

Bottom Ash Data

2023 Week 15

The following analytical report represents bottom ash composite results for week 15 of 2023 (April 9, 2023 to April 15, 2023).

The bottom ash meets the conditions of Metro Vancouver's 2020 Bottom Ash Management Plan and is suitable for disposal.



CERTIFICATE OF ANALYSIS

Work Order : **VA23A8289**
Client : **Covanta Burnaby Renewable Energy, ULC**
Contact : Nicole Victor
Address : 5150 Riverbend Drive
 Burnaby BC Canada V3N 4V3
Telephone : ----
Project : Weekly Bottom Ash - Suite
PO : VANCO0000051998
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : Standing Offer (BC work)
No. of samples received : 12
No. of samples analysed : 12

Page : 1 of 11
Laboratory : Vancouver - Environmental
Account Manager : Brent Mack
Address : 8081 Lougheed Highway
 Burnaby BC Canada V5A 1W9
Telephone : 778-370-3279
Date Samples Received : 18-Apr-2023 12:50
Date Analysis Commenced : 19-Apr-2023
Issue Date : 26-Apr-2023 14:37

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parnian Sane	Analyst	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

Sub-Matrix: Soil					Client sample ID	BA2315-A-1	BA2315-A-2	BA2315-A-3	BA2315-A-4	BA2315-A-5
(Matrix: Soil/Solid)										
Client sampling date / time					12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00
Analyte	CAS Number	Method	LOR	Unit	VA23A8289-001	VA23A8289-002	VA23A8289-003	VA23A8289-004	VA23A8289-005	
					Result	Result	Result	Result	Result	
Physical Tests										
Moisture	----	E144	0.25	%	22.3	22.0	22.7	23.1	22.9	
pH (1:2 soil:water)	----	E108	0.10	pH units	11.2	11.6	11.4	11.4	11.3	
Metals										
Aluminum	7429-90-5	E440	50	mg/kg	35200	40800	41100	43100	46000	
Antimony	7440-36-0	E440	0.10	mg/kg	150	135	152	161	118	
Arsenic	7440-38-2	E440	0.10	mg/kg	22.3	24.7	22.6	24.5	18.6	
Barium	7440-39-3	E440	0.50	mg/kg	612	693	526	545	423	
Beryllium	7440-41-7	E440	0.10	mg/kg	0.39	0.61	0.42	0.44	0.41	
Bismuth	7440-69-9	E440	0.20	mg/kg	8.21	8.67	7.97	11.2	6.13	
Boron	7440-42-8	E440	5.0	mg/kg	287	308	203	217	146	
Cadmium	7440-43-9	E440	0.020	mg/kg	13.2	12.7	12.9	15.7	10.7	
Calcium	7440-70-2	E440	50	mg/kg	158000	162000	157000	160000	157000	
Chromium	7440-47-3	E440	0.50	mg/kg	181	177	244	162	158	
Cobalt	7440-48-4	E440	0.10	mg/kg	157	64.4	378	44.5	360	
Copper	7440-50-8	E440	0.50	mg/kg	2640	5900	8520	2260	16100	
Iron	7439-89-6	E440	50	mg/kg	66900	61100	66100	55200	55000	
Lead	7439-92-1	E440	0.50	mg/kg	399	633	1870	510	332	
Lithium	7439-93-2	E440	2.0	mg/kg	40.6	27.1	33.4	27.8	29.8	
Magnesium	7439-95-4	E440	20	mg/kg	13000	14600	13600	14400	13000	
Manganese	7439-96-5	E440	1.0	mg/kg	1520	882	1180	734	753	
Mercury	7439-97-6	E510	0.0500	mg/kg	0.0505	<0.0500	1.27	<0.0500	<0.0500	
Molybdenum	7439-98-7	E440	0.10	mg/kg	19.1	16.7	24.0	17.4	16.7	
Nickel	7440-02-0	E440	0.50	mg/kg	134	103	318	128	125	
Phosphorus	7723-14-0	E440	50	mg/kg	12800	9550	11500	11400	10300	
Potassium	7440-09-7	E440	100	mg/kg	6320	7370	6250	6270	6440	
Selenium	7782-49-2	E440	0.20	mg/kg	0.34	0.38	0.38	0.43	0.34	
Silver	7440-22-4	E440.Ag	0.10	mg/kg	----	----	----	5.01	----	
Silver	7440-22-4	E440	0.10	mg/kg	5.60	4.16	4.60	----	5.59	
Sodium	7440-23-5	E440	50	mg/kg	17200	21600	17100	17100	17100	



Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2315-A-1	BA2315-A-2	BA2315-A-3	BA2315-A-4	BA2315-A-5
(Matrix: Soil/Solid)					Client sampling date / time	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00
Analyte	CAS Number	Method	LOR	Unit	VA23A8289-001	VA23A8289-002	VA23A8289-003	VA23A8289-004	VA23A8289-005	
					Result	Result	Result	Result	Result	
Metals										
Strontium	7440-24-6	E440	0.50	mg/kg	299	318	316	314	294	
Sulfur	7704-34-9	E440	1000	mg/kg	12200	11500	13600	13200	10800	
Thallium	7440-28-0	E440	0.050	mg/kg	<0.050	0.052	0.052	<0.050	0.053	
Tin	7440-31-5	E440	2.0	mg/kg	124	120	168	147	110	
Titanium	7440-32-6	E440	1.0	mg/kg	246	314	298	364	236	
Tungsten	7440-33-7	E440	0.50	mg/kg	16.1	21.0	15.1	14.9	9.88	
Uranium	7440-61-1	E440	0.050	mg/kg	4.68	4.94	5.27	5.13	4.47	
Vanadium	7440-62-2	E440	0.20	mg/kg	44.8	51.0	50.9	47.6	44.4	
Zinc	7440-66-6	E440	2.0	mg/kg	5440	9180	5560	3880	10800	
Zirconium	7440-67-7	E440	1.0	mg/kg	1.4	1.6	1.6	1.8	2.3	
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.6	11.8	11.8	11.7	11.7	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	6.47	8.45	8.54	8.46	7.98	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.91	2.90	2.90	2.90	2.90	
pH, TCLP final	----	EPP444	0.010	pH units	6.85	6.57	6.60	6.47	6.64	
Antimony, TCLP	7440-36-0	E444	1.00	mg/L	<1.00	<1.00	<1.00	<1.00	<1.00	
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	2.04	2.23	2.10	2.22	2.17	
Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.103	0.118	0.126	0.143	0.117	
Calcium, TCLP	7440-70-2	E444	10	mg/L	1910	1860	1940	1910	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	0.726	0.701	1.15	1.06	1.22	
Copper, TCLP	7440-50-8	E444	0.050	mg/L	0.356	0.455	0.644	0.385	0.508	
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	121	135	140	141	148	
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	0.44	0.42	0.50	0.45	0.45	



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2315-A-1	BA2315-A-2	BA2315-A-3	BA2315-A-4	BA2315-A-5
Client sampling date / time					12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA23A8289-001	VA23A8289-002	VA23A8289-003	VA23A8289-004	VA23A8289-005	
					Result	Result	Result	Result	Result	
TCLP Metals										
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	
Uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	
Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	
Zinc, TCLP	7440-66-6	E444	0.50	mg/L	10.9	14.3	14.2	38.4	13.0	
Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	<10	<10	<10	

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



Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2315-A-6	BA2315-A-7	BA2315-A-8	BA2315-A-9	BA2315-A-10
(Matrix: Soil/Solid)					Client sampling date / time	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00
Analyte	CAS Number	Method	LOR	Unit	VA23A8289-006	VA23A8289-007	VA23A8289-008	VA23A8289-009	VA23A8289-010	
					Result	Result	Result	Result	Result	
Physical Tests										
Moisture	----	E144	0.25	%	23.2	22.4	23.0	22.7	21.7	
pH (1:2 soil:water)	----	E108	0.10	pH units	11.4	11.4	11.3	11.4	11.1	
Metals										
Aluminum	7429-90-5	E440	50	mg/kg	37500	53500	43800	46900	48800	
Antimony	7440-36-0	E440	0.10	mg/kg	160	146	147	172	135	
Arsenic	7440-38-2	E440	0.10	mg/kg	26.2	24.9	25.8	24.9	23.9	
Barium	7440-39-3	E440	0.50	mg/kg	494	500	483	608	681	
Beryllium	7440-41-7	E440	0.10	mg/kg	0.44	0.41	0.41	0.47	0.39	
Bismuth	7440-69-9	E440	0.20	mg/kg	8.84	9.17	17.5	9.46	12.6	
Boron	7440-42-8	E440	5.0	mg/kg	220	261	196	197	246	
Cadmium	7440-43-9	E440	0.020	mg/kg	13.0	18.1	14.3	14.7	10.7	
Calcium	7440-70-2	E440	50	mg/kg	173000	171000	161000	165000	149000	
Chromium	7440-47-3	E440	0.50	mg/kg	192	180	300	249	153	
Cobalt	7440-48-4	E440	0.10	mg/kg	73.4	95.6	45.5	82.6	68.8	
Copper	7440-50-8	E440	0.50	mg/kg	2990	3420	15100	3270	6390	
Iron	7439-89-6	E440	50	mg/kg	72700	46900	54300	58300	53500	
Lead	7439-92-1	E440	0.50	mg/kg	1250	449	484	3680	485	
Lithium	7439-93-2	E440	2.0	mg/kg	26.7	52.0	25.5	41.2	34.5	
Magnesium	7439-95-4	E440	20	mg/kg	14500	13500	14100	13600	11800	
Manganese	7439-96-5	E440	1.0	mg/kg	903	3730	894	1060	1040	
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	20.8	24.2	24.1	18.8	15.0	
Nickel	7440-02-0	E440	0.50	mg/kg	230	228	177	239	158	
Phosphorus	7723-14-0	E440	50	mg/kg	13000	12400	11400	11000	11000	
Potassium	7440-09-7	E440	100	mg/kg	6670	6580	6960	6970	6080	
Selenium	7782-49-2	E440	0.20	mg/kg	0.37	0.47	0.37	0.43	0.36	
Silver	7440-22-4	E440	0.10	mg/kg	5.30	4.85	7.23	5.76	5.63	
Sodium	7440-23-5	E440	50	mg/kg	19000	18000	18200	18700	17400	
Strontium	7440-24-6	E440	0.50	mg/kg	330	327	371	317	284	
Sulfur	7704-34-9	E440	1000	mg/kg	13300	12900	13400	13000	10500	



Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2315-A-6	BA2315-A-7	BA2315-A-8	BA2315-A-9	BA2315-A-10
(Matrix: Soil/Solid)					Client sampling date / time	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00
Analyte	CAS Number	Method	LOR	Unit	VA23A8289-006	VA23A8289-007	VA23A8289-008	VA23A8289-009	VA23A8289-010	
					Result	Result	Result	Result	Result	
Metals										
Thallium	7440-28-0	E440	0.050	mg/kg	0.055	0.059	0.052	0.057	<0.050	
Tin	7440-31-5	E440	2.0	mg/kg	152	110	1240	163	288	
Titanium	7440-32-6	E440	1.0	mg/kg	272	369	223	357	305	
Tungsten	7440-33-7	E440	0.50	mg/kg	14.2	13.9	12.5	16.6	9.40	
Uranium	7440-61-1	E440	0.050	mg/kg	5.26	4.93	5.15	5.05	4.24	
Vanadium	7440-62-2	E440	0.20	mg/kg	50.4	48.0	48.3	54.0	48.2	
Zinc	7440-66-6	E440	2.0	mg/kg	4090	5800	4790	3960	4560	
Zirconium	7440-67-7	E440	1.0	mg/kg	1.9	3.2	3.1	1.8	3.5	
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.7	11.6	11.8	11.7	11.8	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	8.04	7.33	8.48	8.11	8.44	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.90	2.90	2.90	2.90	2.90	
pH, TCLP final	----	EPP444	0.010	pH units	6.71	6.55	6.76	6.71	6.70	
Antimony, TCLP	7440-36-0	E444	1.00	mg/L	<1.00	<1.00	<1.00	<1.00	<1.00	
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	2.16	2.05	2.10	2.02	2.02	
Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.149	0.228	0.133	0.141	0.109	
Calcium, TCLP	7440-70-2	E444	10	mg/L	1950	1890	1900	1870	1880	
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	1.56	1.11	1.43	1.09	1.07	
Copper, TCLP	7440-50-8	E444	0.050	mg/L	0.467	0.788	0.467	0.519	0.569	
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	143	140	136	142	140	
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	0.46	0.52	0.40	0.51	0.46	
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	



Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2315-A-6	BA2315-A-7	BA2315-A-8	BA2315-A-9	BA2315-A-10
(Matrix: Soil/Solid)					Client sampling date / time	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00	12-Apr-2023 09:00
Analyte	CAS Number	Method	LOR	Unit	VA23A8289-006	VA23A8289-007	VA23A8289-008	VA23A8289-009	VA23A8289-010	
TCLP Metals					Result	Result	Result	Result	Result	
Thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	
Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	
Zinc, TCLP	7440-66-6	E444	0.50	mg/L	11.2	16.0	13.4	14.5	10.0	
Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	<10	<10	<10	

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



Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2315-A-11	BA2315-A-12	----	----	----
(Matrix: Soil/Solid)					Client sampling date / time	12-Apr-2023 09:00	12-Apr-2023 09:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA23A8289-011	VA23A8289-012	-----	-----	-----	
					Result	Result	----	----	----	
Physical Tests										
Moisture	----	E144	0.25	%	23.7	22.9	----	----	----	
pH (1:2 soil:water)	----	E108	0.10	pH units	11.1	11.2	----	----	----	
Metals										
Aluminum	7429-90-5	E440	50	mg/kg	46000	51300	----	----	----	
Antimony	7440-36-0	E440	0.10	mg/kg	153	155	----	----	----	
Arsenic	7440-38-2	E440	0.10	mg/kg	23.3	25.0	----	----	----	
Barium	7440-39-3	E440	0.50	mg/kg	581	651	----	----	----	
Beryllium	7440-41-7	E440	0.10	mg/kg	0.41	0.43	----	----	----	
Bismuth	7440-69-9	E440	0.20	mg/kg	8.72	17.3	----	----	----	
Boron	7440-42-8	E440	5.0	mg/kg	171	268	----	----	----	
Cadmium	7440-43-9	E440	0.020	mg/kg	14.7	11.6	----	----	----	
Calcium	7440-70-2	E440	50	mg/kg	164000	170000	----	----	----	
Chromium	7440-47-3	E440	0.50	mg/kg	162	269	----	----	----	
Cobalt	7440-48-4	E440	0.10	mg/kg	89.8	122	----	----	----	
Copper	7440-50-8	E440	0.50	mg/kg	6310	1620	----	----	----	
Iron	7439-89-6	E440	50	mg/kg	64000	65200	----	----	----	
Lead	7439-92-1	E440	0.50	mg/kg	3290	390	----	----	----	
Lithium	7439-93-2	E440	2.0	mg/kg	32.7	29.2	----	----	----	
Magnesium	7439-95-4	E440	20	mg/kg	13000	13800	----	----	----	
Manganese	7439-96-5	E440	1.0	mg/kg	1080	1120	----	----	----	
Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	----	----	----	
Molybdenum	7439-98-7	E440	0.10	mg/kg	18.9	25.8	----	----	----	
Nickel	7440-02-0	E440	0.50	mg/kg	130	141	----	----	----	
Phosphorus	7723-14-0	E440	50	mg/kg	12000	13500	----	----	----	
Potassium	7440-09-7	E440	100	mg/kg	6600	6990	----	----	----	
Selenium	7782-49-2	E440	0.20	mg/kg	0.38	0.43	----	----	----	
Silver	7440-22-4	E440	0.10	mg/kg	6.08	16.8	----	----	----	
Sodium	7440-23-5	E440	50	mg/kg	17700	20500	----	----	----	
Strontium	7440-24-6	E440	0.50	mg/kg	330	353	----	----	----	
Sulfur	7704-34-9	E440	1000	mg/kg	13000	12500	----	----	----	



Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2315-A-11	BA2315-A-12	----	----	----
(Matrix: Soil/Solid)					Client sampling date / time	12-Apr-2023 09:00	12-Apr-2023 09:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA23A8289-011	VA23A8289-012	-----	-----	-----	
					Result	Result	---	---	---	
Metals										
Thallium	7440-28-0	E440	0.050	mg/kg	0.070	0.050	---	---	---	
Tin	7440-31-5	E440	2.0	mg/kg	182	99.1	---	---	---	
Titanium	7440-32-6	E440	1.0	mg/kg	384	394	---	---	---	
Tungsten	7440-33-7	E440	0.50	mg/kg	12.1	11.8	---	---	---	
Uranium	7440-61-1	E440	0.050	mg/kg	5.04	4.66	---	---	---	
Vanadium	7440-62-2	E440	0.20	mg/kg	49.5	52.5	---	---	---	
Zinc	7440-66-6	E440	2.0	mg/kg	4330	4820	---	---	---	
Zirconium	7440-67-7	E440	1.0	mg/kg	2.3	2.2	---	---	---	
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.7	11.8	---	---	---	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	8.43	8.61	---	---	---	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.90	2.90	---	---	---	
pH, TCLP final	----	EPP444	0.010	pH units	6.58	6.68	---	---	---	
Antimony, TCLP	7440-36-0	E444	1.00	mg/L	<1.00	<1.00	---	---	---	
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	2.12	2.18	---	---	---	
Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.327	0.121	---	---	---	
Calcium, TCLP	7440-70-2	E444	10	mg/L	1830	1870	---	---	---	
Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	---	---	---	
Cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.879	0.936	---	---	---	
Copper, TCLP	7440-50-8	E444	0.050	mg/L	0.530	0.449	---	---	---	
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	140	140	---	---	---	
Mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
Nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.47	0.41	---	---	---	
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	---	---	---	



Analytical Results

Sub-Matrix: Soil					Client sample ID		BA2315-A-11	BA2315-A-12	----	----	----
(Matrix: Soil/Solid)					Client sampling date / time		12-Apr-2023 09:00	12-Apr-2023 09:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA23A8289-011	VA23A8289-012	-----	-----	-----	-----	-----
TCLP Metals					Result	Result	---	---	---	---	---
Thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
Uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	---	---	---	---	---
Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	---	---	---	---	---
Zinc, TCLP	7440-66-6	E444	0.50	mg/L	14.4	9.36	---	---	---	---	---
Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	---	---	---	---	---

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



QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : VA23A8289</p> <p>Client : Covanta Burnaby Renewable Energy, ULC</p> <p>Contact : Nicole Victor</p> <p>Address : 5150 Riverbend Drive Burnaby BC Canada V3N 4V3</p> <p>Telephone : ----</p> <p>Project : Weekly Bottom Ash - Suite</p> <p>PO : VANCO0000051998</p> <p>C-O-C number : ----</p> <p>Sampler : ----</p> <p>Site : ----</p> <p>Quote number : Standing Offer (BC work)</p> <p>No. of samples received : 12</p> <p>No. of samples analysed : 12</p>	<p>Page : 1 of 16</p> <p>Laboratory : Vancouver - Environmental</p> <p>Account Manager : Brent Mack</p> <p>Address : 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9</p> <p>Telephone : 778-370-3279</p> <p>Date Samples Received : 18-Apr-2023 12:50</p> <p>Issue Date : 26-Apr-2023 14:38</p>
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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 Service number is a unique identifier assigned to discrete substances.
 - DQO: Data Quality Objective.
 - LOR: Limit of Reporting (detection limit).
 - RPD: Relative Percent Difference.
-

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- Laboratory Control Sample (LCS) 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
Duplicate (DUP) RPDs								
Metals	Anonymous	Anonymous	Cadmium	7440-43-9	E440	43.1 % DUP-H	30%	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.

Laboratory Control Sample (LCS) Recoveries								
Metals	QC-MRG2-9037890 02	----	Antimony	7440-36-0	E440	125 % MES	80.0-120%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



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 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 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		
Metals : High Silver in Soil/Solid by CRC ICPMS											
LDPE bag BA2315-A-4	E440.Ag	12-Apr-2023	21-Apr-2023	180 days	9 days	✓	22-Apr-2023	171 days	1 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-1	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-10	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-11	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-12	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-2	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-3	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 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		
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-4	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-5	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-6	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-7	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-8	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2315-A-9	E510	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2315-A-1	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	10 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2315-A-10	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	10 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2315-A-11	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 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		
Metals : Metals in Soil/Solid by CRC ICMS											
LDPE bag BA2315-A-12	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	10 days	✔	
Metals : Metals in Soil/Solid by CRC ICMS											
LDPE bag BA2315-A-2	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	10 days	✔	
Metals : Metals in Soil/Solid by CRC ICMS											
LDPE bag BA2315-A-3	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	10 days	✔	
Metals : Metals in Soil/Solid by CRC ICMS											
LDPE bag BA2315-A-4	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	10 days	✔	
Metals : Metals in Soil/Solid by CRC ICMS											
LDPE bag BA2315-A-5	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	10 days	✔	
Metals : Metals in Soil/Solid by CRC ICMS											
LDPE bag BA2315-A-6	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	10 days	✔	
Metals : Metals in Soil/Solid by CRC ICMS											
LDPE bag BA2315-A-7	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	10 days	✔	
Metals : Metals in Soil/Solid by CRC ICMS											
LDPE bag BA2315-A-8	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	10 days	✔	
Metals : Metals in Soil/Solid by CRC ICMS											
LDPE bag BA2315-A-9	E440	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 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		
				Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2315-A-1	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2315-A-10	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2315-A-11	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2315-A-12	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2315-A-2	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2315-A-3	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2315-A-4	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2315-A-5	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2315-A-6	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----	



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		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2315-A-7	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2315-A-8	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2315-A-9	E144	12-Apr-2023	----	----	----		19-Apr-2023	----	----		
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-1	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-10	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-11	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-12	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-2	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-3	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 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		
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-4	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-5	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-6	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-7	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-8	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2315-A-9	E108	12-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	30 days	9 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-1	E512	19-Apr-2023	20-Apr-2023	----	----		20-Apr-2023	28 days	8 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-10	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-11	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 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		
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-12	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-2	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-3	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-4	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-5	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-6	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-7	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-8	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2315-A-9	E512	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	9 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		
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-1	E444	19-Apr-2023	20-Apr-2023	----	----		20-Apr-2023	180 days	8 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-10	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-11	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-12	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-2	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-3	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-4	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-5	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-6	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 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		
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-7	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-8	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2315-A-9	E444	19-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	180 days	9 days	✔	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-1	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-10	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-11	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-12	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-2	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-3	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----		



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	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-4	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-5	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-6	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-7	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-8	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2315-A-9	EPP444	12-Apr-2023	19-Apr-2023	----	----		----	----	----	

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 (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Mercury in Soil/Solid by CVAAS	E510	903789	1	15	6.6	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	903790	1	18	5.5	5.0	✔
Moisture Content by Gravimetry	E144	903795	1	12	8.3	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	903791	1	18	5.5	5.0	✔
Laboratory Control Samples (LCS)							
High Silver in Soil/Solid by CRC ICPMS	E440.Ag	906816	1	1	100.0	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	903789	2	15	13.3	10.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	903790	2	18	11.1	10.0	✔
Moisture Content by Gravimetry	E144	903795	1	12	8.3	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	903791	1	18	5.5	5.0	✔
Method Blanks (MB)							
High Silver in Soil/Solid by CRC ICPMS	E440.Ag	906816	1	1	100.0	5.0	✔
Mercury by CVAAS (TCLP)	E512	905370	2	12	16.6	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	903789	1	15	6.6	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	905371	2	12	16.6	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	903790	1	18	5.5	5.0	✔
Moisture Content by Gravimetry	E144	903795	1	12	8.3	5.0	✔
Matrix Spikes (MS)							
Mercury by CVAAS (TCLP)	E512	905370	2	12	16.6	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	905371	2	12	16.6	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)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO ₃ and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
High Silver in Soil/Solid by CRC ICPMS	E440.Ag Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	Samples are sieved through a 2 mm sieve, and digested with HNO ₃ 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 ₃ 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



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
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 HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
Digestion for Silver	EP440.Ag Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
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

Work Order	: VA23A8289	Page	: 1 of 13
Client	: Covanta Burnaby Renewable Energy, ULC	Laboratory	: Vancouver - Environmental
Contact	: Nicole Victor	Account Manager	: Brent Mack
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: 778-370-3279
Project	: Weekly Bottom Ash - Suite	Date Samples Received	: 18-Apr-2023 12:50
PO	: VANCO0000051998	Date Analysis Commenced	: 19-Apr-2023
C-O-C number	: ----	Issue Date	: 26-Apr-2023 14:37
Sampler	: ---- ----		
Site	: ----		
Quote number	: Standing Offer (BC work)		
No. of samples received	: 12		
No. of samples analysed	: 12		

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 Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Vancouver Organics, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Parnian Sane	Analyst	Vancouver Metals, Burnaby, British Columbia



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 Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

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

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



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
Physical Tests (QC Lot: 903791)											
KS2301177-001	Anonymous	pH (1:2 soil:water)	----	E108	0.10	pH units	6.24	6.25	0.2%	5%	----
Physical Tests (QC Lot: 903795)											
VA23A8289-001	BA2315-A-1	Moisture	----	E144	0.25	%	22.3	21.5	3.64%	20%	----
Metals (QC Lot: 903789)											
KS2301177-001	Anonymous	Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
Metals (QC Lot: 903790)											
KS2301177-001	Anonymous	Aluminum	7429-90-5	E440	50	mg/kg	23700	23100	2.59%	40%	----
		Antimony	7440-36-0	E440	0.10	mg/kg	0.21	0.24	0.03	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	3.88	3.78	2.66%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	163	160	1.79%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.63	0.62	0.004	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.20	mg/kg	0.28	0.29	0.005	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.133	0.207	43.1%	30%	DUP-H
		Calcium	7440-70-2	E440	50	mg/kg	4900	4840	1.16%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	49.8	48.8	2.12%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	16.4	16.1	2.02%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	35.6	36.2	1.75%	30%	----
		Iron	7439-89-6	E440	50	mg/kg	33900	33800	0.411%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	11.0	11.2	2.12%	40%	----
		Lithium	7439-93-2	E440	2.0	mg/kg	32.4	32.0	0.994%	30%	----
		Magnesium	7439-95-4	E440	20	mg/kg	13700	13500	1.72%	30%	----
		Manganese	7439-96-5	E440	1.0	mg/kg	525	515	1.86%	30%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	1.42	1.43	0.207%	40%	----
		Nickel	7440-02-0	E440	0.50	mg/kg	39.4	39.4	0.0466%	30%	----
		Phosphorus	7723-14-0	E440	50	mg/kg	1040	1080	3.45%	30%	----
Potassium	7440-09-7	E440	100	mg/kg	6610	6620	0.0941%	40%	----		
Selenium	7782-49-2	E440	0.20	mg/kg	0.40	0.40	0.003	Diff <2x LOR	----		
Silver	7440-22-4	E440	0.10	mg/kg	0.10	0.10	0.0009	Diff <2x LOR	----		
Sodium	7440-23-5	E440	50	mg/kg	380	342	10.5%	40%	----		



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
Metals (QC Lot: 903790) - continued											
KS2301177-001	Anonymous	Strontium	7440-24-6	E440	0.50	mg/kg	37.2	35.5	4.80%	40%	----
		Sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.291	0.286	0.005	Diff <2x LOR	----
		Tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	----
		Titanium	7440-32-6	E440	1.0	mg/kg	1680	1620	3.70%	40%	----
		Tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	2.12	2.12	0.145%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	52.0	51.2	1.71%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	77.4	78.4	1.25%	30%	----
		Zirconium	7440-67-7	E440	1.0	mg/kg	3.1	2.9	0.1	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
Physical Tests (QCLot: 903795)						
Moisture	---	E144	0.25	%	<0.25	---
Metals (QCLot: 903789)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	---
Metals (QCLot: 903790)						
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	---



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 903790) - continued						
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	----
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	----
Metals (QCLot: 906816)						
Silver	7440-22-4	E440.Ag	0.1	mg/kg	<0.10	----
TCLP Metals (QCLot: 904249)						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP Metals (QCLot: 904250)						
Antimony, TCLP	7440-36-0	E444	0.1	mg/L	<0.10	----
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	----
Uranium, TCLP	7440-61-1	E444	0.2	mg/L	<0.20	----
Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	----
Zinc, TCLP	7440-66-6	E444	0.5	mg/L	<0.50	----
Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	----
TCLP Metals (QCLot: 905370)						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP Metals (QCLot: 905371)						



Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
TCLP Metals (QCLot: 905371) - continued						
Antimony, TCLP	7440-36-0	E444	0.1	mg/L	<0.10	----
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	----
Uranium, TCLP	7440-61-1	E444	0.2	mg/L	<0.20	----
Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	----
Zinc, TCLP	7440-66-6	E444	0.5	mg/L	<0.50	----
Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	----



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				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 903791)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	100	95.0	105	----
Physical Tests (QCLot: 903795)									
Moisture	----	E144	0.25	%	50 %	99.8	90.0	110	----
Metals (QCLot: 903789)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	102	80.0	120	----
Metals (QCLot: 903790)									
Aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	106	80.0	120	----
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	# 125	80.0	120	MES
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	108	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	102	80.0	120	----
Bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	110	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	96.4	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	102	80.0	120	----
Calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	101	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	100	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	100	80.0	120	----
Iron	7439-89-6	E440	50	mg/kg	100 mg/kg	92.4	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	109	80.0	120	----
Lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	99.0	80.0	120	----
Magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	117	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	104	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	100	80.0	120	----
Phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	103	80.0	120	----
Potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	116	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	94.1	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	98.6	80.0	120	----
Sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	102	80.0	120	----



Sub-Matrix: Soil/Solid					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 903790) - continued									
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	113	80.0	120	----
Tin	7440-31-5	E440	2	mg/kg	50 mg/kg	101	80.0	120	----
Titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	104	80.0	120	----
Tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	100	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	98.0	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	102	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	99.3	80.0	120	----
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	93.8	80.0	120	----
Metals (QCLot: 906816)									
Silver	7440-22-4	E440.Ag	0.1	mg/kg	10 mg/kg	87.0	80.0	120	----

Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



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

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
TCLP Metals (QCLot: 904249)										
VA23A8289-001	BA2315-A-1	Mercury, TCLP	7439-97-6	E512	0.0010 mg/L	0.001 mg/L	99.6	50.0	140	----
TCLP Metals (QCLot: 904250)										
VA23A8289-001	BA2315-A-1	Antimony, TCLP	7440-36-0	E444	4.65 mg/L	5 mg/L	93.0	50.0	140	----
		Arsenic, TCLP	7440-38-2	E444	4.6 mg/L	5 mg/L	91.6	50.0	140	----
		Barium, TCLP	7440-39-3	E444	11.5 mg/L	12.5 mg/L	92.3	50.0	140	----
		Beryllium, TCLP	7440-41-7	E444	0.215 mg/L	0.25 mg/L	86.2	50.0	140	----
		Boron, TCLP	7440-42-8	E444	8.93 mg/L	10 mg/L	89.3	50.0	140	----
		Cadmium, TCLP	7440-43-9	E444	0.216 mg/L	0.25 mg/L	86.4	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	1.04 mg/L	1.25 mg/L	83.3	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	2.08 mg/L	2.5 mg/L	83.2	50.0	140	----
		Iron, TCLP	7439-89-6	E444	214 mg/L	250 mg/L	85.6	50.0	140	----
		Lead, TCLP	7439-92-1	E444	8.73 mg/L	10 mg/L	87.3	50.0	140	----
		Magnesium, TCLP	7439-95-4	E444	241 mg/L	250 mg/L	96.5	50.0	140	----
		Nickel, TCLP	7440-02-0	E444	2.10 mg/L	2.5 mg/L	83.9	50.0	140	----
		Selenium, TCLP	7782-49-2	E444	4.47 mg/L	5 mg/L	89.4	50.0	140	----
		Silver, TCLP	7440-22-4	E444	0.100 mg/L	0.1 mg/L	99.9	50.0	140	----
		Thallium, TCLP	7440-28-0	E444	4.4 mg/L	5 mg/L	87.7	50.0	140	----
		Uranium, TCLP	7440-61-1	E444	4.34 mg/L	5 mg/L	86.9	50.0	150	----
		Vanadium, TCLP	7440-62-2	E444	0.66 mg/L	0.75 mg/L	88.0	50.0	140	----
		Zinc, TCLP	7440-66-6	E444	ND mg/L	10 mg/L	ND	50.0	140	----
		Zirconium, TCLP	7440-67-7	E444	8 mg/L	10 mg/L	81.9	50.0	150	----
TCLP Metals (QCLot: 905370)										
VA23A8289-002	BA2315-A-2	Mercury, TCLP	7439-97-6	E512	0.0010 mg/L	0.001 mg/L	97.0	50.0	140	----
TCLP Metals (QCLot: 905371)										
VA23A8289-002	BA2315-A-2	Antimony, TCLP	7440-36-0	E444	4.72 mg/L	5 mg/L	94.3	50.0	140	----
		Arsenic, TCLP	7440-38-2	E444	4.8 mg/L	5 mg/L	96.0	50.0	140	----
		Barium, TCLP	7440-39-3	E444	12.0 mg/L	12.5 mg/L	96.4	50.0	140	----
		Beryllium, TCLP	7440-41-7	E444	0.228 mg/L	0.25 mg/L	91.4	50.0	140	----



Sub-Matrix: Soil/Solid

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
TCLP Metals (QCLot: 905371) - continued										
VA23A8289-002	BA2315-A-2	Boron, TCLP	7440-42-8	E444	8.52 mg/L	10 mg/L	85.2	50.0	140	----
		Cadmium, TCLP	7440-43-9	E444	0.230 mg/L	0.25 mg/L	91.9	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	1.15 mg/L	1.25 mg/L	92.1	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	2.18 mg/L	2.5 mg/L	87.1	50.0	140	----
		Iron, TCLP	7439-89-6	E444	214 mg/L	250 mg/L	85.4	50.0	140	----
		Lead, TCLP	7439-92-1	E444	8.70 mg/L	10 mg/L	87.0	50.0	140	----
		Magnesium, TCLP	7439-95-4	E444	238 mg/L	250 mg/L	95.2	50.0	140	----
		Nickel, TCLP	7440-02-0	E444	2.24 mg/L	2.5 mg/L	89.7	50.0	140	----
		Selenium, TCLP	7782-49-2	E444	4.60 mg/L	5 mg/L	92.0	50.0	140	----
		Silver, TCLP	7440-22-4	E444	0.096 mg/L	0.1 mg/L	95.8	50.0	140	----
		Thallium, TCLP	7440-28-0	E444	4.3 mg/L	5 mg/L	86.5	50.0	140	----
		Uranium, TCLP	7440-61-1	E444	4.46 mg/L	5 mg/L	89.2	50.0	150	----
		Vanadium, TCLP	7440-62-2	E444	0.70 mg/L	0.75 mg/L	92.8	50.0	140	----
		Zinc, TCLP	7440-66-6	E444	ND mg/L	10 mg/L	ND	50.0	140	----
		Zirconium, TCLP	7440-67-7	E444	8 mg/L	10 mg/L	82.2	50.0	150	----



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:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Metals (QCLot: 903789)									
	SCP SS-2	Mercury	7439-97-6	E510	0.059 mg/kg	99.0	70.0	130	----
Metals (QCLot: 903790)									
	SCP SS-2	Aluminum	7429-90-5	E440	9817 mg/kg	118	70.0	130	----
	SCP SS-2	Antimony	7440-36-0	E440	3.99 mg/kg	100	70.0	130	----
	SCP SS-2	Arsenic	7440-38-2	E440	3.73 mg/kg	102	70.0	130	----
	SCP SS-2	Barium	7440-39-3	E440	105 mg/kg	100	70.0	130	----
	SCP SS-2	Beryllium	7440-41-7	E440	0.349 mg/kg	104	70.0	130	----
	SCP SS-2	Boron	7440-42-8	E440	8.5 mg/kg	114	40.0	160	----
	SCP SS-2	Cadmium	7440-43-9	E440	0.91 mg/kg	100	70.0	130	----
	SCP SS-2	Calcium	7440-70-2	E440	31082 mg/kg	111	70.0	130	----
	SCP SS-2	Chromium	7440-47-3	E440	101 mg/kg	113	70.0	130	----
	SCP SS-2	Cobalt	7440-48-4	E440	6.9 mg/kg	102	70.0	130	----
	SCP SS-2	Copper	7440-50-8	E440	123 mg/kg	99.2	70.0	130	----
	SCP SS-2	Iron	7439-89-6	E440	23558 mg/kg	102	70.0	130	----
	SCP SS-2	Lead	7439-92-1	E440	267 mg/kg	115	70.0	130	----
	SCP SS-2	Lithium	7439-93-2	E440	9.5 mg/kg	103	70.0	130	----
	SCP SS-2	Magnesium	7439-95-4	E440	5509 mg/kg	119	70.0	130	----
	SCP SS-2	Manganese	7439-96-5	E440	269 mg/kg	107	70.0	130	----
	SCP SS-2	Molybdenum	7439-98-7	E440	1.03 mg/kg	102	70.0	130	----
	SCP SS-2	Nickel	7440-02-0	E440	26.7 mg/kg	101	70.0	130	----
	SCP SS-2	Phosphorus	7723-14-0	E440	752 mg/kg	104	70.0	130	----
	SCP SS-2	Potassium	7440-09-7	E440	1587 mg/kg	113	70.0	130	----
	SCP SS-2	Sodium	7440-23-5	E440	797 mg/kg	99.4	70.0	130	----
	SCP SS-2	Strontium	7440-24-6	E440	86.1 mg/kg	108	70.0	130	----
	SCP SS-2	Thallium	7440-28-0	E440	0.0786 mg/kg	93.8	40.0	160	----
	SCP SS-2	Tin	7440-31-5	E440	10.6 mg/kg	96.2	70.0	130	----
	SCP SS-2	Titanium	7440-32-6	E440	839 mg/kg	118	70.0	130	----

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 Work Order : VA23A8289
 Client : Covanta Burnaby Renewable Energy, ULC
 Project : Weekly Bottom Ash - Suite



Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Metals (QCLot: 903790) - continued									
	SCP SS-2	Uranium	7440-61-1	E440	0.52 mg/kg	99.6	70.0	130	----
	SCP SS-2	Vanadium	7440-62-2	E440	32.7 mg/kg	105	70.0	130	----
	SCP SS-2	Zinc	7440-66-6	E440	297 mg/kg	99.7	70.0	130	----
	SCP SS-2	Zirconium	7440-67-7	E440	5.73 mg/kg	91.4	70.0	130	----



Chain of Custody / Analytical Request Form

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COC # _____

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

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

Lab/Work Order # (lab use only)	ALS Contact:	Sampler:				MET-TCLP-VA (all metals, Hg)		MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)		Number of Containers
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type								
1	BA2315-A-1	12-Apr-23	9:00	Soil	X	X				X		1
2	BA2315-A-2	12-Apr-23	9:00	Soil	X	X				X		1
3	BA2315-A-3	12-Apr-23	9:00	Soil	X	X				X		1
4	BA2315-A-4	12-Apr-23	9:00	Soil	X	X				X		1
5	BA2315-A-5	12-Apr-23	9:00	Soil	X	X				X		1
6	BA2315-A-6	12-Apr-23	9:00	Soil	X	X				X		1
7	BA2315-A-7	12-Apr-23	9:00	Soil	X	X				X		1
8	BA2315-A-8	12-Apr-23	9:00	Soil	X	X				X		1
9	BA2315-A-9	12-Apr-23	9:00	Soil	X	X				X		1
10	BA2315-A-10	12-Apr-23	9:00	Soil	X	X				X		1
11	BA2315-A-11	12-Apr-23	9:00	Soil	X	X				X		1
12	BA2315-A-12	12-Apr-23	9:00	Soil	X	X				X		1

Environmental Division
Vancouver
Work Order Reference
VA23A8289

Telephone: +1 604 253 4166

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)			SHIPMENT VERIFICATION (lab use only)				
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
<i>[Signature]</i>	18 APR 23	08:00	<i>[Signature]</i>	APR 18 2023	1250PM	15 °C				