

Bottom Ash Data

2018 Week 38

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on October 4, 2018. The data represents bottom ash composite results for week 38 of 2018 (September 16, 2018 to September 22, 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: 25-SEP-18
Report Date: 03-OCT-18 11:11 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2170259
Project P.O. #: VANCO-0000047506
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	L2170259-1	L2170259-2	L2170259-3	L2170259-4	L2170259-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	19-SEP-18	19-SEP-18	19-SEP-18	19-SEP-18	19-SEP-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1838-A-1	BA1838-A-2	BA1838-A-3	BA1838-A-4	BA1838-A-5
Grouping	Analyte						
SOIL							
Physical Tests	Moisture (%)		23.0	23.4	22.5	25.0	24.7
	pH (1:2 soil:water) (pH)		10.12	10.37	10.04	10.12	10.18
Metals	Aluminum (Al) (mg/kg)		32500	37200	40300	33400	31700
	Antimony (Sb) (mg/kg)		112	121	114	109	137
	Arsenic (As) (mg/kg)		26.8	25.6	34.9	24.7	29.5
	Barium (Ba) (mg/kg)		518	511	481	555	454
	Beryllium (Be) (mg/kg)		0.35	0.37	0.35	0.36	0.35
	Bismuth (Bi) (mg/kg)		12.6	15.2	16.1	10.6	11.2
	Boron (B) (mg/kg)		407	356	377	367	544
	Cadmium (Cd) (mg/kg)		15.7	15.5	16.3	14.9	17.4
	Calcium (Ca) (mg/kg)		113000	116000	114000	114000	122000
	Chromium (Cr) (mg/kg)		204	289	268	227	716
	Cobalt (Co) (mg/kg)		29.3	119	66.9	166	110
	Copper (Cu) (mg/kg)		2730	3490	20500	4210	6560
	Iron (Fe) (mg/kg)		83800	76300	72900	110000	70300
	Lead (Pb) (mg/kg)		316	1120	777	331	1310
	Lithium (Li) (mg/kg)		16.1	25.7	17.2	22.1	25.4
	Magnesium (Mg) (mg/kg)		10200	9210	8840	8620	10000
	Manganese (Mn) (mg/kg)		786	859	694	1010	775
	Mercury (Hg) (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)		218	175	142	133	192
	Nickel (Ni) (mg/kg)		165	441	131	155	566
	Phosphorus (P) (mg/kg)		11600	13000	10700	10900	11300
	Potassium (K) (mg/kg)		5730	5710	5220	5060	6010
	Selenium (Se) (mg/kg)		0.39	0.46	0.34	0.32	0.38
	Silver (Ag) (mg/kg)		5.69	3.88	5.11	3.30	6.95
	Sodium (Na) (mg/kg)		14700	14100	13200	13300	14700
	Strontium (Sr) (mg/kg)		267	299	258	264	314
	Sulfur (S) (mg/kg)		12500	12300	11200	11200	13300
Thallium (Tl) (mg/kg)		0.101	0.171	0.120	0.094	0.114	
Tin (Sn) (mg/kg)		401	226	356	117	140	
Titanium (Ti) (mg/kg)		474	558	789	678	599	
Tungsten (W) (mg/kg)		8.68	11.8	7.56	8.17	16.6	
Uranium (U) (mg/kg)		6.33	5.82	5.38	5.22	6.09	
Vanadium (V) (mg/kg)		48.3	51.2	75.8	43.2	51.6	
Zinc (Zn) (mg/kg)		4610	3860	16500	3500	4590	
Zirconium (Zr) (mg/kg)		1.6	1.3	1.6	1.2	1.1	

* 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		L2170259-6 Soil 19-SEP-18 09:00 BA1838-A-6	L2170259-7 Soil 19-SEP-18 09:00 BA1838-A-7	L2170259-8 Soil 19-SEP-18 09:00 BA1838-A-8	L2170259-9 Soil 19-SEP-18 09:00 BA1838-A-9	L2170259-10 Soil 19-SEP-18 09:00 BA1838-A-10
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	24.2	25.1	22.1	22.1	23.5
	pH (1:2 soil:water) (pH)	10.03	9.99	10.10	10.11	10.14
Metals	Aluminum (Al) (mg/kg)	33700	43800	42400	45500	28800
	Antimony (Sb) (mg/kg)	132	118	121	133	132
	Arsenic (As) (mg/kg)	29.1	25.7	24.4	27.5	32.0
	Barium (Ba) (mg/kg)	483	455	575	532	455
	Beryllium (Be) (mg/kg)	0.44	0.56	0.40	0.38	0.33
	Bismuth (Bi) (mg/kg)	11.6	17.5	10.3	15.3	11.5
	Boron (B) (mg/kg)	454	574	387	403	434
	Cadmium (Cd) (mg/kg)	17.0	110	16.4	16.2	15.9
	Calcium (Ca) (mg/kg)	118000	115000	121000	124000	117000
	Chromium (Cr) (mg/kg)	231	285	200	196	227
	Cobalt (Co) (mg/kg)	28.5	330	63.5	80.4	27.7
	Copper (Cu) (mg/kg)	1700	2550	2210	19500	2130
	Iron (Fe) (mg/kg)	78400	73000	71700	66200	82600
	Lead (Pb) (mg/kg)	339	491	354	377	414
	Lithium (Li) (mg/kg)	18.0	23.8	21.6	21.1	16.1
	Magnesium (Mg) (mg/kg)	9690	9450	9570	9910	9160
	Manganese (Mn) (mg/kg)	831	1000	1410	889	759
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	0.065	<0.050
	Molybdenum (Mo) (mg/kg)	219	179	147	201	395
	Nickel (Ni) (mg/kg)	174	222	172	137	153
	Phosphorus (P) (mg/kg)	11600	10900	12100	13700	11300
	Potassium (K) (mg/kg)	5940	5660	5810	6060	5460
	Selenium (Se) (mg/kg)	0.33	0.36	0.34	0.39	0.37
	Silver (Ag) (mg/kg)	2.85	2.89	5.15	3.33	3.79
	Sodium (Na) (mg/kg)	15100	15200	16600	15400	14900
	Strontium (Sr) (mg/kg)	330	294	295	285	606
	Sulfur (S) (mg/kg)	12900	11000	12000	12900	13300
Thallium (Tl) (mg/kg)	0.111	0.108	0.100	0.115	0.095	
Tin (Sn) (mg/kg)	141	104	131	149	176	
Titanium (Ti) (mg/kg)	593	770	740	746	557	
Tungsten (W) (mg/kg)	8.68	6.88	9.50	9.32	8.62	
Uranium (U) (mg/kg)	5.84	5.66	5.75	5.77	5.99	
Vanadium (V) (mg/kg)	45.6	49.6	48.0	48.5	45.8	
Zinc (Zn) (mg/kg)	5570	7560	3710	7400	4330	
Zirconium (Zr) (mg/kg)	1.2	1.3	1.5	1.8	1.2	

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2170259-11	L2170259-12		
		Description	Soil	Soil		
		Sampled Date	19-SEP-18	19-SEP-18		
		Sampled Time	09:00	09:00		
		Client ID	BA1838-A-11	BA1838-A-12		
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	22.0	24.0			
	pH (1:2 soil:water) (pH)	10.59	10.10			
Metals	Aluminum (Al) (mg/kg)	34000	39500			
	Antimony (Sb) (mg/kg)	130	133			
	Arsenic (As) (mg/kg)	24.3	39.5			
	Barium (Ba) (mg/kg)	405	547			
	Beryllium (Be) (mg/kg)	0.35	0.39			
	Bismuth (Bi) (mg/kg)	14.9	20.1			
	Boron (B) (mg/kg)	438	379			
	Cadmium (Cd) (mg/kg)	18.6	17.1			
	Calcium (Ca) (mg/kg)	116000	116000			
	Chromium (Cr) (mg/kg)	211	297			
	Cobalt (Co) (mg/kg)	27.2	169			
	Copper (Cu) (mg/kg)	2140	4100			
	Iron (Fe) (mg/kg)	66000	92000			
	Lead (Pb) (mg/kg)	415	397			
	Lithium (Li) (mg/kg)	18.4	18.7			
	Magnesium (Mg) (mg/kg)	9290	9400			
	Manganese (Mn) (mg/kg)	1070	966			
	Mercury (Hg) (mg/kg)	<0.050	<0.050			
	Molybdenum (Mo) (mg/kg)	256	384			
	Nickel (Ni) (mg/kg)	296	191			
	Phosphorus (P) (mg/kg)	12200	12500			
	Potassium (K) (mg/kg)	5940	6240			
	Selenium (Se) (mg/kg)	0.33	0.38			
	Silver (Ag) (mg/kg)	3.45	3.46			
	Sodium (Na) (mg/kg)	16500	17200			
	Strontium (Sr) (mg/kg)	318	319			
	Sulfur (S) (mg/kg)	13100	12800			
	Thallium (Tl) (mg/kg)	0.104	0.094			
	Tin (Sn) (mg/kg)	127	165			
	Titanium (Ti) (mg/kg)	376	529			
	Tungsten (W) (mg/kg)	14.8	8.05			
	Uranium (U) (mg/kg)	5.92	5.42			
Vanadium (V) (mg/kg)	49.2	48.5				
Zinc (Zn) (mg/kg)	5650	5730				
Zirconium (Zr) (mg/kg)	1.7	1.7				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2170259-1	L2170259-2	L2170259-3	L2170259-4	L2170259-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	19-SEP-18	19-SEP-18	19-SEP-18	19-SEP-18	19-SEP-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1838-A-1	BA1838-A-2	BA1838-A-3	BA1838-A-4	BA1838-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.23	11.24	11.21	11.29	11.25
	2nd Preliminary pH (pH)		5.96	6.18	5.80	5.89	5.69
	Final pH (pH)		5.68	5.85	5.51	5.82	5.86
	Extraction Solution Initial pH (pH)		2.89	2.89	2.89	2.89	2.89
	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)		5.67	6.54	5.43	5.81	5.98
	Cadmium (Cd)-Leachable (mg/L)		0.259	0.284	0.243	0.492	0.253
	Calcium (Ca)-Leachable (mg/L)		1930	2000	1830	1840	2010
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.331	0.275	0.371	0.394	0.934
	Copper (Cu)-Leachable (mg/L)		0.354	2.13	1.27	1.67	1.67
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	6.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		0.92	<0.25	<0.25	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		110	115	105	97.1	116
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.96	0.53	0.54	1.19	0.69
	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)		42.4	108	68.3	50.7	42.1

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2170259-6	L2170259-7	L2170259-8	L2170259-9	L2170259-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	19-SEP-18	19-SEP-18	19-SEP-18	19-SEP-18	19-SEP-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1838-A-6	BA1838-A-7	BA1838-A-8	BA1838-A-9	BA1838-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.27	11.09	11.17	11.23	11.18
	2nd Preliminary pH (pH)		5.82	5.72	5.89	5.58	5.76
	Final pH (pH)		5.92	5.79	5.68	5.81	6.12
	Extraction Solution Initial pH (pH)		2.89	2.89	2.89	2.89	2.89
	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)		6.21	6.23	7.11	5.63	5.48
	Cadmium (Cd)-Leachable (mg/L)		0.263	0.337	0.242	0.270	0.242
	Calcium (Ca)-Leachable (mg/L)		2000	1950	1920	2110	2110
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.871	0.292	0.584	0.879	0.431
	Copper (Cu)-Leachable (mg/L)		0.900	1.19	2.28	1.60	1.41
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	5.6	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	0.38	<0.25	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		114	111	109	121	119
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.61	0.47	0.76	0.84	0.58
	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)		49.1	53.8	57.9	58.9	57.2

* 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	L2170259-11 Soil 19-SEP-18 09:00 BA1838-A-11	L2170259-12 Soil 19-SEP-18 09:00 BA1838-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	11.21	11.13		
	2nd Preliminary pH (pH)	5.37	5.52		
	Final pH (pH)	5.92	5.89		
	Extraction Solution Initial pH (pH)	2.89	2.89		
	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)	6.09	6.25		
	Cadmium (Cd)-Leachable (mg/L)	0.236	0.236		
	Calcium (Ca)-Leachable (mg/L)	1970	1820		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.470	0.359		
	Copper (Cu)-Leachable (mg/L)	0.863	0.952		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	118	100		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.74	0.86		
	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)	54.9	53.5		

* 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	Arsenic (As)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Barium (Ba)	DUP-H	L2170259-12
Duplicate	Bismuth (Bi)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Boron (B)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lithium (Li)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Molybdenum (Mo)	DUP-H	L2170259-12
Duplicate	Nickel (Ni)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Titanium (Ti)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tungsten (W)	DUP-H	L2170259-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2170259-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2170259-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2170259-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
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**
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 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:

Reference Information

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



L2170259-COFC

COC # _____

Page ____ of ____

Report To

Company: Covanta Energy
 Contact: Steve Mckinney / Dan Skrypynk
 Address: 5150 Riverbend Drive
 Burnaby BC
 Phone: 604-521-1025 Fax: _____
 Yes No

PDF Excel Digital Fax
 Email 1: smckinney@covanta.com
 Email 2: rjohnson4@covanta.com
 Email 3: dskrypynk@covanta.com
 brent.kirkpatrick@metrovancover.org
 Sarah.Wellman@metrovancover.org

Service Requested (Rush for routine analysis subject to availability)

Regular (Standard Turnaround Times - Business Days)
 Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
 Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
 Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Invoice To Same as Report ?

Hardcopy of Invoice with Report? Yes No
 Company: _____
 Contact: _____
 Address: _____
 Phone: _____ Fax: _____

Client / Project Information

Job #: _____
 PO / AFE: PO# 46693 Weekly Bottom Ash - Suite
 LSD: (Includes 2:1 pH)
 Quote #: _____

Please indicate below Filtered, Preserved or both (F, P, F/P)

Lab Work Order # (lab use only)

ALS Contact: _____
 Sampler: _____

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Analysis Request				Number of Containers
					MET-TCLP-VA (all metals, hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)	
BA1838-A-1		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-2		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-3		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-4		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-5		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-6		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-7		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-8		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-9		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-10		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-11		19-Sep-18	9:00	Soil	X	X		X	1
BA1838-A-12		19-Sep-18	9:00	Soil	X	X		X	1

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.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh:mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
[Signature]	25-Sep-18	08:00	HA	9/25	12:45	21 °C				