

Bottom Ash Data

2018 Week 6

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on February 21, 2018. The data represents bottom ash composite results for week 6 of 2018 (February 4, 2018 to February 10, 2018).

The bottom ash meets the requirements of Metro Vancouver's Bottom Ash Management Plan and is suitable for beneficial use during Coquitlam Landfill closure works.



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Date Received: 13-FEB-18
Report Date: 20-FEB-18 17:54 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2055839
Project P.O. #: VANCO-0000040506
Job Reference:
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2055839-1	L2055839-2	L2055839-3	L2055839-4	L2055839-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	07-FEB-18	07-FEB-18	07-FEB-18	07-FEB-18	07-FEB-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1806-A-1	BA1806-A-2	BA1806-A-3	BA1806-A-4	BA1806-A-5
Grouping	Analyte						
SOIL							
Physical Tests	Moisture (%)		20.0	21.3	23.1	22.3	20.7
	pH (1:2 soil:water) (pH)		11.06	10.99	11.13	10.98	11.10
Metals	Aluminum (Al) (mg/kg)		31500	32800	33500	33200	28700
	Antimony (Sb) (mg/kg)		155	181	145	153	135
	Arsenic (As) (mg/kg)		23.6	21.3	21.4	21.9	21.1
	Barium (Ba) (mg/kg)		469	507	376	467	480
	Beryllium (Be) (mg/kg)		0.44	0.42	0.43	0.45	0.39
	Bismuth (Bi) (mg/kg)		11.3	11.6	7.82	8.06	8.83
	Boron (B) (mg/kg)		350	211	269	329	225
	Cadmium (Cd) (mg/kg)		10.0	9.66	10.5	11.6	12.7
	Calcium (Ca) (mg/kg)		137000	137000	137000	130000	140000
	Chromium (Cr) (mg/kg)		136	140	146	126	136
	Cobalt (Co) (mg/kg)		78.4	36.6	29.9	42.8	31.7
	Copper (Cu) (mg/kg)		2130	10800	1780	3850	7040
	Iron (Fe) (mg/kg)		63500	62400	65400	52000	65300
	Lead (Pb) (mg/kg)		1810	2490	476	671	356
	Lithium (Li) (mg/kg)		20.1	17.8	20.7	23.1	16.1
	Magnesium (Mg) (mg/kg)		9900	10600	9450	9850	9410
	Manganese (Mn) (mg/kg)		725	591	1010	652	693
	Mercury (Hg) (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)		48.7	49.6	62.9	52.0	39.6
	Nickel (Ni) (mg/kg)		98.0	185	195	139	139
	Phosphorus (P) (mg/kg)		10200	9900	9470	10400	10900
	Potassium (K) (mg/kg)		5230	5640	5170	5440	5110
	Selenium (Se) (mg/kg)		0.31	0.37	0.34	0.28	0.32
	Silver (Ag) (mg/kg)		5.72	6.63	5.93	3.84	7.90
	Sodium (Na) (mg/kg)		15300	14700	14600	15600	14500
	Strontium (Sr) (mg/kg)		368	333	332	321	390
	Sulfur (S) (mg/kg)		14500	14400	14800	14200	14300
Thallium (Tl) (mg/kg)		0.073	0.089	0.068	0.066	0.070	
Tin (Sn) (mg/kg)		511	131	115	147	181	
Titanium (Ti) (mg/kg)		691	845	458	787	629	
Tungsten (W) (mg/kg)		9.74	11.9	15.3	7.88	10.3	
Uranium (U) (mg/kg)		5.33	4.78	4.94	4.82	4.92	
Vanadium (V) (mg/kg)		44.1	44.0	52.6	40.9	41.8	
Zinc (Zn) (mg/kg)		3310	5660	4270	3230	4490	
Zirconium (Zr) (mg/kg)		2.0	1.5	2.5	2.0	1.3	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2055839-6 Soil 07-FEB-18 09:00 BA1806-A-6	L2055839-7 Soil 07-FEB-18 09:00 BA1806-A-7	L2055839-8 Soil 07-FEB-18 09:00 BA1806-A-8	L2055839-9 Soil 07-FEB-18 09:00 BA1806-A-9	L2055839-10 Soil 07-FEB-18 09:00 BA1806-A-10
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	20.5	21.8	22.1	20.0	22.3
	pH (1:2 soil:water) (pH)	11.10	10.96	11.12	10.90	11.02
Metals	Aluminum (Al) (mg/kg)	29800	39300	31700	26700	32600
	Antimony (Sb) (mg/kg)	127	105	128	113	126
	Arsenic (As) (mg/kg)	20.7	24.6	19.7	19.4	27.2
	Barium (Ba) (mg/kg)	495	484	408	439	450
	Beryllium (Be) (mg/kg)	0.43	0.43	0.39	0.37	0.43
	Bismuth (Bi) (mg/kg)	12.3	6.99	6.98	8.52	9.17
	Boron (B) (mg/kg)	286	305	213	216	229
	Cadmium (Cd) (mg/kg)	8.81	14.7	11.9	10.5	9.31
	Calcium (Ca) (mg/kg)	129000	128000	125000	124000	129000
	Chromium (Cr) (mg/kg)	155	148	128	127	132
	Cobalt (Co) (mg/kg)	21.7	19.3	26.1	42.0	55.8
	Copper (Cu) (mg/kg)	5920	1220	5720	3340	1930
	Iron (Fe) (mg/kg)	68000	72600	55300	51600	50000
	Lead (Pb) (mg/kg)	1210	282	373	2310	302
	Lithium (Li) (mg/kg)	16.8	15.3	37.9	13.1	16.8
	Magnesium (Mg) (mg/kg)	10000	10000	11100	9700	10800
	Manganese (Mn) (mg/kg)	746	881	582	619	638
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	44.7	198	39.6	199	233
	Nickel (Ni) (mg/kg)	117	102	103	120	185
	Phosphorus (P) (mg/kg)	8630	10400	10800	11000	10300
	Potassium (K) (mg/kg)	5120	5830	5830	5680	5840
	Selenium (Se) (mg/kg)	0.30	0.21	0.35	0.29	0.26
	Silver (Ag) (mg/kg)	6.55	5.63	4.02	5.70	5.20
	Sodium (Na) (mg/kg)	14500	15000	14000	14000	14600
	Strontium (Sr) (mg/kg)	317	312	293	291	308
	Sulfur (S) (mg/kg)	13300	14200	14100	13600	14000
	Thallium (Tl) (mg/kg)	0.062	0.066	0.064	0.063	0.073
	Tin (Sn) (mg/kg)	106	108	166	103	114
	Titanium (Ti) (mg/kg)	672	1050	647	623	707
	Tungsten (W) (mg/kg)	9.55	8.78	7.58	10.5	85.4
	Uranium (U) (mg/kg)	4.82	4.62	4.62	4.54	4.75
	Vanadium (V) (mg/kg)	40.3	44.0	100	39.1	42.8
	Zinc (Zn) (mg/kg)	3220	2890	3310	3570	3670
	Zirconium (Zr) (mg/kg)	1.5	1.9	1.6	1.1	1.4

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2055839-11 Soil 07-FEB-18 09:00 BA1806-A-11	L2055839-12 Soil 07-FEB-18 09:00 BA1806-A-12		
Grouping	Analyte				
SOIL					
Physical Tests	Moisture (%)	21.0	21.4		
	pH (1:2 soil:water) (pH)	11.07	11.17		
Metals	Aluminum (Al) (mg/kg)	31300	33700		
	Antimony (Sb) (mg/kg)	113	110		
	Arsenic (As) (mg/kg)	19.0	20.2		
	Barium (Ba) (mg/kg)	419	482		
	Beryllium (Be) (mg/kg)	0.44	0.42		
	Bismuth (Bi) (mg/kg)	8.35	8.83		
	Boron (B) (mg/kg)	297	244		
	Cadmium (Cd) (mg/kg)	9.63	8.81		
	Calcium (Ca) (mg/kg)	128000	126000		
	Chromium (Cr) (mg/kg)	176	139		
	Cobalt (Co) (mg/kg)	316	24.2		
	Copper (Cu) (mg/kg)	6380	2030		
	Iron (Fe) (mg/kg)	57900	47600		
	Lead (Pb) (mg/kg)	268	597		
	Lithium (Li) (mg/kg)	12.4	15.2		
	Magnesium (Mg) (mg/kg)	11000	10500		
	Manganese (Mn) (mg/kg)	691	655		
	Mercury (Hg) (mg/kg)	<0.050	<0.050		
	Molybdenum (Mo) (mg/kg)	61.8	51.8		
	Nickel (Ni) (mg/kg)	169	106		
	Phosphorus (P) (mg/kg)	10200	11300		
	Potassium (K) (mg/kg)	5540	5430		
	Selenium (Se) (mg/kg)	0.29	0.25		
	Silver (Ag) (mg/kg)	5.87	9.00		
	Sodium (Na) (mg/kg)	15000	14400		
	Strontium (Sr) (mg/kg)	297	307		
	Sulfur (S) (mg/kg)	14300	13100		
	Thallium (Tl) (mg/kg)	0.063	0.063		
	Tin (Sn) (mg/kg)	145	102		
	Titanium (Ti) (mg/kg)	585	713		
	Tungsten (W) (mg/kg)	8.50	8.64		
	Uranium (U) (mg/kg)	4.76	4.67		
	Vanadium (V) (mg/kg)	42.6	56.9		
	Zinc (Zn) (mg/kg)	2700	3660		
	Zirconium (Zr) (mg/kg)	1.5	1.9		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2055839-1	L2055839-2	L2055839-3	L2055839-4	L2055839-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	07-FEB-18	07-FEB-18	07-FEB-18	07-FEB-18	07-FEB-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1806-A-1	BA1806-A-2	BA1806-A-3	BA1806-A-4	BA1806-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.40	11.43	11.41	11.46	11.52
	2nd Preliminary pH (pH)		9.43	9.31	9.42	9.21	9.22
	Final pH (pH)		6.20	6.29	5.92	5.88	6.01
	Extraction Solution Initial pH (pH)		2.88	2.88	2.88	2.88	2.88
	Antimony (Sb)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Arsenic (As)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Barium (Ba)-Leachable (mg/L)		<2.5	<2.5	<2.5	<2.5	<2.5
	Beryllium (Be)-Leachable (mg/L)		<0.025	<0.025	<0.025	<0.025	<0.025
	Boron (B)-Leachable (mg/L)		3.00	3.44	3.29	2.72	3.51
	Cadmium (Cd)-Leachable (mg/L)		0.639	0.161	0.148	0.223	0.165
	Calcium (Ca)-Leachable (mg/L)		2040	2110	2070	2010	2020
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.616	0.760	1.47	0.624	0.247
	Copper (Cu)-Leachable (mg/L)		1.18	1.39	2.17	0.988	1.45
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	<0.25	<0.25	0.60	<0.25
	Magnesium (Mg)-Leachable (mg/L)		121	124	120	119	115
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.42	0.44	0.72	0.72	0.46
	Selenium (Se)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Silver (Ag)-Leachable (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Thallium (Tl)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Vanadium (V)-Leachable (mg/L)		<0.15	<0.15	<0.15	<0.15	<0.15
	Zinc (Zn)-Leachable (mg/L)		66.1	41.6	38.3	45.8	41.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2055839-6	L2055839-7	L2055839-8	L2055839-9	L2055839-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	07-FEB-18	07-FEB-18	07-FEB-18	07-FEB-18	07-FEB-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1806-A-6	BA1806-A-7	BA1806-A-8	BA1806-A-9	BA1806-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.42	11.34	11.47	11.35	11.34
	2nd Preliminary pH (pH)		9.20	9.43	9.58	9.62	9.17
	Final pH (pH)		6.02	6.28	5.94	5.98	6.15
	Extraction Solution Initial pH (pH)		2.88	2.90	2.90	2.90	2.90
	Antimony (Sb)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Arsenic (As)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Barium (Ba)-Leachable (mg/L)		<2.5	<2.5	<2.5	<2.5	<2.5
	Beryllium (Be)-Leachable (mg/L)		<0.025	<0.025	<0.025	<0.025	<0.025
	Boron (B)-Leachable (mg/L)		3.00	6.88	2.96	3.00	2.82
	Cadmium (Cd)-Leachable (mg/L)		0.143	0.146	0.151	0.159	0.146
	Calcium (Ca)-Leachable (mg/L)		2030	1840	1850	1860	1870
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.478	0.314	0.289	1.59	0.353
	Copper (Cu)-Leachable (mg/L)		1.36	0.479	2.13	1.52	1.52
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	0.26	0.44	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		119	105	103	107	107
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.33	0.49	0.38	0.38	0.36
	Selenium (Se)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Silver (Ag)-Leachable (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Thallium (Tl)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Vanadium (V)-Leachable (mg/L)		<0.15	<0.15	<0.15	<0.15	<0.15
	Zinc (Zn)-Leachable (mg/L)		49.3	85.1	36.2	36.3	51.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2055839-11 Soil 07-FEB-18 09:00 BA1806-A-11	L2055839-12 Soil 07-FEB-18 09:00 BA1806-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	11.37	11.40		
	2nd Preliminary pH (pH)	9.43	9.43		
	Final pH (pH)	6.16	6.24		
	Extraction Solution Initial pH (pH)	2.90	2.90		
	Antimony (Sb)-Leachable (mg/L)	<1.0	<1.0		
	Arsenic (As)-Leachable (mg/L)	<1.0	<1.0		
	Barium (Ba)-Leachable (mg/L)	<2.5	<2.5		
	Beryllium (Be)-Leachable (mg/L)	<0.025	<0.025		
	Boron (B)-Leachable (mg/L)	2.75	4.64		
	Cadmium (Cd)-Leachable (mg/L)	0.234	0.167		
	Calcium (Ca)-Leachable (mg/L)	1890	1900		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.491	0.433		
	Copper (Cu)-Leachable (mg/L)	1.81	1.38		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	108	108		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	1.57	0.54		
	Selenium (Se)-Leachable (mg/L)	<1.0	<1.0		
	Silver (Ag)-Leachable (mg/L)	<0.050	<0.050		
	Thallium (Tl)-Leachable (mg/L)	<1.0	<1.0		
	Vanadium (V)-Leachable (mg/L)	<0.15	<0.15		
	Zinc (Zn)-Leachable (mg/L)	53.4	37.5		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bismuth (Bi)	DUP-H	L2055839-1, -2, -3, -4, -5, -6
Duplicate	Cadmium (Cd)	DUP-H	L2055839-1, -2, -3, -4, -5, -6
Duplicate	Copper (Cu)	DUP-H	L2055839-1, -2, -3, -4, -5, -6
Duplicate	Lead (Pb)	DUP-H	L2055839-1, -2, -3, -4, -5, -6
Duplicate	Nickel (Ni)	DUP-H	L2055839-1, -2, -3, -4, -5, -6
Duplicate	Silver (Ag)	DUP-H	L2055839-1, -2, -3, -4, -5, -6
Duplicate	Zinc (Zn)	DUP-H	L2055839-1, -2, -3, -4, -5, -6
Duplicate	Uranium (U)	DUP-H,J	L2055839-10, -11, -12, -7, -8, -9
Matrix Spike	Cadmium (Cd)-Leachable	MS-B	L2055839-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2055839-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2055839-10, -11, -12, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2055839-1, -2, -3, -4, -5, -6
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2055839-10, -11, -12, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2055839-1, -2, -3, -4, -5, -6
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2055839-10, -11, -12, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AG-200.2-A-CCMS-VA	Soil	Elevated Ag in Soil by CRC ICPMS	EPA 200.2/6020A
This method uses a heated strong acid digestion with HNO ₃ and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Analysis is by Collision/Reaction Cell ICPMS.			
HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)
Soil samples are digested with hot nitric and hydrochloric acids, followed by CVAAS analysis. This method is fully compliant with the BC SALM strong acid leachable metals digestion method.			
HG-TCLP-CVAFS-VA	Soil	Mercury by CVAAS (TCLP)	EPA 1311/245.7
This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 245.7).			
MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)
This method uses a heated strong acid digestion with HNO ₃ and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.			
MET-TCLP-ICP-VA	Soil	Metals by ICPOES (TCLP)	EPA 1311/6010B
This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).			
MOISTURE-VA	Soil	Moisture content	CWS for PHC in Soil - Tier 1
This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.			
PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL
This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH			

Reference Information

probe.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC #

Page of

Report To: Covanta Energy
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular, Priority, Emergency, Same Day or Weekend Emergency
Analysis Request table

Invoice To: Same as Report?
Client / Project Information: Job #, PO / AFE, LSD, Quote #
Please indicate below Filtered, Preserved or both (F, P, F/P)

Table with columns: Sample #, Sample Identification, Date, Time, Sample Type, MET-TCLP-VA, MOISTURE, Chrome 6, MET-CSR+FULL-VA, Number of Containers. Rows BA1806-A-1 to BA1806-A-12.

Special Instructions / regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

SHIPMENT RELEASE (client use), SHIPMENT RECEPTION (lab use only), SHIPMENT VERIFICATION (lab use only)
Released by, Date, Time, Received by, Date, Time, Temperature, Verified by, Date, Time, Observations