metrovancouver

Bottom Ash Data

2024 Week 15

The following analytical report represents bottom ash composite results for week 15 of 2024 (April 7, 2024 to April 13, 2024).

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	: **VA24A8085**	Page	: 1 of 11
Client	: **Covanta Burnaby Renewable Energy, ULC**	Laboratory	: ALS Environmental - Vancouver
Contact	: Nicole Victor	Account Manager	: Ian Chen
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Weekly Bottom Ash - Suite	Date Samples Received	: 16-Apr-2024 11:10
PO	: VANCO0000052919	Date Analysis Commenced	: 19-Apr-2024
C-O-C number	: ----	Issue Date	: 23-Apr-2024 23:02
Sampler	: ----		
Site	: ----		
Quote number	: Covanta Burnaby Standing Offer 2024		
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 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.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Organics, 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).

Unit	*Description*
%	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**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BA2415-A-1	BA2415-A-2	BA2415-A-3	BA2415-A-4	BA2415-A-5
					Client sampling date / time	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00
						VA24A8085-001	VA24A8085-002	VA24A8085-003	VA24A8085-004	VA24A8085-005
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.25	%		22.8	23.7	23.2	23.3	23.8
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		12.0	12.0	11.9	11.9	11.9
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg		35000	42100	43600	31400	42600
Antimony	7440-36-0	E440/VA	0.10	mg/kg		125	145	100	129	119
Arsenic	7440-38-2	E440/VA	0.10	mg/kg		44.9	32.8	26.1	28.7	25.8
Barium	7440-39-3	E440/VA	0.50	mg/kg		510	410	493	423	465
Beryllium	7440-41-7	E440/VA	0.10	mg/kg		0.39	0.34	0.34	0.32	0.36
Bismuth	7440-69-9	E440/VA	0.20	mg/kg		11.5	11.4	8.45	11.2	14.1
Boron	7440-42-8	E440/VA	5.0	mg/kg		377	179	292	173	197
Cadmium	7440-43-9	E440/VA	0.020	mg/kg		13.6	14.8	10.5	14.1	14.9
Calcium	7440-70-2	E440/VA	50	mg/kg		158000	163000	134000	152000	151000
Chromium	7440-47-3	E440/VA	0.50	mg/kg		168	246	165	146	146
Cobalt	7440-48-4	E440/VA	0.10	mg/kg		231	91.4	43.7	34.3	2820
Copper	7440-50-8	E440/VA	0.50	mg/kg		1520	3510	1990	2410	3150
Iron	7439-89-6	E440/VA	50	mg/kg		41800	44000	99400	47600	38400
Lead	7439-92-1	E440/VA	0.50	mg/kg		367	594	256	362	334
Lithium	7439-93-2	E440/VA	2.0	mg/kg		64.3	27.5	24.6	25.2	139
Magnesium	7439-95-4	E440/VA	20	mg/kg		12200	12500	10200	12200	11500
Manganese	7439-96-5	E440/VA	1.0	mg/kg		935	791	1060	690	740
Mercury	7439-97-6	E510/VA	0.0500	mg/kg		0.0736	0.0642	0.0784	0.0545	0.220
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg		22.6	25.2	20.3	22.1	20.6
Nickel	7440-02-0	E440/VA	0.50	mg/kg		149	331	126	123	132
Phosphorus	7723-14-0	E440/VA	50	mg/kg		9430	11600	7910	9740	10100
Potassium	7440-09-7	E440/VA	100	mg/kg		7830	7120	6150	7280	7160
Selenium	7782-49-2	E440/VA	0.20	mg/kg		0.50	0.65	0.40	0.70	0.50
Silver	7440-22-4	E440/VA	0.10	mg/kg		5.59	7.76	5.80	7.15	9.10
Sodium	7440-23-5	E440/VA	50	mg/kg		20800	19000	17600	19100	18700
Strontium	7440-24-6	E440/VA	0.50	mg/kg		342	308	250	402	286

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BA2415-A-1	BA2415-A-2	BA2415-A-3	BA2415-A-4	BA2415-A-5
					Client sampling date / time	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00
						VA24A8085-001	VA24A8085-002	VA24A8085-003	VA24A8085-004	VA24A8085-005
						Result	Result	Result	Result	Result
Metals										
Sulfur	7704-34-9	E440/VA	1000	mg/kg		15300	17300	13100	15100	15800
Thallium	7440-28-0	E440/VA	0.050	mg/kg		0.056	0.066	0.053	0.062	0.061
Tin	7440-31-5	E440/VA	2.0	mg/kg		109	134	235	216	99.8
Titanium	7440-32-6	E440/VA	1.0	mg/kg		265	330	473	177	239
Tungsten	7440-33-7	E440/VA	0.50	mg/kg		29.6	38.3	29.2	47.9	42.9
Uranium	7440-61-1	E440/VA	0.050	mg/kg		2.98	3.30	2.42	3.09	3.07
Vanadium	7440-62-2	E440/VA	0.20	mg/kg		39.7	40.2	38.6	35.9	38.0
Zinc	7440-66-6	E440/VA	2.0	mg/kg		4190	4270	5050	4260	3770
Zirconium	7440-67-7	E440/VA	1.0	mg/kg		2.7	3.7	2.2	3.4	3.5
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units		11.9	11.8	11.8	11.9	11.9
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units		8.61	8.24	7.56	8.11	7.80
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units		2.85	2.85	2.85	2.85	2.85
pH, TCLP final	----	EPP444/VA	0.010	pH units		7.67	7.31	7.64	7.02	7.06
Antimony, TCLP	7440-36-0	E444/VA	1.00	mg/L		<1.00	<1.00	<1.00	<1.00	<1.00
Arsenic, TCLP	7440-38-2	E444/VA	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Barium, TCLP	7440-39-3	E444/VA	2.5	mg/L		<2.5	<2.5	<2.5	<2.5	<2.5
Beryllium, TCLP	7440-41-7	E444/VA	0.025	mg/L		<0.025	<0.025	<0.025	<0.025	<0.025
Boron, TCLP	7440-42-8	E444/VA	0.50	mg/L		2.09	2.11	2.27	2.21	2.33
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L		<0.050	0.082	<0.050	0.091	0.120
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L		2090	2090	2120	2110	2250
Chromium, TCLP	7440-47-3	E444/VA	0.25	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25
Cobalt, TCLP	7440-48-4	E444/VA	0.050	mg/L		0.218	0.736	0.262	0.470	0.671
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L		0.576	0.548	0.608	0.626	0.523
Iron, TCLP	7439-89-6	E444/VA	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
Lead, TCLP	7439-92-1	E444/VA	0.25	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25
Magnesium, TCLP	7439-95-4	E444/VA	2.5	mg/L		102	106	104	107	115
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L		<0.25	<0.25	<0.25	0.36	0.41
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2415-A-1	BA2415-A-2	BA2415-A-3	BA2415-A-4	BA2415-A-5
					Client sampling date / time	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24A8085-001	VA24A8085-002	VA24A8085-003	VA24A8085-004	VA24A8085-005
						Result	Result	Result	Result	Result
TCLP Metals										
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L		<0.20	<0.20	<0.20	<0.20	<0.20
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L		<0.15	<0.15	<0.15	<0.15	<0.15
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L		<0.50	1.64	<0.50	4.16	4.34
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L		<10	<10	<10	<10	<10

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BA2415-A-6	BA2415-A-7	BA2415-A-8	BA2415-A-9	BA2415-A-10
					Client sampling date / time	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00
						VA24A8085-006	VA24A8085-007	VA24A8085-008	VA24A8085-009	VA24A8085-010
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.25	%		22.7	22.9	22.6	23.2	22.8
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		12.0	12.1	11.8	12.0	12.0
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg		31900	45900	43700	35400	31800
Antimony	7440-36-0	E440/VA	0.10	mg/kg		150	117	124	133	131
Arsenic	7440-38-2	E440/VA	0.10	mg/kg		30.7	24.4	30.6	27.8	26.5
Barium	7440-39-3	E440/VA	0.50	mg/kg		455	531	505	466	488
Beryllium	7440-41-7	E440/VA	0.10	mg/kg		0.34	0.36	0.36	0.34	0.34
Bismuth	7440-69-9	E440/VA	0.20	mg/kg		13.1	10.4	10.7	12.1	11.0
Boron	7440-42-8	E440/VA	5.0	mg/kg		183	183	225	228	200
Cadmium	7440-43-9	E440/VA	0.020	mg/kg		16.1	12.2	13.8	15.3	12.5
Calcium	7440-70-2	E440/VA	50	mg/kg		162000	160000	159000	156000	151000
Chromium	7440-47-3	E440/VA	0.50	mg/kg		167	145	202	258	126
Cobalt	7440-48-4	E440/VA	0.10	mg/kg		93.7	93.0	223	144	693
Copper	7440-50-8	E440/VA	0.50	mg/kg		2920	1080	1740	1600	1570
Iron	7439-89-6	E440/VA	50	mg/kg		53900	39400	50100	65200	74300
Lead	7439-92-1	E440/VA	0.50	mg/kg		421	370	390	386	1010
Lithium	7439-93-2	E440/VA	2.0	mg/kg		27.4	30.6	29.8	26.8	82.3
Magnesium	7439-95-4	E440/VA	20	mg/kg		11900	12400	12700	11800	11600
Manganese	7439-96-5	E440/VA	1.0	mg/kg		928	863	1050	759	841
Mercury	7439-97-6	E510/VA	0.0500	mg/kg		0.0909	0.0838	0.0630	0.0626	0.0640
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg		32.1	25.0	45.1	27.3	23.1
Nickel	7440-02-0	E440/VA	0.50	mg/kg		193	192	244	349	156
Phosphorus	7723-14-0	E440/VA	50	mg/kg		9670	8900	10100	9370	8720
Potassium	7440-09-7	E440/VA	100	mg/kg		7520	7080	7870	7300	6820
Selenium	7782-49-2	E440/VA	0.20	mg/kg		0.60	0.51	0.48	0.55	0.59
Silver	7440-22-4	E440/VA	0.10	mg/kg		9.61	11.2	9.84	7.16	15.9
Sodium	7440-23-5	E440/VA	50	mg/kg		19500	19500	20300	19500	17800
Strontium	7440-24-6	E440/VA	0.50	mg/kg		312	318	304	329	288
Sulfur	7704-34-9	E440/VA	1000	mg/kg		17000	15400	16200	16100	13600

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BA2415-A-6	BA2415-A-7	BA2415-A-8	BA2415-A-9	BA2415-A-10
					Client sampling date / time	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00
						VA24A8085-006	VA24A8085-007	VA24A8085-008	VA24A8085-009	VA24A8085-010
						Result	Result	Result	Result	Result
Metals										
Thallium	7440-28-0	E440/VA	0.050	mg/kg		0.069	0.068	0.064	0.061	0.057
Tin	7440-31-5	E440/VA	2.0	mg/kg		321	101	104	128	117
Titanium	7440-32-6	E440/VA	1.0	mg/kg		291	359	332	343	326
Tungsten	7440-33-7	E440/VA	0.50	mg/kg		61.0	48.1	43.2	48.6	43.3
Uranium	7440-61-1	E440/VA	0.050	mg/kg		3.38	3.02	3.13	3.24	2.78
Vanadium	7440-62-2	E440/VA	0.20	mg/kg		38.9	40.4	41.4	38.7	34.5
Zinc	7440-66-6	E440/VA	2.0	mg/kg		4260	3470	4660	4790	5000
Zirconium	7440-67-7	E440/VA	1.0	mg/kg		2.1	2.5	2.6	2.2	2.1
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units		11.9	11.9	11.9	11.9	11.9
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units		8.14	8.13	8.59	7.88	7.90
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units		2.85	2.85	2.85	2.85	2.85
pH, TCLP final	----	EPP444/VA	0.010	pH units		6.96	7.24	7.08	6.88	7.16
Antimony, TCLP	7440-36-0	E444/VA	1.00	mg/L		<1.00	<1.00	<1.00	<1.00	<1.00
Arsenic, TCLP	7440-38-2	E444/VA	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Barium, TCLP	7440-39-3	E444/VA	2.5	mg/L		<2.5	<2.5	<2.5	<2.5	<2.5
Beryllium, TCLP	7440-41-7	E444/VA	0.025	mg/L		<0.025	<0.025	<0.025	<0.025	<0.025
Boron, TCLP	7440-42-8	E444/VA	0.50	mg/L		2.28	2.16	2.12	2.25	2.12
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L		0.145	0.460	0.075	0.121	0.072
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L		2140	2140	2110	2190	2110
Chromium, TCLP	7440-47-3	E444/VA	0.25	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25
Cobalt, TCLP	7440-48-4	E444/VA	0.050	mg/L		0.419	1.03	0.817	0.501	0.363
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L		0.591	0.566	0.541	0.543	0.611
Iron, TCLP	7439-89-6	E444/VA	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
Lead, TCLP	7439-92-1	E444/VA	0.25	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25
Magnesium, TCLP	7439-95-4	E444/VA	2.5	mg/L		111	106	106	114	106
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L		0.29	<0.25	0.30	0.43	<0.25
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2415-A-6	BA2415-A-7	BA2415-A-8	BA2415-A-9	BA2415-A-10
					Client sampling date / time	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00	10-Apr-2024 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24A8085-006	VA24A8085-007	VA24A8085-008	VA24A8085-009	VA24A8085-010
						Result	Result	Result	Result	Result
TCLP Metals										
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L		<0.20	<0.20	<0.20	<0.20	<0.20
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L		<0.15	<0.15	<0.15	<0.15	<0.15
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L		4.52	2.56	3.02	10.5	2.94
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L		<10	<10	<10	<10	<10

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BA2415-A-11	BA2415-A-12	----	----	----
					Client sampling date / time	10-Apr-2024 09:00	10-Apr-2024 09:00	----	----	----
						VA24A8085-011	VA24A8085-012	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
Moisture	----	E144/VA	0.25	%		23.5	24.0	----	----	----
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		12.0	12.1	----	----	----
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg		33500	40200	----	----	----
Antimony	7440-36-0	E440/VA	0.10	mg/kg		117	121	----	----	----
Arsenic	7440-38-2	E440/VA	0.10	mg/kg		26.7	40.8	----	----	----
Barium	7440-39-3	E440/VA	0.50	mg/kg		505	489	----	----	----
Beryllium	7440-41-7	E440/VA	0.10	mg/kg		0.33	0.38	----	----	----
Bismuth	7440-69-9	E440/VA	0.20	mg/kg		340	15.6	----	----	----
Boron	7440-42-8	E440/VA	5.0	mg/kg		231	211	----	----	----
Cadmium	7440-43-9	E440/VA	0.020	mg/kg		10.3	12.2	----	----	----
Calcium	7440-70-2	E440/VA	50	mg/kg		149000	166000	----	----	----
Chromium	7440-47-3	E440/VA	0.50	mg/kg		161	232	----	----	----
Cobalt	7440-48-4	E440/VA	0.10	mg/kg		47.5	132	----	----	----
Copper	7440-50-8	E440/VA	0.50	mg/kg		1870	1860	----	----	----
Iron	7439-89-6	E440/VA	50	mg/kg		49500	47800	----	----	----
Lead	7439-92-1	E440/VA	0.50	mg/kg		351	400	----	----	----
Lithium	7439-93-2	E440/VA	2.0	mg/kg		23.2	36.3	----	----	----
Magnesium	7439-95-4	E440/VA	20	mg/kg		10900	12400	----	----	----
Manganese	7439-96-5	E440/VA	1.0	mg/kg		736	710	----	----	----
Mercury	7439-97-6	E510/VA	0.0500	mg/kg		0.0560	0.0703	----	----	----
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg		26.5	33.2	----	----	----
Nickel	7440-02-0	E440/VA	0.50	mg/kg		274	187	----	----	----
Phosphorus	7723-14-0	E440/VA	50	mg/kg		10600	8610	----	----	----
Potassium	7440-09-7	E440/VA	100	mg/kg		7080	7540	----	----	----
Selenium	7782-49-2	E440/VA	0.20	mg/kg		0.55	0.60	----	----	----
Silver	7440-22-4	E440/VA	0.10	mg/kg		>36.7	7.38	----	----	----
Sodium	7440-23-5	E440/VA	50	mg/kg		19600	20000	----	----	----
Strontium	7440-24-6	E440/VA	0.50	mg/kg		274	339	----	----	----
Sulfur	7704-34-9	E440/VA	1000	mg/kg		13400	14700	----	----	----

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2415-A-11	BA2415-A-12	----	----	----
					Client sampling date / time	10-Apr-2024 09:00	10-Apr-2024 09:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24A8085-011	VA24A8085-012	--------	--------	--------
						Result	Result	----	----	----
Metals										
Thallium	7440-28-0	E440/VA	0.050	mg/kg		0.054	0.054	----	----	----
Tin	7440-31-5	E440/VA	2.0	mg/kg		116	108	----	----	----
Titanium	7440-32-6	E440/VA	1.0	mg/kg		263	345	----	----	----
Tungsten	7440-33-7	E440/VA	0.50	mg/kg		173	35.1	----	----	----
Uranium	7440-61-1	E440/VA	0.050	mg/kg		2.70	2.95	----	----	----
Vanadium	7440-62-2	E440/VA	0.20	mg/kg		35.8	40.1	----	----	----
Zinc	7440-66-6	E440/VA	2.0	mg/kg		3770	3670	----	----	----
Zirconium	7440-67-7	E440/VA	1.0	mg/kg		2.8	2.7	----	----	----
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units		12.0	11.9	----	----	----
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units		8.28	8.35	----	----	----
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units		2.85	2.85	----	----	----
pH, TCLP final	----	EPP444/VA	0.010	pH units		7.24	7.42	----	----	----
Antimony, TCLP	7440-36-0	E444/VA	1.00	mg/L		<1.00	<1.00	----	----	----
Arsenic, TCLP	7440-38-2	E444/VA	1.0	mg/L		<1.0	<1.0	----	----	----
Barium, TCLP	7440-39-3	E444/VA	2.5	mg/L		<2.5	<2.5	----	----	----
Beryllium, TCLP	7440-41-7	E444/VA	0.025	mg/L		<0.025	<0.025	----	----	----
Boron, TCLP	7440-42-8	E444/VA	0.50	mg/L		2.10	2.11	----	----	----
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L		0.105	<0.050	----	----	----
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L		2120	2150	----	----	----
Chromium, TCLP	7440-47-3	E444/VA	0.25	mg/L		<0.25	<0.25	----	----	----
Cobalt, TCLP	7440-48-4	E444/VA	0.050	mg/L		0.297	0.435	----	----	----
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L		0.608	0.523	----	----	----
Iron, TCLP	7439-89-6	E444/VA	5.0	mg/L		<5.0	<5.0	----	----	----
Lead, TCLP	7439-92-1	E444/VA	0.25	mg/L		<0.25	<0.25	----	----	----
Magnesium, TCLP	7439-95-4	E444/VA	2.5	mg/L		103	106	----	----	----
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L		<0.25	<0.25	----	----	----
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L		<0.10	<0.10	----	----	----
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L		<0.050	<0.050	----	----	----

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2415-A-11	BA2415-A-12	----	----	----
					Client sampling date / time	10-Apr-2024 09:00	10-Apr-2024 09:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24A8085-011	VA24A8085-012	--------	--------	--------
						Result	Result	----	----	----
TCLP Metals										
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L		<1.0	<1.0	----	----	----
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L		<0.20	<0.20	----	----	----
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L		<0.15	<0.15	----	----	----
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L		3.55	0.74	----	----	----
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L		<10	<10	----	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24A8085**	Page	: 1 of 16
Client	: **Covanta Burnaby Renewable Energy, ULC**	Laboratory	: ALS Environmental - Vancouver
Contact	: Nicole Victor	Account Manager	: Ian Chen
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Weekly Bottom Ash - Suite	Date Samples Received	: 16-Apr-2024 11:10
PO	: VANCO0000052919	Issue Date	: 23-Apr-2024 23:02
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: Covanta Burnaby Standing Offer 2024		
No. of samples received	: 12		
No. of samples analysed	: 12		

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 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
Duplicate (DUP) RPDs								
Metals	Anonymous	Anonymous	Cadmium	7440-43-9	E440	0.047 % DUP-H, J	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).
Metals	Anonymous	Anonymous	Calcium	7440-70-2	E440	37.3 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	Anonymous	Anonymous	Chromium	7440-47-3	E440	61.4 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	Anonymous	Anonymous	Cobalt	7440-48-4	E440	34.5 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	Anonymous	Anonymous	Magnesium	7439-95-4	E440	40.1 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	Anonymous	Anonymous	Nickel	7440-02-0	E440	68.4 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	Anonymous	Anonymous	Phosphorus	7723-14-0	E440	33.5 % 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.*
J	*Duplicate results and limits are expressed in terms of absolute difference.*

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 : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-1	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-10	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-11	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-12	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-2	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-3	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-4	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-5	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-6	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-7	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-8	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2415-A-9	E510	10-Apr-2024	23-Apr-2024	28 days	13 days	✓	23-Apr-2024	28 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-1	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-10	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-11	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-12	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / 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 ICPMS										
LDPE bag BA2415-A-2	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-3	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-4	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-5	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-6	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-7	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-8	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2415-A-9	E440	10-Apr-2024	23-Apr-2024	180 days	13 days	✓	23-Apr-2024	180 days	13 days	✓
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-1	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-10	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-11	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-12	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-2	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-3	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-4	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-5	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-6	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-7	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-8	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2415-A-9	E144	10-Apr-2024	----	----	----		19-Apr-2024	----	9 days	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-1	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-10	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-11	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-12	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-2	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-3	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-4	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / 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 BA2415-A-5	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-6	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-7	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-8	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2415-A-9	E108	10-Apr-2024	23-Apr-2024	30 days	13 days	✓	23-Apr-2024	30 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-1	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-10	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-11	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-12	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-2	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-3	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-4	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-5	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-6	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-7	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-8	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2415-A-9	E512	19-Apr-2024	20-Apr-2024	37 days	10 days	✓	20-Apr-2024	37 days	10 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-1	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-10	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-11	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-12	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-2	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-3	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-4	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-5	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-6	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-7	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-8	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2415-A-9	E444	19-Apr-2024	20-Apr-2024	189 days	10 days	✓	21-Apr-2024	189 days	11 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2415-A-1	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 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) BA2415-A-10	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 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) BA2415-A-11	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 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) BA2415-A-12	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 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) BA2415-A-2	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 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) BA2415-A-3	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 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) BA2415-A-4	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 days	9 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / 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) BA2415-A-5	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 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) BA2415-A-6	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 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) BA2415-A-7	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 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) BA2415-A-8	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 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) BA2415-A-9	EPP444	10-Apr-2024	19-Apr-2024	----	----		----	28 days	9 days	✓

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			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Mercury by CVAAS (TCLP)	E512	1410321	1	12	8.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1409926	1	18	5.5	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1410322	1	12	8.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1409927	1	19	5.2	5.0	✓
Moisture Content by Gravimetry	E144	1409931	1	18	5.5	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1409928	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Mercury in Soil/Solid by CVAAS	E510	1409926	2	18	11.1	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1409927	2	19	10.5	10.0	✓
Moisture Content by Gravimetry	E144	1409931	1	18	5.5	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1409928	1	19	5.2	5.0	✓
Method Blanks (MB)							
Mercury by CVAAS (TCLP)	E512	1410321	1	12	8.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1409926	1	18	5.5	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1410322	1	12	8.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1409927	1	19	5.2	5.0	✓
Moisture Content by Gravimetry	E144	1409931	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Mercury by CVAAS (TCLP)	E512	1410321	1	12	8.3	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1410322	1	12	8.3	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 ALS Environmental - Vancouver	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 ºC) 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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 HNO3 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.
Metals by CRC ICPMS (TCLP)	E444 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Mercury by CVAAS (TCLP)	E512 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Metals and Mercury	EP440 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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	: **VA24A8085**	Page	: 1 of 12
Client	: Covanta Burnaby Renewable Energy, ULC	Laboratory	: ALS Environmental - Vancouver
Contact	: Nicole Victor	Account Manager	: Ian Chen
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Weekly Bottom Ash - Suite	Date Samples Received	: 16-Apr-2024 11:10
PO	: VANCO0000052919	Date Analysis Commenced	: 19-Apr-2024
C-O-C number	: ----	Issue Date	: 23-Apr-2024 23:02
Sampler	: ----		
Site	: ----		
Quote number	: Covanta Burnaby Standing Offer 2024		
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.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	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: 1409928)											
KS2401298-001	Anonymous	pH (1:2 soil:water)	----	E108	0.10	pH units	7.88	7.70	2.3%	5%	----
Physical Tests (QC Lot: 1409931)											
KS2401298-001	Anonymous	Moisture	----	E144	0.25	%	17.0	16.3	3.89%	20%	----
Metals (QC Lot: 1409926)											
KS2401298-001	Anonymous	Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
Metals (QC Lot: 1409927)											
KS2401298-001	Anonymous	Aluminum	7429-90-5	E440	50	mg/kg	4220	5190	20.6%	40%	----
		Antimony	7440-36-0	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	0.88	1.15	27.0%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	39.8	54.7	31.5%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.23	0.26	0.03	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	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	0.061	# 0.108	0.047	Diff <2x LOR	DUP-H,J
		Calcium	7440-70-2	E440	50	mg/kg	2260	3300	37.3%	30%	DUP-H
		Chromium	7440-47-3	E440	0.50	mg/kg	12.3	23.3	61.4%	30%	DUP-H
		Cobalt	7440-48-4	E440	0.10	mg/kg	3.24	4.59	34.5%	30%	DUP-H
		Copper	7440-50-8	E440	0.50	mg/kg	5.99	7.66	24.6%	30%	----
		Iron	7439-89-6	E440	50	mg/kg	9020	10600	16.4%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	2.76	3.17	13.6%	40%	----
		Lithium	7439-93-2	E440	2.0	mg/kg	6.5	7.9	1.4	Diff <2x LOR	----
		Magnesium	7439-95-4	E440	20	mg/kg	2240	3360	40.1%	30%	DUP-H
		Manganese	7439-96-5	E440	1.0	mg/kg	109	128	16.5%	30%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	1.39	1.52	9.06%	40%	----
		Nickel	7440-02-0	E440	0.50	mg/kg	11.3	23.1	68.4%	30%	DUP-H
		Phosphorus	7723-14-0	E440	50	mg/kg	450	632	33.5%	30%	DUP-H
		Potassium	7440-09-7	E440	100	mg/kg	950	1190	22.0%	40%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	0.23	0.35	0.11	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Sodium	7440-23-5	E440	50	mg/kg	162	242	80	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*
Metals (QC Lot: 1409927) - continued											
KS2401298-001	Anonymous	Strontium	7440-24-6	E440	0.50	mg/kg	28.8	39.1	30.4%	40%	----
		Sulfur	7704-34-9	E440	1000	mg/kg	<1000	1600	600	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.071	0.089	0.018	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	530	586	10.0%	40%	----
		Tungsten	7440-33-7	E440	0.50	mg/kg	0.58	0.60	0.02	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	5.26	7.08	29.3%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	19.8	25.5	25.4%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	22.8	29.4	25.3%	30%	----
		Zirconium	7440-67-7	E440	1.0	mg/kg	8.5	10.0	16.4%	30%	----
TCLP Metals (QC Lot: 1410321)											
VA24A8085-001	BA2415-A-1	Mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
TCLP Metals (QC Lot: 1410322)											
VA24A8085-001	BA2415-A-1	Antimony, TCLP	7440-36-0	E444	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
		Arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	0	Diff <2x LOR	----
		Beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	0	Diff <2x LOR	----
		Boron, TCLP	7440-42-8	E444	0.50	mg/L	2.09	2.10	0.007	Diff <2x LOR	----
		Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Calcium, TCLP	7440-70-2	E444	10	mg/L	2090	2120	1.27%	30%	----
		Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.218	0.220	0.002	Diff <2x LOR	----
		Copper, TCLP	7440-50-8	E444	0.050	mg/L	0.576	0.594	3.11%	30%	----
		Iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Magnesium, TCLP	7439-95-4	E444	2.5	mg/L	102	103	0.660%	30%	----
		Nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	0	Diff <2x LOR	----
		Zinc, TCLP	7440-66-6	E444	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	0	Diff <2x LOR	----

Qualifiers

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
J	Duplicate results and limits are expressed in terms of absolute difference.

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: 1409931)						
Moisture	----	E144	0.25	%	<0.25	----
Metals (QCLot: 1409926)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1409927)						
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: 1409927) - 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	----
TCLP Metals (QCLot: 1410321)						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP Metals (QCLot: 1410322)						
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	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1409928)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	99.8	95.0	105	----
Physical Tests (QCLot: 1409931)									
Moisture	----	E144	0.25	%	50 %	99.3	90.0	110	----
Metals (QCLot: 1409926)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	103	80.0	120	----
Metals (QCLot: 1409927)									
Aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	103	80.0	120	----
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	109	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	110	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	107	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	104	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	103	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	105	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	104	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	99.9	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	106	80.0	120	----
Lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	100	80.0	120	----
Magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	110	80.0	120	----
Manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	105	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	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	106	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	108	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	92.2	80.0	120	----
Sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	114	80.0	120	----
Strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	----
Sulfur	7704-34-9	E440	1000	mg/kg	5000 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	Target Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1409927) - continued									
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	105	80.0	120	----
Tin	7440-31-5	E440	2	mg/kg	50 mg/kg	106	80.0	120	----
Titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	102	80.0	120	----
Tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	106	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	109	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	107	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	107	80.0	120	----
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	104	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**

					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: 1410321)										
VA24A8085-001	BA2415-A-1	Mercury, TCLP	7439-97-6	E512	0.0008 mg/L	0.001 mg/L	84.8	50.0	140	----
TCLP Metals (QCLot: 1410322)										
VA24A8085-001	BA2415-A-1	Antimony, TCLP	7440-36-0	E444	4.93 mg/L	5 mg/L	98.6	50.0	140	----
		Arsenic, TCLP	7440-38-2	E444	4.8 mg/L	5 mg/L	97.0	50.0	140	----
		Barium, TCLP	7440-39-3	E444	13.8 mg/L	12.5 mg/L	111	50.0	140	----
		Beryllium, TCLP	7440-41-7	E444	0.241 mg/L	0.25 mg/L	96.4	50.0	140	----
		Boron, TCLP	7440-42-8	E444	9.86 mg/L	10 mg/L	98.6	50.0	140	----
		Cadmium, TCLP	7440-43-9	E444	0.237 mg/L	0.25 mg/L	94.7	50.0	140	----
		Calcium, TCLP	7440-70-2	E444	ND mg/L	----	ND	50.0	140	----
		Chromium, TCLP	7440-47-3	E444	1.18 mg/L	1.25 mg/L	94.5	50.0	140	----
		Cobalt, TCLP	7440-48-4	E444	0.228 mg/L	0.25 mg/L	91.3	50.0	140	----
		Copper, TCLP	7440-50-8	E444	2.13 mg/L	2.5 mg/L	85.4	50.0	140	----
		Iron, TCLP	7439-89-6	E444	229 mg/L	250 mg/L	91.6	50.0	140	----
		Lead, TCLP	7439-92-1	E444	9.42 mg/L	10 mg/L	94.2	50.0	140	----
		Magnesium, TCLP	7439-95-4	E444	255 mg/L	250 mg/L	102	50.0	140	----
		Nickel, TCLP	7440-02-0	E444	2.28 mg/L	2.5 mg/L	91.4	50.0	140	----
		Selenium, TCLP	7782-49-2	E444	4.73 mg/L	5 mg/L	94.6	50.0	140	----
		Silver, TCLP	7440-22-4	E444	0.079 mg/L	0.1 mg/L	78.8	50.0	140	----
		Thallium, TCLP	7440-28-0	E444	4.5 mg/L	5 mg/L	90.9	50.0	140	----
		Uranium, TCLP	7440-61-1	E444	4.70 mg/L	5 mg/L	94.0	50.0	150	----
		Vanadium, TCLP	7440-62-2	E444	0.71 mg/L	0.75 mg/L	94.4	50.0	140	----
		Zinc, TCLP	7440-66-6	E444	8.99 mg/L	10 mg/L	89.9	50.0	140	----
		Zirconium, TCLP	7440-67-7	E444	0.7 mg/L	1 mg/L	72.5	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:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 1409926)									
QC-1409926-003	MRCA-21	Mercury	7439-97-6	E510	0.068 mg/kg	99.4	70.0	130	----
Metals (QCLot: 1409927)									
QC-1409927-003	MRCA-21	Aluminum	7429-90-5	E440	22500 mg/kg	104	70.0	130	----
QC-1409927-003	MRCA-21	Antimony	7440-36-0	E440	24.8 mg/kg	95.9	70.0	130	----
QC-1409927-003	MRCA-21	Arsenic	7440-38-2	E440	21.2 mg/kg	100	70.0	130	----
QC-1409927-003	MRCA-21	Barium	7440-39-3	E440	788 mg/kg	102	70.0	130	----
QC-1409927-003	MRCA-21	Beryllium	7440-41-7	E440	1.82 mg/kg	103	70.0	130	----
QC-1409927-003	MRCA-21	Bismuth	7440-69-9	E440	1.78 mg/kg	85.7	70.0	130	----
QC-1409927-003	MRCA-21	Cadmium	7440-43-9	E440	2.15 mg/kg	106	70.0	130	----
QC-1409927-003	MRCA-21	Calcium	7440-70-2	E440	4900 mg/kg	105	70.0	130	----
QC-1409927-003	MRCA-21	Chromium	7440-47-3	E440	56.9 mg/kg	103	70.0	130	----
QC-1409927-003	MRCA-21	Cobalt	7440-48-4	E440	32 mg/kg	103	70.0	130	----
QC-1409927-003	MRCA-21	Copper	7440-50-8	E440	969 mg/kg	103	70.0	130	----
QC-1409927-003	MRCA-21	Iron	7439-89-6	E440	32700 mg/kg	106	70.0	130	----
QC-1409927-003	MRCA-21	Lead	7439-92-1	E440	919 mg/kg	98.8	70.0	130	----
QC-1409927-003	MRCA-21	Lithium	7439-93-2	E440	47.3 mg/kg	102	70.0	130	----
QC-1409927-003	MRCA-21	Magnesium	7439-95-4	E440	7780 mg/kg	108	70.0	130	----
QC-1409927-003	MRCA-21	Manganese	7439-96-5	E440	8640 mg/kg	105	70.0	130	----
QC-1409927-003	MRCA-21	Molybdenum	7439-98-7	E440	25.1 mg/kg	94.4	70.0	130	----
QC-1409927-003	MRCA-21	Nickel	7440-02-0	E440	1000 mg/kg	105	70.0	130	----
QC-1409927-003	MRCA-21	Phosphorus	7723-14-0	E440	660 mg/kg	99.7	70.0	130	----
QC-1409927-003	MRCA-21	Potassium	7440-09-7	E440	10800 mg/kg	109	70.0	130	----
QC-1409927-003	MRCA-21	Selenium	7782-49-2	E440	1.04 mg/kg	84.8	60.0	140	----
QC-1409927-003	MRCA-21	Silver	7440-22-4	E440	8.98 mg/kg	95.4	70.0	130	----
QC-1409927-003	MRCA-21	Sodium	7440-23-5	E440	1770 mg/kg	115	70.0	130	----
QC-1409927-003	MRCA-21	Strontium	7440-24-6	E440	41 mg/kg	98.6	70.0	130	----
QC-1409927-003	MRCA-21	Sulfur	7704-34-9	E440	3940 mg/kg	106	50.0	150	----
QC-1409927-003	MRCA-21	Thallium	7440-28-0	E440	0.907 mg/kg	97.3	70.0	130	----
QC-1409927-003	MRCA-21	Tin	7440-31-5	E440	3.79 mg/kg	95.5	40.0	160	----
QC-1409927-003	MRCA-21	Titanium	7440-32-6	E440	2790 mg/kg	104	70.0	130	----
QC-1409927-003	MRCA-21	Tungsten	7440-33-7	E440	6.99 mg/kg	113	70.0	130	----
QC-1409927-003	MRCA-21	Uranium	7440-61-1	E440	3.97 mg/kg	104	70.0	130	----
QC-1409927-003	MRCA-21	Vanadium	7440-62-2	E440	66.2 mg/kg	102	70.0	130	----

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 1409927) - continued									
QC-1409927-003	MRCA-21	Zinc	7440-66-6	E440	828 mg/kg	105	70.0	130	----
QC-1409927-003	MRCA-21	Zirconium	7440-67-7	E440	6.91 mg/kg	98.0	70.0	130	----

ALS Environmental

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			☐ Standard ☐ Other				◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Nicole Victor / Dan Skrypnyk			☑ PDF ☐ Excel ☐ Digital ☐ Fax				○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	5150 Riverbend Drive			Email 1:	nvictor@covanta.com			○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Burnaby BC			Email 2:	ofetherstonhaugh@covanta.com			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-521-1025	Fax:		Email 3:	dskrypnyk@covanta.com			Analysis Request
		☐ Yes	☐ No		brent.kirkpatrick@metrovancouver.org			
					Sarah.Wellman@metrovancouver.org			
Invoice To	Same as Report ?			Client / Project Information				Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		☐ Yes	☐ No	Job #:				
Company:				PO / AFE:	PO# 46693 Weekly Bottom Ash - Suite			
Contact:				LSD:	(includes 2:1 pH)			
Address:								
Phone:		Fax:		Quote #:				
Lab Work Order # (lab use only)		A8585		ALS Contact:		Sampler:		

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)	MOISTURE		Chrome 6		MET-CSR+FULL-VA (all metals)						Number of Containers
	BA2415-A-1	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-2	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-3	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-4	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-5	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-6	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-7	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-8	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-9	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-10	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-11	10-Apr-24	9:00	Soil	X	X				X						1
	BA2415-A-12	10-Apr-24	9:00	Soil	X	X				X						1

Environmental Division
Vancouver
Work Order Reference
VA24A8085

Telephone : +1 604 253 4188

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
	16-Apr-24	0900	RK	4/16/24	1110	19,20 °C				