

Bottom Ash Data

2018 Week 48

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on December 11, 2018. The data represents bottom ash composite results for week 48 of 2018 (November 25, 2018 to December 1, 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: 04-DEC-18
Report Date: 10-DEC-18 12:50 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2205646
Project P.O. #: VANCO-0000047506
Job Reference:
C of C Numbers:
Legal Site Desc: Weekly Bottom Ash (includes 2:1) pH

Brent Mack, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2205646-1 Soil 28-NOV-18 09:00 BA1848-A-1	L2205646-2 Soil 28-NOV-18 09:00 BA1848-A-2	L2205646-3 Soil 28-NOV-18 09:00 BA1848-A-3	L2205646-4 Soil 28-NOV-18 09:00 BA1848-A-4	L2205646-5 Soil 28-NOV-18 09:00 BA1848-A-5	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	21.3	21.0	20.5	19.7	20.9
	pH (1:2 soil:water) (pH)	12.03	12.07	12.06	12.02	12.17
Metals	Aluminum (Al) (mg/kg)	36600	30200	44600	38700	35700
	Antimony (Sb) (mg/kg)	113	91.8	88.4	134	142
	Arsenic (As) (mg/kg)	30.8	20.0	20.4	23.7	38.6
	Barium (Ba) (mg/kg)	670	697	697	638	589
	Beryllium (Be) (mg/kg)	0.47	0.48	0.41	0.40	0.42
	Bismuth (Bi) (mg/kg)	7.00	4.87	5.20	5.56	10.3
	Boron (B) (mg/kg)	350	530	308	363	305
	Cadmium (Cd) (mg/kg)	9.92	9.40	25.9	8.98	11.5
	Calcium (Ca) (mg/kg)	132000	134000	122000	130000	120000
	Chromium (Cr) (mg/kg)	175	207	157	155	126
	Cobalt (Co) (mg/kg)	27.1	57.2	28.4	573	155
	Copper (Cu) (mg/kg)	5970	19100	2380	24400	18400
	Iron (Fe) (mg/kg)	56600	78900	54300	81800	59400
	Lead (Pb) (mg/kg)	467	1610	369	1370	1180
	Lithium (Li) (mg/kg)	16.4	67.7	15.9	26.4	21.0
	Magnesium (Mg) (mg/kg)	11700	11100	12300	11600	10400
	Manganese (Mn) (mg/kg)	1080	960	918	947	701
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	44.1	33.5	43.4	41.5	32.8
	Nickel (Ni) (mg/kg)	272	223	108	227	737
	Phosphorus (P) (mg/kg)	11000	8740	9870	9690	8900
	Potassium (K) (mg/kg)	4970	5040	4940	4840	4760
	Selenium (Se) (mg/kg)	0.70	0.30	0.24	0.31	0.29
	Silver (Ag) (mg/kg)	11.8	4.85	5.01	3.72	7.00
	Sodium (Na) (mg/kg)	14100	14400	13900	13800	13200
	Strontium (Sr) (mg/kg)	310	290	263	291	273
	Sulfur (S) (mg/kg)	11500	10800	9900	10900	11400
	Thallium (Tl) (mg/kg)	0.080	0.077	0.067	0.081	0.075
	Tin (Sn) (mg/kg)	499	141	99.3	97.8	263
	Titanium (Ti) (mg/kg)	730	984	1250	843	1150
	Tungsten (W) (mg/kg)	15.0	5.02	4.22	7.35	4.84
	Uranium (U) (mg/kg)	5.39	4.75	4.76	4.99	5.02
	Vanadium (V) (mg/kg)	51.9	49.7	46.5	43.9	44.9
	Zinc (Zn) (mg/kg)	6660	4760	3590	4420	4110
	Zirconium (Zr) (mg/kg)	1.1	<1.0	1.5	1.3	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	L2205646-6 Soil 28-NOV-18 09:00 BA1848-A-6	L2205646-7 Soil 28-NOV-18 09:00 BA1848-A-7	L2205646-8 Soil 28-NOV-18 09:00 BA1848-A-8	L2205646-9 Soil 28-NOV-18 09:00 BA1848-A-9	L2205646-10 Soil 28-NOV-18 09:00 BA1848-A-10	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	21.9	19.6	20.7	20.6	21.1
	pH (1:2 soil:water) (pH)	12.07	12.06	12.04	12.06	12.19
Metals	Aluminum (Al) (mg/kg)	37000	30900	38200	36600	37800
	Antimony (Sb) (mg/kg)	160	127	117	104	237
	Arsenic (As) (mg/kg)	30.7	24.9	22.3	20.2	21.1
	Barium (Ba) (mg/kg)	602	555	693	688	662
	Beryllium (Be) (mg/kg)	0.43	0.42	0.41	0.44	0.39
	Bismuth (Bi) (mg/kg)	5.02	6.98	7.18	6.02	4.64
	Boron (B) (mg/kg)	311	377	322	343	355
	Cadmium (Cd) (mg/kg)	9.72	11.7	12.5	8.23	8.32
	Calcium (Ca) (mg/kg)	127000	147000	127000	134000	127000
	Chromium (Cr) (mg/kg)	236	193	237	175	123
	Cobalt (Co) (mg/kg)	46.2	55.5	42.1	207	118
	Copper (Cu) (mg/kg)	15900	3440	41900	16500	2450
	Iron (Fe) (mg/kg)	52600	49000	59700	52900	58200
	Lead (Pb) (mg/kg)	1360	443	18000	598	552
	Lithium (Li) (mg/kg)	20.8	19.3	17.0	21.2	16.8
	Magnesium (Mg) (mg/kg)	11500	11400	12100	12100	12400
	Manganese (Mn) (mg/kg)	1530	767	804	1040	791
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	35.4	49.1	33.0	45.0	30.0
	Nickel (Ni) (mg/kg)	287	143	1780	216	138
	Phosphorus (P) (mg/kg)	10300	10800	9130	9740	10500
	Potassium (K) (mg/kg)	5240	5530	4710	4910	5160
	Selenium (Se) (mg/kg)	0.31	0.34	0.49	0.33	0.28
	Silver (Ag) (mg/kg)	3.68	17.1	15.9	4.23	4.08
	Sodium (Na) (mg/kg)	14200	13700	13200	14000	14700
	Strontium (Sr) (mg/kg)	301	323	300	415	281
	Sulfur (S) (mg/kg)	11200	15400	10700	11100	10800
	Thallium (Tl) (mg/kg)	0.080	0.087	0.286	0.083	0.076
	Tin (Sn) (mg/kg)	175	116	272	114	1500
	Titanium (Ti) (mg/kg)	726	730	1300	1040	796
	Tungsten (W) (mg/kg)	6.02	10.0	7.34	5.69	6.13
	Uranium (U) (mg/kg)	5.30	6.34	4.58	5.04	5.14
	Vanadium (V) (mg/kg)	49.9	52.9	45.9	50.1	48.6
	Zinc (Zn) (mg/kg)	5490	5050	10700	11000	3970
	Zirconium (Zr) (mg/kg)	1.2	2.3	1.4	1.1	1.3

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2205646-11	L2205646-12			
		Description	Soil	Soil			
		Sampled Date	28-NOV-18	28-NOV-18			
		Sampled Time	09:00	09:00			
		Client ID	BA1848-A-11	BA1848-A-12			
Grouping	Analyte						
SOIL							
Physical Tests	Moisture (%)	20.5	21.0				
	pH (1:2 soil:water) (pH)	12.04	11.94				
Metals	Aluminum (Al) (mg/kg)	37000	35500				
	Antimony (Sb) (mg/kg)	125	122				
	Arsenic (As) (mg/kg)	25.2	24.2				
	Barium (Ba) (mg/kg)	632	671				
	Beryllium (Be) (mg/kg)	0.44	0.42				
	Bismuth (Bi) (mg/kg)	9.17	4.99				
	Boron (B) (mg/kg)	420	654				
	Cadmium (Cd) (mg/kg)	9.75	9.26				
	Calcium (Ca) (mg/kg)	141000	134000				
	Chromium (Cr) (mg/kg)	161	176				
	Cobalt (Co) (mg/kg)	145	123				
	Copper (Cu) (mg/kg)	2740	3320				
	Iron (Fe) (mg/kg)	52100	74500				
	Lead (Pb) (mg/kg)	630	423				
	Lithium (Li) (mg/kg)	22.7	19.5				
	Magnesium (Mg) (mg/kg)	12300	11200				
	Manganese (Mn) (mg/kg)	921	4190				
	Mercury (Hg) (mg/kg)	<0.050	<0.050				
	Molybdenum (Mo) (mg/kg)	36.3	32.3				
	Nickel (Ni) (mg/kg)	258	179				
	Phosphorus (P) (mg/kg)	10600	9630				
	Potassium (K) (mg/kg)	5430	4830				
	Selenium (Se) (mg/kg)	0.34	0.29				
	Silver (Ag) (mg/kg)	5.03	4.50				
	Sodium (Na) (mg/kg)	15000	13900				
	Strontium (Sr) (mg/kg)	333	312				
	Sulfur (S) (mg/kg)	12900	11300				
	Thallium (Tl) (mg/kg)	0.083	0.073				
	Tin (Sn) (mg/kg)	171	116				
	Titanium (Ti) (mg/kg)	781	856				
	Tungsten (W) (mg/kg)	8.21	6.55				
	Uranium (U) (mg/kg)	5.88	5.27				
Vanadium (V) (mg/kg)	53.0	48.2					
Zinc (Zn) (mg/kg)	4480	4470					
Zirconium (Zr) (mg/kg)	1.8	1.2					

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

10-DEC-18 12:50 (MT)

Version: FINAL

		Sample ID	L2205646-1	L2205646-2	L2205646-3	L2205646-4	L2205646-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1848-A-1	BA1848-A-2	BA1848-A-3	BA1848-A-4	BA1848-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.83	11.70	11.87	11.77	11.89
	2nd Preliminary pH (pH)		8.87	8.49	8.93	8.50	9.05
	Final pH (pH)		6.17	6.29	6.32	6.39	6.21
	Extraction Solution Initial pH (pH)		2.92	2.92	2.92	2.92	2.92
	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)		4.20	4.45	3.87	4.33	4.16
	Cadmium (Cd)-Leachable (mg/L)		0.176	0.147	0.119	0.185	0.129
	Calcium (Ca)-Leachable (mg/L)		1910	1890	1880	1980	1930
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.353	0.413	0.389	0.297	0.507
	Copper (Cu)-Leachable (mg/L)		0.620	0.706	0.867	1.47	0.667
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	0.79	<0.25	0.27	<0.25
	Magnesium (Mg)-Leachable (mg/L)		113	114	115	120	117
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.67	0.47	0.58	0.74	0.45
	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)		40.3	44.6	36.0	62.8	52.2

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

10-DEC-18 12:50 (MT)

Version: FINAL

		Sample ID	L2205646-6	L2205646-7	L2205646-8	L2205646-9	L2205646-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1848-A-6	BA1848-A-7	BA1848-A-8	BA1848-A-9	BA1848-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.80	11.78	11.87	11.81	11.91
	2nd Preliminary pH (pH)		8.72	8.58	9.48	8.31	9.17
	Final pH (pH)		6.12	6.14	6.02	6.18	6.48
	Extraction Solution Initial pH (pH)		2.92	2.92	2.92	2.92	2.92
	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)		4.40	4.24	3.87	5.18	4.42
	Cadmium (Cd)-Leachable (mg/L)		0.151	0.135	0.281	0.136	0.118
	Calcium (Ca)-Leachable (mg/L)		1990	2030	1940	2050	1960
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.725	0.515	0.265	0.366	0.459
	Copper (Cu)-Leachable (mg/L)		0.512	1.14	0.721	1.50	0.836
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	<0.25	0.26	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		115	120	122	123	116
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.62	0.49	0.63	0.44	0.51
	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)		34.0	45.7	38.5	36.4	45.6

* 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	L2205646-11 Soil 28-NOV-18 09:00 BA1848-A-11	L2205646-12 Soil 28-NOV-18 09:00 BA1848-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	11.84	11.86		
	2nd Preliminary pH (pH)	8.78	9.00		
	Final pH (pH)	6.06	6.16		
	Extraction Solution Initial pH (pH)	2.92	2.92		
	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)	5.98	3.94		
	Cadmium (Cd)-Leachable (mg/L)	0.156	0.124		
	Calcium (Ca)-Leachable (mg/L)	2030	2020		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	1.48	1.30		
	Copper (Cu)-Leachable (mg/L)	1.68	0.912		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	121	125		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.54	0.40		
	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)	41.3	46.5		

* 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	Silver (Ag)	DUP-H	L2205646-4, -5
Duplicate	Antimony (Sb)	DUP-H	L2205646-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Boron (B)	DUP-H	L2205646-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Chromium (Cr)	DUP-H	L2205646-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)	DUP-H	L2205646-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2205646-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Iron (Fe)	DUP-H	L2205646-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2205646-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lithium (Li)	DUP-H	L2205646-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2205646-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2205646-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2205646-1, -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**
AG-200.2-A-CCMS-VA	Soil	Elevated Ag in Soil by CRC ICPMS	EPA 200.2/6020A
		Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental 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)
		Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.	
		Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H ₂ S) may be excluded if lost during sampling, storage, or digestion.	
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	CCME PHC in Soil - Tier 1 (mod)
		This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of two 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.



ALS Environmental



L2205646-COFC

COC #

Page ___ of ___

Report To		Report		Service Requested (Rush for routine analysis subject to availability)	
Company:	Covanta Energy	<input type="checkbox"/> Standards	<input checked="" type="checkbox"/> Regular (Standard Turnaround Times - Business Days)		
Contact:	Steve Mckinney / Dan Skrypnyk	<input checked="" type="checkbox"/> PDF	<input type="checkbox"/> Excel	<input type="checkbox"/> Digital	<input type="checkbox"/> Fax
Address:	5150 Riverbend Drive	Email 1:	smckinney@covanta.com	<input type="checkbox"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
	Burnaby BC	Email 2:	djohnson4@covanta.com	<input type="checkbox"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
Phone:	604-521-1025	Email 3:	dskrpnyk@covanta.com	<input type="checkbox"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
	<input type="checkbox"/> Yes <input type="checkbox"/> No		brent.kirkpatrick@metrovancover.org	Analysis Request	
			Sarah.Wellman@metrovancover.org		

Invoice To	Same as Report ?	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)					
Hardcopy of Invoice with Report?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Job #:							
Company:		PO / AFE:	PO# 46693 Weekly Bottom Ash - Suite						
Contact:		LSD:	(includes 2:1 pH)						
Address:		Quote #:							
Phone:									

Lab Work Order # (lab use only)		ALS Contact:	Sampler:									Number of Containers
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)				
	BA1848-A-1	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-2	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-3	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-4	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-5	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-6	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-7	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-8	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-9	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-10	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-11	28-Nov-18	9:00	Soil	X	X		X				1
	BA1848-A-12	28-Nov-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-mm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
<i>[Signature]</i>	3-Dec-18	15:15	HA	12/4	12pm	19 °C				Yes / No ? If Yes add SIF