

## Bottom Ash Data

2019 Week 42

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The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on October 31, 2019. The data represents bottom ash composite results for week 42 of 2019 (October 13, 2019 to October 19, 2019).

The bottom ash meets the requirements of Metro Vancouver's Bottom Ash Management Plan and is suitable for disposal.



Covanta Burnaby R.E., ULC  
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Date Received: 22-OCT-19  
Report Date: 30-OCT-19 11:05 (MT)  
Version: FINAL

Client Phone: 604-521-1025

## Certificate of Analysis

Lab Work Order #: L2369478  
Project P.O. #: VANCO-0000048466  
Job Reference:  
C of C Numbers:  
Legal Site Desc:

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Brent Mack, B.Sc.  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2369478-1 Soil 16-OCT-19 09:00 BA1942-A-1	L2369478-2 Soil 16-OCT-19 09:00 BA1942-A-2	L2369478-3 Soil 16-OCT-19 09:00 BA1942-A-3	L2369478-4 Soil 16-OCT-19 09:00 BA1942-A-4	L2369478-5 Soil 16-OCT-19 09:00 BA1942-A-5	
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	20.5	19.9	20.7	21.9	20.5
	pH (1:2 soil:water) (pH)	10.74	10.72	10.84	10.62	10.78
<b>Metals</b>	Aluminum (Al) (mg/kg)	47400	49500	45300	39900	38100
	Antimony (Sb) (mg/kg)	180	163	140	157	148
	Arsenic (As) (mg/kg)	33.7	43.2	34.0	37.7	37.0
	Barium (Ba) (mg/kg)	513	545	683	552	655
	Beryllium (Be) (mg/kg)	0.39	0.37	0.42	0.38	0.37
	Bismuth (Bi) (mg/kg)	9.68	7.93	7.25	10.9	7.23
	Boron (B) (mg/kg)	186	237	237	225	227
	Cadmium (Cd) (mg/kg)	16.1	15.0	15.2	15.7	17.5
	Calcium (Ca) (mg/kg)	134000	140000	142000	141000	134000
	Chromium (Cr) (mg/kg)	162	273	164	167	151
	Cobalt (Co) (mg/kg)	66.3	31.3	25.9	51.6	22.4
	Copper (Cu) (mg/kg)	2640	2990	3240	3710	5620
	Iron (Fe) (mg/kg)	70000	61500	68100	79100	66700
	Lead (Pb) (mg/kg)	1340	1480	502	1060	403
	Lithium (Li) (mg/kg)	19.9	20.5	20.0	22.2	18.5
	Magnesium (Mg) (mg/kg)	11700	12400	13200	11900	12500
	Manganese (Mn) (mg/kg)	10300	1020	922	1250	838
	Mercury (Hg) (mg/kg)	<0.050	0.070	<0.050	<0.050	0.198
	Molybdenum (Mo) (mg/kg)	32.5	47.4	35.1	37.8	30.3
	Nickel (Ni) (mg/kg)	225	194	240	120	136
	Phosphorus (P) (mg/kg)	10800	11400	10400	10100	11100
	Potassium (K) (mg/kg)	5600	5580	6640	6160	6130
	Selenium (Se) (mg/kg)	0.42	0.54	0.43	0.45	0.37
	Silver (Ag) (mg/kg)	5.12	5.62	5.44	4.78	5.84
	Sodium (Na) (mg/kg)	16300	15700	16800	16300	15700
	Strontium (Sr) (mg/kg)	295	350	342	295	344
	Sulfur (S) (mg/kg)	13000	14600	12400	14800	12800
	Thallium (Tl) (mg/kg)	<0.050	<0.050	0.060	0.051	<0.050
	Tin (Sn) (mg/kg)	199	130	169	153	158
	Titanium (Ti) (mg/kg)	738	1020	1170	631	627
	Tungsten (W) (mg/kg)	11.0	6.63	7.86	7.12	12.4
	Uranium (U) (mg/kg)	4.92	4.99	5.26	5.29	4.91
	Vanadium (V) (mg/kg)	53.5	53.1	58.8	52.3	50.3
	Zinc (Zn) (mg/kg)	5710	5860	6050	4300	6150
	Zirconium (Zr) (mg/kg)	1.9	1.8	1.6	1.4	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	L2369478-6 Soil 16-OCT-19 09:00 BA1942-A-6	L2369478-7 Soil 16-OCT-19 09:00 BA1942-A-7	L2369478-8 Soil 16-OCT-19 09:00 BA1942-A-8	L2369478-9 Soil 16-OCT-19 09:00 BA1942-A-9	L2369478-10 Soil 16-OCT-19 09:00 BA1942-A-10	
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	19.8	20.3	22.0	21.5	21.1
	pH (1:2 soil:water) (pH)	10.79	10.81	10.83	10.77	11.19
<b>Metals</b>	Aluminum (Al) (mg/kg)	36600	41800	43600	37900	34200
	Antimony (Sb) (mg/kg)	143	160	398	155	158
	Arsenic (As) (mg/kg)	50.0	45.4	36.9	33.6	32.2
	Barium (Ba) (mg/kg)	609	535	557	566	581
	Beryllium (Be) (mg/kg)	0.45	0.36	0.38	0.36	0.35
	Bismuth (Bi) (mg/kg)	7.88	9.95	7.14	8.14	6.88
	Boron (B) (mg/kg)	225	403	297	229	340
	Cadmium (Cd) (mg/kg)	14.8	14.1	13.3	13.6	13.9
	Calcium (Ca) (mg/kg)	139000	138000	140000	133000	133000
	Chromium (Cr) (mg/kg)	194	151	154	171	149
	Cobalt (Co) (mg/kg)	67.8	33.8	60.1	48.4	20.4
	Copper (Cu) (mg/kg)	1930	9530	1310	3240	5110
	Iron (Fe) (mg/kg)	80600	73300	68400	78300	67200
	Lead (Pb) (mg/kg)	410	515	2450	1510	381
	Lithium (Li) (mg/kg)	18.1	22.5	17.8	26.8	22.4
	Magnesium (Mg) (mg/kg)	11900	10700	12900	11000	10200
	Manganese (Mn) (mg/kg)	935	900	849	1140	1190
	Mercury (Hg) (mg/kg)	<0.050	<0.050	0.062	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	36.9	28.9	29.7	35.4	270
	Nickel (Ni) (mg/kg)	126	211	116	222	167
	Phosphorus (P) (mg/kg)	9800	9490	10600	10500	9670
	Potassium (K) (mg/kg)	5940	5830	5940	6110	5550
	Selenium (Se) (mg/kg)	0.41	0.50	0.43	0.44	0.40
	Silver (Ag) (mg/kg)	4.05	4.91	4.36	3.70	3.88
	Sodium (Na) (mg/kg)	15700	16300	16400	16200	15100
	Strontium (Sr) (mg/kg)	410	324	323	291	315
	Sulfur (S) (mg/kg)	12900	13600	12700	12700	12300
	Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	0.052	<0.050
	Tin (Sn) (mg/kg)	124	703	132	124	147
	Titanium (Ti) (mg/kg)	567	710	522	564	696
	Tungsten (W) (mg/kg)	8.06	5.25	6.49	8.80	5.77
	Uranium (U) (mg/kg)	4.67	4.40	4.37	4.95	4.56
	Vanadium (V) (mg/kg)	52.6	50.3	50.2	70.6	44.8
	Zinc (Zn) (mg/kg)	4960	4400	7120	4820	4070
	Zirconium (Zr) (mg/kg)	1.3	1.5	2.0	1.4	1.5

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2369478-11	L2369478-12		
		Description	Soil	Soil		
		Sampled Date	16-OCT-19	16-OCT-19		
		Sampled Time	09:00	09:00		
		Client ID	BA1942-A-11	BA1942-A-12		
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	21.5	21.5			
	pH (1:2 soil:water) (pH)	11.12	11.04			
<b>Metals</b>	Aluminum (Al) (mg/kg)	33400	38600			
	Antimony (Sb) (mg/kg)	141	126			
	Arsenic (As) (mg/kg)	30.5	32.1			
	Barium (Ba) (mg/kg)	508	554			
	Beryllium (Be) (mg/kg)	0.33	0.33			
	Bismuth (Bi) (mg/kg)	7.44	7.59			
	Boron (B) (mg/kg)	222	228			
	Cadmium (Cd) (mg/kg)	14.0	12.8			
	Calcium (Ca) (mg/kg)	127000	122000			
	Chromium (Cr) (mg/kg)	481	245			
	Cobalt (Co) (mg/kg)	64.5	305			
	Copper (Cu) (mg/kg)	7660	1260			
	Iron (Fe) (mg/kg)	64700	57000			
	Lead (Pb) (mg/kg)	980	381			
	Lithium (Li) (mg/kg)	16.5	17.8			
	Magnesium (Mg) (mg/kg)	11500	10600			
	Manganese (Mn) (mg/kg)	814	799			
	Mercury (Hg) (mg/kg)	0.051	<0.050			
	Molybdenum (Mo) (mg/kg)	37.5	26.2			
	Nickel (Ni) (mg/kg)	349	86.3			
	Phosphorus (P) (mg/kg)	9720	10800			
	Potassium (K) (mg/kg)	5680	5510			
	Selenium (Se) (mg/kg)	0.40	0.42			
	Silver (Ag) (mg/kg)	7.11	6.24			
	Sodium (Na) (mg/kg)	15100	14100			
	Strontium (Sr) (mg/kg)	303	447			
	Sulfur (S) (mg/kg)	12500	11700			
	Thallium (Tl) (mg/kg)	0.111	<0.050			
	Tin (Sn) (mg/kg)	151	95.4			
	Titanium (Ti) (mg/kg)	333	533			
	Tungsten (W) (mg/kg)	6.84	5.80			
	Uranium (U) (mg/kg)	4.96	4.20			
Vanadium (V) (mg/kg)	46.6	50.3				
Zinc (Zn) (mg/kg)	11400	3780				
Zirconium (Zr) (mg/kg)	1.9	1.6				

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

30-OCT-19 11:05 (MT)

Version: FINAL

		Sample ID	L2369478-1	L2369478-2	L2369478-3	L2369478-4	L2369478-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	16-OCT-19	16-OCT-19	16-OCT-19	16-OCT-19	16-OCT-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1942-A-1	BA1942-A-2	BA1942-A-3	BA1942-A-4	BA1942-A-5
Grouping	Analyte						
<b>SOIL</b>							
<b>TCLP Metals</b>	1st Preliminary pH (pH)		11.44	11.58	11.54	11.56	11.52
	2nd Preliminary pH (pH)		9.20	9.42	9.34	9.19	9.42
	Final pH (pH)		6.10	6.10	5.98	6.18	6.10
	Extraction Solution Initial pH (pH)		2.91	2.91	2.91	2.91	2.91
	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)		2.61	4.62	2.64	4.34	2.74
	Cadmium (Cd)-Leachable (mg/L)		0.225	0.233	0.281	0.230	0.274
	Calcium (Ca)-Leachable (mg/L)		1870	1820	1830	1920	1810
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.469	0.407	1.10	0.993	0.442
	Copper (Cu)-Leachable (mg/L)		0.634	0.868	1.04	0.480	1.03
	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	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		126	131	118	128	122
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.51	0.45	0.63	0.53	0.55
	Selenium (Se)-Leachable (mg/L)		<0.10	<0.10	<0.10	<0.10	<0.10
	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	77.1	39.2	55.2	39.8

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

30-OCT-19 11:05 (MT)

Version: FINAL

		Sample ID	L2369478-6	L2369478-7	L2369478-8	L2369478-9	L2369478-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	16-OCT-19	16-OCT-19	16-OCT-19	16-OCT-19	16-OCT-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1942-A-6	BA1942-A-7	BA1942-A-8	BA1942-A-9	BA1942-A-10
Grouping	Analyte						
<b>SOIL</b>							
<b>TCLP Metals</b>	1st Preliminary pH (pH)	11.66	11.49	11.53	11.51	11.52	
	2nd Preliminary pH (pH)	9.53	9.06	9.03	8.90	9.04	
	Final pH (pH)	6.15	6.17	6.14	6.18	6.16	
	Extraction Solution Initial pH (pH)	2.91	2.91	2.91	2.91	2.91	
	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)	3.08	2.57	2.76	2.80	2.71	
	Cadmium (Cd)-Leachable (mg/L)	0.217	0.234	0.403	0.372	0.377	
	Calcium (Ca)-Leachable (mg/L)	1890	1890	1910	1890	1870	
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25	
	Cobalt (Co)-Leachable (mg/L)	0.542	0.426	1.20	0.476	0.487	
	Copper (Cu)-Leachable (mg/L)	0.821	1.10	0.795	0.610	0.617	
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	
	Lead (Pb)-Leachable (mg/L)	<0.25	0.30	<0.25	<0.25	<0.25	
	Magnesium (Mg)-Leachable (mg/L)	120	126	127	126	127	
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
	Nickel (Ni)-Leachable (mg/L)	0.56	0.46	0.51	0.57	0.58	
	Selenium (Se)-Leachable (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10	
	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)	34.8	43.4	53.5	43.5	43.8	

\* 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	L2369478-11 Soil 16-OCT-19 09:00 BA1942-A-11	L2369478-12 Soil 16-OCT-19 09:00 BA1942-A-12		
Grouping	Analyte				
<b>SOIL</b>					
<b>TCLP Metals</b>	1st Preliminary pH (pH)	11.50	11.54		
	2nd Preliminary pH (pH)	8.92	8.92		
	Final pH (pH)	6.12	6.04		
	Extraction Solution Initial pH (pH)	2.91	2.91		
	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)	2.82	3.15		
	Cadmium (Cd)-Leachable (mg/L)	0.313	0.250		
	Calcium (Ca)-Leachable (mg/L)	1920	1880		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.701	0.782		
	Copper (Cu)-Leachable (mg/L)	0.645	0.612		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	123	125		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.54	0.56		
	Selenium (Se)-Leachable (mg/L)	<0.10	<0.10		
	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)	36.9	37.0		

\* 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	Boron (B)	DUP-H	L2369478-10, -11, -12
Duplicate	Copper (Cu)	DUP-H	L2369478-10, -11, -12
Duplicate	Lead (Pb)	DUP-H	L2369478-10, -11, -12
Duplicate	Lithium (Li)	DUP-H	L2369478-10, -11, -12
Duplicate	Manganese (Mn)	DUP-H	L2369478-10, -11, -12
Duplicate	Molybdenum (Mo)	DUP-H	L2369478-10, -11, -12
Duplicate	Silver (Ag)	DUP-H	L2369478-10, -11, -12
Matrix Spike	Cadmium (Cd)-Leachable	MS-B	L2369478-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2369478-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2369478-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2369478-1, -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**
<b>HG-200.2-CVAF-VA</b>	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.			
<b>HG-TCLP-CVAFS-VA</b>	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).			
<b>MET-200.2-CCMS-VA</b>	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, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H <sub>2</sub> S) may be excluded if lost during sampling, storage, or digestion.			
<b>MET-TCLP-CCMS-VA</b>	Soil	Metals by ICPMS (TCLP)	EPA 1311/6020A
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. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).			
<b>MOISTURE-VA</b>	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.			
<b>PH-1:2-VA</b>	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 "pH, Electrometric in Soil and Sediment - Prescriptive Method", Rev. 2005, Section B Physical, Inorganic and Misc. Constituents, BC Environmental Laboratory Manual. 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:*

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

### Chain of Custody Numbers:

## Reference Information

### 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.*



<b>Report To</b>			<b>Report Format / Distribution</b>			<b>Service Requested</b> (RUSH for routine analysis subject to availability)						
Company:	Covanta Energy		<input type="checkbox"/> Standard	<input type="checkbox"/> Other	<input checked="" type="radio"/> 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	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT					
Address:	5150 Riverbend Drive		Email 1: smckinney@covanta.com			<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT						
	Burnaby BC		Email 2: rjohnson4@covanta.com			<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT						
Phone:	604-521-1025	Fax:	Email 3: dskrypnyk@covanta.com			<b>Analysis Request</b>						
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	brent.kirkpatrick@metrovancover.org									
			Sarah.Wellman@metrovancover.org									

<b>Invoice To</b> Same as Report ?			<b>Client / Project Information</b>			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 #:			MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)							Number of Containers
Company:			PO / AFE:	PO# 46693 Weekly Bottom Ash - Suite												
Contact:			LSD:	(includes 2:1 pH)												
Address:																
Phone:			Quote #:													
Lab Work Order # (lab use only)			ALS Contact:	Sampler:												

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)							Number of Containers
BA1942-A-1		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-2		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-3		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-4		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-5		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-6		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-7		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-8		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-9		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-10		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-11		16-Oct-19	9:00	Soil	X	X		X							1
BA1942-A-12		16-Oct-19	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>	22-Oct-19	0800	JW	Oct-22-19	11:30am	20 °C				Yes / No ? If Yes add SIF