

Bottom Ash Data

2021 Week 26

The following analytical report represents bottom ash composite results for week 26 of 2021 (June 20, 2021 to June 26, 2021).

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 : **VA21B3156**
Client : **Covanta Burnaby Renewable Energy, ULC**
Contact : Steve McKinney
Address : 5150 Riverbend Drive
Burnaby BC Canada V3N 4V3
Telephone : 604 521 1025
Project : Weekly Bottom Ash - Suite
PO : VANCO 0000050390
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : Standing Offer (BC work)
No. of samples received : 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 : 29-Jun-2021 12:10
Date Analysis Commenced : 02-Jul-2021
Issue Date : 09-Jul-2021 09:12

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, 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	BA2126-A-1	BA2126-A-2	BA2126-A-3	BA2126-A-4	BA2126-A-5
(Matrix: Soil/Solid)										
Client sampling date / time					23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B3156-001	VA21B3156-002	VA21B3156-003	VA21B3156-004	VA21B3156-005	
					Result	Result	Result	Result	Result	
Physical Tests										
moisture	----	E144	0.25	%	18.2	19.2	18.8	17.4	18.8	
pH (1:2 soil:water)	----	E108	0.10	pH units	10.6	10.6	10.7	10.7	10.6	
Metals										
aluminum	7429-90-5	E440	50	mg/kg	32100	27200	37800	34900	47400	
antimony	7440-36-0	E440	0.10	mg/kg	178	146	121	156	117	
arsenic	7440-38-2	E440	0.10	mg/kg	49.1	34.9	27.3	30.0	27.2	
barium	7440-39-3	E440	0.50	mg/kg	345	344	397	388	477	
beryllium	7440-41-7	E440	0.10	mg/kg	0.36	0.37	0.52	0.35	0.35	
bismuth	7440-69-9	E440	0.20	mg/kg	6.64	8.78	6.98	5.62	6.31	
boron	7440-42-8	E440	5.0	mg/kg	211	202	292	183	289	
cadmium	7440-43-9	E440	0.020	mg/kg	10.4	16.1	11.8	10.7	8.96	
calcium	7440-70-2	E440	50	mg/kg	114000	120000	113000	108000	109000	
chromium	7440-47-3	E440	0.50	mg/kg	164	528	212	119	141	
cobalt	7440-48-4	E440	0.10	mg/kg	50.7	38.1	26.7	37.4	53.9	
copper	7440-50-8	E440	0.50	mg/kg	5510	5280	1060	8930	12500	
iron	7439-89-6	E440	50	mg/kg	48600	59900	57100	48700	56300	
lead	7439-92-1	E440	0.50	mg/kg	3050	713	315	490	464	
lithium	7439-93-2	E440	2.0	mg/kg	31.1	23.3	20.7	20.8	26.0	
magnesium	7439-95-4	E440	20	mg/kg	10500	11000	10900	10800	9320	
manganese	7439-96-5	E440	1.0	mg/kg	676	920	676	1190	731	
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	21.2	25.0	29.7	20.4	19.9	
nickel	7440-02-0	E440	0.50	mg/kg	174	405	188	91.8	149	
phosphorus	7723-14-0	E440	50	mg/kg	7880	8720	7810	8650	8580	
potassium	7440-09-7	E440	100	mg/kg	5110	5480	5400	5070	5150	
selenium	7782-49-2	E440	0.20	mg/kg	0.54	0.48	0.45	0.41	0.44	
silver	7440-22-4	E440.Ag	0.10	mg/kg	----	----	----	----	9.60	
silver	7440-22-4	E440	0.10	mg/kg	7.69	7.30	5.01	7.02	----	
sodium	7440-23-5	E440	50	mg/kg	14100	14200	15700	13900	14400	
strontium	7440-24-6	E440	0.50	mg/kg	255	283	262	255	246	



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2126-A-1	BA2126-A-2	BA2126-A-3	BA2126-A-4	BA2126-A-5
Client sampling date / time					23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B3156-001	VA21B3156-002	VA21B3156-003	VA21B3156-004	VA21B3156-005	
					Result	Result	Result	Result	Result	
Metals										
sulfur	7704-34-9	E440	1000	mg/kg	12400	15500	13600	11700	12100	
thallium	7440-28-0	E440	0.050	mg/kg	0.056	0.077	0.052	0.056	0.055	
tin	7440-31-5	E440	2.0	mg/kg	95.4	172	98.6	111	114	
titanium	7440-32-6	E440	1.0	mg/kg	517	492	732	333	848	
tungsten	7440-33-7	E440	0.50	mg/kg	16.0	17.5	16.4	16.3	17.2	
uranium	7440-61-1	E440	0.050	mg/kg	4.23	5.33	4.43	4.17	4.24	
vanadium	7440-62-2	E440	0.20	mg/kg	47.4	55.4	51.2	48.4	47.0	
zinc	7440-66-6	E440	2.0	mg/kg	3170	5690	3560	3060	4820	
zirconium	7440-67-7	E440	1.0	mg/kg	1.7	1.0	1.3	1.6	1.5	
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.3	11.3	11.3	11.3	11.3	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	8.25	7.33	8.09	8.01	8.33	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.83	2.83	2.83	2.83	2.83	
pH, TCLP final	----	EPP444	0.010	pH units	6.17	6.13	6.20	6.25	6.21	
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5	
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.18	2.19	2.15	2.23	2.26	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.194	1.06	0.242	0.157	0.205	
calcium, TCLP	7440-70-2	E444	10	mg/L	1870	1900	1840	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	2.15	1.34	0.994	0.835	0.989	
copper, TCLP	7440-50-8	E444	0.050	mg/L	0.813	1.04	0.884	0.741	0.845	
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	0.33	<0.25	<0.25	
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	136	134	141	128	130	
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	0.54	0.91	0.52	0.52	0.84	
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 (Matrix: Soil/Solid)					Client sample ID	BA2126-A-1	BA2126-A-2	BA2126-A-3	BA2126-A-4	BA2126-A-5
Client sampling date / time					23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00
Analyte	CAS Number	Method	LOR	Unit	VA21B3156-001	VA21B3156-002	VA21B3156-003	VA21B3156-004	VA21B3156-005	
					Result	Result	Result	Result	Result	
TCLP Metals										
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<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	<0.20
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
zinc, TCLP	7440-66-6	E444	0.50	mg/L	58.8	53.0	45.0	33.1	37.1	37.1
zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	<10	<10	<10	<10

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



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2126-A-6	BA2126-A-7	BA2126-A-8	BA2126-A-9	BA2126-A-10
Client sampling date / time					23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B3156-006	VA21B3156-007	VA21B3156-008	VA21B3156-009	VA21B3156-010	
					Result	Result	Result	Result	Result	
Physical Tests										
moisture	----	E144	0.25	%	18.2	19.1	18.6	18.0	17.5	
pH (1:2 soil:water)	----	E108	0.10	pH units	10.6	10.7	10.7	10.7	10.5	
Metals										
aluminum	7429-90-5	E440	50	mg/kg	35500	29700	31400	29700	39400	
antimony	7440-36-0	E440	0.10	mg/kg	113	111	131	125	114	
arsenic	7440-38-2	E440	0.10	mg/kg	27.9	26.6	33.0	42.3	27.9	
barium	7440-39-3	E440	0.50	mg/kg	411	309	483	283	546	
beryllium	7440-41-7	E440	0.10	mg/kg	0.32	0.33	0.37	0.35	0.31	
bismuth	7440-69-9	E440	0.20	mg/kg	9.34	6.78	8.03	6.80	7.61	
boron	7440-42-8	E440	5.0	mg/kg	166	175	374	184	206	
cadmium	7440-43-9	E440	0.020	mg/kg	14.9	9.93	13.4	11.7	11.0	
calcium	7440-70-2	E440	50	mg/kg	110000	113000	124000	107000	116000	
chromium	7440-47-3	E440	0.50	mg/kg	223	134	155	130	161	
cobalt	7440-48-4	E440	0.10	mg/kg	30.0	270	40.6	35.3	38.9	
copper	7440-50-8	E440	0.50	mg/kg	2640	925	2520	1500	1000	
iron	7439-89-6	E440	50	mg/kg	53500	51700	74500	49200	80800	
lead	7439-92-1	E440	0.50	mg/kg	4250	303	419	403	468	
lithium	7439-93-2	E440	2.0	mg/kg	19.6	44.2	25.6	20.7	20.0	
magnesium	7439-95-4	E440	20	mg/kg	9940	9640	10500	9480	11800	
manganese	7439-96-5	E440	1.0	mg/kg	662	1010	712	654	1550	
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	17.6	20.7	20.1	16.4	18.0	
nickel	7440-02-0	E440	0.50	mg/kg	95.5	136	181	123	124	
phosphorus	7723-14-0	E440	50	mg/kg	7820	8480	9470	7540	8450	
potassium	7440-09-7	E440	100	mg/kg	5140	5120	5640	4960	5360	
selenium	7782-49-2	E440	0.20	mg/kg	0.40	0.39	0.57	0.37	0.43	
silver	7440-22-4	E440	0.10	mg/kg	8.01	6.99	8.66	6.37	5.68	
sodium	7440-23-5	E440	50	mg/kg	14000	14000	15700	13500	15200	
strontium	7440-24-6	E440	0.50	mg/kg	245	262	285	250	278	
sulfur	7704-34-9	E440	1000	mg/kg	13200	12800	14700	12500	12900	
thallium	7440-28-0	E440	0.050	mg/kg	0.064	0.051	0.073	0.072	0.050	



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2126-A-6	BA2126-A-7	BA2126-A-8	BA2126-A-9	BA2126-A-10
Client sampling date / time					23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B3156-006	VA21B3156-007	VA21B3156-008	VA21B3156-009	VA21B3156-010	
					Result	Result	Result	Result	Result	
Metals										
tin	7440-31-5	E440	2.0	mg/kg	133	95.9	128	95.1	116	
titanium	7440-32-6	E440	1.0	mg/kg	557	398	591	290	1090	
tungsten	7440-33-7	E440	0.50	mg/kg	14.3	13.4	24.1	10.1	15.3	
uranium	7440-61-1	E440	0.050	mg/kg	4.36	4.39	5.10	4.28	4.11	
vanadium	7440-62-2	E440	0.20	mg/kg	48.7	49.4	59.7	47.2	61.1	
zinc	7440-66-6	E440	2.0	mg/kg	6180	3010	8640	4000	5020	
zirconium	7440-67-7	E440	1.0	mg/kg	1.2	1.3	1.2	1.6	1.3	
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.3	11.4	11.4	11.4	11.4	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	8.03	8.20	8.34	8.31	8.54	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.83	2.83	2.83	2.83	2.83	
pH, TCLP final	----	EPP444	0.010	pH units	5.91	6.46	6.32	6.29	6.31	
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5	
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.06	2.48	2.39	2.34	2.50	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.195	0.184	0.218	0.190	0.190	
calcium, TCLP	7440-70-2	E444	10	mg/L	1860	2110	1990	1910	2120	
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	0.837	1.66	0.780	0.748	1.59	
copper, TCLP	7440-50-8	E444	0.050	mg/L	1.02	0.856	0.884	1.05	0.694	
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	0.43	<0.25	<0.25	0.52	<0.25	
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	124	143	133	137	143	
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	0.80	0.57	0.60	0.77	0.61	
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	



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2126-A-6	BA2126-A-7	BA2126-A-8	BA2126-A-9	BA2126-A-10
Client sampling date / time					23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00	23-Jun-2021 09:00
Analyte	CAS Number	Method	LOR	Unit	VA21B3156-006	VA21B3156-007	VA21B3156-008	VA21B3156-009	VA21B3156-010	
					Result	Result	Result	Result	Result	
TCLP Metals										
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
zinc, TCLP	7440-66-6	E444	0.50	mg/L	49.2	29.8	47.3	40.4	35.1	
zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<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	BA2126-A-11	BA2126-A-12	----	----	----
(Matrix: Soil/Solid)					Client sampling date / time	23-Jun-2021 09:00	23-Jun-2021 09:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B3156-011	VA21B3156-012	-----	-----	-----	
					Result	Result	---	---	---	
Physical Tests										
moisture	----	E144	0.25	%	17.6	17.9	----	----	----	
pH (1:2 soil:water)	----	E108	0.10	pH units	10.4	10.4	----	----	----	
Metals										
aluminum	7429-90-5	E440	50	mg/kg	34000	41600	----	----	----	
antimony	7440-36-0	E440	0.10	mg/kg	155	134	----	----	----	
arsenic	7440-38-2	E440	0.10	mg/kg	37.2	35.0	----	----	----	
barium	7440-39-3	E440	0.50	mg/kg	483	501	----	----	----	
beryllium	7440-41-7	E440	0.10	mg/kg	0.33	0.38	----	----	----	
bismuth	7440-69-9	E440	0.20	mg/kg	9.37	8.68	----	----	----	
boron	7440-42-8	E440	5.0	mg/kg	184	209	----	----	----	
cadmium	7440-43-9	E440	0.020	mg/kg	15.6	13.7	----	----	----	
calcium	7440-70-2	E440	50	mg/kg	128000	125000	----	----	----	
chromium	7440-47-3	E440	0.50	mg/kg	139	276	----	----	----	
cobalt	7440-48-4	E440	0.10	mg/kg	268	36.0	----	----	----	
copper	7440-50-8	E440	0.50	mg/kg	1650	1920	----	----	----	
iron	7439-89-6	E440	50	mg/kg	62900	64800	----	----	----	
lead	7439-92-1	E440	0.50	mg/kg	384	491	----	----	----	
lithium	7439-93-2	E440	2.0	mg/kg	26.7	31.1	----	----	----	
magnesium	7439-95-4	E440	20	mg/kg	11400	11000	----	----	----	
manganese	7439-96-5	E440	1.0	mg/kg	866	1580	----	----	----	
mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	----	----	----	
molybdenum	7439-98-7	E440	0.10	mg/kg	28.0	22.2	----	----	----	
nickel	7440-02-0	E440	0.50	mg/kg	192	179	----	----	----	
phosphorus	7723-14-0	E440	50	mg/kg	10600	10500	----	----	----	
potassium	7440-09-7	E440	100	mg/kg	5750	5500	----	----	----	
selenium	7782-49-2	E440	0.20	mg/kg	0.59	0.54	----	----	----	
silver	7440-22-4	E440	0.10	mg/kg	8.01	6.20	----	----	----	
sodium	7440-23-5	E440	50	mg/kg	15200	15700	----	----	----	
strontium	7440-24-6	E440	0.50	mg/kg	276	252	----	----	----	
sulfur	7704-34-9	E440	1000	mg/kg	16500	13700	----	----	----	
thallium	7440-28-0	E440	0.050	mg/kg	0.062	0.063	----	----	----	



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2126-A-11	BA2126-A-12	----	----	----
Client sampling date / time					23-Jun-2021 09:00	23-Jun-2021 09:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	VA21B3156-011	VA21B3156-012	-----	-----	-----	
					Result	Result	---	---	---	
Metals										
tin	7440-31-5	E440	2.0	mg/kg	123	141	---	---	---	
titanium	7440-32-6	E440	1.0	mg/kg	708	544	---	---	---	
tungsten	7440-33-7	E440	0.50	mg/kg	21.8	14.8	---	---	---	
uranium	7440-61-1	E440	0.050	mg/kg	5.14	4.60	---	---	---	
vanadium	7440-62-2	E440	0.20	mg/kg	53.4	51.2	---	---	---	
zinc	7440-66-6	E440	2.0	mg/kg	5370	4600	---	---	---	
zirconium	7440-67-7	E440	1.0	mg/kg	1.3	1.8	---	---	---	
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.4	11.4	---	---	---	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	8.24	8.75	---	---	---	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.83	2.83	---	---	---	
pH, TCLP final	----	EPP444	0.010	pH units	6.06	6.21	---	---	---	
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	---	---	---	
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	---	---	---	
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	---	---	---	
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	---	---	---	
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.41	2.48	---	---	---	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.217	0.298	---	---	---	
calcium, TCLP	7440-70-2	E444	10	mg/L	1990	2040	---	---	---	
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	---	---	---	
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.964	0.975	---	---	---	
copper, TCLP	7440-50-8	E444	0.050	mg/L	1.10	0.895	---	---	---	
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	138	144	---	---	---	
mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
nickel, TCLP	7440-02-0	E444	0.25	mg/L	1.13	0.52	---	---	---	
selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	---	---	---	
silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	---	---	---	
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	---	---	---	
uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	---	---	---	



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2126-A-11	BA2126-A-12	----	----	----
					Client sampling date / time	23-Jun-2021 09:00	23-Jun-2021 09:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B3156-011	VA21B3156-012	-----	-----	-----	
					Result	Result	---	---	---	
TCLP Metals										
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	----	----	----	
zinc, TCLP	7440-66-6	E444	0.50	mg/L	48.7	51.6	----	----	----	
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

Work Order	: VA21B3156	Page	: 1 of 15
Client	: Covanta Burnaby Renewable Energy, ULC	Laboratory	: Vancouver - Environmental
Contact	: Steve McKinney	Account Manager	: Brent Mack
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 521 1025	Telephone	: 778-370-3279
Project	: Weekly Bottom Ash - Suite	Date Samples Received	: 29-Jun-2021 12:10
PO	: VANCO 0000050390	Issue Date	: 09-Jul-2021 09:12
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: Standing Offer (BC work)		
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 Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Metals	VA21B3156-010	BA2126-A-10	copper	7440-50-8	E440	40.7 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21B3156-010	BA2126-A-10	iron	7439-89-6	E440	58.8 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21B3156-010	BA2126-A-10	lead	7439-92-1	E440	94.3 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	Anonymous	Anonymous	phosphorus	7723-14-0	E440	59.0 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21B3156-010	BA2126-A-10	titanium	7440-32-6	E440	50.4 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.

Result Qualifiers

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



Analysis Holding Time Compliance

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

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

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 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 BA2126-A-5	E440.Ag	23-Jun-2021	07-Jul-2021	----	----		07-Jul-2021	----	14 days		
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-1	E510	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	28 days	14 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-10	E510	23-Jun-2021	07-Jul-2021	----	----		07-Jul-2021	28 days	14 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-11	E510	23-Jun-2021	07-Jul-2021	----	----		07-Jul-2021	28 days	14 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-12	E510	23-Jun-2021	07-Jul-2021	----	----		07-Jul-2021	28 days	14 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-2	E510	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	28 days	14 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-3	E510	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	28 days	14 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 BA2126-A-4	E510	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	28 days	14 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-5	E510	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	28 days	14 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-6	E510	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	28 days	14 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-7	E510	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	28 days	14 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-8	E510	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	28 days	14 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2126-A-9	E510	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	28 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2126-A-1	E440	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2126-A-10	E440	23-Jun-2021	07-Jul-2021	----	----		07-Jul-2021	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2126-A-11	E440	23-Jun-2021	07-Jul-2021	----	----		07-Jul-2021	180 days	14 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 ICPCS											
LDPE bag BA2126-A-12	E440	23-Jun-2021	07-Jul-2021	----	----		07-Jul-2021	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2126-A-2	E440	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2126-A-3	E440	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2126-A-4	E440	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2126-A-5	E440	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2126-A-6	E440	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2126-A-7	E440	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2126-A-8	E440	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2126-A-9	E440	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	180 days	14 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 : Moisture Content by Gravimetry										
LDPE bag BA2126-A-1	E144	23-Jun-2021	----	----	----		05-Jul-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2126-A-10	E144	23-Jun-2021	----	----	----		06-Jul-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2126-A-11	E144	23-Jun-2021	----	----	----		06-Jul-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2126-A-12	E144	23-Jun-2021	----	----	----		06-Jul-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2126-A-2	E144	23-Jun-2021	----	----	----		05-Jul-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2126-A-3	E144	23-Jun-2021	----	----	----		05-Jul-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2126-A-4	E144	23-Jun-2021	----	----	----		05-Jul-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2126-A-5	E144	23-Jun-2021	----	----	----		05-Jul-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2126-A-6	E144	23-Jun-2021	----	----	----		05-Jul-2021	----	----	



Matrix: Soil/Solid

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2126-A-7	E144	23-Jun-2021	----	----	----		05-Jul-2021	----	----		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2126-A-8	E144	23-Jun-2021	----	----	----		05-Jul-2021	----	----		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2126-A-9	E144	23-Jun-2021	----	----	----		05-Jul-2021	----	----		
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-1	E108	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-2	E108	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-3	E108	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-4	E108	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-5	E108	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-6	E108	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	30 days	13 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 BA2126-A-7	E108	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-8	E108	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-9	E108	23-Jun-2021	06-Jul-2021	----	----		06-Jul-2021	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-10	E108	23-Jun-2021	07-Jul-2021	----	----		07-Jul-2021	30 days	14 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-11	E108	23-Jun-2021	07-Jul-2021	----	----		07-Jul-2021	30 days	14 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2126-A-12	E108	23-Jun-2021	07-Jul-2021	----	----		07-Jul-2021	30 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-1	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-10	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-11	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 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) BA2126-A-12	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-2	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-3	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-4	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-5	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-6	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-7	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-8	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2126-A-9	E512	02-Jul-2021	----	----	----		05-Jul-2021	28 days	12 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) BA2126-A-1	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2126-A-10	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2126-A-11	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2126-A-12	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2126-A-2	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2126-A-3	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2126-A-4	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2126-A-5	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2126-A-6	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 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) BA2126-A-7	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2126-A-8	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2126-A-9	E444	02-Jul-2021	----	----	----		05-Jul-2021	180 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-1	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-10	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-11	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-12	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-2	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-3	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	



Matrix: **Soil/Solid**

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-4	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-5	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-6	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-7	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-8	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2126-A-9	EPP444	23-Jun-2021	02-Jul-2021	----	----		----	----	----	

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Mercury in Soil/Solid by CVAAS	E510	236152	2	21	9.5	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	236884	2	21	9.5	5.0	✔
Moisture Content by Gravimetry	E144	236893	2	34	5.8	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	236886	2	21	9.5	5.0	✔
Laboratory Control Samples (LCS)							
High Silver in Soil/Solid by CRC ICPMS	E440.Ag	238136	1	1	100.0	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	236152	4	21	19.0	10.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	236884	4	21	19.0	10.0	✔
Moisture Content by Gravimetry	E144	236893	2	34	5.8	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	236886	2	21	9.5	5.0	✔
Method Blanks (MB)							
High Silver in Soil/Solid by CRC ICPMS	E440.Ag	238136	1	1	100.0	5.0	✔
Mercury by CVAAS (TCLP)	E512	236335	1	12	8.3	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	236152	2	21	9.5	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	236336	1	12	8.3	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	236884	2	21	9.5	5.0	✔
Moisture Content by Gravimetry	E144	236893	2	34	5.8	5.0	✔
Matrix Spikes (MS)							
Mercury by CVAAS (TCLP)	E512	236335	1	12	8.3	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	236336	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 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals in Soil/Solid by CRC ICPMS	E440 Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO 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.
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
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.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO ₃ 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 HNO ₃ 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 : VA21B3156

Page : 1 of 15

Client : Covanta Burnaby Renewable Energy, ULC
Contact : Steve McKinney
Address : 5150 Riverbend Drive
Burnaby BC Canada V3N 4V3
Telephone : 604 521 1025
Project : Weekly Bottom Ash - Suite
PO : VANCO 0000050390
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : Standing Offer (BC work)
No. of samples received : 12
No. of samples analysed : 12

Laboratory : Vancouver - Environmental
Account Manager : Brent Mack
Address : 8081 Lougheed Highway
Burnaby, British Columbia Canada V5A 1W9
Telephone : 778-370-3279
Date Samples Received : 29-Jun-2021 12:10
Date Analysis Commenced : 02-Jul-2021
Issue Date : 09-Jul-2021 09:12

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

Signatories

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

Table with 3 columns: Signatories, Position, Laboratory Department. Rows include Dee Lee (Analyst, Metals), Gloria Chan (Lab Analyst, Metals), Kevin Duarte (Supervisor - Metals ICP Instrumentation, Metals), and Ophelia Chiu (Department Manager - Organics, Organics).

Page : 2 of 15
Work Order : VA21B3156
Client : Covanta Burnaby Renewable Energy, ULC
Project : Weekly Bottom Ash - Suite



General Comments

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

Key :

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

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

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Soil/Solid

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 236154)											
VA21B3121-001	Anonymous	pH (1:2 soil:water)	----	E108	0.10	pH units	7.23	7.31	1.1%	5%	----
Physical Tests (QC Lot: 236158)											
VA21B3121-001	Anonymous	moisture	----	E144	0.25	%	61.8	65.9	6.47%	20%	----
Physical Tests (QC Lot: 236886)											
VA21B3156-010	BA2126-A-10	pH (1:2 soil:water)	----	E108	0.10	pH units	10.5	10.5	0.2%	5%	----
Physical Tests (QC Lot: 236893)											
VA21B3156-010	BA2126-A-10	moisture	----	E144	0.25	%	17.5	17.7	0.871%	20%	----
Metals (QC Lot: 236152)											
VA21B3121-001	Anonymous	mercury	7439-97-6	E510	0.0500	mg/kg	0.0782	0.0776	0.0006	Diff <2x LOR	----
Metals (QC Lot: 236153)											
VA21B3121-001	Anonymous	aluminum	7429-90-5	E440	50	mg/kg	29900	34200	13.2%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	2.78	2.79	0.603%	30%	----
		arsenic	7440-38-2	E440	0.10	mg/kg	12.3	12.6	2.52%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	569	479	17.2%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.76	0.83	8.36%	30%	----
		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	5.1	5.3	0.2	Diff <2x LOR	----
		cadmium	7440-43-9	E440	0.020	mg/kg	7.36	7.35	0.00950%	30%	----
		calcium	7440-70-2	E440	50	mg/kg	33500	35900	6.92%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	13.9	13.9	0.400%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	17.0	17.8	4.64%	30%	----
		copper	7440-50-8	E440	0.50	mg/kg	76.8	81.0	5.28%	30%	----
		iron	7439-89-6	E440	50	mg/kg	37200	42000	12.2%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	18.3	18.9	3.26%	40%	----
		lithium	7439-93-2	E440	2.0	mg/kg	8.7	9.2	0.4	Diff <2x LOR	----
		magnesium	7439-95-4	E440	20	mg/kg	7420	8150	9.38%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	428	503	16.0%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	7.12	7.29	2.44%	40%	----
		nickel	7440-02-0	E440	0.50	mg/kg	109	105	3.26%	30%	----
		phosphorus	7723-14-0	E440	50	mg/kg	937	1720	59.0%	30%	DUP-H
		potassium	7440-09-7	E440	100	mg/kg	1610	1600	0.994%	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: 236153) - continued											
VA21B3121-001	Anonymous	selenium	7782-49-2	E440	0.20	mg/kg	1.19	1.11	0.08	Diff <2x LOR	----
		silver	7440-22-4	E440	0.10	mg/kg	0.37	0.42	0.04	Diff <2x LOR	----
		sodium	7440-23-5	E440	50	mg/kg	<50	<50	0	Diff <2x LOR	----
		strontium	7440-24-6	E440	0.50	mg/kg	93.3	99.8	6.67%	40%	----
		sulfur	7704-34-9	E440	1000	mg/kg	6700	7800	14.4%	30%	----
		thallium	7440-28-0	E440	0.050	mg/kg	0.400	0.403	0.743%	30%	----
		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	39.1	39.2	0.191%	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	15.3	18.1	16.8%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	34.2	33.5	1.99%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	1180	1140	3.19%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	5.6	5.5	0.06	Diff <2x LOR	----
Metals (QC Lot: 236884)											
VA21B3156-010	BA2126-A-10	aluminum	7429-90-5	E440	50	mg/kg	39400	41000	4.04%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	114	112	1.60%	30%	----
		arsenic	7440-38-2	E440	0.10	mg/kg	27.9	28.9	3.82%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	546	477	13.4%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.31	0.29	0.02	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.20	mg/kg	7.61	7.56	0.594%	30%	----
		boron	7440-42-8	E440	5.0	mg/kg	206	172	17.9%	30%	----
		cadmium	7440-43-9	E440	0.020	mg/kg	11.0	11.4	3.32%	30%	----
		calcium	7440-70-2	E440	50	mg/kg	116000	106000	9.14%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	161	128	22.8%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	38.9	30.0	25.8%	30%	----
		copper	7440-50-8	E440	0.50	mg/kg	1000	1520	40.7%	30%	DUP-H
		iron	7439-89-6	E440	50	mg/kg	80800	44000	58.8%	30%	DUP-H
		lead	7439-92-1	E440	0.50	mg/kg	468	1300	94.3%	40%	DUP-H
		lithium	7439-93-2	E440	2.0	mg/kg	20.0	18.6	7.45%	30%	----
		magnesium	7439-95-4	E440	20	mg/kg	11800	10800	9.33%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	1550	1390	10.9%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	18.0	15.5	14.6%	40%	----
		nickel	7440-02-0	E440	0.50	mg/kg	124	93.2	28.3%	30%	----
		phosphorus	7723-14-0	E440	50	mg/kg	8450	9320	9.82%	30%	----
		potassium	7440-09-7	E440	100	mg/kg	5360	5220	2.60%	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: 236884) - continued											
VA21B3156-010	BA2126-A-10	selenium	7782-49-2	E440	0.20	mg/kg	0.43	0.37	0.06	Diff <2x LOR	----
		silver	7440-22-4	E440	0.10	mg/kg	5.68	7.96	33.4%	40%	----
		sodium	7440-23-5	E440	50	mg/kg	15200	14600	3.74%	40%	----
		strontium	7440-24-6	E440	0.50	mg/kg	278	249	10.7%	40%	----
		sulfur	7704-34-9	E440	1000	mg/kg	12900	12300	4.20%	30%	----
		thallium	7440-28-0	E440	0.050	mg/kg	0.050	0.060	0.009	Diff <2x LOR	----
		tin	7440-31-5	E440	2.0	mg/kg	116	98.6	16.0%	40%	----
		titanium	7440-32-6	E440	1.0	mg/kg	1090	650	50.4%	40%	DUP-H
		tungsten	7440-33-7	E440	0.50	mg/kg	15.3	12.5	20.6%	30%	----
		uranium	7440-61-1	E440	0.050	mg/kg	4.11	4.16	1.24%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	61.1	46.1	28.0%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	5020	5140	2.39%	30%	----
zirconium	7440-67-7	E440	1.0	mg/kg	1.3	1.6	0.3	Diff <2x LOR	----		
Metals (QC Lot: 236885)											
VA21B3156-010	BA2126-A-10	mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----

Qualifiers

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



Method Blank (MB) Report

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

Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 236158)						
moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 236893)						
moisture	----	E144	0.25	%	<0.25	----
Metals (QCLot: 236152)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 236153)						
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	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 236153) - continued						
tin	7440-31-5	E440	2	mg/kg	<2.0	----
titanium	7440-32-6	E440	1	mg/kg	<1.0	----
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	----
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
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: 236884)						
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: 236884) - 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: 236885)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 238136)						
silver	7440-22-4	E440.Ag	0.1	mg/kg	<0.10	----
TCLP Metals (QCLot: 236335)						
mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP Metals (QCLot: 236336)						
antimony, TCLP	7440-36-0	E444	1	mg/L	<1.0	----
arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	----
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	----
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	----
boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	----
cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	----
calcium, TCLP	7440-70-2	E444	10	mg/L	<10	----
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	----
cobalt, TCLP	7440-48-4	E444	0.05	mg/L	<0.050	----
copper, TCLP	7440-50-8	E444	0.05	mg/L	<0.050	----
iron, TCLP	7439-89-6	E444	5	mg/L	<5.0	----
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	----
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	<2.5	----
nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	----
selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	----
silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	----
thallium, TCLP	7440-28-0	E444	1	mg/L	<1.0	----
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				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Physical Tests (QCLot: 236154)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	100	95.0	105	----
Physical Tests (QCLot: 236158)									
moisture	----	E144	0.25	%	50 %	99.8	90.0	110	----
Physical Tests (QCLot: 236886)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	99.8	95.0	105	----
Physical Tests (QCLot: 236893)									
moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Metals (QCLot: 236152)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	99.5	80.0	120	----
Metals (QCLot: 236153)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	99.8	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	100	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	97.6	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	100.0	80.0	120	----
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	105	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	102	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	100	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	96.6	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	102	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	104	80.0	120	----
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	101	80.0	120	----
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	99.9	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	106	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	97.6	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	100	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	102	80.0	120	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Metals (QCLot: 236153) - continued									
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	99.3	80.0	120	----
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	106	80.0	120	----
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	107	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	104	80.0	120	----
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	104	80.0	120	----
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	94.4	80.0	120	----
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	102	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	104	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	101	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	97.6	80.0	120	----
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	106	80.0	120	----
Metals (QCLot: 236884)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	113	80.0	120	----
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	114	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	109	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	110	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	117	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	100	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	106	80.0	120	----
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	107	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	114	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	111	80.0	120	----
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	108	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	119	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	112	80.0	120	----
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	109	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	113	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	108	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	109	80.0	120	----
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	116	80.0	120	----
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	108	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	102	80.0	120	----
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	113	80.0	120	----
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	108	80.0	120	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Metals (QCLot: 236884) - continued									
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	107	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	104	80.0	120	----
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	111	80.0	120	----
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	110	80.0	120	----
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	107	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	103	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	115	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	112	80.0	120	----
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	111	80.0	120	----
Metals (QCLot: 236885)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	96.8	80.0	120	----
Metals (QCLot: 238136)									
silver	7440-22-4	E440.Ag	0.1	mg/kg	10 mg/kg	98.6	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: 236335)										
VA21B3156-001	BA2126-A-1	mercury, TCLP	7439-97-6	E512	0.0010 mg/L	0.001 mg/L	95.8	50.0	140	----
TCLP Metals (QCLot: 236336)										
VA21B3156-001	BA2126-A-1	antimony, TCLP	7440-36-0	E444	4.7 mg/L	5 mg/L	93.4	50.0	140	----
		arsenic, TCLP	7440-38-2	E444	4.6 mg/L	5 mg/L	91.5	50.0	140	----
		barium, TCLP	7440-39-3	E444	11.9 mg/L	12.5 mg/L	95.2	50.0	140	----
		beryllium, TCLP	7440-41-7	E444	0.215 mg/L	0.25 mg/L	85.9	50.0	140	----
		boron, TCLP	7440-42-8	E444	8.81 mg/L	10 mg/L	88.1	50.0	140	----
		cadmium, TCLP	7440-43-9	E444	0.212 mg/L	0.25 mg/L	84.6	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	1.14 mg/L	1.25 mg/L	91.1	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	2.16 mg/L	2.5 mg/L	86.6	50.0	140	----
		iron, TCLP	7439-89-6	E444	228 mg/L	250 mg/L	91.0	50.0	140	----
		lead, TCLP	7439-92-1	E444	9.45 mg/L	10 mg/L	94.5	50.0	140	----
		magnesium, TCLP	7439-95-4	E444	238 mg/L	250 mg/L	95.0	50.0	140	----
		nickel, TCLP	7440-02-0	E444	2.25 mg/L	2.5 mg/L	90.0	50.0	140	----
		selenium, TCLP	7782-49-2	E444	4.75 mg/L	5 mg/L	94.9	50.0	140	----
		silver, TCLP	7440-22-4	E444	0.098 mg/L	0.1 mg/L	98.1	50.0	140	----
		thallium, TCLP	7440-28-0	E444	4.7 mg/L	5 mg/L	93.2	50.0	140	----
		uranium, TCLP	7440-61-1	E444	4.71 mg/L	5 mg/L	94.2	50.0	150	----
		vanadium, TCLP	7440-62-2	E444	0.69 mg/L	0.75 mg/L	92.2	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	7 mg/L	10 mg/L	73.2	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: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Metals (QCLot: 236152)									
QC-236152-003	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	98.8	70.0	130	----
Metals (QCLot: 236153)									
QC-236153-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	109	70.0	130	----
QC-236153-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	102	70.0	130	----
QC-236153-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	106	70.0	130	----
QC-236153-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	95.2	70.0	130	----
QC-236153-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	104	70.0	130	----
QC-236153-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	121	40.0	160	----
QC-236153-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	103	70.0	130	----
QC-236153-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	104	70.0	130	----
QC-236153-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	114	70.0	130	----
QC-236153-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	103	70.0	130	----
QC-236153-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	99.6	70.0	130	----
QC-236153-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	107	70.0	130	----
QC-236153-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	100	70.0	130	----
QC-236153-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	103	70.0	130	----
QC-236153-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	102	70.0	130	----
QC-236153-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	107	70.0	130	----
QC-236153-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	101	70.0	130	----
QC-236153-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	103	70.0	130	----
QC-236153-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	104	70.0	130	----
QC-236153-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	114	70.0	130	----
QC-236153-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	105	70.0	130	----
QC-236153-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	102	70.0	130	----
QC-236153-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	100	40.0	160	----
QC-236153-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	101	70.0	130	----
QC-236153-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	112	70.0	130	----
QC-236153-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	102	70.0	130	----
QC-236153-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	108	70.0	130	----



Sub-Matrix: Soil/Solid

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Metals (QCLot: 236153) - continued									
QC-236153-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	101	70.0	130	----
QC-236153-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	98.7	70.0	130	----
Metals (QCLot: 236884)									
QC-236884-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	118	70.0	130	----
QC-236884-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	105	70.0	130	----
QC-236884-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	126	70.0	130	----
QC-236884-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	114	70.0	130	----
QC-236884-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	107	70.0	130	----
QC-236884-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	122	40.0	160	----
QC-236884-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	110	70.0	130	----
QC-236884-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	108	70.0	130	----
QC-236884-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	122	70.0	130	----
QC-236884-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	114	70.0	130	----
QC-236884-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	110	70.0	130	----
QC-236884-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	117	70.0	130	----
QC-236884-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	113	70.0	130	----
QC-236884-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	109	70.0	130	----
QC-236884-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	114	70.0	130	----
QC-236884-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	118	70.0	130	----
QC-236884-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	108	70.0	130	----
QC-236884-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	112	70.0	130	----
QC-236884-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	120	70.0	130	----
QC-236884-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	119	70.0	130	----
QC-236884-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	113	70.0	130	----
QC-236884-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	107	70.0	130	----
QC-236884-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	95.6	40.0	160	----
QC-236884-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	101	70.0	130	----
QC-236884-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	128	70.0	130	----
QC-236884-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	110	70.0	130	----
QC-236884-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	120	70.0	130	----
QC-236884-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	112	70.0	130	----
QC-236884-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	114	70.0	130	----

Page : 15 of 15
 Work Order : VA21B3156
 Client : Covanta Burnaby Renewable Energy, ULC
 Project : Weekly Bottom Ash - Suite




Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Metals (QCLot: 236885)									
QC-236885-003	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	118	70.0	130	----



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:	Steve Mckinney / Dan Skrypnyk	<input checked="" type="checkbox"/> PDF	<input type="checkbox"/> Excel	<input type="checkbox"/> Digital	<input type="checkbox"/> Fax	
Address:	5150 Riverbend Drive Burnaby BC	Email 1:	smckinney@covanta.com		<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
Phone:	604-521-1025	Email 2:	rjohnson4@covanta.com		<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
	<input type="checkbox"/> Yes <input type="checkbox"/> No	Email 3:	dskrypnyk@covanta.com		<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
			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?		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:									

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
	Lab Work Order # (lab use only) 3156	ALS Contact:	Sampler:						
BA2126-A-1	Environmental Division Vancouver Work Order Reference VA21B3156  Telephone : +1 604 253 4188	23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-2		23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-3		23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-4		23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-5		23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-6		23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-7		23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-8		23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-9		23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-10		23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-11		23-Jun-21	9:00	Soil	X	X	X	1	
BA2126-A-12		23-Jun-21	9:00	Soil	X	X	X	1	

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

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
<i>[Signature]</i>	29-Jun-21	08:00				27, 26°C	JAV	June 29	12:10	Yes / No ? If Yes add SIF