metrovancouver

Bottom Ash Data

2020 Week 32

The following analytical reports were sent to the Ministry of Environment and Climate Change Strategy:

- Weekly Composite Results were submitted on September 8, 2020
- Daily Composite Results were submitted on October 7, 2020

The data represents bottom ash composite results for week 32 of 2020 (August 2, 2020 to August 8, 2020).

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



CERTIFICATE OF ANALYSIS

Page **Work Order** : VA20B2335

Amendment : 1

Client : Covanta Burnaby Renewable Energy, ULC

Contact : Steve McKinney Address : 5150 Riverbend Drive

Burnaby BC Canada V3N 4V3

Telephone : 604 521 1025

Project

PO : VANCO 0000049378

C-O-C number Sampler

Site

Quote number : Standing Offer (BC work)

No. of samples received : 20 No. of samples analysed : 20 : 1 of 12

Laboratory : Vancouver - Environmental

Account Manager **Brent Mack**

Address : 8081 Lougheed Highway

Burnaby BC Canada V5A 1W9

Telephone : +1 604 253 4188 **Date Samples Received**

: 11-Aug-2020 11:45 **Date Analysis Commenced** : 11-Aug-2020

Issue Date : 06-Sep-2020 13:26

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 |
|--------------|---------------------------------------|-------------------------------------|
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |
| Mae Soropia | Laboratory Analyst | Metals, Burnaby, British Columbia |
| Muneeb Alam | Analyst | Metals, Burnaby, British Columbia |
| Ophelia Chiu | Supervisor - Organics Instrumentation | Organics, Burnaby, British Columbia |
| Robin Weeks | Team Leader - Metals | Metals, Burnaby, British Columbia |

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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



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

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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



Analytical Results

| Sub-Matrix: Soil/Solid | | | CI | ient sample ID | BA2032-A-1 | BA2032-A-2 | BA2032-A-3 | BA2032-A-4 | BA2032-A-5 |
|------------------------|------------|--------|---------------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | | | | | |
| | | | Client sampli | ng date / time | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B2335-001 | VA20B2335-002 | VA20B2335-003 | VA20B2335-004 | VA20B2335-005 |
| | | | | | Result | Result | Result | Result | Result |
| Physical Tests | | | | | | | | | |
| moisture | | E144 | 0.25 | % | 21.2 | 19.1 | 21.1 | 20.5 | 20.1 |
| pH (1:2 soil:water) | | E108 | 0.10 | pH units | 10.8 | 10.8 | 10.6 | 10.8 | 10.6 |
| Metals | | | | | | | | | |
| aluminum | 7429-90-5 | | 50 | mg/kg | 31100 | 29700 | 31700 | 34100 | 41900 |
| antimony | 7440-36-0 | | 0.10 | mg/kg | 118 | 131 | 113 | 141 | 118 |
| arsenic | 7440-38-2 | | 0.10 | mg/kg | 38.7 | 40.8 | 30.9 | 38.2 | 31.5 |
| barium | 7440-39-3 | | 0.50 | mg/kg | 536 | 520 | 572 | 522 | 573 |
| beryllium | 7440-41-7 | E440 | 0.10 | mg/kg | 0.40 | 0.42 | 0.41 | 0.40 | 0.38 |
| bismuth | 7440-69-9 | E440 | 0.20 | mg/kg | 12.5 | 17.8 | 5.72 | 7.55 | 4.97 |
| boron | 7440-42-8 | E440 | 5.0 | mg/kg | 203 | 191 | 181 | 239 | 176 |
| cadmium | 7440-43-9 | E440 | 0.020 | mg/kg | 14.8 | 14.7 | 12.8 | 16.3 | 12.9 |
| calcium | 7440-70-2 | E440 | 50 | mg/kg | 118000 | 125000 | 123000 | 122000 | 114000 |
| chromium | 7440-47-3 | E440 | 0.50 | mg/kg | 133 | 145 | 140 | 170 | 160 |
| cobalt | 7440-48-4 | E440 | 0.10 | mg/kg | 82.4 | 48.3 | 30.2 | 94.4 | 35.8 |
| copper | 7440-50-8 | E440 | 0.50 | mg/kg | 2090 | 3070 | 5160 | 1990 | 1350 |
| iron | 7439-89-6 | E440 | 50 | mg/kg | 49900 | 52000 | 69300 | 64900 | 63400 |
| lead | 7439-92-1 | E440 | 0.50 | mg/kg | 533 | 543 | 608 | 1100 | 637 |
| lithium | 7439-93-2 | E440 | 2.0 | mg/kg | 17.1 | 19.2 | 16.3 | 21.7 | 16.3 |
| magnesium | 7439-95-4 | E440 | 20 | mg/kg | 10000 | 10900 | 9960 | 10400 | 9920 |
| manganese | 7439-96-5 | E440 | 1.0 | mg/kg | 777 | 824 | 742 | 836 | 716 |
| mercury | 7439-97-6 | E510 | 0.0500 | mg/kg | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 |
| molybdenum | 7439-98-7 | | 0.10 | mg/kg | 27.4 | 25.2 | 29.5 | 29.1 | 21.8 |
| nickel | 7440-02-0 | | 0.50 | mg/kg | 116 | 158 | 196 | 153 | 164 |
| phosphorus | 7723-14-0 | | 50 | mg/kg | 10700 | 11100 | 12400 | 10700 | 12200 |
| potassium | 7440-09-7 | E440 | 100 | mg/kg | 4860 | 5330 | 4500 | 5000 | 4980 |
| selenium | 7782-49-2 | | 0.20 | mg/kg | 0.43 | 0.40 | 0.42 | 0.37 | 0.58 |
| silver | 7440-22-4 | | 0.10 | mg/kg | 5.39 | 7.50 | 6.33 | 5.57 | 4.96 |
| sodium | 7440-23-5 | | 50 | mg/kg | 13000 | 13800 | 12200 | 13600 | 14100 |
| strontium | 7440-24-6 | | 0.50 | mg/kg | 409 | 287 | 380 | 415 | 265 |
| sulfur | 7704-34-9 | | 1000 | mg/kg | 11100 | 12100 | 11300 | 12900 | 10800 |

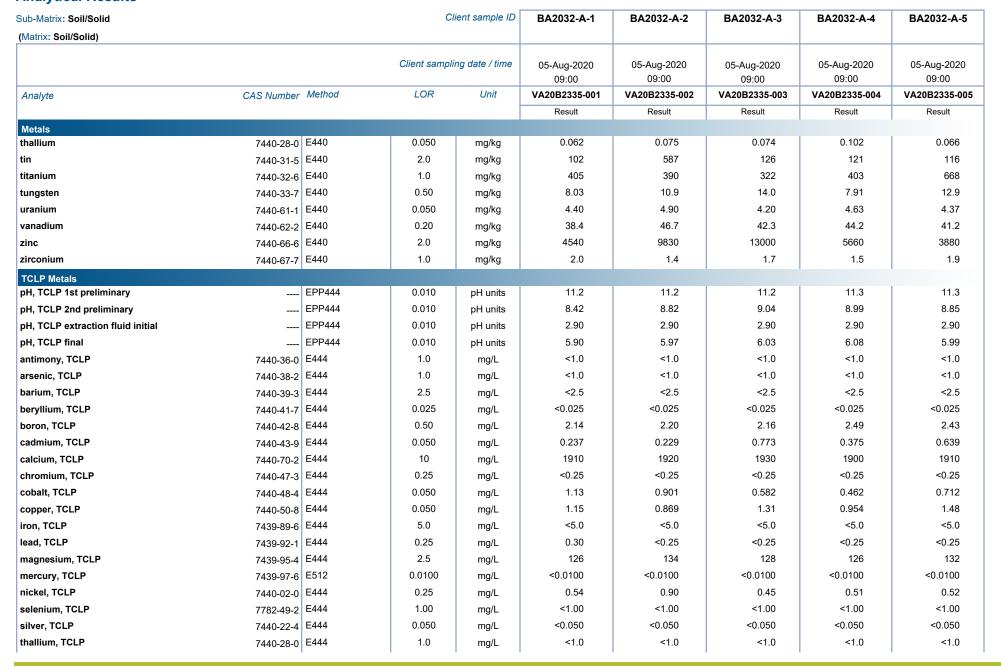
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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---

Analytical Results





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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---

ALS

Analytical Results

| Sub-Matrix: Soil/Solid | | CI | ient sample ID | BA2032-A-1 | BA2032-A-2 | BA2032-A-3 | BA2032-A-4 | BA2032-A-5 |
|------------------------|-------------------|---------------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | | | | |
| | | Client sampli | ng date / time | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 |
| Analyte | CAS Number Method | LOR | Unit | VA20B2335-001 | VA20B2335-002 | VA20B2335-003 | VA20B2335-004 | VA20B2335-005 |
| | | | | 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 |
| zinc, TCLP | 7440-66-6 E444 | 0.50 | mg/L | 60.2 | 45.7 | 61.6 | 56.4 | 53.0 |

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

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Client : Covanta Burnaby Renewable Energy, ULC

Project

Analytical Results

| Sub-Matrix: Soil/Solid | | | CI | ient sample ID | BA2032-A-6 | BA2032-A-7 | BA2032-A-8 | BA2032-A-9 | BA2032-A-10 |
|------------------------|------------|--------|---------------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | | | | | |
| | | | Client sampli | ng date / time | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B2335-006 | VA20B2335-007 | VA20B2335-008 | VA20B2335-009 | VA20B2335-010 |
| | | | | | Result | Result | Result | Result | Result |
| Physical Tests | | | | | | | | | |
| moisture | | E144 | 0.25 | % | 20.5 | 21.5 | 20.3 | 20.7 | 20.9 |
| pH (1:2 soil:water) | | E108 | 0.10 | pH units | 10.5 | 10.8 | 10.7 | 10.6 | 10.6 |
| Metals | | | | | | | | | |
| aluminum | 7429-90-5 | | 50 | mg/kg | 27900 | 33500 | 27900 | 30600 | 31300 |
| antimony | 7440-36-0 | E440 | 0.10 | mg/kg | 154 | 136 | 141 | 132 | 141 |
| arsenic | 7440-38-2 | E440 | 0.10 | mg/kg | 42.5 | 37.5 | 40.8 | 33.6 | 40.4 |
| barium | 7440-39-3 | | 0.50 | mg/kg | 482 | 578 | 575 | 559 | 493 |
| beryllium | 7440-41-7 | | 0.10 | mg/kg | 0.44 | 0.42 | 0.44 | 0.38 | 0.41 |
| bismuth | 7440-69-9 | E440 | 0.20 | mg/kg | 7.56 | 5.91 | 6.13 | 5.58 | 7.29 |
| boron | 7440-42-8 | E440 | 5.0 | mg/kg | 207 | 226 | 262 | 218 | 250 |
| cadmium | 7440-43-9 | E440 | 0.020 | mg/kg | 16.7 | 16.9 | 14.4 | 14.5 | 20.4 |
| calcium | 7440-70-2 | E440 | 50 | mg/kg | 129000 | 131000 | 122000 | 116000 | 120000 |
| chromium | 7440-47-3 | E440 | 0.50 | mg/kg | 188 | 814 | 160 | 149 | 165 |
| cobalt | 7440-48-4 | E440 | 0.10 | mg/kg | 78.0 | 30.7 | 41.5 | 40.6 | 345 |
| copper | 7440-50-8 | E440 | 0.50 | mg/kg | 1930 | 2010 | 3540 | 9300 | 3330 |
| iron | 7439-89-6 | E440 | 50 | mg/kg | 56800 | 77000 | 51000 | 63600 | 59400 |
| lead | 7439-92-1 | E440 | 0.50 | mg/kg | 614 | 517 | 467 | 1520 | 1190 |
| lithium | 7439-93-2 | E440 | 2.0 | mg/kg | 17.1 | 19.9 | 21.4 | 15.2 | 17.4 |
| magnesium | 7439-95-4 | E440 | 20 | mg/kg | 10400 | 12000 | 11500 | 12400 | 10800 |
| manganese | 7439-96-5 | E440 | 1.0 | mg/kg | 808 | 993 | 819 | 776 | 850 |
| mercury | 7439-97-6 | | 0.0500 | mg/kg | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 |
| molybdenum | 7439-98-7 | E440 | 0.10 | mg/kg | 30.3 | 40.2 | 32.2 | 27.3 | 33.3 |
| nickel | 7440-02-0 | E440 | 0.50 | mg/kg | 189 | 681 | 136 | 477 | 173 |
| phosphorus | 7723-14-0 | | 50 | mg/kg | 11400 | 10800 | 12000 | 11100 | 10000 |
| potassium | 7440-09-7 | | 100 | mg/kg | 5300 | 5210 | 5080 | 4800 | 4700 |
| selenium | 7782-49-2 | | 0.20 | mg/kg | 0.54 | 0.39 | 0.43 | 0.43 | 0.32 |
| silver | 7440-22-4 | | 0.10 | mg/kg | 6.66 | 5.77 | 7.88 | 4.46 | 9.84 |
| sodium | 7440-23-5 | | 50 | mg/kg | 13700 | 16200 | 14100 | 12700 | 12500 |
| strontium | 7440-24-6 | | 0.50 | mg/kg | 314 | 295 | 294 | 278 | 368 |
| sulfur | 7704-34-9 | | 1000 | mg/kg | 13600 | 13500 | 12600 | 12200 | 13300 |
| thallium | 7440-28-0 | | 0.050 | mg/kg | 0.077 | 0.070 | 0.073 | 0.092 | 0.072 |

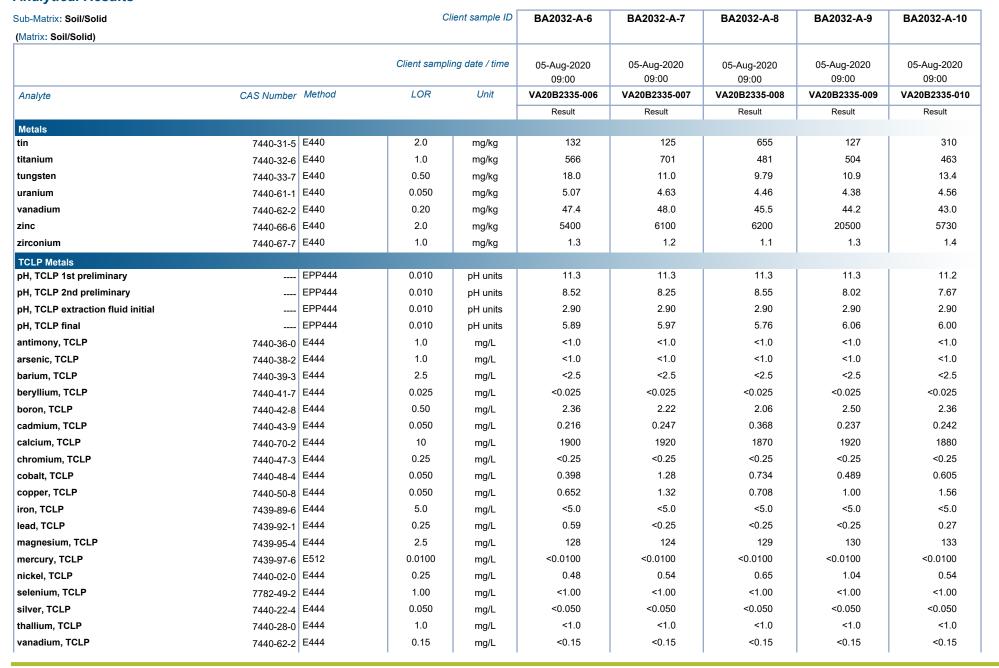
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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---

Analytical Results





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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---

ALS

Analytical Results

| Sub-Matrix: Soil/Solid | | CI | ient sample ID | BA2032-A-6 | BA2032-A-7 | BA2032-A-8 | BA2032-A-9 | BA2032-A-10 |
|------------------------|-------------------|---------------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | | | | |
| | | Client sampli | ng date / time | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 |
| Analyte | CAS Number Method | LOR | Unit | VA20B2335-006 | VA20B2335-007 | VA20B2335-008 | VA20B2335-009 | VA20B2335-010 |
| | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | |
| zinc, TCLP | 7440-66-6 E444 | 0.50 | mg/L | 59.8 | 47.4 | 63.5 | 56.8 | 57.9 |

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

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Client : Covanta Burnaby Renewable Energy, ULC

Project

Analytical Results

| Sub-Matrix: Soil/Solid | | | C | lient sample ID | BA2032-A-11 | BA2032-A-12 | | |
|------------------------|------------|--------|--------------|-----------------|----------------------|----------------------|------|--|
| (Matrix: Soil/Solid) | | | | | | | | |
| | | | Client sampl | ing date / time | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | | |
| Analyte | CAS Number | Method | LOR | Unit | VA20B2335-011 | VA20B2335-012 | | |
| | | | | | Result | Result | | |
| Physical Tests | | | | | | | | |
| moisture | | E144 | 0.25 | % | 21.0 | 21.1 | | |
| pH (1:2 soil:water) | | E108 | 0.10 | pH units | 10.7 | 10.7 | | |
| Metals | | | | | | | | |
| aluminum | 7429-90-5 | | 50 | mg/kg | 26500 | 33900 | | |
| antimony | 7440-36-0 | | 0.10 | mg/kg | 101 | 126 | | |
| arsenic | 7440-38-2 | E440 | 0.10 | mg/kg | 35.2 | 40.4 | | |
| barium | 7440-39-3 | E440 | 0.50 | mg/kg | 547 | 515 | | |
| beryllium | 7440-41-7 | E440 | 0.10 | mg/kg | 0.48 | 0.41 | | |
| bismuth | 7440-69-9 | E440 | 0.20 | mg/kg | 5.00 | 6.02 | | |
| boron | 7440-42-8 | E440 | 5.0 | mg/kg | 172 | 227 | | |
| cadmium | 7440-43-9 | E440 | 0.020 | mg/kg | 21.2 | 14.4 | | |
| calcium | 7440-70-2 | E440 | 50 | mg/kg | 103000 | 124000 | | |
| chromium | 7440-47-3 | E440 | 0.50 | mg/kg | 191 | 144 | | |
| cobalt | 7440-48-4 | E440 | 0.10 | mg/kg | 263 | 317 | | |
| copper | 7440-50-8 | E440 | 0.50 | mg/kg | 24100 | 1460 | | |
| iron | 7439-89-6 | E440 | 50 | mg/kg | 108000 | 62100 | | |
| lead | 7439-92-1 | | 0.50 | mg/kg | 3300 | 613 | | |
| lithium | 7439-93-2 | E440 | 2.0 | mg/kg | 42.8 | 20.0 | | |
| magnesium | 7439-95-4 | | 20 | mg/kg | 9440 | 11000 | | |
| manganese | 7439-96-5 | | 1.0 | mg/kg | 1590 | 1130 | | |
| mercury | 7439-97-6 | | 0.0500 | mg/kg | <0.0500 | <0.0500 | | |
| molybdenum | 7439-98-7 | | 0.10 | mg/kg | 36.5 | 30.6 | | |
| nickel | 7440-02-0 | | 0.50 | mg/kg | 176 | 807 | | |
| phosphorus | 7723-14-0 | | 50 | mg/kg | 9150 | 11000 | | |
| potassium | 7440-09-7 | | 100 | mg/kg | 4570 | 5260 | | |
| selenium | 7782-49-2 | | 0.20 | mg/kg | 0.47 | 0.39 | | |
| silver | 7440-22-4 | | 0.10 | mg/kg | 3.75 | 5.18 | | |
| sodium | 7440-23-5 | | 50 | mg/kg | 11900 | 13500 | | |
| strontium | 7440-24-6 | | 0.50 | mg/kg | 263 | 290 | | |
| sulfur | 7704-34-9 | | 1000 | mg/kg | 10600 | 13100 | | |
| thallium | 7440-28-0 | | 0.050 | mg/kg | 0.075 | 0.064 | | |
| 1 | 1+40-20-0 | 1 | 1 0.000 | '''9'''9 | 0.070 | 0.001 | | |

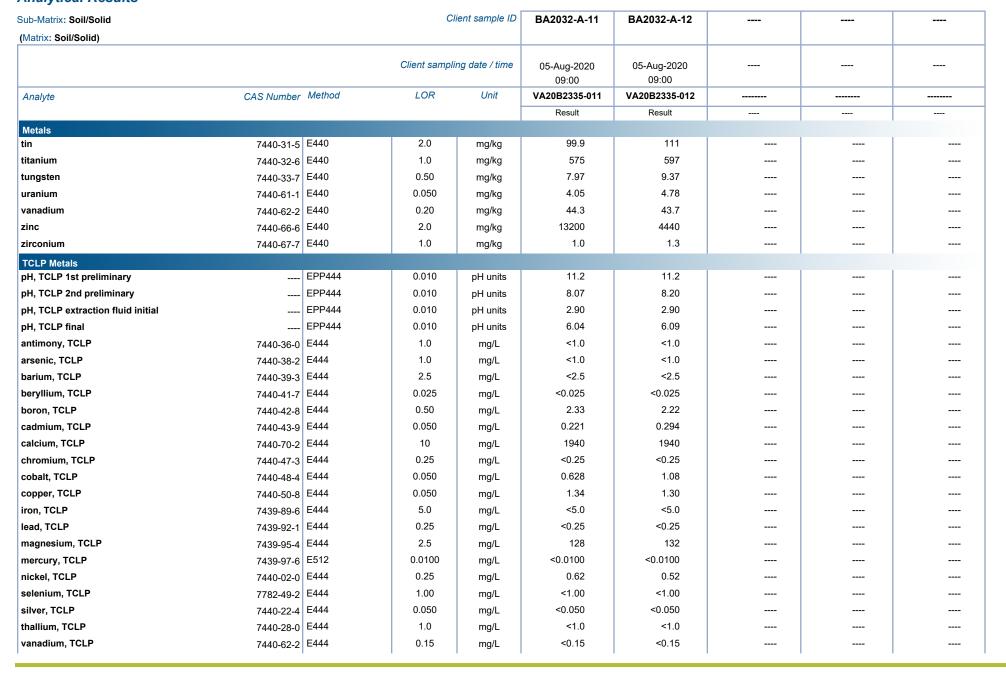
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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : --

Analytical Results





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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



Analytical Results

| Sub-Matrix: Soil/Solid | | CI | lient sample ID | BA2032-A-11 | BA2032-A-12 | | |
|------------------------|-------------------|---------------|-----------------|----------------------|----------------------|------|--|
| (Matrix: Soil/Solid) | | | | | | | |
| | | Client sampli | ing date / time | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | | |
| Analyte | CAS Number Method | LOR | Unit | VA20B2335-011 | VA20B2335-012 | | |
| | | | | Result | Result | | |
| TCLP Metals | | | | | | | |
| zinc, TCLP | 7440-66-6 E444 | 0.50 | mg/L | 46.4 | 50.4 | | |

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

Analytical Results

| Sub-Matrix: Soil | | | CI | ient sample ID | BA2032-A-3 | BA2032-A-3 | BA2032-A-3 | BA2032-A-3 | BA2032-A-5 |
|-----------------------------------|------------|--------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|
| (Matrix: Soil/Solid) | | | | | REP1 | REP2 | REP3 | REP4 | REP1 |
| | | | Client sampli | ng date / time | 05-Aug-2020 | 05-Aug-2020 | 05-Aug-2020 | 05-Aug-2020 | 05-Aug-2020 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B2335-013 | VA20B2335-014 | VA20B2335-015 | VA20B2335-016 | VA20B2335-017 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.2 | 11.2 | 11.2 | 11.2 | 11.3 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 9.04 | 9.04 | 9.04 | 9.04 | 8.85 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.92 | 2.92 | 2.92 | 2.92 | 2.89 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.97 | 6.00 | 5.99 | 5.92 | 5.89 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.252 | 0.284 | 1.91 | 0.240 | 0.333 |
| | | | | | | | | | |

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

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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



Analytical Results

| Sub-Matrix: Soil | | | CI | ient sample ID | BA2032-A-5 | BA2032-A-5 | BA2032-A-5 | |
|-----------------------------------|------------|--------|---------------|----------------|---------------|---------------|---------------|------|
| (Matrix: Soil/Solid) | | | | | REP2 | REP3 | REP4 | |
| | | | Client sampli | ng date / time | 05-Aug-2020 | 05-Aug-2020 | 05-Aug-2020 | |
| Analyte | CAS Number | Method | LOR | Unit | VA20B2335-018 | VA20B2335-019 | VA20B2335-020 | |
| | | | | | Result | Result | Result | |
| TCLP Metals | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.3 | 11.3 | 11.3 | |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.85 | 8.85 | 8.85 | |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.89 | 2.89 | 2.89 | |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.94 | 5.94 | 5.98 | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 1.77 | 0.262 | 0.284 | |

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



Burnaby BC Canada V3N 4V3

QUALITY CONTROL INTERPRETIVE REPORT

Work Order : VA20B2335 Page : 1 of 17

Amendment : 1

Client : Covanta Burnaby Renewable Energy, ULC Laboratory : Vancouver - Environmental

Contact : Steve McKinney Account Manager : Brent Mack

Address : 5150 Riverbend Drive Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone : 604 521 1025 Telephone : +1 604 253 4188

 Project
 : -- Date Samples Received
 : 11-Aug-2020 11:45

 PO
 : VANCO 000049378
 Issue Date
 : 06-Sep-2020 13:26

C-O-C number : ---Sampler : ---Site : ----

Quote number : Standing Offer (BC work)

No. of samples received : 20 No. of samples analysed : 20

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

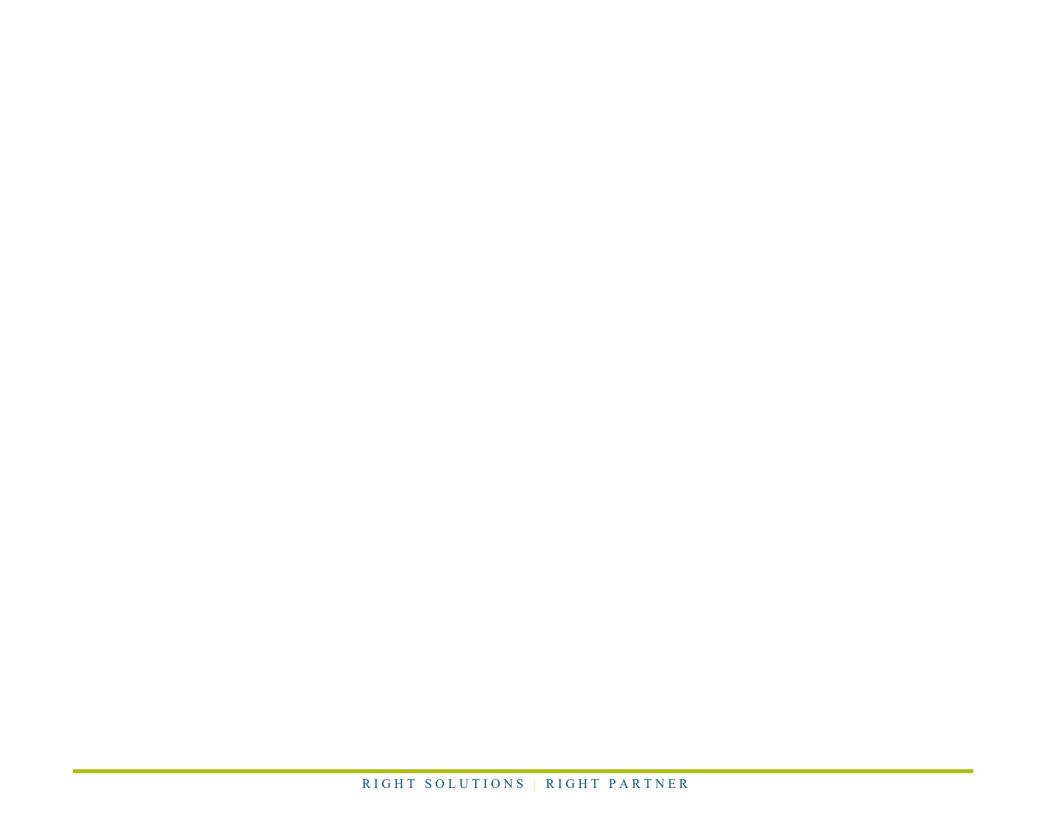
• No Reference Material (RM) Sample outliers occur.

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.



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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



Analysis Holding Time Compliance

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

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

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

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

Astrix: Soil/Solid Evaluation: × = Holding time exceedance; ✓ = Within Holding Time

| Matrix: Soil/Solid | | | | | E۱ | valuation: 🗴 = | Holding time exce | edance ; 🔻 | = Within | Holding Ti |
|---|--------|---------------|---------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|------------|
| Analyte Group | Method | Sampling Date | Ex | traction / Pr | eparation | | | Analys | is | |
| Container / Client Sample ID(s) | | | Preparation Date | Holding Rec | 7 Times Actual | Eval | Analysis Date | Holding Rec | 7 Times Actual | Eval |
| Metals : Mercury in Soil/Solid by CVAAS | | | | | | | | | | |
| LDPE bag BA2032-A-1 | E510 | 05-Aug-2020 | 17-Aug-2020 | 28 days | 12 days | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| Metals : Mercury in Soil/Solid by CVAAS | | | | | | | | | | |
| LDPE bag BA2032-A-10 | E510 | 05-Aug-2020 | 17-Aug-2020 | 28 days | 12 days | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| Metals : Mercury in Soil/Solid by CVAAS | | | | | | | | | | |
| LDPE bag BA2032-A-11 | E510 | 05-Aug-2020 | 17-Aug-2020 | 28 days | 12 days | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| Metals : Mercury in Soil/Solid by CVAAS | | | | | | | | | | |
| LDPE bag BA2032-A-12 | E510 | 05-Aug-2020 | 17-Aug-2020 | 28 days | 12 days | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| Metals : Mercury in Soil/Solid by CVAAS | | | | | | | | | | |
| LDPE bag BA2032-A-2 | E510 | 05-Aug-2020 | 17-Aug-2020 | 28 days | 12 days | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| Metals : Mercury in Soil/Solid by CVAAS | | | | | | | | | | |
| LDPE bag BA2032-A-3 | E510 | 05-Aug-2020 | 17-Aug-2020 | 28 days | 12 days | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| Metals : Mercury in Soil/Solid by CVAAS | | | | | | | | 1 | | |
| LDPE bag BA2032-A-4 | E510 | 05-Aug-2020 | 17-Aug-2020 | 28 days | 12 days | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |

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Client : Covanta Burnaby Renewable Energy, ULC

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Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Analyte Group Sampling Date Extraction / Preparation Analysis Method Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Metals : Mercury in Soil/Solid by CVAAS

| | Metals: Mercury in Soli/Solid by CVAAS | | | | | | | | | |
|--|--|------|-------------|-------------|--|---|-------------|---------|--------|---|
| E510 05-Aug-2020 17-Aug-2020 28 12 | = | E510 | 05-Aug-2020 | 17-Aug-2020 | | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| BA2032-A-6 | Metals : Mercury in Soil/Solid by CVAAS | | | | | | | | | |
| E510 | • | E510 | 05-Aug-2020 | 17-Aug-2020 | | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| BA2032-A-7 | letals : Mercury in Soil/Solid by CVAAS | | | | | | | | | |
| E510 | = | E510 | 05-Aug-2020 | 17-Aug-2020 | | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| E510 05-Aug-2020 17-Aug-2020 28 12 | letals : Mercury in Soil/Solid by CVAAS | | | | | | | | | |
| E510 | 5 | E510 | 05-Aug-2020 | 17-Aug-2020 | | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| E510 05-Aug-2020 17-Aug-2020 28 12 | letals : Mercury in Soil/Solid by CVAAS | | | | | | | | | |
| E440 05-Aug-2020 17-Aug-2020 180 12 | 5 | E510 | 05-Aug-2020 | 17-Aug-2020 | | ✓ | 18-Aug-2020 | 15 days | 0 days | ✓ |
| E440 05-Aug-2020 17-Aug-2020 180 12 | Metals : Metals in Soil/Solid by CRC ICPMS | | | | | | | | | |
| LDPE bag BA2032-A-10 E440 05-Aug-2020 17-Aug-2020 180 12 days 12 days 17-Aug-2020 167 days 0 days Metals : Metals in Soil/Solid by CRC ICPMS E440 05-Aug-2020 17-Aug-2020 180 12 days 17-Aug-2020 17-Aug-2020 167 days 0 days Metals : Metals in Soil/Solid by CRC ICPMS E440 05-Aug-2020 17-Aug-2020 180 12 days 17-Aug-2020 167 days 0 days Metals : Metals in Soil/Solid by CRC ICPMS E440 | LDPE bag | E440 | 05-Aug-2020 | 17-Aug-2020 | | ✓ | 17-Aug-2020 | | 0 days | ✓ |
| BA2032-A-10 E440 05-Aug-2020 17-Aug-2020 180 days 12 √ 17-Aug-2020 167 days 17-Aug-2020 180 days 17-Aug-2020 180 12 √ 17-Aug-2020 180 12 √ 17-Aug-2020 180 12 √ 17-Aug-2020 180 190 190 190 190 190 190 19 | Metals : Metals in Soil/Solid by CRC ICPMS | | | | | | | | | |
| LDPE bag BA2032-A-11 E440 05-Aug-2020 17-Aug-2020 180 12 √ 17-Aug-2020 167 days 0 days Metals : Metals in Soil/Solid by CRC ICPMS LDPE bag Image: Metals in Soil/Solid by CRC ICPMS Image: Metals in Soil/Solid by CRC ICPMS | • | E440 | 05-Aug-2020 | 17-Aug-2020 | | ✓ | 17-Aug-2020 | | 0 days | ✓ |
| BA2032-A-11 | Metals : Metals in Soil/Solid by CRC ICPMS | | | | | | | | | |
| LDPE bag | - | E440 | 05-Aug-2020 | 17-Aug-2020 | | ✓ | 17-Aug-2020 | | 0 days | ✓ |
| | Metals : Metals in Soil/Solid by CRC ICPMS | | | | | | | | | |
| days days days days | • | E440 | 05-Aug-2020 | 17-Aug-2020 | | ✓ | 17-Aug-2020 | | 0 days | ✓ |

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Physical Tests: Moisture Content by Gravimetry

LDPE bag

BA2032-A-1

Client : Covanta Burnaby Renewable Energy, ULC

Project : --



14-Aug-2020

Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Rec Actual Actual Date Metals: Metals in Soil/Solid by CRC ICPMS LDPE bag E440 BA2032-A-2 05-Aug-2020 17-Aug-2020 ✓ 17-Aug-2020 0 days ✓ 180 12 167 days days days Metals: Metals in Soil/Solid by CRC ICPMS LDPE bag 17-Aug-2020 1 1 BA2032-A-3 E440 05-Aug-2020 180 12 17-Aug-2020 167 0 days days days days Metals: Metals in Soil/Solid by CRC ICPMS LDPE bag BA2032-A-4 E440 05-Aug-2020 17-Aug-2020 ✓ 17-Aug-2020 0 days ✓ 180 12 167 days days days Metals: Metals in Soil/Solid by CRC ICPMS LDPE bag E440 17-Aug-2020 ✓ 17-Aug-2020 ✓ BA2032-A-5 05-Aug-2020 180 12 167 0 days days days days Metals: Metals in Soil/Solid by CRC ICPMS LDPE bag BA2032-A-6 E440 05-Aug-2020 17-Aug-2020 1 17-Aug-2020 0 days ✓ 180 12 167 days days days Metals : Metals in Soil/Solid by CRC ICPMS LDPE bag E440 05-Aug-2020 17-Aug-2020 ✓ 17-Aug-2020 ✓ BA2032-A-7 180 12 167 0 days days days days Metals: Metals in Soil/Solid by CRC ICPMS LDPE bag BA2032-A-8 E440 05-Aug-2020 17-Aug-2020 1 17-Aug-2020 0 days 1 180 12 167 days days days Metals: Metals in Soil/Solid by CRC ICPMS LDPE bag ✓ BA2032-A-9 ✓ E440 05-Aug-2020 17-Aug-2020 180 12 17-Aug-2020 167 0 days days days days

05-Aug-2020

E144

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| nalyte Group | Method | Evaluation: > Method Sampling Date Extraction / Preparation | | | | | | | | |
|--|--------|--|---------------------|-----|-------------------|------|---------------|--------|-------------------|------|
| <u> </u> | Metnoa | Sampling Date | | | | | | Analys | | |
| Container / Client Sample ID(s) | | | Preparation Date | Rec | g Times Actual | Eval | Analysis Date | Rec | g Times Actual | Eval |
| hysical Tests : Moisture Content by Gravimetry | | | 24.0 | | | | | | | |
| LDPE bag | | | | | | | | | | |
| BA2032-A-10 | E144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| hysical Tests : Moisture Content by Gravimetry | | | | | | | | | | |
| LDPE bag | | | | | | | | | | |
| BA2032-A-11 | E144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| hysical Tests : Moisture Content by Gravimetry | | | | | | | | | | |
| LDPE bag | | | | | | | | | | |
| BA2032-A-12 | E144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| hysical Tests : Moisture Content by Gravimetry | | | | | | | | | | |
| LDPE bag | E144 | 05 4 0000 | | | | | 44 4 2020 | | | |
| BA2032-A-2 | E144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| hysical Tests : Moisture Content by Gravimetry | | | | | | | | | | |
| LDPE bag | E144 | 05-Aug-2020 | | | | | 44 4 2020 | | | |
| BA2032-A-3 | E 144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| hysical Tests : Moisture Content by Gravimetry | | | | | | | | | | |
| LDPE bag BA2032-A-4 | E144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| BA2U32-A-4 | E 144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| hysical Tests : Moisture Content by Gravimetry | | | | | | | | | | |
| LDPE bag BA2032-A-5 | E144 | 05-Aug-2020 | | | | | 14 Aug 2020 | | | |
| BA2U32-A-5 | C144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| hysical Tests : Moisture Content by Gravimetry | | | | | | | | | | |
| LDPE bag | E144 | 05 Aug 2020 | | | | | 14 Au ~ 2020 | | | |
| BA2032-A-6 | E144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| hysical Tests : Moisture Content by Gravimetry | | | | | | | | | | |
| DPE bag | F444 | 0F A 0000 | | | | | 14 4 2020 | | | |
| BA2032-A-7 | E144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |

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| Matrix: Soil/Solid | | | | | | aluation: × = | Holding time exce | | | Holding 7 |
|--|--------|---------------|-------------|---------------|------------|---------------|-------------------|---------|--------|-----------|
| Analyte Group | Method | Sampling Date | Ext | traction / Pr | | | | Analys | | |
| Container / Client Sample ID(s) | | | Preparation | | g Times | Eval | Analysis Date | Holding | | Eval |
| | | | Date | Rec | Actual | | | Rec | Actual | |
| Physical Tests : Moisture Content by Gravimetry | | | | T T | | | | | | |
| BA2032-A-8 | E144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| Physical Tests : Moisture Content by Gravimetry | | | | | | | | | | |
| LDPE bag BA2032-A-9 | E144 | 05-Aug-2020 | | | | | 14-Aug-2020 | | | |
| Physical Tests : pH by Meter (1:2 Soil:Water Extraction) | | | | | | | | | | |
| BA2032-A-1 | E108 | 05-Aug-2020 | 17-Aug-2020 | 30 days | 12 days | ✓ | 17-Aug-2020 | 17 days | 0 days | ✓ |
| Physical Tests : pH by Meter (1:2 Soil:Water Extraction) | | | | | | | | | | |
| LDPE bag BA2032-A-10 | E108 | 05-Aug-2020 | 17-Aug-2020 | 30 days | 12 days | ✓ | 17-Aug-2020 | 17 days | 0 days | ✓ |
| Physical Tests : pH by Meter (1:2 Soil:Water Extraction) | | | | | | | | | | |
| LDPE bag BA2032-A-11 | E108 | 05-Aug-2020 | 17-Aug-2020 | 30 days | 12 days | ✓ | 17-Aug-2020 | 17 days | 0 days | ✓ |
| hysical Tests : pH by Meter (1:2 Soil:Water Extraction) | | | | | | | | | | |
| LDPE bag BA2032-A-12 | E108 | 05-Aug-2020 | 17-Aug-2020 | 30 days | 12 days | ✓ | 17-Aug-2020 | 17 days | 0 days | ✓ |
| Physical Tests : pH by Meter (1:2 Soil:Water Extraction) | | | | | | | _ | | | |
| LDPE bag BA2032-A-2 | E108 | 05-Aug-2020 | 17-Aug-2020 | 30 days | 12 days | ✓ | 17-Aug-2020 | 17 days | 0 days | ✓ |
| Physical Tests : pH by Meter (1:2 Soil:Water Extraction) | | | | | | | | | | |
| LDPE bag BA2032-A-3 | E108 | 05-Aug-2020 | 17-Aug-2020 | 30 days | 12 days | ✓ | 17-Aug-2020 | 17 days | 0 days | ✓ |
| hysical Tests : pH by Meter (1:2 Soil:Water Extraction) | | | | | | | | | | |
| LDPE bag BA2032-A-4 | E108 | 05-Aug-2020 | 17-Aug-2020 | 30 days | 12 days | ✓ | 17-Aug-2020 | 17 days | 0 days | ✓ |

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Client : Covanta Burnaby Renewable Energy, ULC

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Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Rec Actual Actual Date Physical Tests: pH by Meter (1:2 Soil:Water Extraction) LDPE bag BA2032-A-5 E108 05-Aug-2020 17-Aug-2020 ✓ 17-Aug-2020 17 days 0 days ✓ 30 12 days days Physical Tests: pH by Meter (1:2 Soil:Water Extraction) LDPE bag 1 ✓ BA2032-A-6 E108 05-Aug-2020 17-Aug-2020 30 12 17-Aug-2020 17 days 0 days days days Physical Tests: pH by Meter (1:2 Soil:Water Extraction) LDPE bag BA2032-A-7 E108 05-Aug-2020 17-Aug-2020 ✓ 17-Aug-2020 17 days 0 days ✓ 30 12 days davs Physical Tests : pH by Meter (1:2 Soil:Water Extraction) LDPE bag ✓ E108 17-Aug-2020 17-Aug-2020 17 days 0 days ✓ BA2032-A-8 05-Aug-2020 30 12 days days Physical Tests : pH by Meter (1:2 Soil:Water Extraction) LDPE bag BA2032-A-9 E108 05-Aug-2020 17-Aug-2020 1 17-Aug-2020 17 days 0 days ✓ 30 12 days days TCLP Metals: Mercury by CVAAS (TCLP) Glass vial - total (lab preserved) BA2032-A-1 E512 11-Aug-2020 18-Aug-2020 ✓ 0 days 0 davs TCLP Metals: Mercury by CVAAS (TCLP) Glass vial - total (lab preserved) BA2032-A-10 E512 11-Aug-2020 18-Aug-2020 0 days 0 days 1 TCLP Metals : Mercury by CVAAS (TCLP) Glass vial - total (lab preserved) 0 days ✓ BA2032-A-11 E512 11-Aug-2020 18-Aug-2020 0 days TCLP Metals: Mercury by CVAAS (TCLP) Glass vial - total (lab preserved) E512 ✓ BA2032-A-12 11-Aug-2020 18-Aug-2020 0 days 0 days --------

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| Matrix: Soil/Solid | | | | | E۱ | /aluation: <mark>≭</mark> = | Holding time excee | edance ; • | ∕ = Within | Holding Ti |
|---|--------|------------------|------|--------------------|-----------|-----------------------------|--------------------|------------|------------|------------|
| Analyte Group | Method | Sampling Date | Ext | raction / Pr | eparation | | | Analys | sis | |
| Container / Client Sample ID(s) | | Preparation Hold | | Holding Times Eval | | Eval | Analysis Date | Holding | g Times | Eval |
| | | | Date | Rec | Actual | | | Rec | Actual | |
| TCLP Metals : Mercury by CVAAS (TCLP) | | | | | | | | | | |
| Glass vial - total (lab preserved) | | | | | | | | | | |
| BA2032-A-2 | E512 | 11-Aug-2020 | | | | | 18-Aug-2020 | 0 days | 0 days | ✓ |
| | | | | | | | | | | |
| TCLP Metals : Mercury by CVAAS (TCLP) | | | | | | | | | | |
| Glass vial - total (lab preserved) | | | | | | | | | | |
| BA2032-A-3 | E512 | 11-Aug-2020 | | | | | 18-Aug-2020 | 0 days | 0 days | ✓ |
| | | | | | | | | | | |
| TCLP Metals : Mercury by CVAAS (TCLP) | | | | | | | | | | |
| Glass vial - total (lab preserved) | | | | | | | | | | , |
| BA2032-A-4 | E512 | 11-Aug-2020 | | | | | 18-Aug-2020 | 0 days | 0 days | ✓ |
| | | | | | | | | | | |
| TCLP Metals : Mercury by CVAAS (TCLP) | | | | | | | | | | |
| Glass vial - total (lab preserved) | | | | | | | | | | |
| BA2032-A-5 | E512 | 11-Aug-2020 | | | | | 18-Aug-2020 | 0 days | 0 days | ✓ |
| | | | | | | | | | | |
| TCLP Metals : Mercury by CVAAS (TCLP) | | | | | | | | | | |
| Glass vial - total (lab preserved) | F540 | 44 4 0000 | | | | | 40.4 0000 | | | 1 |
| BA2032-A-6 | E512 | 11-Aug-2020 | | | | | 18-Aug-2020 | 0 days | 0 days | ✓ |
| | | | | | | | | | | |
| TCLP Metals : Mercury by CVAAS (TCLP) | | | | | ı | | | | | |
| Glass vial - total (lab preserved) | F540 | 44 4 0000 | | | | | 40. 4 0000 | 0.1 | 0.1 | 1 |
| BA2032-A-7 | E512 | 11-Aug-2020 | | | | | 18-Aug-2020 | 0 days | 0 days | • |
| | | | | | | | | | | |
| TCLP Metals : Mercury by CVAAS (TCLP) | | | | | | | | ı | | |
| Glass vial - total (lab preserved) | E512 | 11 Aug 2020 | | | | | 10 Aug 2020 | O days | O days | √ |
| BA2032-A-8 | E312 | 11-Aug-2020 | | | | | 18-Aug-2020 | 0 days | 0 days | • |
| | | | | | | | | | | |
| TCLP Metals : Mercury by CVAAS (TCLP) | | | | | | | | | | |
| Glass vial - total (lab preserved) BA2032-A-9 | E512 | 11-Aug-2020 | | | | | 18-Aug-2020 | 0 days | 0 days | 1 |
| DAZU3Z-A-9 | E312 | 11-Aug-2020 | | | | | 10-Aug-2020 | o days | o days | • |
| | | | | | | | | | | |
| TCLP Metals: Metals by CRC ICPMS (TCLP) | | | | | | | I | I | | |
| HDPE - total (lab preserved) BA2032-A-1 | E444 | 11-Aug-2020 | | | | | 18-Aug-2020 | 186 | 13 days | ✓ |
| DU5005-1-1 | L444 | 11-Aug-2020 | | | | | 10-Aug-2020 | | 10 days | • |
| | | | | | | | | days | | |

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| nalyte Group | Method | Sampling Date | Ex | traction / Pre | eparation | | | Analys | SiS | |
|---|--------|---------------|-------------|----------------|-----------|------|---------------|-------------|---------|------|
| Container / Client Sample ID(s) | | | Preparation | Holding | Times | Eval | Analysis Date | Holding | g Times | Eval |
| | | | Date | Rec | Actual | | | Rec | Actual | |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - total (lab preserved) | | | | | | | | | | |
| BA2032-A-10 | E444 | 11-Aug-2020 | | | | | 18-Aug-2020 | 186 days | 13 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - total (lab preserved) | | | | | | | | | | |
| BA2032-A-11 | E444 | 11-Aug-2020 | | | | | 18-Aug-2020 | 186 days | 13 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - total (lab preserved) | | | | | | | | | | |
| BA2032-A-12 | E444 | 11-Aug-2020 | | | | | 18-Aug-2020 | 186 days | 13 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - total (lab preserved) | | | | | | | | | | |
| BA2032-A-2 | E444 | 11-Aug-2020 | | | | | 18-Aug-2020 | 186 days | 13 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - total (lab preserved) | | | | | | | | | | |
| BA2032-A-3 | E444 | 11-Aug-2020 | | | | | 18-Aug-2020 | 186 days | 13 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - total (lab preserved) | | | | | | | | | | |
| BA2032-A-4 | E444 | 11-Aug-2020 | | | | | 18-Aug-2020 | 186 days | 13 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - total (lab preserved) | | | | | | | | | | |
| BA2032-A-5 | E444 | 11-Aug-2020 | | | | | 18-Aug-2020 | 186 days | 13 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - total (lab preserved) | | | | | | | | | | |
| BA2032-A-6 | E444 | 11-Aug-2020 | | | | | 18-Aug-2020 | 186 days | 13 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - total (lab preserved) | | | | | | | | | | |
| BA2032-A-7 | E444 | 11-Aug-2020 | | | | | 18-Aug-2020 | 186 | 13 days | ✓ |

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Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Date Rec Actual TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - total (lab preserved) BA2032-A-8 E444 11-Aug-2020 18-Aug-2020 13 days ✓ 186 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - total (lab preserved) 1 BA2032-A-9 E444 11-Aug-2020 18-Aug-2020 186 13 days -------days TCLP Metals : Metals by CRC ICPMS (TCLP) HDPE - total (lab preserved) BA2032-A-3 REP1 E444 20-Aug-2020 23-Aug-2020 17 days ✓ 194 days TCLP Metals : Metals by CRC ICPMS (TCLP) HDPE - total (lab preserved) ✓ BA2032-A-3 REP2 E444 20-Aug-2020 23-Aug-2020 17 days 194 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - total (lab preserved) BA2032-A-3 REP3 E444 20-Aug-2020 23-Aug-2020 17 days 194 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - total (lab preserved) 1 BA2032-A-3 REP4 E444 20-Aug-2020 23-Aug-2020 17 davs 194 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - total (lab preserved) BA2032-A-5 REP1 E444 02-Sep-2020 04-Sep-2020 30 days 1 207 days TCLP Metals : Metals by CRC ICPMS (TCLP) HDPE - total (lab preserved) ✓ BA2032-A-5 REP2 E444 02-Sep-2020 04-Sep-2020 30 days 207 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - total (lab preserved) E444 02-Sep-2020 04-Sep-2020 ✓ BA2032-A-5 REP3 30 days 207 ---days

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Client : Covanta Burnaby Renewable Energy, ULC

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Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Rec Actual Actual Date TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - total (lab preserved) BA2032-A-5 REP4 E444 02-Sep-2020 04-Sep-2020 30 days 207 days TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) EPP444 BA2032-A-1 05-Aug-2020 11-Aug-2020 --------TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2032-A-10 EPP444 05-Aug-2020 11-Aug-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) EPP444 BA2032-A-11 05-Aug-2020 11-Aug-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2032-A-12 EPP444 05-Aug-2020 11-Aug-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2032-A-2 EPP444 05-Aug-2020 11-Aug-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2032-A-3 EPP444 05-Aug-2020 11-Aug-2020 TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 BA2032-A-3 REP1 05-Aug-2020 20-Aug-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 BA2032-A-3 REP2 05-Aug-2020 20-Aug-2020 ------------

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Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



| Matrix: Soil/Solid | | | | | Ev | aluation: × = | Holding time excee | edance ; | ✓ = Within | Holding Ti |
|--|--------|---------------|---------------------|----------------|-------------------|---------------|--------------------|---------------|-------------------|------------|
| Analyte Group | Method | Sampling Date | Ext | raction / Pr | eparation | | | Analy | sis | |
| Container / Client Sample ID(s) | | | Preparation Date | Holding Rec | g Times Actual | Eval | Analysis Date | Holdin Rec | g Times Actual | Eval |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2032-A-3 REP3 | EPP444 | 05-Aug-2020 | 20-Aug-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2032-A-3 REP4 | EPP444 | 05-Aug-2020 | 20-Aug-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2032-A-4 | EPP444 | 05-Aug-2020 | 11-Aug-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2032-A-5 | EPP444 | 05-Aug-2020 | 11-Aug-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2032-A-5 REP1 | EPP444 | 05-Aug-2020 | 02-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2032-A-5 REP2 | EPP444 | 05-Aug-2020 | 02-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2032-A-5 REP3 | EPP444 | 05-Aug-2020 | 02-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2032-A-5 REP4 | EPP444 | 05-Aug-2020 | 02-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2032-A-6 | EPP444 | 05-Aug-2020 | 11-Aug-2020 | | | | | | | |

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Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



Matrix: Soil/Solid Evaluation: × = Holding time exceedance; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Ext | raction / Pre | eparation | | | Analys | sis | |
|---|--------|---------------|-------------|--------------------|-----------|---------------|---------|---------|--------|--|
| Container / Client Sample ID(s) | | | Preparation | Holding Times Eval | | Analysis Date | Holding | g Times | Eval | |
| | | | Date | 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) BA2032-A-7 | EPP444 | 05-Aug-2020 | 11-Aug-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2032-A-8 | EPP444 | 05-Aug-2020 | 11-Aug-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2032-A-9 | EPP444 | 05-Aug-2020 | 11-Aug-2020 | | | | | | | |

Legend & Qualifier Definitions

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

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Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



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: × = <i>QC frequency outside specification</i> ; ✓ = <i>QC frequency within specification</i> . | | | | | | | | | | |
|---|---|----------|----|---------|--------|---------------|------------|--|--|--|--|
| Quality Control Sample Type | | | Co | ount | | Frequency (%) | | | | | |
| Analytical Methods | Method | QC Lot # | QC | Regular | Actual | Expected | Evaluation | | | | |
| Laboratory Duplicates (DUP) | | | | | | | | | | | |
| Mercury in Soil/Solid by CVAAS | E510 | 72080 | 1 | 20 | 5.0 | 5.0 | ✓ | | | | |
| Metals in Soil/Solid by CRC ICPMS | E440 | 72081 | 1 | 20 | 5.0 | 5.0 | ✓ | | | | |
| Moisture Content by Gravimetry | E144 | 72083 | 1 | 20 | 5.0 | 5.0 | √ | | | | |
| pH by Meter (1:2 Soil:Water Extraction) | E108 | 72082 | 1 | 20 | 5.0 | 5.0 | ✓ | | | | |
| Laboratory Control Samples (LCS) | | | | | | | | | | | |
| Mercury in Soil/Solid by CVAAS | E510 | 72080 | 2 | 20 | 10.0 | 10.0 | 1 | | | | |
| Metals in Soil/Solid by CRC ICPMS | E440 | 72081 | 2 | 20 | 10.0 | 10.0 | ✓ | | | | |
| Moisture Content by Gravimetry | E144 | 72083 | 1 | 20 | 5.0 | 5.0 | ✓ | | | | |
| pH by Meter (1:2 Soil:Water Extraction) | E108 | 72082 | 1 | 20 | 5.0 | 5.0 | ✓ | | | | |
| Method Blanks (MB) | | | | | | | | | | | |
| Mercury by CVAAS (TCLP) | E512 | 72826 | 1 | 12 | 8.3 | 5.0 | ✓ | | | | |
| Mercury in Soil/Solid by CVAAS | E510 | 72080 | 1 | 20 | 5.0 | 5.0 | √ | | | | |
| Metals by CRC ICPMS (TCLP) | E444 | 81654 | 3 | 20 | 15.0 | 5.0 | ✓ | | | | |
| Metals in Soil/Solid by CRC ICPMS | E440 | 72081 | 1 | 20 | 5.0 | 5.0 | ✓ | | | | |
| Moisture Content by Gravimetry | E144 | 72083 | 1 | 20 | 5.0 | 5.0 | ✓ | | | | |
| Matrix Spikes (MS) | | | | | | | | | | | |
| Mercury by CVAAS (TCLP) | E512 | 72826 | 1 | 12 | 8.3 | 5.0 | ✓ | | | | |
| Metals by CRC ICPMS (TCLP) | E444 | 81654 | 3 | 20 | 15.0 | 5.0 | 1 | | | | |

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Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



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 $20\pm5^{\circ}\text{C}$), 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 HNO3 and HCI. 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 HNO3 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 | EP108 Vancouver - Environmental | Soil/Solid | BC WLAP METHOD: PH, ELECTROMETRIC, SOIL | The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. |
| Digestion for Metals and Mercury | EP440 Vancouver - Environmental | Soil/Solid | EPA 200.2 (mod) | Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. This method is intended to liberate metals that may be environmentally available. |

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Client : Covanta Burnaby Renewable Energy, ULC

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| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|------------------------------------|---------------|------------|------------------|--|
| TCLP Leachate Preparation (Metals, | EPP444 | Soil/Solid | EPA 1311 | Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample |
| Inorganics, and SVOCs) | | | | involves particle size reduction, homogenization, then determination of appropriate |
| | Vancouver - | | | extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle |
| | Environmental | | | 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

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Amendment :1

Address

Project

Site

Client : Covanta Burnaby Renewable Energy, ULC Laboratory · Vancouver - Environmental

Contact : Steve McKinney **Account Manager** : Brent Mack

> Address :5150 Riverbend Drive :8081 Lougheed Highway Burnaby BC Canada V3N 4V3

Burnaby, British Columbia Canada V5A 1W9

Telephone :604 521 1025 Telephone :+1 604 253 4188

> **Date Samples Received** :11-Aug-2020 11:45 **Date Analysis Commenced**

PO : VANCO 0000049378 :11-Aug-2020

C-O-C number Issue Date :06-Sep-2020 13:26 Sampler

Quote number : Standing Offer (BC work)

No. of samples received : 20 No. of samples analysed : 20

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.

| Signatories | Position | Laboratory Department |
|--------------|---------------------------------------|-------------------------------------|
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |
| Mae Soropia | Laboratory Analyst | Metals, Burnaby, British Columbia |
| Muneeb Alam | Analyst | Metals, Burnaby, British Columbia |
| Ophelia Chiu | Supervisor - Organics Instrumentation | Organics, Burnaby, British Columbia |
| Robin Weeks | Team Leader - Metals | Metals, Burnaby, British Columbia |

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Client : Covanta Burnaby Renewable Energy, ULC

Project : --



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.

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ALS

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 | | | | | | | Labora | atory Duplicate (D | OUP) Report | | |
|------------------------|------------------|---------------------|------------|--------|--------|----------|--------------------|---------------------|-------------------------|---------------------|----------|
| aboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifie |
| Physical Tests (QC | C Lot: 72082) | | | | | | | | | | |
| /A20B2306-001 | Anonymous | pH (1:2 soil:water) | | E108 | 0.10 | pH units | 9.00 | 9.11 | 1.21% | 5% | |
| Physical Tests (QC | C Lot: 72083) | | | | | | | | | | |
| VA20B2306-001 | Anonymous | moisture | | E144 | 0.25 | % | 14.5 | 15.5 | 6.78% | 20% | |
| Metals (QC Lot: 72 | 080) | | | | | | | | | | |
| /A20B2306-001 | Anonymous | mercury | 7439-97-6 | E510 | 0.0500 | mg/kg | <0.0500 | <0.0500 | 0 | Diff <2x LOR | |
| Metals (QC Lot: 72 | 081) | | | | | | | | | | |
| /A20B2306-001 | Anonymous | aluminum | 7429-90-5 | E440 | 50 | mg/kg | 8410 | 8540 | 1.51% | 40% | |
| | | antimony | 7440-36-0 | E440 | 0.10 | mg/kg | 0.20 | 0.24 | 0.03 | Diff <2x LOR | |
| | | arsenic | 7440-38-2 | E440 | 0.10 | mg/kg | 2.85 | 3.21 | 12.1% | 30% | |
| | | barium | 7440-39-3 | E440 | 0.50 | mg/kg | 63.4 | 63.4 | 0.0546% | 40% | |
| | | beryllium | 7440-41-7 | E440 | 0.10 | mg/kg | 0.26 | 0.28 | 0.02 | 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 | 0.101 | 0.106 | 0.005 | Diff <2x LOR | |
| | | calcium | 7440-70-2 | E440 | 50 | mg/kg | 10200 | 9210 | 10.2% | 30% | |
| | | chromium | 7440-47-3 | E440 | 0.50 | mg/kg | 62.4 | 57.2 | 8.65% | 30% | |
| | | cobalt | 7440-48-4 | E440 | 0.10 | mg/kg | 14.7 | 14.8 | 0.370% | 30% | |
| | | copper | 7440-50-8 | E440 | 0.50 | mg/kg | 21.5 | 21.3 | 0.789% | 30% | |
| | | iron | 7439-89-6 | E440 | 50 | mg/kg | 41200 | 40700 | 1.18% | 30% | |
| | | lead | 7439-92-1 | E440 | 0.50 | mg/kg | 2.22 | 2.42 | 0.20 | Diff <2x LOR | |
| | | lithium | 7439-93-2 | E440 | 2.0 | mg/kg | 4.9 | 4.9 | 0.03 | Diff <2x LOR | |
| | | magnesium | 7439-95-4 | E440 | 20 | mg/kg | 13500 | 13700 | 1.29% | 30% | |
| | | manganese | 7439-96-5 | E440 | 1.0 | mg/kg | 478 | 533 | 10.9% | 30% | |
| | | molybdenum | 7439-98-7 | E440 | 0.10 | mg/kg | 0.44 | 0.53 | 0.08 | Diff <2x LOR | |
| | | nickel | 7440-02-0 | E440 | 0.50 | mg/kg | 71.5 | 70.9 | 0.872% | 30% | |
| | | | 7723-14-0 | E440 | 50 | | 840 | 778 | 7.64% | 30% | |
| | | phosphorus | 7440-09-7 | E440 | 100 | mg/kg | 600 | 600 | 0.855% | 40% | |
| | | potassium | | | | mg/kg | | <0.20 | | _ | |
| | | selenium | 7782-49-2 | E440 | 0.20 | mg/kg | <0.20 | | 0 | 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 | 452 | 419 | 7.49% | 40% | |
| | | strontium | 7440-24-6 | E440 | 0.50 | mg/kg | 58.2 | 52.6 | 9.96% | 40% | |
| | | sulfur | 7704-34-9 | E440 | 1000 | mg/kg | <1000 | <1000 | 0 | Diff <2x LOR | |

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Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



| Sub-Matrix: Soil/Solid | ub-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: 720 | 81) - continued | | | | | | | | | | | | | | |
| VA20B2306-001 | Anonymous | thallium | 7440-28-0 | E440 | 0.050 | mg/kg | <0.050 | <0.050 | 0 | 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 | 1170 | 1160 | 1.04% | 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 | 0.374 | 0.426 | 12.8% | 30% | | | | | |
| | | vanadium | 7440-62-2 | E440 | 0.20 | mg/kg | 114 | 115 | 0.985% | 30% | | | | | |
| | | zinc | 7440-66-6 | E440 | 2.0 | mg/kg | 49.4 | 54.6 | 10.1% | 30% | | | | | |
| | | zirconium | 7440-67-7 | E440 | 1.0 | mg/kg | 6.4 | 7.3 | 13.0% | 30% | | | | | |

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Client : Covanta Burnaby Renewable Energy, ULC

Project : --

ALS

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: 72083) | | | | | |
| noisture | E144 | 0.25 | % | <0.25 | |
| Metals (QCLot: 72080) | | | | | |
| nercury | 7439-97-6 E510 | 0.005 | mg/kg | <0.0050 | |
| Metals (QCLot: 72081) | | | | | |
| aluminum | 7429-90-5 E440 | 50 | mg/kg | <50 | |
| antimony | 7440-36-0 E440 | 0.1 | mg/kg | <0.10 | |
| rsenic | 7440-38-2 E440 | 0.1 | mg/kg | <0.10 | |
| parium | 7440-39-3 E440 | 0.5 | mg/kg | <0.50 | |
| peryllium | 7440-41-7 E440 | 0.1 | mg/kg | <0.10 | |
| sismuth | 7440-69-9 E440 | 0.2 | mg/kg | <0.20 | |
| poron | 7440-42-8 E440 | 5 | mg/kg | <5.0 | |
| admium | 7440-43-9 E440 | 0.02 | mg/kg | <0.020 | |
| alcium | 7440-70-2 E440 | 50 | mg/kg | <50 | |
| hromium | 7440-47-3 E440 | 0.5 | mg/kg | <0.50 | |
| obalt | 7440-48-4 E440 | 0.1 | mg/kg | <0.10 | |
| opper | 7440-50-8 E440 | 0.5 | mg/kg | <0.50 | |
| on | 7439-89-6 E440 | 50 | mg/kg | <50 | |
| ead | 7439-92-1 E440 | 0.5 | mg/kg | <0.50 | |
| thium | 7439-93-2 E440 | 2 | mg/kg | <2.0 | |
| nagnesium | 7439-95-4 E440 | 20 | mg/kg | <20 | |
| nanganese | 7439-96-5 E440 | 1 | mg/kg | <1.0 | |
| nolybdenum | 7439-98-7 E440 | 0.1 | mg/kg | <0.10 | |
| iickel | 7440-02-0 E440 | 0.5 | mg/kg | <0.50 | |
| phosphorus | 7723-14-0 E440 | 50 | mg/kg | <50 | |
| ootassium | 7440-09-7 E440 | 100 | mg/kg | <100 | |
| elenium | 7782-49-2 E440 | 0.2 | mg/kg | <0.20 | |
| ilver | 7440-22-4 E440 | 0.1 | mg/kg | <0.10 | |
| odium | 7440-23-5 E440 | 50 | mg/kg | <50 | |
| trontium | 7440-24-6 E440 | 0.5 | mg/kg | <0.50 | |
| ulfur | 7704-34-9 E440 | 1000 | mg/kg | <1000 | |
| nallium | 7440-28-0 E440 | 0.05 | mg/kg | <0.050 | |
| n | 7440-31-5 E440 | 2 | mg/kg | <2.0 | |
| tanium | 7440-32-6 E440 | 1 | mg/kg | <1.0 | |

Page : 6 of 13

Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---

Sub-Matrix: Soil/Solid

| Metals (QCLot: 72081) - continued tungsten 7440-33-7 E440 0.5 mg/kg uranium 7440-81-1 E440 0.05 mg/kg vanadium 7440-62-2 E440 0.2 mg/kg zinc 7440-66-6 E440 2 mg/kg TCLP Metals (QCLot: 72825) antimony, TCLP 7440-36-0 E444 1 mg/L arsenic, TCLP 7440-38-2 E444 1 mg/L barium, TCLP 7440-39-3 E444 2.5 mg/L beryllium, TCLP 7440-41-7 E444 0.025 mg/L boron, TCLP 7440-42-8 E444 0.05 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-43-2 E444 0.05 mg/L cobalt, TCLP 7440-48-8 E444 0.05 mg/L cobalt, TCLP 7440-48-8 E444 0.05 mg/L cobalt, TCLP 7440-50-8 </th <th><0.50 <0.050 <0.20 <2.0 <1.0</th> <th></th> | <0.50 <0.050 <0.20 <2.0 <1.0 | |
|--|--|----------|
| uranium 7440-61-1 E440 0.05 mg/kg vanadium 7440-62-2 E440 0.2 mg/kg zinc 7440-66-6 E440 2 mg/kg TCLP Metals (QCLot: 72825) antimony, TCLP 7440-36-0 E444 1 mg/L arsenic, TCLP 7440-38-2 E444 1 mg/L barium, TCLP 7440-39-3 E444 0.025 mg/L beryllium, TCLP 7440-42-8 E444 0.5 mg/L boron, TCLP 7440-42-8 E444 0.05 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-47-3 E444 0.05 mg/L chromium, TCLP 7440-47-3 E444 0.25 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L </td <td><0.050 <0.20 <2.0 <1.0</td> <td> </td> | <0.050 <0.20 <2.0 <1.0 | |
| vanadium 7440-62-2 E440 0.2 mg/kg zinc 7440-66-6 E440 2 mg/kg zirconium 7440-66-7 E440 1 mg/kg TCLP Metals (QCLot: 72825) antimony, TCLP 7440-36-0 E444 1 mg/L arsenic, TCLP 7440-38-2 E444 1 mg/L barium, TCLP 7440-39-3 E444 2.5 mg/L beryllium, TCLP 7440-41-7 E444 0.025 mg/L boron, TCLP 7440-42-8 E444 0.5 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-47-3 E444 0.05 mg/L chromium, TCLP 7440-47-3 E444 0.05 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L iron, TCLP 7439-89-8 E444 5 mg/L | <0.20 <2.0 <1.0 | |
| zinc 7440-66-6 E440 2 mg/kg zirconium 7440-67-7 E440 1 mg/kg TCLP Metals (QCLot: 72825) antimony, TCLP 7440-36-0 E444 1 mg/L arsenic, TCLP 7440-38-2 E444 1 mg/L barium, TCLP 7440-39-3 E444 2.5 mg/L beryllium, TCLP 7440-41-7 E444 0.025 mg/L boron, TCLP 7440-42-8 E444 0.5 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-43-8 E444 0.05 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-48-8 E444 0.05 mg/L copper, TCLP 7440-48-8 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L ciron, TCLP 7439-89-6 E444 5 mg/L | <2.0 <1.0 | |
| zirconium 7440-67-7 E440 1 mg/kg TCLP Metals (QCLot: 72825) antimony, TCLP 7440-36-0 E444 1 mg/L arsenic, TCLP 7440-38-2 E444 1 mg/L barium, TCLP 7440-39-3 E444 2.5 mg/L beryllium, TCLP 7440-41-7 E444 0.025 mg/L boron, TCLP 7440-42-8 E444 0.5 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-47-0 E444 0.05 mg/L chromium, TCLP 7440-47-3 E444 0.25 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L iron, TCLP 7439-89-6 E444 5 mg/L | <1.0 | |
| TCLP Metals (QCLot: 72825) antimony, TCLP 7440-36-0 E444 1 mg/L arsenic, TCLP 7440-38-2 E444 1 mg/L barium, TCLP 7440-39-3 E444 2.5 mg/L beryllium, TCLP 7440-41-7 E444 0.025 mg/L boron, TCLP 7440-42-8 E444 0.5 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-40-9 E444 10 mg/L calcium, TCLP 7440-40-8 E444 0.05 mg/L calcium, TCLP 7440-40-8 E444 0.05 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-48-8 E444 0.05 mg/L copper, TCLP 7440-48-8 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 5 0.05 mg/L | | |
| antimony, TCLP 7440-36-0 E444 1 mg/L arsenic, TCLP 7440-38-2 E444 1 mg/L barium, TCLP 7440-39-3 E444 2.5 mg/L beryllium, TCLP 7440-41-7 E444 0.025 mg/L boron, TCLP 7440-42-8 E444 0.5 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-70-2 E444 0.25 mg/L chromium, TCLP 7440-47-3 E444 0.05 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L iron, TCLP 7439-89-6 E444 5 mg/L | <1.0 | |
| arsenic, TCLP 7440-38-2 E444 1 mg/L barium, TCLP 7440-39-3 E444 2.5 mg/L beryllium, TCLP 7440-41-7 E444 0.025 mg/L boron, TCLP 7440-42-8 E444 0.5 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-47-2 E444 0.05 mg/L calcium, TCLP 7440-47-3 E444 0.05 mg/L calcium, TCLP 7440-47-3 E444 0.25 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L copper, TCLP 7439-89-6 E444 5.5 mg/L | <1.0 | |
| barium, TCLP 7440-39-3 E444 2.5 mg/L beryllium, TCLP 7440-41-7 E444 0.025 mg/L boron, TCLP 7440-42-8 E444 0.5 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-70-2 E444 10 mg/L chromium, TCLP 7440-47-3 E444 0.25 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L iron, TCLP 7439-89-6 E444 5 mg/L | | |
| beryllium, TCLP 7440-41-7 E444 0.025 mg/L boron, TCLP 7440-42-8 E444 0.5 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-70-2 E444 10 mg/L chromium, TCLP 7440-47-3 E444 0.25 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L iron, TCLP 7439-89-6 E444 5 mg/L | <1.0 | |
| boron, TCLP 7440-42-8 E444 0.5 mg/L cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-70-2 E444 10 mg/L chromium, TCLP 7440-47-3 E444 0.25 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L iron, TCLP 7439-89-6 E444 5 mg/L | <2.5 | |
| cadmium, TCLP 7440-43-9 E444 0.05 mg/L calcium, TCLP 7440-70-2 E444 10 mg/L chromium, TCLP 7440-47-3 E444 0.25 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L iron, TCLP 7439-89-6 E444 5 mg/L | <0.025 | |
| calcium, TCLP 7440-70-2 E444 10 mg/L chromium, TCLP 7440-47-3 E444 0.25 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L iron, TCLP 7439-89-6 E444 5 mg/L | <0.50 | |
| chromium, TCLP 7440-47-3 E444 0.25 mg/L cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L iron, TCLP 7439-89-6 E444 5 mg/L | <0.050 | |
| cobalt, TCLP 7440-48-4 E444 0.05 mg/L copper, TCLP 7440-50-8 E444 0.05 mg/L iron, TCLP 7439-89-6 E444 5 mg/L | <10 | |
| copper, TCLP 7440-50-8 iron, TCLP E444 0.05 mg/L iron, TCLP 7439-89-6 E444 5 mg/L | <0.25 | |
| iron, TCLP 7439-89-6 E444 5 mg/L | <0.050 | |
| Table Tabl | <0.050 | |
| lead, TCLP 7439-92-1 E444 0.25 mg/L | <5.0 | |
| | <0.25 | |
| magnesium, TCLP 7439-95-4 E444 2.5 mg/L | <2.5 | |
| nickel, TCLP 7440-02-0 E444 0.25 mg/L | <0.25 | |
| selenium, TCLP 7782-49-2 E444 0.1 mg/L | <0.10 | |
| silver, TCLP 7440-22-4 E444 0.05 mg/L | <0.050 | |
| thallium, TCLP 7440-28-0 E444 1 mg/L | <1.0 | |
| vanadium, TCLP 7440-62-2 E444 0.15 mg/L | <0.15 | |
| zinc, TCLP 7440-66-6 E444 0.5 mg/L | <0.50 | |
| TCLP Metals (QCLot: 72826) | | |
| mercury, TCLP 7439-97-6 E512 0.001 mg/L | <0.0010 | |
| TCLP Metals (QCLot: 75631) | | |
| 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 | |



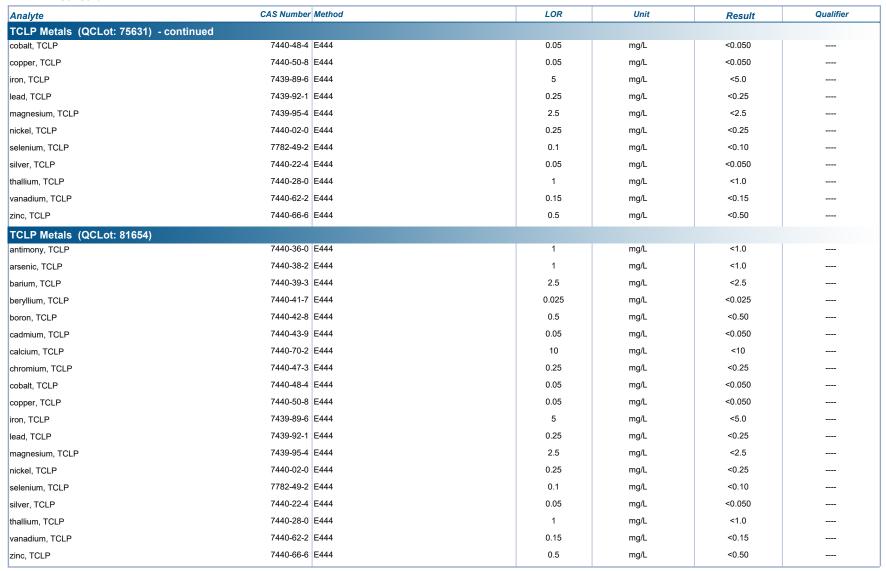
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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---

Sub-Matrix: Soil/Solid





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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : --

ALS

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 | | | | | - | ntrol Sample (LCS) | | |
|-------------------------------|-------------------|-------|----------|---------------|--------------|--------------------|------------|----------|
| | | | | Spike | Recovery (%) | Recovery | Limits (%) | |
| Analyte | CAS Number Method | LOR | Unit | Concentration | LCS | Low | High | Qualifie |
| Physical Tests (QCLot: 72082) | | | | | | | | |
| pH (1:2 soil:water) | E108 | | pH units | 6 pH units | 99.8 | 95.0 | 105 | |
| Physical Tests (QCLot: 72083) | | | | | | | | |
| moisture | E144 | 0.25 | % | 50 % | 100.0 | 90.0 | 110 | |
| | | | | | | | | |
| Metals (QCLot: 72080) | | | | | | | | |
| mercury | 7439-97-6 E510 | 0.005 | mg/kg | 0.1 mg/kg | 102 | 80.0 | 120 | |
| Metals (QCLot: 72081) | | | | | | | | |
| aluminum | 7429-90-5 E440 | 50 | mg/kg | 200 mg/kg | 98.6 | 80.0 | 120 | |
| antimony | 7440-36-0 E440 | 0.1 | mg/kg | 100 mg/kg | 108 | 80.0 | 120 | |
| arsenic | 7440-38-2 E440 | 0.1 | mg/kg | 100 mg/kg | 98.7 | 80.0 | 120 | |
| barium | 7440-39-3 E440 | 0.5 | mg/kg | 25 mg/kg | 107 | 80.0 | 120 | |
| peryllium | 7440-41-7 E440 | 0.1 | mg/kg | 10 mg/kg | 97.4 | 80.0 | 120 | |
| pismuth | 7440-69-9 E440 | 0.2 | mg/kg | 100 mg/kg | 107 | 80.0 | 120 | |
| poron | 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 | 104 | 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 | 101 | 80.0 | 120 | |
| cobalt | 7440-48-4 E440 | 0.1 | mg/kg | 25 mg/kg | 97.5 | 80.0 | 120 | |
| copper | 7440-50-8 E440 | 0.5 | mg/kg | 25 mg/kg | 98.7 | 80.0 | 120 | |
| ron | 7439-89-6 E440 | 50 | mg/kg | 100 mg/kg | 102 | 80.0 | 120 | |
| ead | 7439-92-1 E440 | 0.5 | mg/kg | 50 mg/kg | 106 | 80.0 | 120 | |
| ithium | 7439-93-2 E440 | 2 | mg/kg | 25 mg/kg | 90.4 | 80.0 | 120 | |
| magnesium | 7439-95-4 E440 | 20 | mg/kg | 5000 mg/kg | 105 | 80.0 | 120 | |
| manganese | 7439-96-5 E440 | 1 | mg/kg | 25 mg/kg | 105 | 80.0 | 120 | |
| nolybdenum | 7439-98-7 E440 | 0.1 | mg/kg | 25 mg/kg | 99.3 | 80.0 | 120 | |
| nickel | 7440-02-0 E440 | 0.5 | mg/kg | 50 mg/kg | 98.6 | 80.0 | 120 | |
| phosphorus | 7723-14-0 E440 | 50 | mg/kg | 1000 mg/kg | 108 | 80.0 | 120 | |
| potassium | 7440-09-7 E440 | 100 | mg/kg | 5000 mg/kg | 102 | 80.0 | 120 | |
| selenium | 7782-49-2 E440 | 0.2 | mg/kg | 100 mg/kg | 106 | 80.0 | 120 | |
| silver | 7440-22-4 E440 | 0.1 | mg/kg | 10 mg/kg | 101 | 80.0 | 120 | |
| sodium | 7440-23-5 E440 | 50 | mg/kg | 5000 mg/kg | 103 | 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 | 96.8 | 80.0 | 120 | |
| thallium | 7440-28-0 E440 | 0.05 | mg/kg | 100 mg/kg | 105 | 80.0 | 120 | |

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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : ---



| Sub-Matrix: Soil/Solid | | | | | | Laboratory Co. | ntrol Sample (LCS) | Report | |
|-----------------------------------|------------|--------|------|-------|---------------|----------------|--------------------|------------|-----------|
| | | | | | Spike | Recovery (%) | Recovery | Limits (%) | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| Metals (QCLot: 72081) - continued | | | | | | | | | |
| tin | 7440-31-5 | E440 | 2 | mg/kg | 50 mg/kg | 101 | 80.0 | 120 | |
| titanium | 7440-32-6 | E440 | 1 | mg/kg | 25 mg/kg | 98.0 | 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 | 110 | 80.0 | 120 | |
| vanadium | 7440-62-2 | E440 | 0.2 | mg/kg | 50 mg/kg | 100 | 80.0 | 120 | |
| zinc | 7440-66-6 | E440 | 2 | mg/kg | 50 mg/kg | 114 | 80.0 | 120 | |
| zirconium | 7440-67-7 | E440 | 1 | mg/kg | 10 mg/kg | 100 | 80.0 | 120 | |
| | | | | | | | | | |

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Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : --



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.

| ub-Matrix: Soil/So | lid | | | | | | Matrix Spike | e (MS) Report | | |
|--------------------|------------------|-----------------|------------|--------|---------------|------------|--------------|---------------|------------|----------|
| | | | | | Spi | ke | Recovery (%) | Recovery | Limits (%) | |
| aboratory sample | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifie |
| CLP Metals (Q | CLot: 72825) | | | | | | | | | |
| /A20B2335-001 | BA2032-A-1 | antimony, TCLP | 7440-36-0 | E444 | 4.5 mg/L | 5 mg/L | 90.2 | 50.0 | 140 | |
| | | arsenic, TCLP | 7440-38-2 | E444 | 4.6 mg/L | 5 mg/L | 91.3 | 50.0 | 140 | |
| | | barium, TCLP | 7440-39-3 | E444 | 12.7 mg/L | 12.5 mg/L | 102 | 50.0 | 140 | |
| | | beryllium, TCLP | 7440-41-7 | E444 | 0.225 mg/L | 0.25 mg/L | 90.2 | 50.0 | 140 | |
| | | boron, TCLP | 7440-42-8 | E444 | 8.58 mg/L | 10 mg/L | 85.8 | 50.0 | 140 | |
| | | cadmium, TCLP | 7440-43-9 | E444 | 0.215 mg/L | 0.25 mg/L | 86.0 | 50.0 | 140 | |
| | | calcium, TCLP | 7440-70-2 | E444 | ND mg/L | 250 mg/L | ND | 50.0 | 140 | |
| | | chromium, TCLP | 7440-47-3 | E444 | 1.16 mg/L | 1.25 mg/L | 92.6 | 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 | 2.21 mg/L | 2.5 mg/L | 88.4 | 50.0 | 140 | |
| | | iron, TCLP | 7439-89-6 | E444 | 230 mg/L | 250 mg/L | 92.2 | 50.0 | 140 | |
| | | lead, TCLP | 7439-92-1 | E444 | 9.57 mg/L | 10 mg/L | 95.7 | 50.0 | 140 | |
| | | magnesium, TCLP | 7439-95-4 | E444 | 227 mg/L | 250 mg/L | 90.7 | 50.0 | 140 | |
| | | nickel, TCLP | 7440-02-0 | E444 | 2.22 mg/L | 2.5 mg/L | 89.0 | 50.0 | 140 | |
| | | selenium, TCLP | 7782-49-2 | E444 | 4.48 mg/L | 5 mg/L | 89.6 | 50.0 | 140 | |
| | | silver, TCLP | 7440-22-4 | E444 | 0.107 mg/L | 0.1 mg/L | 107 | 50.0 | 140 | |
| | | thallium, TCLP | 7440-28-0 | E444 | 4.5 mg/L | 5 mg/L | 89.5 | 50.0 | 140 | |
| | | vanadium, TCLP | 7440-62-2 | E444 | 0.71 mg/L | 0.75 mg/L | 94.2 | 50.0 | 140 | |
| | | zinc, TCLP | 7440-66-6 | E444 | ND mg/L | 10 mg/L | ND | 50.0 | 140 | |
| CLP Metals (Q | CLot: 72826) | | | | | | | | | |
| /A20B2335-001 | BA2032-A-1 | mercury, TCLP | 7439-97-6 | E512 | 0.0010 mg/L | 0.001 mg/L | 99.3 | 50.0 | 140 | |
| CLP Metals (QC | CLot: 75631) | | | | | | | | | |
| /A20B2335-013 | BA2032-A-3 REP1 | antimony, TCLP | 7440-36-0 | E444 | 5.1 mg/L | 5 mg/L | 102 | 50.0 | 140 | |
| | | arsenic, TCLP | 7440-38-2 | E444 | 4.8 mg/L | 5 mg/L | 95.4 | 50.0 | 140 | |
| | | barium, TCLP | 7440-39-3 | E444 | 12.0 mg/L | 12.5 mg/L | 95.9 | 50.0 | 140 | |
| | | beryllium, TCLP | 7440-41-7 | E444 | 0.250 mg/L | 0.25 mg/L | 100 | 50.0 | 140 | |
| | | boron, TCLP | 7440-42-8 | E444 | 10.2 mg/L | 10 mg/L | 102 | 50.0 | 140 | |
| | | cadmium, TCLP | 7440-43-9 | E444 | ND mg/L | 0.25 mg/L | ND | 50.0 | 140 | |
| | | calcium, TCLP | 7440-70-2 | E444 | ND mg/L | 250 mg/L | ND | 50.0 | 140 | |
| | | chromium, TCLP | 7440-47-3 | E444 | 1.19 mg/L | 1.25 mg/L | 95.1 | 50.0 | 140 | |
| | | cobalt, TCLP | 7440-48-4 | E444 | ND mg/L | 0.25 mg/L | ND | 50.0 | 140 | |

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: Covanta Burnaby Renewable Energy, ULC Client

Project



| Sub-Matrix: Soil/So | lid | | | | | | Matrix Spik | e (MS) Report | | |
|---------------------|-----------------------|-----------------|------------|--------|---------------|-----------|--------------|---------------|--------------|-----------|
| | | | | | Spi | ke | Recovery (%) | Recovery | y Limits (%) | |
| Laboratory sample | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| | CLot: 75631) - contir | nued | | | | | | | | |
| VA20B2335-013 | BA2032-A-3 REP1 | copper, TCLP | 7440-50-8 | E444 | 2.29 mg/L | 2.5 mg/L | 91.7 | 50.0 | 140 | |
| | | iron, TCLP | 7439-89-6 | E444 | 240 mg/L | 250 mg/L | 95.9 | 50.0 | 140 | |
| | | lead, TCLP | 7439-92-1 | E444 | 10.4 mg/L | 10 mg/L | 104 | 50.0 | 140 | |
| | | magnesium, TCLP | 7439-95-4 | E444 | 240 mg/L | 250 mg/L | 96.1 | 50.0 | 140 | |
| | | nickel, TCLP | 7440-02-0 | E444 | 2.31 mg/L | 2.5 mg/L | 92.4 | 50.0 | 140 | |
| | | selenium, TCLP | 7782-49-2 | E444 | 4.95 mg/L | 5 mg/L | 99.1 | 50.0 | 140 | |
| | | silver, TCLP | 7440-22-4 | E444 | 0.103 mg/L | 0.1 mg/L | 103 | 50.0 | 140 | |
| | | thallium, TCLP | 7440-28-0 | E444 | 5.2 mg/L | 5 mg/L | 104 | 50.0 | 140 | |
| | | vanadium, TCLP | 7440-62-2 | E444 | 0.73 mg/L | 0.75 mg/L | 97.3 | 50.0 | 140 | |
| | | zinc, TCLP | 7440-66-6 | E444 | ND mg/L | 10 mg/L | ND | 50.0 | 140 | |
| TCLP Metals (Q | CLot: 81654) | | | | | | | | | |
| VA20B2335-017 | BA2032-A-5 REP1 | antimony, TCLP | 7440-36-0 | E444 | 4.6 mg/L | 5 mg/L | 92.0 | 50.0 | 140 | |
| | | arsenic, TCLP | 7440-38-2 | E444 | 4.4 mg/L | 5 mg/L | 89.1 | 50.0 | 140 | |
| | | barium, TCLP | 7440-39-3 | E444 | 12.0 mg/L | 12.5 mg/L | 95.8 | 50.0 | 140 | |
| | | beryllium, TCLP | 7440-41-7 | E444 | 0.234 mg/L | 0.25 mg/L | 93.4 | 50.0 | 140 | |
| | | boron, TCLP | 7440-42-8 | E444 | 8.91 mg/L | 10 mg/L | 89.1 | 50.0 | 140 | |
| | | cadmium, TCLP | 7440-43-9 | E444 | ND mg/L | 0.25 mg/L | ND | 50.0 | 140 | |
| | | calcium, TCLP | 7440-70-2 | E444 | ND mg/L | 250 mg/L | ND | 50.0 | 140 | |
| | | chromium, TCLP | 7440-47-3 | E444 | 1.14 mg/L | 1.25 mg/L | 90.9 | 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 | 2.11 mg/L | 2.5 mg/L | 84.4 | 50.0 | 140 | |
| | | iron, TCLP | 7439-89-6 | E444 | 222 mg/L | 250 mg/L | 88.6 | 50.0 | 140 | |
| | | lead, TCLP | 7439-92-1 | E444 | 9.40 mg/L | 10 mg/L | 94.0 | 50.0 | 140 | |
| | | magnesium, TCLP | 7439-95-4 | E444 | 223 mg/L | 250 mg/L | 89.2 | 50.0 | 140 | |
| | | nickel, TCLP | 7440-02-0 | E444 | 2.15 mg/L | 2.5 mg/L | 85.9 | 50.0 | 140 | |
| | | selenium, TCLP | 7782-49-2 | E444 | 4.86 mg/L | 5 mg/L | 97.2 | 50.0 | 140 | |
| | | silver, TCLP | 7440-22-4 | E444 | 0.101 mg/L | 0.1 mg/L | 101 | 50.0 | 140 | |
| | | thallium, TCLP | 7440-28-0 | E444 | 4.4 mg/L | 5 mg/L | 87.1 | 50.0 | 140 | |
| | | vanadium, TCLP | 7440-62-2 | E444 | 0.66 mg/L | 0.75 mg/L | 87.8 | 50.0 | 140 | |
| | | zinc, TCLP | 7440-66-6 | E444 | ND mg/L | 10 mg/L | ND | 50.0 | 140 | |

Page : 12 of 13

Work Order : VA20B2335 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : -

ALS

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 | | | | | Refere | nce Material (RM) Re | port | |
|-------------------------|-----------------------|------------|------------|--------|---------------|--------------|----------------------|-----------|-----------|
| | | | | | RM Target | Recovery (%) | Recovery L | imits (%) | |
| Laboratory sample ID | Reference Material ID | Analyte | CAS Number | Method | Concentration | RM | Low | High | Qualifier |
| Metals (QCLo | t: 72080) | | | | | | | | |
| QC-72080-003 | SCP SS-2 | mercury | 7439-97-6 | E510 | 0.059 mg/kg | 118 | 70.0 | 130 | |
| Metals (QCLo | t: 72081) | | | | | | | | |
| QC-72081-003 | SCP SS-2 | aluminum | 7429-90-5 | E440 | 9817 mg/kg | 98.8 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | antimony | 7440-36-0 | E440 | 3.99 mg/kg | 97.9 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | arsenic | 7440-38-2 | E440 | 3.73 mg/kg | 98.3 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | barium | 7440-39-3 | E440 | 105 mg/kg | 99.7 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | beryllium | 7440-41-7 | E440 | 0.349 mg/kg | 100 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | boron | 7440-42-8 | E440 | 8.5 mg/kg | 115 | 40.0 | 160 | |
| QC-72081-003 | SCP SS-2 | cadmium | 7440-43-9 | E440 | 0.91 mg/kg | 99.0 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | calcium | 7440-70-2 | E440 | 31082 mg/kg | 103 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | chromium | 7440-47-3 | E440 | 101 mg/kg | 105 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | cobalt | 7440-48-4 | E440 | 6.9 mg/kg | 97.9 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | copper | 7440-50-8 | E440 | 123 mg/kg | 98.3 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | iron | 7439-89-6 | E440 | 23558 mg/kg | 102 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | lead | 7439-92-1 | E440 | 267 mg/kg | 99.2 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | lithium | 7439-93-2 | E440 | 9.5 mg/kg | 97.1 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | magnesium | 7439-95-4 | E440 | 5509 mg/kg | 98.1 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | manganese | 7439-96-5 | E440 | 269 mg/kg | 105 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | molybdenum | 7439-98-7 | E440 | 1.03 mg/kg | 102 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | nickel | 7440-02-0 | E440 | 26.7 mg/kg | 98.0 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | phosphorus | 7723-14-0 | E440 | 752 mg/kg | 106 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | potassium | 7440-09-7 | E440 | 1587 mg/kg | 106 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | silver | 7440-22-4 | E440 | 4.06 mg/kg | 96.6 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | sodium | 7440-23-5 | E440 | 797 mg/kg | 100 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | strontium | 7440-24-6 | E440 | 86.1 mg/kg | 102 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | thallium | 7440-28-0 | E440 | 0.0786 mg/kg | 96.2 | 40.0 | 160 | |
| QC-72081-003 | SCP SS-2 | tin | 7440-31-5 | E440 | 10.6 mg/kg | 97.6 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | titanium | 7440-32-6 | E440 | 839 mg/kg | 109 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | uranium | 7440-61-1 | E440 | 0.52 mg/kg | 105 | 70.0 | 130 | |

Page

: 13 of 13 : VA20B2335 Amendment 1 Work Order

: Covanta Burnaby Renewable Energy, ULC Client

Project



| Sub-Matrix: Soil/Sol | lid | | | | | Refere | nce Material (RM) Re | port | |
|----------------------|-----------------------|-----------|------------|--------|---------------|--------------|----------------------|-----------|-----------|
| | | | | | RM Target | Recovery (%) | Recovery I | imits (%) | |
| Laboratory sample ID | Reference Material ID | Analyte | CAS Number | Method | Concentration | RM | Low | High | Qualifier |
| Metals (QCLot: 7 | 72081) - continued | | | | | | | | |
| QC-72081-003 | SCP SS-2 | vanadium | 7440-62-2 | E440 | 32.7 mg/kg | 102 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | zinc | 7440-66-6 | E440 | 297 mg/kg | 110 | 70.0 | 130 | |
| QC-72081-003 | SCP SS-2 | zirconium | 7440-67-7 | E440 | 5.73 mg/kg | 99.2 | 70.0 | 130 | |

| ALS | Environme | ntal | | | Chair | n of Custody / Canada Toll F <u>www.</u> a | | | | | | | | CC | OC# | Pa | ge _ | of | f |
|---------------------------------------|------------------------|--------------------|------------------------|-----------------|-----------------|--|--|---------------|------------------|----------|----------|----------|---------|----------------------|-----------|---------|---------------|----------|----------------------|
| Report To | | | | | Report Fo | rmat / Distribut | tion | | Serv | ice R | eques | ited (Ri | ush for | routine | analys | is subj | ect to a | ıvailabi | ility) |
| Company: | Covanta Energy | | | - | Standard | Other | | . (| Regula | ır (Stai | ndard Tu | rnaround | d Times | - Busine | ss Days |) | | | |
| Contact: | Steve Mckinney / D | an Skrypnyk | · | | ✓ PDF | ☐ Excel | Digital | | _ | | | | | urcharge | | | to Confir | rm TAT | |
| Address: | 5150 Riverbend Dr | ive | | | Email 1: | smckinney@co | vanta.com | | Emerg | ency (| 1-2 Bus. | Days) - | 100% 5 | Surcharge | e - Conta | act ALS | to Conf | irm TAT | г |
| | Burnaby BC | | | | Email 2: | rjohnson4@cov | anta.com | | Same | Day or | Weeker | nd Emerg | ency - | Contact / | ALS to C | onfirm | TAT | | |
| Phone: | 604-521-1025 | Fax: | | . | Email 3: | dskrypnyk@cov | vanta.com | | | | | | Ana | lysis R | eques | st | | | |
| | | Yes | □ No | ļ | | brent.kirkpatricl | | | | | | | | _ | | | | | |
| | | | | <u> </u> | ļ | Sarah Wellman | | ver.org | L | | | | | | | | | | |
| Invoice To | Same as Report ? | Vos | No | <u> </u> | | oject Informati | on | | Ple | ase ir | ndicate | below | Filter | ed, Pre | serve | d or b | oth (F, | P, F/F | 2) |
| | f Invoice with Report? | Yes | NO | | Job #: | DO# 40000 14/ | . I.b. Flattam Asi | n Cuita | ├ | | | _ | - | <u>.</u> | | | \rightarrow | \dashv | _ |
| Company: | 1 | | | | LSD: | PO# 46693 We | | n - Suite | Ę H | | | | | metals) | | | | | |
| Contact: Address: | | <u></u> | | | LSD. | (includes 2:1 pl | H) | | metals, | | | | | E ਵ | 1 | | | | ε |
| Phone: | | Fax: | | | Quote #: | | | | m me | | | İ | | ≸ | | | | | taine |
| | Work Order# | \ | B23 | 35 | ALS Contact: | | Sampler: | | MET-TCLP-VA (all | RE | | اي | | MET-CSR+FULL-VA (all | | | | | Number of Containers |
| Sample | | Sample Id | lentification | | | Date | Time | Samula Tura | 1-10 | MOISTURE | . | Chrome | | S | | | | | nber |
| # | (Thi | s description will | l appear on the | report) | | (dd-mmm-yy) | (hh:mm) | Sample Type | ME | MO | | 등 | | ΔE | | | | • |] 5 |
| | BA2032-A-1 | | | | | 05-Aug-20 | 9:00 | Soil | Х | Х | | | \top | < | | | | | 1 |
| | BA2032-A-2 | | | | | 05-Aug-20 | 9:00 | Soil | Х | Х | | | 7 | (| | | | | 1 |
| | BA2032-A-3 | Enviro | nmental Di | violon | 1 | 05-Aug-20 | 9:00 | Soil | Х | Х | | | 7 | (| | | | | 1 |
| | BA2032-A-4 | | | | · | 05-Aug-20 | 9:00 | Soil | х | Х | | |) | (| | | | | 1 |
| | BA2032-A-5 | -Work | uver, k Order Refer | ence | | 05-Aug-20 | 9:00 | Soil | Х | Х | | | > | (| | | | | 1 |
| | BA2032-A-6 | – V <i>F</i> | 420B2 | 335 | ì | 05-Aug-20 | 9:00 | Soil | Х | Х | | | 7 | 7 | | | | | 1 |
| · · · · · · · · · · · · · · · · · · · | BA2032-A-7 | | | <u>. ■</u> []]] | 1 | 05-Aug-20 | 9:00 | Soil | Х | X | | 1 |) | (| | _ | | | 1 |
| | BA2032-A-8 | - | | | | 05-Aug-20 | 9:00 | Soil | Х | х | | | 7 | (| | | | | 1 |
| • | BA2032-A-9 | | | \$ = | | 05-Aug-20 | 9:00 | Soil | Х | Х | | | 7 | (| | | | | 1 |
| Ass. | BA2032-A-10 | | | 75 | 1 | 05-Aug-20 | 9:00 | Soil | Х | Х | | | 7 | < | | | | | 1 |
| | BA2032-A-11 | Telephone | e : +1 604 253 416 | 98 | | 05-Aug-20 | 9:00 | Soil | Х | X | | | > | (| | | | | 1 |
| | BA2032-A-12 | <u> </u> | | <u> </u> | | 05-Aug-20 | 9:00 | Soil | Х | X | | |) | | | | | | 1 |
| | Special Instr | uctions / Regul | ations with w | ater or land | d use (CCM | E-Freshwater A | quatic Life/BC | CSR - Commerc | al/AB | Tier | 1 - Na | tural, e | etc) / | Hazard | ous C | etails | 3 | | |
| | | | | | | | | | | | | | | | | 1 | | T | |
| | | | Failure to co | <u> </u> | | | <u>: </u> | | | | | | | | | | | | |

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 |) | SHIP | MENT RECEPTI | ON (lab use onl | y) | SHIPM | MENT VERIFICA | ATION (lab use | only) |
|--------------|---------------------|--------------|--------------|--------------|-----------------|--------------|--------------|---------------|----------------|-----------------|
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: |
| in/// | / 11-Aug-20 | P00 | λ | 11/20/2 | 11:45an | 1/2.00 | | | | Yes / No ? |
| | 1111900 | 5000 | m | 11/00/20 | 17 /0.27 | 2 2 2 °C | | | | If Yes add SIF |
| | | | | | | | | | Gi | ENF 20,00 Front |



CERTIFICATE OF ANALYSIS

Work Order : VA20B5217

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 0000049378

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 4

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway

Burnaby BC Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 15-Sep-2020 11:35

Date Analysis Commenced : 18-Sep-2020

Issue Date : 23-Sep-2020 09:58

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

Brieanna Allen Department Manager - Organics Organics, Burnaby, British Columbia
Robin Weeks Team Leader - Metals Metals, Burnaby, British Columbia

Page : 2 of 4
Work Order : VA20B5217

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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).

| mg/L milligrams per litre pH units pH units | Unit | Description |
|---|------|-------------|
| | | |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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

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

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

Page : 3 of 4
Work Order : VA20B5217

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analytical Results

| Sub-Matrix: Soil | | | Cl | ient sample ID | DBA2032-A-01- | DBA2032-A-01- | DBA2032-A-01- | DBA2032-A-01- | DBA2032-A-01- |
|-----------------------------------|------------|--------|-------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | 01 | 02 | 03 | 04 | 05 |
| | | | · | ng date / time | 03-Aug-2020 09:00 | 03-Aug-2020 09:00 | 03-Aug-2020 09:00 | 03-Aug-2020 09:00 | 03-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5217-001 | VA20B5217-002 | VA20B5217-003 | VA20B5217-004 | VA20B5217-005 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.54 | 8.49 | 8.44 | 9.62 | 9.42 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.91 | 2.91 | 2.91 | 2.91 | 2.91 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 6.15 | 5.81 | 6.08 | 5.93 | 6.02 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.312 | 0.271 | 0.301 | 0.258 | 0.274 |

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

Analytical Results

| Sub-Matrix: Soil | | | Cli | ient sample ID | DBA2032-A-01- | DBA2032-A-01- | DBA2032-A-01- | DBA2032-A-01- | DBA2032-A-01- |
|-----------------------------------|------------|--------|----------------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | 06 | 07 | 08 | 09 | 10 |
| | | | Client samplii | ng date / time | 03-Aug-2020 09:00 | 03-Aug-2020 09:00 | 03-Aug-2020 09:00 | 03-Aug-2020 09:00 | 03-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5217-006 | VA20B5217-007 | VA20B5217-008 | VA20B5217-009 | VA20B5217-010 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.89 | 8.87 | 8.32 | 9.32 | 9.14 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.91 | 2.91 | 2.91 | 2.91 | 2.91 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.93 | 6.22 | 6.03 | 6.29 | 6.19 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.301 | 0.530 | 0.262 | 0.432 | 0.275 |

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

Page : 4 of 4 Work Order : VA20B5217

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite

ALS

Analytical Results

| | | Cli | ient sample ID | DBA2032-A-01- | DBA2032-A-01- | | | |
|------------|----------|----------------|---|---|-----------------------------|-----------------------------|-----------------------------|---------|
| | | | | 11 | 12 | | | |
| | | Client samplii | ng date / time | 03-Aug-2020 09:00 | 03-Aug-2020 09:00 | | | |
| CAS Number | Method | LOR | Unit | VA20B5217-011 | VA20B5217-012 | | | |
| | | | | Result | Result | | | |
| | | | | | | | | |
| | EPP444 | 0.010 | pH units | 11.2 | 11.2 | | | |
| | EPP444 | 0.010 | pH units | 9.88 | 9.45 | | | |
| | EPP444 | 0.010 | pH units | 2.91 | 2.91 | | | |
| | EPP444 | 0.010 | pH units | 6.31 | 5.82 | | | |
| 7440-43-9 | E444 | 0.050 | ma/L | 0.314 | 0.418 | | | |
|] | | 500.444 | CAS Number Method LOR EPP444 0.010 EPP444 0.010 EPP444 0.010 EPP444 0.010 EPP444 0.010 | EPP444 0.010 pH units | Client sampling date / time | Client sampling date / time | Client sampling date / time | 11 12 |

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : VA20B5217

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 0000049378

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 7

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 15-Sep-2020 11:35

Issue Date : 23-Sep-2020 09:58

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- 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.

RIGHT SOLUTIONS | RIGHT PARTNER

Page : 3 of 7
Work Order : VA20B5217

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analysis Holding Time Compliance

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

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

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

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

Matrix: Soil/Solid Evaluation: × = Holding time exceedance; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Ext | raction / Pr | eparation | | | Analy | sis | |
|--|--------|---------------|-------------|--------------|-----------|------|---------------|-------------|---------|----------|
| Container / Client Sample ID(s) | | | Preparation | Holding | g Times | Eval | Analysis Date | Holdin | g Times | Eval |
| | | | Date | Rec | Actual | | | Rec | Actual | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-01-01 | E444 | 18-Sep-2020 | | | | | 21-Sep-2020 | 226 | 49 days | √ |
| | | | | | | | · | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-01-02 | E444 | 18-Sep-2020 | | | | | 21-Sep-2020 | 226 days | 49 days | ✓ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | , | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-01-03 | E444 | 18-Sep-2020 | | | | | 21-Sep-2020 | 226 days | 49 days | ✓ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | ,- | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-01-04 | E444 | 18-Sep-2020 | | | | | 21-Sep-2020 | 226 days | 49 days | ✓ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-01-05 | E444 | 18-Sep-2020 | | | | | 21-Sep-2020 | 226 days | 49 days | ✓ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-01-06 | E444 | 18-Sep-2020 | | | | | 21-Sep-2020 | 226 days | 49 days | ✓ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-01-07 | E444 | 18-Sep-2020 | | | | | 21-Sep-2020 | 226 days | 49 days | ✓ |

Page : 4 of 7
Work Order : VA20B5217

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Rec Actual Actual Date TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-01-08 E444 18-Sep-2020 21-Sep-2020 49 days 226 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) 1 DBA2032-A-01-09 E444 18-Sep-2020 21-Sep-2020 226 49 days ---days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-01-10 E444 18-Sep-2020 21-Sep-2020 49 days 1 226 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) ✓ E444 18-Sep-2020 21-Sep-2020 49 days DBA2032-A-01-11 226 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-01-12 E444 18-Sep-2020 21-Sep-2020 49 days 226 days TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-01-01 EPP444 03-Aug-2020 18-Sep-2020 TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-01-02 EPP444 03-Aug-2020 18-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-01-03 03-Aug-2020 18-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 18-Sep-2020 DBA2032-A-01-04 03-Aug-2020 ----------------

Page : 5 of 7
Work Order : VA20B5217

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-01-05 EPP444 03-Aug-2020 18-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-01-06 03-Aug-2020 18-Sep-2020 --------TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-01-07 EPP444 03-Aug-2020 18-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-01-08 03-Aug-2020 18-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-01-09 EPP444 03-Aug-2020 18-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-01-10 EPP444 03-Aug-2020 18-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-01-11 EPP444 03-Aug-2020 18-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)

03-Aug-2020

18-Sep-2020

EPP444

Legend & Qualifier Definitions

DBA2032-A-01-12

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

Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)

Page : 6 of 7
Work Order : VA20B5217

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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: x = QC frequency outside specification; √ = QC frequency within specification.

 Quality Control Sample Type
 Count
 Frequency (%)

 Analytical Methods
 Method
 QC Lot #
 QC Regular
 Actual
 Expected
 Evaluation

 Method Blanks (MB)

| Metals by CRC ICPMS (TCLP) | E444 | 89073 | 1 | 12 | 8.3 | 5.0 | ✓ |
|----------------------------|------|-------|---|----|-----|-----|---|
| Matrix Spikes (MS) | | | | | | | |
| Metals by CRC ICPMS (TCLP) | E444 | 89073 | 1 | 12 | 8.3 | 5.0 | ✓ |

Page : 7 of 7 Work Order : VA20B

Work Order : VA20B5217

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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 |
|------------------------------------|---------------|------------|--------------------|--|
| Metals by CRC ICPMS (TCLP) | E444 | Soil/Solid | EPA 1311/6020B | An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per |
| | | | (mod) | EPA 1311 is analyzed by Collision/Reaction Cell ICPMS. |
| | Vancouver - | | | |
| | Environmental | | | |
| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
| Leach 1:2 Soil:Water for pH | EP108 | Soil/Solid | BC WLAP METHOD: | The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample |
| | | | PH, ELECTROMETRIC, | with deionized/distilled water at a 1:2 ratio of sediment to water. |
| | Vancouver - | | SOIL | |
| | Environmental | | | |
| TCLP Leachate Preparation (Metals, | EPP444 | Soil/Solid | EPA 1311 | Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample |
| Inorganics, and SVOCs) | | | | involves particle size reduction, homogenization, then determination of appropriate |
| | Vancouver - | | | extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle |
| | Environmental | | | 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 :VA20B5217

Client : Covanta Burnaby Renewable Energy, ULC Laboratory : Vancouver - Environmental

Contact : Steve McKinney Account Manager : Brent Mack

:5150 Riverbend Drive Address :8081 Lougheed Highway

Burnaby BC Canada V3N 4V3

604 521 1025

Burnaby, British Columbia Canada V5A 1W9

Telephone: +1 604 253 4188

: 1 of 3

 Telephone
 : 604 521 1025
 Telephone
 : +1 604 253 4188

 Project
 : Weekly Bottom Ash-Suite
 Date Samples Received
 : 15-Sep-2020 11:35

C-O-C number :---- Issue Date : 23-Sep-2020 09:58 Sampler ----

Quote number : Standing Offer (BC work)

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:

: 12

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

No. of samples received

Address

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

Brieanna Allen Department Manager - Organics Organics, Burnaby, British Columbia
Robin Weeks Team Leader - Metals Metals, Burnaby, British Columbia

Page : 2 of 3
Work Order : VA20B5217

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.

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 |
|----------------------------|-------------------|------|------|--------|-----------|
| TCLP Metals (QCLot: 89073) | | | | | |
| cadmium, TCLP | 7440-43-9 E444 | 0.05 | mg/L | <0.050 | |

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 | | | | | | | |
|-------------------------|------------------|---------------|------------|--------|---------------|--------------------------|----------------------------------|------|------------|-----------|--|--|--|
| | | | | | | ike | Recovery (%) Recovery Limits (%) | | Limits (%) | | | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier | | | |
| TCLP Metals (QC | CLot: 89073) | | | | | | | | | | | | |
| VA20B5217-001 | DBA2032-A-01-01 | cadmium, TCLP | 7440-43-9 | E444 | ND mg/L | 0.25 mg/L | ND | 50.0 | 140 | | | | |

Page : 3 of 3 Work Order : VA20B5217

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



(ALS) Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

| COC # | |
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| Page | of |
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| Contact: | Steve Mckinney / D | | | <u>-</u> | ☑ PDF | Excel | Digital | | | | | Days) - 50 | | | | | | | |
| Address: | Burnaby BC | | · | | Email 1: | smckinney@cov | | | | | | Days) - 10 | | | | | | n TAT_ | |
| Phone | 604-521-1025 | Fax: | 1 | | Email 2: | dskrypnyk@cov | | | Same L | Day or W | eekend | Emerge | Analy: | | | | T | | |
| Phone: | 004-521-1025 | Yes | No No | | Email 3: | sarah.wellman@ | · · · · · · · · · · · · · · · · · · · | | | | | - | Allary | 313 NE | quesi | | - | $\overline{}$ | |
| | | _ | | <u> </u> | | brent.kirkpatrick rjohnson4@cov | | ver.org | | , | | | + | | | | -+- | +- | _ |
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| | Invoice with Report? | Yes | No | <u> </u> | Job #: | oject informatio | | | | Ť | | 1 | T | ,, | T | | <u> </u> | ,,,, | `┨. |
| Company: | | | : | <u> </u> | | Weekly Bottom | Ash - Suite | | <u></u> | | | <u> </u> | + | 1 | | | \dashv | + | ┪ |
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| (lab | use only) | | | | Contact: | | Sampler: | | ×- | | | | | | | | | | of (|
| Sample | | Sample I | Identification | | <u> </u> | Date | Time | | 1 5 | | | | | | ļ | | | | ber |
| # | (Th | is description w | ill appear on the | report) | | (dd-mmm-yy) | (ħħ:mm) | Sample Type | CD-TCL | | | ŀ | | | | | | | Number of Containers |
| | DBA2032-A-01-01 | | - | | | Aug 3 2020 | 9:00 | Soil | х | | | | | | | <u> </u> | | | 1 |
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| | DBA2032-A-01-11 | | 10110 00+ 200 4 | ,55 | / | Aug 3 2020 | 9:00 | Soil | Х | | | | | | | | \rightarrow | \top | 1 |
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CERTIFICATE OF ANALYSIS

Work Order : VA20B5216

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 0000049378

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 4

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway

Burnaby BC Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 15-Sep-2020 11:35

Date Analysis Commenced : 17-Sep-2020

Issue Date : 23-Sep-2020 09:58

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

Brieanna Allen Department Manager - Organics Organics, Burnaby, British Columbia
Kim Jensen Department Manager - Metals Metals, Burnaby, British Columbia

Page : 2 of 4

Work Order : VA20B5216

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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).

| mg/L milligrams per litre pH units pH units | Unit | Description |
|---|------|-------------|
| | | |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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

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

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

Page : 3 of 4
Work Order : VA20B5216

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analytical Results

| Sub-Matrix: Soil | | | CI | ient sample ID | DBA2032-A-02- | DBA2032-A-02- | DBA2032-A-02- | DBA2032-A-02- | DBA2032-A-02- |
|-----------------------------------|------------|--------|----------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | 01 | 02 | 03 | 04 | 05 |
| | | | <u> </u> | ng date / time | 04-Aug-2020 09:00 | 04-Aug-2020 09:00 | 04-Aug-2020 09:00 | 04-Aug-2020 09:00 | 04-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5216-001 | VA20B5216-002 | VA20B5216-003 | VA20B5216-004 | VA20B5216-005 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.2 | 11.3 | 11.3 | 11.3 | 11.3 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 5.98 | 5.86 | 7.23 | 6.38 | 7.41 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.90 | 2.90 | 2.90 | 2.90 | 2.90 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.63 | 5.55 | 5.85 | 5.69 | 5.71 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.243 | 0.211 | 0.230 | 0.228 | 0.229 |

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

Analytical Results

| Sub-Matrix: Soil | | | Cli | ient sample ID | DBA2032-A-02- | DBA2032-A-02- | DBA2032-A-02- | DBA2032-A-02- | DBA2032-A-02- |
|-----------------------------------|------------|--------|----------------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | 06 | 07 | 08 | 09 | 10 |
| | | | Client samplii | ng date / time | 04-Aug-2020 09:00 | 04-Aug-2020 09:00 | 04-Aug-2020 09:00 | 04-Aug-2020 09:00 | 04-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5216-006 | VA20B5216-007 | VA20B5216-008 | VA20B5216-009 | VA20B5216-010 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.3 | 11.2 | 11.4 | 11.4 | 11.4 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 6.24 | 6.42 | 5.87 | 6.91 | 6.31 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.90 | 2.90 | 2.90 | 2.90 | 2.90 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.54 | 5.49 | 5.54 | 5.54 | 5.56 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.220 | 0.238 | 0.215 | 0.214 | 0.231 |

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

Page : 4 of 4

Work Order : VA20B5216

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite

ALS

Analytical Results

| | | Cli | ient sample ID | DBA2032-A-02- | DBA2032-A-02- | | | |
|------------|----------|----------------|---|---|---|-----------------------|--|--|
| | | | | DDA2032-A-02- | DDA2032-A-02- | | | |
| | | | | 11 | 12 | | | |
| | | Client samplii | ng date / time | 04-Aug-2020 09:00 | 04-Aug-2020 09:00 | | | |
| CAS Number | Method | LOR | Unit | VA20B5216-011 | VA20B5216-012 | | | |
| | | | | Result | Result | | | |
| | | | | | | | | |
| | EPP444 | 0.010 | pH units | 11.4 | 11.2 | | | |
| | EPP444 | 0.010 | pH units | 6.95 | 5.78 | | | |
| | EPP444 | 0.010 | pH units | 2.90 | 2.90 | | | |
| | EPP444 | 0.010 | pH units | 5.81 | 5.27 | | | |
| 7440-43-9 | E444 | 0.050 | mg/L | 0.229 | 0.238 | | | |
| | | 555444 | CAS Number Method LOR EPP444 0.010 EPP444 0.010 EPP444 0.010 EPP444 0.010 EPP444 0.010 | EPP444 0.010 pH units EPP444 0.010 pH units EPP444 0.010 pH units EPP444 0.010 pH units EPP444 0.010 pH units | O9:00 O9:00 CAS Number Method LOR Unit VA20B5216-011 Result | O9:00 O9:00 O9:00 | O9:00 O9:0 | O9:00 O9:0 |

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : VA20B5216

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 0000049378

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 7

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 15-Sep-2020 11:35

Issue Date : 23-Sep-2020 09:58

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- 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.

RIGHT SOLUTIONS | RIGHT PARTNER

Page : 3 of 7
Work Order : VA20B5216

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



days

Analysis Holding Time Compliance

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

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

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

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

 Matrix: Soil/Solid
 Evaluation: x = Holding time exceedance; √ = Within Holding Time

 Analyte Group
 Method
 Sampling Date
 Extraction / Preparation
 Holding Times
 Eval
 Analysis Date
 Holding Times
 Eval

 Container / Client Sample ID(s)
 Preparation
 Holding Times
 Eval
 Analysis Date
 Holding Times
 Eval

 Date
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 Actual
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 Actual

| Container / Cheft Sample ID(s) | | | Preparation | Holairi | j rimes | ⊏vai | Arialysis Date Holding Times | | ⊏vai | |
|--|------|-------------|-------------|---------|---------|------|--------------------------------|-------------|---------|----------|
| | | | Date | Rec | Actual | | | Rec | Actual | |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-02-01 | E444 | 17-Sep-2020 | | | | | 20-Sep-2020 | 224 days | 47 days | * |
| ICLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-02-02 | E444 | 17-Sep-2020 | | | | | 20-Sep-2020 | 224 days | 47 days | √ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-02-03 | E444 | 17-Sep-2020 | | | | | 20-Sep-2020 | 224 days | 47 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-02-04 | E444 | 17-Sep-2020 | | | | | 20-Sep-2020 | 224 days | 47 days | 4 |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-02-05 | E444 | 17-Sep-2020 | | | | | 20-Sep-2020 | 224 days | 47 days | * |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-02-06 | E444 | 17-Sep-2020 | | | | | 20-Sep-2020 | 224 days | 47 days | √ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-02-07 | E444 | 17-Sep-2020 | | | | | 20-Sep-2020 | 224 | 47 days | ✓ |

Page : 4 of 7
Work Order : VA20B5216

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Rec Actual Actual Date TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-02-08 E444 17-Sep-2020 20-Sep-2020 47 days 224 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) 1 DBA2032-A-02-09 E444 17-Sep-2020 20-Sep-2020 224 47 days ---days TCLP Metals : Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-02-10 E444 17-Sep-2020 20-Sep-2020 47 days 1 224 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) ✓ E444 17-Sep-2020 20-Sep-2020 47 days DBA2032-A-02-11 224 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) 17-Sep-2020 DBA2032-A-02-12 E444 20-Sep-2020 47 days 224 days TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-02-01 EPP444 04-Aug-2020 17-Sep-2020 TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-02-02 EPP444 04-Aug-2020 17-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-02-03 17-Sep-2020 04-Aug-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 17-Sep-2020 DBA2032-A-02-04 04-Aug-2020 ----------------

Page : 5 of 7
Work Order : VA20B5216

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation Holding Times Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-02-05 EPP444 04-Aug-2020 17-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-02-06 04-Aug-2020 17-Sep-2020 --------TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-02-07 EPP444 04-Aug-2020 17-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-02-08 04-Aug-2020 17-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-02-09 EPP444 04-Aug-2020 17-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-02-10 EPP444 04-Aug-2020 17-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-02-11 EPP444 04-Aug-2020 17-Sep-2020

04-Aug-2020

17-Sep-2020

EPP444

Legend & Qualifier Definitions

DBA2032-A-02-12

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

TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)

Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)

Page : 6 of 7
Work Order : VA20B5216

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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: **x** = QC frequency outside specification; ✓ = QC frequency within specification. Quality Control Sample Type Count Frequency (%) Method QC Lot # QC Regular Actual Expected Evaluation Analytical Methods Method Blanks (MB) Metals by CRC ICPMS (TCLP) 88860 12 8.3 5.0 E444 Matrix Spikes (MS) Metals by CRC ICPMS (TCLP) 12 88860 1 8.3 5.0 E444

Page : 7 of 7

Work Order : VA20B5216

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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 |
|---|--|------------|---|---|
| Metals by CRC ICPMS (TCLP) | E444 | 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. |
| | Vancouver - | | | |
| | Environmental | | | |
| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
| Leach 1:2 Soil:Water for pH | 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. |
| 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 Page :VA20B5216

Client : Covanta Burnaby Renewable Energy, ULC Laboratory : Vancouver - Environmental

Contact : Steve McKinney **Account Manager** : Brent Mack

Address Address :5150 Riverbend Drive :8081 Lougheed Highway

> Burnaby BC Canada V3N 4V3 Burnaby, British Columbia Canada V5A 1W9 Telephone :+1 604 253 4188

: 1 of 3

Project : Weekly Bottom Ash-Suite **Date Samples Received** : 15-Sep-2020 11:35

Date Analysis Commenced : 17-Sep-2020 : VANCO 0000049378

C-O-C number Issue Date :23-Sep-2020 09:58 Sampler

Quote number : Standing Offer (BC work)

:604 521 1025

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 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

Telephone

Site

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

Brieanna Allen Department Manager - Organics Organics, Burnaby, British Columbia Department Manager - Metals Kim Jensen Metals, Burnaby, British Columbia

Page : 2 of 3
Work Order : VA20B5216

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.

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 | | | Result | Qualifier |
|----------------------------|-------------------|------|------|--------|-----------|
| TCLP Metals (QCLot: 88860) | | | | | |
| cadmium, TCLP | 7440-43-9 E444 | 0.05 | mg/L | <0.050 | |

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: 88860) | | | | | | | | | | |
| VA20B5216-001 | DBA2032-A-02-01 | cadmium, TCLP | 7440-43-9 | E444 | 0.245 mg/L | 0.25 mg/L | 98.1 | 50.0 | 140 | |

Page : 3 of 3 Work Order : VA20B5216

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



| (ALS) | Envi | roni | men | tai |
|-------|------|------|-----|-----|

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

| <u> </u> | | |
|----------|----|--|
| Page | of | |

COC#

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|----------------------|----------------------|--------------|------------------------|--|----------|--------------------|-----------------|---------------------|---------------|----------------|--------|----------|-------------|----------|--------|-------------|----------------|--------------------|----------------------|
| Report To | | | | | | ormat / Distributi | on | | _ | | | | Rush for r | | | | t to av | ailabilit | ty) |
| Company: | Covanta Energy | | | | tandard | | | | _ | | | | ınd Times - | _ | | | | | |
| Contact: | Steve Mckinney / Da | | <u> </u> | . J P□ | DF | ☐ Excel | Digital | | +- | | | | - 50% Sur | _ | | | | | |
| Address: | 5150 Riverbend Driv | <u>'e</u> | | Ema | | smckinney@cov | | | | | | _ | - 100% Su | | | | | n TAT | |
| | Burnaby BC | | | Ema | | dskrypnyk@cov | | | Same | Day or | Weeke | nd Eme | rgency - C | | - | | <u>.T</u> | | |
| Phone: | 604-521-1025 | Yes | ax: No | Ema | iii 3: | sarah.wellman@ | | | <u> </u> | | 1 | | Anal | ysis F | Reques | <u>t</u> | | | |
| | | | | | _ | brent.kirkpatrick | | iver.org | - | | | | | <u> </u> | | | _+ | \dashv | |
| tavaina Ta | Company 2 | | | | - 4 / 53 | riohnson4@cov | | <u> </u> | Dia | 200 :- | olioot | o bolo | : : | <u> </u> | | or bot | <u> </u> | | |
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| | invoice with neport? | | | | | Weekly Bottom | Ach - Suite | | - | - | | \dashv | | ┿ | + | | -+- | + | 4 |
| Company: Contact: | | | | LSD | | | | | eps) | | | | | | | | | | |
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| i | use only) | | | ALS Con | | | Sampler: | | , Y | | | | | | | | | | ၂၃ |
| Sample | Tase only) | Sami | ole Identification | | | | | | 립 | | ļ | Ī | | | | | İ | 1 | l je |
| # | - (This | | on will appear on the | e report) | | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | CD-TCLP-VA(Cd | | | | | | | | | | Number of Containers |
| | DBA2032-A-02-01 | | | | | Aug 4 2020 | 9:00 | Soil | X | | | | | | | | \top | | 1 |
| | DBA2032-A-02-02 | ī | Environmental | l Division | | Aug 4 2020 | 9:00 | Soil | х | | | | | | 1 1 | | _ | \top | 1 |
| | DBA2032-A-02-03 | — | Vancouver | | ; | Aug 4 2020 | 9:00 | Soil | Х | | | | | | | | \top | | 1 |
| | DBA2032-A-02-04 | | Work Order Re VA20E | \$5216 | | Aug 4 2020 | 9:00 | Soil | Х | | | | | | | | | T | 1 |
| | DBA2032-A-02-05 | · | VAZOL | OLIO | | Aug 4 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-02-06 | | | | ì | Aug 4 2020 | 9:00 | Soil | х | | | | | L | | | | | 1 |
| | DBA2032-A-02-07 | | | // () | | Aug 4 2020 | 9:00 | Soil | X | | | l | | | | | | | 1 |
| | DBA2032-A-02-08 | | | | | Aug 4 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-02-09 | | | | | Aug 4 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-02-10 | <u> </u> | Telephone: +1 604 25 | 53 4188 | 1 | Aug 4 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-02-11 | ` | <u> </u> | | <u></u> | Aug 4 2020 | 9:00 | Soil | Х | | | | | | | | | \perp | 1 |
| | DBA2032-A-02-12 | | | | | Aug 4 2020 | 9:00 | Soil | X | | | | | | | | | \perp | 1 |
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| | | | | | | | | | | | | | <u> </u> | | | | _ | 00 Er | |



CERTIFICATE OF ANALYSIS

Page **Work Order** : VA20B5218

Amendment : 1

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 0000049378

C-O-C number

Sampler Site

Quote number : Standing Offer (BC work)

No. of samples received : 26 No. of samples analysed : 26 : 1 of 5

Laboratory : Vancouver - Environmental

Account Manager **Brent Mack**

Address : 8081 Lougheed Highway

Burnaby BC Canada V5A 1W9

Telephone : +1 604 253 4188 **Date Samples Received** : 15-Sep-2020 11:35

Date Analysis Commenced : 19-Sep-2020

Issue Date : 06-Oct-2020 10:20

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 |
|--------------------|---|-------------------------------------|
| Brieanna Allen | Department Manager - Organics | Organics, Burnaby, British Columbia |
| Cristina Alexandre | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |
| Robin Weeks | Team Leader - Metals | Metals, Burnaby, British Columbia |

Page : 2 of 5

Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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).

| mg/L milligrams per litre pH units pH units | |
|---|--|

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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

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

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

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Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analytical Results

| Sub-Matrix: Soil | | | CI | ient sample ID | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- |
|-----------------------------------|------------|--------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------|---------------|
| (Matrix: Soil/Solid) | | | | | 01 | 02 | 03 | 04 | 05 |
| | | | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | | |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5218-001 | VA20B5218-002 | VA20B5218-003 | VA20B5218-004 | VA20B5218-005 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.1 | 11.1 | 11.1 | 11.2 | 11.2 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.65 | 8.75 | 8.76 | 8.80 | 9.01 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.91 | 2.91 | 2.91 | 2.91 | 2.91 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.63 | 5.59 | 5.57 | 5.62 | 5.78 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.305 | 0.338 | 1.66 | 0.720 | 1.63 |

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

Analytical Results

| Sub-Matrix: Soil | | | Cli | ient sample ID | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- |
|-----------------------------------|--|--------|-------|----------------|---------------|---------------|---------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | 06 | 07 | 08 | 09 | 10 |
| | Client sampling date / time Analyte CAS Number Method LOR Unit | | | | | | | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5218-006 | VA20B5218-007 | VA20B5218-008 | VA20B5218-009 | VA20B5218-010 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.2 | 11.2 | 11.2 | 11.1 | 11.2 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.76 | 8.74 | 8.71 | 8.76 | 8.70 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.91 | 2.91 | 2.91 | 2.91 | 2.91 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.62 | 5.87 | 5.87 | 5.69 | 6.01 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.463 | 0.327 | 0.322 | 0.443 | 0.266 |

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Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analytical Results

| Sub-Matrix: Soil | | | CI | ient sample ID | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- |
|-----------------------------------|------------|--------|---------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------|
| (Matrix: Soil/Solid) | | | | | 11 | 12 | 03 REP 1 | 03 REP 2 | 03 REP 3 |
| | | | Client sampli | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5218-011 | VA20B5218-012 | VA20B5218-013 | VA20B5218-014 | VA20B5218-015 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.2 | 11.2 | 11.1 | 11.1 | 11.1 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.48 | 8.55 | 8.76 | 8.76 | 8.76 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.91 | 2.91 | 2.88 | 2.88 | 2.88 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.85 | 5.96 | 5.88 | 5.77 | 5.87 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.254 | 0.333 | 0.270 | 0.229 | 0.304 |

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

Analytical Results

| Sub-Matrix: Soil | | | CI | ient sample ID | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- |
|-----------------------------------|------------|--------|---------------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | 03 REP 4 | 03 REP 5 | 03 REP 6 | 05 REP 1 | 05 REP 2 |
| | | | Client sampli | ng date / time | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5218-016 | VA20B5218-017 | VA20B5218-018 | VA20B5218-019 | VA20B5218-020 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.1 | 11.1 | 11.1 | 11.2 | 11.2 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.76 | 8.76 | 8.76 | 9.01 | 9.01 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.88 | 2.88 | 2.88 | 2.88 | 2.88 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.90 | 5.95 | 5.90 | 5.84 | 5.92 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.443 | 0.317 | 0.280 | 0.271 | 0.318 |

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Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analytical Results

| Sub-Matrix: Soil | | | Cli | ient sample ID | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- | DBA2032-A-03- |
|-----------------------------------|---|--------|-------|----------------|---------------|---------------|---------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | 05 REP 3 | 05 REP 4 | 05 REP 5 | 05 REP 6 | 04 REP 1 |
| | Client sampling date / time Analyte CAS Number Method LOR Unit | | | | | | | 05-Aug-2020 09:00 | 05-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5218-021 | VA20B5218-022 | VA20B5218-023 | VA20B5218-024 | VA20B5218-025 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 9.01 | 9.01 | 9.01 | 9.01 | 8.80 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.88 | 2.88 | 2.88 | 2.88 | 2.91 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.81 | 5.92 | 5.80 | 5.92 | 5.83 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.367 | 0.260 | 0.264 | 0.290 | 0.268 |

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

Analytical Results

| Sub-Matrix: Soil | | | CI | lient sample ID | DBA2032-A-03- | | |
|-----------------------------------|------------|--------|---------------|-----------------|----------------------|------|------|
| (Matrix: Soil/Solid) | | | | | 04 REP 2 | | |
| | | | Client sampli | ing date / time | 05-Aug-2020 09:00 | | |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5218-026 | | |
| | | | | | Result | | |
| TCLP Metals | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.2 | | |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.80 | | |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.91 | | |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.93 | | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.416 | | |
| | | | | | | | |



Burnaby BC Canada V3N 4V3

QUALITY CONTROL INTERPRETIVE REPORT

Work Order : VA20B5218 Page : 1 of 10

Amendment : 1

Client : Covanta Burnaby Renewable Energy, ULC Laboratory : Vancouver - Environmental

Contact : Steve McKinney Account Manager : Brent Mack

Address : 5150 Riverbend Drive Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

 Telephone
 : 604 521 1025
 Telephone
 : +1 604 253 4188

 Project
 : Weekly Bottom Ash-Suite
 Date Samples Received
 : 15-Sep-2020 11:35

PO : VANCO 000049378 | Issue Date : 06-Oct-2020 10:20

C-O-C number : ---Sampler : ---Site : ----

Quote number : Standing Offer (BC work)

No. of samples received : 26
No. of samples analysed : 26

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

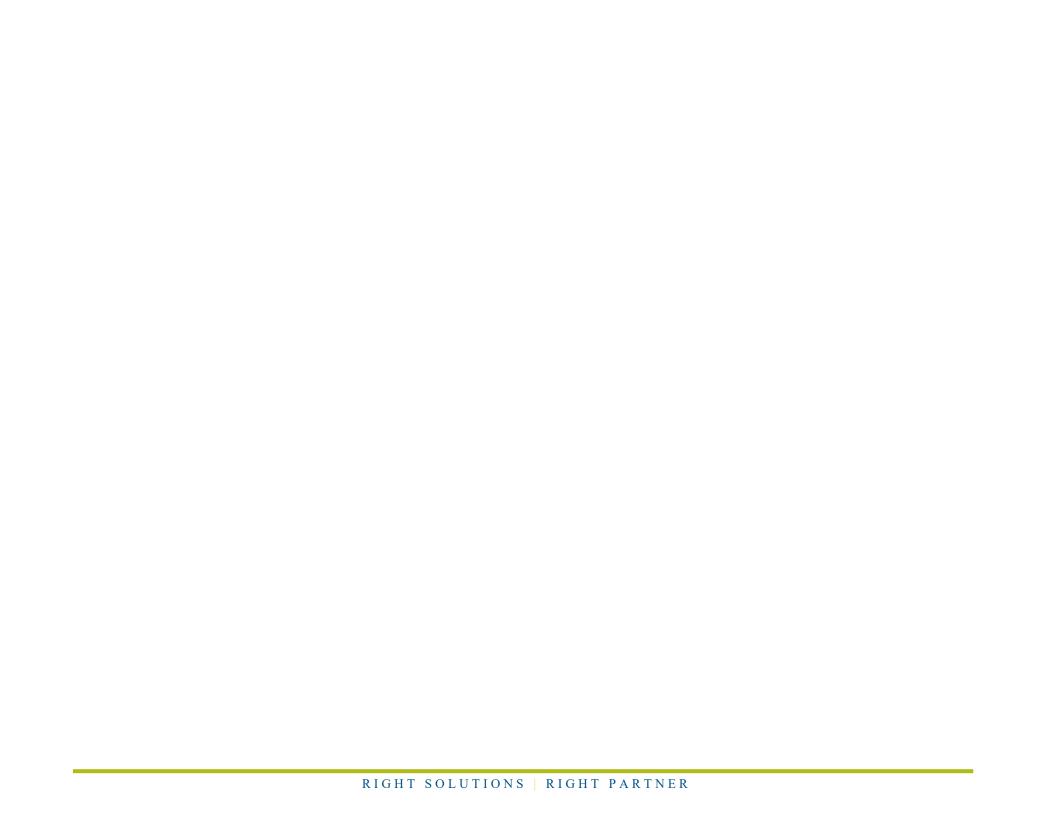
• No Reference Material (RM) Sample outliers occur.

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.



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Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analysis Holding Time Compliance

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

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

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

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

| Matrix: Soil/Solid | | | | | Ev | aluation: 🗴 = | Holding time excee | edance ; | ✓ = Within | Holding Time |
|--|--------|---------------|-------------|---------------|-----------|---------------|--------------------|----------|------------|--------------|
| Analyte Group | Method | Sampling Date | Ex | traction / Pr | eparation | | | Analy | sis | |
| Container / Client Sample ID(s) | | | Preparation | Holding | g Times | Eval | Analysis Date | Holdin | g Times | Eval |
| | | | Date | Rec | Actual | | | Rec | Actual | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-03-01 | E444 | 19-Sep-2020 | | | | | 23-Sep-2020 | 225 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-03-02 | E444 | 19-Sep-2020 | | | | | 23-Sep-2020 | 225 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-03-03 | E444 | 19-Sep-2020 | | | | | 23-Sep-2020 | 225 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-03-04 | E444 | 19-Sep-2020 | | | | | 23-Sep-2020 | 225 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-03-05 | E444 | 19-Sep-2020 | | | | | 23-Sep-2020 | 225 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-03-06 | E444 | 19-Sep-2020 | | | | | 23-Sep-2020 | 225 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-03-07 | E444 | 19-Sep-2020 | | | | | 23-Sep-2020 | 225 | 49 days | ✓ |
| | | | | | | | | days | | |

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Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Date Rec Actual TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-08 E444 19-Sep-2020 23-Sep-2020 49 days 225 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) 1 DBA2032-A-03-09 E444 19-Sep-2020 23-Sep-2020 225 49 days ---days TCLP Metals : Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-10 E444 19-Sep-2020 23-Sep-2020 49 days 1 225 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-11 E444 19-Sep-2020 23-Sep-2020 49 days 225 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-12 E444 19-Sep-2020 23-Sep-2020 49 days 225 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-03 REP 1 E444 02-Oct-2020 04-Oct-2020 60 davs ✓ 238 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-03 REP 2 E444 02-Oct-2020 04-Oct-2020 60 days 1 238 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) ✓ DBA2032-A-03-03 REP 3 E444 02-Oct-2020 04-Oct-2020 60 days 238 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) E444 02-Oct-2020 04-Oct-2020 ✓ DBA2032-A-03-03 REP 4 60 days 238 days

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Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Rec Actual Actual Date TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-03 REP 5 E444 02-Oct-2020 04-Oct-2020 60 days 238 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) 1 DBA2032-A-03-03 REP 6 E444 02-Oct-2020 04-Oct-2020 238 60 days ---days TCLP Metals : Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-05 REP 1 E444 02-Oct-2020 04-Oct-2020 60 days 1 238 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-05 REP 2 E444 02-Oct-2020 04-Oct-2020 60 days 238 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-05 REP 3 E444 02-Oct-2020 04-Oct-2020 60 days 238 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-05 REP 4 02-Oct-2020 04-Oct-2020 60 davs ✓ E444 238 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-03-05 REP 5 E444 02-Oct-2020 04-Oct-2020 60 days 1 238 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) ✓ E444 04-Oct-2020 DBA2032-A-03-05 REP 6 02-Oct-2020 238 60 days days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) E444 04-Oct-2020 05-Oct-2020 ✓ DBA2032-A-03-04 REP 1 61 days 240 days

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Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) 05-Oct-2020 DBA2032-A-03-04 REP 2 E444 04-Oct-2020 61 days 240 days TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-03-01 05-Aug-2020 19-Sep-2020 ----TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-02 EPP444 05-Aug-2020 19-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-03-03 19-Sep-2020 05-Aug-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 05-Aug-2020 02-Oct-2020 DBA2032-A-03-03 REP 1 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-03 REP 2 EPP444 05-Aug-2020 02-Oct-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-03 REP 3 EPP444 05-Aug-2020 02-Oct-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-03-03 REP 4 05-Aug-2020 02-Oct-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-03-03 REP 5 05-Aug-2020 02-Oct-2020 --------

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Work Order VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



| Matrix: Soil/Solid | | | | | Ev | aluation: × = | Holding time excee | edance ; | ✓ = Within | Holding Tin |
|---|--------|---------------|---------------------|----------------|-------------------|---------------|--------------------|---------------|-------------------|-------------|
| Analyte Group | Method | Sampling Date | Ext | raction / Pr | reparation | | | Analy | sis | |
| Container / Client Sample ID(s) | | | Preparation Date | Holding Rec | g Times Actual | Eval | Analysis Date | Holdin Rec | g Times Actual | Eval |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | Bato | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-03 REP 6 | EPP444 | 05-Aug-2020 | 02-Oct-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-04 | EPP444 | 05-Aug-2020 | 19-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-04 REP 1 | EPP444 | 05-Aug-2020 | 04-Oct-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-04 REP 2 | EPP444 | 05-Aug-2020 | 04-Oct-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-05 | EPP444 | 05-Aug-2020 | 19-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-05 REP 1 | EPP444 | 05-Aug-2020 | 02-Oct-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-05 REP 2 | EPP444 | 05-Aug-2020 | 02-Oct-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-05 REP 3 | EPP444 | 05-Aug-2020 | 02-Oct-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-05 REP 4 | EPP444 | 05-Aug-2020 | 02-Oct-2020 | | | | | | | |

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Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Method Sampling Date Extraction / Preparation Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Actual Actual Date TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 05-Aug-2020 02-Oct-2020 DBA2032-A-03-05 REP 5 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-03-05 REP 6 05-Aug-2020 02-Oct-2020 --------TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-06 EPP444 05-Aug-2020 19-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-03-07 05-Aug-2020 19-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 05-Aug-2020 DBA2032-A-03-08 19-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-03-09 05-Aug-2020 19-Sep-2020 TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-03-10 EPP444 05-Aug-2020 19-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-03-11 05-Aug-2020 19-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-03-12 05-Aug-2020 19-Sep-2020 --------

Legend & Qualifier Definitions

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

Page : 9 of 10

Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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: **x** = QC frequency outside specification; ✓ = QC frequency within specification. Quality Control Sample Type Count Frequency (%) Method QC Lot # QC Regular Actual Expected Evaluation Analytical Methods Method Blanks (MB) Metals by CRC ICPMS (TCLP) 89836 3 30 10.0 5.0 E444 Matrix Spikes (MS) Metals by CRC ICPMS (TCLP) 3 30 89836 10.0 5.0 E444

Page : 10 of 10

Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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 |
|---|---|------------|---|---|
| Metals by CRC ICPMS (TCLP) | E444 | Soil/Solid | EPA 1311/6020B | An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by Collision/Reaction Cell ICPMS. |
| | Vancouver - | | (mod) | EFA 1311 is allaryzed by Collision/Reaction Cell ICFNIS. |
| | Environmental | | | |
| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
| Leach 1:2 Soil:Water for pH | EP108 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. |
| TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | Environmental 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 :VA20B5218

VALUDO

Page : 1 of 3

Amendment : 1

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 000049378

C-O-C number

Sampler :----

Quote number : Standing Offer (BC work)

No. of samples received : 26
No. of samples analysed : 26

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone :+1 604 253 4188

Date Samples Received :15-Sep-2020 11:35

Date Analysis Commenced :19-Sep-2020

Issue Date : 06-Oct-2020 10:20

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.

Signatories Position Laboratory Department

Brieanna Allen Department Manager - Organics Organics, Burnaby, British Columbia
Cristina Alexandre Supervisor - Metals ICP Instrumentation Metals, Burnaby, British Columbia
Kim Jensen Department Manager - Metals Metals, Burnaby, British Columbia
Robin Weeks Team Leader - Metals Metals, Burnaby, British Columbia

Page : 2 of 3

Work Order ; VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite

ALS

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.

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 |
|----------------------------|------------|--------|------|------|--------|-----------|
| TCLP Metals (QCLot: 89836) | | | | | | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.05 | mg/L | <0.050 | |
| TCLP Metals (QCLot: 96762) | | | | | | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.05 | mg/L | <0.050 | |
| TCLP Metals (QCLot: 97274) | | | | | | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.05 | mg/L | <0.050 | |

Page : 3 of 3

Work Order : VA20B5218 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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/Sol | id | | Matrix Spike (MS) Report | | | | | | | |
|----------------------|-----------------------|---------------|--------------------------|--------|----------------|-----------|----|----------|------------|-----------|
| | | | | | Spike Recovery | | | Recovery | Limits (%) | |
| Laboratory sample | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| TCLP Metals (QC | Lot: 89836) | | | | | | | | | |
| VA20B5218-001 | DBA2032-A-03-01 | cadmium, TCLP | 7440-43-9 | E444 | ND mg/L | 0.25 mg/L | ND | 50.0 | 140 | |
| TCLP Metals (QC | CLot: 96762) | | | | | | | | | |
| VA20B5218-013 | DBA2032-A-03-03 REP 1 | cadmium, TCLP | 7440-43-9 | E444 | ND mg/L | 0.25 mg/L | ND | 50.0 | 140 | |
| TCLP Metals (QC | Lot: 97274) | | | | | | | | | |
| VA20B5218-025 | DBA2032-A-03-04 REP 1 | cadmium, TCLP | 7440-43-9 | E444 | ND mg/L | 0.25 mg/L | ND | 50.0 | 140 | |

(ALS) Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

Page

COC#

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|---------------|---------------------|------------------|---------------------------------------|------------------------|-----------------|-------------------|----------------|--|---------------|--|----------|---------------|----------|-------------------|--------|----------------|----------------|----------------------|
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| | Covanta Energy | | | | Standard | | | | | | | around Times | | | | | | |
| | Steve Mckinney / Da | | | | ✓ PDF | Excel | Digital | | | | | ys) - 50% Su | | | | | | |
| | 5150 Riverbend Driv | ve | | | Email 1: | smckinney@co | | | | | | ys) - 100% S | | | | | TAT | |
| | Burnaby BC | | | | Email 2: | dskrypnyk@cov | | |) Same | Day or \ | Veekend | Emergency - (| | | | ι Τ | | |
| Phone: | 604-521-1025 | Fax: | | | Email 3: | sarah.wellman@ | metrovancou | er.org | <u> </u> | , | | Ana | ysis F | eques | t . | | _, | |
| | | Yes | No No | | | brent.kirkpatrick | | uver.org | | | i_ | | | | | | — | |
| | | | | | | riohnson4@cov | | 1 | | i | | | <u> </u> | | | | ┸- | |
| Invoice To | Same as Report ? | | | ļ | Client / Pr | roject Informatio | on | | Ple | ease in | dicate b | elow Filter | d, Pre | served | or bot | <u>h (F, P</u> | , F/P) | _ |
| Hardcopy of I | nvoice with Report? | Yes | ☐ No | | Job #: | <u> </u> | | | | | | | | ļl | | _: | ┷ | ╛ |
| Company: | | | | | | Weekly Bottom | Ash - Suite | | steps) | | | | | | | | | |
| Contact: | | | | | LSD: | (includes 2:1 pt | <u></u> | | ste | | | | | | - 1 | | | |
| Address: | | | | | | | | |] 표 | | | | | | | | | Sers |
| Phone: | | Fax: | <u> </u> | | Quote #: | | | | and | | | | | | _ | | - | <u> -</u> ‡ |
| Lab W | /ork Order # | | | | ALS | | Campler | | CD-TCLP-VA(Cd | | | | | | | | | Number of Containers |
| (lab | use only) | | | | Contact: | | Sampler: | | , -d | | | | | | İ | | | r of |
| Sample | <u>-</u> | Sample I | dentification | | | Date | Time | A | 기 달 | | | | 1 | | | | | nbe |
| # | (Thi | s description wi | ill appear on the | e report) | | (dd-mmm-yy) | (hh:mm) | Sample Type | 9 | | | | 1 | | | | | N S |
| | DBA2032-A-03-01 | | | | | Aug 5 2020 | 9:00 | Soil | Х | | | | - | | | | \top | 1 |
| | DBA2032-A-03-02 | | | . | , | Aug 5 2020 | 9:00 | Soil | Х | | | | | | | | \top | 1 |
| | DBA2032-A-03-03 | Env | ironmental | Division | 7 | Aug 5 2020 | 9:00 | Soil | Х | | | | | | | | | 1 |
| | DBA2032-A-03-04 | . Van | couver | | | Aug 5 2020 | 9:00 | Soil | х | | | | | | | | | 1 |
| | DBA2032-A-03-05 | ; | A20B | erence 5 212 | [| Aug 5 2020 | 9:00 | Soil | Х | | | | | | | | | 1 |
| - | DBA2032-A-03-06 | | | 0210 | | Aug 5 2020 | 9:00 | Soil | Х | | | | | | | | | 1 |
| | DBA2032-A-03-07 | ! | W 184 | | | Aug 5 2020 | 9:00 | Soil | Х | | | | | | | | | 1 |
| | DBA2032-A-03-08 | | | | | Aug 5 2020 | 9:00 | Soil | Х | | _ | | | | | | \top | 1 |
| | DBA2032-A-03-09 | | | 赞剧川 | | Aug 5 2020 | 9:00 | Soil | Х | | | | | | | | \prod | 1 |
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| | DBA2032-A-03-11 | | ne: +1 604 253 4 | 188 | . : <u>L</u> | Aug 5 2020 | 9:00 | Soil | X | | | | | | | | | 1 |
| | DBA2032-A-03-12 | | | ÷ . | <u> </u> | Aug 5 2020 | 9:00 | Soil | Х | | | | | | | | | 1 |
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CERTIFICATE OF ANALYSIS

Page **Work Order** : VA20B5234

Amendment : 1

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 0000049378

C-O-C number

Sampler Site

Quote number : Standing Offer (BC work)

No. of samples received : 16 No. of samples analysed : 16 : 1 of 4

Laboratory : Vancouver - Environmental

Account Manager **Brent Mack**

Address : 8081 Lougheed Highway

Burnaby BC Canada V5A 1W9

Telephone : +1 604 253 4188 **Date Samples Received** : 15-Sep-2020 11:35

Date Analysis Commenced : 22-Sep-2020

Issue Date : 06-Oct-2020 10:20

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 |
|--------------------|---|-------------------------------------|
| Brieanna Allen | Department Manager - Organics | Organics, Burnaby, British Columbia |
| Cristina Alexandre | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |
| Ophelia Chiu | Supervisor - Organics Instrumentation | Organics, Burnaby, British Columbia |

Page : 2 of 4

Work Order : VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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 |
|----------|----------------------|
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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

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

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

Page : 3 of 4

Work Order : VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analytical Results

| Sub-Matrix: Soil | | | Cl | ient sample ID | DBA2032-A-04- | DBA2032-A-04- | DBA2032-A-04- | DBA2032-A-04- | DBA2032-A-04- |
|-----------------------------------|------------|--------|----------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | 01 | 02 | 03 | 04 | 05 |
| | | | <u> </u> | ng date / time | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5234-001 | VA20B5234-002 | VA20B5234-003 | VA20B5234-004 | VA20B5234-005 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.3 | 11.3 | 11.3 | 11.4 | 11.4 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.29 | 9.14 | 9.25 | 7.13 | 9.18 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.87 | 2.87 | 2.87 | 2.87 | 2.87 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.91 | 5.75 | 5.78 | 5.89 | 5.92 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.309 | 0.310 | 0.310 | 0.465 | 0.321 |

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

Analytical Results

| Sub-Matrix: Soil | | | Cli | ient sample ID | DBA2032-A-04- | DBA2032-A-04- | DBA2032-A-04- | DBA2032-A-04- | DBA2032-A-04- |
|-----------------------------------|------------|--------|----------------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | 06 | 07 | 08 | 09 | 10 |
| | | | Client samplii | ng date / time | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5234-006 | VA20B5234-007 | VA20B5234-008 | VA20B5234-009 | VA20B5234-010 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.4 | 11.4 | 11.3 | 11.4 | 11.4 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 9.04 | 8.88 | 9.02 | 9.16 | 8.56 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.87 | 2.87 | 2.87 | 2.87 | 2.87 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 6.00 | 5.70 | 5.93 | 6.02 | 5.85 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.428 | 0.306 | 1.60 | 0.325 | 0.321 |

Page : 4 of 4

Work Order : VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite

ALS

Analytical Results

| Sub-Matrix: Soil | | | Cli | ient sample ID | DBA2032-A-04- | DBA2032-A-04- | DBA2032-A-04- | DBA2032-A-04- | DBA2032-A-04- |
|-----------------------------------|------------|--------|----------------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | | 11 | 12 | 08 REP 1 | 08 REP 2 | 08 REP 3 |
| | | | Client samplii | ng date / time | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 | 06-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5234-011 | VA20B5234-012 | VA20B5234-013 | VA20B5234-014 | VA20B5234-015 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.4 | 11.4 | 11.3 | 11.3 | 11.3 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.68 | 8.79 | 9.02 | 9.02 | 9.02 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.87 | 2.87 | 2.87 | 2.87 | 2.87 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.93 | 5.91 | 5.86 | 5.80 | 5.89 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.307 | 0.348 | 0.302 | 0.556 | 0.359 |

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

Analytical Results

| Sub-Matrix: Soil | | | CI | ient sample ID | DBA2032-A-04- | | |
|-----------------------------------|------------|--------|---------------|----------------|----------------------|------|------|
| (Matrix: Soil/Solid) | | | | | 08 REP 4 | | |
| | | | Client sampli | ng date / time | 06-Aug-2020 09:00 | | |
| Analyte | CAS Number | Method | LOR | Unit | VA20B5234-016 | | |
| | | | | | Result | | |
| TCLP Metals | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.3 | | |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 9.02 | | |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.87 | | |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 6.01 | | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.338 | | |



Burnaby BC Canada V3N 4V3

QUALITY CONTROL INTERPRETIVE REPORT

Work Order : VA20B5234 Page : 1 of 8

Amendment : 1

Client : Covanta Burnaby Renewable Energy, ULC Laboratory : Vancouver - Environmental

Contact : Steve McKinney Account Manager : Brent Mack

Address : 5150 Riverbend Drive Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone : 604 521 1025 Telephone : +1 604 253 4188

 Project
 : Weekly Bottom Ash-Suite
 Date Samples Received
 : 15-Sep-2020 11:35

 PO
 : VANCO 0000049378
 Issue Date
 : 06-Oct-2020 10:20

C-O-C number : ---Sampler : ---Site : ----

Quote number : Standing Offer (BC work)

No. of samples received : 16 No. of samples analysed : 16

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

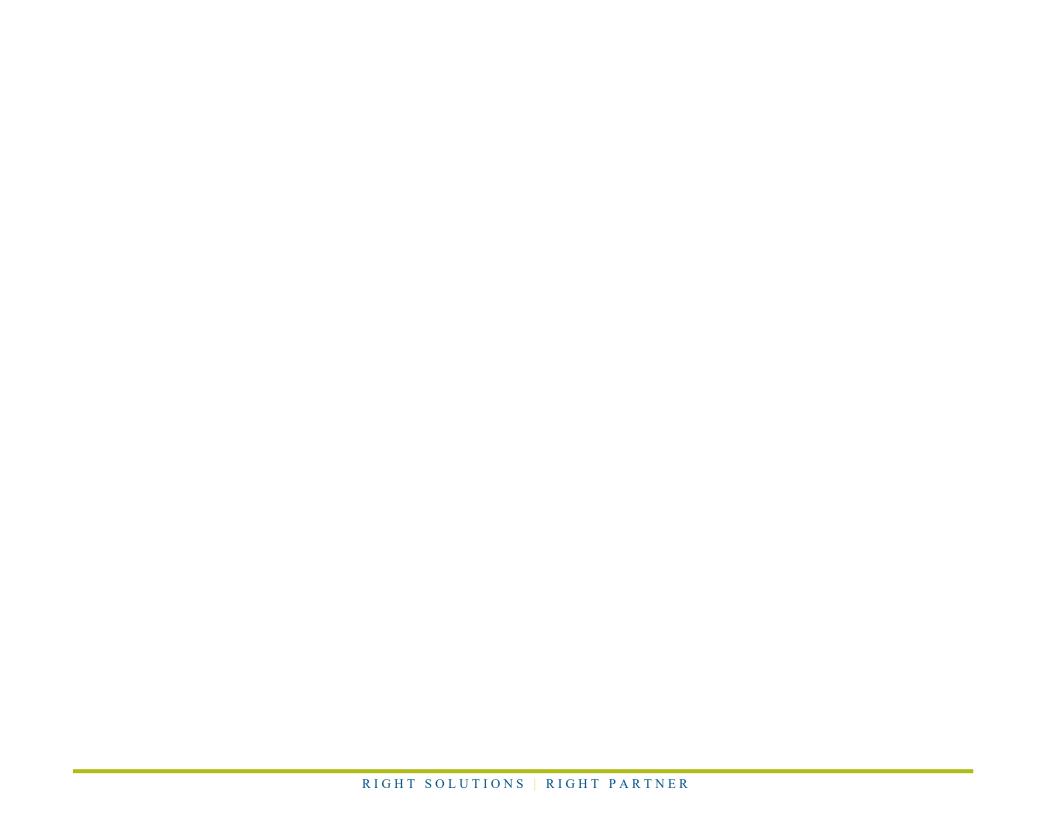
• No Reference Material (RM) Sample outliers occur.

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.



Page : 3 of 8

Work Order : VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analysis Holding Time Compliance

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

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

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

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

Matrix: Soil/Solid Evaluation: × = Holding time exceedance; ✓ = Within Holding Time

| iviatrix. Soii/Soiiu | | | | | | | Holding time excee | | | |
|--|--------|---------------|-------------|---------------|------------|------|--------------------|--------|---------|------|
| Analyte Group | Method | Sampling Date | Ext | traction / Pr | reparation | | | Analy | sis | |
| Container / Client Sample ID(s) | | | Preparation | Holdin | g Times | Eval | Analysis Date | Holdin | g Times | Eval |
| | | | Date | Rec | Actual | | | Rec | Actual | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-04-01 | E444 | 23-Sep-2020 | | | | | 24-Sep-2020 | 228 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-04-02 | E444 | 23-Sep-2020 | | | | | 24-Sep-2020 | 228 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-04-03 | E444 | 23-Sep-2020 | | | | | 24-Sep-2020 | 228 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-04-04 | E444 | 23-Sep-2020 | | | | | 24-Sep-2020 | 228 | 49 days | ✓ |
| | | | | | | | | days | - | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-04-05 | E444 | 23-Sep-2020 | | | | | 24-Sep-2020 | 228 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-04-06 | E444 | 23-Sep-2020 | | | | | 24-Sep-2020 | 228 | 49 days | ✓ |
| | | | | | | | | days | | |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-04-07 | E444 | 23-Sep-2020 | | | | | 24-Sep-2020 | 228 | 49 days | ✓ |
| | | | | | | | | days | 1 1 | |

Page : 4 of 8

Work Order : VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Date Rec Actual TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) 23-Sep-2020 DBA2032-A-04-08 E444 24-Sep-2020 49 days 228 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) 1 DBA2032-A-04-09 E444 23-Sep-2020 24-Sep-2020 228 49 days ---days TCLP Metals : Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-04-10 E444 23-Sep-2020 24-Sep-2020 49 days 1 228 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-04-11 E444 23-Sep-2020 24-Sep-2020 49 days 228 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-04-12 E444 23-Sep-2020 24-Sep-2020 49 days 228 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-04-08 REP 1 E444 04-Oct-2020 05-Oct-2020 60 davs ✓ 239 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-04-08 REP 2 E444 04-Oct-2020 05-Oct-2020 60 days 1 239 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) ✓ DBA2032-A-04-08 REP 3 E444 04-Oct-2020 05-Oct-2020 60 days 239 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) E444 04-Oct-2020 05-Oct-2020 ✓ DBA2032-A-04-08 REP 4 60 days 239 days

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Work Order : VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



| Matrix: Soil/Solid | | | | | Ev | aluation: × = | Holding time excee | edance ; | ✓ = Within | Holding Tir |
|---|--------|---------------|--------------------------|-------------------------------|----|---------------|--------------------|-------------------|------------|-------------|
| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Eval Rec Actual | | Analysis Date | Holding Rec | g Times Actual | Eval | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-04-01 | EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-04-02 | EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-04-03 | EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-04-04 | EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-04-05 | EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-04-06 | EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-04-07 | EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-04-08 | EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-04-08 REP 1 | EPP444 | 06-Aug-2020 | 04-Oct-2020 | | | | | | | |

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Work Order VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: × = Holding time exceedance; ✓ = Within Holding Time

| | | | | | | <u> </u> | | | riolaling rii |
|--------|--|--|--|---|--|--|--|---|--|
| Method | Sampling Date | Ex | Extraction / Preparation | | | Analysis | | | |
| | | Preparation | Holding Times | | Eval | Analysis Date | Holding Times | | Eval |
| | | Date | Rec | Actual | | | Rec | Actual | |
| | | | | | | | | | |
| EPP444 | 06-Aug-2020 | 04-Oct-2020 | | | | | | | |
| | | | | | | | I | | |
| EPP444 | 06-Aug-2020 | 04-Oct-2020 | | | | | | | |
| | | | | | | | | | |
| EPP444 | 06-Aug-2020 | 04-Oct-2020 | | | | | | | |
| | | | | | | | | | |
| EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| | | | | | | | | | |
| EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| | | | | | | | | | |
| EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| | | | | | | | | | |
| EPP444 | 06-Aug-2020 | 23-Sep-2020 | | | | | | | |
| | EPP444 EPP444 EPP444 EPP444 EPP444 | EPP444 06-Aug-2020 EPP444 06-Aug-2020 EPP444 06-Aug-2020 EPP444 06-Aug-2020 EPP444 06-Aug-2020 | Preparation Date EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 | Preparation Date Holding Rec EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 | Preparation Date Holding Times Rec Rec Actual EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 | Preparation Date Holding Times Rec Eval EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 | Preparation Date Holding Times Rec Eval Analysis Date EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 | Preparation Date Holding Times Rec Eval Analysis Date Holding Rec EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 | Preparation Date Holding Times Rec Eval Actual Analysis Date Holding Times Rec Actual EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 04-Oct-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 EPP444 06-Aug-2020 23-Sep-2020 |

Legend & Qualifier Definitions

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

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Work Order : VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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: **x** = QC frequency outside specification; ✓ = QC frequency within specification. Quality Control Sample Type Count Frequency (%) Method QC Lot # QC Regular Actual Expected Evaluation Analytical Methods Method Blanks (MB) Metals by CRC ICPMS (TCLP) 91136 2 18 11.1 5.0 E444 Matrix Spikes (MS) Metals by CRC ICPMS (TCLP) 2 91136 18 11.1 5.0

E444

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Work Order : VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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 |
|---|--|------------|---|---|
| Metals by CRC ICPMS (TCLP) | E444 | 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. |
| | Vancouver - | | | |
| | Environmental | | | |
| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
| Leach 1:2 Soil:Water for pH | 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. |
| 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 :VA20B5234

VALUDUZU.

Page : 1 of 3

Amendment : 1

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 000049378

C-O-C number :---Sampler :----

Site :----

Quote number : Standing Offer (BC work)

No. of samples received : 16
No. of samples analysed : 16

Laboratory Vancouver - Environmental

Account Manager : Brent Mack

Address 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone :+1 604 253 4188

Date Samples Received :15-Sep-2020 11:35

Date Analysis Commenced :22-Sep-2020

Issue Date : 06-Oct-2020 10:20

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.

Signatories Position Laboratory Department

Brieanna Allen Department Manager - Organics Organics, Burnaby, British Columbia
Cristina Alexandre Supervisor - Metals ICP Instrumentation Metals, Burnaby, British Columbia
Kim Jensen Department Manager - Metals Metals, Burnaby, British Columbia
Ophelia Chiu Supervisor - Organics Instrumentation Organics, Burnaby, British Columbia

Page : 2 of 3

Work Order ; VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite

ALS

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.

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 |
|----------------------------|------------|--------|------|------|--------|-----------|
| TCLP Metals (QCLot: 91136) | | | | | | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.05 | mg/L | <0.050 | |
| TCLP Metals (QCLot: 97274) | | | | | | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.05 | mg/L | <0.050 | |

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 | | | | | | | |
|----------------------------|------------------|---------------|------------|--------|--------------------------|-----------|---------------------------|------|------------|-----------|--|--|
| | | | | | Spi | ke | Recovery (%) Recovery Lin | | Limits (%) | | | |
| Laboratory sample | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier | | |
| TCLP Metals (QCLot: 91136) | | | | | | | | | | | | |
| VA20B5234-001 | DBA2032-A-04-01 | cadmium, TCLP | 7440-43-9 | E444 | ND mg/L | 0.25 mg/L | ND | 50.0 | 140 | | | |
| TCLP Metals (QCLot: 97274) | | | | | | | | | | | | |
| VA20B5218-025 | Anonymous | cadmium, TCLP | 7440-43-9 | E444 | ND mg/L | 0.25 mg/L | ND | 50.0 | 140 | | | |

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Work Order : VA20B5234 Amendment 1

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



ALS Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878

www.alsglobal.com

| | • | |
|------|----|--|
| Page | of | |

COC#

Report Format / Distribution Report To Service Requested (Rush for routine analysis subject to availability) Covanta Energy Company: Standard Other Regular (Standard Turnaround Times - Business Days) Contact: Steve Mckinney / Dan Skrypnyk ✓ PDF Excel ☐ Digital ☐ Fax Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT Address: 5150 Riverbend Drive smckinney@covantaenergy.com Email 1: Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT Burnaby BC Email 2: dskrypnyk@covanta.com Same Day or Weekend Emergency - Contact ALS to Confirm TAT Phone: 604-521-1025 Fax: sarah.wellman@metrovancouver.org **Analysis Request** Email 3: Yes No brent.kirkpatrick@metrovancouver.org riohnson4@covanta.com Please indicate below Filtered, Preserved or both (F, P, F/P) Invoice To Same as Report ? Client / Project Information No Hardcopy of Invoice with Report? Job #: PO / AFE: Weekly Bottom Ash - Suite Company: Contact: (includes 2:1 pH) 듄 Address: Number of Containers Phone: Fax: Quote #: CD-TCLP-VA(Cd Lab Work Order # ALS Sampler: Contact: (lab use only) Sample Identification Sample Date Time Sample Type # (dd-mmm-yy) (hh:mm) (This description will appear on the report) DBA2032-A-04-01 Aug 6 2020 9:00 Soil X 1 **Environmental Division** X DBA2032-A-04-02 Aug 6 2020 9:00 Soil 1 Vancouver X DBA2032-A-04-03 9:00 Work Order Reference Aug 6 2020 Soil 1 VA20B5234 X DBA2032-A-04-04 Aug 6 2020 9:00 Soil DBA2032-A-04-05 X Aug 6 2020 9:00 Soil 1 X DBA2032-A-04-06 Aug 6 2020 9:00 Soil X DBA2032-A-04-07 Aug 6 2020 9:00 Soil DBA2032-A-04-08 9:00 X Aug 6 2020 Soil DBA2032-A-04-09 9:00 X Aug 6 2020 Soil DBA2032-A-04-10 9:00 Х Aug 6 2020 Soil DBA2032-A-04-11 9:00 Х Aug 6 2020 Soil DBA2032-A-04-12 9:00 Х Aug 6 2020 Soil 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) Received by: Released by: Time: Temperature: Verified by: Date: Time: Observations: Yes / No? 5-569-20 0000 15/9/20 If Yes add SIF GENF 20.00 Front



CERTIFICATE OF ANALYSIS

Work Order : VA20B5215

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 0000049378

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 4

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway

Burnaby BC Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 15-Sep-2020 11:35

Date Analysis Commenced : 16-Sep-2020

Issue Date : 23-Sep-2020 09:57

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

Brieanna Allen Department Manager - Organics Organics, Burnaby, British Columbia
Kim Jensen Department Manager - Metals Metals, Burnaby, British Columbia

Page : 2 of 4

Work Order : VA20B5215

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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 |
|---|------|-------------|
| mg/L milligrams per litre pH units pH units | | |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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

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

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

Page : 3 of 4
Work Order : VA20B5215

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analytical Results

| Sub-Matrix: Soil | | | CI | ient sample ID | DBA2032-A-05- | DBA2032-A-05- | DBA2032-A-05- | DBA2032-A-05- | DBA2032-A-05- |
|---|---------------------|--------|-------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | Matrix: Soil/Solid) | | | | 01 | 02 | 03 | 04 | 05 |
| Client sampling date / time Analyte CAS Number Method LOR Unit | | | | | 07-Aug-2020 09:00 | 07-Aug-2020 09:00 | 07-Aug-2020 09:00 | 07-Aug-2020 09:00 | 07-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | LOR Unit \ | | VA20B5215-002 | VA20B5215-003 | VA20B5215-004 | VA20B5215-005 |
| | | | | | | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.5 | 11.6 | 11.6 | 11.5 | 11.6 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.40 | 8.74 | 8.80 | 8.82 | 9.59 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.90 | 2.90 | 2.90 | 2.90 | 2.90 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 6.14 | 5.82 | 5.86 | 5.93 | 5.90 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.151 | 0.177 | 0.180 | 0.180 | 0.170 |

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

Analytical Results

| Sub-Matrix: Soil | | Client sample ID | | | DBA2032-A-05- | DBA2032-A-05- | DBA2032-A-05- | DBA2032-A-05- | DBA2032-A-05- |
|-----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------|---------------|---------------|---------------|
| (Matrix: Soil/Solid) | | | | 06 | 07 | 08 | 09 | 10 | |
| | 07-Aug-2020 09:00 | 07-Aug-2020 09:00 | 07-Aug-2020 09:00 | 07-Aug-2020 09:00 | 07-Aug-2020 09:00 | | | | |
| Analyte | CAS Number | Method | LOR Unit | | VA20B5215-006 | VA20B5215-007 | VA20B5215-008 | VA20B5215-009 | VA20B5215-010 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.6 | 11.6 | 11.6 | 11.5 | 11.6 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 10.3 | 9.15 | 9.38 | 9.16 | 9.26 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.90 | 2.90 | 2.90 | 2.90 | 2.90 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.85 | 5.87 | 6.08 | 6.11 | 6.02 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.185 | 0.284 | 0.151 | 0.214 | 0.214 |

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

Page : 4 of 4
Work Order : VA20B5215

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analytical Results

| Sub-Matrix: Soil | | | CI | ient sample ID | DBA2032-A-05- | DBA2032-A-05- | | |
|-----------------------------------|------------|--------|--------------------------|----------------|---------------|----------------------|------|--|
| (Matrix: Soil/Solid) | | | | | 11 | 12 | | |
| Client sampling date / time | | | | | | 07-Aug-2020 09:00 | | |
| Analyte | CAS Number | Method | thod LOR Unit VA2 | | VA20B5215-011 | VA20B5215-012 | | |
| | | | | | Result | Result | | |
| TCLP Metals | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.5 | 11.6 | | |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 9.31 | 9.35 | | |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.90 | 2.90 | | |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 6.07 | 5.92 | | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.236 | 0.204 | | |

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : VA20B5215

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 0000049378

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 7

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 15-Sep-2020 11:35

Issue Date : 23-Sep-2020 09:57

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- 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.

RIGHT SOLUTIONS | RIGHT PARTNER

Page : 3 of 7
Work Order : VA20B5215

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analysis Holding Time Compliance

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

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

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

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

Matrix: Soil/Solid Evaluation: × = Holding time exceedance; ✓ = Within Holding Time

| latrix: Soil/Soild | | | | | | aluation. • – | Holding time excee | | | rioluling |
|---|---|-------------|-------------|-----|---------|---------------|--------------------|-------------|---------|-----------|
| Analyte Group | Method Sampling Date Extraction / Preparation | | | | | | | Analy | | |
| Container / Client Sample ID(s) | | | Preparation | | g Times | Eval | Analysis Date | | g Times | Eval |
| | | | Date | Rec | Actual | | | Rec | Actual | |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-05-01 | E444 | 16-Sep-2020 | | | | | 21-Sep-2020 | 220 | 45 days | ✓ |
| | | | | | | | | days | | |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | 40.0 0000 | | | | | 04.0 | | 45. | , |
| DBA2032-A-05-02 | E444 | 16-Sep-2020 | | | | | 21-Sep-2020 | 220 | 45 days | ✓ |
| | | | | | | | | days | | |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | ı | | |
| HDPE - dissolved (lab preserved) DBA2032-A-05-03 | E444 | 16-Sep-2020 | | | | | 21-Sep-2020 | 000 | 45 days | ✓ |
| DBA2032-A-00-03 | E444 | 10-3ep-2020 | | | | | 21-3ep-2020 | 220 days | 45 uays | • |
| | | | | | | | | uays | | |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | l | | |
| HDPE - dissolved (lab preserved) DBA2032-A-05-04 | E444 | 16-Sep-2020 | | | | | 21-Sep-2020 | 220 | 45 days | 1 |
| DBA2002-A-00-04 | | 10 Cop 2020 | | | | | 21-00p-2020 | days | 40 days | |
| CLD Metals - Metals by CDC ICDMS (TCLD) | | | | | | | | dayo | | |
| CLP Metals : Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-05-05 | E444 | 16-Sep-2020 | | | | | 21-Sep-2020 | 220 | 45 days | ✓ |
| | | | | | | | , , , | days | | |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | , | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-05-06 | E444 | 16-Sep-2020 | | | | | 21-Sep-2020 | 220 | 45 days | ✓ |
| | | · | | | | | · | days | 1 | |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) | | | | | | | | | | |
| DBA2032-A-05-07 | E444 | 16-Sep-2020 | | | | | 21-Sep-2020 | 220 | 45 days | ✓ |
| | | | | | | | | days | | |

Page : 4 of 7
Work Order : VA20B5215

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Rec Actual Actual Date TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-05-08 E444 16-Sep-2020 21-Sep-2020 45 days 220 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) 1 DBA2032-A-05-09 E444 16-Sep-2020 21-Sep-2020 220 45 days ---days TCLP Metals : Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-05-10 E444 16-Sep-2020 21-Sep-2020 45 days 1 220 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) ✓ E444 16-Sep-2020 21-Sep-2020 45 days DBA2032-A-05-11 220 days TCLP Metals: Metals by CRC ICPMS (TCLP) HDPE - dissolved (lab preserved) DBA2032-A-05-12 E444 16-Sep-2020 21-Sep-2020 45 days 220 days TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-05-01 EPP444 07-Aug-2020 16-Sep-2020 TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-05-02 EPP444 07-Aug-2020 16-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-05-03 07-Aug-2020 16-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 16-Sep-2020 DBA2032-A-05-04 07-Aug-2020 ----------------

Page : 5 of 7
Work Order : VA20B5215

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-05-05 EPP444 07-Aug-2020 16-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-05-06 07-Aug-2020 16-Sep-2020 --------TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-05-07 EPP444 07-Aug-2020 16-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-05-08 07-Aug-2020 16-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-05-09 EPP444 07-Aug-2020 16-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-05-10 EPP444 07-Aug-2020 16-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-05-11 EPP444 07-Aug-2020 16-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)

07-Aug-2020

16-Sep-2020

EPP444

Legend & Qualifier Definitions

DBA2032-A-05-12

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

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Work Order : VA20B5215

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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: x = QC frequency outside specification; √ = QC frequency within specification.

 Quality Control Sample Type
 Count
 Frequency (%)

 Analytical Methods
 Method
 QC Lot #
 QC Regular
 Actual
 Expected
 Evaluation

 Method Blanks (MB)

| Metals by CRC ICPMS (TCLP) | E444 | 88875 | 1 | 12 | 8.3 | 5.0 | ✓ |
|----------------------------|------|-------|---|----|-----|-----|---|
| Matrix Spikes (MS) | | | | | | | |
| Metals by CRC ICPMS (TCLP) | E444 | 88875 | 1 | 12 | 8.3 | 5.0 | ✓ |

Page : 7 of 7

Work Order : VA20B5215

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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 |
|------------------------------------|---------------|------------|--------------------|--|
| Metals by CRC ICPMS (TCLP) | E444 | Soil/Solid | EPA 1311/6020B | An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per |
| | | | (mod) | EPA 1311 is analyzed by Collision/Reaction Cell ICPMS. |
| | Vancouver - | | | |
| | Environmental | | | |
| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
| Leach 1:2 Soil:Water for pH | EP108 | Soil/Solid | BC WLAP METHOD: | The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample |
| | | | PH, ELECTROMETRIC, | with deionized/distilled water at a 1:2 ratio of sediment to water. |
| | Vancouver - | | SOIL | |
| | Environmental | | | |
| TCLP Leachate Preparation (Metals, | EPP444 | Soil/Solid | EPA 1311 | Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample |
| Inorganics, and SVOCs) | | | | involves particle size reduction, homogenization, then determination of appropriate |
| | Vancouver - | | | extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle |
| | Environmental | | | 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 : VA20B5215

Client : Covanta Burnaby Renewable Energy, ULC Laboratory : Vancouver - Environmental

Contact : Steve McKinney Account Manager : Brent Mack

:5150 Riverbend Drive Address :8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

: 1 of 3

: 604 521 1025 Telephone : +1 604 253 4188 : Weekly Bottom Ash-Suite Date Samples Received : 15-Sep-2020 11:35

: VANCO 0000049378 Date Analysis Commenced : 16-Sep-2020

C-O-C number :---- Issue Date : 23-Sep-2020 09:58 Sampler :---

Quote number : Standing Offer (BC work)

No. of samples received : 12
No. of samples analysed : 12

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

Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits

Burnaby BC Canada V3N 4V3

- 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

Address

Telephone

Project

Site

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

Brieanna Allen Department Manager - Organics Organics, Burnaby, British Columbia
Kim Jensen Department Manager - Metals Metals, Burnaby, British Columbia

Page : 2 of 3
Work Order : VA20B5215

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.

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 |
|----------------------------|-------------------|------|------|--------|-----------|
| TCLP Metals (QCLot: 88875) | | | | | |
| cadmium, TCLP | 7440-43-9 E444 | 0.05 | mg/L | <0.050 | |

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/Soli | id | Matrix Spike (MS) Report | | | | | | | | |
|----------------------------|------------------|--------------------------|------------|--------|---------------|-----------|------|------|------|-----------|
| | | Spi | | | | | | | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| TCLP Metals (QCLot: 88875) | | | | | | | | | | |
| VA20B5215-001 | DBA2032-A-05-01 | cadmium, TCLP | 7440-43-9 | E444 | 0.230 mg/L | 0.25 mg/L | 91.9 | 50.0 | 140 | |

Page : 3 of 3 Work Order : VA20B5215

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



ALS Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsqlobal.com

| COC # | |
|----------|---|
| | |
| <u> </u> | • |

| Report To | | | | F | Report Fo | rmat / Distributi | on | | Service Requested (Rush for routine analysis subject to availability) | | | | | | | | | | | |
|-------------|--|---------------------------------------|---|--|------------|----------------------------------|----------------|----------------------|---|--|---------|--------------|----------|----------|------------|--------------|-----------------|----------------------|--|--|
| Company: | Covanta Energy | | | | Standard | Other | | <u> </u> | Regular | Standard | Turnaro | ound Times - | Busines | s Days) | | | | | | |
| Contact: | Steve Mckinney / D | an Skrypnyk | | | ✓ PDF | ☐ Excel | Digital | Fax C | Priority (| 2-4 Busine | ss Days | s) - 50% Sur | :harge - | Contact | ALS to Cor | ıfirm TA | Т | | | |
| Address: | 5150 Riverbend Dri | ve | | E | Email 1: | smckinney@cov | antaenergy.co | <u>m</u> C | Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | | |
| | Burnaby BC | | | E | Email 2: | dskrypnyk@covanta.com Os | | | | Same Day or Weekend Emergency - Contact ALS to Confirm TAT | | | | | | | | | | |
| Phone: | 604-521-1025 | Fax: | · | E | Email 3: | sarah.wellman@metrovancouver.org | | | | Analysis Request | | | | | | | | | | |
| | | Yes | □ No | | | brent.kirkpatrick | @metrovancou | iver.org | | | | | | | _ | | | | | |
| | | | | _ | | riohnson4@covanta.com | | | | | 1 | | | | | | L | | | |
| Invoice To | Same as Report ? | | <u> </u> | | | Client / Project Information | | | | | ite bel | ow Filtere | d, Pres | served | or both | F, P, F | /P) | | | |
| Hardcopy of | Invoice with Report? | Yes | No | \ | Job #: | | | | | | \perp | \vdash | ↓ | | | | | | | |
| Company: | | | | | | Weekly Bottom | Ash - Suite | | steps) | | | | | | | | | | | |
| Contact: | | | | | LSD: | (includes 2:1 pH | l) | | l ste | | | | i | | | | | | | |
| Address: | | | | | | | | | 된 | | İ | | | | Ì | | | ners | | |
| Phone: | | Fax: | | | Quote #: | | | | d and | | | | | | ļ | | | ntai | | |
| Lab V | Vork Order # | | | | ALS | | Sampler: | | P-VA(Cd | | | | | | | | | ပိ | | |
| (lat | use only) | | | | Contact: | | | | 4 | | | | | | | / | | io lo | | |
| Sample | | Sample | Identification | | | Date | Time | Sample Type | CD-TCL | | | | | | | | | Number of Containers | | |
| # . | (Th | is description v | vill appear on the | report) | | (dd-mmm-yy) | (hh:mm) | | 밁 | | | | ╄ | \sqcup | | | <u> </u> | ž | | |
| · | DBA2032-A-05-01 | | | | | Aug 7 2020 | 9:00 | Soil | X | | | | <u> </u> | | | | | 1 | | |
| | DBA2032-A-05-02 Environmental Division Vancouver | | | |) | Aug 7 2020 | 9:00 | Soil | X | | ļ | | <u> </u> | \sqcup | | $oxed{oxed}$ | | 1 | | |
| | DBA2032-A-05-03 | | | Aug 7 2020 | 9:00 | Soil | X | | | | | | | | | 1 | | | | |
| | DBA2032-A-05-04 | | Work Order I | Reference | . !_ | Aug 7 2020 | 9:00 | Soil | X | | | | | | | | Ш | 1 | | |
| | DBA2032-A-05-05 | <u>.</u> | * | 20210 |) : | Aug 7 2020 | 9:00 | Soil | X | | | | | | | | | 1 | | |
| | DBA2032-A-05-06 | | | | · . | Aug 7 2020 | 9:00 | Soil | X | | | | | | | | | 1 | | |
| | DBA2032-A-05-07 | · · · · · · · · · · · · · · · · · · · | | | <u>.</u> | Aug 7 2020 | 9:00 | Soil | X | | | | | | | | | 1 | | |
| | DBA2032-A-05-08 | | | # | | Aug 7 2020 | 9:00 | Soil | Х | | | | l | | _ | | | 1 | | |
| | DBA2032-A-05-09 | | | | : | Aug 7 2020 | 9:00 | Soil | X | | | | | | | | | 1 | | |
| | DBA2032-A-05-10 | / en | ephone: +1 604 253 | 3 4188 | | Aug 7 2020 | 9:00 | Soil | X | | | | | | | | | 1 | | |
| | DBA2032-A-05-11 | | ** | | - / | Aug 7 2020 | 9:00 | Soil | X | | | | | | | | | 1 | | |
| 2 | DBA2032-A-05-12 | | | | | Aug 7 2020 | 9:00 | Soil | X | | | | | Ш | | | L | 1 | | |
| | Special Inst | ructions / Reg | gulations with w | ater or land u | use (CCM | E-Freshwater A | quatic Life/BC | CSR - Commerci | al/AB T | ier 1 - N | latural | l, etc) / Ha | zardo | us De | tails | | | | | |
| | | | | | | | | | | | | | | | | } } | | | | |
| | | | Failure to c | omplete all po | ortions of | f this form may | delav analysis | . Please fill in thi | s form | LEGIBL | Y. | | 1 | | | | | | | |
| | | By the use | | | | | | Conditions as pr | | | | Excel ta | b. | | | | | | | |
| | Also provided o | | | | | | | container / prese | | | | | | mon a | nalyses. | | | | | |
| | SHIPMENT RELEASE (client use) | | | | SHIP | MENT RECEPTION | ON (lab use on | | | | НРМ | ENT VER | IFICAT | ION (I | ab use o | nly) | | | | |
| Released by | | Date (dd-mmm-yy |) Time (hh-mm) | Received by | y: | Date: | Time: | Temperature: | Verifie | | | Date: | | Time: | | Von | rvatio | | | |
| 2 | -1 | 15-5cp-2 | o Ogod | | | | | 19.4 00 | R | K | | 159 | 20 | 11:3 | sam | _ | / No ? s add | | | |
| | | | | | | | | | | | | τ | | | GEN | F 20.00 | Front | | | |



CERTIFICATE OF ANALYSIS

Work Order : VA20B5219

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 0000049378

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 4

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway

Burnaby BC Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 15-Sep-2020 11:35

Date Analysis Commenced : 21-Sep-2020

Issue Date : 24-Sep-2020 09:51

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

Brieanna Allen Department Manager - Organics Organics, Burnaby, British Columbia
Robin Weeks Team Leader - Metals Metals, Burnaby, British Columbia

Page : 2 of 4

Work Order : VA20B5219

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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 |
|------------------|-------------------------------|
| mg/L pH units | milligrams per litre pH units |
| | |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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

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

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

Page : 3 of 4
Work Order : VA20B5219

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analytical Results

| Sub-Matrix: Soil | | | Cl | ient sample ID | DBA2032-A-06- | DBA2032-A-06- | DBA2032-A-06- | DBA2032-A-06- | DBA2032-A-06- |
|-----------------------------------|------------|--------|-------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil/Solid) | | | | 01 | 02 | 03 | 04 | 05 | |
| | | | | | 08-Aug-2020 09:00 | 08-Aug-2020 09:00 | 08-Aug-2020 09:00 | 08-Aug-2020 09:00 | 08-Aug-2020 09:00 |
| Analyte | CAS Number | Method | LOR | LOR Unit | | VA20B5219-002 | VA20B5219-003 | VA20B5219-004 | VA20B5219-005 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.1 | 11.2 | 11.2 | 11.1 | 11.3 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.68 | 8.59 | 7.96 | 7.97 | 8.66 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.89 | 2.89 | 2.89 | 2.89 | 2.89 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.50 | 5.49 | 5.82 | 5.43 | 5.57 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.361 | 0.255 | 0.296 | 0.254 | 0.358 |

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

Analytical Results

| Sub-Matrix: Soil | | | Cli | ient sample ID | DBA2032-A-06- | DBA2032-A-06- | DBA2032-A-06- | DBA2032-A-06- | DBA2032-A-06- |
|-----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------|---------------|---------------|---------------|
| (Matrix: Soil/Solid) | | | | | 06 | 07 | 08 | 09 | 10 |
| | 08-Aug-2020 09:00 | 08-Aug-2020 09:00 | 08-Aug-2020 09:00 | 08-Aug-2020 09:00 | 08-Aug-2020 09:00 | | | | |
| Analyte | CAS Number | Method | LOR Unit | | VA20B5219-006 | VA20B5219-007 | VA20B5219-008 | VA20B5219-009 | VA20B5219-010 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.3 | 11.4 | 11.2 | 11.2 | 11.4 |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.75 | 8.97 | 8.94 | 8.89 | 9.04 |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.89 | 2.89 | 2.89 | 2.89 | 2.89 |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.63 | 5.35 | 5.33 | 5.52 | 5.53 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.606 | 0.293 | 0.255 | 0.267 | 0.230 |

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

Page : 4 of 4
Work Order : VA20B5219

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analytical Results

| Sub-Matrix: Soil | | | Cli | ient sample ID | DBA2032-A-06- | DBA2032-A-06- | | |
|---|------------|--------|----------|----------------|----------------------|----------------------|------|--|
| (Matrix: Soil/Solid) | | | | | 11 | 12 | | |
| Client sampling date / time Analyte CAS Number Method LOR Unit | | | | | 08-Aug-2020 09:00 | 08-Aug-2020 09:00 | | |
| Analyte | CAS Number | Method | LOR Unit | | VA20B5219-011 | VA20B5219-012 | | |
| | | | | | Result | Result | | |
| TCLP Metals | | | | | | | | |
| pH, TCLP 1st preliminary | | EPP444 | 0.010 | pH units | 11.4 | 11.3 | | |
| pH, TCLP 2nd preliminary | | EPP444 | 0.010 | pH units | 8.63 | 8.34 | | |
| pH, TCLP extraction fluid initial | | EPP444 | 0.010 | pH units | 2.89 | 2.89 | | |
| pH, TCLP final | | EPP444 | 0.010 | pH units | 5.62 | 5.75 | | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.263 | 0.298 | | |

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : VA20B5219

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 0000049378

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 7

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 15-Sep-2020 11:35

Issue Date : 24-Sep-2020 09:51

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- 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.

RIGHT SOLUTIONS | RIGHT PARTNER

Page : 3 of 7

Work Order · VA20B5219

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Analysis Holding Time Compliance

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

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

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

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

Astrix: Soil/Solid Evaluation: x = Holding time exceedance; √ = Within Holding Time

| Matrix: Soil/Solid | | | | | | /aiuation: × = | Holding time excee | | | Holding |
|---|--------|---------------|-------------|---------------|---------|----------------|--------------------|-------------|---------|---------|
| nalyte Group | Method | Sampling Date | Ex | traction / Pr | • | | | Analy | | |
| Container / Client Sample ID(s) | | | Preparation | | g Times | Eval | Analysis Date | | g Times | Eval |
| | | | Date | Rec | Actual | | | Rec | Actual | |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-01 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-02 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-03 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-04 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-05 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-06 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| CLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-07 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |

Page 4 of 7 VA20B5219 Work Order

: Covanta Burnaby Renewable Energy, ULC : Weekly Bottom Ash-Suite Client

Project



| /latrix: Soil/Solid | | | | | | raluation: × = | Holding time excee | | | Holding T |
|---|--------|---------------|---------------------|----------------|-----------------|----------------|--------------------|----------------|-------------------|-----------|
| Analyte Group | Method | Sampling Date | Ext | traction / Pre | | | | Analy | | |
| Container / Client Sample ID(s) | | | Preparation Date | Holding Rec | Times Actual | Eval | Analysis Date | Holding Rec | g Times Actual | Eval |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-08 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-09 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-10 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-11 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| TCLP Metals : Metals by CRC ICPMS (TCLP) | | | | | | | | , | | |
| HDPE - dissolved (lab preserved) DBA2032-A-06-12 | E444 | 21-Sep-2020 | | | | | 23-Sep-2020 | 224 days | 46 days | ✓ |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | , | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-06-01 | EPP444 | 08-Aug-2020 | 21-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-06-02 | EPP444 | 08-Aug-2020 | 21-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-06-03 | EPP444 | 08-Aug-2020 | 21-Sep-2020 | | | | | | | |
| TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) | | | | | | | | | | |
| Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-06-04 | EPP444 | 08-Aug-2020 | 21-Sep-2020 | | | | | | | |

Page : 5 of 7
Work Order : VA20B5219

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation Holding Times Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-06-05 EPP444 08-Aug-2020 21-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-06-06 08-Aug-2020 21-Sep-2020 --------TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-06-07 EPP444 08-Aug-2020 21-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-06-08 08-Aug-2020 21-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-06-09 EPP444 08-Aug-2020 21-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-06-10 EPP444 08-Aug-2020 21-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) DBA2032-A-06-11 EPP444 08-Aug-2020 21-Sep-2020 TCLP Metals: TCLP Leachate Preparation (Metals, Inorganics, and SVOCs) Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) EPP444 DBA2032-A-06-12 08-Aug-2020 21-Sep-2020

Legend & Qualifier Definitions

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

Page : 6 of 7
Work Order : VA20B5219

Metals by CRC ICPMS (TCLP)

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



12

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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: **x** = QC frequency outside specification; ✓ = QC frequency within specification. Quality Control Sample Type Count Frequency (%) Method QC Lot # QC Regular Actual Expected Evaluation Analytical Methods Method Blanks (MB) Metals by CRC ICPMS (TCLP) 89824 12 8.3 5.0 E444 Matrix Spikes (MS)

E444

89824

Page : 7 of 7

Work Order : VA20B5219

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



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 |
|------------------------------------|---------------|------------|---------------------------------------|---|
| Metals by CRC ICPMS (TCLP) | E444 | 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. |
| | Vancouver - | | | |
| | Environmental | | | |
| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
| Leach 1:2 Soil:Water for pH | EP108 | Soil/Solid | BC WLAP METHOD: PH, ELECTROMETRIC, | 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. |
| | Vancouver - | | SOIL | |
| | Environmental | | | |
| TCLP Leachate Preparation (Metals, | EPP444 | Soil/Solid | EPA 1311 | Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample |
| Inorganics, and SVOCs) | | | | involves particle size reduction, homogenization, then determination of appropriate |
| | Vancouver - | | | extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle |
| | Environmental | | | 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 :VA20B5219

Client : Covanta Burnaby Renewable Energy, ULC

Contact : Steve McKinney
Address : 5150 Piverhead D

: 5150 Riverbend Drive

Burnaby BC Canada V3N 4V3
Telephone :604 521 1025

Telephone : 604 521 1025

Project : Weekly Bottom Ash-Suite
PO : VANCO 000049378

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 3

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 15-Sep-2020 11:35

Date Analysis Commenced : 21-Sep-2020

Issue Date : 24-Sep-2020 09:51

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.

Signatories Position Laboratory Department

Brieanna Allen Department Manager - Organics Organics, Burnaby, British Columbia
Robin Weeks Team Leader - Metals Metals, Burnaby, British Columbia

Page : 2 of 3
Work Order : VA20B5219

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.

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 |
|----------------------------|------------|--------|------|------|--------|-----------|
| TCLP Metals (QCLot: 89824) | | | | | | |
| cadmium, TCLP | 7440-43-9 | E444 | 0.05 | mg/L | <0.050 | |

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/Sol | id | | Matrix Spike (MS) Report | | | | | | | | |
|-------------------------|------------------|---------------|--------------------------|--------|---------------|-----------|----|------|------|-----------|--|
| | | Spi | | | | | | | | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier | |
| TCLP Metals (QC | CLot: 89824) | | | | | | | | | | |
| VA20B5219-001 | DBA2032-A-06-01 | cadmium, TCLP | 7440-43-9 | E444 | ND mg/L | 0.25 mg/L | ND | 50.0 | 140 | | |

Page : 3 of 3 Work Order : VA20B5219

Client : Covanta Burnaby Renewable Energy, ULC

Project : Weekly Bottom Ash-Suite



ALS Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878

www.aisglobal.com

| _ | |
|---|--|

COC#

| Report To | | | | | Report Fo | ormat / Distribut | ion | · | Serv | rice Requ | uested | d (Rush i | for ro | utine and | alysis sub | ject to | availa | bility) | |
|--------------|---------------------|---|--------------------|------------------|----------------|--|-----------------|---------------------|---|--------------|----------|-----------|----------|------------|--------------|-----------------|----------|----------|----------------------|
| Company: | Covanta Energy | | | | Standard | Other | | . (| Regula | ar (Standard | d Turna | round Tim | nes - E | 3usiness [| ays) | | | | |
| Contact: | Steve Mckinney / [| Dan Skrypnyk | | | ₽ DF | ☐ Excel | Digital | ☐ Fax (| Priorit | y (2-4 Busir | ness Da | ys) - 50% | Surch | narge - Co | intact ALS | to Conf | ìrm TA | т | |
| Address: | 5150 Riverbend Di | rive | | | Email 1: | smckinney@co | vantaenergy.co | <u>m</u> (| Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | |
| | Burnaby BC | | | | Email 2: | Same Day or Weekend Emergency - Contact ALS to Confirm TAT | | | | | | | | | | | | | |
| Phone: | 604-521-1025 | Fax: | | | Email 3: | sarah.wellman@ | metrovancouv | er.org | | | | Α | naly | sis Req | uest | | | | |
| | | Yes | □ No | | | brent.kirkpatrick | | iver.org | | | | | | | | | لــــا | | |
| | | | | | | _ | | | | | | | | | <u> </u> | | | | |
| Invoice To | Same as Report ? | | 1 | 1 | | roject Information | Ple | ase indic | ate be | elow Filt | ered | , Prese | ved or I | ooth (F | , P, F | :/P) | | | |
| | nvoice with Report? | Yes | No No | 1 | Job #: | | | | ┷ | | <u> </u> | 1 1 | | | — | | | \sqcup | |
| Company: | | | | | | Weekly Bottom | Ash - Suite | | steps) | 1 | . | 1 | | 1 | | | | i | |
| Contact: | - | | LSD: | (includes 2:1 pl | 1) | | | ' | | | | | | | | | (0 | | |
| Address: | | <u> </u> | | | | | | | Hd bu | | | | | | | | .1 | 1 | ners |
| Phone: | | Fax: | | | Quote #: | ļ | | | | | | | | | | | | | ntai |
| | Vork Order # | , | | | ALS | | Sampler: | | P-VA(Cd | | | | | | | | | | ဂ္ဂ |
| | use only) | | | | Contact: | | ļ | | | 1 1 | | | | | ĺ | | | ıΙ | o ie |
| Sample | | · | dentification | | | Date | Time | Sample Type | CD-TCL | 1 | 1 | | | | | 1 1 | | 1 1 | Number of Containers |
| # | | nis description w | ill appear on the | e report) | | (dd-mmm-yy) | (hh:mm) | | | | 4 | | | \vdash | + | $+\!-\!\!\!\!-$ | igsquare | \vdash | <u> 2</u> |
| | DBA2032-A-06-01 | · · * | | | | Aug 8 2020 | 9:00 | Soil | <u> </u> | | | | | | | | | L | 1 |
| | DBA2032-A-06-02 | | ronmental F | Division | · \ | Aug 8 2020 | 9:00 | Soil | X | - | · . | | | 1.1 | | | | l l | 1 |
| | DBA2032-A-06-03 | -A-06-02 Environmental Division Vancouver | | | | Aug 8 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-06-04 | W | A20B5 | rence | ! | Aug 8 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-06-05 | | へといり | 1219 | | Aug 8 2020 | 9:00 | Soil | х | | | | | | | | | | 1 |
| | DBA2032-A-06-06 | | | E IIII | | Aug 8 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-06-07 | | | | | Aug 8 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-06-08 | | | FB | | Aug 8 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-06-09 | | | | - F | Aug 8 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-06-10 | I elephon | 9: +1 604 253 4186 | 9 | | Aug 8 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-06-11 | | | | <u> </u> | Aug 8 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | DBA2032-A-06-12 | | | | | Aug 8 2020 | 9:00 | Soil | Х | | | | | | | | | | 1 |
| | Special Ins | tructions / Reg | ulations with w | rater or land | use (CCM | E-Freshwater A | quatic Life/BC | CSR - Commerc | ial/AB | Tier 1 - i | Natura | al, etc) | / Haz | ardous | Details | 3 | | | |
| ļ | | | | | | | | | | | | | | | | | | | |
| | <u> </u> | <u> </u> | Failure to c | omplete all r | ortions o | f this form may | dejav analysis | . Please fill in th | is forn | n I EGIBI | LY. | | | | —— | | | | |
| | | By the use of | | | | | | Conditions as p | | | | te Exce | l tab | · | | | | | |
| | Also provided o | | | | | | | container / pres | | | - | | | | n analy | yses. | <u> </u> | | |
| | SHIPMENT RELE | | | | | MENT RECEPTI | ON (lab use onl | | T | | | | | |)Ν (lab ι | | ly) | | - |
| Released by | // | Date (dd-mmm-yy) | Time (hh-mm) | Received b | y: | Date: Time: Temperature: Ver | | | | | | Date: | | | ime: | | Obse | rvatio | |
| 1 | | 15-520-3 | 0800 | } | | 1 | | 19.4 00 | | RK | 1 | 151 | 19 | 201 | 1)25 | San | Yes / | No? | elE. |
| | | <u> </u> | 1 0/00 | | | | <u> </u> | 11 1 2 | | , , , , | | 100 | LL | المعر | <u>12 00</u> | GENF | | | SIF |
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