

Bottom Ash Data

2018 Week 18

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on May 16, 2018. The data represents bottom ash composite results for week 18 of 2018 (April 29, 2018 to May 5, 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: 08-MAY-18
Report Date: 14-MAY-18 17:13 (MT)
Version: FINAL REV. 2

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2090790
Project P.O. #: VANCO-0000047506
Job Reference: 46693 WEEKLY BOTTOM ASH-SUITE
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2090790-1	L2090790-2	L2090790-3	L2090790-4	L2090790-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	02-MAY-18	02-MAY-18	02-MAY-18	02-MAY-18	02-MAY-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1818-A-1	BA1818-A-2	BA1818-A-3	BA1818-A-4	BA1818-A-5
Grouping	Analyte						
SOIL							
Physical Tests	Moisture (%)		17.5	19.3	19.0	18.9	17.8
	pH (1:2 soil:water) (pH)		12.15	12.06	12.13	12.15	12.09
Metals	Aluminum (Al) (mg/kg)		32700	34100	29200	30200	27600
	Antimony (Sb) (mg/kg)		183	237	169	174	177
	Arsenic (As) (mg/kg)		53.3	50.0	44.9	41.4	45.4
	Barium (Ba) (mg/kg)		546	582	574	578	543
	Beryllium (Be) (mg/kg)		0.45	0.52	0.45	2.60	0.41
	Bismuth (Bi) (mg/kg)		9.31	8.90	8.28	10.0	9.29
	Boron (B) (mg/kg)		198	198	191	301	189
	Cadmium (Cd) (mg/kg)		17.1	16.8	42.6	17.3	42.1
	Calcium (Ca) (mg/kg)		164000	150000	142000	153000	145000
	Chromium (Cr) (mg/kg)		201	170	326	181	175
	Cobalt (Co) (mg/kg)		49.0	18.7	35.3	32.5	31.7
	Copper (Cu) (mg/kg)		2900	8110	3630	2860	2000
	Iron (Fe) (mg/kg)		58200	44200	43400	56100	60200
	Lead (Pb) (mg/kg)		655	2900	514	825	1050
	Lithium (Li) (mg/kg)		21.7	26.2	15.8	18.5	17.6
	Magnesium (Mg) (mg/kg)		11300	9890	9410	10200	10100
	Manganese (Mn) (mg/kg)		3070	657	1070	728	682
	Mercury (Hg) (mg/kg)		<0.050	<0.050	<0.050	<0.050	0.052
	Molybdenum (Mo) (mg/kg)		37.7	30.5	30.6	34.0	34.2
	Nickel (Ni) (mg/kg)		169	134	151	138	135
	Phosphorus (P) (mg/kg)		12100	10300	10000	10000	10300
	Potassium (K) (mg/kg)		5330	5320	5000	5120	5260
	Selenium (Se) (mg/kg)		0.81	0.64	0.49	0.64	0.52
	Silver (Ag) (mg/kg)		4.59	15.6	5.12	4.28	4.80
	Sodium (Na) (mg/kg)		15700	14600	14100	14400	14300
	Strontium (Sr) (mg/kg)		419	344	330	328	331
Sulfur (S) (mg/kg)		15200	13400	13500	14500	13900	
Thallium (Tl) (mg/kg)		0.096	0.083	0.083	0.091	0.087	
Tin (Sn) (mg/kg)		158	1450	277	160	243	
Titanium (Ti) (mg/kg)		645	1290	902	872	689	
Tungsten (W) (mg/kg)		5.37	5.13	4.94	6.95	5.08	
Uranium (U) (mg/kg)		6.44	5.81	5.62	6.13	5.55	
Vanadium (V) (mg/kg)		62.8	61.9	55.1	57.6	51.6	
Zinc (Zn) (mg/kg)		4880	3210	4330	3760	4170	
Zirconium (Zr) (mg/kg)		1.5	1.4	1.1	1.2	<1.0	

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2090790-6	L2090790-7	L2090790-8	L2090790-9	L2090790-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	02-MAY-18	02-MAY-18	02-MAY-18	02-MAY-18	02-MAY-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1818-A-6	BA1818-A-7	BA1818-A-8	BA1818-A-9	BA1818-A-10
Grouping	Analyte						
SOIL							
Physical Tests	Moisture (%)		17.8	19.7	19.2	19.9	18.6
	pH (1:2 soil:water) (pH)		12.16	12.16	12.20	12.18	12.20
Metals	Aluminum (Al) (mg/kg)		29200	36000	27900	32200	47500
	Antimony (Sb) (mg/kg)		182	183	165	182	175
	Arsenic (As) (mg/kg)		42.1	44.1	45.4	44.9	47.4
	Barium (Ba) (mg/kg)		576	537	488	591	622
	Beryllium (Be) (mg/kg)		0.40	0.48	0.43	0.44	0.40
	Bismuth (Bi) (mg/kg)		8.26	13.2	9.35	11.1	8.47
	Boron (B) (mg/kg)		215	226	172	247	168
	Cadmium (Cd) (mg/kg)		17.2	18.7	16.8	20.5	16.0
	Calcium (Ca) (mg/kg)		139000	160000	141000	152000	140000
	Chromium (Cr) (mg/kg)		161	224	160	304	253
	Cobalt (Co) (mg/kg)		55.9	234	25.8	29.2	98.4
	Copper (Cu) (mg/kg)		2230	11300	1910	6090	2690
	Iron (Fe) (mg/kg)		41200	69400	40500	46600	65000
	Lead (Pb) (mg/kg)		804	1270	606	1010	1100
	Lithium (Li) (mg/kg)		27.4	23.9	16.7	19.3	22.6
	Magnesium (Mg) (mg/kg)		9710	11900	9860	11600	9540
	Manganese (Mn) (mg/kg)		584	874	959	732	1990
	Mercury (Hg) (mg/kg)		<0.050	0.064	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)		35.0	39.0	31.0	37.1	77.0
	Nickel (Ni) (mg/kg)		131	141	102	252	620
	Phosphorus (P) (mg/kg)		10000	10200	10000	9670	10000
	Potassium (K) (mg/kg)		5200	5790	5020	5290	4910
	Selenium (Se) (mg/kg)		0.60	0.61	0.54	0.47	0.67
	Silver (Ag) (mg/kg)		8.07	17.7	5.50	9.85	5.01
	Sodium (Na) (mg/kg)		14300	15800	13400	15000	13500
	Strontium (Sr) (mg/kg)		323	392	320	364	324
	Sulfur (S) (mg/kg)		12800	15200	13800	13400	12700
Thallium (Tl) (mg/kg)		0.091	0.093	0.088	0.092	0.097	
Tin (Sn) (mg/kg)		178	222	129	241	145	
Titanium (Ti) (mg/kg)		929	1140	743	1100	1730	
Tungsten (W) (mg/kg)		32.8	6.41	5.23	6.85	6.62	
Uranium (U) (mg/kg)		5.45	6.00	5.80	6.03	6.07	
Vanadium (V) (mg/kg)		50.5	65.8	59.2	66.3	58.4	
Zinc (Zn) (mg/kg)		4390	4030	5130	3940	4640	
Zirconium (Zr) (mg/kg)		1.1	1.3	1.2	1.2	3.3	

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2090790-11	L2090790-12		
		Description	Soil	Soil		
		Sampled Date	02-MAY-18	02-MAY-18		
		Sampled Time	09:00	09:00		
		Client ID	BA1818-A-11	BA1818-A-12		
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)		18.4	18.3		
	pH (1:2 soil:water) (pH)		12.30	12.15		
Metals	Aluminum (Al) (mg/kg)		27200	31900		
	Antimony (Sb) (mg/kg)		167	174		
	Arsenic (As) (mg/kg)		47.0	42.0		
	Barium (Ba) (mg/kg)		529	602		
	Beryllium (Be) (mg/kg)		0.39	0.43		
	Bismuth (Bi) (mg/kg)		11.0	9.12		
	Boron (B) (mg/kg)		189	225		
	Cadmium (Cd) (mg/kg)		16.3	16.9		
	Calcium (Ca) (mg/kg)		142000	141000		
	Chromium (Cr) (mg/kg)		190	177		
	Cobalt (Co) (mg/kg)		26.8	27.9		
	Copper (Cu) (mg/kg)		2320	1830		
	Iron (Fe) (mg/kg)		45600	50900		
	Lead (Pb) (mg/kg)		505	547		
	Lithium (Li) (mg/kg)		16.6	16.7		
	Magnesium (Mg) (mg/kg)		9870	10700		
	Manganese (Mn) (mg/kg)		694	888		
	Mercury (Hg) (mg/kg)		<0.050	<0.050		
	Molybdenum (Mo) (mg/kg)		38.1	32.0		
	Nickel (Ni) (mg/kg)		151	147		
	Phosphorus (P) (mg/kg)		9890	9960		
	Potassium (K) (mg/kg)		4920	5350		
	Selenium (Se) (mg/kg)		0.50	0.57		
	Silver (Ag) (mg/kg)		4.02	4.40		
	Sodium (Na) (mg/kg)		13400	14200		
	Strontium (Sr) (mg/kg)		340	342		
	Sulfur (S) (mg/kg)		12900	12600		
	Thallium (Tl) (mg/kg)		0.081	0.091		
	Tin (Sn) (mg/kg)		137	152		
	Titanium (Ti) (mg/kg)		578	1180		
	Tungsten (W) (mg/kg)		5.15	5.87		
	Uranium (U) (mg/kg)		5.53	5.85		
Vanadium (V) (mg/kg)		58.5	55.3			
Zinc (Zn) (mg/kg)		3770	4090			
Zirconium (Zr) (mg/kg)		1.1	1.4			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2090790-1	L2090790-2	L2090790-3	L2090790-4	L2090790-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	02-MAY-18	02-MAY-18	02-MAY-18	02-MAY-18	02-MAY-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1818-A-1	BA1818-A-2	BA1818-A-3	BA1818-A-4	BA1818-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.94	11.86	11.91	11.83	11.93
	2nd Preliminary pH (pH)		8.76	8.79	8.96	8.67	9.09
	Final pH (pH)		6.27	6.53	6.43	6.06	5.96
	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)		2.68	2.94	2.73	2.31	2.75
	Cadmium (Cd)-Leachable (mg/L)		0.203	0.162	0.175	0.189	0.231
	Calcium (Ca)-Leachable (mg/L)		2040	2210	2020	1930	2050
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.843	0.817	0.517	0.682	0.413
	Copper (Cu)-Leachable (mg/L)		1.98	0.527	1.79	0.171	3.18
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		0.29	<0.25	0.30	<0.25	0.45
	Magnesium (Mg)-Leachable (mg/L)		118	131	117	112	128
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.51	0.56	0.61	0.74	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)		61.9	45.1	94.9	45.4	52.4

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2090790-6	L2090790-7	L2090790-8	L2090790-9	L2090790-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	02-MAY-18	02-MAY-18	02-MAY-18	02-MAY-18	02-MAY-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1818-A-6	BA1818-A-7	BA1818-A-8	BA1818-A-9	BA1818-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.89	12.00	11.84	12.00	11.87
	2nd Preliminary pH (pH)		9.17	9.20	9.10	9.04	9.18
	Final pH (pH)		6.02	6.19	6.03	6.27	5.91
	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)		2.61	2.72	2.47	2.73	2.38
	Cadmium (Cd)-Leachable (mg/L)		0.213	0.195	0.183	0.157	0.456
	Calcium (Ca)-Leachable (mg/L)		2050	2060	1980	2110	1970
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.458	1.48	0.307	1.43	1.35
	Copper (Cu)-Leachable (mg/L)		1.47	1.58	1.86	0.979	2.05
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	<0.25	0.96	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		112	121	110	117	111
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		1.72	1.05	0.47	0.47	0.55
	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)		36.5	41.3	74.2	30.3	60.7

* 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	L2090790-11 Soil 02-MAY-18 09:00 BA1818-A-11	L2090790-12 Soil 02-MAY-18 09:00 BA1818-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	12.03	11.89		
	2nd Preliminary pH (pH)	9.95	9.21		
	Final pH (pH)	5.97	6.01		
	Extraction Solution Initial pH (pH)	2.88	2.88		
	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)	3.37	2.59		
	Cadmium (Cd)-Leachable (mg/L)	0.239	0.180		
	Calcium (Ca)-Leachable (mg/L)	2060	2030		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.223	0.431		
	Copper (Cu)-Leachable (mg/L)	2.83	1.39		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	0.95	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	117	111		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.56	0.71		
	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)	63.7	35.2		

* 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	L2090790-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)	DUP-H	L2090790-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Manganese (Mn)	DUP-H	L2090790-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Certified Reference Material	Sodium (Na)	MES	L2090790-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Certified Reference Material	Titanium (Ti)	MES	L2090790-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2090790-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2090790-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2090790-1, -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.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
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:

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.



L2090790-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

Page ___ of ___

Report To		Report Format / Distribution		Service Requested (Push 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 Skrypyk	<input checked="" type="checkbox"/> PDF	<input type="checkbox"/> Excel	<input type="checkbox"/> Digital	<input type="checkbox"/> Fax
Address:	5150 Riverbend Drive	Email 1: <u>smckinney@covanta.com</u>		<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
	Burnaby BC	Email 2: <u>rjohnson4@covanta.com</u>		<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
Phone:	604-521-1025	Email 3: <u>dskrypyk@covanta.com</u>		<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
	Fax: <input type="checkbox"/> Yes <input type="checkbox"/> No	brent.kirkpatrick@metrovancover.org		Analysis Request	
		Sarah.Wellman@metrovancover.org			

Invoice To Same as Report? <input type="checkbox"/> Yes <input type="checkbox"/> No		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:		ALS Contact:													
Fax:		Sampler:													
Lab Work Order # (lab use only)															

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)							Number of Containers
BA1818-A-1		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-2		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-3		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-4		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-5		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-6		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-7		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-8		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-9		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-10		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-11		02-May-18	9:00	Soil	X	X		X							1
BA1818-A-12		02-May-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	
<i>[Signature]</i>	8/5/18	07:50	<i>[Signature]</i>	5/8/18	11:25 AM	23 °C					