

## Bottom Ash Data

2021 Week 4

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The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on February 9, 2021. The data represents bottom ash composite results for week 4 of 2021 (January 17, 2021 to January 23, 2021).

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



**CERTIFICATE OF ANALYSIS**

**Work Order** : **VA21A1417**  
**Client** : **Covanta Burnaby Renewable Energy, ULC**  
**Contact** : Steve McKinney  
**Address** : 5150 Riverbend Drive  
Burnaby BC Canada V3N 4V3  
**Telephone** : 604 521 1025  
**Project** : Weekly Bottom Ash-Suite  
**PO** : VANCO 0000050390  
**C-O-C number** : ----  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Standing Offer (BC work)  
**No. of samples received** : 16  
**No. of samples analysed** : 16

**Page** : 1 of 11  
**Laboratory** : Vancouver - Environmental  
**Account Manager** : Brent Mack  
**Address** : 8081 Lougheed Highway  
Burnaby BC Canada V5A 1W9  
**Telephone** : +1 604 253 4188  
**Date Samples Received** : 26-Jan-2021 11:55  
**Date Analysis Commenced** : 28-Jan-2021  
**Issue Date** : 08-Feb-2021 09:01

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Brieanna Allen	Production/Validation Manager	Organics, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior 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.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.



## Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2104-A-1	BA2104-A-2	BA2104-A-3	BA2104-A-4	BA2104-A-5
(Matrix: Soil/Solid)										
Client sampling date / time					20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00
Analyte	CAS Number	Method	LOR	Unit	VA21A1417-001	VA21A1417-002	VA21A1417-003	VA21A1417-004	VA21A1417-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
moisture	----	E144	0.25	%	24.4	24.8	26.0	24.8	22.4	
pH (1:2 soil:water)	----	E108	0.10	pH units	10.9	11.0	11.1	11.0	11.0	
<b>Metals</b>										
aluminum	7429-90-5	E440	50	mg/kg	37200	42500	40200	34300	47200	
antimony	7440-36-0	E440	0.10	mg/kg	180	214	158	179	151	
arsenic	7440-38-2	E440	0.10	mg/kg	33.4	32.9	28.1	24.1	21.7	
barium	7440-39-3	E440	0.50	mg/kg	550	494	516	460	528	
beryllium	7440-41-7	E440	0.10	mg/kg	0.46	0.42	0.45	0.44	0.42	
bismuth	7440-69-9	E440	0.20	mg/kg	10.4	9.78	9.30	9.25	9.13	
boron	7440-42-8	E440	5.0	mg/kg	346	257	199	258	228	
cadmium	7440-43-9	E440	0.020	mg/kg	16.2	17.7	17.2	16.8	14.8	
calcium	7440-70-2	E440	50	mg/kg	168000	180000	168000	162000	159000	
chromium	7440-47-3	E440	0.50	mg/kg	278	168	164	161	197	
cobalt	7440-48-4	E440	0.10	mg/kg	76.6	110	46.7	43.1	34.2	
copper	7440-50-8	E440	0.50	mg/kg	2100	2330	1980	1540	1660	
iron	7439-89-6	E440	50	mg/kg	46300	48800	46200	55300	59400	
lead	7439-92-1	E440	0.50	mg/kg	815	472	646	792	420	
lithium	7439-93-2	E440	2.0	mg/kg	26.9	23.9	24.2	28.1	22.0	
magnesium	7439-95-4	E440	20	mg/kg	12800	13200	13100	11900	12100	
manganese	7439-96-5	E440	1.0	mg/kg	1820	916	693	825	919	
mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
molybdenum	7439-98-7	E440	0.10	mg/kg	84.6	26.6	35.2	22.8	19.0	
nickel	7440-02-0	E440	0.50	mg/kg	271	171	107	127	139	
phosphorus	7723-14-0	E440	50	mg/kg	9940	11900	11100	10800	11400	
potassium	7440-09-7	E440	100	mg/kg	5940	6800	5900	5940	5670	
selenium	7782-49-2	E440	0.20	mg/kg	0.51	0.62	0.46	0.41	0.63	
silver	7440-22-4	E440	0.10	mg/kg	9.39	5.75	9.09	5.82	6.46	
sodium	7440-23-5	E440	50	mg/kg	15900	16400	15600	16200	16400	
strontium	7440-24-6	E440	0.50	mg/kg	403	363	374	358	374	
sulfur	7704-34-9	E440	1000	mg/kg	15200	17000	14800	14800	14200	



## Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2104-A-1	BA2104-A-2	BA2104-A-3	BA2104-A-4	BA2104-A-5
(Matrix: Soil/Solid)										
Client sampling date / time					20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21A1417-001	VA21A1417-002	VA21A1417-003	VA21A1417-004	VA21A1417-005	
					Result	Result	Result	Result	Result	
<b>Metals</b>										
thallium	7440-28-0	E440	0.050	mg/kg	0.092	0.091	0.086	0.086	0.083	
tin	7440-31-5	E440	2.0	mg/kg	184	167	125	154	174	
titanium	7440-32-6	E440	1.0	mg/kg	451	671	414	347	485	
tungsten	7440-33-7	E440	0.50	mg/kg	16.9	13.6	11.0	11.9	12.6	
uranium	7440-61-1	E440	0.050	mg/kg	6.42	7.29	6.04	6.10	5.92	
vanadium	7440-62-2	E440	0.20	mg/kg	73.6	66.4	60.4	65.7	60.7	
zinc	7440-66-6	E440	2.0	mg/kg	4870	6730	4850	4350	4960	
zirconium	7440-67-7	E440	1.0	mg/kg	1.4	1.5	1.8	1.4	1.6	
<b>TCLP Metals</b>										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.6	11.7	11.8	11.8	11.7	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	9.03	8.46	8.65	9.20	8.18	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.86	2.86	2.86	2.86	2.86	
pH, TCLP final	----	EPP444	0.010	pH units	6.20	6.62	6.63	6.26	6.56	
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5	
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.36	2.24	1.99	2.31	2.12	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.250	1.46	0.410	0.213	0.209	
calcium, TCLP	7440-70-2	E444	10	mg/L	2200	2070	2090	2180	1930	
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.603	0.354	0.534	1.72	1.55	
copper, TCLP	7440-50-8	E444	0.050	mg/L	1.16	0.739	0.330	0.669	0.524	
iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	118	106	108	113	111	
mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.51	0.49	0.45	0.62	0.45	
selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	



## Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2104-A-1	BA2104-A-2	BA2104-A-3	BA2104-A-4	BA2104-A-5
Client sampling date / time					20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00
Analyte	CAS Number	Method	LOR	Unit	VA21A1417-001	VA21A1417-002	VA21A1417-003	VA21A1417-004	VA21A1417-005	
					Result	Result	Result	Result	Result	
<b>TCLP Metals</b>										
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
zinc, TCLP	7440-66-6	E444	0.50	mg/L	37.6	21.2	23.0	42.9	20.4	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2104-A-6	BA2104-A-7	BA2104-A-8	BA2104-A-9	BA2104-A-10
Client sampling date / time					20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 13:19	20-Jan-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21A1417-006	VA21A1417-007	VA21A1417-008	VA21A1417-009	VA21A1417-010	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
moisture	----	E144	0.25	%	23.6	24.3	24.4	23.8	25.3	
pH (1:2 soil:water)	----	E108	0.10	pH units	10.8	10.9	10.7	10.9	10.8	
<b>Metals</b>										
aluminum	7429-90-5	E440	50	mg/kg	45000	34900	35900	35100	36100	
antimony	7440-36-0	E440	0.10	mg/kg	156	193	164	184	179	
arsenic	7440-38-2	E440	0.10	mg/kg	20.9	23.7	25.1	26.6	25.1	
barium	7440-39-3	E440	0.50	mg/kg	561	538	539	524	563	
beryllium	7440-41-7	E440	0.10	mg/kg	0.44	0.43	0.40	0.42	0.46	
bismuth	7440-69-9	E440	0.20	mg/kg	9.80	8.10	8.87	8.94	14.0	
boron	7440-42-8	E440	5.0	mg/kg	273	197	197	232	217	
cadmium	7440-43-9	E440	0.020	mg/kg	14.0	15.0	14.5	15.9	17.7	
calcium	7440-70-2	E440	50	mg/kg	167000	170000	164000	161000	176000	
chromium	7440-47-3	E440	0.50	mg/kg	154	191	181	202	243	
cobalt	7440-48-4	E440	0.10	mg/kg	388	377	31.5	46.6	31.5	
copper	7440-50-8	E440	0.50	mg/kg	2540	1730	2000	11200	2710	
iron	7439-89-6	E440	50	mg/kg	51900	56800	60900	53700	65500	
lead	7439-92-1	E440	0.50	mg/kg	504	4240	493	502	537	
lithium	7439-93-2	E440	2.0	mg/kg	72.1	26.0	20.9	25.3	22.6	
magnesium	7439-95-4	E440	20	mg/kg	12800	12500	12400	12200	13200	
manganese	7439-96-5	E440	1.0	mg/kg	891	889	866	845	1150	
mercury	7439-97-6	E510	0.0500	mg/kg	0.0784	<0.0500	0.0707	<0.0500	0.0501	
molybdenum	7439-98-7	E440	0.10	mg/kg	20.8	25.6	23.5	29.5	27.4	
nickel	7440-02-0	E440	0.50	mg/kg	274	135	138	659	296	
phosphorus	7723-14-0	E440	50	mg/kg	9920	13000	13800	11200	11900	
potassium	7440-09-7	E440	100	mg/kg	5860	6030	6540	6300	6620	
selenium	7782-49-2	E440	0.20	mg/kg	0.59	0.51	0.58	0.47	0.49	
silver	7440-22-4	E440	0.10	mg/kg	14.5	5.73	5.76	9.70	7.28	
sodium	7440-23-5	E440	50	mg/kg	15900	16100	16000	15400	16800	
strontium	7440-24-6	E440	0.50	mg/kg	354	360	359	381	429	
sulfur	7704-34-9	E440	1000	mg/kg	13600	14000	13900	15000	16000	
thallium	7440-28-0	E440	0.050	mg/kg	0.076	0.080	0.076	0.086	0.117	



## Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2104-A-6	BA2104-A-7	BA2104-A-8	BA2104-A-9	BA2104-A-10
Client sampling date / time					20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 13:19	20-Jan-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21A1417-006	VA21A1417-007	VA21A1417-008	VA21A1417-009	VA21A1417-010	
					Result	Result	Result	Result	Result	
<b>Metals</b>										
tin	7440-31-5	E440	2.0	mg/kg	498	158	142	183	173	
titanium	7440-32-6	E440	1.0	mg/kg	347	282	280	444	507	
tungsten	7440-33-7	E440	0.50	mg/kg	12.8	16.0	10.4	14.8	17.2	
uranium	7440-61-1	E440	0.050	mg/kg	5.86	6.68	6.64	6.24	7.25	
vanadium	7440-62-2	E440	0.20	mg/kg	59.8	66.5	65.4	70.2	72.6	
zinc	7440-66-6	E440	2.0	mg/kg	4230	4520	4580	8190	6130	
zirconium	7440-67-7	E440	1.0	mg/kg	2.1	1.2	1.3	1.1	1.3	
<b>TCLP Metals</b>										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.6	11.6	11.6	11.6	11.6	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	8.30	8.56	8.47	8.68	8.66	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.86	2.86	2.86	2.86	2.86	
pH, TCLP final	----	EPP444	0.010	pH units	6.67	6.18	6.69	6.43	6.36	
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5	
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.46	2.40	2.42	2.45	2.49	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.182	0.203	0.151	0.174	0.200	
calcium, TCLP	7440-70-2	E444	10	mg/L	2220	2260	2120	2330	2260	
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.519	0.619	0.552	0.524	0.503	
copper, TCLP	7440-50-8	E444	0.050	mg/L	0.550	1.12	0.679	0.804	1.08	
iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	109	116	111	118	117	
mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.35	0.52	0.31	0.51	0.45	
selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	





## Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2104-A-6	BA2104-A-7	BA2104-A-8	BA2104-A-9	BA2104-A-10
Client sampling date / time					20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021 13:19	20-Jan-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21A1417-006	VA21A1417-007	VA21A1417-008	VA21A1417-009	VA21A1417-010	
					Result	Result	Result	Result	Result	
<b>TCLP Metals</b>										
zinc, TCLP	7440-66-6	E444	0.50	mg/L	19.0	45.0	16.5	41.9	36.0	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2104-A-11	BA2104-A-12	BA2104-A-2 REP 1	BA2104-A-2 REP 2	BA2104-A-2 REP 3
Client sampling date / time					20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021	20-Jan-2021	20-Jan-2021	
Analyte	CAS Number	Method	LOR	Unit	VA21A1417-011	VA21A1417-012	VA21A1417-013	VA21A1417-014	VA21A1417-015	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
moisture	---	E144	0.25	%	24.6	25.4	---	---	---	
pH (1:2 soil:water)	---	E108	0.10	pH units	10.8	10.8	---	---	---	
<b>Metals</b>										
aluminum	7429-90-5	E440	50	mg/kg	37300	36900	---	---	---	
antimony	7440-36-0	E440	0.10	mg/kg	171	177	---	---	---	
arsenic	7440-38-2	E440	0.10	mg/kg	25.7	26.4	---	---	---	
barium	7440-39-3	E440	0.50	mg/kg	404	438	---	---	---	
beryllium	7440-41-7	E440	0.10	mg/kg	0.41	0.41	---	---	---	
bismuth	7440-69-9	E440	0.20	mg/kg	9.82	24.3	---	---	---	
boron	7440-42-8	E440	5.0	mg/kg	233	187	---	---	---	
cadmium	7440-43-9	E440	0.020	mg/kg	16.4	18.7	---	---	---	
calcium	7440-70-2	E440	50	mg/kg	167000	164000	---	---	---	
chromium	7440-47-3	E440	0.50	mg/kg	228	182	---	---	---	
cobalt	7440-48-4	E440	0.10	mg/kg	55.3	559	---	---	---	
copper	7440-50-8	E440	0.50	mg/kg	2800	2180	---	---	---	
iron	7439-89-6	E440	50	mg/kg	61700	65400	---	---	---	
lead	7439-92-1	E440	0.50	mg/kg	615	582	---	---	---	
lithium	7439-93-2	E440	2.0	mg/kg	23.5	33.4	---	---	---	
magnesium	7439-95-4	E440	20	mg/kg	12700	12200	---	---	---	
manganese	7439-96-5	E440	1.0	mg/kg	1500	916	---	---	---	
mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	0.0762	---	---	---	
molybdenum	7439-98-7	E440	0.10	mg/kg	25.9	26.0	---	---	---	
nickel	7440-02-0	E440	0.50	mg/kg	176	150	---	---	---	
phosphorus	7723-14-0	E440	50	mg/kg	11600	12400	---	---	---	
potassium	7440-09-7	E440	100	mg/kg	6560	6800	---	---	---	
selenium	7782-49-2	E440	0.20	mg/kg	0.51	0.56	---	---	---	
silver	7440-22-4	E440	0.10	mg/kg	8.78	12.6	---	---	---	
sodium	7440-23-5	E440	50	mg/kg	16500	16400	---	---	---	
strontium	7440-24-6	E440	0.50	mg/kg	864	381	---	---	---	
sulfur	7704-34-9	E440	1000	mg/kg	15200	16000	---	---	---	
thallium	7440-28-0	E440	0.050	mg/kg	0.088	0.081	---	---	---	



## Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2104-A-11	BA2104-A-12	BA2104-A-2 REP 1	BA2104-A-2 REP 2	BA2104-A-2 REP 3
Client sampling date / time					20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021	20-Jan-2021	20-Jan-2021	
Analyte	CAS Number	Method	LOR	Unit	VA21A1417-011	VA21A1417-012	VA21A1417-013	VA21A1417-014	VA21A1417-015	
					Result	Result	Result	Result	Result	
<b>Metals</b>										
tin	7440-31-5	E440	2.0	mg/kg	196	172	----	----	----	
titanium	7440-32-6	E440	1.0	mg/kg	374	268	----	----	----	
tungsten	7440-33-7	E440	0.50	mg/kg	12.4	12.1	----	----	----	
uranium	7440-61-1	E440	0.050	mg/kg	6.75	7.00	----	----	----	
vanadium	7440-62-2	E440	0.20	mg/kg	67.6	74.1	----	----	----	
zinc	7440-66-6	E440	2.0	mg/kg	5570	5880	----	----	----	
zirconium	7440-67-7	E440	1.0	mg/kg	1.7	1.9	----	----	----	
<b>TCLP Metals</b>										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.6	11.4	11.7	11.7	11.7	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	8.37	8.53	8.64	8.64	8.64	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.86	2.86	2.87	2.87	2.87	
pH, TCLP final	----	EPP444	0.010	pH units	6.33	6.45	6.25	6.35	6.25	
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	----	----	----	
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	----	----	----	
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	----	----	----	
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	----	----	----	
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.58	2.55	----	----	----	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.194	0.192	0.199	0.254	0.195	
calcium, TCLP	7440-70-2	E444	10	mg/L	2310	2270	----	----	----	
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	----	----	----	
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.747	0.509	----	----	----	
copper, TCLP	7440-50-8	E444	0.050	mg/L	1.24	0.991	----	----	----	
iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	----	----	----	
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	----	----	----	
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	112	125	----	----	----	
mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.41	0.49	----	----	----	
selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	----	----	----	
silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	----	----	----	
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	----	----	----	
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	----	----	----	



### Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2104-A-11	BA2104-A-12	BA2104-A-2 REP 1	BA2104-A-2 REP 2	BA2104-A-2 REP 3
Client sampling date / time					20-Jan-2021 09:00	20-Jan-2021 09:00	20-Jan-2021	20-Jan-2021	20-Jan-2021	
Analyte	CAS Number	Method	LOR	Unit	VA21A1417-011	VA21A1417-012	VA21A1417-013	VA21A1417-014	VA21A1417-015	
					Result	Result	Result	Result	Result	
<b>TCLP Metals</b>										
zinc, TCLP	7440-66-6	E444	0.50	mg/L	37.2	32.2	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

### Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2104-A-2 REP 4	----	----	----	----
Client sampling date / time					20-Jan-2021	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	VA21A1417-016	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>TCLP Metals</b>										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.7	----	----	----	----	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	8.64	----	----	----	----	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.87	----	----	----	----	
pH, TCLP final	----	EPP444	0.010	pH units	6.11	----	----	----	----	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.236	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>VA21A1417</b>	Page	: 1 of 17
Client	: <b>Covanta Burnaby Renewable Energy, ULC</b>	Laboratory	: Vancouver - Environmental
Contact	: Steve McKinney	Account Manager	: Brent Mack
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 521 1025	Telephone	: +1 604 253 4188
Project	: Weekly Bottom Ash-Suite	Date Samples Received	: 26-Jan-2021 11:55
PO	: VANCO 0000050390	Issue Date	: 08-Feb-2021 09:01
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: Standing Offer (BC work)		
No. of samples received	: 16		
No. of samples analysed	: 16		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- No Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Metals	VA21A1417-001	BA2104-A-1	bismuth	7440-69-9	E440	42.8 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21A1417-001	BA2104-A-1	boron	7440-42-8	E440	34.4 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21A1417-001	BA2104-A-1	chromium	7440-47-3	E440	41.6 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21A1417-001	BA2104-A-1	cobalt	7440-48-4	E440	42.5 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21A1417-001	BA2104-A-1	manganese	7439-96-5	E440	77.3 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21A1417-001	BA2104-A-1	molybdenum	7439-98-7	E440	95.2 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21A1417-001	BA2104-A-1	nickel	7440-02-0	E440	78.5 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21A1417-001	BA2104-A-1	silver	7440-22-4	E440	42.5 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-1	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✓	29-Jan-2021	19 days	0 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-10	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✓	29-Jan-2021	19 days	0 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-11	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✓	29-Jan-2021	19 days	0 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-12	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✓	29-Jan-2021	19 days	0 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-2	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✓	29-Jan-2021	19 days	0 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-3	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✓	29-Jan-2021	19 days	0 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-4	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✓	29-Jan-2021	19 days	0 days	✓	





Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-5	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✔	29-Jan-2021	19 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-6	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✔	29-Jan-2021	19 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-7	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✔	29-Jan-2021	19 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-8	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✔	29-Jan-2021	19 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2104-A-9	E510	20-Jan-2021	29-Jan-2021	28 days	8 days	✔	29-Jan-2021	19 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
LDPE bag BA2104-A-1	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
LDPE bag BA2104-A-10	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
LDPE bag BA2104-A-11	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
LDPE bag BA2104-A-12	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
LDPE bag BA2104-A-2	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
LDPE bag BA2104-A-3	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
LDPE bag BA2104-A-4	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
LDPE bag BA2104-A-5	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
LDPE bag BA2104-A-6	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
LDPE bag BA2104-A-7	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
LDPE bag BA2104-A-8	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
LDPE bag BA2104-A-9	E440	20-Jan-2021	29-Jan-2021	180 days	8 days	✔	29-Jan-2021	171 days	0 days	✔	
<b>Physical Tests : Moisture Content by Gravimetry</b>											
LDPE bag BA2104-A-1	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----		



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2104-A-10	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2104-A-11	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2104-A-12	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2104-A-2	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2104-A-3	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2104-A-4	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2104-A-5	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2104-A-6	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2104-A-7	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Moisture Content by Gravimetry</b>											
LDPE bag BA2104-A-8	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----		
<b>Physical Tests : Moisture Content by Gravimetry</b>											
LDPE bag BA2104-A-9	E144	20-Jan-2021	----	----	----		28-Jan-2021	----	----		
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2104-A-1	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2104-A-10	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2104-A-11	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2104-A-12	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2104-A-2	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2104-A-3	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2104-A-4	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
<b>LDPE bag</b> BA2104-A-5	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
<b>LDPE bag</b> BA2104-A-6	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
<b>LDPE bag</b> BA2104-A-7	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
<b>LDPE bag</b> BA2104-A-8	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
<b>LDPE bag</b> BA2104-A-9	E108	20-Jan-2021	29-Jan-2021	30 days	8 days	✔	29-Jan-2021	21 days	0 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-1	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-10	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-11	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-12	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-2	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-3	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-4	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-5	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-6	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-7	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-8	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	10 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
<b>Glass vial - total (lab preserved)</b> BA2104-A-9	E512	28-Jan-2021	----	----	----		30-Jan-2021	36 days	9 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
<b>HDPE - total (lab preserved)</b> BA2104-A-1	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2104-A-10	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2104-A-11	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2104-A-12	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2104-A-2	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2104-A-3	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2104-A-4	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2104-A-5	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2104-A-6	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2104-A-7	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔	





Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>										
HDPE - total (lab preserved) BA2104-A-8	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	10 days	✔
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>										
HDPE - total (lab preserved) BA2104-A-9	E444	28-Jan-2021	----	----	----		30-Jan-2021	188 days	9 days	✔
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>										
HDPE - total (lab preserved) BA2104-A-2 REP 1	E444	02-Feb-2021	----	----	----		04-Feb-2021	193 days	15 days	✔
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>										
HDPE - total (lab preserved) BA2104-A-2 REP 2	E444	02-Feb-2021	----	----	----		04-Feb-2021	193 days	15 days	✔
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>										
HDPE - total (lab preserved) BA2104-A-2 REP 3	E444	02-Feb-2021	----	----	----		04-Feb-2021	193 days	15 days	✔
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>										
HDPE - total (lab preserved) BA2104-A-2 REP 4	E444	02-Feb-2021	----	----	----		04-Feb-2021	193 days	15 days	✔
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-1	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-10	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-11	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----	





Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-12	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-2	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-2 REP 1	EPP444	20-Jan-2021	02-Feb-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-2 REP 2	EPP444	20-Jan-2021	02-Feb-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-2 REP 3	EPP444	20-Jan-2021	02-Feb-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-2 REP 4	EPP444	20-Jan-2021	02-Feb-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-3	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-4	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2104-A-5	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----	



Matrix: **Soil/Solid**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2104-A-6	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----		
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2104-A-7	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----		
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2104-A-8	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----		
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2104-A-9	EPP444	20-Jan-2021	28-Jan-2021	----	----		----	----	----		

**Legend & Qualifier Definitions**

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Mercury in Soil/Solid by CVAAS	E510	145695	1	12	8.3	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	145694	1	12	8.3	5.0	✔
Moisture Content by Gravimetry	E144	145697	1	12	8.3	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	145696	1	12	8.3	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Mercury in Soil/Solid by CVAAS	E510	145695	2	12	16.6	10.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	145694	2	12	16.6	10.0	✔
Moisture Content by Gravimetry	E144	145697	1	12	8.3	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	145696	1	12	8.3	5.0	✔
<b>Method Blanks (MB)</b>							
Mercury by CVAAS (TCLP)	E512	146422	1	12	8.3	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	145695	1	12	8.3	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	148014	2	16	12.5	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	145694	1	12	8.3	5.0	✔
Moisture Content by Gravimetry	E144	145697	1	12	8.3	5.0	✔
<b>Matrix Spikes (MS)</b>							
Mercury by CVAAS (TCLP)	E512	146422	1	12	8.3	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	148014	2	16	12.5	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals in Soil/Solid by CRC ICPMS	E440 Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO <sub>3</sub> and HCl. This method 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.
Metals by CRC ICPMS (TCLP)	E444 Vancouver - Environmental	Soil/Solid	EPA 1311/6020B (mod)	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by Collision/Reaction Cell ICPMS.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO <sub>3</sub> and HCl, followed by CVAAS analysis.
Mercury by CVAAS (TCLP)	E512 Vancouver - Environmental	Soil/Solid	SW 846 -1311/245.1 CVAA ON TCLP LEACHATE	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by CVAAS.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Vancouver - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	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.
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO <sub>3</sub> and HCl. This method is intended to liberate metals that may be environmentally available.

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Work Order : VA21A1417  
Client : Covanta Burnaby Renewable Energy, ULC  
Project : Weekly Bottom Ash-Suite



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)	EPP444  Vancouver - Environmental	Soil/Solid	EPA 1311	Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample involves particle size reduction, homogenization, then determination of appropriate extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle with the appropriate extraction fluid then tumbled in a rotary extractor for 18+/- 2 hours at 23 +/- 2 C. The liquid leachate is filtered to separate from solids then bottled and prepared for analytical tests.

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>VA21A1417</b>	<b>Page</b>	: 1 of 13
<b>Client</b>	: Covanta Burnaby Renewable Energy, ULC	<b>Laboratory</b>	: Vancouver - Environmental
<b>Contact</b>	: Steve McKinney	<b>Account Manager</b>	: Brent Mack
<b>Address</b>	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	<b>Address</b>	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
<b>Telephone</b>	: 604 521 1025	<b>Telephone</b>	: +1 604 253 4188
<b>Project</b>	: Weekly Bottom Ash-Suite	<b>Date Samples Received</b>	: 26-Jan-2021 11:55
<b>PO</b>	: VANCO 0000050390	<b>Date Analysis Commenced</b>	: 28-Jan-2021
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 08-Feb-2021 09:01
<b>Sampler</b>	: ----		
<b>Site</b>	: ----		
<b>Quote number</b>	: Standing Offer (BC work)		
<b>No. of samples received</b>	: 16		
<b>No. of samples analysed</b>	: 16		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Brianna Allen	Production/Validation Manager	Organics, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

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Work Order : VA21A1417  
Client : Covanta Burnaby Renewable Energy, ULC  
Project : Weekly Bottom Ash-Suite

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## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 145696)</b>											
VA21A1417-001	BA2104-A-1	pH (1:2 soil:water)	----	E108	0.10	pH units	10.9	11.0	0.183%	5%	----
<b>Physical Tests (QC Lot: 145697)</b>											
VA21A1417-001	BA2104-A-1	moisture	----	E144	0.25	%	24.4	23.5	3.52%	20%	----
<b>Metals (QC Lot: 145694)</b>											
VA21A1417-001	BA2104-A-1	aluminum	7429-90-5	E440	50	mg/kg	37200	42000	12.2%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	180	180	0.0878%	30%	----
		arsenic	7440-38-2	E440	0.10	mg/kg	33.4	25.1	28.4%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	550	571	3.74%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.46	0.50	0.04	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.20	mg/kg	10.4	16.1	42.8%	30%	DUP-H
		boron	7440-42-8	E440	5.0	mg/kg	346	244	34.4%	30%	DUP-H
		cadmium	7440-43-9	E440	0.020	mg/kg	16.2	16.9	4.16%	30%	----
		calcium	7440-70-2	E440	50	mg/kg	168000	175000	4.22%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	278	182	41.6%	30%	DUP-H
		cobalt	7440-48-4	E440	0.10	mg/kg	76.6	49.7	42.5%	30%	DUP-H
		copper	7440-50-8	E440	0.50	mg/kg	2100	2060	2.21%	30%	----
		iron	7439-89-6	E440	50	mg/kg	46300	50400	8.38%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	815	579	33.8%	40%	----
		lithium	7439-93-2	E440	2.0	mg/kg	26.9	26.9	0.0437%	30%	----
		magnesium	7439-95-4	E440	20	mg/kg	12800	12800	0.487%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	1820	805	77.3%	30%	DUP-H
		molybdenum	7439-98-7	E440	0.10	mg/kg	84.6	30.0	95.2%	40%	DUP-H
		nickel	7440-02-0	E440	0.50	mg/kg	271	118	78.5%	30%	DUP-H
		phosphorus	7723-14-0	E440	50	mg/kg	9940	11900	18.1%	30%	----
		potassium	7440-09-7	E440	100	mg/kg	5940	6300	5.82%	40%	----
		selenium	7782-49-2	E440	0.20	mg/kg	0.51	0.50	0.01	Diff <2x LOR	----
		silver	7440-22-4	E440	0.10	mg/kg	9.39	6.10	42.5%	40%	DUP-H
		sodium	7440-23-5	E440	50	mg/kg	15900	16400	2.61%	40%	----
		strontium	7440-24-6	E440	0.50	mg/kg	403	387	4.02%	40%	----
		sulfur	7704-34-9	E440	1000	mg/kg	15200	15200	0.0291%	30%	----
		thallium	7440-28-0	E440	0.050	mg/kg	0.092	0.089	0.002	Diff <2x LOR	----





Sub-Matrix: **Soil/Solid**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Metals (QC Lot: 145694) - continued</b>											
VA21A1417-001	BA2104-A-1	tin	7440-31-5	E440	2.0	mg/kg	184	168	8.79%	40%	----
		titanium	7440-32-6	E440	1.0	mg/kg	451	541	18.1%	40%	----
		tungsten	7440-33-7	E440	0.50	mg/kg	16.9	16.3	3.82%	30%	----
		uranium	7440-61-1	E440	0.050	mg/kg	6.42	6.61	2.99%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	73.6	69.6	5.61%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	4870	5350	9.38%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	1.4	1.5	0.1	Diff <2x LOR	----
<b>Metals (QC Lot: 145695)</b>											
VA21A1417-001	BA2104-A-1	mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 145697)</b>						
moisture	----	E144	0.25	%	<0.25	----
<b>Metals (QCLot: 145694)</b>						
aluminum	7429-90-5	E440	50	mg/kg	<50	----
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	----
boron	7440-42-8	E440	5	mg/kg	<5.0	----
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
calcium	7440-70-2	E440	50	mg/kg	<50	----
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
iron	7439-89-6	E440	50	mg/kg	<50	----
lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
lithium	7439-93-2	E440	2	mg/kg	<2.0	----
magnesium	7439-95-4	E440	20	mg/kg	<20	----
manganese	7439-96-5	E440	1	mg/kg	<1.0	----
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
phosphorus	7723-14-0	E440	50	mg/kg	<50	----
potassium	7440-09-7	E440	100	mg/kg	<100	----
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
sodium	7440-23-5	E440	50	mg/kg	<50	----
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	----
sulfur	7704-34-9	E440	1000	mg/kg	<1000	----
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
tin	7440-31-5	E440	2	mg/kg	<2.0	----
titanium	7440-32-6	E440	1	mg/kg	<1.0	----
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	----
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Metals (QCLot: 145694) - continued</b>						
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	---
zinc	7440-66-6	E440	2	mg/kg	<2.0	---
zirconium	7440-67-7	E440	1	mg/kg	<1.0	---
<b>Metals (QCLot: 145695)</b>						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	---
<b>TCLP Metals (QCLot: 146422)</b>						
mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	---
<b>TCLP Metals (QCLot: 146423)</b>						
antimony, TCLP	7440-36-0	E444	1	mg/L	<1.0	---
arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	---
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	---
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	---
boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	---
cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	---
calcium, TCLP	7440-70-2	E444	10	mg/L	<10	---
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	---
cobalt, TCLP	7440-48-4	E444	0.05	mg/L	<0.050	---
copper, TCLP	7440-50-8	E444	0.05	mg/L	<0.050	---
iron, TCLP	7439-89-6	E444	5	mg/L	<5.0	---
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	---
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	<2.5	---
nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	---
selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	---
silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	---
thallium, TCLP	7440-28-0	E444	1	mg/L	<1.0	---
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	---
zinc, TCLP	7440-66-6	E444	0.5	mg/L	<0.50	---
<b>TCLP Metals (QCLot: 148014)</b>						
antimony, TCLP	7440-36-0	E444	1	mg/L	<1.0	---
arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	---
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	---
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	---
boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	---
cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	---
calcium, TCLP	7440-70-2	E444	10	mg/L	<10	---
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	---



Sub-Matrix: **Soil/Solid**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>TCLP Metals (QCLot: 148014) - continued</b>						
cobalt, TCLP	7440-48-4	E444	0.05	mg/L	<0.050	----
copper, TCLP	7440-50-8	E444	0.05	mg/L	<0.050	----
iron, TCLP	7439-89-6	E444	5	mg/L	<5.0	----
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	----
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	<2.5	----
nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	----
selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	----
silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	----
thallium, TCLP	7440-28-0	E444	1	mg/L	<1.0	----
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	----
zinc, TCLP	7440-66-6	E444	0.5	mg/L	<0.50	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 145696)</b>									
pH (1:2 soil:water)	---	E108	---	pH units	6 pH units	99.8	95.0	105	---
<b>Physical Tests (QCLot: 145697)</b>									
moisture	---	E144	0.25	%	50 %	101	90.0	110	---
<b>Metals (QCLot: 145694)</b>									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	102	80.0	120	---
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	110	80.0	120	---
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	106	80.0	120	---
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	---
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	107	80.0	120	---
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	113	80.0	120	---
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	110	80.0	120	---
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	104	80.0	120	---
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	111	80.0	120	---
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	104	80.0	120	---
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	105	80.0	120	---
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	---
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	103	80.0	120	---
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	108	80.0	120	---
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	105	80.0	120	---
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	112	80.0	120	---
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	103	80.0	120	---
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	107	80.0	120	---
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	103	80.0	120	---
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	104	80.0	120	---
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	110	80.0	120	---
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	103	80.0	120	---
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	107	80.0	120	---
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	108	80.0	120	---
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	113	80.0	120	---
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	109	80.0	120	---
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	111	80.0	120	---
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	104	80.0	120	---
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	103	80.0	120	---



Sub-Matrix: Soil/Solid

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Metals (QCLot: 145694) - continued</b>									
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	104	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	112	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	105	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	106	80.0	120	----
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	102	80.0	120	----
<b>Metals (QCLot: 145695)</b>									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	108	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Soil/Solid

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>TCLP Metals (QCLot: 146422)</b>										
VA21A1417-001	BA2104-A-1	mercury, TCLP	7439-97-6	E512	0.0010 mg/L	0.001 mg/L	104	50.0	140	----
<b>TCLP Metals (QCLot: 146423)</b>										
VA21A1417-001	BA2104-A-1	antimony, TCLP	7440-36-0	E444	4.9 mg/L	5 mg/L	98.8	50.0	140	----
		arsenic, TCLP	7440-38-2	E444	4.7 mg/L	5 mg/L	93.7	50.0	140	----
		barium, TCLP	7440-39-3	E444	12.1 mg/L	12.5 mg/L	97.2	50.0	140	----
		beryllium, TCLP	7440-41-7	E444	0.258 mg/L	0.25 mg/L	103	50.0	140	----
		boron, TCLP	7440-42-8	E444	10.1 mg/L	10 mg/L	101	50.0	140	----
		cadmium, TCLP	7440-43-9	E444	ND mg/L	0.25 mg/L	ND	50.0	140	----
		calcium, TCLP	7440-70-2	E444	ND mg/L	250 mg/L	ND	50.0	140	----
		chromium, TCLP	7440-47-3	E444	1.17 mg/L	1.25 mg/L	93.8	50.0	140	----
		cobalt, TCLP	7440-48-4	E444	ND mg/L	0.25 mg/L	ND	50.0	140	----
		copper, TCLP	7440-50-8	E444	2.26 mg/L	2.5 mg/L	90.4	50.0	140	----
		iron, TCLP	7439-89-6	E444	230 mg/L	250 mg/L	92.1	50.0	140	----
		lead, TCLP	7439-92-1	E444	10.6 mg/L	10 mg/L	106	50.0	140	----
		magnesium, TCLP	7439-95-4	E444	229 mg/L	250 mg/L	91.7	50.0	140	----
		nickel, TCLP	7440-02-0	E444	2.29 mg/L	2.5 mg/L	91.8	50.0	140	----
		selenium, TCLP	7782-49-2	E444	5.02 mg/L	5 mg/L	100	50.0	140	----
		silver, TCLP	7440-22-4	E444	0.112 mg/L	0.1 mg/L	112	50.0	140	----
		thallium, TCLP	7440-28-0	E444	5.0 mg/L	5 mg/L	100	50.0	140	----
		vanadium, TCLP	7440-62-2	E444	0.71 mg/L	0.75 mg/L	94.7	50.0	140	----
		zinc, TCLP	7440-66-6	E444	ND mg/L	10 mg/L	ND	50.0	140	----
<b>TCLP Metals (QCLot: 148014)</b>										
VA21A1417-013	BA2104-A-2 REP 1	antimony, TCLP	7440-36-0	E444	5.0 mg/L	5 mg/L	101	50.0	140	----
		arsenic, TCLP	7440-38-2	E444	4.8 mg/L	5 mg/L	95.0	50.0	140	----
		barium, TCLP	7440-39-3	E444	13.2 mg/L	12.5 mg/L	106	50.0	140	----
		beryllium, TCLP	7440-41-7	E444	0.257 mg/L	0.25 mg/L	103	50.0	140	----
		boron, TCLP	7440-42-8	E444	9.30 mg/L	10 mg/L	93.0	50.0	140	----
		cadmium, TCLP	7440-43-9	E444	0.235 mg/L	0.25 mg/L	94.0	50.0	140	----
		calcium, TCLP	7440-70-2	E444	ND mg/L	250 mg/L	ND	50.0	140	----
		chromium, TCLP	7440-47-3	E444	1.18 mg/L	1.25 mg/L	94.7	50.0	140	----
		cobalt, TCLP	7440-48-4	E444	ND mg/L	0.25 mg/L	ND	50.0	140	----

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 Work Order : VA21A1417  
 Client : Covanta Burnaby Renewable Energy, ULC  
 Project : Weekly Bottom Ash-Suite



Sub-Matrix: **Soil/Solid**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>TCLP Metals (QCLot: 148014) - continued</b>										
VA21A1417-013	BA2104-A-2 REP 1	copper, TCLP	7440-50-8	E444	2.26 mg/L	2.5 mg/L	90.5	50.0	140	----
		iron, TCLP	7439-89-6	E444	236 mg/L	250 mg/L	94.4	50.0	140	----
		lead, TCLP	7439-92-1	E444	10.2 mg/L	10 mg/L	102	50.0	140	----
		magnesium, TCLP	7439-95-4	E444	258 mg/L	250 mg/L	103	50.0	140	----
		nickel, TCLP	7440-02-0	E444	2.32 mg/L	2.5 mg/L	93.0	50.0	140	----
		selenium, TCLP	7782-49-2	E444	4.86 mg/L	5 mg/L	97.2	50.0	140	----
		silver, TCLP	7440-22-4	E444	0.116 mg/L	0.1 mg/L	116	50.0	140	----
		thallium, TCLP	7440-28-0	E444	5.0 mg/L	5 mg/L	99.2	50.0	140	----
		vanadium, TCLP	7440-62-2	E444	0.72 mg/L	0.75 mg/L	95.4	50.0	140	----
		zinc, TCLP	7440-66-6	E444	ND mg/L	10 mg/L	ND	50.0	140	----





## Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
<b>Metals (QCLot: 145694)</b>									
QC-145694-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	110	70.0	130	----
QC-145694-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	118	70.0	130	----
QC-145694-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	98.0	70.0	130	----
QC-145694-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	94.5	70.0	130	----
QC-145694-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	118	70.0	130	----
QC-145694-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	136	40.0	160	----
QC-145694-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	105	70.0	130	----
QC-145694-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	114	70.0	130	----
QC-145694-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	109	70.0	130	----
QC-145694-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	99.4	70.0	130	----
QC-145694-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	95.7	70.0	130	----
QC-145694-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	95.3	70.0	130	----
QC-145694-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	113	70.0	130	----
QC-145694-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	112	70.0	130	----
QC-145694-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	104	70.0	130	----
QC-145694-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	105	70.0	130	----
QC-145694-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	101	70.0	130	----
QC-145694-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	101	70.0	130	----
QC-145694-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	96.0	70.0	130	----
QC-145694-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	116	70.0	130	----
QC-145694-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	102	70.0	130	----
QC-145694-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	108	70.0	130	----
QC-145694-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	97.6	40.0	160	----
QC-145694-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	105	70.0	130	----
QC-145694-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	115	70.0	130	----
QC-145694-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	112	70.0	130	----
QC-145694-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	104	70.0	130	----
QC-145694-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	99.0	70.0	130	----
QC-145694-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	95.7	70.0	130	----

Page : 13 of 13  
 Work Order : VA21A1417  
 Client : Covanta Burnaby Renewable Energy, ULC  
 Project : Weekly Bottom Ash-Suite



Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
<b>Metals (QCLot: 145695)</b>									
QC-145695-003	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	124	70.0	130	----



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

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

Lab Work Order # (lab use only)		ALS Contact:	Sampler:								Number of Containers
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)			
1	BA2104-A-1	20-Jan-21	9:00	Soil	X	X		X			1
2	BA2104-A-2	20-Jan-21	9:00	Soil	X	X		X			1
3	BA2104-A-3	20-Jan-21	9:00	Soil	X	X		X			1
4	BA2104-A-4	20-Jan-21	9:00	Soil	X	X		X			1
5	BA2104-A-5	20-Jan-21	9:00	Soil	X	X		X			1
6	BA2104-A-6	20-Jan-21	9:00	Soil	X	X		X			1
7	BA2104-A-7	20-Jan-21	9:00	Soil	X	X		X			1
8	BA2104-A-8	20-Jan-21	9:00	Soil	X	X		X			1
9	BA2104-A-9	20-Jan-21	9:00	Soil	X	X		X			1
10	BA2104-A-10	20-Jan-21	9:00	Soil	X	X		X			1
11	BA2104-A-11	20-Jan-21	9:00	Soil	X	X		X			1
12	BA2104-A-12	20-Jan-21	9:00	Soil	X	X		X			1

**Environmental Division  
 Vancouver**  
 Work Order Reference  
**VA21A1417**



Telephone : +1 604 253 4186

**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:
<i>[Signature]</i>	26-Jan-21	0800	MB	Jan 26	11:55AM	16 °C				Yes / No ? If Yes add SIF