

## Bottom Ash Data

2019 Week 43

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The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on November 5, 2019. The data represents bottom ash composite results for week 43 of 2019 (October 20, 2019 to October 26, 2019).

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



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Date Received: 29-OCT-19  
Report Date: 05-NOV-19 11:26 (MT)  
Version: FINAL

Client Phone: 604-521-1025

## Certificate of Analysis

Lab Work Order #: L2373544  
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		L2373544-1 Soil 23-OCT-19 09:00 BA1943-A-1	L2373544-2 Soil 23-OCT-19 09:00 BA1943-A-2	L2373544-3 Soil 23-OCT-19 09:00 BA1943-A-3	L2373544-4 Soil 23-OCT-19 09:00 BA1943-A-4	L2373544-5 Soil 23-OCT-19 09:00 BA1943-A-5
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	25.2	25.3	23.6	23.9	23.6
	pH (1:2 soil:water) (pH)	9.99	10.12	10.01	10.01	10.08
<b>Metals</b>	Aluminum (Al) (mg/kg)	30700	31500	30000	37800	28800
	Antimony (Sb) (mg/kg)	148	159	153	144	164
	Arsenic (As) (mg/kg)	35.6	40.0	39.0	33.5	38.5
	Barium (Ba) (mg/kg)	396	419	280	321	300
	Beryllium (Be) (mg/kg)	0.36	0.38	0.37	0.30	0.30
	Bismuth (Bi) (mg/kg)	10.2	9.57	9.84	9.06	11.2
	Boron (B) (mg/kg)	197	254	190	176	187
	Cadmium (Cd) (mg/kg)	14.9	23.0	14.4	17.5	17.2
	Calcium (Ca) (mg/kg)	134000	136000	116000	112000	116000
	Chromium (Cr) (mg/kg)	190	179	130	253	170
	Cobalt (Co) (mg/kg)	75.8	25.8	42.0	56.6	56.3
	Copper (Cu) (mg/kg)	2200	3210	7350	2610	3060
	Iron (Fe) (mg/kg)	60800	56400	36900	68000	54900
	Lead (Pb) (mg/kg)	396	434	414	467	710
	Lithium (Li) (mg/kg)	17.9	17.0	16.7	19.2	16.3
	Magnesium (Mg) (mg/kg)	10300	10600	10600	9340	9050
	Manganese (Mn) (mg/kg)	803	798	706	802	710
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	0.056	<0.050
	Molybdenum (Mo) (mg/kg)	57.1	49.9	40.9	51.5	73.9
	Nickel (Ni) (mg/kg)	264	151	172	151	293
	Phosphorus (P) (mg/kg)	16600	11700	9330	10200	9960
	Potassium (K) (mg/kg)	6390	6440	6270	5720	6170
	Selenium (Se) (mg/kg)	0.41	0.36	0.37	0.42	0.41
	Silver (Ag) (mg/kg)	4.59	5.45	5.05	4.42	5.83
	Sodium (Na) (mg/kg)	16400	16300	15200	15200	15500
	Strontium (Sr) (mg/kg)	318	303	270	274	262
	Sulfur (S) (mg/kg)	17900	18500	17500	16800	17200
Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050	
Tin (Sn) (mg/kg)	139	135	301	130	141	
Titanium (Ti) (mg/kg)	378	836	456	514	303	
Tungsten (W) (mg/kg)	12.4	7.66	5.90	6.93	9.00	
Uranium (U) (mg/kg)	4.12	4.32	4.15	4.14	4.47	
Vanadium (V) (mg/kg)	42.6	43.2	40.8	40.0	38.9	
Zinc (Zn) (mg/kg)	7230	5780	5220	3860	4500	
Zirconium (Zr) (mg/kg)	1.2	1.4	1.4	1.9	1.4	

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2373544-6	L2373544-7	L2373544-8	L2373544-9	L2373544-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	23-OCT-19	23-OCT-19	23-OCT-19	23-OCT-19	23-OCT-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1943-A-6	BA1943-A-7	BA1943-A-8	BA1943-A-9	BA1943-A-10
Grouping	Analyte						
<b>SOIL</b>							
<b>Physical Tests</b>	Moisture (%)		25.2	20.5	24.6	23.7	25.7
	pH (1:2 soil:water) (pH)		9.95	10.44	9.95	10.11	10.20
<b>Metals</b>	Aluminum (Al) (mg/kg)		33500	47900	31200	28900	39200
	Antimony (Sb) (mg/kg)		138	167	153	165	179
	Arsenic (As) (mg/kg)		31.2	36.1	40.9	35.0	36.6
	Barium (Ba) (mg/kg)		402	352	299	334	387
	Beryllium (Be) (mg/kg)		0.31	0.39	0.36	0.36	0.39
	Bismuth (Bi) (mg/kg)		7.47	10.7	12.5	10.3	9.27
	Boron (B) (mg/kg)		215	208	223	188	190
	Cadmium (Cd) (mg/kg)		12.7	16.7	15.7	17.7	15.1
	Calcium (Ca) (mg/kg)		118000	122000	123000	114000	122000
	Chromium (Cr) (mg/kg)		118	143	187	211	165
	Cobalt (Co) (mg/kg)		21.6	152	25.2	33.6	30.4
	Copper (Cu) (mg/kg)		1060	1970	2980	1420	2150
	Iron (Fe) (mg/kg)		36200	39200	52100	59700	60900
	Lead (Pb) (mg/kg)		351	1290	466	502	1150
	Lithium (Li) (mg/kg)		15.3	28.3	16.3	16.1	17.3
	Magnesium (Mg) (mg/kg)		8770	11000	9500	9740	10600
	Manganese (Mn) (mg/kg)		533	832	799	782	1370
	Mercury (Hg) (mg/kg)		0.058	0.706	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)		40.7	53.1	52.9	64.7	41.3
	Nickel (Ni) (mg/kg)		115	131	290	278	227
	Phosphorus (P) (mg/kg)		15900	11000	11600	9670	11200
	Potassium (K) (mg/kg)		6170	6520	6810	6310	6530
	Selenium (Se) (mg/kg)		0.34	0.36	0.46	0.39	0.42
	Silver (Ag) (mg/kg)		4.45	6.73	7.84	5.05	7.90
	Sodium (Na) (mg/kg)		16200	15900	16400	16200	16400
	Strontium (Sr) (mg/kg)		260	292	689	270	274
Sulfur (S) (mg/kg)		16000	17700	18400	17100	19200	
Thallium (Tl) (mg/kg)		0.069	<0.050	0.051	<0.050	<0.050	
Tin (Sn) (mg/kg)		125	134	149	133	158	
Titanium (Ti) (mg/kg)		343	702	572	484	835	
Tungsten (W) (mg/kg)		9.03	8.02	10.5	10.2	7.46	
Uranium (U) (mg/kg)		3.84	4.74	4.61	4.45	4.39	
Vanadium (V) (mg/kg)		36.3	45.6	43.7	44.9	51.7	
Zinc (Zn) (mg/kg)		11700	4660	5290	5200	4630	
Zirconium (Zr) (mg/kg)		2.2	2.0	1.0	1.1	1.3	

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2373544-11	L2373544-12		
		Description	Soil	Soil		
		Sampled Date	23-OCT-19	23-OCT-19		
		Sampled Time	09:00	09:00		
		Client ID	BA1943-A-11	BA1943-A-12		
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	24.9	23.4			
	pH (1:2 soil:water) (pH)	10.40	10.10			
<b>Metals</b>	Aluminum (Al) (mg/kg)	31100	30300			
	Antimony (Sb) (mg/kg)	163	157			
	Arsenic (As) (mg/kg)	33.4	34.0			
	Barium (Ba) (mg/kg)	303	284			
	Beryllium (Be) (mg/kg)	0.34	0.36			
	Bismuth (Bi) (mg/kg)	9.39	10.6			
	Boron (B) (mg/kg)	170	242			
	Cadmium (Cd) (mg/kg)	15.5	18.0			
	Calcium (Ca) (mg/kg)	115000	114000			
	Chromium (Cr) (mg/kg)	125	149			
	Cobalt (Co) (mg/kg)	30.7	23.4			
	Copper (Cu) (mg/kg)	4160	12900			
	Iron (Fe) (mg/kg)	62100	51500			
	Lead (Pb) (mg/kg)	711	589			
	Lithium (Li) (mg/kg)	17.0	17.0			
	Magnesium (Mg) (mg/kg)	9800	9980			
	Manganese (Mn) (mg/kg)	656	657			
	Mercury (Hg) (mg/kg)	<0.050	<0.050			
	Molybdenum (Mo) (mg/kg)	42.8	46.2			
	Nickel (Ni) (mg/kg)	409	115			
	Phosphorus (P) (mg/kg)	10400	10300			
	Potassium (K) (mg/kg)	5740	5810			
	Selenium (Se) (mg/kg)	0.47	0.44			
	Silver (Ag) (mg/kg)	4.66	5.16			
	Sodium (Na) (mg/kg)	14900	14800			
	Strontium (Sr) (mg/kg)	247	257			
	Sulfur (S) (mg/kg)	16500	15200			
	Thallium (Tl) (mg/kg)	<0.050	<0.050			
	Tin (Sn) (mg/kg)	147	136			
	Titanium (Ti) (mg/kg)	404	281			
	Tungsten (W) (mg/kg)	5.90	6.51			
	Uranium (U) (mg/kg)	4.07	4.19			
Vanadium (V) (mg/kg)	38.2	40.0				
Zinc (Zn) (mg/kg)	5360	5180				
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	L2373544-1	L2373544-2	L2373544-3	L2373544-4	L2373544-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	23-OCT-19	23-OCT-19	23-OCT-19	23-OCT-19	23-OCT-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1943-A-1	BA1943-A-2	BA1943-A-3	BA1943-A-4	BA1943-A-5
Grouping	Analyte						
<b>SOIL</b>							
<b>TCLP Metals</b>	1st Preliminary pH (pH)		11.10	11.18	11.19	11.15	11.22
	2nd Preliminary pH (pH)		8.24	8.30	8.21	8.18	8.52
	Final pH (pH)		6.66	6.05	6.64	6.50	5.94
	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)		2.76	2.73	3.02	3.40	2.54
	Cadmium (Cd)-Leachable (mg/L)		0.231	0.210	0.222	0.260	0.228
	Calcium (Ca)-Leachable (mg/L)		2110	1920	2070	2330	1910
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.747	0.375	0.715	1.10	0.880
	Copper (Cu)-Leachable (mg/L)		0.986	0.720	0.860	1.04	1.25
	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)		135	119	127	149	127
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.53	0.75	0.43	0.55	0.94
	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)		45.8	45.3	70.8	45.0	56.2

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2373544-6	L2373544-7	L2373544-8	L2373544-9	L2373544-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	23-OCT-19	23-OCT-19	23-OCT-19	23-OCT-19	23-OCT-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1943-A-6	BA1943-A-7	BA1943-A-8	BA1943-A-9	BA1943-A-10
Grouping	Analyte						
<b>SOIL</b>							
<b>TCLP Metals</b>	1st Preliminary pH (pH)		11.20	11.23	11.13	11.14	11.15
	2nd Preliminary pH (pH)		8.80	8.28	8.71	8.08	7.79
	Final pH (pH)		5.98	6.18	6.39	6.60	6.26
	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)		2.95	2.42	2.46	2.78	2.85
	Cadmium (Cd)-Leachable (mg/L)		0.222	0.246	0.244	0.225	0.240
	Calcium (Ca)-Leachable (mg/L)		2110	1770	1880	2040	1990
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.564	0.540	6.62	0.398	0.629
	Copper (Cu)-Leachable (mg/L)		0.866	1.30	1.02	1.09	0.565
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	1.64	<0.25	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		134	115	116	128	125
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		1.00	0.41	2.30	0.53	0.60
	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)		39.7	54.5	83.9	40.4	38.9

\* 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	L2373544-11 Soil 23-OCT-19 09:00 BA1943-A-11	L2373544-12 Soil 23-OCT-19 09:00 BA1943-A-12		
Grouping	Analyte				
<b>SOIL</b>					
<b>TCLP Metals</b>	1st Preliminary pH (pH)	11.15	11.15		
	2nd Preliminary pH (pH)	8.18	8.74		
	Final pH (pH)	6.38	6.30		
	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)	2.79	2.81		
	Cadmium (Cd)-Leachable (mg/L)	0.227	0.298		
	Calcium (Ca)-Leachable (mg/L)	1960	2030		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	1.18	0.704		
	Copper (Cu)-Leachable (mg/L)	1.59	1.16		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	131	130		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.56	0.60		
	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)	41.4	46.0		

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



## Reference Information

## QC Samples with Qualifiers &amp; Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bismuth (Bi)	DUP-H	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lithium (Li)	DUP-H	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nickel (Ni)	DUP-H	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Phosphorus (P)	DUP-H	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)	DUP-H	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tungsten (W)	DUP-H	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zinc (Zn)	DUP-H	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cadmium (Cd)-Leachable	MS-B	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2373544-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2373544-1, -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, 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

## Reference Information

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### Chain of Custody Numbers:

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#### **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.*



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L2373544-COFC

COC #

Page of

<b>Report To</b>		<b>Report Info</b>		<b>Service Requested</b> (Rush for routine analysis subject to availability)	
Company:	Covanta Energy	<input type="checkbox"/> Standard	(Standard Turnaround Times - Business Days)		
Contact:	Steve McKinney / Dan Skrypnik	<input checked="" type="checkbox"/> PDF	<input type="checkbox"/> Excel	<input type="checkbox"/> Digital	<input type="checkbox"/> Fax
Address:	5150 Riverbend Drive Burnaby BC	Email 1:	Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT		
Phone:	604-521-1025	Email 2:	Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT		
	<input type="checkbox"/> Yes <input type="checkbox"/> No	Email 3:	Same Day or Weekend Emergency - Contact ALS to Confirm TAT		
			<b>Analysis Request</b>		

<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 #:			
Company:		PO / AFE:	PO# 46693 Weekly Bottom Ash - Suite		
Contact:		LSD:	(includes 2:1 pH)		
Address:		Quote #:			
Phone:					

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Fig)	MOISTURE	Chrome 6	MET-CSR-FULL-VA (all metals)	Number of Containers
BA1943-A-1		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-2		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-3		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-4		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-5		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-6		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-7		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-8		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-9		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-10		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-11		23-Oct-19	9:00	Soil	X	X		X	1
BA1943-A-12		23-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.

<b>SHIPMENT RELEASE (client use)</b>			<b>SHIPMENT RECEPTION (lab use only)</b>			<b>SHIPMENT VERIFICATION (lab use only)</b>				
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
<i>[Signature]</i>	29-Oct-19	0800	HA	10/29	11:53	-18 °C				Yes / No ? If Yes add SIF