Bottom Ash Data

2018 Week 26

The following analytical reports were sent to the Ministry of Environment and Climate Change Strategy on August 10, 2018. The data represents bottom ash composite results for week 26 of 2018 (June 24, 2018 to June 30, 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.

Covanta Burnaby R.E., ULC
ATTN: Steve McKinney
5150 Riverbend Drive
Burnaby BC V3N 4V3

Date Received: 03-JUL-18
Report Date: 19-JUL-18 14:57 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2122520

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

Comments: As per client request, certain samples were re-prepped from scratch and analyzed for TCLP Metals (TCLP Cd) in varying replicate amounts. Results are reported as samples #13-24, and have "REP" in the Client Sample ID field. Fluid determination was not performed for samples #13-24, as per client instructions. The prep data was taken from the original samples but is reported with the re-prepped samples for informational purposes.

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2122520-1	L2122520-2	L2122520-3	L2122520-4	L2122520-5
Description	Soil	Soil	Soil	Soil	Soil
Sampled Date	27-JUN-18	27-JUN-18	27-JUN-18	27-JUN-18	27-JUN-18
Sampled Time	09:00	09:00	09:00	09:00	09:00
Client ID	BA1826-A-1	BA1826-A-2	BA1826-A-3	BA1826-A-4	BA1826-A-5
Grouping / **Analyte**					
SOIL					
Physical Tests Moisture (%)	18.7	17.6	16.8	15.4	16.8
pH (1:2 soil:water) (pH)	11.33	11.35	11.30	11.16	11.21
Metals Aluminum (Al) (mg/kg)	37500	31200	44200	33300	30300
Antimony (Sb) (mg/kg)	157	155	157	151	176
Arsenic (As) (mg/kg)	45.3	48.8	50.1	50.2	50.6
Barium (Ba) (mg/kg)	566	485	511	557	537
Beryllium (Be) (mg/kg)	0.44	0.40	0.39	0.38	0.37
Bismuth (Bi) (mg/kg)	16.2	14.4	15.8	12.0	10.3
Boron (B) (mg/kg)	397	343	346	391	411
Cadmium (Cd) (mg/kg)	13.6	13.4	13.0	13.6	15.7
Calcium (Ca) (mg/kg)	126000	123000	121000	130000	123000
Chromium (Cr) (mg/kg)	159	163	159	170	3970
Cobalt (Co) (mg/kg)	767	27.8	30.5	34.8	116
Copper (Cu) (mg/kg)	3000	1190	3370	1980	2880
Iron (Fe) (mg/kg)	61000	67300	47200	68500	72500
Lead (Pb) (mg/kg)	715	1430	22100	612	571
Lithium (Li) (mg/kg)	20.4	16.5	16.1	17.5	17.3
Magnesium (Mg) (mg/kg)	11000	11000	10800	11900	11700
Manganese (Mn) (mg/kg)	780	3730	685	863	2610
Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum (Mo) (mg/kg)	88.3	40.4	28.0	26.6	100
Nickel (Ni) (mg/kg)	156	153	160	145	1760
Phosphorus (P) (mg/kg)	11300	12500	9950	11200	8990
Potassium (K) (mg/kg)	5500	5420	5140	5460	5680
Selenium (Se) (mg/kg)	0.43	0.41	0.37	0.42	0.46
Silver (Ag) (mg/kg)	7.40	4.44	4.76	5.76	4.66
Sodium (Na) (mg/kg)	14500	15500	14200	14700	14500
Strontium (Sr) (mg/kg)	295	285	354	345	311
Sulfur (S) (mg/kg)	15100	14400	16300	15500	17200
Thallium (Tl) (mg/kg)	0.063	0.059	0.088	0.060	0.057
Tin (Sn) (mg/kg)	181	219	257	132	503
Titanium (Ti) (mg/kg)	978	503	1330	729	996
Tungsten (W) (mg/kg)	4.38	4.91	3.81	5.00	9.64
Uranium (U) (mg/kg)	4.97	4.86	4.51	23.4	4.58
Vanadium (V) (mg/kg)	53.8	51.8	53.0	55.9	69.2
Zinc (Zn) (mg/kg)	5660	6070	4350	5110	6290
Zirconium (Zr) (mg/kg)	1.5	1.7	2.4	1.4	1.6

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2122520-6 Soil 27-JUN-18 09:00 BA1826-A-6	L2122520-7 Soil 27-JUN-18 09:00 BA1826-A-7	L2122520-8 Soil 27-JUN-18 09:00 BA1826-A-8	L2122520-9 Soil 27-JUN-18 09:00 BA1826-A-9	L2122520-10 Soil 27-JUN-18 09:00 BA1826-A-10
SOIL						
Physical Tests	Moisture (%)	17.6	18.1	17.2	15.8	17.6
	pH (1:2 soil:water) (pH)	11.32	11.40	11.10	11.39	11.30
Metals	Aluminum (Al) (mg/kg)	42000	35800	29600	29300	38200
	Antimony (Sb) (mg/kg)	206	166	197	166	156
	Arsenic (As) (mg/kg)	48.5	55.5	57.9	56.7	44.0
	Barium (Ba) (mg/kg)	606	606	596	599	537
	Beryllium (Be) (mg/kg)	0.40	0.42	0.44	0.54	0.42
	Bismuth (Bi) (mg/kg)	11.7	10.2	11.6	12.1	14.8
	Boron (B) (mg/kg)	342	547	616	732	424
	Cadmium (Cd) (mg/kg)	17.4	16.2	15.5	13.8	12.8
	Calcium (Ca) (mg/kg)	119000	130000	125000	124000	122000
	Chromium (Cr) (mg/kg)	193	311	167	183	148
	Cobalt (Co) (mg/kg)	106	24.9	23.8	31.8	41.1
	Copper (Cu) (mg/kg)	2200	8390	3290	3270	1790
	Iron (Fe) (mg/kg)	46300	73700	64900	69200	77500
	Lead (Pb) (mg/kg)	400	466	489	510	501
	Lithium (Li) (mg/kg)	15.6	18.2	17.1	16.9	16.5
	Magnesium (Mg) (mg/kg)	11400	11600	12200	12400	11100
	Manganese (Mn) (mg/kg)	919	881	777	791	832
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	32.3	42.8	29.2	61.2	102
	Nickel (Ni) (mg/kg)	567	239	133	172	142
	Phosphorus (P) (mg/kg)	9620	9880	9670	9560	9530
	Potassium (K) (mg/kg)	5380	5590	5770	5320	5170
	Selenium (Se) (mg/kg)	0.47	0.41	0.46	0.76	0.45
	Silver (Ag) (mg/kg)	4.97	5.25	6.29	4.72	4.72
	Sodium (Na) (mg/kg)	14000	15900	16900	16000	14700
	Strontium (Sr) (mg/kg)	323	361	307	392	294
	Sulfur (S) (mg/kg)	15200	16200	15700	15000	13800
	Thallium (Tl) (mg/kg)	0.064	0.059	0.070	0.066	0.065
	Tin (Sn) (mg/kg)	126	126	1710	137	126
	Titanium (Ti) (mg/kg)	1240	979	993	1030	946
	Tungsten (W) (mg/kg)	4.19	5.93	7.23	4.82	4.03
	Uranium (U) (mg/kg)	5.09	4.72	4.86	5.00	4.88
	Vanadium (V) (mg/kg)	53.9	55.7	55.0	58.1	52.5
	Zinc (Zn) (mg/kg)	6130	4720	6400	7680	5430
	Zirconium (Zr) (mg/kg)	1.7	1.5	1.4	1.3	2.1

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2122520-11 Soil 27-JUN-18 09:00 BA1826-A-11	L2122520-12 Soil 27-JUN-18 09:00 BA1826-A-12	L2122520-13 Soil 27-JUN-18 09:00 BA1826-A-4 REP 1	L2122520-14 Soil 27-JUN-18 09:00 BA1826-A-4 REP 2	L2122520-15 Soil 27-JUN-18 09:00 BA1826-A-4 REP 3
SOIL						
Physical Tests	Moisture (%)	18.5	16.6			
	pH (1:2 soil:water) (pH)	11.20	11.32			
Metals	Aluminum (Al) (mg/kg)	27600	30800			
	Antimony (Sb) (mg/kg)	166	156			
	Arsenic (As) (mg/kg)	49.2	52.8			
	Barium (Ba) (mg/kg)	492	619			
	Beryllium (Be) (mg/kg)	0.40	0.42			
	Bismuth (Bi) (mg/kg)	10.7	55.0			
	Boron (B) (mg/kg)	341	513			
	Cadmium (Cd) (mg/kg)	15.8	12.7			
	Calcium (Ca) (mg/kg)	122000	131000			
	Chromium (Cr) (mg/kg)	161	333			
	Cobalt (Co) (mg/kg)	27.4	46.6			
	Copper (Cu) (mg/kg)	4200	6270			
	Iron (Fe) (mg/kg)	64400	60200			
	Lead (Pb) (mg/kg)	735	1000			
	Lithium (Li) (mg/kg)	16.7	17.3			
	Magnesium (Mg) (mg/kg)	12000	11400			
	Manganese (Mn) (mg/kg)	844	1300			
	Mercury (Hg) (mg/kg)	<0.050	<0.050			
	Molybdenum (Mo) (mg/kg)	24.3	29.7			
	Nickel (Ni) (mg/kg)	144	200			
	Phosphorus (P) (mg/kg)	9900	10600			
	Potassium (K) (mg/kg)	5340	5570			
	Selenium (Se) (mg/kg)	0.40	0.41			
	Silver (Ag) (mg/kg)	17.7	4.56			
	Sodium (Na) (mg/kg)	14300	15400			
	Strontium (Sr) (mg/kg)	302	358			
	Sulfur (S) (mg/kg)	16600	14900			
	Thallium (Tl) (mg/kg)	0.057	0.061			
	Tin (Sn) (mg/kg)	661	163			
	Titanium (Ti) (mg/kg)	656	949			
	Tungsten (W) (mg/kg)	5.80	6.29			
	Uranium (U) (mg/kg)	4.53	5.28			
	Vanadium (V) (mg/kg)	53.2	57.9			
	Zinc (Zn) (mg/kg)	6660	5340			
	Zirconium (Zr) (mg/kg)	1.3	1.3			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L2122520-16 Description: Soil Sampled Date: 27-JUN-18 Sampled Time: 09:00 Client ID: BA1826-A-4 REP 4	L2122520-17 Soil 27-JUN-18 09:00 BA1826-A-8 REP 1	L2122520-18 Soil 27-JUN-18 09:00 BA1826-A-8 REP 2	L2122520-19 Soil 27-JUN-18 09:00 BA1826-A-8 REP 3	L2122520-20 Soil 27-JUN-18 09:00 BA1826-A-8 REP 4
SOIL						
Physical Tests	Moisture (%)					
	pH (1:2 soil:water) (pH)					
Metals	Aluminum (Al) (mg/kg)					
	Antimony (Sb) (mg/kg)					
	Arsenic (As) (mg/kg)					
	Barium (Ba) (mg/kg)					
	Beryllium (Be) (mg/kg)					
	Bismuth (Bi) (mg/kg)					
	Boron (B) (mg/kg)					
	Cadmium (Cd) (mg/kg)					
	Calcium (Ca) (mg/kg)					
	Chromium (Cr) (mg/kg)					
	Cobalt (Co) (mg/kg)					
	Copper (Cu) (mg/kg)					
	Iron (Fe) (mg/kg)					
	Lead (Pb) (mg/kg)					
	Lithium (Li) (mg/kg)					
	Magnesium (Mg) (mg/kg)					
	Manganese (Mn) (mg/kg)					
	Mercury (Hg) (mg/kg)					
	Molybdenum (Mo) (mg/kg)					
	Nickel (Ni) (mg/kg)					
	Phosphorus (P) (mg/kg)					
	Potassium (K) (mg/kg)					
	Selenium (Se) (mg/kg)					
	Silver (Ag) (mg/kg)					
	Sodium (Na) (mg/kg)					
	Strontium (Sr) (mg/kg)					
	Sulfur (S) (mg/kg)					
	Thallium (Tl) (mg/kg)					
	Tin (Sn) (mg/kg)					
	Titanium (Ti) (mg/kg)					
	Tungsten (W) (mg/kg)					
	Uranium (U) (mg/kg)					
	Vanadium (V) (mg/kg)					
	Zinc (Zn) (mg/kg)					
	Zirconium (Zr) (mg/kg)					

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2122520-21	L2122520-22	L2122520-23	L2122520-24	
	Description	Soil	Soil	Soil	Soil	
	Sampled Date	27-JUN-18	27-JUN-18	27-JUN-18	27-JUN-18	
	Sampled Time	09:00	09:00	09:00	09:00	
	Client ID	BA1826-A-10 REP 1	BA1826-A-10 REP 2	BA1826-A-10 REP 3	BA1826-A-10 REP 4	
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)					
	pH (1:2 soil:water) (pH)					
Metals	Aluminum (Al) (mg/kg)					
	Antimony (Sb) (mg/kg)					
	Arsenic (As) (mg/kg)					
	Barium (Ba) (mg/kg)					
	Beryllium (Be) (mg/kg)					
	Bismuth (Bi) (mg/kg)					
	Boron (B) (mg/kg)					
	Cadmium (Cd) (mg/kg)					
	Calcium (Ca) (mg/kg)					
	Chromium (Cr) (mg/kg)					
	Cobalt (Co) (mg/kg)					
	Copper (Cu) (mg/kg)					
	Iron (Fe) (mg/kg)					
	Lead (Pb) (mg/kg)					
	Lithium (Li) (mg/kg)					
	Magnesium (Mg) (mg/kg)					
	Manganese (Mn) (mg/kg)					
	Mercury (Hg) (mg/kg)					
	Molybdenum (Mo) (mg/kg)					
	Nickel (Ni) (mg/kg)					
	Phosphorus (P) (mg/kg)					
	Potassium (K) (mg/kg)					
	Selenium (Se) (mg/kg)					
	Silver (Ag) (mg/kg)					
	Sodium (Na) (mg/kg)					
	Strontium (Sr) (mg/kg)					
	Sulfur (S) (mg/kg)					
	Thallium (Tl) (mg/kg)					
	Tin (Sn) (mg/kg)					
	Titanium (Ti) (mg/kg)					
	Tungsten (W) (mg/kg)					
	Uranium (U) (mg/kg)					
	Vanadium (V) (mg/kg)					
	Zinc (Zn) (mg/kg)					
	Zirconium (Zr) (mg/kg)					

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2122520-1 Soil 27-JUN-18 09:00 BA1826-A-1	L2122520-2 Soil 27-JUN-18 09:00 BA1826-A-2	L2122520-3 Soil 27-JUN-18 09:00 BA1826-A-3	L2122520-4 Soil 27-JUN-18 09:00 BA1826-A-4	L2122520-5 Soil 27-JUN-18 09:00 BA1826-A-5
Sample ID		L2122520-1	L2122520-2	L2122520-3	L2122520-4	L2122520-5
Description		Soil	Soil	Soil	Soil	Soil
Sampled Date		27-JUN-18	27-JUN-18	27-JUN-18	27-JUN-18	27-JUN-18
Sampled Time		09:00	09:00	09:00	09:00	09:00
Client ID		BA1826-A-1	BA1826-A-2	BA1826-A-3	BA1826-A-4	BA1826-A-5
SOIL						
TCLP Metals	1st Preliminary pH (pH)	11.68	11.72	11.72	11.66	11.69
	2nd Preliminary pH (pH)	10.26	10.28	10.30	10.21	10.28
	Final pH (pH)	6.25	6.03	6.06	6.02	6.06
	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)	5.66	5.25	5.06	4.59	5.26
	Cadmium (Cd)-Leachable (mg/L)	0.301	0.161	0.259	0.720	0.195
	Calcium (Ca)-Leachable (mg/L)	2040	1990	2010	1930	1930
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)	0.525	1.65	0.503	0.383	0.513
	Copper (Cu)-Leachable (mg/L)	0.897	1.09	1.53	1.11	2.01
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)	0.47	<0.25	<0.25	<0.25	0.33
	Magnesium (Mg)-Leachable (mg/L)	125	121	126	117	123
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)	0.53	0.60	0.45	0.62	0.53
	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)	41.2	45.4	42.8	95.1	52.1

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2122520-6 Soil 27-JUN-18 09:00 BA1826-A-6	L2122520-7 Soil 27-JUN-18 09:00 BA1826-A-7	L2122520-8 Soil 27-JUN-18 09:00 BA1826-A-8	L2122520-9 Soil 27-JUN-18 09:00 BA1826-A-9	L2122520-10 Soil 27-JUN-18 09:00 BA1826-A-10
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
TCLP Metals	1st Preliminary pH (pH)	11.78	11.66	11.67	11.71	11.78
	2nd Preliminary pH (pH)	10.35	10.18	10.27	9.81	9.92
	Final pH (pH)	6.37	6.28	6.18	5.73	6.17
	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)	5.82	5.35	6.82	4.69	6.69
	Cadmium (Cd)-Leachable (mg/L)	0.178	0.163	0.857	0.148	1.99
	Calcium (Ca)-Leachable (mg/L)	2010	2030	2000	1820	2000
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)	0.357	0.900	0.272	0.799	0.447
	Copper (Cu)-Leachable (mg/L)	0.717	1.02	0.968	1.46	0.458
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25	0.32	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)	124	128	125	122	126
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)	0.47	0.56	0.50	0.97	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)	29.2	45.7	51.5	57.9	36.1

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2122520-11 Soil 27-JUN-18 09:00 BA1826-A-11	L2122520-12 Soil 27-JUN-18 09:00 BA1826-A-12	L2122520-13 Soil 27-JUN-18 09:00 BA1826-A-4 REP 1	L2122520-14 Soil 27-JUN-18 09:00 BA1826-A-4 REP 2	L2122520-15 Soil 27-JUN-18 09:00 BA1826-A-4 REP 3
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
SOIL						
TCLP Metals	1st Preliminary pH (pH)	11.64	11.55	11.66	11.66	11.66
	2nd Preliminary pH (pH)	9.56	9.54	10.21	10.21	10.21
	Final pH (pH)	5.92	5.31	5.59	5.59	5.50
	Extraction Solution Initial pH (pH)	2.88	2.88	2.91	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)	5.66	4.04			
	Cadmium (Cd)-Leachable (mg/L)	0.179	0.163	0.200	0.442	0.207
	Calcium (Ca)-Leachable (mg/L)	1970	1680			
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25			
	Cobalt (Co)-Leachable (mg/L)	0.291	1.18			
	Copper (Cu)-Leachable (mg/L)	1.82	6.85			
	Iron (Fe)-Leachable (mg/L)	<5.0	27.4			
	Lead (Pb)-Leachable (mg/L)	0.48	1.58			
	Magnesium (Mg)-Leachable (mg/L)	122	99.4			
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010			
	Nickel (Ni)-Leachable (mg/L)	0.54	0.76			
	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)	58.9	109			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L2122520-16 Description: Soil Sampled Date: 27-JUN-18 Sampled Time: 09:00 Client ID: BA1826-A-4 REP 4	L2122520-17 Soil 27-JUN-18 09:00 BA1826-A-8 REP 1	L2122520-18 Soil 27-JUN-18 09:00 BA1826-A-8 REP 2	L2122520-19 Soil 27-JUN-18 09:00 BA1826-A-8 REP 3	L2122520-20 Soil 27-JUN-18 09:00 BA1826-A-8 REP 4
SOIL						
TCLP Metals	1st Preliminary pH (pH)	11.66	11.67	11.67	11.67	11.67
	2nd Preliminary pH (pH)	10.21	10.27	10.27	10.27	10.27
	Final pH (pH)	5.88	5.67	5.61	5.66	5.96
	Extraction Solution Initial pH (pH)	2.91	2.91	2.91	2.91	2.91
	Antimony (Sb)-Leachable (mg/L)					
	Arsenic (As)-Leachable (mg/L)					
	Barium (Ba)-Leachable (mg/L)					
	Beryllium (Be)-Leachable (mg/L)					
	Boron (B)-Leachable (mg/L)					
	Cadmium (Cd)-Leachable (mg/L)	0.404	12.8	0.275	0.220	4.60
	Calcium (Ca)-Leachable (mg/L)					
	Chromium (Cr)-Leachable (mg/L)					
	Cobalt (Co)-Leachable (mg/L)					
	Copper (Cu)-Leachable (mg/L)					
	Iron (Fe)-Leachable (mg/L)					
	Lead (Pb)-Leachable (mg/L)					
	Magnesium (Mg)-Leachable (mg/L)					
	Mercury (Hg)-Leachable (mg/L)					
	Nickel (Ni)-Leachable (mg/L)					
	Selenium (Se)-Leachable (mg/L)					
	Silver (Ag)-Leachable (mg/L)					
	Thallium (Tl)-Leachable (mg/L)					
	Vanadium (V)-Leachable (mg/L)					
	Zinc (Zn)-Leachable (mg/L)					

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2122520-21 Soil 27-JUN-18 09:00 BA1826-A-10 REP 1	L2122520-22 Soil 27-JUN-18 09:00 BA1826-A-10 REP 2	L2122520-23 Soil 27-JUN-18 09:00 BA1826-A-10 REP 3	L2122520-24 Soil 27-JUN-18 09:00 BA1826-A-10 REP 4	
SOIL						
TCLP Metals	1st Preliminary pH (pH)	11.78	11.78	11.78	11.78	
	2nd Preliminary pH (pH)	9.92	9.92	9.92	9.92	
	Final pH (pH)	5.79	5.74	5.84	6.03	
	Extraction Solution Initial pH (pH)	2.91	2.91	2.91	2.91	
	Antimony (Sb)-Leachable (mg/L)					
	Arsenic (As)-Leachable (mg/L)					
	Barium (Ba)-Leachable (mg/L)					
	Beryllium (Be)-Leachable (mg/L)					
	Boron (B)-Leachable (mg/L)					
	Cadmium (Cd)-Leachable (mg/L)	0.193	0.284	0.182	0.183	
	Calcium (Ca)-Leachable (mg/L)					
	Chromium (Cr)-Leachable (mg/L)					
	Cobalt (Co)-Leachable (mg/L)					
	Copper (Cu)-Leachable (mg/L)					
	Iron (Fe)-Leachable (mg/L)					
	Lead (Pb)-Leachable (mg/L)					
	Magnesium (Mg)-Leachable (mg/L)					
	Mercury (Hg)-Leachable (mg/L)					
	Nickel (Ni)-Leachable (mg/L)					
	Selenium (Se)-Leachable (mg/L)					
	Silver (Ag)-Leachable (mg/L)					
	Thallium (Tl)-Leachable (mg/L)					
	Vanadium (V)-Leachable (mg/L)					
	Zinc (Zn)-Leachable (mg/L)					

* 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	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Boron (B)	DUP-H	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)	DUP-H	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Molybdenum (Mo)	DUP-H	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nickel (Ni)	DUP-H	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)	DUP-H	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Titanium (Ti)	DUP-H	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zirconium (Zr)	DUP-H,J	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Leachable	MS-B	L2122520-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2122520-1, -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.
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
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 HNO3 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
	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Reference Information

VA

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

L2122520-COFC

COC #

Page ____ of ____

Report To				Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	Covanta Energy			☐ Standard ☐ Other				◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Steve Mckinney / Dan Skrypnyk			☑ PDF ☐ Excel ☐ Digital ☐ Fax				○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	5150 Riverbend Drive			Email 1:	smckinney@covanta.com			○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Burnaby BC			Email 2:	rjohnson4@covanta.com			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-521-1025	Fax:		Email 3:	dskrypnyk@covanta.com			**Analysis Request**
		☐ Yes	☐ No		brent.kirkpatrick@metrovancouver.org			
					Sarah.Wellman@metrovancouver.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?	☐ Yes	☐ No		Job #:				
Company:				PO / AFE:	PO# 46693 Weekly Bottom Ash - Suite			
Contact:				LSD:	(includes 2:1 pH)			
Address:								
Phone:		Fax:		Quote #:	— —			
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	MET-TCLP-VA (all metals, Hg)	MOISTURE		Chrome 6		MET-CSR+FULL-VA (all metals						Number of Containers
	BA1826-A-1	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-2	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-3	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-4	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-5	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-6	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-7	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-8	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-9	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-10	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-11	27-Jun-18	9:00	Soil	X	X				X						1
	BA1826-A-12	27-Jun-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
	3-Jul-18	08:00	HA	7/3	1214	21 °C				

GENF 20.00 Front

Covanta Burnaby R.E., ULC
ATTN: Steve McKinney
5150 Riverbend Drive
Burnaby BC V3N 4V3

Date Received: 26-JUL-18
Report Date: 09-AUG-18 17:14 (MT)
Version: FINAL REV. 2

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2136717

Project P.O. #: VANCO-0000047506
Job Reference: WEEKLY BOTTOM ASH-SUITE (INCLUDES 2:1 PH)
C of C Numbers:
Legal Site Desc:

Comments: As per client request, certain samples were re-prepped from scratch and analyzed for TCLP Metals (TCLP Cd) in varying replicate amounts. Results are reported as samples #13-16, and have "REP" in the Client Sample ID field. Fluid determination was not performed for samples #13-16, as per client instructions. The prep data was taken from the original samples but is reported with the re-prepped samples for informational purposes.

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136717-1	L2136717-2	L2136717-3	L2136717-4	L2136717-5
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	25-JUN-18	25-JUN-18	25-JUN-18	25-JUN-18	25-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-01-01	DBA1826-A-01-02	DBA1826-A-01-03	DBA1826-A-01-04	DBA1826-A-01-05
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	11.68	11.70	11.61	11.34	11.52
TCLP Metals	1st Preliminary pH (pH)	11.46	11.45	11.50	11.43	11.28
	2nd Preliminary pH (pH)	9.64	9.72	9.85	9.64	10.00
	Final pH (pH)	6.57	6.62	6.25	6.25	6.58
	Extraction Solution Initial pH (pH)	2.89	2.89	2.89	2.89	2.89
	Cadmium (Cd)-Leachable (mg/L)	0.127	4.35	0.140	0.148	0.193

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136717-6	L2136717-7	L2136717-8	L2136717-9	L2136717-10
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	25-JUN-18	25-JUN-18	25-JUN-18	25-JUN-18	25-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-01-06	DBA1826-A-01-07	DBA1826-A-01-08	DBA1826-A-01-09	DBA1826-A-01-10
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	11.63	11.59	11.72	11.81	11.99
TCLP Metals	1st Preliminary pH (pH)	11.47	11.29	11.41	11.33	11.55
	2nd Preliminary pH (pH)	9.65	9.69	9.79	9.72	9.91
	Final pH (pH)	6.23	6.20	6.70	6.48	6.61
	Extraction Solution Initial pH (pH)	2.89	2.89	2.89	2.89	2.89
	Cadmium (Cd)-Leachable (mg/L)	0.179	0.164	0.136	0.156	0.226

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2136717-11	L2136717-12	L2136717-13	L2136717-14	L2136717-15
Description	Soil	Soil	Soil	Soil	Soil
Sampled Date	25-JUN-18	25-JUN-18	25-JUN-18	25-JUN-18	25-JUN-18
Sampled Time	09:00	09:00	09:00	09:00	09:00
Client ID	DBA1826-A-01-11	DBA1826-A-01-12	DBA1826-A-01-02 REP 1	DBA1826-A-01-02 REP 2	DBA1826-A-01-02 REP 3
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	11.89	11.93			
TCLP Metals 1st Preliminary pH (pH)	11.29	11.53	11.45	11.45	11.45
2nd Preliminary pH (pH)	9.83	9.89	9.72	9.72	9.72
Final pH (pH)	6.58	6.33	6.47	6.57	6.48
Extraction Solution Initial pH (pH)	2.89	2.89	2.86	2.86	2.86
Cadmium (Cd)-Leachable (mg/L)	0.146	0.213	0.130	0.153	0.134

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136717-16				
	Description	Soil				
	Sampled Date	25-JUN-18				
	Sampled Time	09:00				
	Client ID	DBA1826-A-01-02 REP 4				
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)					
TCLP Metals	1st Preliminary pH (pH)	11.45				
	2nd Preliminary pH (pH)	9.72				
	Final pH (pH)	6.47				
	Extraction Solution Initial pH (pH)	2.86				
	Cadmium (Cd)-Leachable (mg/L)	0.131				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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).

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:

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

Ch[illegible] L2136717-COFC

COC # ____

Page ____ of ____

Report To		Report [illegible]		Service Requested (Rush for routine analysis subject to availability)
Company:	Covanta Energy	☐ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Steve Mckinney / Dan Skrypnyk	☑ PDF ☐ Excel ☐ Digital ☐ Fax		◯ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	5150 Riverbend Drive	Email 1:	smckinney@covanta.com	◯ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Burnaby BC	Email 2:	dskrypnyk@covanta.com	◯ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-521-1025 Fax:	Email 3:	sarah.wellman@metrovancouver.org	Analysis Request
	☐ Yes ☐ No		brent.kirkpatrick@metrovancouver.org	
			rjohnson4@covanta.com	
Invoice To	Same as Report ?	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		
Company:		PO / AFE:	Weekly Bottom Ash - Suite	
Contact:		LSD:	(includes 2:1 pH)	
Address:				
Phone:	Fax:	Quote #:		
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	CD-TCLP-VA(Cd and pH steps)	Number of Containers
	DBA1826-A-01-01	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-02	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-03	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-04	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-05	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-06	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-07	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-08	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-09	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-10	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-11	25-Jun-18	9:00	Soil	X	1
	DBA1826-A-01-12	25-Jun-18	9:00	Soil	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]	26-Jul-18	08:00	HP	7/26	12:18p	23 °C				

GENF 20.00 Front

Covanta Burnaby R.E., ULC
ATTN: Steve McKinney
5150 Riverbend Drive
Burnaby BC V3N 4V3

Date Received: 26-JUL-18
Report Date: 01-AUG-18 11:20 (MT)
Version: FINAL REV. 2

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2136726

Project P.O. #: VANCO-0000047506
Job Reference: WEEKLY BOTTOM ASH-SUITE (INCLUDES 2:1 PH)

C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136726-1	L2136726-2	L2136726-3	L2136726-4	L2136726-5
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	26-JUN-18	26-JUN-18	26-JUN-18	26-JUN-18	26-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-02-01	DBA1826-A-02-02	DBA1826-A-02-03	DBA1826-A-02-04	DBA1826-A-02-05
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	10.70	10.66	10.75	10.78	10.76
TCLP Metals	1st Preliminary pH (pH)	11.17	11.13	11.12	11.16	10.98
	2nd Preliminary pH (pH)	6.63	7.48	7.41	7.35	8.09
	Final pH (pH)	5.44	5.64	5.64	5.96	6.00
	Extraction Solution Initial pH (pH)	2.91	2.91	2.91	2.91	2.91
	Cadmium (Cd)-Leachable (mg/L)	0.582	0.310	0.254	0.385	0.270

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136726-6	L2136726-7	L2136726-8	L2136726-9	L2136726-10
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	26-JUN-18	26-JUN-18	26-JUN-18	26-JUN-18	26-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-02-06	DBA1826-A-02-07	DBA1826-A-02-08	DBA1826-A-02-09	DBA1826-A-02-10
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	10.72	10.78	11.01	10.83	10.91
TCLP Metals	1st Preliminary pH (pH)	11.22	11.24	11.36	11.29	11.33
	2nd Preliminary pH (pH)	7.86	8.01	7.71	8.01	8.11
	Final pH (pH)	5.63	5.90	5.66	5.97	5.55
	Extraction Solution Initial pH (pH)	2.91	2.91	2.91	2.91	2.91
	Cadmium (Cd)-Leachable (mg/L)	0.324	0.262	0.242	0.262	0.234

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136726-11	L2136726-12			
	Description	Soil	Soil			
	Sampled Date	26-JUN-18	26-JUN-18			
	Sampled Time	09:00	09:00			
	Client ID	DBA1826-A-02-11	DBA1826-A-02-12			
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	10.80	10.90			
TCLP Metals	1st Preliminary pH (pH)	11.24	11.26			
	2nd Preliminary pH (pH)	7.98	8.20			
	Final pH (pH)	5.89	6.00			
	Extraction Solution Initial pH (pH)	2.91	2.91			
	Cadmium (Cd)-Leachable (mg/L)	0.240	0.239			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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).

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:

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

Chain of Custody / Analytical Request Form

L2136726-COFC

COC # _____

Page ____ of ____

Report To				Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Covanta Energy			☐ Standard		☐ Regular (Standard Turnaround Times - Business Days)
Contact:	Steve Mckinney / Dan Skrypnyk			☑ PDF ☐ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	5150 Riverbend Drive			Email 1:	smckinney@covantaenergy.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Burnaby BC			Email 2:	dskrypnyk@covanta.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-521-1025	Fax:		Email 3:	sarah.wellman@metrovancouver.org	**Analysis Request**
		☐ Yes	☐ No		brent.kirkpatrick@metrovancouver.org	
					rjohnson4@covanta.com	
Invoice To	Same as Report ?			**Client / Project Information**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		☐ Yes	☐ No	Job #:		
Company:				PO / AFE:	Weekly Bottom Ash - Suite	
Contact:				LSD:	(includes 2:1 pH)	
Address:						
Phone:		Fax:		Quote #:		
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	CD-TCLP-VA(Cd and pH steps)	Number of Containers
	DBA1826-A-02-01	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-02	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-03	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-04	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-05	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-06	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-07	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-08	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-09	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-10	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-11	June 27 2018	9:00	Soil	X	1
	DBA1826-A-02-12	June 27 2018	9:00	Soil	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
	26-Jul-18	08:00	HA	7/26	12:18P	23 °C				

Covanta Burnaby R.E., ULC
ATTN: Steve McKinney
5150 Riverbend Drive
Burnaby BC V3N 4V3

Date Received: 26-JUL-18
Report Date: 09-AUG-18 17:25 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2136729

Project P.O. #: VANCO-0000047506
Job Reference: WEEKLY BOTTOM ASH-SUITE (INCLUDES 2:1 PH)
C of C Numbers:
Legal Site Desc:

Comments: As per client request, certain samples were re-prepped from scratch and analyzed for TCLP Metals (TCLP Cd) in varying replicate amounts. Results are reported as samples #13-16, and have "REP" in the Client Sample ID field. Fluid determination was not performed for samples #13-16, as per client instructions. The prep data was taken from the original samples but is reported with the re-prepped samples for informational purposes.

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136729-1	L2136729-2	L2136729-3	L2136729-4	L2136729-5
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	27-JUN-18	27-JUN-18	27-JUN-18	27-JUN-18	27-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-03-01	DBA1826-A-03-02	DBA1826-A-03-03	DBA1826-A-03-04	DBA1826-A-03-05
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	11.41	11.56	11.42	11.35	11.32
TCLP Metals	1st Preliminary pH (pH)	11.40	11.42	11.38	11.47	11.43
	2nd Preliminary pH (pH)	8.59	8.95	8.89	9.32	8.99
	Final pH (pH)	5.44	5.51	5.52	5.91	5.43
	Extraction Solution Initial pH (pH)	2.88	2.88	2.88	2.88	2.88
	Cadmium (Cd)-Leachable (mg/L)	0.141	0.172	0.154	0.172	0.154

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136729-6	L2136729-7	L2136729-8	L2136729-9	L2136729-10
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	27-JUN-18	27-JUN-18	27-JUN-18	27-JUN-18	27-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-03-06	DBA1826-A-03-07	DBA1826-A-03-08	DBA1826-A-03-09	DBA1826-A-03-10
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	11.30	11.54	11.22	11.33	11.43
TCLP Metals	1st Preliminary pH (pH)	11.45	11.50	11.41	11.41	11.45
	2nd Preliminary pH (pH)	9.08	9.26	8.99	8.72	8.67
	Final pH (pH)	5.56	5.41	5.67	5.65	5.67
	Extraction Solution Initial pH (pH)	2.88	2.88	2.88	2.88	2.88
	Cadmium (Cd)-Leachable (mg/L)	2.11	0.109	0.148	0.170	0.136

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2136729-11 Soil 27-JUN-18 09:00 DBA1826-A-03-11	L2136729-12 Soil 27-JUN-18 09:00 DBA1826-A-03-12	L2136729-13 Soil 27-JUN-18 09:00 DBA1826-A-03-06 REP 1	L2136729-14 Soil 27-JUN-18 09:00 DBA1826-A-03-06 REP 2	L2136729-15 Soil 27-JUN-18 09:00 DBA1826-A-03-06 REP 3
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	11.30	11.36			
TCLP Metals	1st Preliminary pH (pH)	11.45	11.46	11.45	11.45	11.45
	2nd Preliminary pH (pH)	8.87	8.80	9.08	9.08	9.08
	Final pH (pH)	5.91	5.81	5.21	5.28	5.39
	Extraction Solution Initial pH (pH)	2.88	2.88	2.88	2.88	2.88
	Cadmium (Cd)-Leachable (mg/L)	0.125	0.163	0.168	0.124	0.264

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136729-16				
	Description	Soil				
	Sampled Date	27-JUN-18				
	Sampled Time	09:00				
	Client ID	DBA1826-A-03-06 REP 4				
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)					
TCLP Metals	1st Preliminary pH (pH)	11.45				
	2nd Preliminary pH (pH)	9.08				
	Final pH (pH)	5.38				
	Extraction Solution Initial pH (pH)	2.88				
	Cadmium (Cd)-Leachable (mg/L)	0.127				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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).

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:

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

Chain o[...] C[...]

L2136729-COFC

COC # ______

Page ____ of ____

Report To				Report Form[...]		[...]equested (Rush for routine analysis subject to availability)
Company:	Covanta Energy			☐ Standard		[...]dard Turnaround Times - Business Days)
Contact:	Steve Mckinney / Dan Skrypnyk			☑ PDF ☐ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	5150 Riverbend Drive			Email 1:	smckinney@covantaenergy.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Burnaby BC			Email 2:	dskrypnyk@covanta.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-521-1025	Fax:		Email 3:	sarah.wellman@metrovancouver.org	Analysis Request
		☐ Yes	☐ No		brent.kirkpatrick@metrovancouver.org	
					rjohnson4@covanta.com	
Invoice To	Same as Report ?			Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		☐ Yes	☐ No	Job #:		
Company:				PO / AFE:	Weekly Bottom Ash - Suite	
Contact:				LSD:	(includes 2:1 pH)	
Address:						
Phone:		Fax:		Quote #:		
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	CD-TCLP-VA(Cd and pH steps)	Number of Containers
	DBA1826-A-03-01	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-02	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-03	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-04	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-05	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-06	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-07	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-08	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-09	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-10	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-11	June 27 2018	9:00	Soil	X	1
	DBA1826-A-03-12	June 27 2018	9:00	Soil	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]	26-Jul-18	08:00	HA	7/26	12:18p	23 °C				

GENF 20.00 Front

Covanta Burnaby R.E., ULC
ATTN: Steve McKinney
5150 Riverbend Drive
Burnaby BC V3N 4V3

Date Received: 26-JUL-18
Report Date: 31-JUL-18 14:06 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2136720

Project P.O. #: VANCO-0000047506
Job Reference: WEEKLY BOTTOM ASH-SUITE (INCLUDES PH)
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136720-1	L2136720-2	L2136720-3	L2136720-4	L2136720-5
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-04-01	DBA1826-A-04-02	DBA1826-A-04-03	DBA1826-A-04-04	DBA1826-A-04-05
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	11.45	11.59	11.48	11.37	11.45
TCLP Metals	1st Preliminary pH (pH)	11.52	11.49	11.57	11.43	11.40
	2nd Preliminary pH (pH)	9.22	9.16	9.24	9.08	9.06
	Final pH (pH)	5.57	5.62	5.86	5.78	5.63
	Extraction Solution Initial pH (pH)	2.90	2.90	2.90	2.90	2.90
	Cadmium (Cd)-Leachable (mg/L)	0.238	0.309	0.163	0.313	0.163

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136720-6	L2136720-7	L2136720-8	L2136720-9	L2136720-10
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-04-06	DBA1826-A-04-07	DBA1826-A-04-08	DBA1826-A-04-09	DBA1826-A-04-10
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	11.29	11.39	11.52	11.50	11.52
TCLP Metals	1st Preliminary pH (pH)	11.38	11.42	11.46	11.50	11.39
	2nd Preliminary pH (pH)	8.98	8.91	9.00	9.12	9.01
	Final pH (pH)	5.55	5.69	5.49	5.47	5.48
	Extraction Solution Initial pH (pH)	2.90	2.90	2.90	2.90	2.90
	Cadmium (Cd)-Leachable (mg/L)	0.169	0.212	0.167	0.153	0.185

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136720-11	L2136720-12			
	Description	Soil	Soil			
	Sampled Date	28-JUN-18	28-JUN-18			
	Sampled Time	09:00	09:00			
	Client ID	DBA1826-A-04-11	DBA1826-A-04-12			
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	11.58	11.34			
TCLP Metals	1st Preliminary pH (pH)	11.48	11.45			
	2nd Preliminary pH (pH)	9.10	9.28			
	Final pH (pH)	5.45	5.50			
	Extraction Solution Initial pH (pH)	2.90	2.90			
	Cadmium (Cd)-Leachable (mg/L)	0.170	0.243			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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).

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:

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

L2136720-COFC

COC # _____ Page ____ of ____

Report To				Report		Service Requested (Rush for routine analysis subject to availability)
Company:	Covanta Energy			☐ Standa		(Standard Turnaround Times - Business Days)
Contact:	Steve Mckinney / Dan Skrypnyk			☑ PDF ☐ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	5150 Riverbend Drive			Email 1:	smckinney@covantaenergy.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Burnaby BC			Email 2:	dskrypnyk@covanta.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-521-1025	Fax:		Email 3:	sarah.wellman@metrovancouver.org	**Analysis Request**
		☐ Yes	☐ No		brent.kirkpatrick@metrovancouver.org	
					rjohnson4@covanta.com	
Invoice To	Same as Report ?			**Client / Project Information**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		☐ Yes	☐ No	Job #:		
Company:				PO / AFE:	Weekly Bottom Ash - Suite	
Contact:				LSD:	(includes 2:1 pH)	
Address:						
Phone:		Fax:		Quote #:		
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	CD-TCLP-VA(Cd and pH steps)	Number of Containers
	DBA1826-A-04-01	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-02	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-03	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-04	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-05	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-06	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-07	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-08	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-09	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-10	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-11	June 28 2018	9:00	Soil	X	1
	DBA1826-A-04-12	June 28 2018	9:00	Soil	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
	26-Jul-18	08:00	HA	7/26	12:18P	23 °C				

GENF 20.00 Front

Covanta Burnaby R.E., ULC
ATTN: Steve McKinney
5150 Riverbend Drive
Burnaby BC V3N 4V3

Date Received: 26-JUL-18
Report Date: 01-AUG-18 17:22 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2136734

Project P.O. #: VANCO-0000047506
Job Reference: WEEKLY BOTTOM ASH-SUITE (INCLUDES 2:1 PH)

C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136734-1	L2136734-2	L2136734-3	L2136734-4	L2136734-5
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	29-JUN-18	29-JUN-18	29-JUN-18	29-JUN-18	29-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-05-01	DBA1826-A-05-02	DBA1826-A-05-03	DBA1826-A-05-04	DBA1826-A-05-05
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	10.56	10.56	10.62	10.74	10.72
TCLP Metals	1st Preliminary pH (pH)	11.25	11.15	11.23	11.34	11.26
	2nd Preliminary pH (pH)	6.02	7.66	6.36	6.55	6.06
	Final pH (pH)	5.37	5.50	5.33	5.59	5.32
	Extraction Solution Initial pH (pH)	2.92	2.92	2.92	2.92	2.92
	Cadmium (Cd)-Leachable (mg/L)	0.228	0.313	0.154	0.288	0.191

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136734-6	L2136734-7	L2136734-8	L2136734-9	L2136734-10
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	29-JUN-18	29-JUN-18	29-JUN-18	29-JUN-18	29-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-05-06	DBA1826-A-05-07	DBA1826-A-05-08	DBA1826-A-05-09	DBA1826-A-05-10
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	10.84	10.88	10.77	10.68	10.68
TCLP Metals	1st Preliminary pH (pH)	11.42	11.34	11.25	11.02	10.97
	2nd Preliminary pH (pH)	6.40	6.25	6.90	6.97	6.78
	Final pH (pH)	5.32	5.44	5.35	5.45	5.47
	Extraction Solution Initial pH (pH)	2.92	2.92	2.92	2.92	2.92
	Cadmium (Cd)-Leachable (mg/L)	0.181	0.241	0.231	0.315	0.312

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136734-11	L2136734-12			
	Description	Soil	Soil			
	Sampled Date	29-JUN-18	29-JUN-18			
	Sampled Time	09:00	09:00			
	Client ID	DBA1826-A-05-11	DBA1826-A-05-12			
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	10.76	10.70			
TCLP Metals	1st Preliminary pH (pH)	11.06	10.98			
	2nd Preliminary pH (pH)	6.94	7.07			
	Final pH (pH)	5.46	5.51			
	Extraction Solution Initial pH (pH)	2.92	2.92			
	Cadmium (Cd)-Leachable (mg/L)	0.322	0.493			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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).

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:

GLOSSARY OF REPORT TERMS

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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

Chain [illegible] Form

L2136734-COFC

COC # _____

Page ____ of ____

Report To				Report For		Turnaround Time Requested (Rush for routine analysis subject to availability)
Company:	Covanta Energy			☐ Standard		[illegible]andard Turnaround Times - Business Days)
Contact:	Steve Mckinney / Dan Skrypnyk			☑ PDF	☐ Excel	☐ Digital ☐ Fax ○ [illegible]-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	5150 Riverbend Drive			Email 1:	smckinney@covantaenergy.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Burnaby BC			Email 2:	dskrypnyk@covanta.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-521-1025	Fax:		Email 3:	sarah.wellman@metrovancouver.org	**Analysis Request**
		☐ Yes	☐ No		brent.kirkpatrick@metrovancouver.org	
					rjohnson4@covanta.com	
Invoice To	Same as Report ?			**Client / Project Information**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		☐ Yes	☐ No	Job #:		
Company:				PO / AFE:	Weekly Bottom Ash - Suite	
Contact:				LSD:	(includes 2:1 pH)	
Address:						
Phone:		Fax:		Quote #:		
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	CD-TCLP-VA(Cd and pH steps)	Number of Containers
	DBA1826-A-05-01	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-02	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-03	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-04	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-05	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-06	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-07	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-08	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-09	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-10	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-11	June 29 2018	9:00	Soil	X	1
	DBA1826-A-05-12	June 29 2018	9:00	Soil	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]	26-Jul-18	08:00	HA	7/26	12:18 p	23 °C				

GENF 20.00 Front

Covanta Burnaby R.E., ULC
ATTN: Steve McKinney
5150 Riverbend Drive
Burnaby BC V3N 4V3

Date Received: 26-JUL-18
Report Date: 02-AUG-18 17:46 (MT)
Version: FINAL REV. 2

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2136730

Project P.O. #: VANCO-0000047506
Job Reference: WEEKLY BOTTOM ASH-SUITE (INCLUDES 2:1 PH)
C of C Numbers:
Legal Site Desc:

Comments:

2-AUG-2018 This report replaces the previous version and contains an updated Final pH result for 1 sample.

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2136730-1	L2136730-2	L2136730-3	L2136730-4	L2136730-5
Description	Soil	Soil	Soil	Soil	Soil
Sampled Date	30-JUN-18	30-JUN-18	30-JUN-18	30-JUN-18	30-JUN-18
Sampled Time	09:00	09:00	09:00	09:00	09:00
Client ID	DBA1826-A-06-01	DBA1826-A-06-02	DBA1826-A-06-03	DBA1826-A-06-04	DBA1826-A-06-05
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	10.87	10.91	11.12	11.09	11.28
TCLP Metals 1st Preliminary pH (pH)	11.37	11.36	11.60	11.45	11.59
2nd Preliminary pH (pH)	8.28	8.46	8.93	8.75	8.85
Final pH (pH)	5.40	5.51	5.51	5.83	5.66
Extraction Solution Initial pH (pH)	2.89	2.89	2.89	2.89	2.89
Cadmium (Cd)-Leachable (mg/L)	0.214	0.337	0.179	0.213	0.129

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136730-6	L2136730-7	L2136730-8	L2136730-9	L2136730-10
	Description	Soil	Soil	Soil	Soil	Soil
	Sampled Date	30-JUN-18	30-JUN-18	30-JUN-18	30-JUN-18	30-JUN-18
	Sampled Time	09:00	09:00	09:00	09:00	09:00
	Client ID	DBA1826-A-06-06	DBA1826-A-06-07	DBA1826-A-06-08	DBA1826-A-06-09	DBA1826-A-06-10
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	11.15	10.94	11.09	10.98	10.97
TCLP Metals	1st Preliminary pH (pH)	11.46	11.31	11.34	11.32	11.21
	2nd Preliminary pH (pH)	9.09	8.16	8.62	8.16	7.98
	Final pH (pH)	5.79	5.29	5.69	5.54	5.64
	Extraction Solution Initial pH (pH)	2.89	2.89	2.89	2.89	2.89
	Cadmium (Cd)-Leachable (mg/L)	0.281	0.151	0.170	0.158	0.174

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2136730-11	L2136730-12			
	Description	Soil	Soil			
	Sampled Date	30-JUN-18	30-JUN-18			
	Sampled Time	09:00	09:00			
	Client ID	DBA1826-A-06-11	DBA1826-A-06-12			
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	11.00	10.87			
TCLP Metals	1st Preliminary pH (pH)	11.34	11.17			
	2nd Preliminary pH (pH)	8.57	8.04			
	Final pH (pH)	5.73	5.39			
	Extraction Solution Initial pH (pH)	2.89	2.89			
	Cadmium (Cd)-Leachable (mg/L)	0.613	0.155			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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).

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:

GLOSSARY OF REPORT TERMS

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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

L2136730-COFC

COC # _____

Page ____ of ____

Report To				Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	Covanta Energy			☐ Standard				◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Steve Mckinney / Dan Skrypnyk			☑ PDF	☐ Excel	☐ Digital	☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	5150 Riverbend Drive			Email 1:	smckinney@covanta.com			○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Burnaby BC			Email 2:	dskrypnyk@covanta.com			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-521-1025	Fax:		Email 3:	sarah.wellman@metrovancouver.org			Analysis Request
		☐ Yes	☐ No		brent.kirkpatrick@metrovancouver.org			
					rjohnson4@covanta.com			
Invoice To	Same as Report ?			Client / Project Information				Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		☐ Yes	☐ No	Job #:				
Company:				PO / AFE:	Weekly Bottom Ash - Suite			
Contact:				LSD:	(includes 2:1 pH)			
Address:								
Phone:		Fax:		Quote #:				
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	CD-TCLP-VA(Cd and pH steps)	Number of Containers
	DBA1826-A-06-01	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-02	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-03	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-04	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-05	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-06	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-07	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-08	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-09	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-10	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-11	June 30 2018	9:00	Soil	X	1
	DBA1826-A-06-12	June 30 2018	9:00	Soil	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
[illegible]	26-Jul-18	08:00	HA	7/26	12:18	23 °C				

GENF 20.00 Front