Report No. | 22081

ORTECH
a Kontrol Technologies Company

Report:

Covanta Durham York Renewable Energy Limited Partnership
Durham York Energy Centre
2021 Voluntary Compliance Emission Testing Program

Date: March 8, 2022





Report:

Covanta Durham York Renewable Energy Limited Partnership
Durham York Energy Centre
2021 Voluntary Compliance Emission Testing Program

Submitted to: The Regional Municipality of Durham
Works Department
605 Rossland Road East, Level 4
PO Box 623, Whitby, Ontario L1N 6A3

Mr. Gioseph Anello
Manager, Waste Planning & Technical Services
Tel: (905) 668-4113, Ext. 3445
E-mail: gioseph.anello@durham.ca

Covanta Corporation
445 South Street
Morristown, NJ, USA 07960

Mr. Rick Kohler, Environmental Engineer
Tel: (862) 345-5197
E-mail: rkohler@covanta.com

Site Location: Durham York Energy Centre
1835 Energy Drive
Courtice, Ontario L1E 2R2

Prepared by: ORTECH Consulting Inc.
804 Southdown Rd.
Mississauga, Ontario L5J 2Y4

Tina Sanderson, B.Sc.
Senior Project Manager, Emission Testing
Tel: (905) 822-4120, Ext. 522
E-mail: tsanderson@ortech.ca

Reviewed by: ORTECH Consulting Inc.
804 Southdown Rd.
Mississauga, Ontario L5J 2Y4

Hank Van Bakel, P.Eng., President
Tel: (905) 822-4120, Ext. 628
E-mail: hvanbakel@ortech.ca

Report No.: 22081
57 pages, 28 Appendices

Revision History

Version	Date	Summary Changes/Purpose of Revision
1	September 16, 2021	None
2	March 8, 2022	Revised Aldehyde ad Acrolein Data – Analytical laboratory identified an error in the units shown in the report

NOTICE:
This report was prepared by ORTECH Consulting Inc. (ORTECH) solely for the Client identified above and is to be used exclusively for the purposes set out in the report. The material in this report reflects the judgment of ORTECH based on information available to them at the time of preparation. Unless manifestly incorrect, ORTECH assumes information provided by others is accurate. Changed conditions or information occurring or becoming known after the date of this report could affect the results and conclusions presented. Unless otherwise required by law or regulation, this report shall not be shared with any Third Party without the express written consent of ORTECH. ORTECH accepts no responsibility for damages, if any, suffered by any Third Party which makes use of the results and conclusions presented in this report.

Table of Contents

Page

EXECUTIVE SUMMARY 6

1. INTRODUCTION 12

2. PROCESS DESCRIPTION 13
   - 2.1 Control Equipment 13
   - 2.2 Continuous Emission Monitoring Systems 13

3. SAMPLING LOCATIONS 15

4. SAMPLING PROCEDURES 16
   - 4.1 General 16
   - 4.2 Particulate and Metals 17
   - 4.3 Particle Size Distribution 18
   - 4.4 Semi-Volatile Organic Compounds 18
   - 4.5 Acid Gases 19
   - 4.6 Volatile Organic Compounds 20
   - 4.7 Aldehydes 21
   - 4.8 Combustion Gases 22

5. SAMPLE RECOVERY AND ANALYSIS 23
   - 5.1 Particulate and Metals 23
   - 5.2 Particle Size Distribution 24
   - 5.3 Semi-Volatile Organic Compounds 25
   - 5.4 Acid Gases 27
   - 5.5 Volatile Organics Train Recovery 27
   - 5.6 Aldehydes 28

6. INTERNAL AND EXTERNAL QA/QC PROGRAM 29
   - 6.1 General 29
   - 6.2 Pre-Test Activities 29
   - 6.3 Emission Testing QA/QC Results 30
   - 6.4 Sample Recovery, Handling and Custody 31
   - 6.5 Analytical Results 31
     - *6.5.1 Metals Sample Analysis QA/QC 32*
     - *6.5.2 Acid Gas Sample Analysis QA/QC 34*
     - *6.5.3 Aldehyde Sample Analysis QA/QC 35*
     - *6.5.4 SVOC Sample Analysis QA/QC 35*
     - *6.5.5 Volatile Organic Compound Analysis QA/QC 36*

Table of Contents

Page

7. RESULTS AND DISCUSSION 36
   - 7.1 Stack Gas Sampling Parameters 37
   - 7.2 Stack Gas Physical Parameters 37
   - 7.3 Volumetric Flowrate Data 37
   - 7.4 Particulate Emission Data 38
   - 7.5 Acid Gases 40
   - 7.6 Combustion Gas Emission Data 40
   - 7.7 Metal Emission Data 42
   - 7.8 Mercury Emission Data 43
   - 7.9 Semi-Volatile Organic Emission Data 44
     - *7.9.1 Dioxins and Furans Emission Data 44*
     - *7.9.2 Chlorobenzene and Chlorophenol Emission Data 48*
     - *7.9.3 Polycyclic Aromatic Hydrocarbon Emission Data 49*
   - 7.10 Aldehydes 50
   - 7.11 Volatile Organic Emission Data 50

8. DISPERSION MODELLING 51

9. FACILITY PROCESS DATA 52

10. CONCLUSIONS 54

List of Appendices

APPENDIX 1 Boiler No. 1 BH Outlet Data Tables
APPENDIX 2 Boiler No. 2 BH Outlet Data Tables
APPENDIX 3 Notice of Testing and ECA No. 7306-8FDKNX
APPENDIX 4 Particulate and Metals Field Data Sheets
APPENDIX 5 Particle Size Distribution Field Data Sheets
APPENDIX 6 SVOC Data Sheets
APPENDIX 7 Acid Gas Field Data Sheets
APPENDIX 8 VOST Field Data Sheets
APPENDIX 9 Aldehydes Field Data Sheets
APPENDIX 10 ORTECH Sample Log/Chain of Custody Forms
APPENDIX 11 Particulate and Metals Train Recovery Data Sheets
APPENDIX 12 Inorganics Analytical Reports
APPENDIX 13 Particle Size Distribution Train Recovery Data Sheets
APPENDIX 14 SVOC Train Recovery Data Sheets
APPENDIX 15 SVOC Analytical Report
APPENDIX 16 Acid Gas Recovery Data Sheets
APPENDIX 17 VOST Analytical Report
APPENDIX 18 Aldehydes Recovery Data Sheet
APPENDIX 19 Aldehydes Analytical Report
APPENDIX 20 SVOC and VOST Proof Data
APPENDIX 21 ORTECH Equipment Calibration Data
APPENDIX 22 Particulate and Metals Test Emission Calculations
APPENDIX 23 Particle Size Distribution Test Emission Calculations
APPENDIX 24 Acid Gases Test Emission Calculations
APPENDIX 25 SVOC Test Emission Calculations
APPENDIX 26 ORTECH Total Hydrocarbon CEM Data
APPENDIX 27 Dispersion Modelling Results for the June 2021 Testing Program
APPENDIX 28 DYEC CEMS 1-Hour Average Data

EXECUTIVE SUMMARY

NOTE: This report was updated on March 8, 2022. During the preparation of the 2021 compliance testing report (ORTECH Report No. 22085) an inconsistency was noted by ORTECH in regards to the units being used in the analytical reports for acetaldehyde, formaldehyde and acrolein. Upon review by ALS, the analytical laboratory, it was determined that the data for the 2021 compliance testing program was correct but there may have been an issue with the data reported for previous testing programs. ORTECH requested that all historical aldehyde data be reviewed by ALS to identify if an error in reporting had occurred. ALS determined that the units used to report the acetaldehyde, formaldehyde and acrolein data was incorrect for this, the 2021 voluntary testing program. The data was previously reported as ng and should have been reported as µg and as a result the emission data for these parameters was previously under reported. ORTECH has revised this 2021 voluntary testing report to correct the acetaldehyde, formaldehyde and acrolein emission data and dispersion modelling. As discussed below, this correction does not impact the compliance status of the facility.

ORTECH Consulting Inc. (ORTECH) completed a voluntary compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between June 15 and June 18, 2021. The voluntary emission testing program was performed at the request of the Regions of Durham and York. The current test program is the sixth voluntary test program conducted at the facility.

Ontario Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX Section 7(1) states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter". A list of the test programs conducted by ORTECH to date is provided below:

Test Program	Test Date	ORTECH Report No.
2015 Compliance	September/October 2015	21546
2016 Voluntary	May 2016	21656
2016 Compliance	October/November 2016	21698
2017 Voluntary	May 2017	21754
2017 Compliance	October 2017	21800
2018 Voluntary	May/June 2018	21840
2018 Compliance	September 2018	21880
2019 Voluntary	June 2019	21936
2019 Compliance	September 2019	21960
2020 Voluntary	June 2020	22001
2020 Compliance	November 2020	22050
2021 Voluntary	June 2021	22081

Source testing was performed on the Baghouse (BH) Outlet of Boiler No. 1 and BH Outlet of Boiler No. 2 for the test contaminants listed in Schedule D of the ECA.

Triplicate emission tests were completed for particulate matter, metals, semi-volatile organic compounds, acid gases, volatile organic compounds, aldehydes and combustion gases at the BH Outlet of each Boiler. Triplicate emission tests were also completed for total hydrocarbons at the Quench Inlet of each Boiler. The contaminant groups included in the emission test program and the reference test methods used are summarized below:

Test Groups	Reference Method
Particulate and Metals	US EPA Method 29
$PM_{2.5}$/PM_{10} and Condensable Particulate	US EPA Methods 201A and 202
Semi-Volatile Organic Compounds	Environment Canada Method EPS 1/RM/2
Volatile Organic Compounds	US EPA SW-846 Method 0030 (SLO VOST modification)
Aldehydes	NCASI Method ISS/FP-A105.01
Halides and Ammonia	US EPA Method 26A
Combustion Gases:	
Oxygen and Carbon Dioxide	Facility CEM
Carbon Monoxide	Facility CEM
Sulphur Dioxide	Facility CEM
Nitrogen Oxides	Facility CEM
Total Hydrocarbons	ORTECH per US EPA Method 25A

Schedule C of ECA No. 7306-8FDKNX lists in-stack limits for the emissions of various compounds. In-stack emissions limits are given for particulate matter, mercury, cadmium, lead, dioxins and furans and organic matter for comparison with the results from compliance source testing. In-stack emission limits are also given for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide calculated as the rolling arithmetic average of data measured by a continuous emission monitoring system (CEMS).

Since relative accuracy and system bias testing was conducted in July 2020, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (June 15 to June 18, 2021) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on June 15 and June 16, 2021 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

Consistent with the approach commonly required by the MECP for compliance emission testing programs, the following results are conservative in the sense that when the analytical result is reported to be below the detection limit, the full detection limit is used to calculate emission data and is shown by a "<" symbol. Also, when one or both Boiler results are reported to be below the detection limit, the detection limit was used to conservatively estimate the total emission rate for the Main Stack.

The MECP "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provides an updated framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs. This document was replaced by "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", with the most recent version published on April 27, 2018, however the dioxin and furan toxicity equivalent calculation methodology remains the same. The dioxins, furans and dioxin-like PCBs toxicity equivalent emission data was also calculated using half the detection limit for those compounds not detected. The half detection limit data was used to assess against the dispersion modelling Point of Impingement limit. The toxicity equivalent concentrations calculated using the full detection limit, for those compounds less than the reportable detection limit, were used to assess against the in-stack limit detailed in Schedule C of the ECA.

The average results for the tests conducted at Boiler No. 1, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	381	-
Average Combustion Zone Temp. (°C)*	-	-	-	1242	-
Steam (tonnes/day)*	-	-	-	810	-
MSW Combusted (tonnes/day)*	-	-	-	195	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	589	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	5134	-
Filterable Particulate (mg/Rm^3) (1)	0.63	0.49	1.22	0.78	9
PM_{10} with Condensable (mg/Rm^3) (1)	5.51	<4.27	<4.02	<4.60	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	5.31	<4.13	<3.89	<4.45	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.12	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	2.30	1.70	1.31	1.77	-
Cadmium (µg/Rm^3) (1)	0.020	0.12	0.060	0.068	7
Lead (µg/Rm^3) (1)	0.39	0.62	0.32	0.44	50
Mercury (µg/Rm^3) (1)	0.088	<0.086	<0.086	<0.086	15
Antimony (µg/Rm^3) (1)	<0.043	<0.041	<0.044	<0.043	-
Arsenic (µg/Rm^3) (1)	<0.043	<0.041	<0.044	<0.043	-
Barium (µg/Rm^3) (1)	1.71	1.48	2.30	1.83	-
Beryllium (µg/Rm^3) (1)	<0.043	<0.041	<0.044	<0.043	-
Chromium (µg/Rm^3) (1)	0.93	0.79	0.73	0.82	-
Cobalt (µg/Rm^3) (1)	0.12	0.10	<0.044	<0.089	-
Copper (µg/Rm^3) (1)	3.58	6.08	3.13	4.26	-
Molybdenum (µg/Rm^3) (1)	5.15	4.55	4.86	4.85	-
Nickel (µg/Rm^3) (1)	1.01	2.25	0.74	1.33	-
Selenium (µg/Rm^3) (1)	0.23	<0.20	<0.22	<0.22	-
Silver (µg/Rm^3) (1)	<0.043	<0.041	<0.044	<0.043	-
Thallium (µg/Rm^3) (1)	<0.043	<0.041	<0.044	<0.043	-
Vanadium (µg/Rm^3) (1)	<0.022	<0.020	<0.022	<0.021	-
Zinc (µg/Rm^3) (1)	6.26	7.56	7.94	7.25	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<3.84	<5.09	<3.37	<4.10	60
Total Chlorobenzenes (ng/Rm^3) (1)	<440	<605	<496	<514	-
Total Chlorophenols (ng/Rm^3) (1)	<176	<169	<166	<171	-
Total PAHs (ng/Rm^3) (1)	<254	<241	<286	<260	-
VOCs (µg/Rm^3) (1)	<100	<73.7	<73.6	<82.4	-
Aldehydes (µg/Rm^3) (1)	<1801	<702	<439	<981	-
Total VOCs (µg/Rm^3) (1) (4)	<1901	<776	<513	<1063	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	1.5	1.1	0.5	1.0	50

* based on process data provided by Covanta

(1) dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(2) dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

(3) calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(4) Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).

The average results for the tests conducted at Boiler No. 2, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	381	-
Average Combustion Zone Temp. (°C)*	-	-	-	1211	-
Steam (tonnes/day)*	-	-	-	808	-
MSW Combusted (tonnes/day)*	-	-	-	196	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	631	-
Carbon Injection (kg/day)*	-	-	-	128	-
Lime Injection (kg/day)*	-	-	-	4205	-
Filterable Particulate (mg/Rm^3) (1)	0.29	<0.30	0.16	<0.25	9
PM_{10} with Condensable (mg/Rm^3) (1)	4.73	<4.95	<5.38	<5.02	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	4.46	<4.88	<5.32	<4.89	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.099	<0.098	<0.10	-
Ammonia (mg/Rm^3) (1)	0.91	0.74	0.63	0.76	-
Cadmium (µg/Rm^3) (1)	0.054	0.047	0.034	0.045	7
Lead (µg/Rm^3) (1)	0.37	0.31	0.28	0.32	50
Mercury (µg/Rm^3) (1)	0.081	<0.078	0.083	<0.081	15
Antimony (µg/Rm^3) (1)	0.047	<0.043	0.041	<0.044	-
Arsenic (µg/Rm^3) (1)	<0.045	<0.043	<0.041	<0.043	-
Barium (µg/Rm^3) (1)	1.77	1.53	1.51	1.60	-
Beryllium (µg/Rm^3) (1)	<0.045	<0.043	<0.041	<0.043	-
Chromium (µg/Rm^3) (1)	0.88	0.67	0.73	0.76	-
Cobalt (µg/Rm^3) (1)	0.047	<0.043	0.021	<0.037	-
Copper (µg/Rm^3) (1)	4.10	3.59	3.88	3.86	-
Molybdenum (µg/Rm^3) (1)	5.13	5.19	4.72	5.01	-
Nickel (µg/Rm^3) (1)	1.02	0.82	0.76	0.87	-
Selenium (µg/Rm^3) (1)	<0.22	<0.22	<0.20	<0.22	-
Silver (µg/Rm^3) (1)	<0.045	<0.043	<0.041	<0.043	-
Thallium (µg/Rm^3) (1)	<0.045	<0.043	<0.041	<0.043	-
Vanadium (µg/Rm^3) (1)	0.038	<0.022	<0.020	<0.027	-
Zinc (µg/Rm^3) (1)	8.34	4.62	5.63	6.20	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<6.76	<8.35	<6.95	<7.35	60
Total Chlorobenzenes (ng/Rm^3) (1)	<341	<419	<387	<382	-
Total Chlorophenols (ng/Rm^3) (1)	<159	<165	<162	<162	-
Total PAHs (ng/Rm^3) (1)	<312	<298	<216	<275	-
VOCs (µg/Rm^3) (1)	<74.5	<60.3	<137	<90.6	-
Aldehydes (µg/Rm^3) (1)	<318	<331	<370	<340	-
Total VOCs (µg/Rm^3) (1) (4)	<393	<391	<507	<430	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.1	0.1	0.9	0.4	50

* based on process data provided by Covanta

(1) dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(2) dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

(3) calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(4) Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).

A summary of the minimum, average and maximum concentrations for the combustion gases measured by the DYEC CEMS with in-stack limits listed in the ECA is provided below for the two units.

Boiler No.	Parameter	Minimum	Average	Maximum	In-Stack Limit
Boiler No. 1	Carbon Monoxide (mg/Rm^3) (1)	7.8	12.6	20.5	40
	Hydrogen Chloride (mg/Rm^3) (2)	2.4	3.1	3.8	9
	Nitrogen Oxides (mg/Rm^3) (2)	108	109	110	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.3	1.0	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	8.3	12.7	24.8	40
	Hydrogen Chloride (mg/Rm^3) (2)	2.5	2.9	3.5	9
	Nitrogen Oxides (mg/Rm^3) (2)	109	110	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.7	2.3	35

(1) 4-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume
(2) 24-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume

The emission data measured at each Boiler BH Outlet during the testing program was combined and used to assess the emissions from the Main Stack against the current point of impingement criteria detailed in Ontario Regulation 419/05.

The CALPUFF dispersion modelling (using Version 6.263 as requested by the MECP) for the June 2021 emission testing program was performed by Golder Associates. A summary of the results are provided in the tables appended to this report (Appendix 27) based on calculated ground level Point of Impingement (POI) concentrations for the average total Main Stack emissions. As shown in the tables, the calculated impingement concentrations for all of the contaminants were well below the relevant MECP standards.

In summary, the key results of the emission testing program are:

- The facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation during the stack test periods. Testing was conducted at a steam production rate of greater than 804 tonnes of steam per day for each Boiler (approximately 99.0% of maximum continuous rating). The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler).
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in Schedule C of the ECA.
- Using CALPUFF dispersion modelling techniques, the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below all current standards in Regulation 419/05 under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

Tables referenced in this report for the tests conducted at Boiler No. 1 and Boiler No. 2 are provided in Appendix 1 and Appendix 2, respectively.

1. INTRODUCTION

ORTECH Consulting Inc. (ORTECH) completed a voluntary compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between June 15 and June 18, 2021. The voluntary emission testing program was performed at the request of the Regions of Durham and York. The current test program is the sixth voluntary test program conducted at the facility.

Ontario Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX Section 7(1) states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter". A list of the test programs conducted by ORTECH to date is provided below:

Test Program	Test Date	ORTECH Report No.
2015 Compliance	September/October 2015	21546
2016 Voluntary	May 2016	21656
2016 Compliance	October/November 2016	21698
2017 Voluntary	May 2017	21754
2017 Compliance	October 2017	21800
2018 Voluntary	May/June 2018	21840
2018 Compliance	September 2018	21880
2019 Voluntary	June 2019	21936
2019 Compliance	September 2019	21960
2020 Voluntary	June 2020	22001
2020 Compliance	November 2020	22050
2021 Voluntary	June 2021	22081

Source testing was performed on the Baghouse (BH) Outlet of Boiler No. 1 and BH Outlet of Boiler No. 2 for the test contaminants listed in Schedule D of the ECA. Triplicate emission tests were also completed for total hydrocarbons at the Quench Inlet of each Boiler.

Prior to commencing the test program, the Durham and York Regions submitted a Pre-Test Plan letter to the MECP stating that the Voluntary sampling program would follow the procedures detailed in ORTECH Pre-Test Plan No. 22050, "Covanta Durham York Renewable Energy Limited Partnership Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (Air) No. 7306-8FDKNX", dated September 8, 2020. Provided in Appendix 3 is a copy of the Pre-Test Plan letter sent by the Regions, dated March 4, 2021. A copy of the Amended Environmental Compliance Approval, including amendment notices, is also provided in Appendix 3.

Triplicate emission tests were completed for each of the test parameters listed in Schedule D of the ECA between June 15 and June 18, 2021.

2. PROCESS DESCRIPTION

DYEC is a thermal treatment facility with a maximum thermal treatment rate of 140,000 tonnes/year of municipal solid waste (MSW), as established by the Amended ECA. The maximum continuous rating (MCR) for the facility is defined as 218 tonnes per day, per unit, of MSW with a heat content of 13 MJ/kg per train. The steam production MCR is 33.64 tonnes per hour for each Boiler.

The facility was built to operate on a continuous basis; 24 hours/day, seven days/weeks, 365 days/year. Waste may be delivered six days per week between 7:00 am to 7:00 pm. The proposed operating schedule may be adjusted depending on demand and facility needs within the established setup indicated in the ECA (i.e., waste can only be received from Monday to Saturday - excluding statutory holidays, and between 7:00 am and 7:00 pm - ECA's Condition 4(1)(b)).

MSW arrives at the facility via covered refuse trucks and is deposited in a storage pit within the receiving building. Facility operators manage MSW by moving and mixing MSW within the storage pit with the overhead grapple cranes. The MSW is lifted from the pit by crane and fed into the fuel hopper for each thermal treatment train.

The facility consists of two thermal treatment trains, each equipped with independently operated boilers/furnaces and air pollution control equipment. The treated exhaust gases are vented to a common 87.6 m stack and released to atmosphere.

2.1 Control Equipment

Flue gasses pass through a dry recirculating type scrubber for acid control and a fabric filter for particulate control. A Selective Non-Catalytic Reduction System (SNCR) with ammonia injection is used for NO_X control. Powdered carbon is injected for mercury, and dioxin and furan control between the dry recirculating type scrubber and the fabric filter.

2.2 Continuous Emission Monitoring Systems

Continuous Emissions Monitors are installed in the vertical ductwork between the economizer and dry recirculating type scrubber (location referred to as the Quench Inlet), and in the vertical ductwork between the fabric filter and the ID fan (location referred to as the BH Outlet).

A summary of the CEMS installed at each location is provided below:

Unit	Location	Analyzer Manufacturer	Model No.	Serial No.	Parameter	Range
1	Quench Inlet	Environmental SA	MIR 9000	2684	CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					HCl	0-1500 ppm
					O_2 (Dry)	0-25%
		Ametek	RM CEM O_2/IQ	10217710-2	O_2 (Wet)	0-25%
1	BH Outlet	Environmental SA	MIR 9000	2686	NO_X	0-500 ppm
					SO_2	0-200 ppm
					HCl	0-100 ppm
					HF	0-100 ppm
					CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					O_2 (Dry)	0-25%
					CO_2	0-25%
		Ametek	RM CEM O_2/IQ	10217710-1	O_2 (Wet)	0-25%
		Tethys	EXM400	F130304	NH_3	0-50 ppm
		OSI	OFS-2000W	13020629	Flow	0-40 m/s
		Teledyne	Light Hawk 560	5602492	Opacity	0-100%
		Environmental SA	Graphite 52M	647	THC	0-100 ppm
		Environmental SA	Amesa	1825-269	Dioxin/Furan	0-10 ng/m^3
2	Quench Inlet	Environmental SA	MIR 9000	2685	CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					HCl	0-1500 ppm
					O_2 (Dry)	0-25%
		Ametek	RM CEM O2/IQ	10218084-1	O_2 (Wet)	0-25%
2	BH Outlet	Environmental SA	MIR 9000	2687	NO_X	0-500 ppm
					SO_2	0-200 ppm
					HCl	0-100 ppm
					HF	0-100 ppm
					CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					O_2 (Dry)	0-25%
					CO_2	0-25%
		Ametek	RM CEM O2/IQ	10218084-2	O_2 (Wet)	0-25%
		Tethys	EXM400	F130303	NH_3	0-50 ppm
		OSI	OFS-2000W	13020633	Flow	0-40 m/s
		Teledyne	Light Hawk 560	5602493	Opacity	0-100%
		Environmental SA	Graphite 52M	648	THC	0-100 ppm
		Environmental SA	Amesa	1825-284	Dioxin/Furan	0-10 ng/m^3

3. SAMPLING LOCATIONS

The BH Outlet sampling ports are located on the vertical circular ductwork between the baghouse outlet and the ID Fan inlet. There are two 6-inch ports, located 90 degrees apart, at the same elevation and a single 4-inch port located approximately 0.8 m upstream of the 6-inch ports. The two 6-inch sampling ports were used for isokinetic sampling and the 4-inch ports were used for all non-isokinetic sampling.

The BH Outlet duct has an inside diameter of 1.37 meters (54 inches) at the sampling ports. The two 6-inch ports are approximately 4.4 duct diameters (6.1 meters) downstream and 0.68 duct diameters (0.94 meters) upstream from the nearest flow disturbances.

The Quench Inlet sampling ports are located on the circular ductwork between the Boiler Outlet and the Recirculating Type Dry Scrubber Inlet. There are two 6-inch ports, located 90 degrees apart, at the same height. The Quench Inlet duct has a diameter of 1.37 meters (54 inches) at the sampling ports. The ports are located approximately 3.8 duct diameters (5.2 meters) downstream and 4.7 duct diameters (6.4 meters) upstream from the nearest flow disturbances.

The sampling ports are located at a "non-ideal" location as defined by the Ontario Source Testing Code. An "ideal" location is defined as being at least eight stack diameters downstream and at least two stack diameters upstream of flow disturbances.

Cyclonic flow checks were performed by ORTECH at the BH Outlet and Quench Inlet sampling locations on each Boiler on September 22, 2015. The cyclonic flow checks were performed using an S-type pitot tube and manometer following the procedures detailed in Ontario Source Testing Code Method 1. Briefly, the pitot tube was positioned at each sampling point so that the planes of the face openings were parallel to the cross-sectional axis of the duct. The pitot tube was then rotated about its longitudinal axis until the manometer reading was zero. The absolute value of the rotational angle was recorded to the nearest degree at each point. The average of the recorded angles was calculated at each location. If the average angle is less than 15°, cyclonic flow is not present and sampling may proceed as normal.

The results for the cyclonic flow checks are summarized below:

Sampling Location	Performance Specification	Average Angle (°)	Cyclonic Flow Present
Boiler No. 1 Quench Inlet	Average <15°	6.6	No
Boiler No. 2 Quench Inlet	Average <15°	8.4	No
Boiler No. 1 BH Outlet	Average <15°	8.8	No
Boiler No. 2 BH Outlet	Average <15°	8.1	No

In addition, reverse flow was not observed at any point at any of the four sample locations during the cyclonic flow checks or during any test.

4. SAMPLING PROCEDURES

4.1 General

This section outlines the sampling procedures as well as pre-test and on-site internal quality assurance/quality control (QA/QC) procedures which were utilized in the testing program. The procedures described in this section ensured that representative samples were collected and that the integrity of the collected samples was maintained. The use of these sampling procedures significantly reduced the possibility of sample contamination from external sources. Sample handling and documentation requirements were key factors in this program.

Triplicate emission tests were completed for particulate matter, metals, semi-volatile organic compounds, acid gases, volatile organic compounds, aldehydes and combustion gases at the BH Outlet of each Boiler. Triplicate emission tests were also completed for total hydrocarbons at the Quench Inlet of each Boiler. The contaminant groups included in the emission test program and the reference test methods used are summarized below:

Test Groups	Reference Method
Particulate and Metals	US EPA Method 29
$PM_{2.5}$/PM_{10} and Condensable Particulate	US EPA Methods 201A and 202
Semi-Volatile Organic Compounds	Environment Canada Method EPS 1/RM/2
Volatile Organic Compounds	US EPA SW-846 Method 0030 (SLO VOST modification)
Aldehydes	NCASI Method ISS/FP-A105.01
Halides and Ammonia	US EPA Method 26A
Combustion Gases:	
Oxygen and Carbon Dioxide	Facility CEM
Carbon Monoxide	Facility CEM
Sulphur Dioxide	Facility CEM
Nitrogen Oxides	Facility CEM
Total Hydrocarbons	ORTECH per US EPA Method 25A

Since relative accuracy and system bias testing was performed in July 2020, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (June 15 to June 18, 2021) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on June 15 and June 16, 2021 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

4.2 Particulate and Metals

Particulate and metals were sampled using the sampling procedures outlined in US EPA Method 29. Major components of the sampling train were as follows:

- A glass nozzle and probe liner assembly
- A quartz fiber filter with a low metal background
- The first impinger was initially empty to collect moisture
- The second and third impingers initially contained 100 mL each of 5% nitric acid/10% hydrogen peroxide solution to collect metals
- The fourth impinger was initially empty
- The fifth and sixth impingers initially contained 100 mL each of 4% potassium permanganate/10% sulphuric acid solution to collect mercury
- The seventh impinger contained silica gel

Each test for particulate matter and metals involved the collection of stack gas sampled isokinetically at twelve points centered on equal areas along each of two traverses (at 90° to each other) of the BH Outlet duct. Each of the twenty-four points was sampled for 7.5 minutes for a total actual sampling time of one hundred and eighty minutes.

At 2.5 minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

The particulate and metals field data sheets are provided in Appendix 4.

At the start and finish of sampling each traverse the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 cubic meters per minute (m^3/min) or 4% of the estimated sampling rate, whichever is less. All of the leak-checks, as detailed on the field data sheets, were acceptable.

A blank train was prepared and the samples recovered in a manner identical to the test sampling trains for each Boiler.

4.3 Particle Size Distribution

Particle Size Distribution (PSD) tests were performed at each of the BH Outlet sample locations in accordance with the test procedures described in US EPA Method 201A using PM_{10} and $PM_{2.5}$ combined cyclone heads and US EPA Method 202. Sampling was conducted for approximately one hundred and twenty minutes at six points across each traverse of the duct using isokinetic dwell time sampling. At approximately ten minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the PSD tests are provided in Appendix 5.

A blank train was prepared and samples recovered in a manner identical to the test sampling trains for each Boiler.

4.4 Semi-Volatile Organic Compounds

Semi-volatile organic compounds (SVOC), including dioxins and furans, polychlorinated biphenyls (PCBs), chlorobenzenes (CBs), chlorophenols (CPs) and polycyclic aromatic hydrocarbons (PAHs) were sampled at the BH Outlet of each Boiler using the sampling train and sampling procedures outlined in Environment Canada Report EPS 1/RM/2. Major components of the sampling train were as follows:

- A glass nozzle and probe liner assembly
- A clean and proven glass fiber filter
- Amberlite XAD-2 sorbent resin was used in a trap to collect semi-volatile organics
- The first impinger was initially empty
- The second impinger contained 100 mL of ethylene glycol
- The third impinger was initially empty
- The fourth impinger contained silica gel

All test train and auxiliary glassware were cleaned according to the methods as outlined in Environment Canada EPS 1/RM/2 except that the methods were modified by combining proofing extracts prior to analysis for the target analytes.

Each test for semi-volatile organic compounds at the BH Outlet involved the collection of stack gas sampled isokinetically at twelve points centered on equal areas along each of two traverses (at 90° to each other) of the duct. Each of the twenty-four points was sampled for ten minutes for a total actual sampling time of two hundred and forty minutes.

At five minute time increments the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger outlet temperatures
- XAD-2 trap outlet temperature
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the SVOC tests are provided in Appendix 6.

At the start and finish of sampling each traverse, the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 m^3/min or 4% of the estimated average sampling rate, whichever is less. All of the leak-checks for the tests reported, as detailed on the field data sheets, were acceptable.

A blank train was prepared in a manner identical to the test trains for each Boiler. It was assembled, transported and left at the sampling site for a period of time equal to the test trains. The blank train was treated at the sampling site in the same manner as the test trains and a gas volume was drawn through the blank train approximately equal to the leak-check volume for the test trains.

4.5 Acid Gases

Hydrogen fluoride, hydrogen chloride and ammonia were sampled together using the sampling train and sampling procedures outlined in US EPA Method 26A. Major components of the test train were as follows:

- A glass nozzle and probe liner assembly
- The first and second impingers contained 100 mL of 0.1N H_2SO_4
- The third impinger was initially empty
- The fourth impinger contained silica gel

At five minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the acid gases tests are provided in Appendix 7.

At the start and finish of each test the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 m^3/min or 4% of the estimated average sampling rate, whichever is less.

A blank train was prepared and samples recovered in a manner identical to the test sampling trains for each Boiler.

4.6 Volatile Organic Compounds

Volatile Organic Compound (VOC) sampling was performed in accordance with US EPA SW-846 Method 0030 (SLO-VOST modification). Briefly, the sampling method involved withdrawing a sample of the stack gas through a heated glass lined sampling probe containing a glass wool plug to remove particulate material. The sample was then passed through a water cooled condenser and a Tenax GC adsorbent tube, as the primary volatile organic collection device. Condensate was collected in an initial condensate trap and the sample was then drawn through a second condenser and a combined secondary Tenax GC/charcoal adsorbent tube, as the secondary volatile organic collection device. The sampled gas stream then passed through a silica gel trap to remove any remaining traces of moisture prior to the rotameter, pump and dry gas meter.

During each test, a single forty minute run was completed at an approximate flowrate of 0.5 L/min. A fourth run was also conducted and the tube pair was archived in case a sample was lost during desorption or analysis. The analytical results from the three runs performed were combined and used to calculate test average results for the respective source. Note the samples for Test No. 1, Test No. 2 and Test No. 4 were analyzed and reported. Test No. 3 for Unit No. 1 was lost during desorption and Test No. 3 for Unit No. 2 was archived.

At five minute time increments throughout sampling each pair of tubes, the following information was measured and recorded:

- Elapsed sampling time
- Dry gas meter volume
- Stack gas temperature
- Probe and first condenser outlet temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

The sampling train components were cleaned using the procedures in US EPA SW-846 Method 0030, Volatile Organic Sampling Train (VOST).

Field data sheets for the VOST tests are provided in Appendix 8.

Blank tube samples analyzed for the program included two pairs of field blank tubes, a trip blank pair of tubes and one laboratory blank pair of tubes.

4.7 Aldehydes

Some of the compounds listed as VOC's (acetaldehyde, formaldehyde and acrolein) are more commonly classified as aldehydes. These compounds were captured in a separate test train in accordance with NCASI Method ISS/FP-A105.01.

Major components of the test train were as follows:

- A Teflon probe liner assembly was used.
- The first, second and third impingers contained approximately 15 mL each of o-Benzylhydroxylamine (BHA).
- The fourth impinger contained silica gel

A single test for aldehydes involved the collection of gas sampled at a single point in the duct at a sampling flowrate of approximately 0.5 liters per minute for sixty minutes.

At five minute time increments throughout each test, the following information was measured and recorded for the train:

- Elapsed sampling time
- Dry gas meter volume
- Stack gas temperature
- Probe, oven and impinger outlet temperatures
- Dry gas meter temperature
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the aldehyde tests are provided in Appendix 9.

4.8 Combustion Gases

In July 2020, relative accuracy and system bias testing was conducted on the Continuous Emission Monitoring Systems (CEMS) installed at the Quench Inlet and BH Outlet of each Boiler. DYEC CEMS met the performance parameters detailed in Schedule F of the ECA. Therefore, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide.

Combustion gases, including carbon dioxide, carbon monoxide, hydrogen chloride, nitrogen oxides, oxygen, sulphur dioxide and total hydrocarbons, were measured continuously at the BH Outlet during the emission testing program by the DYEC CEMs. Oxygen was also measured continuously by the DYEC CEMS at the Quench Inlet.

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. The data measured by the DYEC CEMS, from June 15, 2021 at 00:00 to June 18, 2021 at 23:00, was used to assess against the in-stack emission limit stated in the ECA for each Boiler.

A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the calculated 1-hour average data to compare to the in-stack emission limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data to compare to the in-stack emission limit stated in the ECA.

Total hydrocarbon concentrations were measured by ORTECH following the procedures detailed in US EPA Method 25A. Triplicate one-hour tests were conducted at the Quench Inlet and BH Outlet of each Boiler on June 15 and June 16, 2021, respectively. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA.

5. SAMPLE RECOVERY AND ANALYSIS

All sample analysis was performed by ALS Canada Ltd, except for the VOST samples. ALS subcontracted BV Labs to conduct the VOC analysis due to an instrument issue that prevented ALS from analyzing the samples within the recommended hold time for the test method. Copies of Sample Logs/Chain of Custody Forms for all samples submitted for chemical analysis are provided in Appendix 10.

5.1 Particulate and Metals

Before loading of the field test trains commenced, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The particulate and metals train recovery data sheets are provided in Appendix 11.

Following the conclusion of each test performed with the metals train, the probe was disconnected and all openings sealed with Teflon tape. The test trains, including the probes, were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The test trains were visually inspected to ensure that no damage occurred during transportation. The condition of the test train was noted. Filter and impinger content colors were recorded. The filter housing was disassembled and the filter carefully transferred to its pre-test petri dish with the use of Teflon coated tweezers.

All the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The front half of the sampling train was brushed and rinsed thoroughly with acetone. A nylon bristle probe brush was used to assist in dislodging particulate material which may have adhered to the inside surfaces of the nozzle and probe assembly. The front half was then rinsed in triplicate using 0.1 N nitric acid but no brushing was performed.

The contents of the first four impingers were combined. Triplicate rinses of the impingers and connecting glassware back to and including the Teflon filter support was performed with 0.1 N nitric acid and combined with the impinger solution sample.

The contents of the fifth and sixth impingers were combined. The impingers with connecting glassware were then rinsed in triplicate with approximately 100 mL of fresh potassium permanganate solution followed by a triplicate rinse with 100 mL of distilled, de-ionized water. All of the glassware rinses were added to the sample container.

Any brown residue which was present in the fifth and sixth impingers was removed by incrementally rinsing with small amounts of 8 N hydrochloric acid. These acid rinses were added to a separate sample bottle which initially contained 150 mL of distilled, de-ionized water. The impingers were then rinsed with distilled, de-ionized water into the same sample container.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were delivered to the analytical laboratory for analysis.

The test samples were prepared and analyzed for metals according to US EPA Method 29 (modified). The inorganic analytical reports are provided in Appendix 12.

5.2 Particle Size Distribution

Prior to loading the field test trains, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The train recovery data sheets are provided in Appendix 13.

The particle size distribution (PSD) samples were recovered in much the same way as the particulate samples from the particulate and metals trains. Following the conclusion of each test performed with the PSD trains, the probe was disconnected and all openings sealed with Teflon tape. The sample recoveries were performed in the on-site ORTECH sample recovery trailer.

The test trains were visually inspected to ensure that no damage during movement had occurred. The recovery procedure is briefly described as follows.

The condition of the test train was noted and the filter and impinger colours were recorded. The nozzle, PM_{10} cyclone walls, collection cup and outside of the exit stem was brushed and rinsed thoroughly with acetone into a glass sample container to determine particulate greater than PM_{10}. The PM_{10} cup and connecting parts were rinsed with acetone in a glass sample container to determine particulate less than PM_{10} but greater than $PM_{2.5}$. The $PM_{2.5}$ cup and connecting parts up to the back-up filter were rinsed with acetone into a glass sample container to determine particulate less than $PM_{2.5}$. The back-up filter was transferred to its original petri dish.

The impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content. The back half of the sampling train was then purged with nitrogen at 14 lpm for 1 hour as soon as possible after the completion of each test.

The back-half of the sampling train was recovered following the procedures detailed in US EPA Method 202 for condensable particulate. The contents of the first impinger were poured into a glass sample bottle and rinses of the impinger and connecting glassware were performed with water which was added to the sample. The glassware was then rinsed with acetone and the rinse was repeated in duplicate with hexane. The acetone and hexane rinses were combined into a single glass sample bottle.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were delivered to the analytical laboratory for analysis.

The particle size and condensable particulate matter results are presented with the inorganic analytical reports provided in Appendix 12.

5.3 Semi-Volatile Organic Compounds

Prior to loading the field test trains, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The train recovery data sheets are provided in Appendix 14.

Following the conclusion of each test performed with the semi-volatile organics train, the probe was disconnected and all openings sealed with Teflon tape. The test trains, including the probes, were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The condition of the test train was noted. Filter, XAD-2 trap and impinger content colours were recorded. The filter housing was disassembled and the filter carefully transferred, with the use of Teflon coated tweezers, to a piece of pre-cleaned aluminum foil. Each filter was then folded in half onto itself within the foil, the foil ends crimped, then placed in a pre-cleaned glass petri dish. Both the foil containing the filter(s) and the glass Petri dish were labeled.

All of the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The front half of the sampling train, up to but not including the trap, was brushed and rinsed thoroughly with acetone. A Teflon probe brush was used to assist in dislodging particulate material that may have adhered to the inside surfaces of the cyclone bypass and filter top assembly. This front half rinse was then repeated using hexane, with no brushing, and all rinsing was combined with the probe rinse sample. The filter bottom, filter bottom u-tube and trap inlet stem were soaked for five minutes in each of acetone and hexane then rinsed.

The XAD-2 trap was drained of excess cooling water and weighed. The ends were then sealed with Teflon tape and the trap was labeled and wrapped in aluminum foil. Since ORTECH uses a one piece trap and condenser, the five minute soak of this component was performed by the analytical laboratory.

The contents of the first three impingers were combined in a pre-cleaned amber glass sample bottle. Triplicate rinses of the impingers and connecting glassware back to and including the trap bottom u-tube were performed first with HPLC water, which was added to the impinger solution sample, and then with acetone followed by hexane. The acetone and hexane rinses were combined in a separate sample bottle from the impinger solutions.

Each sample container was sealed and labeled once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form then refrigerated until they were delivered to the analytical laboratory for analysis.

Semi-volatile organic analyses were performed on single composite extracts for each test according to EPS 1/RM/3 and EPS 1/RM/23. These methods were modified slightly to include other semi-volatile organic compounds following the Environment Canada NITEP/Mid-Connecticut combustion test procedures. These analytical improvements have been implemented over many years and have been identified and approved through laboratory accreditation and acceptance by the MECP.

The SVOC analytical reports are provided in Appendix 15.

5.4 Acid Gases

Following the conclusion of each test performed with the acid gas train, the probe was disconnected and all openings sealed with Teflon tape. The test trains were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The test trains were visually inspected to ensure that no damage occurred during transportation. The condition of the test train was noted and the impinger content colors were recorded. All the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The contents of the first three impingers were combined. Triplicate rinses of the impingers and connecting glassware back to and including the Teflon filter support was performed with high purity water and combined with the impinger solution sample.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were transported to the laboratory for analysis.

Analysis for hydrogen fluoride, hydrogen chloride and ammonia was performed via ion chromatography.

Train recovery data sheets are provided in Appendix 16. The acid gases analytical results are presented with inorganic analytical reports in Appendix 12.

5.5 Volatile Organics Train Recovery

Following the conclusion of each tube pair run performed with the volatile organic sampling train (VOST), the tubes were removed from the train, capped and placed in appropriately labeled test tubes which were also capped. The tubes were sent to the analytical laboratory for volatile organic compound (VOC) analysis.

The VOST samples were analyzed via SW846 Method 5041A/8260B. Briefly, after spiking with internal and surrogate standards, the traps were thermally desorbed through a clam shell heater then through a chilled aqueous purge to remove the bulk of the moisture onto a secondary trap. These secondary traps are further dried using a counter current flow of helium. The secondary traps are then thermally desorbed into a VOC sample concentrator and again the VOCs are thermally transferred/concentrated onto a GC column. The VOC compounds are separated via gas chromatography (GC) and analyzed via GC/MS.

The condensate collected from each tube pair run was carefully transferred to a glass bottle and combined as a single sample for each sampling location. The condensate samples were archived for future analysis if necessary.

The VOST analytical report is provided in Appendix 17.

5.6 Aldehydes

Following the conclusion of each test performed with the Aldehyde Train the probe was disconnected and all openings were sealed with Teflon tape. The test train was then recovered on site in an ORTECH sample recovery trailer separate from all other test train recoveries and solvents. The train recovery procedure is briefly described as follows.

The condition of the test train was noted. All the impingers were wiped dry and weighed. The contents of the impingers were transferred into a glass sample container. The probe and impingers were rinsed with a small amount of DI water followed by a small amount of hexane into the same sample container.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were transported to the laboratory for analysis.

Analysis for formaldehyde, acetaldehyde and acrolein was performed via GC/MS. The sample recovery data sheets are provided in Appendix 18 and the analytical results are presented in Appendix 19.

6. INTERNAL AND EXTERNAL QA/QC PROGRAM

6.1 General

As with other emission testing programs conducted by ORTECH, a comprehensive internal quality assurance/quality control (QA/QC) program was included.

Blank sampling trains were recovered and analyzed or reagent blanks were analyzed using the same procedures as the test trains to provide background concentrations of the emission test components.

6.2 Pre-Test Activities

Prior to the commencement of the emission testing program, the following activities were performed:

- Preparation, pre-cleaning and proofing of the manual stack sampling trains and sample containers.
- Preparation and quality checks of chemicals, reagents, filters and XAD-2 adsorbent resin.
- Calibration of all sampling and monitoring equipment.
- Development (and review) of data acquisition, data reduction and summary procedures.
- Development of internal QA/QC field data sheets.
- Review of equipment calibration logs.
- Review of proposed field and laboratory procedures.

All proving data for the Semi-Volatile Organics Train glassware and auxiliary equipment was deemed acceptable prior to the test program.

A proof rinse of the sampling probes was collected and archived for future analysis if necessary.

For each batch of VOST tubes, a minimum of 1 pair in 10 was analyzed to demonstrate an absence of significant background contaminants from the tubes prior to the test program.

The proof data for the semi-volatile organics glassware and VOST tubes is provided in Appendix 20. The proof data for the aldehyde solutions is provided in the aldehyde analytical report.

All equipment used in the field testing program was calibrated and checked prior to the field testing program. Pertinent equipment calibration data is supplied in Appendix 21.

As part of ORTECH's internal QA/QC, data acquisition, data reduction and summary procedures were already in place and periodic spot checks of the computer programs were performed using known data sets.

6.3 Emission Testing QA/QC Results

Prior to the field testing program, preliminary data was acquired to perform the required calculations for choosing a nozzle size to permit isokinetic sampling.

The internal diameter of each duct was verified and the appropriate number of sampling points was marked on each sampling probe.

The following general QA/QC criteria were satisfied for each of the test trains where applicable:

- All sampling equipment was cleaned and proven clean (where applicable) prior to the commencement of the field testing program.
- All sampling equipment passed a visual and operational check prior to use in the field.
- Oil filled manometer gauges which had been properly leveled and zeroed were used to measure the velocity pressure.
- All sampling data was recorded in ink on preformatted data sheets at least once every 5 minutes and/or at least twice during sampling each traverse point.
- Any unusual occurrences were noted during each test on the appropriate data form.
- The field team leader reviewed all calibration and sampling data forms daily.
- Only tapered edge sampling nozzles and S-type pitot tubes that had been visually inspected and caliper measured, and deemed acceptable, were used for sampling.
- Each leg of the S-type pitot was leak-checked before the start of testing. The leak-checks were all acceptable (no leak detected).
- Each entire sampling train met acceptable leak-check criteria before and after each test, and during any move from one sampling traverse to another. If a test did not meet the leak-check criteria the test was voided and repeated.
- The S-type pitot tube and sampling nozzle were maintained parallel to the flow during testing and care was taken to ensure that they did not scrape the ports when being inserted and removed from the stack.
- The probe and filter components were maintained at 120°C $\pm$ 14°C during testing. If the probe or filter temperature was outside of the acceptable range the test was halted until the temperature could be brought back into the acceptable range.
- Covanta was responsible for monitoring process operations during testing and notified ORTECH when testing was to proceed.

During Acid Gas Test No. 2 at Unit No. 1, the glass nozzle was broken when the metals train was inserted into the stack. The test was paused and the nozzle was replaced. The isokinetic output sheet for the test was run in two parts for each nozzle used and combined to get the total sample volume for the test.

6.4 Sample Recovery, Handling and Custody

ORTECH's sample identification scheme and system for handling and processing samples was initiated as part of ORTECH's sample tracking system for stack emission samples. All samples were identified by a unique sample number comprised of a series of numbers and letters. A master sample log/chain of custody form was maintained by the QA/QC designate and was made available to the ORTECH personnel designated to perform the sample recovery for a specific sampling train. Once a sample was collected it was labeled and checked against the sample log by the QA/QC designate.

The information contained within the sample number and the sample log enabled the sampling, recovery, data reduction and report writing personnel to easily determine the test date, test number, test type and train sample identification for a given sample. To ensure continuity, the analytical laboratory was requested to use the ORTECH number for sample identification.

The ORTECH personnel responsible for delivering samples used the master sample log/chain of custody form to document the transfer of the samples to the analytical laboratory. Appropriate care was taken when shipping the samples in order to maintain sample integrity. Once the samples and master sample log/chain of custody forms were received by the analytical laboratory, the laboratory personnel verified that all samples had been received and their integrity maintained. The laboratory personnel then signed the master log and made a photocopy which ORTECH personnel received as a record of the chain of custody for the samples.

6.5 Analytical Results

ORTECH uses a one piece condenser and XAD-2 trap for SVOC collection, this component of the test train was Teflon sealed and wrapped with foil prior to being transported to the analytical laboratory where it was given the required five minute soaking with each of acetone and hexane. This is consistent with all SVOC test programs conducted by ORTECH and the modification was documented in the Pre-Test Plan approved by the MECP.

Analyses for the present emission testing program were performed using acceptable laboratory procedures in accordance with the specified analytical protocols. Adherence to the prescribed QA/QC procedures ensured data of consistent and measurable quality. Analytical quality control focused on the use of control standards to provide a measure of analytical accuracy. Replicate analysis (usually duplicate analysis) of the same sample was used as a means of determining precision of the various analytical procedures. Also specific acceptance criteria were defined for various analytical operations including calibrations, control standard analysis, drift checks, blanks, etc.

The following general QA/QC procedures were incorporated into the analytical effort:

- the on-site Field Supervisor reviewed all data and QA/QC data on a daily basis for completeness and acceptability
- master sample logs were maintained for all samples collected
- analytical QA/QC data was tabulated by the analytical laboratories using appropriate charts or forms
- all hard copy raw data was maintained in organized files

Specific analytical QA/QC procedures are presented in the analytical reports and are briefly summarized below.

6.5.1 Metals Sample Analysis QA/QC

The analysis of the Method 29 stack samples involved sample digestion followed by Inductively Coupled Argon Plasma Mass Spectroscopy (ICP-MS) analysis. The analysis for mercury employed cold vapour atomic absorption (CVAA). The analytical QA/QC is described as follows and the results are provided in the analytical report.

ICPMS Analysis

The quality assurance activities conducted by the analytical laboratory are detailed in the Quality Assurance Report provided in the analytical report. Specific QA/QC results are summarized below:

- One duplicate sample analysis was performed for the test program. The relative percent difference was less than 5.2% well within the acceptable limit of less than ±20%, for elements that are greater than 5 times the minimum detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 87-106%, except for silver. The recovery for silver was 73% in the front half however silver was not detected in any of the test samples in quantities greater than the detection limit. The acceptable limit is 85-115% of the true value.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. All of the recovery results were between 77-105%. The acceptable limit is 70-130% of the true value.

The following general analytical QA/QC requirements must also be met or the samples are re-analyzed:

- An instrument calibration check standard was analyzed immediately after the calibration curve and must be within 90%-110% of the actual concentrations.
- Instrument calibration blank check sample were analyzed with every 10 samples and must be within three times the minimum detection limit.
- A continuing calibration check is run every 10 samples and must be within 85%-115% of the actual concentrations.
- Instrument (interference) check sample for ICP-MS analysis was analyzed before and after each analytical run. The value(s) found for the interference check sample must be within 80%-120% of the true value.

Barium, chromium, copper, lead, molybdenum and nickel were detected in the blank train at levels greater than the limit of reporting. Chromium, copper, molybdenum and nickel were observed by the analytical laboratory in the method blank at levels greater than the limit of reporting. The test sample data may be biased high for these compounds as a result of this potential background.

Mercury Analysis

The quality assurance activities conducted by the analytical laboratory are detailed in the Quality Assurance Report provided in the analytical report. Specific QA/QC results are summarized below:

- One duplicate sample analysis was performed for each fraction. The relative percent difference was less than 3.9% within the acceptable limit of less than ±20%, for fractions that are greater than 5 times the minimum detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 98-101% within the acceptable limit of 90-110% of the true value.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. All of the recovery results were between 92-97%, within the acceptable limit of 85-115% of the true value.

The following general analytical QA/QC requirements must also be met or the samples are re-analyzed:

- A 5 point calibration was performed.
- An instrument check calibration standard was analyzed immediately after the calibration and must be within 90%-110% of the actual concentration
- One mid-range calibration standard was analyzed after 10 samples and at the end of the run and must be within 85%-115% of the actual concentration.
- Instrument calibration blank check sample is analyzed with every 10 samples and must be within three times the minimum detection limit.

6.5.2 Acid Gas Sample Analysis QA/QC

Analyses of the acid gas samples from the Method 26A sampling train was performed by Ion Chromatography (IC). The quality assurance activities conducted by the analytical laboratory are detailed in the Quality Assurance Report provided in the analytical report. Specific QA/QC results are summarized below:

- All of the hydrogen chloride and hydrogen fluoride analyses were conducted in duplicate. One duplicate sample analysis was also performed for ammonia. The relative percent difference was less than 2.0%, well within the acceptable limit of less than ±20% for compounds that are greater than 5 times the minimum detection limit.
- A blank spike sample was analyzed with the test samples. The recovery results for the blank spike sample were 98% for hydrogen chloride, 102% for hydrogen fluoride and 110% for ammonia, within the acceptable range of 90-110%.
- A matrix spike (spike confirmation) sample was analyzed with every 20 samples to confirm the identity of each peak. The recovery results of the matrix spike sample were 105% for hydrogen chloride, 98% for hydrogen fluoride and 99% for ammonia, within the acceptable range of 90-110%.

The following general analytical QA/QC requirements must also be met or the samples are re-analyzed:

- A 6 point calibration bracketing the expected range.
- An instrument check calibration standard was analyzed immediately after the calibration and must be within 90%-110% of the actual concentration.
- A complete set of calibration standards were analyzed at the end of the analysis and must be within 10% of the true value.
- One mid-range calibration standard was analyzed after 10 samples and at the end of the run and must be within 90%-110% of the actual concentration.
- Instrument calibration blank check samples were analyzed with every 10 samples and must be within three times the minimum detection limit for each ion.

6.5.3 Aldehyde Sample Analysis QA/QC

Analysis for formaldehyde, acetaldehyde and acrolein was performed via GC/MS. Laboratory control samples were analyzed with the test samples. Two laboratory control samples were prepared by the analytical laboratory and analyzed with the test samples (5µg and 2.5 µg). The recovery for the 5µg sample was 105% for acetaldehyde, 122% for formaldehyde and 48% for acrolein. The recovery for the 2.5µg sample was 60% for acetaldehyde, 77% for formaldehyde and 40% for acrolein.

Acrolein was not detected in any of the samples in quantities greater than the reported detection limit. Acetaldehyde and formaldehyde were detected in both blank samples in quantities similar to those found in the test samples. Acetaldehyde and formaldehyde were also detected in the method blank. The test sample data may be biased high for these compounds as a result of this potential background.

During the preparation of the 2021 compliance testing report (ORTECH Report No. 22085) an inconsistency was noted by ORTECH in regards to the units being used in the analytical reports for acetaldehyde, formaldehyde and acrolein. Upon review by ALS, it was determined that the data reported for the 2021 voluntary testing program was incorrect. The data was reported as ng and should have been reported as µg; as a result the emission data in the original report, dated September 16, 2021, was incorrect for these compounds. ORTECH has revised this report to correct the acetaldehyde, formaldehyde and acrolein emission data and dispersion modelling.

6.5.4 SVOC Sample Analysis QA/QC

The combined filter, probe rinse, Amberlite XAD-2 cartridge, impinger solutions and associated rinse and soaking solutions for each of the semi-volatile organics trains were analyzed together as one sample per test.

Staff at ALS added extraction standards to all samples prior to extraction. Clean-up standards were added just prior to the clean-up process. Recoveries of the clean-up standards provide an indication on the losses that occur during the extract clean-up. The analytical report includes the lists of the field spike, extraction and clean-up standards used. The analysis of samples involved complex sample extraction and cleanup, followed by HRMS/MS analysis.

Recovery of the dioxin and furan field spike standards were between 76-113% which indicates good extraction efficiency and provides a high degree of confidence in the results obtained from the dioxin and furan test trains.

Per the analytical report for chlorobenzenes, the field spike target was observed in all field samples but was not quantifiable due to interference.

Per the analytical report for PAHs, bias due to a high field spike recovery of Fluorene D10 for Test No. 1 for Unit No. 2 is likely due to interference on the peak response.

6.5.5 Volatile Organic Compound Analysis QA/QC

Prior to sampling VOST tube pairs were cleaned and conditioned under helium sweep (approximately 50 mL/min flow) through each tube in an oven at 280°C for at least 12 hours. One VOST pair was analyzed and proven clean for every 10 pairs cleaned. VOST tubes were end-capped and stored sealed in individual screw-capped vials at 4°C between conditioning and shipment to the field.

Two field blanks, a trip blank and a laboratory method blank were analyzed with the test sample tubes. VOST tubes were desorbed and analyzed, combined as pairs, according to SW846 Method 5041A/8260B.

The analytical report includes the field standards, internal standards and surrogate standards used. The surrogate recoveries for each of the surrogates should be between 50-150%. The recoveries for each sample were between 91-106%, except for D10-Ethylbenzene. The surrogate recoveries for D10-Ethylbenzene were outside control limits however the overall quality control for this analysis meets acceptability criteria.

7. RESULTS AND DISCUSSION

Emission tests were completed for particulate matter, particle size distribution, condensable particulate matter, metals, semi-volatile organic compounds, aldehydes, acid gases and volatile organic compounds at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet.

Combustion gases, including hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide were measured during the emission testing program (June 15 to June 18, 2021) by the DYEC CEMS. Total hydrocarbon concentrations were also measured at the BH Outlet and Quench Inlet by ORTECH on June 15 and June 16, 2021.

Tables referenced in this report for the tests conducted at Boiler No. 1 and Boiler No. 2 are provided in Appendix 1 and Appendix 2, respectively.

Detailed test schedules are provided in Table 1 and Table 2 of Appendix 1 and Appendix 2 for Boiler No. 1 and Boiler No. 2, respectively.

7.1 Stack Gas Sampling Parameters

Emission test calculations for the particulate and metals, particle size, acid gases, and SVOC tests conducted are provided in Appendix 22 to Appendix 25, respectively.

Stack gas sampling parameters for the tests conducted at each location are summarized in Table 3 (Appendix 1 and Appendix 2). These parameters include calibration data, nozzle diameter, dry gas volume sampled and average percentage of isokineticity for each test.

7.2 Stack Gas Physical Parameters

Stack gas physical parameters for tests conducted at each BH Outlet location are presented in Table 4 (Appendix 1 and Appendix 2). The average values from the isokinetic tests at each site are summarized below:

Stack Gas Parameter	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Gas Temperature (°C)	141	142
Moisture by Volume (%)	15.7	15.7
Velocity (m/s)	17.6	18.5
Static Pressure (kPa)	-2.54	-2.48
Absolute Pressure (kPa)	97.8	97.8
Carbon Dioxide by Volume (%)**	10.8	10.6
Oxygen by Volume (%)**	8.30	8.46

* Excludes the isokinetic Acid Gases tests as testing was conducted on a single traverse of the duct
** dry basis, measured by DYEC CEMS

7.3 Volumetric Flowrate Data

Stack gas volumetric flowrates for the tests conducted at each BH Outlet location are presented in Table 5 (Appendix 1 and Appendix 2). The average flowrate values from the tests at each site are summarized below:

Volumetric Flowrate	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Actual Flowrate (m^3/s)	25.9	27.3
Dry Reference Flowrate (Rm^3/s)**	15.2	16.0
Dry Adjusted Flowrate (Rm^3/s)***	19.3	20.1
Wet Reference Flowrate (Rm^3/s)**	18.0	19.0

* Excludes the isokinetic Acid Gases tests as testing was conducted on a single traverse of the duct
** at 25°C and 1 atmosphere
*** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

7.4 Particulate Emission Data

Filterable particulate emission data obtained from each of the particulate and metals tests conducted at the BH Outlet of each Boiler is presented in Table 6 (Appendix 1 and Appendix 2). Average filterable particulate emission data for each BH Outlet location is summarized below:

Particulate Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	0.58	<0.19
Dry Reference Conc. (mg/Rm^3)*	0.99	<0.32
Dry Adjusted Conc. (mg/Rm^3)**	0.78	<0.25
Wet Reference Conc. (mg/Rm^3)*	0.83	<0.27
Emission Rate (mg/s)	15.0	<4.90

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The ECA stipulates maximum in-stack limits for the emissions of various compounds including particulate matter. The average particulate dry adjusted concentration at the Boiler No. 1 BH Outlet (0.78 mg/Rm^3, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (<0.25 mg/Rm^3, adjusted to 11% oxygen) were well below the maximum limit (9 mg/Rm^3, adjusted to 11% oxygen) stated in the ECA.

The amount of particulate matter detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 1 BH Outlet was 3.3 mg and <0.1 mg, respectively. The amount of particulate detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 2 BH Outlet was 0.5 mg and <0.1 mg, respectively. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the particulate emission data.

Particle size distribution tests were also conducted at the BH Outlet of each Boiler. PM_{10} and $PM_{2.5}$ emission data is detailed in Table 7 (Appendix 1 and Appendix 2) for each location. Average emission data for each BH Outlet location is summarized below:

PM_{10} and $PM_{2.5}$ Emission Parameter	PM_{10}		$PM_{2.5}$	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<0.33	<0.29	<0.21	<0.18
Dry Reference Conc. (mg/Rm^3)*	<0.56	<0.49	<0.36	<0.31
Dry Adjusted Conc. (mg/Rm^3)**	<0.44	<0.39	<0.29	<0.25
Wet Reference Conc. (mg/Rm^3)*	<0.47	<0.41	<0.31	<0.27
Emission Rate (mg/s)	<8.33	<8.19	<5.36	<5.30

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Condensable particulate emission data obtained from the back-half of each of the particle size distribution tests conducted at the BH Outlet for each Boiler is presented in Table 8 (Appendix 1 and Appendix 2). Average condensable particulate emission data for each BH Outlet location is summarized below:

Condensable Particulate Emission Parameter	Inorganic Fraction		Organic Fraction	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	1.57	1.54	1.53	1.84
Dry Reference Conc. (mg/Rm^3)*	2.68	2.65	2.60	3.15
Dry Adjusted Conc. (mg/Rm^3)**	2.11	2.11	2.05	2.52
Wet Reference Conc. (mg/Rm^3)*	2.26	2.24	2.19	2.66
Emission Rate (mg/s)	40.7	44.5	39.7	52.9

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The amount of condensable particulate detected in the blank sampling train for Boiler No. 1 was 0.6 mg for the inorganic fraction and 1.3 mg for the organic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 0.5 mg for the inorganic fraction and 1.0 mg for the organic fraction. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the condensable particulate emission data.

The average PM_{10} and $PM_{2.5}$ results, including condensable particulate matter, are summarized below for each Boiler:

PM_{10} and $PM_{2.5}$ + Condensable Emission Parameter	PM_{10} + Condensable		$PM_{2.5}$ + Condensable	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<3.43	<3.67	<3.31	<3.56
Dry Reference Conc. (mg/Rm^3)*	<5.85	<6.29	<5.65	<6.12
Dry Adjusted Conc. (mg/Rm^3)**	<4.60	<5.02	<4.45	<4.89
Wet Reference Conc. (mg/Rm^3)*	<4.93	<5.31	<4.76	<5.17
Emission Rate (mg/s)	<88.8	<106	<85.8	<103

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

7.5 Acid Gases

Hydrogen chloride, hydrogen fluoride and ammonia emission data for the tests conducted at the BH Outlet of each Boiler are presented in Table 9 (Appendix 1 and Appendix 2). Hydrogen fluoride was not detected in any of the test samples in quantities greater than the detection limit. The detection limit was used to calculate hydrogen fluoride emission data. Hydrogen chloride and ammonia were detected in quantities greater than the detection limit in all of the samples collected at each location.

Average hydrogen chloride, hydrogen fluoride and ammonia emission data for the tests conducted at the BH Outlet of each Boiler is summarized below:

Acid Gases Emission Parameter	Hydrogen Chloride		Hydrogen Fluoride		Ammonia	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (mg/m^3)	2.48	2.49	<0.082	<0.075	1.31	0.56
Dry Reference Conc. (mg/Rm^3)*	4.23	4.23	<0.14	<0.13	2.24	0.95
Dry Adjusted Conc. (mg/Rm^3)**	3.34	3.37	<0.11	<0.10	1.77	0.76
Wet Reference Conc. (mg/Rm^3)*	3.56	3.57	<0.12	<0.11	1.89	0.81
Emission Rate (mg/s)	64.4	65.9	<2.13	<1.99	34.1	14.8
Dry Adjusted Conc. (ppm)**	2.24	2.26	<0.14	<0.12	2.54	1.09

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Hydrogen chloride, hydrogen fluoride and ammonia were not detected in the blank samples in quantities greater than the detection limit. The blank analysis was not subtracted from the test sample analyses during calculation of the emission data.

7.6 Combustion Gas Emission Data

Combustion gases, including carbon dioxide, carbon monoxide, hydrogen chloride, nitrogen oxides, oxygen and sulphur dioxide, were measured continuously at the BH Outlet during the emission testing program by the DYEC CEMs. Oxygen was also measured at the Quench Inlet by the DYEC CEMS. The oxygen, carbon dioxide and carbon monoxide concentrations for each test period were used to calculate the molecular weight of the gas stream. The oxygen concentration data was also used to correct the dry reference concentration data to 11% oxygen.

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. DYEC CEMS data was provided from June 15, 2021 at 00:00 to June 18, 2021 at 23:00 for each Boiler.

A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limit stated in the ECA.

The minimum, average and maximum 1-hour, 4-hour and 24-hour combustion gas data measured by the DYEC CEMS is summarized in Table 10 (Appendix 1 and Appendix 2). The maximum concentration, along with the in-stack limit stated in the ECA, is summarized in the following table for each component.

Combustion Gases Emission Parameter		In-Stack ECA Limit	Maximum Concentration	
			Boiler No. 1	Boiler No. 2
BH Outlet	Oxygen (%, 1-hr)	-	9.23	9.71
	Carbon Monoxide (mg/Rm^3, 4-hr)*	≤ 40	20.5	24.8
	Sulphur Dioxide (mg/Rm^3, 24-hr)*	≤ 35	1.0	2.3
	Nitrogen Oxides (mg/Rm^3, 24-hr)*	≤ 121	110	111
	Hydrogen Chloride (mg/Rm^3, 24-hr)*	≤ 9	3.8	3.5
	Total Hydrocarbons (mg/Rm^3, 1-hr)*	-	0	0
Quench Inlet	Oxygen (%, 1-hr)	≥ 6	9	9

* dry at reference conditions, adjusted to 11% oxygen
** dry at reference conditions

Total hydrocarbon concentration data was measured by ORTECH on June 15, 2021 at the Quench Inlet and June 16, 2021 at the BH Outlet sampling locations. The results of the total hydrocarbons tests are summarized in Table 10 (Appendix 1 and Appendix 2). The average THC concentration for each location, along with the in-stack limit stated in the ECA, is summarized in the following table.

Combustion Gases Emission Parameter		Limit	Average Concentration	
			Boiler No. 1	Boiler No. 2
BH Outlet	Total Hydrocarbons (1-minute)*	-	0.5	0.8
	Total Hydrocarbons (10-minute)**	-	0.6	0.8
Quench Inlet	Total Hydrocarbons (1-minute)*	-	1.0	0.4
	Total Hydrocarbons (10-minute)**	50	1.1	0.4

* ppm dry basis, expressed as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)
** ppm dry basis, expressed as equivalent methane (average of each 60 minute test calculated using the 10-minute rolling average)

The one-minute average total hydrocarbon data and the 10-minute total hydrocarbon data measured by ORTECH and expressed on a dry basis as equivalent methane is provided in Appendix 26.

7.7 Metal Emission Data

Metal analytical results for the tests performed at the BH Outlet of each Boiler are given in Tables 11, 12 and 13 (Appendix 1 and Appendix 2) for Test No. 1, Test No. 2 and Test No. 3, respectively. Metal concentrations and emission rates are shown in Tables 14, 15 and 16 for Test No. 1, Test No. 2 and Test No. 3, respectively.

Summaries of the metal actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates including the coefficients of variation for the tests performed are provided in Tables 17, 18, 19, 20 and 21, respectively. Table 22 summarizes the average metal emission data for the tests performed.

Table 23 summarizes the results from the blank metals trains. The amount of metals detected in the blank trains was significant when compared to the amounts collected in the test trains since most of the metals in the test trains were at or near the detection limit. The emission data was not corrected for the blank data.

The metals analysis of the Method 29 test trains was performed on two separate analytical fractions, the probe and filter hydrofluoric acid digest and analysis of the train impingers and associated rinses. In instances where all analyses were reported to be below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, and the remaining fraction was assigned a value of zero. In instances where any given fraction was detected that value was used to calculate emission data, and the remaining undetected fraction were assigned a value of zero.

The ECA stipulates maximum in-stack limits for the emissions of various compounds including cadmium and lead.

The average cadmium emission data is summarized below:

Cadmium Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	0.050	0.033
Dry Reference Conc. (µg/Rm^3)*	0.086	0.056
Dry Adjusted Conc. (µg/Rm^3)**	0.068	0.045
Wet Reference Conc. (µg/Rm^3)*	0.072	0.047
Emission Rate (mg/s)	0.0013	0.00087

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The average lead emission data is summarized below:

Lead Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	0.32	0.24
Dry Reference Conc. (µg/Rm^3)*	0.56	0.40
Dry Adjusted Conc. (µg/Rm^3)**	0.44	0.32
Wet Reference Conc. (µg/Rm^3)*	0.47	0.34
Emission Rate (mg/s)	0.0085	0.0063

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The cadmium and lead dry adjusted concentrations were well below the maximum in-stack emission limits stated in the ECA (7 µg/Rm^3, adjusted to 11% oxygen for cadmium and 50 µg/Rm^3, adjusted to 11% oxygen for lead).

7.8 Mercury Emission Data

Mercury analysis, concentration and emission data are also summarized in the metals emission tables. Mercury was detected in samples from one of the three tests at Boiler No. 1 and in two of the three tests at Boiler No. 2, specifically in the impinger sample analysis, and as is the case with all other analyses the mercury analytical results are not blank corrected.

The average mercury emission data is summarized below:

Mercury Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	<0.064	<0.060
Dry Reference Conc. (µg/Rm^3)*	<0.11	<0.10
Dry Adjusted Conc. (µg/Rm^3)**	<0.086	<0.081
Wet Reference Conc. (µg/Rm^3)*	<0.092	<0.086
Emission Rate (mg/s)	<0.0017	<0.0016

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The mercury dry adjusted concentrations were well below the maximum in-stack emission limit stated in the ECA of 15 µg/Rm^3, adjusted to 11% oxygen.

7.9 Semi-Volatile Organic Emission Data

The combined filter and probe rinse, and combined Amberlite XAD-2 cartridge and impinger solutions for each of the semi-volatile organics trains were analyzed together (one analysis per test) for semi-volatile organic compounds including select dioxins, furans, dioxin-like polychlorinated biphenyls (PCBs), chlorobenzenes (CBs), chlorophenols (CPs) and polycyclic aromatic hydrocarbons (PAHs) at the BH Outlet of each Boiler.

7.9.1 Dioxins and Furans Emission Data

Dioxins and furans are groups of chemically related chlorinated organic compounds or congeners. There are seventy-five dioxin congeners and one hundred and thirty five furan congeners. The individual congeners all have different molecular structures and they may also have different molecular formulae. Individual congeners, which have the same molecular formula but different molecular structure, are referred to as isomers. Groups of isomers are referred to as congener groups or homologues. The basic dioxin and furan molecules have the molecular formulae $C_{12}H_8O_2$ and $C_{12}H_8O$, respectively. In chlorinated dioxin and furans, between one and eight chlorine atoms may replace an equal number of hydrogen atoms in the basic molecule.

The following table lists the chlorinated dioxin and furan congener groups, and the number of isomers present in each group:

Congener Group Abbreviation		Number of Chlorine Atoms Per Molecule	Molecular Formula	Number of Isomers Per Congener Group
Dioxins	M1CDD	1	$C_{12}H_7ClO_2$	2
	D2CDD	2	$C_{12}H_6Cl_2O_2$	10
	T3CDD	3	$C_{12}H_5Cl_3O_2$	14
	T4CDD	4	$C_{12}H_4Cl_4O_2$	22
	P5CDD	5	$C_{12}H_3Cl_5O_2$	14
	H6CDD	6	$C_{12}H_2Cl_6O_2$	10
	H7CDD	7	$C_{12}H_1Cl_7O_2$	2
	O8CDD	8	$C_{12}Cl_8O_2$	1
Furans	M1CDF	1	$C_{12}H_7ClO$	4
	D2CDF	2	$C_{12}H_6Cl_2O$	16
	T3CDF	3	$C_{12}H_5Cl_3O$	28
	T4CDF	4	$C_{12}H_4Cl_4O$	38
	P5CDF	5	$C_{12}H_3Cl_5O$	28
	H6CDF	6	$C_{12}H_2Cl_6O$	16
	H7CDF	7	$C_{12}H_1Cl_7O$	4
	O8CDF	8	$C_{12}Cl_8O$	1

In Ontario, the MECP normally requires that only the higher tetra to octa (T4CDD to O8CDD) dioxin congeners and the higher tetra to octa (T4CDF to O8CDF) furan congeners are included in air emission testing. This is because the lower mono to tri congener groups (M1CDD to T3CDD and M1CDF to T3CDF) are considered to be generally less toxic than the higher congener groups and the test procedures have not been validated for these lower groups. In addition, it is acceptable to the MECP to use only specific isomers in the higher congener groups to compare emission data with the MECP criteria for dioxin and furan emissions.

Dioxin and furan congener group analytical results and emission data for the tests performed at the BH Outlet of each Boiler are given in Table 24 to Table 32 (Appendix 1 and Appendix 2). The results are shown as congener groups from T4CDF to O8CDF and T4CDD to O8CDD, as normally required by the MECP.

The average dioxin congener group emission data for each location is summarized below:

Dioxin Congener Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	0.17	0.43
Dry Reference Conc. (ng/Rm^3)*	0.29	0.74
Dry Adjusted Conc. (ng/Rm^3)**	0.23	0.59
Wet Reference Conc. (ng/Rm^3)*	0.24	0.62
Emission Rate (ng/s)	4.33	11.6

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The average furan congener group emission data for each location is summarized below:

Furan Congener Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<0.025	<0.038
Dry Reference Conc. (ng/Rm^3)*	<0.042	<0.065
Dry Adjusted Conc. (ng/Rm^3)**	<0.033	<0.051
Wet Reference Conc. (ng/Rm^3)*	<0.035	<0.054
Emission Rate (ng/s)	<0.63	<1.01

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The amounts of dioxin and furan congeners detected in the blank sampling trains and in the laboratory blank were insignificant when compared to the amounts detected in the test trains. The blank sampling train analytical results are shown in Table 33. The blank analyses were not subtracted from the test sample analyses during calculation of the dioxin and furan congener emission data.

Dioxin, furan and dioxin-like PCB specific isomer analytical results and emission data for the tests performed are given in Table 34 to Table 42 (Appendix 1 and 2) for the BH Outlets. The isomers included in these tables are considered the most toxic of all the dioxin and furan isomers. They are characterized by having chlorine atoms located at the 2, 3, 7 and 8 positions of the basic dioxin and furan molecules.

The blank sampling train analytical results are shown in Table 43 for the BH Outlet. The blank analyses were not subtracted from the test sample analyses during the calculation of the dioxin and furan isomer emission data.

Several schemes have been proposed for calculating dioxin and furan toxic equivalents (TEQ's) in which different factors have been assigned to the various isomers and congener groups. Calculations in this report are based on the methods preferred by the MECP, which use WHO and NATO/CCMS (1989) toxicity equivalence factors (TEFs).

The purpose in calculating dioxin and furan emission rates as toxic equivalents is to provide a means of assessing and comparing the effects of dioxin and furan emission rates for different emission sources. In these calculations, 2,3,7,8-T4CDD, the most toxic of all the dioxin and furan isomers, is assigned an arbitrary value of 1.0 for a toxic equivalency factor.

Then, other dioxin and furan isomers are assigned toxic equivalency factors which are based on their relative toxicity compared with 2,3,7,8-T4CDD. Emission rates for each isomer are multiplied by their assigned factor and the products are summed to provide the toxic equivalency emission rate.

The MECP "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provided a new framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs. This document was replaced by "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", with the most recent version published on April 27, 2018, however the dioxin and furan toxicity equivalent calculation methodology remains the same.

Tables 44 to 49 show the dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using the full detection limit for those compounds not detected. Table 50 show the dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using half the detection limit for those compounds not detected.

The average dioxin, furan and dioxin-like PCBs toxicity equivalent emission data, calculated using the WHO toxicity equivalence factors and half the detection limit (Table 50 in Appendix 1 and Appendix 2) is summarized below. Per the MECP standards and guidelines referenced above, dioxin, furan and dioxin-like PCB toxicity equivalent emission data calculated using the WHO toxicity equivalence factors and half the detection limit are used for dispersion modelling analysis for comparison with the point of impingement criteria discussed in Section 8.

Total Dioxin and Furan Isomer and PBCs Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (pg TEQ/m^3)	2.29	4.21
Dry Reference Conc. (pg TEQ/Rm^3)*	3.86	7.21
Dry Adjusted Conc. (pg TEQ/Rm^3)**	3.05	5.71
Wet Reference Conc. (pg TEQ/Rm^3)*	3.29	6.06
Emission Rate (ng TEQ/s)	0.059	0.11

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The average dioxin and furan dry adjusted toxicity equivalent concentration, calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit (Table 46B in Appendix 1 and Appendix 2) is summarized below. Dioxin and furan toxicity equivalent emission data for the BH Outlet, calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit, is used for comparison with the in-stack emission limit specified in the ECA.

Dioxin and Furan Isomer Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Dry Adjusted Conc. (pg TEQ/Rm^3)*	<4.10	<7.35

* at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The dioxin and furan dry adjusted TEQ concentration at the BH Outlet of each Boiler was well below the maximum in-stack emission limit stated in the ECA of 60 pgTEQ/Rm^3, adjusted to 11% oxygen.

7.9.2 Chlorobenzene and Chlorophenol Emission Data

As with dioxins and furans, chlorobenzenes and chlorophenols are groups of compounds that have different molecular structures and may also have different numbers of chlorine atoms in the basic molecule. Chlorobenzenes have the structure of the benzene molecule except that between one and six chlorine atoms are substituted for an equal number of hydrogen atoms in the benzene ring. Benzene has the molecular formula C_6H_6. Chlorobenzene congener groups have the molecular formulae C_6H_5Cl, $C_6H_4Cl_2$, $C_6H_3Cl_3$, $C_6H_2Cl_4$, C_6HCl_5 and C_6Cl_6. Chlorophenols have the structure of the phenol molecule except that between one and five chlorine atoms are substituted for an equal number of hydrogen atoms in the benzene ring. Phenol has the molecular formula C_6H_5OH. Chlorophenol congener groups have the molecular formulae C_6H_4ClOH, $C_6H_3Cl_2OH$, $C_6H_2Cl_3OH$, C_6HCl_4OH and C_6Cl_5OH.

Chlorobenzene congener and isomer analytical results and emission data are given in Table 51 to Table 59 for the BH Outlet.

Amounts collected were assumed to be equivalent to the detection limit, where the analytical results were below the detection limit.

The average total chlorobenzene emission data is presented below:

Chlorobenzenes Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<385	<282
Dry Reference Conc. (ng/Rm^3)*	<655	<483
Dry Adjusted Conc. (ng/Rm^3)**	<514	<382
Wet Reference Conc. (ng/Rm^3)*	<554	<406
Emission Rate (µg/s)	<9.88	<7.56

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Blank sampling train and laboratory blank analytical results for chlorobenzenes are given in Table 60. The blank analyses were not subtracted from the test sample analyses during the calculation of chlorobenzene emission data.

Chlorophenol congener and isomer analytical results and emission data is given in Table 61 to Table 69 for the BH Outlet of each Boiler.

Amounts collected were assumed to be equivalent to the detection limit, where the analytical results were below the detection limits (<DL).

The average total chlorophenol emission data is presented below:

Chlorophenol Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<128	<120
Dry Reference Conc. (ng/Rm^3)*	<217	<205
Dry Adjusted Conc. (ng/Rm^3)**	<171	<162
Wet Reference Conc. (ng/Rm^3)*	<184	<172
Emission Rate (µg/s)	<3.27	<3.21

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Blank sampling train and laboratory blank analytical results for chlorophenols are given in Table 70. The blank analyses were not subtracted from the test sample analyses during the calculation of chlorophenol emission data.

7.9.3 Polycyclic Aromatic Hydrocarbon Emission Data

The SVOC samples from the BH Outlet sampling location on each Boiler were also analyzed for select polycyclic aromatic hydrocarbon (PAH) compounds.

Analytical results and PAH emission data for the tests performed are provided in Table 71, 72 and Table 73 for Test No. 1, Test No. 2 and Test No. 3, respectively. PAH actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates are shown in Tables 74 to 78, respectively. A summary of the average emission data is given in Table 79.

The average total PAH emission data is presented below:

Total PAH Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<195	<203
Dry Reference Conc. (ng/Rm^3)*	<332	<347
Dry Adjusted Conc. (ng/Rm^3)**	<260	<275
Wet Reference Conc. (ng/Rm^3)*	<281	<292
Emission Rate (µg/s)	<5.00	<5.45

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Table 80 summarizes the lab blank and blank train PAH analyses. The blank train sample analyses were not subtracted from the test train sample analyses for the purposes of emission rate calculations.

7.10 Aldehydes

Acetaldehyde, formaldehyde and acrolein emission data for the tests conducted at the BH Outlet of each Boiler is presented in Table 81.

Average acetaldehyde, formaldehyde and acrolein emission data for the tests conducted at the BH Outlet of each Boiler is summarized below:

Aldehydes Emission Parameter	Acetaldehyde		Formaldehyde		Acrolein	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	252	196	475	51.0	<1.66	<1.93
Dry Reference Conc. (µg/Rm^3)*	428	336	805	87.4	<2.83	<3.31
Dry Adjusted Conc. (µg/Rm^3)**	339	267	640	69.5	<2.24	<2.63
Wet Reference Conc. (µg/Rm^3)*	363	283	683	73.4	<2.39	<2.78
Emission Rate (mg/s)	6.51	5.25	12.1	1.37	<0.043	<0.052

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Acrolein was not detected in any of the test samples or in the blank samples in quantities greater than the reported detection limit. Acetaldehyde and formaldehyde were detected in both blank samples in quantities greater than the detection limit and in quantities similar to the test samples.

7.11 Volatile Organic Emission Data

Three forty minute test runs were completed at each BH Outlet for volatile organic compounds using SLO-VOST. One backup pair of tubes was collected for each Boiler and archived in case a sample was lost during the analytical extraction process.

Volatile organic analysis data for the tests is provided in Table 82, 83 and Table 84 for Test No. 1, Test No. 2 and Test No. 4, respectively. Test No. 3 for Unit No. 1 was lost during desorption and Test No. 3 for Unit No. 2 was archived. The average test results of volatile organic actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates are shown in Table 85 to 89, respectively. The average volatile organic emission data is summarized in Table 90.

The average total VOC emission data collected from the VOST sampling train is presented below:

VOC Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	<61.3	<67.2
Dry Reference Conc. (µg/Rm^3)*	<103	<115
Dry Adjusted Conc. (µg/Rm^3)**	<82.4	<90.6
Wet Reference Conc. (µg/Rm^3)*	<88.1	<96.3
Emission Rate (mg/s)	<1.55	<1.82

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The average total VOC emission data, including acetaldehyde, formaldehyde and acrolein, per the list provided in Schedule D of the ECA is presented below:

VOC Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Dry Reference Conc. (µg/Rm^3)*	<1339	<542
Dry Adjusted Conc. (µg/Rm^3)**	<1063	<430
Emission Rate (mg/s)	<20.2	<8.49

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Analysis of blank adsorbent tubes is provided in Table 91. The field blank tubes were taken to the test site and uncapped in order to expose the tubes to the ambient environment at the sampling location. Test sample analyses were not blank corrected during the calculation of the emission data.

8. DISPERSION MODELLING

The emission data measured during the testing program was used to assess emissions from the main stack against the point of impingement criteria detailed in Ontario Regulation 419/05 or the applicable MECP guideline.

Dispersion modelling was completed using the CALPUFF model (using Version 6.263 as requested by the MECP) by Golder Associates. The dispersion modelling results are detailed in Appendix 27. Golder Associates can provide the dispersion modelling zip files upon request.

The predicted ground level Point of Impingement (POI) concentrations, calculated based on the average total emission rate, for each contaminant included in the June 2021 emission testing program was well below the applicable standard, guideline or upper risk threshold. The contaminant with the highest predicted concentration relative to the standard was nitrogen oxides (11% of the 1-hour standard and 3% of the 24-hour standard with meteorological anomaly removal), all other contaminants were 1% or less than the relevant standard with meteorological anomaly removal.

9. FACILITY PROCESS DATA

Continuous Emission Monitoring (CEM) data was supplied by DYEC personnel for the emission test program. The 1-hour CEM System data was provided for the following process parameters at the BH Outlet sampling locations:

- Hydrogen Chloride (mg/Rm^3, adjusted to 11% oxygen)
- Nitrogen Oxides (mg/Rm^3, adjusted to 11% oxygen)
- Sulphur Dioxide (mg/Rm^3, adjusted to 11% oxygen)
- Carbon Monoxide (mg/Rm^3, adjusted to 11% oxygen)
- Oxygen (% volume, dry)
- Total Hydrocarbons (mg/Rm^3, adjusted to 11% oxygen)

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. DYEC CEMS data was provided from June 15, 2021 at 00:00 to June 18, 2021 at 23:00 for each Boiler. A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limit stated in the ECA.

The combustion gas concentrations, expressed as 1-hour average concentrations, 4-hour rolling average and 24-hour rolling average where applicable, at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet are provided in Appendix 28.

1-minute CEM data provided by DYEC was used to calculate the average oxygen, carbon dioxide and carbon monoxide concentrations for each isokinetic test period. The average oxygen, carbon dioxide and carbon monoxide concentrations were used to calculate the molecular weight of the gas stream. The average oxygen concentrations were also used to adjust the dry reference concentration data to 11% oxygen. The 1-minute data for the isokinetic test periods has been retained by ORTECH and can be provided upon request.

ORTECH a Kontrol Technologies Company

The facility process data was also supplied by DYEC personnel for each test day. Hourly process data has been retained by Covanta and can be provided upon request. The process data is summarized below:

Test Date	Total Power Output* (MWh/d)	Aux. Fuel Combusted** (m^3/d)		Avg. Combustion Zone Temp. (°C)		Steam (tonnes/d)		MSW Combusted*** (tonnes/d)		NO_X Reagent Inj. Rate (liters/d)		Carbon Inj. Rate (kg/d)		Lime Inj. Rate (kg/d)	
		Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
June 15, 2021	377	0	0	1239	1208	811	808	196	196	587	575	130	127	5146	4188
June 16, 2021	380	0	0	1241	1207	808	804	195	196	562	604	126	127	4854	4186
June 17, 2021	382	0	0	1240	1219	807	808	190	187	583	628	123	129	4839	4338
June 18, 2021	385	0	0	1247	1210	812	811	197	205	624	717	124	128	5697	4108
Average	381	0	0	1242	1211	810	808	195	196	589	631	126	128	5134	4205

* Gross turbine output

** Auxiliary fuel was not combusted during the conduct of reference test runs to demonstrate ECA compliance

*** Calculated by crane scales.

10. CONCLUSIONS

The main conclusions which can be drawn from the present emission testing program are:

- During the stack test periods the facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation. Testing was conducted at a steam production rate of greater than 804 tonnes of steam per day for each Boiler. The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler).
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in the ECA.
- Using CALPUFF dispersion modelling techniques (using Version 6.263 as requested by the MECP), the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below the current standards in Regulation 419/05 (Schedule 3) under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

Schedule C of ECA No. 7306-8FDKNX lists in-stack limits for the emissions of various compounds. Emissions limits are given for particulate matter, mercury, cadmium, lead, dioxins and furans and organic matter as the results from compliance source testing. Emission limits are also given for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide calculated as the rolling arithmetic average of data measured by a CEMS.

The July 2020 relative accuracy and system bias testing was conducted on the Continuous Emission Monitoring Systems (CEMS) installed at the Quench Inlet and BH Outlet of each Boiler prior to the compliance testing program. Since the DYEC CEMS met the performance parameters detailed in Schedule F of the ECA, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the isokinetic test days at each unit was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA.

Total hydrocarbon concentration data was measured by ORTECH on June 15, 2021 at the Quench Inlet and June 16, 2021 at the BH Outlet sampling locations. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was well below the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

The average results for the tests conducted at Boiler No. 1, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	381	-
Average Combustion Zone Temp. (°C)*	-	-	-	1242	-
Steam (tonnes/day)*	-	-	-	810	-
MSW Combusted (tonnes/day)*	-	-	-	195	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	589	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	5134	-
Filterable Particulate (mg/Rm^3) (1)	0.63	0.49	1.22	0.78	9
PM_{10} with Condensable (mg/Rm^3) (1)	5.51	<4.27	<4.02	<4.60	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	5.31	<4.13	<3.89	<4.45	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.12	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	2.30	1.70	1.31	1.77	-
Cadmium (µg/Rm^3) (1)	0.020	0.12	0.060	0.068	7
Lead (µg/Rm^3) (1)	0.39	0.62	0.32	0.44	50
Mercury (µg/Rm^3) (1)	0.088	<0.086	<0.086	<0.086	15
Antimony (µg/Rm^3) (1)	<0.043	<0.041	<0.044	<0.043	-
Arsenic (µg/Rm^3) (1)	<0.043	<0.041	<0.044	<0.043	-
Barium (µg/Rm^3) (1)	1.71	1.48	2.30	1.83	-
Beryllium (µg/Rm^3) (1)	<0.043	<0.041	<0.044	<0.043	-
Chromium (µg/Rm^3) (1)	0.93	0.79	0.73	0.82	-
Cobalt (µg/Rm^3) (1)	0.12	0.10	<0.044	<0.089	-
Copper (µg/Rm^3) (1)	3.58	6.08	3.13	4.26	-
Molybdenum (µg/Rm^3) (1)	5.15	4.55	4.86	4.85	-
Nickel (µg/Rm^3) (1)	1.01	2.25	0.74	1.33	-
Selenium (µg/Rm^3) (1)	0.23	<0.20	<0.22	<0.22	-
Silver (µg/Rm^3) (1)	<0.043	<0.041	<0.044	<0.043	-
Thallium (µg/Rm^3) (1)	<0.043	<0.041	<0.044	<0.043	-
Vanadium (µg/Rm^3) (1)	<0.022	<0.020	<0.022	<0.021	-
Zinc (µg/Rm^3) (1)	6.26	7.56	7.94	7.25	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<3.84	<5.09	<3.37	<4.10	60
Total Chlorobenzenes (ng/Rm^3) (1)	<440	<605	<496	<514	-
Total Chlorophenols (ng/Rm^3) (1)	<176	<169	<166	<171	-
Total PAHs (ng/Rm^3) (1)	<254	<241	<286	<260	-
VOCs (µg/Rm^3) (1)	<100	<73.7	<73.6	<82.4	-
Aldehydes (µg/Rm^3) (1)	<1801	<702	<439	<981	-
Total VOCs (µg/Rm^3) (1) (4)	<1901	<776	<513	<1063	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	1.5	1.1	0.5	1.0	50

* based on process data provided by Covanta

(1) dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(2) dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

(3) calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(4) Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).

The average results for the tests conducted at Boiler No. 2, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	381	-
Average Combustion Zone Temp. (°C)*	-	-	-	1211	-
Steam (tonnes/day)*	-	-	-	808	-
MSW Combusted (tonnes/day)*	-	-	-	196	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	631	-
Carbon Injection (kg/day)*	-	-	-	128	-
Lime Injection (kg/day)*	-	-	-	4205	-
Filterable Particulate (mg/Rm^3) (1)	0.29	<0.30	0.16	<0.25	9
PM_{10} with Condensable (mg/Rm^3) (1)	4.73	<4.95	<5.38	<5.02	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	4.46	<4.88	<5.32	<4.89	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.099	<0.098	<0.10	-
Ammonia (mg/Rm^3) (1)	0.91	0.74	0.63	0.76	-
Cadmium (µg/Rm^3) (1)	0.054	0.047	0.034	0.045	7
Lead (µg/Rm^3) (1)	0.37	0.31	0.28	0.32	50
Mercury (µg/Rm^3) (1)	0.081	<0.078	0.083	<0.081	15
Antimony (µg/Rm^3) (1)	0.047	<0.043	0.041	<0.044	-
Arsenic (µg/Rm^3) (1)	<0.045	<0.043	<0.041	<0.043	-
Barium (µg/Rm^3) (1)	1.77	1.53	1.51	1.60	-
Beryllium (µg/Rm^3) (1)	<0.045	<0.043	<0.041	<0.043	-
Chromium (µg/Rm^3) (1)	0.88	0.67	0.73	0.76	-
Cobalt (µg/Rm^3) (1)	0.047	<0.043	0.021	<0.037	-
Copper (µg/Rm^3) (1)	4.10	3.59	3.88	3.86	-
Molybdenum (µg/Rm^3) (1)	5.13	5.19	4.72	5.01	-
Nickel (µg/Rm^3) (1)	1.02	0.82	0.76	0.87	-
Selenium (µg/Rm^3) (1)	<0.22	<0.22	<0.20	<0.22	-
Silver (µg/Rm^3) (1)	<0.045	<0.043	<0.041	<0.043	-
Thallium (µg/Rm^3) (1)	<0.045	<0.043	<0.041	<0.043	-
Vanadium (µg/Rm^3) (1)	0.038	<0.022	<0.020	<0.027	-
Zinc (µg/Rm^3) (1)	8.34	4.62	5.63	6.20	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<6.76	<8.35	<6.95	<7.35	60
Total Chlorobenzenes (ng/Rm^3) (1)	<341	<419	<387	<382	-
Total Chlorophenols (ng/Rm^3) (1)	<159	<165	<162	<162	-
Total PAHs (ng/Rm^3) (1)	<312	<298	<216	<275	-
VOCs (µg/Rm^3) (1)	<74.5	<60.3	<137	<90.6	-
Aldehydes (µg/Rm^3) (1)	<318	<331	<370	<340	-
Total VOCs (µg/Rm^3) (1) (4)	<393	<391	<507	<430	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.1	0.1	0.9	0.4	50

* based on process data provided by Covanta

(1) dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(2) dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

(3) calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(4) Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).

A summary of the minimum, average and maximum concentrations for the combustion gases measured by the DYEC CEMS with in-stack limits listed in the ECA is provided below for the two units.

Boiler No.	Parameter	Minimum	Average	Maximum	In-Stack Limit
Boiler No. 1	Carbon Monoxide (mg/Rm^3) (1)	7.8	12.6	20.5	40
	Hydrogen Chloride (mg/Rm^3) (2)	2.4	3.1	3.8	9
	Nitrogen Oxides (mg/Rm^3) (2)	108	109	110	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.3	1.0	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	8.3	12.7	24.8	40
	Hydrogen Chloride (mg/Rm^3) (2)	2.5	2.9	3.5	9
	Nitrogen Oxides (mg/Rm^3) (2)	109	110	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.7	2.3	35

(1) 4-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume
(2) 24-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume

APPENDIX 1

Boiler No. 1 BH Outlet
Data Tables
(93 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 1
Isokinetic Sampling Train Test Schedules

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	June 15, 2021	9:00	12:30	180
2	June 15, 2021	13:27	16:36	180
3	June 16, 2021	15:36	18:42	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	June 16, 2021	8:08	10:10	120
2	June 16, 2021	11:04	13:06	120
3	June 16, 2021	14:02	16:04	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	June 15, 2021	8:51	9:51	60
2	June 15, 2021	10:45	11:49	60
3	June 15, 2021	12:36	13:36	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	June 17, 2021	8:56	13:06	240
2	June 17, 2021	14:19	18:26	240
3	June 18, 2021	9:10	13:22	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 1
Organic Compounds Test Schedules

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	June 17, 2021	12:05	13:05	60
2	June 17, 2021	13:10	14:31	60
3	June 17, 2021	14:40	15:40	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	June 17, 2021	8:50	9:30	40
2	June 17, 2021	9:35	10:15	40
3	June 17, 2021	10:20	11:00	40
4	June 17, 2021	11:05	11:45	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period		Sampling Time
			Start	Finish	min
BH Outlet	1	June 16, 2021	7:25	8:25	60
BH Outlet	2	June 16, 2021	8:45	9:45	60
BH Outlet	3	June 16, 2021	10:00	11:00	60
Quench Inlet	1	June 15, 2021	9:50	10:50	60
Quench Inlet	2	June 15, 2021	11:00	12:00	60
Quench Inlet	3	June 15, 2021	12:25	13:25	60

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Sampling Parameters

Particulate and Metals Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.841	0.994	6.42	3.638	102.0
2	0.841	0.994	6.42	3.865	104.4
3	0.842	0.993	6.38	3.536	100.7

Particle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.845	0.987	4.51	1.200	106.7
2	0.845	0.987	4.51	1.178	94.4
3	0.845	0.987	4.51	1.195	99.1

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.842	0.993	6.11	1.047	97.3
2	0.842	0.993	6.11/6.38	1.070	99.4
3	0.842	0.993	6.38	1.174	99.6

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.846	0.993	6.38	4.611	99.0
2	0.846	0.993	6.38	4.754	99.5
3	0.842	0.993	6.38	4.714	101.5

* Dry at 25°C and 1 atmosphere

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Physical Parameters

Particulate and Metals Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	140	15.2	17.3	-2.54	97.5	10.8	8.38
2	138	17.1	18.3	-2.54	97.5	10.7	8.35
3	144	16.1	17.6	-2.54	97.9	10.9	8.25
Average	141	16.1	17.7	-2.54	97.7	10.8	8.33

Particle Size Distribution Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	141	15.1	16.4	-2.54	98.1	10.8	8.48
2	141	14.8	18.2	-2.54	98.0	10.7	8.49
3	143	17.2	18.2	-2.54	97.9	11.1	7.91
Average	142	15.7	17.6	-2.54	98.0	10.9	8.29

Acid Gases Trains **

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	141	15.0	17.3	-2.54	97.5	10.4	8.65
2	142	15.2	17.7	-2.54	97.5	10.8	8.45
3	143	16.4	17.8	-2.54	97.5	11.1	7.91
Average	142	15.5	17.6	-2.54	97.5	10.8	8.34

Semi-Volatile Organics Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	141	15.1	17.1	-2.54	98.1	10.7	8.46
2	143	15.4	17.7	-2.54	98.0	10.6	8.35
3	140	15.0	17.1	-2.57	97.5	10.9	8.04
Average	142	15.2	17.3	-2.55	97.9	10.7	8.28

* Dry basis, measured by the DYEC CEMS

** Sampling was conducted isokinetically on a single traverse in the duct.

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Volumetric Flowrates

Particulate and Metals Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.6	15.1	19.1	17.8
2	27.0	15.6	19.8	18.9
3	26.0	15.0	19.2	17.9
Average	26.2	15.2	19.4	18.2

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	24.3	14.4	18.1	17.0
2	27.0	16.0	20.1	18.8
3	26.9	15.4	20.2	18.6
Average	26.1	15.3	19.4	18.1

Acid Gases Trains ***

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.6	15.1	18.6	17.7
2	26.2	15.4	19.3	18.1
3	26.3	15.1	19.9	18.1
Average	26.0	15.2	19.3	18.0

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.3	15.0	18.8	17.6
2	26.2	15.3	19.4	18.2
3	25.3	14.9	19.4	17.6
Average	25.6	15.1	19.2	17.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

*** Sampling was conducted isokinetically on a single traverse in the duct. Volumetric flowrates from the corresponding particulate and metals tests were used to calculate emission data.

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Particulate Emission Data

Test No.	Particulate Collected			Dry Gas Volume Sampled	Particulate Concentration Actual	Dry Reference	Dry Adjusted	Wet Reference	Particulate Emission Rate
	Probe Rinse	Main Filter	Total						
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	2.2	0.7	2.9	3.638	0.47	0.80	0.63	0.68	12.0
2	2.1	0.3	2.4	3.865	0.36	0.62	0.49	0.52	9.71
3	3.7	1.8	5.5	3.536	0.90	1.56	1.22	1.31	23.4
Average					0.58	0.99	0.78	0.83	15.0
Blank	<0.1	3.3	<3.4						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
$PM_{2.5}$ and PM_{10} Emission Data

$PM_{2.5}$

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	$PM_{2.5}$ Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	0.9	1.200	0.44	0.75	0.60	0.64	10.8
2	<0.2	1.178	<0.10	<0.17	<0.14	<0.14	<2.72
3	<0.2	1.195	<0.096	<0.17	<0.13	<0.14	<2.58
Average			<0.21	<0.36	<0.29	<0.31	<5.36
Blank	<0.4						

PM_{10}

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	PM_{10} Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	1.2	1.200	0.59	1.00	0.80	0.85	14.4
2	<0.4	1.178	<0.20	<0.34	<0.27	<0.29	<5.43
3	<0.4	1.195	<0.19	<0.33	<0.26	<0.28	<5.15
Average			<0.33	<0.56	<0.44	<0.47	<8.33
Blank	<0.6						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Condensable Particulate Emission Data

Inorganic Condensable Particulate

Test	Total Collected	Dry Volume Sampled	Inorganic Condensable Particulate Concentration				Emission Rate
			Actual	Dry Reference	Dry Adjusted	Wet Reference	
No.	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	3.8	1.200	1.88	3.17	2.52	2.68	45.6
2	2.7	1.178	1.36	2.29	1.83	1.95	36.7
3	3.1	1.195	1.49	2.59	1.98	2.15	39.9
Average			1.57	2.68	2.11	2.26	40.7
Blank	0.6						

Organic Condensable Particulate

Test	Total Collected	Dry Volume Sampled	Organic Condensable Particulate Concentration				Emission Rate
			Actual	Dry Reference	Dry Adjusted	Wet Reference	
No.	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	3.3	1.200	1.63	2.75	2.19	2.33	39.6
2	3.2	1.178	1.61	2.72	2.17	2.31	43.5
3	2.8	1.195	1.34	2.34	1.79	1.94	36.1
Average			1.53	2.60	2.05	2.19	39.7
Blank	1.3						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Halides and Ammonia Emission Data

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Chloride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	4.23	1.047	2.38	4.04	3.19	3.42	60.8
2	5.16	1.070	2.84	4.82	3.81	4.09	72.6
3	4.48	1.174	2.21	3.82	3.01	3.16	59.6
Average			2.48	4.23	3.34	3.56	64.4
Blank	<0.236						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Fluoride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.153	1.047	<0.086	<0.15	<0.12	<0.12	<2.20
2	<0.146	1.070	<0.080	<0.14	<0.11	<0.12	<2.05
3	<0.160	1.174	<0.079	<0.14	<0.11	<0.11	<2.13
Average			<0.082	<0.14	<0.11	<0.12	<2.13
Blank	<0.161						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Ammonia Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	3.05	1.047	1.72	2.91	2.30	2.47	43.9
2	2.30	1.070	1.27	2.15	1.70	1.82	32.4
3	1.95	1.174	0.96	1.66	1.31	1.38	26.0
Average			1.31	2.24	1.77	1.89	34.1
Blank	<0.222						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1
Combustion Gas Analyses

Data measured by the DYEC CEMS from June 15 to June 18, 2021

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.25	8.36	9.23
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	6	13	28
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	7.8	12.6	20.5
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.3	6
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.3	1.0
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	94	109	118
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	108	109	110
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	2	3	5
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	2.4	3.1	3.8
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	0
Quench Inlet	Oxygen (%, 1 hr Avg)	7	8	9

Data measured by the ORTECH CEMS on June 15 and June 16, 2021

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0.3	0.4	2.9
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.9	10.3
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	4.2
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.5	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	1.5	14.6
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0.8	1.1	1.5
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.5	4.1
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		1.0	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	1.7	6.1
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0.9	1.1	1.3
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0.3	0.5	1.0
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		1.1	

* Reference conditions, dry basis adjusted to 11% oxygen

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 1

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	6.44	1.45	7.89
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	0.094	0.094
Chromium	3.31	0.96	4.27
Cobalt	<0.2	0.54	0.54
Copper	7.70	8.77	16.5
Lead	0.87	0.90	1.77
Mercury *	<0.015	0.40	0.40
Molybdenum	23.7	<0.1	23.7
Nickel	2.69	1.94	4.63
Selenium	<2	1.08	1.08
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	15.8	13.0	28.8
Total			<90.7

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	5.85	1.42	7.27
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.49	0.12	0.60
Chromium	3.23	0.63	3.86
Cobalt	<0.2	0.52	0.52
Copper	8.13	21.7	29.8
Lead	1.08	1.94	3.02
Mercury *	<0.015	<0.42	<0.42
Molybdenum	22.3	<0.1	22.3
Nickel	3.21	7.85	11.1
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	18.6	18.5	37.1
Total			<118

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	9.46	0.93	10.4
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.27	<0.05	0.27
Chromium	2.97	0.34	3.31
Cobalt	<0.2	<0.1	<0.20
Copper	7.04	7.12	14.2
Lead	1.08	0.35	1.43
Mercury *	<0.015	<0.39	<0.39
Molybdenum	22.0	<0.1	22.0
Nickel	2.95	0.42	3.37
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	29.7	6.22	35.9
Total			<93.5

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 1

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.032	<0.055	<0.043	<0.047	<0.00083
Arsenic	<0.20	<0.032	<0.055	<0.043	<0.047	<0.00083
Barium	7.89	1.28	2.17	1.71	1.84	0.033
Beryllium	<0.20	<0.032	<0.055	<0.043	<0.047	<0.00083
Cadmium	0.094	0.015	0.026	0.020	0.022	0.00039
Chromium	4.27	0.69	1.17	0.93	0.99	0.018
Cobalt	0.54	0.087	0.15	0.12	0.13	0.0022
Copper	16.5	2.67	4.53	3.58	3.84	0.068
Lead	1.77	0.29	0.49	0.39	0.41	0.0074
Mercury	0.40	0.065	0.11	0.088	0.094	0.0017
Molybdenum	23.7	3.84	6.51	5.15	5.53	0.098
Nickel	4.63	0.75	1.27	1.01	1.08	0.019
Selenium	1.08	0.18	0.30	0.23	0.25	0.0045
Silver	<0.20	<0.032	<0.055	<0.043	<0.047	<0.00083
Thallium	<0.20	<0.032	<0.055	<0.043	<0.047	<0.00083
Vanadium	<0.10	<0.016	<0.027	<0.022	<0.023	<0.00042
Zinc	28.8	4.669	7.92	6.26	6.72	0.12
Total	<90.7	<14.7	<24.9	<19.7	<21.2	<0.38

Dry Gas Volume Sampled (Rm^3*) :	3.638
Actual Flowrate (m^3/s) :	25.6
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	17.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 2

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.030	<0.052	<0.041	<0.043	<0.00081
Arsenic	<0.20	<0.030	<0.052	<0.041	<0.043	<0.00081
Barium	7.27	1.09	1.88	1.48	1.55	0.029
Beryllium	<0.20	<0.030	<0.052	<0.041	<0.043	<0.00081
Cadmium	0.60	0.090	0.16	0.12	0.13	0.0024
Chromium	3.86	0.58	1.00	0.79	0.82	0.016
Cobalt	0.52	0.077	0.13	0.10	0.11	0.0021
Copper	29.8	4.46	7.72	6.08	6.37	0.12
Lead	3.02	0.45	0.78	0.62	0.64	0.012
Mercury	<0.42	<0.063	<0.11	<0.086	<0.090	<0.0017
Molybdenum	22.3	3.33	5.77	4.55	4.76	0.090
Nickel	11.1	1.65	2.86	2.25	2.36	0.045
Selenium	<1.00	<0.15	<0.26	<0.20	<0.21	<0.0040
Silver	<0.20	<0.030	<0.052	<0.041	<0.043	<0.00081
Thallium	<0.20	<0.030	<0.052	<0.041	<0.043	<0.00081
Vanadium	<0.10	<0.015	<0.026	<0.020	<0.021	<0.00040
Zinc	37.1	5.55	9.60	7.56	7.92	0.15
Total	<118	<17.7	<30.6	<24.1	<25.2	<0.48

Dry Gas Volume Sampled (Rm^3*) :	3.865
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.6
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 3

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.033	<0.057	<0.044	<0.047	<0.00085
Arsenic	<0.20	<0.033	<0.057	<0.044	<0.047	<0.00085
Barium	10.4	1.70	2.94	2.30	2.46	0.044
Beryllium	<0.20	<0.033	<0.057	<0.044	<0.047	<0.00085
Cadmium	0.27	0.045	0.077	0.060	0.065	0.0012
Chromium	3.31	0.54	0.94	0.73	0.78	0.014
Cobalt	<0.20	<0.033	<0.057	<0.044	<0.047	<0.00085
Copper	14.2	2.31	4.00	3.13	3.36	0.060
Lead	1.43	0.23	0.40	0.32	0.34	0.0061
Mercury	<0.39	<0.064	<0.11	<0.086	<0.092	<0.0017
Molybdenum	22.0	3.59	6.22	4.86	5.21	0.093
Nickel	3.37	0.55	0.95	0.74	0.80	0.014
Selenium	<1.00	<0.16	<0.28	<0.22	<0.24	<0.0042
Silver	<0.20	<0.033	<0.057	<0.044	<0.047	<0.00085
Thallium	<0.20	<0.033	<0.057	<0.044	<0.047	<0.00085
Vanadium	<0.10	<0.016	<0.028	<0.022	<0.024	<0.00042
Zinc	35.9	5.86	10.2	7.94	8.51	0.15
Total	<93.5	<15.3	<26.5	<20.7	<22.2	<0.40

Dry Gas Volume Sampled (Rm^3*) :	3.536
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	19.2
Wet Reference Flowrate (Rm^3/s*) :	17.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Actual Concentrations

Metal	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	<0.032	<0.030	<0.033	<0.032	4.8
Arsenic	<0.032	<0.030	<0.033	<0.032	4.8
Barium	1.28	1.09	1.70	1.35	23.0
Beryllium	<0.032	<0.030	<0.033	<0.032	4.8
Cadmium	0.015	0.090	0.045	0.050	75.5
Chromium	0.69	0.58	0.54	0.60	13.2
Cobalt	0.087	0.077	<0.033	<0.066	44.2
Copper	2.67	4.46	2.31	3.15	36.6
Lead	0.29	0.45	0.23	0.32	35.0
Mercury	0.065	<0.063	<0.064	<0.064	2.0
Molybdenum	3.84	3.33	3.59	3.59	7.1
Nickel	0.75	1.65	0.55	0.98	59.7
Selenium	0.18	<0.15	<0.16	<0.16	7.9
Silver	<0.032	<0.030	<0.033	<0.032	4.8
Thallium	<0.032	<0.030	<0.033	<0.032	4.8
Vanadium	<0.016	<0.015	<0.016	<0.016	4.8
Zinc	4.669	5.55	5.86	5.36	11.5
Total	<14.7	<17.7	<15.3	<15.9	9.8

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Dry Reference Concentrations

Metal	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.055	<0.052	<0.057	<0.054	4.5
Arsenic	<0.055	<0.052	<0.057	<0.054	4.5
Barium	2.17	1.88	2.94	2.33	23.5
Beryllium	<0.055	<0.052	<0.057	<0.054	4.5
Cadmium	0.026	0.16	0.077	0.086	75.9
Chromium	1.17	1.00	0.94	1.04	11.9
Cobalt	0.15	0.13	<0.057	<0.11	43.5
Copper	4.53	7.72	4.00	5.42	37.1
Lead	0.49	0.78	0.40	0.56	35.5
Mercury	0.11	<0.11	<0.11	<0.11	1.0
Molybdenum	6.51	5.77	6.22	6.17	6.1
Nickel	1.27	2.86	0.95	1.70	60.3
Selenium	0.30	<0.26	<0.28	<0.28	6.9
Silver	<0.055	<0.052	<0.057	<0.054	4.5
Thallium	<0.055	<0.052	<0.057	<0.054	4.5
Vanadium	<0.027	<0.026	<0.028	<0.027	4.5
Zinc	7.92	9.60	10.2	9.22	12.7
Total	<24.9	<30.6	<26.5	<27.3	10.6

* At 25°C and 1 atmosphere

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Dry Adjusted Concentrations

Metal	Dry Adjusted Concentration				Coefficient
	Test No. 1 µg/Rm³**	Test No. 2 µg/Rm³**	Test No. 3 µg/Rm³**	Average µg/Rm³**	of Variation %
Antimony	<0.043	<0.041	<0.044	<0.043	4.2
Arsenic	<0.043	<0.041	<0.044	<0.043	4.2
Barium	1.71	1.48	2.30	1.83	22.9
Beryllium	<0.043	<0.041	<0.044	<0.043	4.2
Cadmium	0.020	0.12	0.060	0.068	76.0
Chromium	0.93	0.79	0.73	0.82	12.4
Cobalt	0.12	0.10	<0.044	<0.089	43.9
Copper	3.58	6.08	3.13	4.26	37.3
Lead	0.39	0.62	0.32	0.44	35.7
Mercury	0.088	<0.086	<0.086	<0.086	1.2
Molybdenum	5.15	4.55	4.86	4.85	6.2
Nickel	1.01	2.25	0.74	1.33	60.5
Selenium	0.23	<0.20	<0.22	<0.22	7.0
Silver	<0.043	<0.041	<0.044	<0.043	4.2
Thallium	<0.043	<0.041	<0.044	<0.043	4.2
Vanadium	<0.022	<0.020	<0.022	<0.021	4.2
Zinc	6.26	7.56	7.94	7.25	12.1
Total	<19.7	<24.1	<20.7	<21.5	10.6

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Wet Reference Concentrations

Metal	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.047	<0.043	<0.047	<0.046	5.5
Arsenic	<0.047	<0.043	<0.047	<0.046	5.5
Barium	1.84	1.55	2.46	1.95	23.8
Beryllium	<0.047	<0.043	<0.047	<0.046	5.5
Cadmium	0.022	0.13	0.065	0.072	74.8
Chromium	0.99	0.82	0.78	0.87	12.9
Cobalt	0.13	0.11	<0.047	<0.094	43.8
Copper	3.84	6.37	3.36	4.52	35.8
Lead	0.41	0.64	0.34	0.47	34.2
Mercury	0.094	<0.090	<0.092	<0.092	2.4
Molybdenum	5.53	4.76	5.21	5.17	7.4
Nickel	1.08	2.36	0.80	1.41	59.0
Selenium	0.25	<0.21	<0.24	<0.23	8.2
Silver	<0.047	<0.043	<0.047	<0.046	5.5
Thallium	<0.047	<0.043	<0.047	<0.046	5.5
Vanadium	<0.023	<0.021	<0.024	<0.023	5.5
Zinc	6.72	7.92	8.51	7.72	11.9
Total	<21.2	<25.2	<22.2	<22.8	9.2

* At 25°C and 1 atmosphere

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Emission Rates

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	<0.00083	<0.00081	<0.00085	<0.00083	2.5
Arsenic	<0.00083	<0.00081	<0.00085	<0.00083	2.5
Barium	0.033	0.029	0.044	0.035	21.8
Beryllium	<0.00083	<0.00081	<0.00085	<0.00083	2.5
Cadmium	0.00039	0.0024	0.0012	0.0013	77.7
Chromium	0.018	0.016	0.014	0.016	11.7
Cobalt	0.0022	0.0021	<0.00085	<0.0017	44.1
Copper	0.068	0.12	0.060	0.083	39.4
Lead	0.0074	0.012	0.0061	0.0085	37.8
Mercury	0.0017	<0.0017	<0.0017	<0.0017	1.2
Molybdenum	0.098	0.090	0.093	0.094	4.5
Nickel	0.019	0.045	0.014	0.026	62.6
Selenium	0.0045	<0.0040	<0.0042	<0.0043	5.3
Silver	<0.00083	<0.00081	<0.00085	<0.00083	2.5
Thallium	<0.00083	<0.00081	<0.00085	<0.00083	2.5
Vanadium	<0.00042	<0.00040	<0.00042	<0.00041	2.5
Zinc	0.12	0.15	0.15	0.14	13.0
Total	<0.38	<0.48	<0.40	<0.42	12.7

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Emission Data

Metal	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.032	<0.054	<0.043	<0.046	<0.00083
Arsenic	<0.032	<0.054	<0.043	<0.046	<0.00083
Barium	1.35	2.33	1.83	1.95	0.035
Beryllium	<0.032	<0.054	<0.043	<0.046	<0.00083
Cadmium	0.050	0.086	0.068	0.072	0.0013
Chromium	0.60	1.04	0.82	0.87	0.016
Cobalt	<0.066	<0.11	<0.089	<0.094	<0.0017
Copper	3.15	5.42	4.26	4.52	0.083
Lead	0.32	0.56	0.44	0.47	0.0085
Mercury	<0.064	<0.11	<0.086	<0.092	<0.0017
Molybdenum	3.59	6.17	4.85	5.17	0.094
Nickel	0.98	1.70	1.33	1.41	0.026
Selenium	<0.16	<0.28	<0.22	<0.23	<0.0043
Silver	<0.032	<0.054	<0.043	<0.046	<0.00083
Thallium	<0.032	<0.054	<0.043	<0.046	<0.00083
Vanadium	<0.016	<0.027	<0.021	<0.023	<0.00041
Zinc	5.36	9.22	7.25	7.72	0.14
Total	<15.9	<27.3	<21.5	<22.8	<0.42

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Train Metal Analyses

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.88	0.88
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.30	0.40	2.70
Cobalt	<0.2	<0.1	<0.20
Copper	5.86	4.00	9.9
Lead	<0.5	0.29	0.29
Mercury *	<0.015	<0.15	<0.15
Molybdenum	23.6	<0.1	23.6
Nickel	2.27	0.37	2.64
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	0.056	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	<3	<6.00
Total			<48.5

* Includes the permanganate impingers.

Note: "<" indicates that the analyte was not detected. Where all values are reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate the total collected in the blank, the remaining fractions are assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate the total collected in the blank.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	72.2	0.0093	0.016	0.012	0.013	0.23
Pentachlorodibenzo-p-dioxins	174	0.022	0.038	0.030	0.032	0.57
Hexachlorodibenzo-p-dioxins	413	0.053	0.090	0.071	0.076	1.34
Heptachlorodibenzo-p-dioxins	243	0.031	0.053	0.042	0.045	0.79
Octachlorodibenzo-p-dioxin	410	0.053	0.089	0.071	0.076	1.33
Total	1312	0.17	0.28	0.23	0.24	4.27

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	<3.7	<0.00048	<0.00080	<0.00064	<0.00068	<0.012
Pentachlorodibenzofurans	37.6	0.0048	0.0082	0.0065	0.0069	0.12
Hexachlorodibenzofurans	<6.6	<0.00085	<0.0014	<0.0011	<0.0012	<0.021
Heptachlorodibenzofurans	69.1	0.0089	0.015	0.012	0.013	0.22
Octachlorodibenzofuran	56.7	0.0073	0.012	0.0098	0.010	0.18
Total	<174	<0.022	<0.038	<0.030	<0.032	<0.57

Dry Gas Volume Sampled (Rm^3*) :	4.611
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	76.2	0.0094	0.016	0.013	0.013	0.25
Pentachlorodibenzo-p-dioxins	72.9	0.0090	0.015	0.012	0.013	0.23
Hexachlorodibenzo-p-dioxins	605	0.074	0.13	0.10	0.11	1.95
Heptachlorodibenzo-p-dioxins	340	0.042	0.072	0.056	0.060	1.09
Octachlorodibenzo-p-dioxin	541	0.066	0.11	0.090	0.096	1.74
Total	1635	0.20	0.34	0.27	0.29	5.26

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	<5.7	<0.00070	<0.0012	<0.00095	<0.0010	<0.018
Pentachlorodibenzofurans	29.0	0.0036	0.0061	0.0048	0.0051	0.093
Hexachlorodibenzofurans	31.0	0.0038	0.0065	0.0051	0.0055	0.10
Heptachlorodibenzofurans	94.3	0.012	0.020	0.016	0.017	0.30
Octachlorodibenzofuran	65.6	0.0081	0.014	0.011	0.012	0.21
Total	<226	<0.028	<0.047	<0.037	<0.040	<0.73

Dry Gas Volume Sampled (Rm^3*) :	4.754
Actual Flowrate (m^3/s) :	26.2
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	63.3	0.0079	0.013	0.010	0.011	0.20
Pentachlorodibenzo-p-dioxins	57.3	0.0072	0.012	0.0093	0.010	0.18
Hexachlorodibenzo-p-dioxins	320	0.040	0.068	0.052	0.057	1.01
Heptachlorodibenzo-p-dioxins	238	0.030	0.050	0.039	0.043	0.75
Octachlorodibenzo-p-dioxin	414	0.052	0.088	0.067	0.074	1.31
Total	1093	0.14	0.23	0.18	0.20	3.45

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	<4.4	<0.00055	<0.00093	<0.00072	<0.00079	<0.014
Pentachlorodibenzofurans	18.6	0.0023	0.0039	0.0030	0.0033	0.059
Hexachlorodibenzofurans	29.6	0.0037	0.0063	0.0048	0.0053	0.094
Heptachlorodibenzofurans	78.4	0.0098	0.017	0.013	0.014	0.25
Octachlorodibenzofuran	57.0	0.0071	0.012	0.0093	0.010	0.18
Total	<188	<0.023	<0.040	<0.031	<0.034	<0.59

Dry Gas Volume Sampled (Rm^3*) :	4.714
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	14.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.0093	0.0094	0.0079	0.0089	9.2
Pentachlorodibenzo-p-dioxins	0.022	0.0090	0.0072	0.013	64.8
Hexachlorodibenzo-p-dioxins	0.053	0.074	0.040	0.056	31.1
Heptachlorodibenzo-p-dioxins	0.031	0.042	0.030	0.034	19.1
Octachlorodibenzo-p-dioxin	0.053	0.066	0.052	0.057	14.5
Total	0.17	0.20	0.14	0.17	19.1

Furans

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	<0.00048	<0.00070	<0.00055	<0.00058	19.9
Pentachlorodibenzofurans	0.0048	0.0036	0.0023	0.0036	35.1
Hexachlorodibenzofurans	<0.00085	0.0038	0.0037	<0.0028	60.2
Heptachlorodibenzofurans	0.0089	0.012	0.0098	0.010	13.6
Octachlorodibenzofuran	0.0073	0.0081	0.0071	0.0075	6.7
Total	<0.022	<0.028	<0.023	<0.025	11.6

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.016	0.016	0.013	0.015	9.4
Pentachlorodibenzo-p-dioxins	0.038	0.015	0.012	0.022	64.1
Hexachlorodibenzo-p-dioxins	0.090	0.13	0.068	0.095	31.7
Heptachlorodibenzo-p-dioxins	0.053	0.072	0.050	0.058	19.8
Octachlorodibenzo-p-dioxin	0.089	0.11	0.088	0.097	15.2
Total	0.28	0.34	0.23	0.29	19.6

Furans

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	<0.00080	<0.0012	<0.00093	<0.00098	20.7
Pentachlorodibenzofurans	0.0082	0.0061	0.0039	0.0061	34.7
Hexachlorodibenzofurans	<0.0014	0.0065	0.0063	<0.0047	60.5
Heptachlorodibenzofurans	0.015	0.020	0.017	0.017	14.4
Octachlorodibenzofuran	0.012	0.014	0.012	0.013	7.3
Total	<0.038	<0.047	<0.040	<0.042	12.3

* At 25°C and 1 atmosphere

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.012	0.013	0.010	0.012	11.0
Pentachlorodibenzo-p-dioxins	0.030	0.012	0.0093	0.017	65.7
Hexachlorodibenzo-p-dioxins	0.071	0.10	0.052	0.075	32.5
Heptachlorodibenzo-p-dioxins	0.042	0.056	0.039	0.046	20.5
Octachlorodibenzo-p-dioxin	0.071	0.090	0.067	0.076	15.8
Total	0.23	0.27	0.18	0.23	20.7

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	<0.00064	<0.00095	<0.00072	<0.00077	20.7
Pentachlorodibenzofurans	0.0065	0.0048	0.0030	0.0048	36.3
Hexachlorodibenzofurans	<0.0011	0.0051	0.0048	<0.0037	60.0
Heptachlorodibenzofurans	0.012	0.016	0.013	0.013	14.4
Octachlorodibenzofuran	0.0098	0.011	0.0093	0.010	8.1
Total	<0.030	<0.037	<0.031	<0.033	12.5

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.013	0.013	0.011	0.013	9.3
Pentachlorodibenzo-p-dioxins	0.032	0.013	0.010	0.018	64.8
Hexachlorodibenzo-p-dioxins	0.076	0.11	0.057	0.080	31.1
Heptachlorodibenzo-p-dioxins	0.045	0.060	0.043	0.049	19.2
Octachlorodibenzo-p-dioxin	0.076	0.096	0.074	0.082	14.5
Total	0.24	0.29	0.20	0.24	19.1

Furans

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	<0.00068	<0.0010	<0.00079	<0.00083	20.0
Pentachlorodibenzofurans	0.0069	0.0051	0.0033	0.0051	35.1
Hexachlorodibenzofurans	<0.0012	0.0055	0.0053	<0.0040	60.3
Heptachlorodibenzofurans	0.013	0.017	0.014	0.015	13.7
Octachlorodibenzofuran	0.010	0.012	0.010	0.011	6.8
Total	<0.032	<0.040	<0.034	<0.035	11.6

* At 25°C and 1 atmosphere

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.23	0.25	0.20	0.23	10.4
Pentachlorodibenzo-p-dioxins	0.57	0.23	0.18	0.33	63.7
Hexachlorodibenzo-p-dioxins	1.34	1.95	1.01	1.43	33.1
Heptachlorodibenzo-p-dioxins	0.79	1.09	0.75	0.88	21.3
Octachlorodibenzo-p-dioxin	1.33	1.74	1.31	1.46	16.6
Total	4.27	5.26	3.45	4.33	20.9

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	<0.012	<0.018	<0.014	<0.015	21.9
Pentachlorodibenzofurans	0.12	0.093	0.059	0.091	34.8
Hexachlorodibenzofurans	<0.021	0.10	0.094	<0.072	60.8
Heptachlorodibenzofurans	0.22	0.303	0.25	0.26	15.6
Octachlorodibenzofuran	0.18	0.211	0.18	0.19	8.7
Total	<0.57	<0.73	<0.59	<0.63	13.6

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	0.0089	0.015	0.012	0.013	0.23
Pentachlorodibenzo-p-dioxins	0.013	0.022	0.017	0.018	0.33
Hexachlorodibenzo-p-dioxins	0.056	0.095	0.075	0.080	1.43
Heptachlorodibenzo-p-dioxins	0.034	0.058	0.046	0.049	0.88
Octachlorodibenzo-p-dioxin	0.057	0.097	0.076	0.082	1.46
Total	0.17	0.29	0.23	0.24	4.33

Furans

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	<0.00058	<0.00098	<0.00077	<0.00083	<0.015
Pentachlorodibenzofurans	0.0036	0.0061	0.0048	0.0051	0.091
Hexachlorodibenzofurans	<0.0028	<0.0047	<0.0037	<0.0040	<0.072
Heptachlorodibenzofurans	0.010	0.017	0.013	0.015	0.26
Octachlorodibenzofuran	0.0075	0.013	0.010	0.011	0.19
Total	<0.025	<0.042	<0.033	<0.035	<0.63

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<2.4	<1.3
Pentachlorodibenzo-p-dioxins	<1.3	<0.62
Hexachlorodibenzo-p-dioxins	<1.6	<0.93
Heptachlorodibenzo-p-dioxins	<6.7	<1.0
Octachlorodibenzo-p-dioxin	112	110
Total	<124	<114

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<1.3	<0.64
Pentachlorodibenzofurans	<1.3	<1.1
Hexachlorodibenzofurans	<1.8	<1.4
Heptachlorodibenzofurans	<2.8	<1.3
Octachlorodibenzofuran	12.4	<13
Total	<19.6	<17.4

"<" indicates that the amount detected is less than the detection limit
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.4	<0.57	<0.95	<0.76	<0.81	<0.014
12378-pentachlorodibenzo-p-dioxin	<4.9	<0.63	<1.06	<0.85	<0.91	<0.016
123478-hexachlorodibenzo-p-dioxin	<9.2	<1.18	<2.00	<1.59	<1.70	<0.030
123678-hexachlorodibenzo-p-dioxin	<15	<1.93	<3.25	<2.60	<2.77	<0.049
123789-hexachlorodibenzo-p-dioxin	<8.2	<1.05	<1.78	<1.42	<1.52	<0.027
1234678-heptachlorodibenzo-p-dioxin	243	31.2	52.7	42.0	44.9	0.79
Octachlorodibenzo-p-dioxin	410	52.7	88.9	70.9	75.8	1.33
2378-tetrachlorodibenzofuran	<3.7	<0.48	<0.80	<0.64	<0.68	<0.012
12378-pentachlorodibenzofuran	<5.9	<0.76	<1.28	<1.02	<1.09	<0.019
23478-pentachlorodibenzofuran	10.2	1.31	2.21	1.76	1.89	0.033
123478-hexachlorodibenzofuran	<7.0	<0.90	<1.52	<1.21	<1.29	<0.023
123678-hexachlorodibenzofuran	<7.0	<0.90	<1.52	<1.21	<1.29	<0.023
234678-hexachlorodibenzofuran	<5.8	<0.75	<1.26	<1.00	<1.07	<0.019
123789-hexachlorodibenzofuran	<6.6	<0.85	<1.43	<1.14	<1.22	<0.021
1234678-heptachlorodibenzofuran	69.1	8.88	15.0	12.0	12.8	0.22
1234789-heptachlorodibenzofuran	<13	<1.67	<2.82	<2.25	<2.40	<0.042
Octachlorodibenzofuran	56.7	7.29	12.3	9.81	10.5	0.18
PCB 81	<8.2	<1.05	<1.78	<1.42	<1.52	<0.027
PCB 77	238	30.6	51.6	41.2	44.0	0.77
PCB 123	105	13.5	22.8	18.2	19.4	0.34
PCB 118	6190	796	1342	1071	1144	20.1
PCB 114	142	18.3	30.8	24.6	26.2	0.46
PCB 105	1630	210	354	282	301	5.30
PCB 126	18.7	2.40	4.06	3.24	3.46	0.061
PCB 167	40.0	5.14	8.67	6.92	7.39	0.13
PCB 156/157	109	14.0	23.6	18.9	20.1	0.35
PCB 169	16.0	2.06	3.47	2.77	2.96	0.052
PCB 189	4.99	0.64	1.08	0.86	0.92	0.016
Total Dioxins & Furans Only	<880	<113	<191	<152	<163	<2.86
Total PCBs Only	<8502	<1093	<1844	<1471	<1571	<27.7
Total Dioxins & Furans and PCBs	<9382	<1206	<2035	<1623	<1734	<30.5

Dry Gas Volume Sampled (Rm³*) :	4.611
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<6.8	<0.84	<1.43	<1.13	<1.20	<0.022
12378-pentachlorodibenzo-p-dioxin	<5.9	<0.72	<1.24	<0.98	<1.04	<0.019
123478-hexachlorodibenzo-p-dioxin	<13	<1.60	<2.73	<2.16	<2.30	<0.042
123678-hexachlorodibenzo-p-dioxin	36.8	4.52	7.74	6.10	6.51	0.12
123789-hexachlorodibenzo-p-dioxin	<17	<2.09	<3.58	<2.82	<3.01	<0.055
1234678-heptachlorodibenzo-p-dioxin	340	41.8	71.5	56.4	60.1	1.09
Octachlorodibenzo-p-dioxin	541	66.5	114	89.7	95.7	1.74
2378-tetrachlorodibenzofuran	<5.7	<0.70	<1.20	<0.95	<1.01	<0.018
12378-pentachlorodibenzofuran	<5.3	<0.65	<1.11	<0.88	<0.94	<0.017
23478-pentachlorodibenzofuran	11.1	1.36	2.33	1.84	1.96	0.036
123478-hexachlorodibenzofuran	<9.0	<1.11	<1.89	<1.49	<1.59	<0.029
123678-hexachlorodibenzofuran	<10	<1.23	<2.10	<1.66	<1.77	<0.032
234678-hexachlorodibenzofuran	<4.8	<0.59	<1.01	<0.80	<0.85	<0.015
123789-hexachlorodibenzofuran	<5.5	<0.68	<1.16	<0.91	<0.97	<0.018
1234678-heptachlorodibenzofuran	76.6	9.41	16.1	12.7	13.5	0.25
1234789-heptachlorodibenzofuran	17.7	2.17	3.72	2.94	3.13	0.057
Octachlorodibenzofuran	65.6	8.06	13.8	10.9	11.6	0.21
PCB 81	<6.9	<0.85	<1.45	<1.14	<1.22	<0.022
PCB 77	354	43.5	74.5	58.7	62.6	1.14
PCB 123	43.2	5.31	9.09	7.17	7.64	0.14
PCB 118	3320	408	698	551	587	10.7
PCB 114	83.6	10.3	17.6	13.9	14.8	0.27
PCB 105	986	121	207	164	174	3.17
PCB 126	14.1	1.73	2.97	2.34	2.49	0.045
PCB 167	33.3	4.09	7.00	5.52	5.89	0.11
PCB 156/157	96.8	11.9	20.4	16.1	17.1	0.31
PCB 169	5.89	0.72	1.24	0.98	1.04	0.019
PCB 189	7.02	0.86	1.48	1.16	1.24	0.023
Total Dioxins & Furans Only	<1172	<144	<246	<194	<207	<3.77
Total PCBs Only	<4951	<608	<1041	<821	<875	<15.9
Total Dioxins & Furans and PCBs	<6123	<752	<1288	<1016	<1083	<19.7

Dry Gas Volume Sampled (Rm³*) :	4.754
Actual Flowrate (m³/s) :	26.2
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	19.4
Wet Reference Flowrate (Rm³/s*) :	18.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.0	<0.50	<0.85	<0.65	<0.72	<0.013
12378-pentachlorodibenzo-p-dioxin	<3.8	<0.47	<0.81	<0.62	<0.68	<0.012
123478-hexachlorodibenzo-p-dioxin	<10	<1.25	<2.12	<1.63	<1.80	<0.032
123678-hexachlorodibenzo-p-dioxin	22.6	2.82	4.79	3.68	4.06	0.071
123789-hexachlorodibenzo-p-dioxin	<8.6	<1.07	<1.82	<1.40	<1.54	<0.027
1234678-heptachlorodibenzo-p-dioxin	238	29.7	50.5	38.8	42.7	0.75
Octachlorodibenzo-p-dioxin	414	51.7	87.8	67.5	74.4	1.31
2378-tetrachlorodibenzofuran	<4.4	<0.55	<0.93	<0.72	<0.79	<0.014
12378-pentachlorodibenzofuran	7.38	0.92	1.57	1.20	1.33	0.023
23478-pentachlorodibenzofuran	<6.1	<0.76	<1.29	<0.99	<1.10	<0.019
123478-hexachlorodibenzofuran	<4.5	<0.56	<0.95	<0.73	<0.81	<0.014
123678-hexachlorodibenzofuran	<6.0	<0.75	<1.27	<0.98	<1.08	<0.019
234678-hexachlorodibenzofuran	17.2	2.15	3.65	2.80	3.09	0.054
123789-hexachlorodibenzofuran	<5.1	<0.64	<1.08	<0.83	<0.92	<0.016
1234678-heptachlorodibenzofuran	59.6	7.45	12.6	9.71	10.7	0.19
1234789-heptachlorodibenzofuran	<8.8	<1.10	<1.87	<1.43	<1.58	<0.028
Octachlorodibenzofuran	57.0	7.12	12.1	9.29	10.2	0.18
PCB 81	<4.3	<0.54	<0.91	<0.70	<0.77	<0.014
PCB 77	68.8	8.60	14.6	11.2	12.4	0.22
PCB 123	24.8	3.10	5.26	4.04	4.45	0.078
PCB 118	1900	237	403	310	341	6.01
PCB 114	42.5	5.31	9.02	6.92	7.63	0.13
PCB 105	477	59.6	101	77.7	85.7	1.51
PCB 126	7.00	0.87	1.48	1.14	1.26	0.022
PCB 167	16.5	2.06	3.50	2.69	2.96	0.052
PCB 156/157	39.6	4.95	8.40	6.45	7.11	0.13
PCB 169	<3.2	<0.40	<0.68	<0.52	<0.57	<0.010
PCB 189	3.32	0.41	0.70	0.54	0.60	0.010
Total Dioxins & Furans Only	<877	<110	<186	<143	<158	<2.77
Total PCBs Only	<2587	<323	<549	<421	<465	<8.18
Total Dioxins & Furans and PCBs	<3464	<433	<735	<564	<622	<10.9

Dry Gas Volume Sampled (Rm³*) :	4.714
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	19.4
Wet Reference Flowrate (Rm³/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.57	<0.84	<0.50	<0.63	28.1
12378-pentachlorodibenzo-p-dioxin	<0.63	<0.72	<0.47	<0.61	20.7
123478-hexachlorodibenzo-p-dioxin	<1.18	<1.60	<1.25	<1.34	16.6
123678-hexachlorodibenzo-p-dioxin	<1.93	4.52	2.82	<3.09	42.6
123789-hexachlorodibenzo-p-dioxin	<1.05	<2.09	<1.07	<1.41	42.1
1234678-heptachlorodibenzo-p-dioxin	31.2	41.8	29.7	34.2	19.1
Octachlorodibenzo-p-dioxin	52.7	66.5	51.7	57.0	14.5
2378-tetrachlorodibenzofuran	<0.48	<0.70	<0.55	<0.58	19.9
12378-pentachlorodibenzofuran	<0.76	<0.65	0.92	<0.78	17.6
23478-pentachlorodibenzofuran	1.31	1.36	<0.76	<1.15	29.1
123478-hexachlorodibenzofuran	<0.90	<1.11	<0.56	<0.86	32.1
123678-hexachlorodibenzofuran	<0.90	<1.23	<0.75	<0.96	25.5
234678-hexachlorodibenzofuran	<0.75	<0.59	2.15	<1.16	73.9
123789-hexachlorodibenzofuran	<0.85	<0.68	<0.64	<0.72	15.6
1234678-heptachlorodibenzofuran	8.88	9.41	7.45	8.58	11.8
1234789-heptachlorodibenzofuran	<1.67	2.17	<1.10	<1.65	32.6
Octachlorodibenzofuran	7.29	8.06	7.12	7.49	6.7
PCB 81	<1.05	<0.85	<0.54	<0.81	32.0
PCB 77	30.6	43.5	8.60	27.6	64.0
PCB 123	13.5	5.31	3.10	7.30	75.1
PCB 118	796	408	237	480	59.6
PCB 114	18.3	10.3	5.31	11.3	57.9
PCB 105	210	121	59.6	130	58.0
PCB 126	2.40	1.73	0.87	1.67	45.9
PCB 167	5.14	4.09	2.06	3.77	41.6
PCB 156/157	14.0	11.9	4.95	10.3	46.1
PCB 169	2.06	0.72	<0.40	<1.06	82.9
PCB 189	0.64	0.86	0.41	0.64	35.0
Total Dioxins & Furans Only	<113	<144	<110	<122	15.5
Total PCBs Only	<1093	<608	<323	<675	57.7
Total Dioxins & Furans and PCBs	<1206	<752	<433	<797	48.8

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.95	<1.43	<0.85	<1.08	28.8
12378-pentachlorodibenzo-p-dioxin	<1.06	<1.24	<0.81	<1.04	21.1
123478-hexachlorodibenzo-p-dioxin	<2.00	<2.73	<2.12	<2.28	17.3
123678-hexachlorodibenzo-p-dioxin	<3.25	7.74	4.79	<5.26	43.3
123789-hexachlorodibenzo-p-dioxin	<1.78	<3.58	<1.82	<2.39	42.8
1234678-heptachlorodibenzo-p-dioxin	52.7	71.5	50.5	58.2	19.8
Octachlorodibenzo-p-dioxin	88.9	114	87.8	96.8	15.2
2378-tetrachlorodibenzofuran	<0.80	<1.20	<0.93	<0.98	20.7
12378-pentachlorodibenzofuran	<1.28	<1.11	1.57	<1.32	17.3
23478-pentachlorodibenzofuran	2.21	2.33	<1.29	<1.95	29.2
123478-hexachlorodibenzofuran	<1.52	<1.89	<0.95	<1.46	32.5
123678-hexachlorodibenzofuran	<1.52	<2.10	<1.27	<1.63	26.2
234678-hexachlorodibenzofuran	<1.26	<1.01	3.65	<1.97	73.9
123789-hexachlorodibenzofuran	<1.43	<1.16	<1.08	<1.22	15.0
1234678-heptachlorodibenzofuran	15.0	16.1	12.6	14.6	12.1
1234789-heptachlorodibenzofuran	<2.82	3.72	<1.87	<2.80	33.1
Octachlorodibenzofuran	12.3	13.8	12.1	12.7	7.3
PCB 81	<1.78	<1.45	<0.91	<1.38	31.7
PCB 77	51.6	74.5	14.6	46.9	64.4
PCB 123	22.8	9.09	5.26	12.4	74.4
PCB 118	1342	698	403	815	59.0
PCB 114	30.8	17.6	9.02	19.1	57.3
PCB 105	354	207	101	221	57.4
PCB 126	4.06	2.97	1.48	2.84	45.5
PCB 167	8.67	7.00	3.50	6.39	41.3
PCB 156/157	23.6	20.4	8.40	17.5	45.9
PCB 169	3.47	1.24	<0.68	<1.80	82.2
PCB 189	1.08	1.48	0.70	1.09	35.5
Total Dioxins & Furans Only	<191	<246	<186	<208	16.2
Total PCBs Only	<1844	<1041	<549	<1145	57.1
Total Dioxins & Furans and PCBs	<2035	<1288	<735	<1352	48.2

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.76	<1.13	<0.65	<0.85	29.5
12378-pentachlorodibenzo-p-dioxin	<0.85	<0.98	<0.62	<0.82	22.3
123478-hexachlorodibenzo-p-dioxin	<1.59	<2.16	<1.63	<1.79	17.6
123678-hexachlorodibenzo-p-dioxin	<2.60	6.10	3.68	<4.13	43.5
123789-hexachlorodibenzo-p-dioxin	<1.42	<2.82	<1.40	<1.88	43.3
1234678-heptachlorodibenzo-p-dioxin	42.0	56.4	38.8	45.7	20.5
Octachlorodibenzo-p-dioxin	70.9	89.7	67.5	76.0	15.8
2378-tetrachlorodibenzofuran	<0.64	<0.95	<0.72	<0.77	20.7
12378-pentachlorodibenzofuran	<1.02	<0.88	1.20	<1.03	15.7
23478-pentachlorodibenzofuran	1.76	1.84	<0.99	<1.53	30.6
123478-hexachlorodibenzofuran	<1.21	<1.49	<0.73	<1.15	33.5
123678-hexachlorodibenzofuran	<1.21	<1.66	<0.98	<1.28	27.0
234678-hexachlorodibenzofuran	<1.00	<0.80	2.80	<1.53	71.9
123789-hexachlorodibenzofuran	<1.14	<0.91	<0.83	<0.96	16.8
1234678-heptachlorodibenzofuran	12.0	12.7	9.71	11.5	13.6
1234789-heptachlorodibenzofuran	<2.25	2.94	<1.43	<2.21	34.1
Octachlorodibenzofuran	9.81	10.9	9.29	9.99	8.1
PCB 81	<1.42	<1.14	<0.70	<1.09	33.3
PCB 77	41.2	58.7	11.2	37.0	64.9
PCB 123	18.2	7.17	4.04	9.79	75.8
PCB 118	1071	551	310	644	60.5
PCB 114	24.6	13.9	6.92	15.1	58.8
PCB 105	282	164	77.7	174	58.8
PCB 126	3.24	2.34	1.14	2.24	47.0
PCB 167	6.92	5.52	2.69	5.04	42.8
PCB 156/157	18.9	16.1	6.45	13.8	47.2
PCB 169	2.77	0.98	<0.52	<1.42	83.5
PCB 189	0.86	1.16	0.54	0.86	36.4
Total Dioxins & Furans Only	<152	<194	<143	<163	16.8
Total PCBs Only	<1471	<821	<421	<905	58.6
Total Dioxins & Furans and PCBs	<1623	<1016	<564	<1068	49.8

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.81	<1.20	<0.72	<0.91	28.1
12378-pentachlorodibenzo-p-dioxin	<0.91	<1.04	<0.68	<0.88	20.8
123478-hexachlorodibenzo-p-dioxin	<1.70	<2.30	<1.80	<1.93	16.6
123678-hexachlorodibenzo-p-dioxin	<2.77	6.51	4.06	<4.45	42.7
123789-hexachlorodibenzo-p-dioxin	<1.52	<3.01	<1.54	<2.02	42.2
1234678-heptachlorodibenzo-p-dioxin	44.9	60.1	42.7	49.3	19.2
Octachlorodibenzo-p-dioxin	75.8	95.7	74.4	81.9	14.5
2378-tetrachlorodibenzofuran	<0.68	<1.01	<0.79	<0.83	20.0
12378-pentachlorodibenzofuran	<1.09	<0.94	1.33	<1.12	17.5
23478-pentachlorodibenzofuran	1.89	1.96	<1.10	<1.65	29.1
123478-hexachlorodibenzofuran	<1.29	<1.59	<0.81	<1.23	32.1
123678-hexachlorodibenzofuran	<1.29	<1.77	<1.08	<1.38	25.6
234678-hexachlorodibenzofuran	<1.07	<0.85	3.09	<1.67	73.9
123789-hexachlorodibenzofuran	<1.22	<0.97	<0.92	<1.04	15.6
1234678-heptachlorodibenzofuran	12.8	13.5	10.7	12.3	11.9
1234789-heptachlorodibenzofuran	<2.40	3.13	<1.58	<2.37	32.7
Octachlorodibenzofuran	10.5	11.6	10.2	10.8	6.8
PCB 81	<1.52	<1.22	<0.77	<1.17	32.0
PCB 77	44.0	62.6	12.4	39.6	64.1
PCB 123	19.4	7.64	4.45	10.5	75.0
PCB 118	1144	587	341	691	59.6
PCB 114	26.2	14.8	7.63	16.2	57.9
PCB 105	301	174	85.7	187	57.9
PCB 126	3.46	2.49	1.26	2.40	45.9
PCB 167	7.39	5.89	2.96	5.42	41.6
PCB 156/157	20.1	17.1	7.11	14.8	46.1
PCB 169	2.96	1.04	<0.57	<1.52	82.8
PCB 189	0.92	1.24	0.60	0.92	35.1
Total Dioxins & Furans Only	<163	<207	<158	<176	15.6
Total PCBs Only	<1571	<875	<465	<971	57.7
Total Dioxins & Furans and PCBs	<1734	<1083	<622	<1146	48.7

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.014	<0.022	<0.013	<0.016	30.2
12378-pentachlorodibenzo-p-dioxin	<0.016	<0.019	<0.012	<0.016	22.4
123478-hexachlorodibenzo-p-dioxin	<0.030	<0.042	<0.032	<0.034	18.7
123678-hexachlorodibenzo-p-dioxin	<0.049	0.12	0.071	<0.080	44.7
123789-hexachlorodibenzo-p-dioxin	<0.027	<0.055	<0.027	<0.036	44.3
1234678-heptachlorodibenzo-p-dioxin	0.79	1.09	0.75	0.88	21.3
Octachlorodibenzo-p-dioxin	1.33	1.74	1.31	1.46	16.6
2378-tetrachlorodibenzofuran	<0.012	<0.018	<0.014	<0.015	21.9
12378-pentachlorodibenzofuran	<0.019	<0.017	0.023	<0.020	16.0
23478-pentachlorodibenzofuran	0.033	0.036	<0.019	<0.029	30.1
123478-hexachlorodibenzofuran	<0.023	<0.029	<0.014	<0.022	33.7
123678-hexachlorodibenzofuran	<0.023	<0.032	<0.019	<0.025	27.6
234678-hexachlorodibenzofuran	<0.019	<0.015	0.054	<0.030	72.9
123789-hexachlorodibenzofuran	<0.021	<0.018	<0.016	<0.018	14.9
1234678-heptachlorodibenzofuran	0.22	0.25	0.19	0.22	13.4
1234789-heptachlorodibenzofuran	<0.042	0.057	<0.028	<0.042	34.4
Octachlorodibenzofuran	0.18	0.21	0.18	0.19	8.7
PCB 81	<0.027	<0.022	<0.014	<0.021	31.9
PCB 77	0.77	1.14	0.22	0.71	65.4
PCB 123	0.34	0.14	0.078	0.19	74.0
PCB 118	20.1	10.7	6.01	12.3	58.6
PCB 114	0.46	0.27	0.13	0.29	57.1
PCB 105	5.30	3.17	1.51	3.33	57.2
PCB 126	0.061	0.045	0.022	0.043	45.5
PCB 167	0.13	0.11	0.052	0.096	41.5
PCB 156/157	0.35	0.31	0.13	0.26	46.2
PCB 169	0.052	0.019	<0.010	<0.027	81.8
PCB 189	0.016	0.023	0.010	0.016	36.8
Total Dioxins & Furans Only	<2.86	<3.77	<2.77	<3.14	17.6
Total PCBs Only	<27.7	<15.9	<8.18	<17.3	56.8
Total Dioxins & Furans and PCBs	<30.5	<19.7	<10.9	<20.4	48.1

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.63	<1.08	<0.85	<0.91	<0.016
12378-pentachlorodibenzo-p-dioxin	<0.61	<1.04	<0.82	<0.88	<0.016
123478-hexachlorodibenzo-p-dioxin	<1.34	<2.28	<1.79	<1.93	<0.034
123678-hexachlorodibenzo-p-dioxin	<3.09	<5.26	<4.13	<4.45	<0.080
123789-hexachlorodibenzo-p-dioxin	<1.41	<2.39	<1.88	<2.02	<0.036
1234678-heptachlorodibenzo-p-dioxin	34.2	58.2	45.7	49.3	0.88
Octachlorodibenzo-p-dioxin	57.0	96.8	76.0	81.9	1.46
2378-tetrachlorodibenzofuran	<0.58	<0.98	<0.77	<0.83	<0.015
12378-pentachlorodibenzofuran	<0.78	<1.32	<1.03	<1.12	<0.020
23478-pentachlorodibenzofuran	<1.15	<1.95	<1.53	<1.65	<0.029
123478-hexachlorodibenzofuran	<0.86	<1.46	<1.15	<1.23	<0.022
123678-hexachlorodibenzofuran	<0.96	<1.63	<1.28	<1.38	<0.025
234678-hexachlorodibenzofuran	<1.16	<1.97	<1.53	<1.67	<0.030
123789-hexachlorodibenzofuran	<0.72	<1.22	<0.96	<1.04	<0.018
1234678-heptachlorodibenzofuran	8.58	14.6	11.5	12.3	0.22
1234789-heptachlorodibenzofuran	<1.65	<2.80	<2.21	<2.37	<0.042
Octachlorodibenzofuran	7.49	12.7	9.99	10.8	0.19
PCB 81	<0.81	<1.38	<1.09	<1.17	<0.021
PCB 77	27.6	46.9	37.0	39.6	0.71
PCB 123	7.30	12.4	9.79	10.5	0.19
PCB 118	480	815	644	691	12.3
PCB 114	11.3	19.1	15.1	16.2	0.29
PCB 105	130	221	174	187	3.33
PCB 126	1.67	2.84	2.24	2.40	0.043
PCB 167	3.77	6.39	5.04	5.42	0.096
PCB 156/157	10.3	17.5	13.8	14.8	0.26
PCB 169	<1.06	<1.80	<1.42	<1.52	<0.027
PCB 189	0.64	1.09	0.86	0.92	0.016
Total Dioxins & Furans Only	<122	<208	<163	<176	<3.14
Total PCBs Only	<675	<1145	<905	<971	<17.3
Total Dioxins & Furans and PCBs	<797	<1352	<1068	<1146	<20.4

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train	Laboratory Blank
	pg	pg
2378-tetrachlorodibenzo-p-dioxin	<2.4	<1.3
12378-pentachlorodibenzo-p-dioxin	<1.3	<0.62
123478-hexachlorodibenzo-p-dioxin	<1.6	<0.93
123678-hexachlorodibenzo-p-dioxin	<1.4	<0.78
123789-hexachlorodibenzo-p-dioxin	<1.5	<0.82
1234678-heptachlorodibenzo-p-dioxin	<6.9	<7.9
Octachlorodibenzo-p-dioxin	112	110
2378-tetrachlorodibenzofuran	<1.3	<0.64
12378-pentachlorodibenzofuran	<1.3	<1.1
23478-pentachlorodibenzofuran	<1.2	<1.0
123478-hexachlorodibenzofuran	<1.6	<1.2
123678-hexachlorodibenzofuran	<1.4	<1.1
234678-hexachlorodibenzofuran	<1.5	<1.2
123789-hexachlorodibenzofuran	<1.8	<2.3
1234678-heptachlorodibenzofuran	<2.4	<3.5
1234789-heptachlorodibenzofuran	<2.8	<1.3
Octachlorodibenzofuran	12.4	<13
PCB 81	<7.4	<9.0
PCB 77	<7.2	<8.2
PCB 123	<4.0	<2.1
PCB 118	52.1	<2.1
PCB 114	<3.9	<2.1
PCB 105	18.4	<1.8
PCB 126	<2.8	<3.0
PCB 167	<1.9	<1.8
PCB 156/157	<2.7	<2.7
PCB 169	<2.1	<2.7
PCB 189	<0.74	<2.0
Total Dioxins & Furans Only	<155	<149
Total PCBs Only	<103	<37.5
Total Dioxins & Furans and PCBs	<258	<186

"<" indicates that the amount detected is less than the detection limit
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m³	Test No. 2 pg TEQ/m³	Test No. 3 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.57	<0.84	<0.50	<0.63
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.63	<0.72	<0.47	<0.61
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.12	<0.16	<0.12	<0.13
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.19	0.45	0.28	<0.31
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.11	<0.21	<0.11	<0.14
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.31	0.42	0.30	0.34
Octachlorodibenzo-p-dioxin	0.00030	0.016	0.020	0.016	0.017
2378-tetrachlorodibenzofuran	0.10000	<0.048	<0.070	<0.055	<0.058
12378-pentachlorodibenzofuran	0.03000	<0.023	<0.020	0.028	<0.023
23478-pentachlorodibenzofuran	0.30000	0.39	0.41	<0.23	<0.34
123478-hexachlorodibenzofuran	0.10000	<0.090	<0.11	<0.056	<0.086
123678-hexachlorodibenzofuran	0.10000	<0.090	<0.12	<0.075	<0.096
234678-hexachlorodibenzofuran	0.10000	<0.075	<0.059	0.21	<0.12
123789-hexachlorodibenzofuran	0.10000	<0.085	<0.068	<0.064	<0.072
1234678-heptachlorodibenzofuran	0.01000	0.089	0.094	0.074	0.086
1234789-heptachlorodibenzofuran	0.01000	<0.017	0.022	<0.011	<0.016
Octachlorodibenzofuran	0.00030	0.0022	0.0024	0.0021	0.0022
PCB 81	0.00030	<0.00032	<0.00025	<0.00016	<0.00024
PCB 77	0.00010	0.0031	0.0043	0.00086	0.0028
PCB 123	0.00003	0.00041	0.00016	0.000093	0.00022
PCB 118	0.00003	0.024	0.012	0.0071	0.014
PCB 114	0.00003	0.00055	0.00031	0.00016	0.00034
PCB 105	0.00003	0.0063	0.0036	0.0018	0.0039
PCB 126	0.10000	0.24	0.17	0.087	0.17
PCB 167	0.00003	0.00015	0.00012	0.000062	0.00011
PCB 156/157	0.00003	0.00042	0.00036	0.00015	0.00031
PCB 169	0.03000	0.062	0.022	<0.012	<0.032
PCB 189	0.00003	0.000019	0.000026	0.000012	0.000019
Total Dioxins & Furans Only		<2.85	<3.79	<2.61	<3.09
Total PCBs Only		<0.34	<0.22	<0.11	<0.22
Total Dioxins & Furans and PCBs		<3.19	<4.01	<2.72	<3.31

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.95	<1.43	<0.85	<1.08
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.06	<1.24	<0.81	<1.04
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.20	<0.27	<0.21	<0.23
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.33	0.77	0.48	<0.53
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.18	<0.36	<0.18	<0.24
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.53	0.72	0.50	0.58
Octachlorodibenzo-p-dioxin	0.00030	0.027	0.034	0.026	0.029
2378-tetrachlorodibenzofuran	0.10000	<0.080	<0.12	<0.093	<0.098
12378-pentachlorodibenzofuran	0.03000	<0.038	<0.033	0.047	<0.040
23478-pentachlorodibenzofuran	0.30000	0.66	0.70	<0.39	<0.58
123478-hexachlorodibenzofuran	0.10000	<0.15	<0.19	<0.095	<0.15
123678-hexachlorodibenzofuran	0.10000	<0.15	<0.21	<0.13	<0.16
234678-hexachlorodibenzofuran	0.10000	<0.13	<0.10	0.36	<0.20
123789-hexachlorodibenzofuran	0.10000	<0.14	<0.12	<0.11	<0.12
1234678-heptachlorodibenzofuran	0.01000	0.15	0.16	0.13	0.15
1234789-heptachlorodibenzofuran	0.01000	<0.028	0.037	<0.019	<0.028
Octachlorodibenzofuran	0.00030	0.0037	0.0041	0.0036	0.0038
PCB 81	0.00030	<0.00053	<0.00044	<0.00027	<0.00041
PCB 77	0.00010	0.0052	0.0074	0.0015	0.0047
PCB 123	0.00003	0.00068	0.00027	0.00016	0.00037
PCB 118	0.00003	0.040	0.021	0.012	0.024
PCB 114	0.00003	0.00092	0.00053	0.00027	0.00057
PCB 105	0.00003	0.011	0.0062	0.0030	0.0066
PCB 126	0.10000	0.41	0.30	0.15	0.28
PCB 167	0.00003	0.00026	0.00021	0.00011	0.00019
PCB 156/157	0.00003	0.00071	0.00061	0.00025	0.00052
PCB 169	0.03000	0.10	0.037	<0.020	<0.054
PCB 189	0.00003	0.000032	0.000044	0.000021	0.000033
Total Dioxins & Furans Only		<4.81	<6.50	<4.43	<5.25
Total PCBs Only		<0.57	<0.37	<0.19	<0.38
Total Dioxins & Furans and PCBs		<5.38	<6.87	<4.62	<5.62

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.76	<1.13	<0.65	<0.85
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.85	<0.98	<0.62	<0.82
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.16	<0.22	<0.16	<0.18
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.26	0.61	0.37	<0.41
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.14	<0.28	<0.14	<0.19
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.42	0.56	0.39	0.46
Octachlorodibenzo-p-dioxin	0.00030	0.021	0.027	0.020	0.023
2378-tetrachlorodibenzofuran	0.10000	<0.064	<0.095	<0.072	<0.077
12378-pentachlorodibenzofuran	0.03000	<0.031	<0.026	0.036	<0.031
23478-pentachlorodibenzofuran	0.30000	0.53	0.55	<0.30	<0.46
123478-hexachlorodibenzofuran	0.10000	<0.12	<0.15	<0.073	<0.11
123678-hexachlorodibenzofuran	0.10000	<0.12	<0.17	<0.098	<0.13
234678-hexachlorodibenzofuran	0.10000	<0.10	<0.080	0.28	<0.15
123789-hexachlorodibenzofuran	0.10000	<0.11	<0.091	<0.083	<0.096
1234678-heptachlorodibenzofuran	0.01000	0.12	0.13	0.097	0.11
1234789-heptachlorodibenzofuran	0.01000	<0.022	0.029	<0.014	<0.022
Octachlorodibenzofuran	0.00030	0.0029	0.0033	0.0028	0.0030
PCB 81	0.00030	<0.00043	<0.00034	<0.00021	<0.00033
PCB 77	0.00010	0.0041	0.0059	0.0011	0.0037
PCB 123	0.00003	0.00055	0.00021	0.00012	0.00029
PCB 118	0.00003	0.032	0.017	0.0093	0.019
PCB 114	0.00003	0.00074	0.00042	0.00021	0.00045
PCB 105	0.00003	0.0085	0.0049	0.0023	0.0052
PCB 126	0.10000	0.32	0.23	0.11	0.22
PCB 167	0.00003	0.00021	0.00017	0.000081	0.00015
PCB 156/157	0.00003	0.00057	0.00048	0.00019	0.00041
PCB 169	0.03000	0.083	0.029	<0.016	<0.043
PCB 189	0.00003	0.000026	0.000035	0.000016	0.000026
Total Dioxins & Furans Only		<3.84	<5.13	<3.40	<4.12
Total PCBs Only		<0.45	<0.29	<0.14	<0.30
Total Dioxins & Furans and PCBs		<4.29	<5.42	<3.55	<4.42

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 46A
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	0.38	0.56	0.33	0.42
12378-pentachlorodibenzo-p-dioxin	1.00000	0.42	0.49	0.31	0.41
123478-hexachlorodibenzo-p-dioxin	0.10000	0.080	0.11	0.081	0.090
123678-hexachlorodibenzo-p-dioxin	0.10000	0.13	0.61	0.37	0.37
123789-hexachlorodibenzo-p-dioxin	0.10000	0.071	0.14	0.070	0.094
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.42	0.56	0.39	0.46
Octachlorodibenzo-p-dioxin	0.00030	0.021	0.027	0.020	0.023
2378-tetrachlorodibenzofuran	0.10000	0.032	0.047	0.036	0.038
12378-pentachlorodibenzofuran	0.03000	0.015	0.013	0.036	0.022
23478-pentachlorodibenzofuran	0.30000	0.53	0.55	0.15	0.41
123478-hexachlorodibenzofuran	0.10000	0.061	0.075	0.037	0.057
123678-hexachlorodibenzofuran	0.10000	0.061	0.083	0.049	0.064
234678-hexachlorodibenzofuran	0.10000	0.050	0.040	0.28	0.12
123789-hexachlorodibenzofuran	0.10000	0.057	0.046	0.042	0.048
1234678-heptachlorodibenzofuran	0.01000	0.12	0.13	0.097	0.11
1234789-heptachlorodibenzofuran	0.01000	0.011	0.029	0.0072	0.016
Octachlorodibenzofuran	0.00030	0.0029	0.0033	0.0028	0.0030
PCB 81	0.00030	0.00021	0.00017	0.00011	0.00016
PCB 77	0.00010	0.0041	0.0059	0.0011	0.0037
PCB 123	0.00003	0.00055	0.00021	0.00012	0.00029
PCB 118	0.00003	0.032	0.017	0.0093	0.019
PCB 114	0.00003	0.00074	0.00042	0.00021	0.00045
PCB 105	0.00003	0.0085	0.0049	0.0023	0.0052
PCB 126	0.10000	0.32	0.23	0.11	0.22
PCB 167	0.00003	0.00021	0.00017	0.000081	0.00015
PCB 156/157	0.00003	0.00057	0.00048	0.00019	0.00041
PCB 169	0.03000	0.083	0.029	0.0078	0.040
PCB 189	0.00003	0.000026	0.000035	0.000016	0.000026
Total Dioxins & Furans Only		2.5	3.5	2.3	2.8
Total PCBs Only		0.45	0.29	0.14	0.29
Total Dioxins & Furans and PCBs		2.9	3.8	2.4	3.1

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 46B
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.76	<1.13	<0.65	<0.85
12378-pentachlorodibenzo-p-dioxin	0.500	<0.42	<0.49	<0.31	<0.41
123478-hexachlorodibenzo-p-dioxin	0.100	<0.16	<0.22	<0.16	<0.18
123678-hexachlorodibenzo-p-dioxin	0.100	<0.26	0.61	0.37	<0.41
123789-hexachlorodibenzo-p-dioxin	0.100	<0.14	<0.28	<0.14	<0.19
1234678-heptachlorodibenzo-p-dioxin	0.010	0.42	0.56	0.39	0.46
Octachlorodibenzo-p-dioxin	0.001	0.071	0.090	0.067	0.076
2378-tetrachlorodibenzofuran	0.100	<0.064	<0.095	<0.072	<0.077
12378-pentachlorodibenzofuran	0.050	<0.051	<0.044	0.060	<0.052
23478-pentachlorodibenzofuran	0.500	0.88	0.92	<0.50	<0.77
123478-hexachlorodibenzofuran	0.100	<0.12	<0.15	<0.073	<0.11
123678-hexachlorodibenzofuran	0.100	<0.12	<0.17	<0.098	<0.13
234678-hexachlorodibenzofuran	0.100	<0.10	<0.080	0.28	<0.15
123789-hexachlorodibenzofuran	0.100	<0.11	<0.091	<0.083	<0.096
1234678-heptachlorodibenzofuran	0.010	0.12	0.13	0.097	0.11
1234789-heptachlorodibenzofuran	0.010	<0.022	0.029	<0.014	<0.022
Octachlorodibenzofuran	0.001	0.0098	0.011	0.0093	0.010
Total Dioxins & Furans		<3.84	<5.09	<3.37	<4.10
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.81	<1.20	<0.72	<0.91
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.91	<1.04	<0.68	<0.88
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.17	<0.23	<0.18	<0.19
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.28	0.65	0.41	<0.44
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.15	<0.30	<0.15	<0.20
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.45	0.60	0.43	0.49
Octachlorodibenzo-p-dioxin	0.00030	0.023	0.029	0.022	0.025
2378-tetrachlorodibenzofuran	0.10000	<0.068	<0.10	<0.079	<0.083
12378-pentachlorodibenzofuran	0.03000	<0.033	<0.028	0.040	<0.034
23478-pentachlorodibenzofuran	0.30000	0.57	0.59	<0.33	<0.49
123478-hexachlorodibenzofuran	0.10000	<0.13	<0.16	<0.081	<0.12
123678-hexachlorodibenzofuran	0.10000	<0.13	<0.18	<0.11	<0.14
234678-hexachlorodibenzofuran	0.10000	<0.11	<0.085	0.31	<0.17
123789-hexachlorodibenzofuran	0.10000	<0.12	<0.097	<0.092	<0.10
1234678-heptachlorodibenzofuran	0.01000	0.13	0.14	0.11	0.12
1234789-heptachlorodibenzofuran	0.01000	<0.024	0.031	<0.016	<0.024
Octachlorodibenzofuran	0.00030	0.0031	0.0035	0.0031	0.0032
PCB 81	0.00030	<0.00045	<0.00037	<0.00023	<0.00035
PCB 77	0.00010	0.0044	0.0063	0.0012	0.0040
PCB 123	0.00003	0.00058	0.00023	0.00013	0.00032
PCB 118	0.00003	0.034	0.018	0.010	0.021
PCB 114	0.00003	0.00079	0.00044	0.00023	0.00049
PCB 105	0.00003	0.0090	0.0052	0.0026	0.0056
PCB 126	0.10000	0.35	0.25	0.13	0.24
PCB 167	0.00003	0.00022	0.00018	0.000089	0.00016
PCB 156/157	0.00003	0.00060	0.00051	0.00021	0.00044
PCB 169	0.03000	0.089	0.031	<0.017	<0.046
PCB 189	0.00003	0.000028	0.000037	0.000018	0.000028
Total Dioxins & Furans Only		<4.10	<5.46	<3.75	<4.44
Total PCBs Only		<0.48	<0.31	<0.16	<0.32
Total Dioxins & Furans and PCBs		<4.58	<5.77	<3.91	<4.76

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.014	<0.022	<0.013	<0.016
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.016	<0.019	<0.012	<0.016
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.0030	<0.0042	<0.0032	<0.0034
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.0049	0.012	0.0071	<0.0080
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.0027	<0.0055	<0.0027	<0.0036
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.0079	0.011	0.0075	0.0088
Octachlorodibenzo-p-dioxin	0.00030	0.00040	0.00052	0.00039	0.00044
2378-tetrachlorodibenzofuran	0.10000	<0.0012	<0.0018	<0.0014	<0.0015
12378-pentachlorodibenzofuran	0.03000	<0.00058	<0.00051	0.00070	<0.00060
23478-pentachlorodibenzofuran	0.30000	0.010	0.011	<0.0058	<0.0088
123478-hexachlorodibenzofuran	0.10000	<0.0023	<0.0029	<0.0014	<0.0022
123678-hexachlorodibenzofuran	0.10000	<0.0023	<0.0032	<0.0019	<0.0025
234678-hexachlorodibenzofuran	0.10000	<0.0019	<0.0015	0.0054	<0.0030
123789-hexachlorodibenzofuran	0.10000	<0.0021	<0.0018	<0.0016	<0.0018
1234678-heptachlorodibenzofuran	0.01000	0.0022	0.0025	0.0019	0.0022
1234789-heptachlorodibenzofuran	0.01000	<0.00042	0.00057	<0.00028	<0.00042
Octachlorodibenzofuran	0.00030	0.000055	0.000063	0.000054	0.000058
PCB 81	0.00030	<0.0000080	<0.0000067	<0.0000041	<0.0000062
PCB 77	0.00010	0.000077	0.00011	0.000022	0.000071
PCB 123	0.00003	0.000010	0.0000042	0.0000024	0.0000056
PCB 118	0.00003	0.00060	0.00032	0.00018	0.00037
PCB 114	0.00003	0.000014	0.0000081	0.0000040	0.0000087
PCB 105	0.00003	0.00016	0.000095	0.000045	0.00010
PCB 126	0.10000	0.0061	0.0045	0.0022	0.0043
PCB 167	0.00003	0.0000039	0.0000032	0.0000016	0.0000029
PCB 156/157	0.00003	0.000011	0.0000093	0.0000038	0.0000079
PCB 169	0.03000	0.0016	0.00057	<0.00030	<0.00081
PCB 189	0.00003	0.00000049	0.00000068	0.00000031	0.00000049
Total Dioxins & Furans Only		<0.072	<0.099	<0.066	<0.079
Total PCBs Only		<0.0085	<0.0057	<0.0028	<0.0057
Total Dioxins & Furans and PCBs		<0.081	<0.11	<0.069	<0.085

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg TEQ/m³	pg TEQ/Rm³*	pg TEQ/Rm³**	pg TEQ/Rm³*	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.63	<1.08	<0.85	<0.91	<0.016
12378-pentachlorodibenzo-p-dioxin	<0.61	<1.04	<0.82	<0.88	<0.016
123478-hexachlorodibenzo-p-dioxin	<0.13	<0.23	<0.18	<0.19	<0.0034
123678-hexachlorodibenzo-p-dioxin	<0.31	<0.53	<0.41	<0.44	<0.0080
123789-hexachlorodibenzo-p-dioxin	<0.14	<0.24	<0.19	<0.20	<0.0036
1234678-heptachlorodibenzo-p-dioxin	0.34	0.58	0.46	0.49	0.0088
Octachlorodibenzo-p-dioxin	0.017	0.029	0.023	0.025	0.00044
2378-tetrachlorodibenzofuran	<0.058	<0.098	<0.077	<0.083	<0.0015
12378-pentachlorodibenzofuran	<0.023	<0.040	<0.031	<0.034	<0.00060
23478-pentachlorodibenzofuran	<0.34	<0.58	<0.46	<0.49	<0.0088
123478-hexachlorodibenzofuran	<0.086	<0.15	<0.11	<0.12	<0.0022
123678-hexachlorodibenzofuran	<0.096	<0.16	<0.13	<0.14	<0.0025
234678-hexachlorodibenzofuran	<0.12	<0.20	<0.15	<0.17	<0.0030
123789-hexachlorodibenzofuran	<0.072	<0.12	<0.096	<0.10	<0.0018
1234678-heptachlorodibenzofuran	0.086	0.15	0.11	0.12	0.0022
1234789-heptachlorodibenzofuran	<0.016	<0.028	<0.022	<0.024	<0.00042
Octachlorodibenzofuran	0.0022	0.0038	0.0030	0.0032	0.000058
PCB 81	<0.00024	<0.00041	<0.00033	<0.00035	<0.0000062
PCB 77	0.0028	0.0047	0.0037	0.0040	0.000071
PCB 123	0.00022	0.00037	0.00029	0.00032	0.0000056
PCB 118	0.014	0.024	0.019	0.021	0.00037
PCB 114	0.00034	0.00057	0.00045	0.00049	0.0000087
PCB 105	0.0039	0.0066	0.0052	0.0056	0.00010
PCB 126	0.17	0.28	0.22	0.24	0.0043
PCB 167	0.00011	0.00019	0.00015	0.00016	0.0000029
PCB 156/157	0.00031	0.00052	0.00041	0.00044	0.0000079
PCB 169	<0.032	<0.054	<0.043	<0.046	<0.00081
PCB 189	0.000019	0.000033	0.000026	0.000028	0.00000049
Total Dioxins & Furans Only	<3.09	<5.25	<4.12	<4.44	<0.079
Total PCBs Only	<0.22	<0.38	<0.30	<0.32	<0.0057
Total Dioxins & Furans and PCBs	<3.31	<5.62	<4.42	<4.76	<0.085

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m^3	Dry Reference Concentration pg TEQ/Rm^3*	Dry Adjusted Concentration pg TEQ/Rm^3**	Wet Reference Concentration pg TEQ/Rm^3*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.32	0.54	0.42	0.46	0.0081
12378-pentachlorodibenzo-p-dioxin	0.30	0.52	0.41	0.44	0.0078
123478-hexachlorodibenzo-p-dioxin	0.067	0.11	0.090	0.097	0.0017
123678-hexachlorodibenzo-p-dioxin	0.28	0.47	0.37	0.40	0.0071
123789-hexachlorodibenzo-p-dioxin	0.070	0.12	0.094	0.10	0.0018
1234678-heptachlorodibenzo-p-dioxin	0.34	0.58	0.46	0.49	0.0088
Octachlorodibenzo-p-dioxin	0.017	0.029	0.023	0.025	0.00044
2378-tetrachlorodibenzofuran	0.029	0.049	0.038	0.041	0.00074
12378-pentachlorodibenzofuran	0.016	0.028	0.022	0.023	0.00041
23478-pentachlorodibenzofuran	0.31	0.52	0.41	0.44	0.0079
123478-hexachlorodibenzofuran	0.043	0.073	0.057	0.062	0.0011
123678-hexachlorodibenzofuran	0.048	0.082	0.064	0.069	0.0012
234678-hexachlorodibenzofuran	0.094	0.16	0.12	0.13	0.0024
123789-hexachlorodibenzofuran	0.036	0.061	0.048	0.052	0.00092
1234678-heptachlorodibenzofuran	0.086	0.15	0.11	0.12	0.0022
1234789-heptachlorodibenzofuran	0.012	0.020	0.016	0.017	0.00031
Octachlorodibenzofuran	0.0022	0.0038	0.0030	0.0032	0.000058
PCB 81	0.00012	0.00021	0.00016	0.00018	0.0000031
PCB 77	0.0028	0.0047	0.0037	0.0040	0.000071
PCB 123	0.00022	0.00037	0.00029	0.00032	0.0000056
PCB 118	0.014	0.024	0.019	0.021	0.00037
PCB 114	0.00034	0.00057	0.00045	0.00049	0.0000087
PCB 105	0.0039	0.0066	0.0052	0.0056	0.00010
PCB 126	0.17	0.28	0.22	0.24	0.0043
PCB 167	0.00011	0.00019	0.00015	0.00016	0.0000029
PCB 156/157	0.00031	0.00052	0.00041	0.00044	0.0000079
PCB 169	0.030	0.050	0.040	0.043	0.00076
PCB 189	0.000019	0.000033	0.000026	0.000028	0.00000049
Total Dioxins & Furans Only	2.07	3.52	2.76	2.97	0.053
Total PCBs Only	0.22	0.37	0.29	0.32	0.0056
Total Dioxins & Furans and PCBs	2.29	3.89	3.05	3.29	0.059

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	2100	270	455	363	388	6.83
1,3-Dichlorobenzene	170	21.9	36.9	29.4	31.4	0.55
1,4-Dichlorobenzene	116	14.9	25.2	20.1	21.4	0.38
1,2-Dichlorobenzene	75.4	9.69	16.4	13.0	13.9	0.25
Total Dichlorobenzene	361	46.5	78.4	62.5	66.8	1.18
1,3,5-trichlorobenzene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
1,2,4-trichlorobenzene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
1,2,3-trichlorobenzene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Total Trichlorobenzene	<36.0	<4.63	<7.81	<6.23	<6.65	<0.12
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.54	<2.60	<2.08	<2.22	<0.039
1,2,3,4-tetrachlorobenzene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Total Tetrachlorobenzene	<24.0	<3.09	<5.20	<4.15	<4.44	<0.078
Pentachlorobenzene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Hexachlorobenzene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Total Chlorobenzenes	<2545	<327	<552	<440	<470	<8.28

Dry Gas Volume Sampled (Rm³*) :	4.611
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	3020	371	635	501	534	9.72
1,3-Dichlorobenzene	221	27.1	46.5	36.7	39.1	0.71
1,4-Dichlorobenzene	127	15.6	26.7	21.1	22.5	0.41
1,2-Dichlorobenzene	136	16.7	28.6	22.6	24.0	0.44
Total Dichlorobenzene	484	59.5	102	80.3	85.6	1.56
1,3,5-trichlorobenzene	12.7	1.56	2.67	2.11	2.25	0.041
1,2,4-trichlorobenzene	58.0	7.12	12.2	9.62	10.3	0.19
1,2,3-trichlorobenzene	26.7	3.28	5.62	4.43	4.72	0.086
Total Trichlorobenzene	97.4	12.0	20.5	16.2	17.2	0.31
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.47	<2.52	<1.99	<2.12	<0.039
1,2,3,4-tetrachlorobenzene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Total Tetrachlorobenzene	<24.0	<2.95	<5.05	<3.98	<4.24	<0.077
Pentachlorobenzene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Hexachlorobenzene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Total Chlorobenzenes	<3649	<448	<768	<605	<645	<11.7

Dry Gas Volume Sampled (Rm³*) :	4.754
Actual Flowrate (m³/s) :	26.2
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	19.4
Wet Reference Flowrate (Rm³/s*) :	18.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	2460	307	522	401	442	7.78
1,3-Dichlorobenzene	207	25.9	43.9	33.7	37.2	0.65
1,4-Dichlorobenzene	126	15.7	26.7	20.5	22.6	0.40
1,2-Dichlorobenzene	122	15.2	25.9	19.9	21.9	0.39
Total Dichlorobenzene	455	56.8	96.5	74.1	81.7	1.44
1,3,5-trichlorobenzene	16.4	2.05	3.48	2.67	2.95	0.052
1,2,4-trichlorobenzene	53.4	6.67	11.3	8.70	9.59	0.17
1,2,3-trichlorobenzene	12.9	1.61	2.74	2.10	2.32	0.041
Total Trichlorobenzene	82.7	10.3	17.5	13.5	14.9	0.26
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.50	<2.55	<1.96	<2.16	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Total Tetrachlorobenzene	<24.0	<3.00	<5.09	<3.91	<4.31	<0.076
Pentachlorobenzene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Hexachlorobenzene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Total Chlorobenzenes	<3046	<381	<646	<496	<547	<9.63

Dry Gas Volume Sampled (Rm^3*) :	4.714
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	14.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	270	371	307	316	16.1
1,3-Dichlorobenzene	21.9	27.1	25.9	25.0	11.1
1,4-Dichlorobenzene	14.9	15.6	15.7	15.4	2.9
1,2-Dichlorobenzene	9.69	16.7	15.2	13.9	26.6
Total Dichlorobenzene	46.5	59.5	56.8	54.3	12.7
1,3,5-trichlorobenzene	<1.54	1.56	2.05	<1.72	16.7
1,2,4-trichlorobenzene	<1.54	7.12	6.67	<5.11	60.6
1,2,3-trichlorobenzene	<1.54	3.28	1.61	<2.14	45.9
Total Trichlorobenzene	<4.63	12.0	10.3	<8.98	42.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.54	<1.47	<1.50	<1.51	2.3
1,2,3,4-tetrachlorobenzene	<1.54	<1.47	<1.50	<1.51	2.3
Total Tetrachlorobenzene	<3.09	<2.95	<3.00	<3.01	2.3
Pentachlorobenzene	<1.54	<1.47	<1.50	<1.51	2.3
Hexachlorobenzene	<1.54	<1.47	<1.50	<1.51	2.3
Total Chlorobenzenes	<327	<448	<381	<385	15.7

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	455	635	522	538	16.9
1,3-Dichlorobenzene	36.9	46.5	43.9	42.4	11.7
1,4-Dichlorobenzene	25.2	26.7	26.7	26.2	3.4
1,2-Dichlorobenzene	16.4	28.6	25.9	23.6	27.2
Total Dichlorobenzene	78.4	102	96.5	92.2	13.3
1,3,5-trichlorobenzene	<2.60	2.67	3.48	<2.92	16.7
1,2,4-trichlorobenzene	<2.60	12.2	11.3	<8.71	60.9
1,2,3-trichlorobenzene	<2.60	5.62	2.74	<3.65	46.6
Total Trichlorobenzene	<7.81	20.5	17.5	<15.3	43.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.60	<2.52	<2.55	<2.56	1.6
1,2,3,4-tetrachlorobenzene	<2.60	<2.52	<2.55	<2.56	1.6
Total Tetrachlorobenzene	<5.20	<5.05	<5.09	<5.11	1.6
Pentachlorobenzene	<2.60	<2.52	<2.55	<2.56	1.6
Hexachlorobenzene	<2.60	<2.52	<2.55	<2.56	1.6
Total Chlorobenzenes	<552	<768	<646	<655	16.5

* At 25°C and 1 atmosphere

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	%
Monochlorobenzene	363	501	401	422	16.9
1,3-Dichlorobenzene	29.4	36.7	33.7	33.3	11.0
1,4-Dichlorobenzene	20.1	21.1	20.5	20.6	2.4
1,2-Dichlorobenzene	13.0	22.6	19.9	18.5	26.5
Total Dichlorobenzene	62.5	80.3	74.1	72.3	12.5
1,3,5-trichlorobenzene	<2.08	2.11	2.67	<2.29	14.7
1,2,4-trichlorobenzene	<2.08	9.62	8.70	<6.80	60.5
1,2,3-trichlorobenzene	<2.08	4.43	2.10	<2.87	47.1
Total Trichlorobenzene	<6.23	16.2	13.5	<12.0	43.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.08	<1.99	<1.96	<2.01	3.1
1,2,3,4-tetrachlorobenzene	<2.08	<1.99	<1.96	<2.01	3.1
Total Tetrachlorobenzene	<4.15	<3.98	<3.91	<4.01	3.1
Pentachlorobenzene	<2.08	<1.99	<1.96	<2.01	3.1
Hexachlorobenzene	<2.08	<1.99	<1.96	<2.01	3.1
Total Chlorobenzenes	<440	<605	<496	<514	16.3

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	388	534	442	455	16.2
1,3-Dichlorobenzene	31.4	39.1	37.2	35.9	11.1
1,4-Dichlorobenzene	21.4	22.5	22.6	22.2	2.9
1,2-Dichlorobenzene	13.9	24.0	21.9	20.0	26.7
Total Dichlorobenzene	66.8	85.6	81.7	78.0	12.7
1,3,5-trichlorobenzene	<2.22	2.25	2.95	<2.47	16.7
1,2,4-trichlorobenzene	<2.22	10.3	9.59	<7.35	60.7
1,2,3-trichlorobenzene	<2.22	4.72	2.32	<3.09	45.9
Total Trichlorobenzene	<6.65	17.2	14.9	<12.9	43.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.22	<2.12	<2.16	<2.17	2.3
1,2,3,4-tetrachlorobenzene	<2.22	<2.12	<2.16	<2.17	2.3
Total Tetrachlorobenzene	<4.44	<4.24	<4.31	<4.33	2.3
Pentachlorobenzene	<2.22	<2.12	<2.16	<2.17	2.3
Hexachlorobenzene	<2.22	<2.12	<2.16	<2.17	2.3
Total Chlorobenzenes	<470	<645	<547	<554	15.8

* At 25°C and 1 atmosphere

TABLE 58
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Monochlorobenzene	6.83	9.72	7.78	8.11	18.2
1,3-Dichlorobenzene	0.55	0.71	0.65	0.64	12.5
1,4-Dichlorobenzene	0.38	0.41	0.40	0.39	4.0
1,2-Dichlorobenzene	0.25	0.44	0.39	0.36	27.9
Total Dichlorobenzene	1.18	1.56	1.44	1.39	14.1
1,3,5-trichlorobenzene	<0.039	0.041	0.052	<0.044	15.8
1,2,4-trichlorobenzene	<0.039	0.19	0.17	<0.13	61.3
1,2,3-trichlorobenzene	<0.039	0.086	0.041	<0.055	48.1
Total Trichlorobenzene	<0.12	0.31	0.26	<0.23	44.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.039	<0.039	<0.038	<0.039	1.5
1,2,3,4-tetrachlorobenzene	<0.039	<0.039	<0.038	<0.039	1.5
Total Tetrachlorobenzene	<0.078	<0.077	<0.076	<0.077	1.5
Pentachlorobenzene	<0.039	<0.039	<0.038	<0.039	1.5
Hexachlorobenzene	<0.039	<0.039	<0.038	<0.039	1.5
Total Chlorobenzenes	<8.28	<11.7	<9.63	<9.88	17.7

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	316	538	422	455	8.11
1,3-Dichlorobenzene	25.0	42.4	33.3	35.9	0.64
1,4-Dichlorobenzene	15.4	26.2	20.6	22.2	0.39
1,2-Dichlorobenzene	13.9	23.6	18.5	20.0	0.36
Total Dichlorobenzene	54.3	92.2	72.3	78.0	1.39
1,3,5-trichlorobenzene	<1.72	<2.92	<2.29	<2.47	<0.044
1,2,4-trichlorobenzene	<5.11	<8.71	<6.80	<7.35	<0.13
1,2,3-trichlorobenzene	<2.14	<3.65	<2.87	<3.09	<0.055
Total Trichlorobenzene	<8.98	<15.3	<12.0	<12.9	<0.23
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.51	<2.56	<2.01	<2.17	<0.039
1,2,3,4-tetrachlorobenzene	<1.51	<2.56	<2.01	<2.17	<0.039
Total Tetrachlorobenzene	<3.01	<5.11	<4.01	<4.33	<0.077
Pentachlorobenzene	<1.51	<2.56	<2.01	<2.17	<0.039
Hexachlorobenzene	<1.51	<2.56	<2.01	<2.17	<0.039
Total Chlorobenzenes	<385	<655	<514	<554	<9.88

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Laboratory Blank Total ng
Monochlorobenzene	NQ	<12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	<12	<12
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<36.0	<36.0
1,3,5-trichlorobenzene	<12	<12
1,2,4-trichlorobenzene	<12	<12
1,2,3-trichlorobenzene	<12	<12
Total Trichlorobenzene	<36.0	<36.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<12
1,2,3,4-tetrachlorobenzene	<12	<12
Total Tetrachlorobenzene	<24.0	<24.0
Pentachlorobenzene	<12	<12
Hexachlorobenzene	<12	<12
Total Chlorobenzenes	<120	<132

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
3-monochlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
4-monochlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
Total Monochlorophenols	<180	<23.1	<39.0	<31.1	<33.3	<0.59
2,6-dichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
2,4 & 2,5-dichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
3,5-dichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
2,3-dichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
3,4-dichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
Total Dichlorophenols	<300	<38.6	<65.1	<51.9	<55.5	<0.98
2,4,6-trichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
2,3,6-trichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
2,3,5-trichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
2,4,5-trichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
2,3,4-trichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
3,4,5-trichlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
Total Trichlorophenols	<360	<46.3	<78.1	<62.3	<66.5	<1.17
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
2,3,4,5-tetrachlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
Total Tetrachlorophenols	<120	<15.4	<26.0	<20.8	<22.2	<0.39
Pentachlorophenol	<60	<7.71	<13.0	<10.4	<11.1	<0.20
Total Chlorophenols	<1020	<131	<221	<176	<189	<3.32

Dry Gas Volume Sampled (Rm^3*) :	4.611
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 62
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
3-monochlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
4-monochlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
Total Monochlorophenols	<180	<22.1	<37.9	<29.9	<31.8	<0.58
2,6-dichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
3,5-dichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
2,3-dichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
3,4-dichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
Total Dichlorophenols	<300	<36.9	<63.1	<49.8	<53.0	<0.97
2,4,6-trichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
2,3,6-trichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
2,3,5-trichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
2,4,5-trichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
2,3,4-trichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
3,4,5-trichlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
Total Trichlorophenols	<360	<44.2	<75.7	<59.7	<63.7	<1.16
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
Total Tetrachlorophenols	<120	<14.7	<25.2	<19.9	<21.2	<0.39
Pentachlorophenol	<60	<7.37	<12.6	<9.95	<10.6	<0.19
Total Chlorophenols	<1020	<125	<215	<169	<180	<3.28

Dry Gas Volume Sampled (Rm^3*) :	4.754
Actual Flowrate (m^3/s) :	26.2
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 63
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
3-monochlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
4-monochlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
Total Monochlorophenols	<180	<22.5	<38.2	<29.3	<32.3	<0.57
2,6-dichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
3,5-dichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
2,3-dichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
3,4-dichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
Total Dichlorophenols	<300	<37.5	<63.6	<48.9	<53.9	<0.95
2,4,6-trichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
2,3,6-trichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
2,3,5-trichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
2,4,5-trichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
2,3,4-trichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
3,4,5-trichlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
Total Trichlorophenols	<360	<45.0	<76.4	<58.7	<64.7	<1.14
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
Total Tetrachlorophenols	<120	<15.0	<25.5	<19.6	<21.6	<0.38
Pentachlorophenol	<60	<7.50	<12.7	<9.78	<10.8	<0.19
Total Chlorophenols	<1020	<127	<216	<166	<183	<3.22

Dry Gas Volume Sampled (Rm^3*) :	4.714
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	14.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 64
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
3-monochlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
4-monochlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
Total Monochlorophenols	<23.1	<22.1	<22.5	<22.6	2.3
2,6-dichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
2,4 & 2,5-dichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
3,5-dichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
2,3-dichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
3,4-dichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
Total Dichlorophenols	<38.6	<36.9	<37.5	<37.6	2.3
2,4,6-trichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
2,3,6-trichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
2,3,5-trichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
2,4,5-trichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
2,3,4-trichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
3,4,5-trichlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
Total Trichlorophenols	<46.3	<44.2	<45.0	<45.2	2.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
2,3,4,5-tetrachlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
Total Tetrachlorophenols	<15.4	<14.7	<15.0	<15.1	2.3
Pentachlorophenol	<7.71	<7.37	<7.50	<7.53	2.3
Total Chlorophenols	<131	<125	<127	<128	2.3

TABLE 65
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
3-monochlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
4-monochlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
Total Monochlorophenols	<39.0	<37.9	<38.2	<38.4	1.6
2,6-dichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
2,4 & 2,5-dichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
3,5-dichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
2,3-dichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
3,4-dichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
Total Dichlorophenols	<65.1	<63.1	<63.6	<63.9	1.6
2,4,6-trichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
2,3,6-trichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
2,3,5-trichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
2,4,5-trichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
2,3,4-trichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
3,4,5-trichlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
Total Trichlorophenols	<78.1	<75.7	<76.4	<76.7	1.6
2,3,5,6/2,3,4,6-tetrachlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
2,3,4,5-tetrachlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
Total Tetrachlorophenols	<26.0	<25.2	<25.5	<25.6	1.6
Pentachlorophenol	<13.0	<12.6	<12.7	<12.8	1.6
Total Chlorophenols	<221	<215	<216	<217	1.6

* At 25°C and 1 atmosphere

TABLE 66
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
3-monochlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
4-monochlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
Total Monochlorophenols	<31.1	<29.9	<29.3	<30.1	3.1
2,6-dichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
2,4 & 2,5-dichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
3,5-dichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
2,3-dichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
3,4-dichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
Total Dichlorophenols	<51.9	<49.8	<48.9	<50.2	3.1
2,4,6-trichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
2,3,6-trichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
2,3,5-trichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
2,4,5-trichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
2,3,4-trichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
3,4,5-trichlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
Total Trichlorophenols	<62.3	<59.7	<58.7	<60.2	3.1
2,3,5,6/2,3,4,6-tetrachlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
2,3,4,5-tetrachlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
Total Tetrachlorophenols	<20.8	<19.9	<19.6	<20.1	3.1
Pentachlorophenol	<10.4	<9.95	<9.78	<10.0	3.1
Total Chlorophenols	<176	<169	<166	<171	3.1

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 67
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
3-monochlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
4-monochlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
Total Monochlorophenols	<33.3	<31.8	<32.3	<32.5	2.3
2,6-dichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
2,4 & 2,5-dichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
3,5-dichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
2,3-dichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
3,4-dichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
Total Dichlorophenols	<55.5	<53.0	<53.9	<54.1	2.3
2,4,6-trichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
2,3,6-trichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
2,3,5-trichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
2,4,5-trichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
2,3,4-trichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
3,4,5-trichlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
Total Trichlorophenols	<66.5	<63.7	<64.7	<65.0	2.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
2,3,4,5-tetrachlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
Total Tetrachlorophenols	<22.2	<21.2	<21.6	<21.7	2.3
Pentachlorophenol	<11.1	<10.6	<10.8	<10.8	2.3
Total Chlorophenols	<189	<180	<183	<184	2.3

* At 25°C and 1 atmosphere

TABLE 68
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
2-monochlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
3-monochlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
4-monochlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
Total Monochlorophenols	<0.59	<0.58	<0.57	<0.58	1.5
2,6-dichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
2,4 & 2,5-dichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
3,5-dichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
2,3-dichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
3,4-dichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
Total Dichlorophenols	<0.98	<0.97	<0.95	<0.96	1.5
2,4,6-trichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
2,3,6-trichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
2,3,5-trichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
2,4,5-trichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
2,3,4-trichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
3,4,5-trichlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
Total Trichlorophenols	<1.17	<1.16	<1.14	<1.16	1.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
2,3,4,5-tetrachlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
Total Tetrachlorophenols	<0.39	<0.39	<0.38	<0.39	1.5
Pentachlorophenol	<0.20	<0.19	<0.19	<0.19	1.5
Total Chlorophenols	<3.32	<3.28	<3.22	<3.27	1.5

TABLE 69
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
3-monochlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
4-monochlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
Total Monochlorophenols	<22.6	<38.4	<30.1	<32.5	<0.58
2,6-dichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
2,4 & 2,5-dichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
3,5-dichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
2,3-dichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
3,4-dichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
Total Dichlorophenols	<37.6	<63.9	<50.2	<54.1	<0.96
2,4,6-trichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
2,3,6-trichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
2,3,5-trichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
2,4,5-trichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
2,3,4-trichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
3,4,5-trichlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
Total Trichlorophenols	<45.2	<76.7	<60.2	<65.0	<1.16
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
2,3,4,5-tetrachlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
Total Tetrachlorophenols	<15.1	<25.6	<20.1	<21.7	<0.39
Pentachlorophenol	<7.53	<12.8	<10.0	<10.8	<0.19
Total Chlorophenols	<128	<217	<171	<184	<3.27

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 70
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Lab Blank Total ng	Blank Train Total ng
2-monochlorophenol	<60	<60
3-monochlorophenol	<60	<60
4-monochlorophenol	<60	<60
Total Monochlorophenols	<180	<180
2,6-dichlorophenol	<60	<60
2,4 & 2,5-dichlorophenol	<60	<60
3,5-dichlorophenol	<60	<60
2,3-dichlorophenol	<60	<60
3,4-dichlorophenol	<60	<60
Total Dichlorophenols	<300	<300
2,4,6-trichlorophenol	<60	<60
2,3,6-trichlorophenol	<60	<60
2,3,5-trichlorophenol	<60	<60
2,4,5-trichlorophenol	<60	<60
2,3,4-trichlorophenol	<60	<60
3,4,5-trichlorophenol	<60	<60
Total Trichlorophenols	<360	<360
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<60
2,3,4,5-tetrachlorophenol	<60	<60
Total Tetrachlorophenols	<120	<120
Pentachlorophenol	<60	<60
Total Chlorophenols	<1020	<1020

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 71
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Acenaphthylene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Anthracene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Benzo(a)Anthracene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Benzo(b)Fluoranthene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Benzo(k)Fluoranthene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Benzo(a)fluorene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Benzo(b)fluorene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Benzo(g,h,i)Perylene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Benzo(a)Pyrene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Benzo(e)Pyrene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Biphenyl	92.8	11.9	20.1	16.1	17.2	0.30
2-Chloronaphthalene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Chrysene/Triphenylene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Coronene	<60	<7.71	<13.0	<10.4	<11.1	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Dibenzo(a,e)pyrene	<60	<7.71	<13.0	<10.4	<11.1	<0.20
9,10-dimethylanthracene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Fluoranthene	45.5	5.85	9.87	7.87	8.41	0.15
Fluorene	18.3	2.35	3.97	3.17	3.38	0.060
Indeno(1,2,3-cd)Pyrene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
2-methylanthracene	92.5	11.9	20.1	16.0	17.1	0.30
3-Methylcholanthrene	<60	<7.71	<13.0	<10.4	<11.1	<0.20
1-Methylnaphthalene	26.3	3.38	5.70	4.55	4.86	0.086
2-Methylnaphthalene	28.7	3.69	6.22	4.97	5.30	0.093
1-Methylphenanthrene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
9-Methylphenanthrene	42.1	5.41	9.13	7.28	7.78	0.14
Naphthalene	124	15.9	26.9	21.5	22.9	0.40
Perylene	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Phenanthrene	317	40.8	68.7	54.9	58.6	1.03
Picene	<60	<7.71	<13.0	<10.4	<11.1	<0.20
Pyrene	36.8	4.73	7.98	6.37	6.80	0.12
Tetralin	138	17.7	29.9	23.9	25.5	0.45
m-terphenyl	12.1	1.56	2.62	2.09	2.24	0.039
o-Terphenyl	<12	<1.54	<2.60	<2.08	<2.22	<0.039
p-terphenyl	<12	<1.54	<2.60	<2.08	<2.22	<0.039
Total	<1466	<189	<318	<254	<271	<4.77

Dry Gas Volume Sampled (Rm^3*) :	4.611
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 72
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 2

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Acenaphthylene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Anthracene	12.1	1.49	2.55	2.01	2.14	0.039
Benzo(a)Anthracene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Benzo(b)Fluoranthene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Benzo(k)Fluoranthene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Benzo(a)fluorene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Benzo(b)fluorene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Benzo(g,h,i)Perylene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Benzo(a)Pyrene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Benzo(e)Pyrene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Biphenyl	36.1	4.43	7.59	5.99	6.38	0.12
2-Chloronaphthalene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Chrysene/Triphenylene	16.0	1.97	3.37	2.65	2.83	0.051
Coronene	<60	<7.37	<12.6	<9.95	<10.6	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Dibenzo(a,e)pyrene	<60	<7.37	<12.6	<9.95	<10.6	<0.19
9,10-dimethylanthracene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Fluoranthene	45.4	5.58	9.55	7.53	8.03	0.15
Fluorene	29.2	3.59	6.14	4.84	5.16	0.094
Indeno(1,2,3-cd)Pyrene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
2-methylanthracene	74.8	9.19	15.7	12.4	13.2	0.24
3-Methylcholanthrene	<60	<7.37	<12.6	<9.95	<10.6	<0.19
1-Methylnaphthalene	31.8	3.91	6.69	5.28	5.62	0.10
2-Methylnaphthalene	46.5	5.71	9.78	7.71	8.22	0.15
1-Methylphenanthrene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
9-Methylphenanthrene	34.0	4.18	7.15	5.64	6.01	0.11
Naphthalene	111	13.6	23.3	18.4	19.6	0.36
Perylene	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Phenanthrene	344	42.3	72.4	57.1	60.8	1.11
Picene	<60	<7.37	<12.6	<9.95	<10.6	<0.19
Pyrene	39.1	4.80	8.22	6.49	6.91	0.13
Tetralin	154	18.9	32.4	25.5	27.2	0.50
m-terphenyl	<12	<1.47	<2.52	<1.99	<2.12	<0.039
o-Terphenyl	<12	<1.47	<2.52	<1.99	<2.12	<0.039
p-terphenyl	<12	<1.47	<2.52	<1.99	<2.12	<0.039
Total	<1454	<179	<306	<241	<257	<4.68

Dry Gas Volume Sampled (Rm^3*) :	4.754
Actual Flowrate (m^3/s) :	26.2
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 73
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Acenaphthylene	29.9	3.74	6.34	4.87	5.37	0.095
Anthracene	13.3	1.66	2.82	2.17	2.39	0.042
Benzo(a)Anthracene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Benzo(b)Fluoranthene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Benzo(k)Fluoranthene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Benzo(a)fluorene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Benzo(b)fluorene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Benzo(g,h,i)Perylene	27.4	3.42	5.81	4.46	4.92	0.087
Benzo(a)Pyrene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Benzo(e)Pyrene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Biphenyl	366	45.7	77.6	59.6	65.7	1.16
2-Chloronaphthalene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Chrysene/Triphenylene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Coronene	<60	<7.50	<12.7	<9.78	<10.8	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Dibenzo(a,e)pyrene	<60	<7.50	<12.7	<9.78	<10.8	<0.19
9,10-dimethylanthracene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Fluoranthene	43.7	5.46	9.27	7.12	7.85	0.14
Fluorene	15.5	1.94	3.29	2.53	2.78	0.049
Indeno(1,2,3-cd)Pyrene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
2-methylanthracene	28.2	3.52	5.98	4.59	5.06	0.089
3-Methylcholanthrene	<60	<7.50	<12.7	<9.78	<10.8	<0.19
1-Methylnaphthalene	45.5	5.68	9.65	7.41	8.17	0.14
2-Methylnaphthalene	103	12.9	21.8	16.8	18.5	0.33
1-Methylphenanthrene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
9-Methylphenanthrene	14.8	1.85	3.14	2.41	2.66	0.047
Naphthalene	240	30.0	50.9	39.1	43.1	0.76
Perylene	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Phenanthrene	204	25.5	43.3	33.2	36.6	0.64
Picene	<60	<7.50	<12.7	<9.78	<10.8	<0.19
Pyrene	44.3	5.53	9.40	7.22	7.96	0.14
Tetralin	109	13.6	23.1	17.8	19.6	0.34
m-terphenyl	<12	<1.50	<2.55	<1.96	<2.16	<0.038
o-Terphenyl	<12	<1.50	<2.55	<1.96	<2.16	<0.038
p-terphenyl	<12	<1.50	<2.55	<1.96	<2.16	<0.038
Total	<1753	<219	<372	<286	<315	<5.54

Dry Gas Volume Sampled (Rm^3*) :	4.714
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	14.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 74
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<1.54	<1.47	<1.50	<1.51	2.3
Acenaphthylene	<1.54	<1.47	3.74	<2.25	57.1
Anthracene	<1.54	1.49	1.66	<1.56	5.7
Benzo(a)Anthracene	<1.54	<1.47	<1.50	<1.51	2.3
Benzo(b)Fluoranthene	<1.54	<1.47	<1.50	<1.51	2.3
Benzo(k)Fluoranthene	<1.54	<1.47	<1.50	<1.51	2.3
Benzo(a)fluorene	<1.54	<1.47	<1.50	<1.51	2.3
Benzo(b)fluorene	<1.54	<1.47	<1.50	<1.51	2.3
Benzo(g,h,i)Perylene	<1.54	<1.47	3.42	<2.15	51.5
Benzo(a)Pyrene	<1.54	<1.47	<1.50	<1.51	2.3
Benzo(e)Pyrene	<1.54	<1.47	<1.50	<1.51	2.3
Biphenyl	11.9	4.43	45.7	20.7	106
2-Chloronaphthalene	<1.54	<1.47	<1.50	<1.51	2.3
Chrysene/Triphenylene	<1.54	1.97	<1.50	<1.67	15.4
Coronene	<7.71	<7.37	<7.50	<7.53	2.3
Dibenzo(a,c/a,h)Anthracene	<1.54	<1.47	<1.50	<1.51	2.3
Dibenzo(a,e)pyrene	<7.71	<7.37	<7.50	<7.53	2.3
9,10-dimethylanthracene	<1.54	<1.47	<1.50	<1.51	2.3
7,12-Dimethylbenzo(a)anthracene	<1.54	<1.47	<1.50	<1.51	2.3
Fluoranthene	5.85	5.58	5.46	5.63	3.6
Fluorene	2.35	3.59	1.94	2.63	32.7
Indeno(1,2,3-cd)Pyrene	<1.54	<1.47	<1.50	<1.51	2.3
2-methylanthracene	11.9	9.19	3.52	8.20	52.1
3-Methylcholanthrene	<7.71	<7.37	<7.50	<7.53	2.3
1-Methylnaphthalene	3.38	3.91	5.68	4.32	27.9
2-Methylnaphthalene	3.69	5.71	12.9	7.42	65.0
1-Methylphenanthrene	<1.54	<1.47	<1.50	<1.51	2.3
9-Methylphenanthrene	5.41	4.18	1.85	3.81	47.5
Naphthalene	15.9	13.6	30.0	19.9	44.6
Perylene	<1.54	<1.47	<1.50	<1.51	2.3
Phenanthrene	40.8	42.3	25.5	36.2	25.7
Picene	<7.71	<7.37	<7.50	<7.53	2.3
Pyrene	4.73	4.80	5.53	5.02	8.8
Tetralin	17.7	18.9	13.6	16.8	16.6
m-terphenyl	1.56	<1.47	<1.50	<1.51	2.8
o-Terphenyl	<1.54	<1.47	<1.50	<1.51	2.3
p-terphenyl	<1.54	<1.47	<1.50	<1.51	2.3
Total	<189	<179	<219	<195	10.8

TABLE 75
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.60	<2.52	<2.55	<2.56	1.6
Acenaphthylene	<2.60	<2.52	6.34	<3.82	57.1
Anthracene	<2.60	2.55	2.82	<2.66	5.5
Benzo(a)Anthracene	<2.60	<2.52	<2.55	<2.56	1.6
Benzo(b)Fluoranthene	<2.60	<2.52	<2.55	<2.56	1.6
Benzo(k)Fluoranthene	<2.60	<2.52	<2.55	<2.56	1.6
Benzo(a)fluorene	<2.60	<2.52	<2.55	<2.56	1.6
Benzo(b)fluorene	<2.60	<2.52	<2.55	<2.56	1.6
Benzo(g,h,i)Perylene	<2.60	<2.52	5.81	<3.65	51.5
Benzo(a)Pyrene	<2.60	<2.52	<2.55	<2.56	1.6
Benzo(e)Pyrene	<2.60	<2.52	<2.55	<2.56	1.6
Biphenyl	20.1	7.59	77.6	35.1	106
2-Chloronaphthalene	<2.60	<2.52	<2.55	<2.56	1.6
Chrysene/Triphenylene	<2.60	3.37	<2.55	<2.84	16.1
Coronene	<13.0	<12.6	<12.7	<12.8	1.6
Dibenzo(a,c/a,h)Anthracene	<2.60	<2.52	<2.55	<2.56	1.6
Dibenzo(a,e)pyrene	<13.0	<12.6	<12.7	<12.8	1.6
9,10-dimethylanthracene	<2.60	<2.52	<2.55	<2.56	1.6
7,12-Dimethylbenzo(a)anthracene	<2.60	<2.52	<2.55	<2.56	1.6
Fluoranthene	9.87	9.55	9.27	9.56	3.1
Fluorene	3.97	6.14	3.29	4.47	33.4
Indeno(1,2,3-cd)Pyrene	<2.60	<2.52	<2.55	<2.56	1.6
2-methylanthracene	20.1	15.7	5.98	13.9	51.8
3-Methylcholanthrene	<13.0	<12.6	<12.7	<12.8	1.6
1-Methylnaphthalene	5.70	6.69	9.65	7.35	28.0
2-Methylnaphthalene	6.22	9.78	21.8	12.6	64.9
1-Methylphenanthrene	<2.60	<2.52	<2.55	<2.56	1.6
9-Methylphenanthrene	9.13	7.15	3.14	6.47	47.1
Naphthalene	26.9	23.3	50.9	33.7	44.5
Perylene	<2.60	<2.52	<2.55	<2.56	1.6
Phenanthrene	68.7	72.4	43.3	61.5	25.8
Picene	<13.0	<12.6	<12.7	<12.8	1.6
Pyrene	7.98	8.22	9.40	8.53	8.9
Tetralin	29.9	32.4	23.1	28.5	16.9
m-terphenyl	2.62	<2.52	<2.55	<2.56	2.1
o-Terphenyl	<2.60	<2.52	<2.55	<2.56	1.6
p-terphenyl	<2.60	<2.52	<2.55	<2.56	1.6
Total	<318	<306	<372	<332	10.6

* At 25°C and 1 atmosphere

TABLE 76
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.08	<1.99	<1.96	<2.01	3.1
Acenaphthylene	<2.08	<1.99	4.87	<2.98	55.0
Anthracene	<2.08	2.01	2.17	<2.08	3.8
Benzo(a)Anthracene	<2.08	<1.99	<1.96	<2.01	3.1
Benzo(b)Fluoranthene	<2.08	<1.99	<1.96	<2.01	3.1
Benzo(k)Fluoranthene	<2.08	<1.99	<1.96	<2.01	3.1
Benzo(a)fluorene	<2.08	<1.99	<1.96	<2.01	3.1
Benzo(b)fluorene	<2.08	<1.99	<1.96	<2.01	3.1
Benzo(g,h,i)Perylene	<2.08	<1.99	4.46	<2.84	49.4
Benzo(a)Pyrene	<2.08	<1.99	<1.96	<2.01	3.1
Benzo(e)Pyrene	<2.08	<1.99	<1.96	<2.01	3.1
Biphenyl	16.1	5.99	59.6	27.2	105
2-Chloronaphthalene	<2.08	<1.99	<1.96	<2.01	3.1
Chrysene/Triphenylene	<2.08	2.65	<1.96	<2.23	16.8
Coronene	<10.4	<9.95	<9.78	<10.0	3.1
Dibenzo(a,c/a,h)Anthracene	<2.08	<1.99	<1.96	<2.01	3.1
Dibenzo(a,e)pyrene	<10.4	<9.95	<9.78	<10.0	3.1
9,10-dimethylanthracene	<2.08	<1.99	<1.96	<2.01	3.1
7,12-Dimethylbenzo(a)anthracene	<2.08	<1.99	<1.96	<2.01	3.1
Fluoranthene	7.87	7.53	7.12	7.51	5.0
Fluorene	3.17	4.84	2.53	3.51	34.1
Indeno(1,2,3-cd)Pyrene	<2.08	<1.99	<1.96	<2.01	3.1
2-methylanthracene	16.0	12.4	4.59	11.0	53.0
3-Methylcholanthrene	<10.4	<9.95	<9.78	<10.0	3.1
1-Methylnaphthalene	4.55	5.28	7.41	5.75	25.9
2-Methylnaphthalene	4.97	7.71	16.8	9.82	63.0
1-Methylphenanthrene	<2.08	<1.99	<1.96	<2.01	3.1
9-Methylphenanthrene	7.28	5.64	2.41	5.11	48.5
Naphthalene	21.5	18.4	39.1	26.3	42.4
Perylene	<2.08	<1.99	<1.96	<2.01	3.1
Phenanthrene	54.9	57.1	33.2	48.4	27.2
Picene	<10.4	<9.95	<9.78	<10.0	3.1
Pyrene	6.37	6.49	7.22	6.69	6.9
Tetralin	23.9	25.5	17.8	22.4	18.3
m-terphenyl	2.09	<1.99	<1.96	<2.01	3.6
o-Terphenyl	<2.08	<1.99	<1.96	<2.01	3.1
p-terphenyl	<2.08	<1.99	<1.96	<2.01	3.1
Total	<254	<241	<286	<260	8.8

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 77
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.22	<2.12	<2.16	<2.17	2.3
Acenaphthylene	<2.22	<2.12	5.37	<3.24	57.1
Anthracene	<2.22	2.14	2.39	<2.25	5.7
Benzo(a)Anthracene	<2.22	<2.12	<2.16	<2.17	2.3
Benzo(b)Fluoranthene	<2.22	<2.12	<2.16	<2.17	2.3
Benzo(k)Fluoranthene	<2.22	<2.12	<2.16	<2.17	2.3
Benzo(a)fluorene	<2.22	<2.12	<2.16	<2.17	2.3
Benzo(b)fluorene	<2.22	<2.12	<2.16	<2.17	2.3
Benzo(g,h,i)Perylene	<2.22	<2.12	4.92	<3.09	51.5
Benzo(a)Pyrene	<2.22	<2.12	<2.16	<2.17	2.3
Benzo(e)Pyrene	<2.22	<2.12	<2.16	<2.17	2.3
Biphenyl	17.2	6.38	65.7	29.8	106
2-Chloronaphthalene	<2.22	<2.12	<2.16	<2.17	2.3
Chrysene/Triphenylene	<2.22	2.83	<2.16	<2.40	15.5
Coronene	<11.1	<10.6	<10.8	<10.8	2.3
Dibenzo(a,c/a,h)Anthracene	<2.22	<2.12	<2.16	<2.17	2.3
Dibenzo(a,e)pyrene	<11.1	<10.6	<10.8	<10.8	2.3
9,10-dimethylanthracene	<2.22	<2.12	<2.16	<2.17	2.3
7,12-Dimethylbenzo(a)anthracene	<2.22	<2.12	<2.16	<2.17	2.3
Fluoranthene	8.41	8.03	7.85	8.10	3.5
Fluorene	3.38	5.16	2.78	3.78	32.8
Indeno(1,2,3-cd)Pyrene	<2.22	<2.12	<2.16	<2.17	2.3
2-methylanthracene	17.1	13.2	5.06	11.8	52.1
3-Methylcholanthrene	<11.1	<10.6	<10.8	<10.8	2.3
1-Methylnaphthalene	4.86	5.62	8.17	6.22	27.9
2-Methylnaphthalene	5.30	8.22	18.5	10.7	64.9
1-Methylphenanthrene	<2.22	<2.12	<2.16	<2.17	2.3
9-Methylphenanthrene	7.78	6.01	2.66	5.48	47.5
Naphthalene	22.9	19.6	43.1	28.5	44.5
Perylene	<2.22	<2.12	<2.16	<2.17	2.3
Phenanthrene	58.6	60.8	36.6	52.0	25.7
Picene	<11.1	<10.6	<10.8	<10.8	2.3
Pyrene	6.80	6.91	7.96	7.22	8.8
Tetralin	25.5	27.2	19.6	24.1	16.7
m-terphenyl	2.24	<2.12	<2.16	<2.17	2.7
o-Terphenyl	<2.22	<2.12	<2.16	<2.17	2.3
p-terphenyl	<2.22	<2.12	<2.16	<2.17	2.3
Total	<271	<257	<315	<281	10.7

* At 25°C and 1 atmosphere

TABLE 78
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
Acenaphthene	<0.039	<0.039	<0.038	<0.039	1.5
Acenaphthylene	<0.039	<0.039	0.095	<0.057	56.0
Anthracene	<0.039	0.039	0.042	<0.040	4.4
Benzo(a)Anthracene	<0.039	<0.039	<0.038	<0.039	1.5
Benzo(b)Fluoranthene	<0.039	<0.039	<0.038	<0.039	1.5
Benzo(k)Fluoranthene	<0.039	<0.039	<0.038	<0.039	1.5
Benzo(a)fluorene	<0.039	<0.039	<0.038	<0.039	1.5
Benzo(b)fluorene	<0.039	<0.039	<0.038	<0.039	1.5
Benzo(g,h,i)Perylene	<0.039	<0.039	0.087	<0.055	50.4
Benzo(a)Pyrene	<0.039	<0.039	<0.038	<0.039	1.5
Benzo(e)Pyrene	<0.039	<0.039	<0.038	<0.039	1.5
Biphenyl	0.30	0.12	1.16	0.52	106
2-Chloronaphthalene	<0.039	<0.039	<0.038	<0.039	1.5
Chrysene/Triphenylene	<0.039	0.051	<0.038	<0.043	17.6
Coronene	<0.20	<0.19	<0.19	<0.19	1.5
Dibenzo(a,c/a,h)Anthracene	<0.039	<0.039	<0.038	<0.039	1.5
Dibenzo(a,e)pyrene	<0.20	<0.19	<0.19	<0.19	1.5
9,10-dimethylanthracene	<0.039	<0.039	<0.038	<0.039	1.5
7,12-Dimethylbenzo(a)anthracene	<0.039	<0.039	<0.038	<0.039	1.5
Fluoranthene	0.15	0.15	0.14	0.14	3.6
Fluorene	0.060	0.094	0.049	0.067	34.9
Indeno(1,2,3-cd)Pyrene	<0.039	<0.039	<0.038	<0.039	1.5
2-methylanthracene	0.30	0.24	0.089	0.21	51.9
3-Methylcholanthrene	<0.20	<0.19	<0.19	<0.19	1.5
1-Methylnaphthalene	0.086	0.10	0.14	0.11	27.1
2-Methylnaphthalene	0.093	0.15	0.33	0.19	63.9
1-Methylphenanthrene	<0.039	<0.039	<0.038	<0.039	1.5
9-Methylphenanthrene	0.14	0.11	0.047	0.098	47.3
Naphthalene	0.40	0.36	0.76	0.51	43.4
Perylene	<0.039	<0.039	<0.038	<0.039	1.5
Phenanthrene	1.03	1.11	0.64	0.93	26.7
Picene	<0.20	<0.19	<0.19	<0.19	1.5
Pyrene	0.12	0.13	0.14	0.13	8.1
Tetralin	0.45	0.50	0.34	0.43	18.0
m-terphenyl	0.039	<0.039	<0.038	<0.039	1.9
o-Terphenyl	<0.039	<0.039	<0.038	<0.039	1.5
p-terphenyl	<0.039	<0.039	<0.038	<0.039	1.5
Total	<4.77	<4.68	<5.54	<5.00	9.5

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<1.51	<2.56	<2.01	<2.17	<0.039
Acenaphthylene	<2.25	<3.82	<2.98	<3.24	<0.057
Anthracene	<1.56	<2.66	<2.08	<2.25	<0.040
Benzo(a)Anthracene	<1.51	<2.56	<2.01	<2.17	<0.039
Benzo(b)Fluoranthene	<1.51	<2.56	<2.01	<2.17	<0.039
Benzo(k)Fluoranthene	<1.51	<2.56	<2.01	<2.17	<0.039
Benzo(a)fluorene	<1.51	<2.56	<2.01	<2.17	<0.039
Benzo(b)fluorene	<1.51	<2.56	<2.01	<2.17	<0.039
Benzo(g,h,i)Perylene	<2.15	<3.65	<2.84	<3.09	<0.055
Benzo(a)Pyrene	<1.51	<2.56	<2.01	<2.17	<0.039
Benzo(e)Pyrene	<1.51	<2.56	<2.01	<2.17	<0.039
Biphenyl	20.7	35.1	27.2	29.8	0.52
2-Chloronaphthalene	<1.51	<2.56	<2.01	<2.17	<0.039
Chrysene/Triphenylene	<1.67	<2.84	<2.23	<2.40	<0.043
Coronene	<7.53	<12.8	<10.0	<10.8	<0.19
Dibenzo(a,c/a,h)Anthracene	<1.51	<2.56	<2.01	<2.17	<0.039
Dibenzo(a,e)pyrene	<7.53	<12.8	<10.0	<10.8	<0.19
9,10-dimethylanthracene	<1.51	<2.56	<2.01	<2.17	<0.039
7,12-Dimethylbenzo(a)anthracene	<1.51	<2.56	<2.01	<2.17	<0.039
Fluoranthene	5.63	9.56	7.51	8.10	0.14
Fluorene	2.63	4.47	3.51	3.78	0.067
Indeno(1,2,3-cd)Pyrene	<1.51	<2.56	<2.01	<2.17	<0.039
2-methylanthracene	8.20	13.9	11.0	11.8	0.21
3-Methylcholanthrene	<7.53	<12.8	<10.0	<10.8	<0.19
1-Methylnaphthalene	4.32	7.35	5.75	6.22	0.11
2-Methylnaphthalene	7.42	12.6	9.82	10.7	0.19
1-Methylphenanthrene	<1.51	<2.56	<2.01	<2.17	<0.039
9-Methylphenanthrene	3.81	6.47	5.11	5.48	0.098
Naphthalene	19.9	33.7	26.3	28.5	0.51
Perylene	<1.51	<2.56	<2.01	<2.17	<0.039
Phenanthrene	36.2	61.5	48.4	52.0	0.93
Picene	<7.53	<12.8	<10.0	<10.8	<0.19
Pyrene	5.02	8.53	6.69	7.22	0.13
Tetralin	16.8	28.5	22.4	24.1	0.43
m-terphenyl	<1.51	<2.56	<2.01	<2.17	<0.039
o-Terphenyl	<1.51	<2.56	<2.01	<2.17	<0.039
p-terphenyl	<1.51	<2.56	<2.01	<2.17	<0.039
Total	<195	<332	<260	<281	<5.00

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 80
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Laboratory Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	<12	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	12.0	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	84.8	32.1
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	13.7	59.6
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<711	<704

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 81
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Acetaldehyde, Formaldehyde and Acrolein Emission Data

Acetaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acetaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acetaldehyde Emission Rate mg/s
1	16.2	0.0341	282	476	379	404	7.12
2	15.4	0.0364	247	422	333	357	6.48
3	13.8	0.0357	226	387	305	327	5.93
Average			252	428	339	363	6.51
Blank	17.9						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Formaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Formaldehyde Emission Rate mg/s
1	60.8	0.0341	1055	1783	1420	1513	26.7
2	16.9	0.0364	272	465	367	393	7.13
3	5.99	0.0357	98.2	168	132	142	2.57
Average			475	805	640	683	12.1
Blank	3.64						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acrolein Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acrolein Emission Rate mg/s
1	<0.1	0.0341	<1.74	<2.93	<2.34	<2.49	<0.044
2	<0.1	0.0364	<1.61	<2.75	<2.17	<2.32	<0.042
3	<0.1	0.0357	<1.64	<2.80	<2.21	<2.37	<0.043
Average			<1.66	<2.83	<2.24	<2.39	<0.043
Blank	<0.1						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

Sampling was conducted at a single point. Volumetric flowrates from corresponding isokinetic tests were used to calculate emission data.

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 82
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	0.12	3.11	5.25	4.19	4.48	0.079
Benzene	0.073	1.94	3.28	2.61	2.79	0.049
Bromodichloromethane	0.072	1.92	3.23	2.58	2.75	0.048
Bromoform	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Bromomethane	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
1,3-Butadiene	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
2-Butanone	0.052	1.38	2.33	1.86	1.99	0.035
Carbon Tetrachloride	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Chloroform	0.087	2.32	3.90	3.12	3.33	0.059
Cumene (Isopropylbenzene)	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Dibromochloromethane	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Dichlorodifluoromethane	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
1,2-Dichloroethane	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
trans,1,2-Dichloroethene	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
1,1-Dichloroethene	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
1,2-Dichloropropane	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Ethylbenzene	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Ethylene Dibromide	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Methylene Chloride	0.57	15.1	25.5	20.4	21.8	0.38
Styrene	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Tetrachloroethene	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Toluene	0.62	16.6	28.0	22.3	23.9	0.42
1,1,1-Trichloroethane	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Trichlorotrifluoroethane	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Trichlorofluoromethane	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
M&P-Xylene	<0.10	<2.66	<4.49	<3.58	<3.83	<0.067
O-Xylene	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Vinyl Chloride	<0.050	<1.33	<2.24	<1.79	<1.91	<0.034
Total	<2.79	<74.3	<125	<100	<107	<1.88

Dry Gas Volume Sampled (Rm^3*) :	0.0223
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 83
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 2

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	0.13	3.49	5.88	4.69	5.01	0.088
Benzene	0.073	1.90	3.20	2.56	2.73	0.048
Bromodichloromethane	0.082	2.13	3.60	2.87	3.07	0.054
Bromoform	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Bromomethane	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
1,3-Butadiene	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
2-Butanone	0.053	1.38	2.33	1.86	1.98	0.035
Carbon Tetrachloride	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Chloroform	0.095	2.47	4.17	3.33	3.55	0.063
Cumene (Isopropylbenzene)	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Dibromochloromethane	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Dichlorodifluoromethane	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
1,2-Dichloroethane	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
trans,1,2-Dichloroethene	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
1,1-Dichloroethene	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
1,2-Dichloropropane	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Ethylbenzene	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Ethylene Dibromide	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Methylene Chloride	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Styrene	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Tetrachloroethene	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Toluene	0.42	10.9	18.3	14.6	15.6	0.28
1,1,1-Trichloroethane	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Trichlorotrifluoroethane	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Trichlorofluoromethane	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
M&P-Xylene	<0.10	<2.60	<4.39	<3.50	<3.74	<0.066
O-Xylene	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Vinyl Chloride	<0.050	<1.30	<2.19	<1.75	<1.87	<0.033
Total	<2.11	<54.8	<92.4	<73.7	<78.7	<1.39

Dry Gas Volume Sampled (Rm^3*) :	0.0228
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 4

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	0.067	1.71	2.88	2.30	2.46	0.043
Benzene	0.27	6.83	11.5	9.19	9.82	0.17
Bromodichloromethane	0.079	2.01	3.40	2.71	2.90	0.051
Bromoform	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Bromomethane	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
1,3-Butadiene	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
2-Butanone	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Carbon Tetrachloride	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Chloroform	0.10	2.55	4.30	3.43	3.66	0.064
Cumene (Isopropylbenzene)	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Dibromochloromethane	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Dichlorodifluoromethane	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
1,2-Dichloroethane	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
trans,1,2-Dichloroethene	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
1,1-Dichloroethene	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
1,2-Dichloropropane	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Ethylbenzene	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Ethylene Dibromide	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Methylene Chloride	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Styrene	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Tetrachloroethene	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Toluene	0.33	8.44	14.2	11.4	12.1	0.21
1,1,1-Trichloroethane	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Trichlorotrifluoroethane	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Trichlorofluoromethane	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
M&P-Xylene	<0.10	<2.55	<4.30	<3.43	<3.66	<0.064
O-Xylene	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Vinyl Chloride	<0.050	<1.27	<2.15	<1.72	<1.83	<0.032
Total	<2.15	<54.7	<92.2	<73.6	<78.6	<1.38

Dry Gas Volume Sampled (Rm^3*) :	0.0233
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 85
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 4	Average	
	µg/m^3	µg/m^3	µg/m^3	µg/m^3	%
Acetone	3.11	3.49	1.71	2.77	33.9
Benzene	1.94	1.90	6.83	3.56	79.7
Bromodichloromethane	1.92	2.13	2.01	2.02	5.4
Bromoform	<1.33	<1.30	<1.27	<1.30	2.1
Bromomethane	<1.33	<1.30	<1.27	<1.30	2.1
1,3-Butadiene	<1.33	<1.30	<1.27	<1.30	2.1
2-Butanone	1.38	1.38	<1.27	<1.35	4.6
Carbon Tetrachloride	<1.33	<1.30	<1.27	<1.30	2.1
Chloroform	2.32	2.47	2.55	2.45	4.9
Cumene (Isopropylbenzene)	<1.33	<1.30	<1.27	<1.30	2.1
Dibromochloromethane	<1.33	<1.30	<1.27	<1.30	2.1
Dichlorodifluoromethane	<1.33	<1.30	<1.27	<1.30	2.1
1,2-Dichloroethane	<1.33	<1.30	<1.27	<1.30	2.1
trans,1,2-Dichloroethene	<1.33	<1.30	<1.27	<1.30	2.1
1,1-Dichloroethene	<1.33	<1.30	<1.27	<1.30	2.1
1,2-Dichloropropane	<1.33	<1.30	<1.27	<1.30	2.1
Ethylbenzene	<1.33	<1.30	<1.27	<1.30	2.1
Ethylene Dibromide	<1.33	<1.30	<1.27	<1.30	2.1
Mesitylene (1,3,5-Trimethylbenzene)	<1.33	<1.30	<1.27	<1.30	2.1
Methylene Chloride	15.1	<1.30	<1.27	<5.91	135
Styrene	<1.33	<1.30	<1.27	<1.30	2.1
Tetrachloroethene	<1.33	<1.30	<1.27	<1.30	2.1
Toluene	16.6	10.9	8.44	12.0	35.0
1,1,1-Trichloroethane	<1.33	<1.30	<1.27	<1.30	2.1
Trichloroethene/1,1,2-Trichloroethene	<1.33	<1.30	<1.27	<1.30	2.1
Trichlorotrifluoroethane	<1.33	<1.30	<1.27	<1.30	2.1
Trichlorofluoromethane	<1.33	<1.30	<1.27	<1.30	2.1
M&P-Xylene	<2.66	<2.60	<2.55	<2.60	2.1
O-Xylene	<1.33	<1.30	<1.27	<1.30	2.1
Vinyl Chloride	<1.33	<1.30	<1.27	<1.30	2.1
Total	<74.3	<54.8	<54.7	<61.3	18.5

TABLE 86
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 4	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	5.25	5.88	2.88	4.67	33.9
Benzene	3.28	3.20	11.5	6.00	79.7
Bromodichloromethane	3.23	3.60	3.40	3.41	5.4
Bromoform	<2.24	<2.19	<2.15	<2.20	2.1
Bromomethane	<2.24	<2.19	<2.15	<2.20	2.1
1,3-Butadiene	<2.24	<2.19	<2.15	<2.20	2.1
2-Butanone	2.33	2.33	<2.15	<2.27	4.6
Carbon Tetrachloride	<2.24	<2.19	<2.15	<2.20	2.1
Chloroform	3.90	4.17	4.30	4.12	4.9
Cumene (Isopropylbenzene)	<2.24	<2.19	<2.15	<2.20	2.1
Dibromochloromethane	<2.24	<2.19	<2.15	<2.20	2.1
Dichlorodifluoromethane	<2.24	<2.19	<2.15	<2.20	2.1
1,2-Dichloroethane	<2.24	<2.19	<2.15	<2.20	2.1
trans,1,2-Dichloroethene	<2.24	<2.19	<2.15	<2.20	2.1
1,1-Dichloroethene	<2.24	<2.19	<2.15	<2.20	2.1
1,2-Dichloropropane	<2.24	<2.19	<2.15	<2.20	2.1
Ethylbenzene	<2.24	<2.19	<2.15	<2.20	2.1
Ethylene Dibromide	<2.24	<2.19	<2.15	<2.20	2.1
Mesitylene (1,3,5-Trimethylbenzene)	<2.24	<2.19	<2.15	<2.20	2.1
Methylene Chloride	25.5	<2.19	<2.15	<9.96	135
Styrene	<2.24	<2.19	<2.15	<2.20	2.1
Tetrachloroethene	<2.24	<2.19	<2.15	<2.20	2.1
Toluene	28.0	18.3	14.2	20.2	35.0
1,1,1-Trichloroethane	<2.24	<2.19	<2.15	<2.20	2.1
Trichloroethene/1,1,2-Trichloroethene	<2.24	<2.19	<2.15	<2.20	2.1
Trichlorotrifluoroethane	<2.24	<2.19	<2.15	<2.20	2.1
Trichlorofluoromethane	<2.24	<2.19	<2.15	<2.20	2.1
M&P-Xylene	<4.49	<4.39	<4.30	<4.39	2.1
O-Xylene	<2.24	<2.19	<2.15	<2.20	2.1
Vinyl Chloride	<2.24	<2.19	<2.15	<2.20	2.1
Total	<125	<92.4	<92.2	<103	18.5

* At 25°C and 1 atmosphere

TABLE 87
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 4	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	4.19	4.69	2.30	3.73	33.9
Benzene	2.61	2.56	9.19	4.79	79.7
Bromodichloromethane	2.58	2.87	2.71	2.72	5.4
Bromoform	<1.79	<1.75	<1.72	<1.75	2.1
Bromomethane	<1.79	<1.75	<1.72	<1.75	2.1
1,3-Butadiene	<1.79	<1.75	<1.72	<1.75	2.1
2-Butanone	1.86	1.86	<1.72	<1.81	4.6
Carbon Tetrachloride	<1.79	<1.75	<1.72	<1.75	2.1
Chloroform	3.12	3.33	3.43	3.29	4.9
Cumene (Isopropylbenzene)	<1.79	<1.75	<1.72	<1.75	2.1
Dibromochloromethane	<1.79	<1.75	<1.72	<1.75	2.1
Dichlorodifluoromethane	<1.79	<1.75	<1.72	<1.75	2.1
1,2-Dichloroethane	<1.79	<1.75	<1.72	<1.75	2.1
trans,1,2-Dichloroethene	<1.79	<1.75	<1.72	<1.75	2.1
1,1-Dichloroethene	<1.79	<1.75	<1.72	<1.75	2.1
1,2-Dichloropropane	<1.79	<1.75	<1.72	<1.75	2.1
Ethylbenzene	<1.79	<1.75	<1.72	<1.75	2.1
Ethylene Dibromide	<1.79	<1.75	<1.72	<1.75	2.1
Mesitylene (1,3,5-Trimethylbenzene)	<1.79	<1.75	<1.72	<1.75	2.1
Methylene Chloride	20.4	<1.75	<1.72	<7.95	135
Styrene	<1.79	<1.75	<1.72	<1.75	2.1
Tetrachloroethene	<1.79	<1.75	<1.72	<1.75	2.1
Toluene	22.3	14.6	11.4	16.1	35.0
1,1,1-Trichloroethane	<1.79	<1.75	<1.72	<1.75	2.1
Trichloroethene/1,1,2-Trichloroethene	<1.79	<1.75	<1.72	<1.75	2.1
Trichlorotrifluoroethane	<1.79	<1.75	<1.72	<1.75	2.1
Trichlorofluoromethane	<1.79	<1.75	<1.72	<1.75	2.1
M&P-Xylene	<3.58	<3.50	<3.43	<3.50	2.1
O-Xylene	<1.79	<1.75	<1.72	<1.75	2.1
Vinyl Chloride	<1.79	<1.75	<1.72	<1.75	2.1
Total	<100	<73.7	<73.6	<82.4	18.5

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 88
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 4	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	4.48	5.01	2.46	3.98	33.9
Benzene	2.79	2.73	9.82	5.11	79.7
Bromodichloromethane	2.75	3.07	2.90	2.91	5.4
Bromoform	<1.91	<1.87	<1.83	<1.87	2.1
Bromomethane	<1.91	<1.87	<1.83	<1.87	2.1
1,3-Butadiene	<1.91	<1.87	<1.83	<1.87	2.1
2-Butanone	1.99	1.98	<1.83	<1.93	4.6
Carbon Tetrachloride	<1.91	<1.87	<1.83	<1.87	2.1
Chloroform	3.33	3.55	3.66	3.51	4.9
Cumene (Isopropylbenzene)	<1.91	<1.87	<1.83	<1.87	2.1
Dibromochloromethane	<1.91	<1.87	<1.83	<1.87	2.1
Dichlorodifluoromethane	<1.91	<1.87	<1.83	<1.87	2.1
1,2-Dichloroethane	<1.91	<1.87	<1.83	<1.87	2.1
trans,1,2-Dichloroethene	<1.91	<1.87	<1.83	<1.87	2.1
1,1-Dichloroethene	<1.91	<1.87	<1.83	<1.87	2.1
1,2-Dichloropropane	<1.91	<1.87	<1.83	<1.87	2.1
Ethylbenzene	<1.91	<1.87	<1.83	<1.87	2.1
Ethylene Dibromide	<1.91	<1.87	<1.83	<1.87	2.1
Mesitylene (1,3,5-Trimethylbenzene)	<1.91	<1.87	<1.83	<1.87	2.1
Methylene Chloride	21.8	<1.87	<1.83	<8.49	135
Styrene	<1.91	<1.87	<1.83	<1.87	2.1
Tetrachloroethene	<1.91	<1.87	<1.83	<1.87	2.1
Toluene	23.9	15.6	12.1	17.2	35.0
1,1,1-Trichloroethane	<1.91	<1.87	<1.83	<1.87	2.1
Trichloroethene/1,1,2-Trichloroethene	<1.91	<1.87	<1.83	<1.87	2.1
Trichlorotrifluoroethane	<1.91	<1.87	<1.83	<1.87	2.1
Trichlorofluoromethane	<1.91	<1.87	<1.83	<1.87	2.1
M&P-Xylene	<3.83	<3.74	<3.66	<3.74	2.1
O-Xylene	<1.91	<1.87	<1.83	<1.87	2.1
Vinyl Chloride	<1.91	<1.87	<1.83	<1.87	2.1
Total	<107	<78.7	<78.6	<88.1	18.5

* At 25°C and 1 atmosphere

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 4 mg/s	Average mg/s	%
Acetone	0.079	0.088	0.043	0.070	33.9
Benzene	0.049	0.048	0.17	0.090	79.7
Bromodichloromethane	0.048	0.054	0.051	0.051	5.4
Bromoform	<0.034	<0.033	<0.032	<0.033	2.1
Bromomethane	<0.034	<0.033	<0.032	<0.033	2.1
1,3-Butadiene	<0.034	<0.033	<0.032	<0.033	2.1
2-Butanone	0.035	0.035	<0.032	<0.034	4.6
Carbon Tetrachloride	<0.034	<0.033	<0.032	<0.033	2.1
Chloroform	0.059	0.063	0.064	0.062	4.9
Cumene (Isopropylbenzene)	<0.034	<0.033	<0.032	<0.033	2.1
Dibromochloromethane	<0.034	<0.033	<0.032	<0.033	2.1
Dichlorodifluoromethane	<0.034	<0.033	<0.032	<0.033	2.1
1,2-Dichloroethane	<0.034	<0.033	<0.032	<0.033	2.1
trans,1,2-Dichloroethene	<0.034	<0.033	<0.032	<0.033	2.1
1,1-Dichloroethene	<0.034	<0.033	<0.032	<0.033	2.1
1,2-Dichloropropane	<0.034	<0.033	<0.032	<0.033	2.1
Ethylbenzene	<0.034	<0.033	<0.032	<0.033	2.1
Ethylene Dibromide	<0.034	<0.033	<0.032	<0.033	2.1
Mesitylene (1,3,5-Trimethylbenzene)	<0.034	<0.033	<0.032	<0.033	2.1
Methylene Chloride	0.38	<0.033	<0.032	<0.15	135
Styrene	<0.034	<0.033	<0.032	<0.033	2.1
Tetrachloroethene	<0.034	<0.033	<0.032	<0.033	2.1
Toluene	0.42	0.28	0.21	0.30	35.0
1,1,1-Trichloroethane	<0.034	<0.033	<0.032	<0.033	2.1
Trichloroethene/1,1,2-Trichloroethene	<0.034	<0.033	<0.032	<0.033	2.1
Trichlorotrifluoroethane	<0.034	<0.033	<0.032	<0.033	2.1
Trichlorofluoromethane	<0.034	<0.033	<0.032	<0.033	2.1
M&P-Xylene	<0.067	<0.066	<0.064	<0.066	2.1
O-Xylene	<0.034	<0.033	<0.032	<0.033	2.1
Vinyl Chloride	<0.034	<0.033	<0.032	<0.033	2.1
Total	<1.88	<1.39	<1.38	<1.55	18.5

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual Concentration $\mu g/m^3$	Dry Reference Concentration $\mu g/Rm^3$*	Dry Adjusted Concentration $\mu g/Rm^3$*	Wet Reference Concentration $\mu g/Rm^3$*	Emission Rate mg/s
Acetone	2.77	4.67	3.73	3.98	0.070
Benzene	3.56	6.00	4.79	5.11	0.090
Bromodichloromethane	2.02	3.41	2.72	2.91	0.051
Bromoform	<1.30	<2.20	<1.75	<1.87	<0.033
Bromomethane	<1.30	<2.20	<1.75	<1.87	<0.033
1,3-Butadiene	<1.30	<2.20	<1.75	<1.87	<0.033
2-Butanone	<1.35	<2.27	<1.81	<1.93	<0.034
Carbon Tetrachloride	<1.30	<2.20	<1.75	<1.87	<0.033
Chloroform	2.45	4.12	3.29	3.51	0.062
Cumene (Isopropylbenzene)	<1.30	<2.20	<1.75	<1.87	<0.033
Dibromochloromethane	<1.30	<2.20	<1.75	<1.87	<0.033
Dichlorodifluoromethane	<1.30	<2.20	<1.75	<1.87	<0.033
1,2-Dichloroethane	<1.30	<2.20	<1.75	<1.87	<0.033
trans,1,2-Dichloroethene	<1.30	<2.20	<1.75	<1.87	<0.033
1,1-Dichloroethene	<1.30	<2.20	<1.75	<1.87	<0.033
1,2-Dichloropropane	<1.30	<2.20	<1.75	<1.87	<0.033
Ethylbenzene	<1.30	<2.20	<1.75	<1.87	<0.033
Ethylene Dibromide	<1.30	<2.20	<1.75	<1.87	<0.033
Mesitylene (1,3,5-Trimethylbenzene)	<1.30	<2.20	<1.75	<1.87	<0.033
Methylene Chloride	<5.91	<9.96	<7.95	<8.49	<0.15
Styrene	<1.30	<2.20	<1.75	<1.87	<0.033
Tetrachloroethene	<1.30	<2.20	<1.75	<1.87	<0.033
Toluene	12.0	20.2	16.1	17.2	0.30
1,1,1-Trichloroethane	<1.30	<2.20	<1.75	<1.87	<0.033
Trichloroethene/1,1,2-Trichloroethene	<1.30	<2.20	<1.75	<1.87	<0.033
Trichlorotrifluoroethane	<1.30	<2.20	<1.75	<1.87	<0.033
Trichlorofluoromethane	<1.30	<2.20	<1.75	<1.87	<0.033
M&P-Xylene	<2.60	<4.39	<3.50	<3.74	<0.066
O-Xylene	<1.30	<2.20	<1.75	<1.87	<0.033
Vinyl Chloride	<1.30	<2.20	<1.75	<1.87	<0.033
Total	<61.3	<103	<82.4	<88.1	<1.55

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank 1 Tube 5A/5B	Field Blank 2 Tube 13A/13B	Trip Blank Tube 15A/15B	Method Blank
	µg	µg	µg	µg
Acetone	<0.050	4.04	1.62	<0.050
Benzene	<0.050	<0.050	<0.050	<0.050
Bromodichloromethane	<0.050	<0.050	<0.050	<0.050
Bromoform	<0.050	<0.050	<0.050	<0.050
Bromomethane	<0.050	<0.050	<0.050	<0.050
1,3-Butadiene	<0.050	<0.050	<0.050	<0.050
2-Butanone	<0.050	0.18	<0.050	<0.050
Carbon Tetrachloride	<0.050	<0.050	<0.050	<0.050
Chloroform	<0.050	<0.050	<0.050	<0.050
Cumene (Isopropylbenzene)	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	<0.050	<0.050	<0.050	<0.050
trans,1,2-Dichloroethene	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethene	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	<0.050	<0.050	<0.050	<0.050
Ethylene Dibromide	<0.050	<0.050	<0.050	<0.050
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	1.08	1.74	0.053	<0.050
Styrene	<0.050	<0.050	<0.050	<0.050
Tetrachloroethene	<0.050	<0.050	<0.050	<0.050
Toluene	0.067	0.15	0.072	<0.050
1,1,1-Trichloroethane	<0.050	<0.050	<0.050	<0.050
Trichloroethene/1,1,2-Trichloroethene	<0.050	<0.050	<0.050	<0.050
Trichlorotrifluoroethane	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	<0.050	<0.050	<0.050	<0.050
M&P-Xylene	<0.10	<0.10	<0.10	<0.10
O-Xylene	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	<0.050	<0.050	<0.050	<0.050
Total	<2.60	<7.47	<3.15	<1.55

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

APPENDIX 2

Boiler No. 2 BH Outlet
Data Tables
(93 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 2
Isokinetic Sampling Train Test Schedules

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	June 15, 2021	17:02	20:09	180
2	June 16, 2021	8:16	11:27	180
3	June 16, 2021	12:10	18:32	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	June 15, 2021	9:08	11:12	120
2	June 15, 2021	12:16	14:18	120
3	June 15, 2021	15:28	17:30	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	June 16, 2021	8:15	9:15	60
2	June 16, 2021	9:55	10:55	60
3	June 16, 2021	11:38	12:38	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	June 17, 2021	8:54	13:09	240
2	June 17, 2021	14:03	18:10	240
3	June 18, 2021	9:15	13:30	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 2
Organic Compounds Test Schedules

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	June 17, 2021	12:15	13:15	60
2	June 17, 2021	13:23	14:23	60
3	June 17, 2021	14:30	15:30	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	June 17, 2021	8:49	9:29	40
2	June 17, 2021	9:34	10:14	40
3	June 17, 2021	10:20	11:00	40
4	June 17, 2021	11:05	11:45	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period		Sampling Time
			Start	Finish	min
BH Outlet	1	June 16, 2021	7:25	8:25	60
BH Outlet	2	June 16, 2021	8:45	9:45	60
BH Outlet	3	June 16, 2021	10:00	11:00	60
Quench Inlet	1	June 15, 2021	9:50	10:50	60
Quench Inlet	2	June 15, 2021	11:00	12:00	60
Quench Inlet	3	June 15, 2021	12:25	13:25	60

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Sampling Parameters

Particulate and Metals Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.842	0.993	6.38	3.582	100.0
2	0.841	0.994	6.42	3.694	101.3
3	0.841	0.994	6.42	3.875	102.6

Particle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.845	0.987	4.51	1.161	88.0
2	0.845	0.987	4.51	1.158	88.1
3	0.845	0.987	4.51	1.194	92.4

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.842	0.993	6.38	1.159	98.0
2	0.842	0.993	6.38	1.185	99.4
3	0.842	0.993	6.38	1.173	99.4

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.843	0.994	6.42	5.065	100.9
2	0.841	0.994	6.42	4.927	100.8
3	0.841	0.994	6.42	4.935	100.4

* Dry at 25°C and 1 atmosphere

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Physical Parameters

Particulate and Metals Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	140	15.3	17.6	-2.44	97.7	10.5	8.61
2	140	15.3	17.6	-2.47	98.1	10.7	8.53
3	142	16.2	18.5	-2.47	98.0	10.8	8.33
Average	141	15.6	17.9	-2.46	98.0	10.7	8.49

Particle Size Distribution Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	142	14.7	19.3	-2.44	97.6	10.7	8.47
2	142	15.9	19.6	-2.44	97.6	10.7	8.47
3	144	16.5	19.5	-2.44	97.6	10.5	8.58
Average	143	15.7	19.5	-2.44	97.6	10.6	8.51

Acid Gases Trains **

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	142	13.0	17.0	-2.47	98.2	10.7	8.57
2	143	14.8	17.5	-2.47	98.1	10.8	8.45
3	142	14.4	17.2	-2.47	98.1	10.6	8.66
Average	142	14.1	17.2	-2.47	98.1	10.7	8.56

Semi-Volatile Organics Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	141	15.8	18.3	-2.64	98.0	10.7	8.40
2	142	16.1	18.0	-2.64	97.9	10.6	8.47
3	142	15.7	18.0	-2.37	97.7	10.7	8.27
Average	141	15.9	18.1	-2.55	97.9	10.7	8.38

* Dry basis, measured by the DYEC CEMS

** Sampling was conducted isokinetically on a single traverse in the duct.

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Volumetric Flowrates

Particulate and Metals Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	26.0	15.3	19.0	18.1
2	26.0	15.4	19.2	18.2
3	27.4	16.0	20.3	19.0
Average	26.5	15.6	19.5	18.4

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	28.6	16.9	21.2	19.8
2	29.0	16.9	21.2	20.0
3	28.8	16.6	20.7	19.8
Average	28.8	16.8	21.0	19.9

Acid Gases Trains ***

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.1	15.2	18.9	17.5
2	25.9	15.3	19.3	18.0
3	25.5	15.1	18.7	17.7
Average	25.5	15.2	19.0	17.7

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.1	15.9	20.1	18.9
2	26.6	15.5	19.4	18.5
3	26.7	15.6	19.9	18.5
Average	26.8	15.7	19.8	18.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

*** Sampling was conducted isokinetically on a single traverse in the duct. Volumetric flowrates from the corresponding particulate and metals tests were used to calculate emission data.

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Particulate Emission Data

Test No.	Particulate Collected			Dry Gas Volume Sampled	Particulate Concentration Actual	Dry Reference	Dry Adjusted	Wet Reference	Particulate Emission Rate
	Probe Rinse	Main Filter	Total						
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	1.0	0.3	1.3	3.582	0.21	0.36	0.29	0.31	5.56
2	1.3	<0.1	<1.4	3.694	<0.23	<0.38	<0.30	<0.32	<5.84
3	0.6	0.2	0.8	3.875	0.12	0.21	0.16	0.17	3.29
Average					<0.19	<0.32	<0.25	<0.27	<4.90
Blank	<0.1	0.5	<0.6						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
$PM_{2.5}$ and PM_{10} Emission Data

$PM_{2.5}$

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	$PM_{2.5}$ Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	0.7	1.161	0.36	0.60	0.48	0.51	10.2
2	<0.2	1.158	<0.10	<0.17	<0.14	<0.15	<2.92
3	<0.2	1.194	<0.097	<0.17	<0.13	<0.14	<2.78
Average			<0.18	<0.31	<0.25	<0.27	<5.30
Blank	0.7						

PM_{10}

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	PM_{10} Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	1.1	1.161	0.56	0.95	0.75	0.81	16.0
2	<0.3	1.158	<0.15	<0.26	<0.21	<0.22	<4.38
3	<0.3	1.194	<0.14	<0.25	<0.20	<0.21	<4.17
Average			<0.29	<0.49	<0.39	<0.41	<8.19
Blank	1.1						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Condensable Particulate Emission Data

Inorganic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Inorganic Condensable Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	3.0	1.161	1.53	2.58	2.06	2.21	43.7
2	3.1	1.158	1.56	2.68	2.13	2.26	45.2
3	3.2	1.194	1.54	2.68	2.15	2.25	44.5
Average			1.54	2.65	2.11	2.24	44.5
Blank	0.5						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Organic Condensable Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	2.8	1.161	1.43	2.41	1.92	2.06	40.8
2	3.8	1.158	1.91	3.28	2.61	2.77	55.5
3	4.5	1.194	2.17	3.77	3.03	3.16	62.6
Average			1.84	3.15	2.52	2.66	52.9
Blank	1.0						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Halides and Ammonia Emission Data

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Chloride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	5.02	1.159	2.57	4.33	3.47	3.67	66.7
2	4.99	1.185	2.50	4.21	3.37	3.57	64.8
3	4.86	1.173	2.41	4.14	3.26	3.47	66.1
Average			2.49	4.23	3.37	3.57	65.9
Blank	<0.212						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Fluoride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.156	1.159	<0.080	<0.13	<0.11	<0.11	<2.07
2	<0.146	1.185	<0.073	<0.12	<0.099	<0.10	<1.90
3	<0.146	1.173	<0.072	<0.12	<0.098	<0.10	<1.99
Average			<0.075	<0.13	<0.10	<0.11	<1.99
Blank	<0.145						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Ammonia Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	1.32	1.159	0.67	1.14	0.91	0.96	17.5
2	1.10	1.185	0.55	0.93	0.74	0.79	14.3
3	0.93	1.173	0.46	0.79	0.63	0.67	12.7
Average			0.56	0.95	0.76	0.81	14.8
Blank	<0.198						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 2
Combustion Gas Analyses

Data measured by the DYEC CEMS from June 15 to June 18, 2021

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.56	8.52	9.71
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	7	13	29
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	8.3	12.7	24.8
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.6	25
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.7	2.3
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	87	110	123
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	109	110	111
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	2	3	5
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	2.5	2.9	3.5
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	0
Quench Inlet	Oxygen (%, 1 hr Avg)	7	8	9

Data measured by the ORTECH CEMS on June 15 and June 16, 2021

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0.7	1.1	2.8
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0.5	0.7	0.9
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0.6	0.6	0.8
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.8	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	2.3
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	0.4
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.9	3.1
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.4	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.1	0.4
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.1	0.3
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0.4	0.9	1.5
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		0.4	

* Reference conditions, dry basis adjusted to 11% oxygen

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 1

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	0.21	<0.1	0.21
Arsenic	<1	<0.2	<0.20
Barium	6.47	1.39	7.86
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.15	0.086	0.24
Chromium	2.93	0.99	3.92
Cobalt	<0.2	0.21	0.21
Copper	7.25	11.0	18.3
Lead	0.83	0.84	1.67
Mercury *	<0.015	0.36	0.36
Molybdenum	22.7	0.11	22.8
Nickel	2.93	1.59	4.52
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.17	0.17
Zinc	15.1	22.0	37.1
Total			<99.1

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	5.88	1.17	7.05
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.22	<0.05	0.22
Chromium	2.45	0.62	3.07
Cobalt	<0.2	<0.1	<0.20
Copper	7.08	9.45	16.5
Lead	0.88	0.56	1.44
Mercury *	<0.015	<0.36	<0.36
Molybdenum	23.9	<0.1	23.9
Nickel	2.50	1.29	3.79
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	13.9	7.38	21.3
Total			<79.9

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	0.20	<0.1	0.20
Arsenic	<1	<0.2	<0.20
Barium	6.03	1.41	7.44
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.17	<0.05	0.17
Chromium	2.66	0.95	3.61
Cobalt	<0.2	0.11	0.11
Copper	6.99	12.1	19.1
Lead	0.93	0.44	1.36
Mercury *	<0.015	0.41	0.41
Molybdenum	23.2	<0.1	23.2
Nickel	2.74	1.00	3.74
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	14.0	13.7	27.7
Total			<88.9

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 1

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	0.21	0.034	0.058	0.047	0.049	0.00088
Arsenic	<0.20	<0.033	<0.056	<0.045	<0.047	<0.00085
Barium	7.86	1.29	2.19	1.77	1.85	0.034
Beryllium	<0.20	<0.033	<0.056	<0.045	<0.047	<0.00085
Cadmium	0.24	0.039	0.067	0.054	0.057	0.0010
Chromium	3.92	0.64	1.09	0.88	0.92	0.017
Cobalt	0.21	0.034	0.059	0.047	0.050	0.00090
Copper	18.3	3.00	5.09	4.10	4.31	0.078
Lead	1.67	0.27	0.47	0.37	0.39	0.0071
Mercury	0.36	0.059	0.10	0.081	0.085	0.0015
Molybdenum	22.8	3.75	6.37	5.13	5.38	0.097
Nickel	4.52	0.74	1.26	1.02	1.07	0.019
Selenium	<1.00	<0.16	<0.28	<0.22	<0.24	<0.0043
Silver	<0.20	<0.033	<0.056	<0.045	<0.047	<0.00085
Thallium	<0.20	<0.033	<0.056	<0.045	<0.047	<0.00085
Vanadium	0.17	0.028	0.047	0.038	0.040	0.00072
Zinc	37.1	6.09	10.4	8.34	8.76	0.16
Total	<99.1	<16.3	<27.7	<22.3	<23.4	<0.42

Dry Gas Volume Sampled (Rm^3*) :	3.582
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	18.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 2

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.032	<0.054	<0.043	<0.046	<0.00083
Arsenic	<0.20	<0.032	<0.054	<0.043	<0.046	<0.00083
Barium	7.05	1.13	1.91	1.53	1.61	0.029
Beryllium	<0.20	<0.032	<0.054	<0.043	<0.046	<0.00083
Cadmium	0.22	0.034	0.058	0.047	0.049	0.00090
Chromium	3.07	0.49	0.83	0.67	0.70	0.013
Cobalt	<0.20	<0.032	<0.054	<0.043	<0.046	<0.00083
Copper	16.5	2.65	4.47	3.59	3.79	0.069
Lead	1.44	0.23	0.39	0.31	0.33	0.0060
Mercury	<0.36	<0.058	<0.097	<0.078	<0.082	<0.0015
Molybdenum	23.9	3.83	6.47	5.19	5.47	0.10
Nickel	3.79	0.61	1.03	0.82	0.87	0.016
Selenium	<1.00	<0.16	<0.27	<0.22	<0.23	<0.0042
Silver	<0.20	<0.032	<0.054	<0.043	<0.046	<0.00083
Thallium	<0.20	<0.032	<0.054	<0.043	<0.046	<0.00083
Vanadium	<0.10	<0.016	<0.027	<0.022	<0.023	<0.00042
Zinc	21.3	3.41	5.76	4.62	4.87	0.089
Total	<79.9	<12.8	<21.6	<17.4	<18.3	<0.33

Dry Gas Volume Sampled (Rm^3*) :	3.694
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	15.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.2
Wet Reference Flowrate (Rm^3/s*) :	18.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 3

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	0.20	0.030	0.052	0.041	0.043	0.00083
Arsenic	<0.20	<0.030	<0.052	<0.041	<0.043	<0.00083
Barium	7.44	1.12	1.92	1.51	1.62	0.031
Beryllium	<0.20	<0.030	<0.052	<0.041	<0.043	<0.00083
Cadmium	0.17	0.025	0.043	0.034	0.036	0.00068
Chromium	3.61	0.54	0.93	0.73	0.78	0.015
Cobalt	0.11	0.016	0.027	0.021	0.023	0.00043
Copper	19.1	2.88	4.93	3.88	4.15	0.079
Lead	1.36	0.21	0.35	0.28	0.30	0.0056
Mercury	0.41	0.062	0.11	0.083	0.089	0.0017
Molybdenum	23.2	3.50	5.99	4.72	5.04	0.096
Nickel	3.74	0.56	0.96	0.76	0.81	0.015
Selenium	<1.00	<0.15	<0.26	<0.20	<0.22	<0.0041
Silver	<0.20	<0.030	<0.052	<0.041	<0.043	<0.00083
Thallium	<0.20	<0.030	<0.052	<0.041	<0.043	<0.00083
Vanadium	<0.10	<0.015	<0.026	<0.020	<0.022	<0.00041
Zinc	27.7	4.17	7.15	5.63	6.02	0.11
Total	<88.9	<13.4	<22.9	<18.1	<19.3	<0.37

Dry Gas Volume Sampled (Rm^3*) :	3.875
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	16.0
Dry Adjusted Flowrate (Rm^3/s**) :	20.3
Wet Reference Flowrate (Rm^3/s*) :	19.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Actual Concentrations

Metal	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	0.034	<0.032	0.030	<0.032	6.0
Arsenic	<0.033	<0.032	<0.030	<0.032	4.4
Barium	1.29	1.13	1.12	1.18	8.1
Beryllium	<0.033	<0.032	<0.030	<0.032	4.4
Cadmium	0.039	0.034	0.025	0.033	22.6
Chromium	0.64	0.49	0.54	0.56	13.8
Cobalt	0.034	<0.032	0.016	<0.027	37.0
Copper	3.00	2.65	2.88	2.84	6.2
Lead	0.27	0.23	0.21	0.24	14.6
Mercury	0.059	<0.058	0.062	<0.060	3.4
Molybdenum	3.75	3.83	3.50	3.69	4.7
Nickel	0.74	0.61	0.56	0.64	14.7
Selenium	<0.16	<0.16	<0.15	<0.16	4.4
Silver	<0.033	<0.032	<0.030	<0.032	4.4
Thallium	<0.033	<0.032	<0.030	<0.032	4.4
Vanadium	0.028	<0.016	<0.015	<0.020	35.6
Zinc	6.09	3.41	4.17	4.56	30.3
Total	<16.3	<12.8	<13.4	<14.2	13.1

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Dry Reference Concentrations

Metal	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	0.058	<0.054	0.052	<0.055	5.7
Arsenic	<0.056	<0.054	<0.052	<0.054	3.9
Barium	2.19	1.91	1.92	2.01	8.1
Beryllium	<0.056	<0.054	<0.052	<0.054	3.9
Cadmium	0.067	0.058	0.043	0.056	22.2
Chromium	1.09	0.83	0.93	0.95	14.0
Cobalt	0.059	<0.054	0.027	<0.047	36.6
Copper	5.09	4.47	4.93	4.83	6.6
Lead	0.47	0.39	0.35	0.40	14.4
Mercury	0.10	<0.097	0.11	<0.10	4.1
Molybdenum	6.37	6.47	5.99	6.27	4.1
Nickel	1.26	1.03	0.96	1.08	14.5
Selenium	<0.28	<0.27	<0.26	<0.27	3.9
Silver	<0.056	<0.054	<0.052	<0.054	3.9
Thallium	<0.056	<0.054	<0.052	<0.054	3.9
Vanadium	0.047	<0.027	<0.026	<0.033	35.6
Zinc	10.4	5.76	7.15	7.76	30.4
Total	<27.7	<21.6	<22.9	<24.1	13.2

* At 25°C and 1 atmosphere

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Dry Adjusted Concentrations

Metal	Dry Adjusted Concentration				Coefficient
	Test No. 1 µg/Rm³**	Test No. 2 µg/Rm³**	Test No. 3 µg/Rm³**	Average µg/Rm³**	of Variation %
Antimony	0.047	<0.043	0.041	<0.044	6.7
Arsenic	<0.045	<0.043	<0.041	<0.043	5.0
Barium	1.77	1.53	1.51	1.60	8.8
Beryllium	<0.045	<0.043	<0.041	<0.043	5.0
Cadmium	0.054	0.047	0.034	0.045	23.2
Chromium	0.88	0.67	0.73	0.76	14.5
Cobalt	0.047	<0.043	0.021	<0.037	37.4
Copper	4.10	3.59	3.88	3.86	6.7
Lead	0.37	0.31	0.28	0.32	15.3
Mercury	0.081	<0.078	0.083	<0.081	3.3
Molybdenum	5.13	5.19	4.72	5.01	5.1
Nickel	1.02	0.82	0.76	0.87	15.4
Selenium	<0.22	<0.22	<0.20	<0.22	5.0
Silver	<0.045	<0.043	<0.041	<0.043	5.0
Thallium	<0.045	<0.043	<0.041	<0.043	5.0
Vanadium	0.038	<0.022	<0.020	<0.027	36.4
Zinc	8.34	4.62	5.63	6.20	31.0
Total	<22.3	<17.4	<18.1	<19.2	13.8

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Wet Reference Concentrations

Metal	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	0.049	<0.046	0.043	<0.046	5.9
Arsenic	<0.047	<0.046	<0.043	<0.045	4.1
Barium	1.85	1.61	1.62	1.70	8.1
Beryllium	<0.047	<0.046	<0.043	<0.045	4.1
Cadmium	0.057	0.049	0.036	0.047	22.4
Chromium	0.92	0.70	0.78	0.80	14.0
Cobalt	0.050	<0.046	0.023	<0.039	36.8
Copper	4.31	3.79	4.15	4.08	6.5
Lead	0.39	0.33	0.30	0.34	14.5
Mercury	0.085	<0.082	0.089	<0.086	3.9
Molybdenum	5.38	5.47	5.04	5.30	4.3
Nickel	1.07	0.87	0.81	0.92	14.6
Selenium	<0.24	<0.23	<0.22	<0.23	4.1
Silver	<0.047	<0.046	<0.043	<0.045	4.1
Thallium	<0.047	<0.046	<0.043	<0.045	4.1
Vanadium	0.040	<0.023	<0.022	<0.028	35.7
Zinc	8.76	4.87	6.02	6.55	30.4
Total	<23.4	<18.3	<19.3	<20.3	13.2

* At 25°C and 1 atmosphere

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Emission Rates

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	0.00088	<0.00083	0.00083	<0.00085	3.7
Arsenic	<0.00085	<0.00083	<0.00083	<0.00084	1.8
Barium	0.034	0.029	0.031	0.031	6.8
Beryllium	<0.00085	<0.00083	<0.00083	<0.00084	1.8
Cadmium	0.0010	0.00090	0.00068	0.00087	20.1
Chromium	0.017	0.013	0.015	0.015	13.4
Cobalt	0.00090	<0.00083	0.00043	<0.00072	34.8
Copper	0.078	0.069	0.079	0.075	7.3
Lead	0.0071	0.0060	0.0056	0.0063	12.4
Mercury	0.0015	<0.0015	0.0017	<0.0016	6.4
Molybdenum	0.097	0.10	0.096	0.098	2.0
Nickel	0.019	0.016	0.015	0.017	12.7
Selenium	<0.0043	<0.0042	<0.0041	<0.0042	1.8
Silver	<0.00085	<0.00083	<0.00083	<0.00084	1.8
Thallium	<0.00085	<0.00083	<0.00083	<0.00084	1.8
Vanadium	0.00072	<0.00042	<0.00041	<0.00052	33.9
Zinc	0.16	0.089	0.11	0.12	29.3
Total	<0.42	<0.33	<0.37	<0.37	12.2

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Emission Data

Metal	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.032	<0.055	<0.044	<0.046	<0.00085
Arsenic	<0.032	<0.054	<0.043	<0.045	<0.00084
Barium	1.18	2.01	1.60	1.70	0.031
Beryllium	<0.032	<0.054	<0.043	<0.045	<0.00084
Cadmium	0.033	0.056	0.045	0.047	0.00087
Chromium	0.56	0.95	0.76	0.80	0.015
Cobalt	<0.027	<0.047	<0.037	<0.039	<0.00072
Copper	2.84	4.83	3.86	4.08	0.075
Lead	0.24	0.40	0.32	0.34	0.0063
Mercury	<0.060	<0.10	<0.081	<0.086	<0.0016
Molybdenum	3.69	6.27	5.01	5.30	0.098
Nickel	0.64	1.08	0.87	0.92	0.017
Selenium	<0.16	<0.27	<0.22	<0.23	<0.0042
Silver	<0.032	<0.054	<0.043	<0.045	<0.00084
Thallium	<0.032	<0.054	<0.043	<0.045	<0.00084
Vanadium	<0.020	<0.033	<0.027	<0.028	<0.00052
Zinc	4.56	7.76	6.20	6.55	0.12
Total	<14.2	<24.1	<19.2	<20.3	<0.37

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Train Metal Analyses

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.99	0.99
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.25	0.45	2.70
Cobalt	<0.2	<0.1	<0.20
Copper	5.72	5.36	11.1
Lead	<0.5	0.24	0.24
Mercury *	<0.015	<0.15	<0.15
Molybdenum	22.8	<0.1	22.8
Nickel	2.18	0.30	2.48
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	<3	<6.00
Total			<48.8

* Includes the permanganate impingers.

Note: "<" indicates that the analyte was not detected. Where all values are reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate the total collected in the blank, the remaining fractions are assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate the total collected in the blank.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	202	0.023	0.040	0.032	0.034	0.63
Pentachlorodibenzo-p-dioxins	432	0.050	0.085	0.067	0.072	1.36
Hexachlorodibenzo-p-dioxins	973	0.11	0.19	0.15	0.16	3.05
Heptachlorodibenzo-p-dioxins	590	0.068	0.12	0.092	0.098	1.85
Octachlorodibenzo-p-dioxin	813	0.094	0.16	0.13	0.14	2.55
Total	3010	0.35	0.59	0.47	0.50	9.45

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	<4.6	<0.00053	<0.00091	<0.00072	<0.00076	<0.014
Pentachlorodibenzofurans	85.1	0.0099	0.017	0.013	0.014	0.27
Hexachlorodibenzofurans	15.2	0.0018	0.0030	0.0024	0.0025	0.048
Heptachlorodibenzofurans	122	0.014	0.024	0.019	0.020	0.38
Octachlorodibenzofuran	85.9	0.010	0.017	0.013	0.014	0.27
Total	<313	<0.036	<0.062	<0.049	<0.052	<0.98

Dry Gas Volume Sampled (Rm^3*) :	5.065
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	223	0.026	0.045	0.036	0.038	0.70
Pentachlorodibenzo-p-dioxins	520	0.061	0.11	0.084	0.088	1.64
Hexachlorodibenzo-p-dioxins	1280	0.15	0.26	0.21	0.22	4.03
Heptachlorodibenzo-p-dioxins	1360	0.16	0.28	0.22	0.23	4.28
Octachlorodibenzo-p-dioxin	1190	0.14	0.24	0.19	0.20	3.74
Total	4573	0.54	0.93	0.74	0.78	14.4

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	<6.9	<0.00082	<0.0014	<0.0011	<0.0012	<0.022
Pentachlorodibenzofurans	57.6	0.0068	0.012	0.0093	0.0098	0.18
Hexachlorodibenzofurans	38.3	0.0045	0.0078	0.0062	0.0065	0.12
Heptachlorodibenzofurans	144	0.017	0.029	0.023	0.024	0.45
Octachlorodibenzofuran	136	0.016	0.028	0.022	0.023	0.43
Total	<383	<0.045	<0.078	<0.062	<0.065	<1.20

Dry Gas Volume Sampled (Rm^3*) :	4.927
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	176	0.021	0.036	0.028	0.030	0.56
Pentachlorodibenzo-p-dioxins	279	0.033	0.057	0.044	0.048	0.88
Hexachlorodibenzo-p-dioxins	1070	0.13	0.22	0.17	0.18	3.38
Heptachlorodibenzo-p-dioxins	1120	0.13	0.23	0.18	0.19	3.54
Octachlorodibenzo-p-dioxin	799	0.095	0.16	0.13	0.14	2.53
Total	3444	0.41	0.70	0.55	0.59	10.9

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	<4.4	<0.00052	<0.00089	<0.00070	<0.00075	<0.014
Pentachlorodibenzofurans	10.1	0.0012	0.0020	0.0016	0.0017	0.032
Hexachlorodibenzofurans	47.5	0.0056	0.0096	0.0075	0.0081	0.15
Heptachlorodibenzofurans	122	0.014	0.025	0.019	0.021	0.39
Octachlorodibenzofuran	86.9	0.010	0.018	0.014	0.015	0.27
Total	<271	<0.032	<0.055	<0.043	<0.046	<0.86

Dry Gas Volume Sampled (Rm^3*) :	4.935
Actual Flowrate (m^3/s) :	26.7
Dry Reference Flowrate (Rm^3/s*) :	15.6
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	18.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.023	0.026	0.021	0.024	11.8
Pentachlorodibenzo-p-dioxins	0.050	0.061	0.033	0.048	29.7
Hexachlorodibenzo-p-dioxins	0.11	0.15	0.13	0.13	15.0
Heptachlorodibenzo-p-dioxins	0.068	0.16	0.13	0.12	39.3
Octachlorodibenzo-p-dioxin	0.094	0.14	0.095	0.11	24.4
Total	0.35	0.54	0.41	0.43	22.8

Furans

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	<0.00053	<0.00082	<0.00052	<0.00062	26.8
Pentachlorodibenzofurans	0.0099	0.0068	0.0012	0.0060	73.8
Hexachlorodibenzofurans	0.0018	0.0045	0.0056	0.0040	50.1
Heptachlorodibenzofurans	0.014	0.017	0.014	0.015	10.5
Octachlorodibenzofuran	0.010	0.016	0.010	0.012	28.5
Total	<0.036	<0.045	<0.032	<0.038	17.8

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.040	0.045	0.036	0.040	11.9
Pentachlorodibenzo-p-dioxins	0.085	0.11	0.057	0.082	29.9
Hexachlorodibenzo-p-dioxins	0.19	0.26	0.22	0.22	15.4
Heptachlorodibenzo-p-dioxins	0.12	0.28	0.23	0.21	39.6
Octachlorodibenzo-p-dioxin	0.16	0.24	0.16	0.19	24.7
Total	0.59	0.93	0.70	0.74	23.1

Furans

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	<0.00091	<0.0014	<0.00089	<0.0011	27.1
Pentachlorodibenzofurans	0.017	0.012	0.0020	0.010	73.6
Hexachlorodibenzofurans	0.0030	0.0078	0.0096	0.0068	50.3
Heptachlorodibenzofurans	0.024	0.029	0.025	0.026	10.8
Octachlorodibenzofuran	0.017	0.028	0.018	0.021	28.8
Total	<0.062	<0.078	<0.055	<0.065	18.1

* At 25°C and 1 atmosphere

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.032	0.036	0.028	0.032	12.9
Pentachlorodibenzo-p-dioxins	0.067	0.084	0.044	0.065	30.7
Hexachlorodibenzo-p-dioxins	0.15	0.21	0.17	0.18	16.1
Heptachlorodibenzo-p-dioxins	0.092	0.22	0.18	0.16	40.0
Octachlorodibenzo-p-dioxin	0.13	0.19	0.13	0.15	25.6
Total	0.47	0.74	0.55	0.59	23.9

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	<0.00072	<0.0011	<0.00070	<0.00085	28.0
Pentachlorodibenzofurans	0.013	0.0093	0.0016	0.0081	73.6
Hexachlorodibenzofurans	0.0024	0.0062	0.0075	0.0054	49.9
Heptachlorodibenzofurans	0.019	0.023	0.019	0.021	11.6
Octachlorodibenzofuran	0.013	0.022	0.014	0.016	29.7
Total	<0.049	<0.062	<0.043	<0.051	19.0

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.034	0.038	0.030	0.034	11.6
Pentachlorodibenzo-p-dioxins	0.072	0.088	0.048	0.069	29.6
Hexachlorodibenzo-p-dioxins	0.16	0.22	0.18	0.19	15.1
Heptachlorodibenzo-p-dioxins	0.098	0.23	0.19	0.17	39.4
Octachlorodibenzo-p-dioxin	0.14	0.20	0.14	0.16	24.3
Total	0.50	0.78	0.59	0.62	22.8

Furans

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	<0.00076	<0.0012	<0.00075	<0.00090	26.8
Pentachlorodibenzofurans	0.014	0.0098	0.0017	0.0086	73.6
Hexachlorodibenzofurans	0.0025	0.0065	0.0081	0.0057	50.4
Heptachlorodibenzofurans	0.020	0.024	0.021	0.022	10.5
Octachlorodibenzofuran	0.014	0.023	0.015	0.017	28.5
Total	<0.052	<0.065	<0.046	<0.054	17.7

* At 25°C and 1 atmosphere

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.63	0.70	0.56	0.63	11.5
Pentachlorodibenzo-p-dioxins	1.36	1.64	0.88	1.29	29.5
Hexachlorodibenzo-p-dioxins	3.05	4.03	3.38	3.49	14.2
Heptachlorodibenzo-p-dioxins	1.85	4.28	3.54	3.22	38.6
Octachlorodibenzo-p-dioxin	2.55	3.74	2.53	2.94	23.7
Total	9.45	14.4	10.9	11.6	21.9

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	<0.014	<0.022	<0.014	<0.017	26.1
Pentachlorodibenzofurans	0.27	0.18	0.032	0.16	74.3
Hexachlorodibenzofurans	0.048	0.12	0.15	0.11	49.7
Heptachlorodibenzofurans	0.38	0.45	0.39	0.41	9.7
Octachlorodibenzofuran	0.27	0.43	0.27	0.32	27.7
Total	<0.98	<1.20	<0.86	<1.01	17.4

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	0.024	0.040	0.032	0.034	0.63
Pentachlorodibenzo-p-dioxins	0.048	0.082	0.065	0.069	1.29
Hexachlorodibenzo-p-dioxins	0.13	0.22	0.18	0.19	3.49
Heptachlorodibenzo-p-dioxins	0.12	0.21	0.16	0.17	3.22
Octachlorodibenzo-p-dioxin	0.11	0.19	0.15	0.16	2.94
Total	0.43	0.74	0.59	0.62	11.6

Furans

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	<0.00062	<0.0011	<0.00085	<0.00090	<0.017
Pentachlorodibenzofurans	0.0060	0.010	0.0081	0.0086	0.16
Hexachlorodibenzofurans	0.0040	0.0068	0.0054	0.0057	0.11
Heptachlorodibenzofurans	0.015	0.026	0.021	0.022	0.41
Octachlorodibenzofuran	0.012	0.021	0.016	0.017	0.32
Total	<0.038	<0.065	<0.051	<0.054	<1.01

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train	Laboratory Blank
	pg	pg
Tetrachlorodibenzo-p-dioxins	<2.1	<1.3
Pentachlorodibenzo-p-dioxins	<1.3	<0.62
Hexachlorodibenzo-p-dioxins	<1.7	<0.93
Heptachlorodibenzo-p-dioxins	7.77	<1.0
Octachlorodibenzo-p-dioxin	83.5	110
Total	<96.4	<114

Furans

Congener Group	Blank Train	Laboratory Blank
	pg	pg
Tetrachlorodibenzofurans	<1.1	<0.64
Pentachlorodibenzofurans	<1.2	<1.1
Hexachlorodibenzofurans	<1.1	<1.4
Heptachlorodibenzofurans	<1.8	<1.3
Octachlorodibenzofuran	10.8	<13
Total	<16.0	<17.4

"<" indicates that the amount detected is less than the detection limit
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<5.9	<0.68	<1.16	<0.92	<0.98	<0.019
12378-pentachlorodibenzo-p-dioxin	<8.1	<0.94	<1.60	<1.27	<1.35	<0.025
123478-hexachlorodibenzo-p-dioxin	<18	<2.09	<3.55	<2.81	<2.99	<0.057
123678-hexachlorodibenzo-p-dioxin	73.3	8.49	14.5	11.4	12.2	0.23
123789-hexachlorodibenzo-p-dioxin	35.8	4.15	7.07	5.59	5.95	0.11
1234678-heptachlorodibenzo-p-dioxin	590	68.3	116	92.1	98.0	1.85
Octachlorodibenzo-p-dioxin	813	94.2	161	127	135	2.55
2378-tetrachlorodibenzofuran	<4.6	<0.53	<0.91	<0.72	<0.76	<0.014
12378-pentachlorodibenzofuran	<11	<1.27	<2.17	<1.72	<1.83	<0.035
23478-pentachlorodibenzofuran	<14	<1.62	<2.76	<2.19	<2.33	<0.044
123478-hexachlorodibenzofuran	<15	<1.74	<2.96	<2.34	<2.49	<0.047
123678-hexachlorodibenzofuran	<15	<1.74	<2.96	<2.34	<2.49	<0.047
234678-hexachlorodibenzofuran	<7.5	<0.87	<1.48	<1.17	<1.25	<0.024
123789-hexachlorodibenzofuran	<8.5	<0.98	<1.68	<1.33	<1.41	<0.027
1234678-heptachlorodibenzofuran	102	11.8	20.1	15.9	16.9	0.32
1234789-heptachlorodibenzofuran	19.7	2.28	3.89	3.08	3.27	0.062
Octachlorodibenzofuran	85.9	9.95	17.0	13.4	14.3	0.27
PCB 81	40.5	4.69	8.00	6.33	6.73	0.13
PCB 77	915	106	181	143	152	2.87
PCB 123	1230	142	243	192	204	3.86
PCB 118	82700	9580	16328	12916	13736	260
PCB 114	2070	240	409	323	344	6.50
PCB 105	21100	2444	4166	3295	3505	66.2
PCB 126	26.4	3.06	5.21	4.12	4.38	0.083
PCB 167	364	42.2	71.9	56.8	60.5	1.14
PCB 156/157	841	97.4	166	131	140	2.64
PCB 169	<7.0	<0.81	<1.38	<1.09	<1.16	<0.022
PCB 189	9.15	1.06	1.81	1.43	1.52	0.029
Total Dioxins & Furans Only	<1827	<212	<361	<285	<304	<5.74
Total PCBs Only	<109303	<12661	<21580	<17071	<18155	<343
Total Dioxins & Furans and PCBs	<111130	<12873	<21941	<17356	<18458	<349

Dry Gas Volume Sampled (Rm^3*) :	5.065
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<8.7	<1.03	<1.77	<1.41	<1.48	<0.027
12378-pentachlorodibenzo-p-dioxin	<9.2	<1.09	<1.87	<1.49	<1.56	<0.029
123478-hexachlorodibenzo-p-dioxin	<27	<3.19	<5.48	<4.38	<4.59	<0.085
123678-hexachlorodibenzo-p-dioxin	71.8	8.49	14.6	11.6	12.2	0.23
123789-hexachlorodibenzo-p-dioxin	32.0	3.78	6.49	5.19	5.44	0.10
1234678-heptachlorodibenzo-p-dioxin	643	76.0	131	104	109	2.02
Octachlorodibenzo-p-dioxin	1190	141	242	193	202	3.74
2378-tetrachlorodibenzofuran	<6.9	<0.82	<1.40	<1.12	<1.17	<0.022
12378-pentachlorodibenzofuran	<8.4	<0.99	<1.70	<1.36	<1.43	<0.026
23478-pentachlorodibenzofuran	14.7	1.74	2.98	2.38	2.50	0.046
123478-hexachlorodibenzofuran	<12	<1.42	<2.44	<1.95	<2.04	<0.038
123678-hexachlorodibenzofuran	16.6	1.96	3.37	2.69	2.82	0.052
234678-hexachlorodibenzofuran	<34	<4.02	<6.90	<5.51	<5.78	<0.11
123789-hexachlorodibenzofuran	<14	<1.66	<2.84	<2.27	<2.38	<0.044
1234678-heptachlorodibenzofuran	107	12.7	21.7	17.4	18.2	0.34
1234789-heptachlorodibenzofuran	19.5	2.31	3.96	3.16	3.32	0.061
Octachlorodibenzofuran	136	16.1	27.6	22.1	23.1	0.43
PCB 81	<6.7	<0.79	<1.36	<1.09	<1.14	<0.021
PCB 77	60.0	7.10	12.2	9.73	10.2	0.19
PCB 123	<13	<1.54	<2.64	<2.11	<2.21	<0.041
PCB 118	1180	140	239	191	201	3.71
PCB 114	<26	<3.07	<5.28	<4.22	<4.42	<0.082
PCB 105	359	42.5	72.9	58.2	61.0	1.13
PCB 126	12.7	1.50	2.58	2.06	2.16	0.040
PCB 167	14.6	1.73	2.96	2.37	2.48	0.046
PCB 156/157	47.1	5.57	9.56	7.64	8.01	0.15
PCB 169	<5.8	<0.69	<1.18	<0.94	<0.99	<0.018
PCB 189	6.81	0.81	1.38	1.10	1.16	0.021
Total Dioxins & Furans Only	<2351	<278	<477	<381	<400	<7.40
Total PCBs Only	<1732	<205	<351	<281	<294	<5.45
Total Dioxins & Furans and PCBs	<4083	<483	<829	<662	<694	<12.8

Dry Gas Volume Sampled (Rm³*) :	4.927
Actual Flowrate (m³/s) :	26.6
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	19.4
Wet Reference Flowrate (Rm³/s*) :	18.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<5.0	<0.59	<1.01	<0.79	<0.85	<0.016
12378-pentachlorodibenzo-p-dioxin	<10	<1.18	<2.03	<1.59	<1.71	<0.032
123478-hexachlorodibenzo-p-dioxin	<23	<2.72	<4.66	<3.65	<3.93	<0.073
123678-hexachlorodibenzo-p-dioxin	<63	<7.46	<12.8	<10.0	<10.8	<0.20
123789-hexachlorodibenzo-p-dioxin	35.2	4.17	7.13	5.59	6.01	0.11
1234678-heptachlorodibenzo-p-dioxin	567	67.1	115	90.1	96.9	1.79
Octachlorodibenzo-p-dioxin	799	94.6	162	127	137	2.53
2378-tetrachlorodibenzofuran	<4.4	<0.52	<0.89	<0.70	<0.75	<0.014
12378-pentachlorodibenzofuran	<3.9	<0.46	<0.79	<0.62	<0.67	<0.012
23478-pentachlorodibenzofuran	<13	<1.54	<2.63	<2.07	<2.22	<0.041
123478-hexachlorodibenzofuran	<12	<1.42	<2.43	<1.91	<2.05	<0.038
123678-hexachlorodibenzofuran	<15	<1.78	<3.04	<2.38	<2.56	<0.047
234678-hexachlorodibenzofuran	33.0	3.91	6.69	5.24	5.64	0.10
123789-hexachlorodibenzofuran	<8.4	<0.99	<1.70	<1.33	<1.44	<0.027
1234678-heptachlorodibenzofuran	89.4	10.6	18.1	14.2	15.3	0.28
1234789-heptachlorodibenzofuran	<18	<2.13	<3.65	<2.86	<3.08	<0.057
Octachlorodibenzofuran	86.9	10.3	17.6	13.8	14.8	0.27
PCB 81	<7.7	<0.91	<1.56	<1.22	<1.32	<0.024
PCB 77	111	13.1	22.5	17.6	19.0	0.35
PCB 123	45.4	5.38	9.20	7.21	7.76	0.14
PCB 118	1620	192	328	257	277	5.12
PCB 114	<41	<4.85	<8.31	<6.51	<7.01	<0.13
PCB 105	449	53.2	91.0	71.3	76.7	1.42
PCB 126	10.6	1.25	2.15	1.68	1.81	0.034
PCB 167	17.3	2.05	3.51	2.75	2.96	0.055
PCB 156/157	56.2	6.65	11.4	8.93	9.60	0.18
PCB 169	<5.3	<0.63	<1.07	<0.84	<0.91	<0.017
PCB 189	4.34	0.51	0.88	0.69	0.74	0.014
Total Dioxins & Furans Only	<1786	<211	<362	<284	<305	<5.65
Total PCBs Only	<2368	<280	<480	<376	<405	<7.48
Total Dioxins & Furans and PCBs	<4154	<492	<842	<660	<710	<13.1

Dry Gas Volume Sampled (Rm^3*) :	4.935
Actual Flowrate (m^3/s) :	26.7
Dry Reference Flowrate (Rm^3/s*) :	15.6
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	18.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.68	<1.03	<0.59	<0.77	30.0
12378-pentachlorodibenzo-p-dioxin	<0.94	<1.09	<1.18	<1.07	11.6
123478-hexachlorodibenzo-p-dioxin	<2.09	<3.19	<2.72	<2.67	20.9
123678-hexachlorodibenzo-p-dioxin	8.49	8.49	<7.46	<8.15	7.3
123789-hexachlorodibenzo-p-dioxin	4.15	3.78	4.17	4.03	5.3
1234678-heptachlorodibenzo-p-dioxin	68.3	76.0	67.1	70.5	6.9
Octachlorodibenzo-p-dioxin	94.2	141	94.6	110	24.4
2378-tetrachlorodibenzofuran	<0.53	<0.82	<0.52	<0.62	26.8
12378-pentachlorodibenzofuran	<1.27	<0.99	<0.46	<0.91	45.4
23478-pentachlorodibenzofuran	<1.62	1.74	<1.54	<1.63	6.1
123478-hexachlorodibenzofuran	<1.74	<1.42	<1.42	<1.53	12.0
123678-hexachlorodibenzofuran	<1.74	1.96	<1.78	<1.83	6.6
234678-hexachlorodibenzofuran	<0.87	<4.02	3.91	<2.93	61.0
123789-hexachlorodibenzofuran	<0.98	<1.66	<0.99	<1.21	31.7
1234678-heptachlorodibenzofuran	11.8	12.7	10.6	11.7	8.9
1234789-heptachlorodibenzofuran	2.28	2.31	<2.13	<2.24	4.2
Octachlorodibenzofuran	9.95	16.1	10.3	12.1	28.5
PCB 81	4.69	<0.79	<0.91	<2.13	104
PCB 77	106	7.10	13.1	42.1	132
PCB 123	142	<1.54	5.38	<49.8	161
PCB 118	9580	140	192	3304	165
PCB 114	240	<3.07	<4.85	<82.6	165
PCB 105	2444	42.5	53.2	847	163
PCB 126	3.06	1.50	1.25	1.94	50.4
PCB 167	42.2	1.73	2.05	15.3	152
PCB 156/157	97.4	5.57	6.65	36.5	144
PCB 169	<0.81	<0.69	<0.63	<0.71	13.2
PCB 189	1.06	0.81	0.51	0.79	34.5
Total Dioxins & Furans Only	<212	<278	<211	<234	16.4
Total PCBs Only	<12661	<205	<280	<4382	164
Total Dioxins & Furans and PCBs	<12873	<483	<492	<4616	155

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<1.16	<1.77	<1.01	<1.31	30.3
12378-pentachlorodibenzo-p-dioxin	<1.60	<1.87	<2.03	<1.83	11.8
123478-hexachlorodibenzo-p-dioxin	<3.55	<5.48	<4.66	<4.56	21.2
123678-hexachlorodibenzo-p-dioxin	14.5	14.6	<12.8	<13.9	7.3
123789-hexachlorodibenzo-p-dioxin	7.07	6.49	7.13	6.90	5.1
1234678-heptachlorodibenzo-p-dioxin	116	131	115	121	7.1
Octachlorodibenzo-p-dioxin	161	242	162	188	24.7
2378-tetrachlorodibenzofuran	<0.91	<1.40	<0.89	<1.07	27.1
12378-pentachlorodibenzofuran	<2.17	<1.70	<0.79	<1.56	45.2
23478-pentachlorodibenzofuran	<2.76	2.98	<2.63	<2.79	6.3
123478-hexachlorodibenzofuran	<2.96	<2.44	<2.43	<2.61	11.7
123678-hexachlorodibenzofuran	<2.96	3.37	<3.04	<3.12	6.9
234678-hexachlorodibenzofuran	<1.48	<6.90	6.69	<5.02	61.1
123789-hexachlorodibenzofuran	<1.68	<2.84	<1.70	<2.07	32.1
1234678-heptachlorodibenzofuran	20.1	21.7	18.1	20.0	9.0
1234789-heptachlorodibenzofuran	3.89	3.96	<3.65	<3.83	4.3
Octachlorodibenzofuran	17.0	27.6	17.6	20.7	28.8
PCB 81	8.00	<1.36	<1.56	<3.64	104
PCB 77	181	12.2	22.5	71.8	132
PCB 123	243	<2.64	9.20	<84.9	161
PCB 118	16328	239	328	5632	164
PCB 114	409	<5.28	<8.31	<141	165
PCB 105	4166	72.9	91.0	1443	163
PCB 126	5.21	2.58	2.15	3.31	50.1
PCB 167	71.9	2.96	3.51	26.1	152
PCB 156/157	166	9.56	11.4	62.3	144
PCB 169	<1.38	<1.18	<1.07	<1.21	12.9
PCB 189	1.81	1.38	0.88	1.36	34.2
Total Dioxins & Furans Only	<361	<477	<362	<400	16.7
Total PCBs Only	<21580	<351	<480	<7470	164
Total Dioxins & Furans and PCBs	<21941	<829	<842	<7870	155

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.92	<1.41	<0.79	<1.04	31.2
12378-pentachlorodibenzo-p-dioxin	<1.27	<1.49	<1.59	<1.45	11.5
123478-hexachlorodibenzo-p-dioxin	<2.81	<4.38	<3.65	<3.61	21.7
123678-hexachlorodibenzo-p-dioxin	11.4	11.6	<10.0	<11.0	8.1
123789-hexachlorodibenzo-p-dioxin	5.59	5.19	5.59	5.46	4.3
1234678-heptachlorodibenzo-p-dioxin	92.1	104	90.1	95.5	8.0
Octachlorodibenzo-p-dioxin	127	193	127	149	25.6
2378-tetrachlorodibenzofuran	<0.72	<1.12	<0.70	<0.85	28.0
12378-pentachlorodibenzofuran	<1.72	<1.36	<0.62	<1.23	45.4
23478-pentachlorodibenzofuran	<2.19	2.38	<2.07	<2.21	7.3
123478-hexachlorodibenzofuran	<2.34	<1.95	<1.91	<2.06	11.7
123678-hexachlorodibenzofuran	<2.34	2.69	<2.38	<2.47	7.7
234678-hexachlorodibenzofuran	<1.17	<5.51	5.24	<3.98	61.2
123789-hexachlorodibenzofuran	<1.33	<2.27	<1.33	<1.64	33.0
1234678-heptachlorodibenzofuran	15.9	17.4	14.2	15.8	10.0
1234789-heptachlorodibenzofuran	3.08	3.16	<2.86	<3.03	5.1
Octachlorodibenzofuran	13.4	22.1	13.8	16.4	29.7
PCB 81	6.33	<1.09	<1.22	<2.88	104
PCB 77	143	9.73	17.6	56.8	132
PCB 123	192	<2.11	7.21	<67.1	161
PCB 118	12916	191	257	4455	164
PCB 114	323	<4.22	<6.51	<111	165
PCB 105	3295	58.2	71.3	1142	163
PCB 126	4.12	2.06	1.68	2.62	50.1
PCB 167	56.8	2.37	2.75	20.7	152
PCB 156/157	131	7.64	8.93	49.3	144
PCB 169	<1.09	<0.94	<0.84	<0.96	13.2
PCB 189	1.43	1.10	0.69	1.07	34.5
Total Dioxins & Furans Only	<285	<381	<284	<317	17.6
Total PCBs Only	<17071	<281	<376	<5909	164
Total Dioxins & Furans and PCBs	<17356	<662	<660	<6226	155

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.98	<1.48	<0.85	<1.10	29.9
12378-pentachlorodibenzo-p-dioxin	<1.35	<1.56	<1.71	<1.54	11.9
123478-hexachlorodibenzo-p-dioxin	<2.99	<4.59	<3.93	<3.84	21.0
123678-hexachlorodibenzo-p-dioxin	12.2	12.2	<10.8	<11.7	7.0
123789-hexachlorodibenzo-p-dioxin	5.95	5.44	6.01	5.80	5.4
1234678-heptachlorodibenzo-p-dioxin	98.0	109	96.9	101	6.8
Octachlorodibenzo-p-dioxin	135	202	137	158	24.3
2378-tetrachlorodibenzofuran	<0.76	<1.17	<0.75	<0.90	26.8
12378-pentachlorodibenzofuran	<1.83	<1.43	<0.67	<1.31	45.1
23478-pentachlorodibenzofuran	<2.33	2.50	<2.22	<2.35	6.0
123478-hexachlorodibenzofuran	<2.49	<2.04	<2.05	<2.19	11.7
123678-hexachlorodibenzofuran	<2.49	2.82	<2.56	<2.63	6.6
234678-hexachlorodibenzofuran	<1.25	<5.78	5.64	<4.22	61.1
123789-hexachlorodibenzofuran	<1.41	<2.38	<1.44	<1.74	31.7
1234678-heptachlorodibenzofuran	16.9	18.2	15.3	16.8	8.7
1234789-heptachlorodibenzofuran	3.27	3.32	<3.08	<3.22	4.0
Octachlorodibenzofuran	14.3	23.1	14.8	17.4	28.5
PCB 81	6.73	<1.14	<1.32	<3.06	104
PCB 77	152	10.2	19.0	60.4	132
PCB 123	204	<2.21	7.76	<71.4	161
PCB 118	13736	201	277	4738	164
PCB 114	344	<4.42	<7.01	<118	165
PCB 105	3505	61.0	76.7	1214	163
PCB 126	4.38	2.16	1.81	2.79	50.1
PCB 167	60.5	2.48	2.96	22.0	152
PCB 156/157	140	8.01	9.60	52.4	144
PCB 169	<1.16	<0.99	<0.91	<1.02	12.9
PCB 189	1.52	1.16	0.74	1.14	34.2
Total Dioxins & Furans Only	<304	<400	<305	<336	16.4
Total PCBs Only	<18155	<294	<405	<6285	164
Total Dioxins & Furans and PCBs	<18458	<694	<710	<6621	155

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.019	<0.027	<0.016	<0.021	29.4
12378-pentachlorodibenzo-p-dioxin	<0.025	<0.029	<0.032	<0.029	10.8
123478-hexachlorodibenzo-p-dioxin	<0.057	<0.085	<0.073	<0.071	20.0
123678-hexachlorodibenzo-p-dioxin	0.23	0.23	<0.20	<0.22	7.7
123789-hexachlorodibenzo-p-dioxin	0.11	0.10	0.11	0.11	6.0
1234678-heptachlorodibenzo-p-dioxin	1.85	2.02	1.79	1.89	6.3
Octachlorodibenzo-p-dioxin	2.55	3.74	2.53	2.94	23.7
2378-tetrachlorodibenzofuran	<0.014	<0.022	<0.014	<0.017	26.1
12378-pentachlorodibenzofuran	<0.035	<0.026	<0.012	<0.024	46.0
23478-pentachlorodibenzofuran	<0.044	0.046	<0.041	<0.044	5.9
123478-hexachlorodibenzofuran	<0.047	<0.038	<0.038	<0.041	13.0
123678-hexachlorodibenzofuran	<0.047	0.052	<0.047	<0.049	5.9
234678-hexachlorodibenzofuran	<0.024	<0.11	0.10	<0.078	60.6
123789-hexachlorodibenzofuran	<0.027	<0.044	<0.027	<0.032	31.0
1234678-heptachlorodibenzofuran	0.32	0.34	0.28	0.31	8.8
1234789-heptachlorodibenzofuran	0.062	0.061	<0.057	<0.060	4.5
Octachlorodibenzofuran	0.27	0.43	0.27	0.32	27.7
PCB 81	0.13	<0.021	<0.024	<0.058	105
PCB 77	2.87	0.19	0.35	1.14	132
PCB 123	3.86	<0.041	0.14	<1.35	161
PCB 118	260	3.71	5.12	89.5	165
PCB 114	6.50	<0.082	<0.13	<2.24	165
PCB 105	66.2	1.13	1.42	22.9	164
PCB 126	0.083	0.040	0.034	0.052	51.5
PCB 167	1.14	0.046	0.055	0.41	152
PCB 156/157	2.64	0.15	0.18	0.99	145
PCB 169	<0.022	<0.018	<0.017	<0.019	14.2
PCB 189	0.029	0.021	0.014	0.021	35.2
Total Dioxins & Furans Only	<5.74	<7.40	<5.65	<6.26	15.7
Total PCBs Only	<343	<5.45	<7.48	<119	164
Total Dioxins & Furans and PCBs	<349	<12.8	<13.1	<125	155

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.77	<1.31	<1.04	<1.10	<0.021
12378-pentachlorodibenzo-p-dioxin	<1.07	<1.83	<1.45	<1.54	<0.029
123478-hexachlorodibenzo-p-dioxin	<2.67	<4.56	<3.61	<3.84	<0.071
123678-hexachlorodibenzo-p-dioxin	<8.15	<13.9	<11.0	<11.7	<0.22
123789-hexachlorodibenzo-p-dioxin	4.03	6.90	5.46	5.80	0.11
1234678-heptachlorodibenzo-p-dioxin	70.5	121	95.5	101	1.89
Octachlorodibenzo-p-dioxin	110	188	149	158	2.94
2378-tetrachlorodibenzofuran	<0.62	<1.07	<0.85	<0.90	<0.017
12378-pentachlorodibenzofuran	<0.91	<1.56	<1.23	<1.31	<0.024
23478-pentachlorodibenzofuran	<1.63	<2.79	<2.21	<2.35	<0.044
123478-hexachlorodibenzofuran	<1.53	<2.61	<2.06	<2.19	<0.041
123678-hexachlorodibenzofuran	<1.83	<3.12	<2.47	<2.63	<0.049
234678-hexachlorodibenzofuran	<2.93	<5.02	<3.98	<4.22	<0.078
123789-hexachlorodibenzofuran	<1.21	<2.07	<1.64	<1.74	<0.032
1234678-heptachlorodibenzofuran	11.7	20.0	15.8	16.8	0.31
1234789-heptachlorodibenzofuran	<2.24	<3.83	<3.03	<3.22	<0.060
Octachlorodibenzofuran	12.1	20.7	16.4	17.4	0.32
PCB 81	<2.13	<3.64	<2.88	<3.06	<0.058
PCB 77	42.1	71.8	56.8	60.4	1.14
PCB 123	<49.8	<84.9	<67.1	<71.4	<1.35
PCB 118	3304	5632	4455	4738	89.5
PCB 114	<82.6	<141	<111	<118	<2.24
PCB 105	847	1443	1142	1214	22.9
PCB 126	1.94	3.31	2.62	2.79	0.052
PCB 167	15.3	26.1	20.7	22.0	0.41
PCB 156/157	36.5	62.3	49.3	52.4	0.99
PCB 169	<0.71	<1.21	<0.96	<1.02	<0.019
PCB 189	0.79	1.36	1.07	1.14	0.021
Total Dioxins & Furans Only	<234	<400	<317	<336	<6.26
Total PCBs Only	<4382	<7470	<5909	<6285	<119
Total Dioxins & Furans and PCBs	<4616	<7870	<6226	<6621	<125

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train	Laboratory Blank
	pg	pg
2378-tetrachlorodibenzo-p-dioxin	<2.1	<1.3
12378-pentachlorodibenzo-p-dioxin	<1.3	<0.62
123478-hexachlorodibenzo-p-dioxin	<1.7	<0.93
123678-hexachlorodibenzo-p-dioxin	<1.5	<0.78
123789-hexachlorodibenzo-p-dioxin	<1.5	<0.82
1234678-heptachlorodibenzo-p-dioxin	7.77	<7.9
Octachlorodibenzo-p-dioxin	83.5	110
2378-tetrachlorodibenzofuran	<1.1	<0.64
12378-pentachlorodibenzofuran	<1.2	<1.1
23478-pentachlorodibenzofuran	<1.1	<1.0
123478-hexachlorodibenzofuran	<0.99	<1.2
123678-hexachlorodibenzofuran	<0.92	<1.1
234678-hexachlorodibenzofuran	<0.99	<1.2
123789-hexachlorodibenzofuran	<1.1	<2.3
1234678-heptachlorodibenzofuran	<1.5	<3.5
1234789-heptachlorodibenzofuran	<1.8	<1.3
Octachlorodibenzofuran	10.8	<13
PCB 81	<7.9	<9.0
PCB 77	10.5	<8.2
PCB 123	<3.6	<2.1
PCB 118	62.6	<2.1
PCB 114	<3.4	<2.1
PCB 105	22.5	<1.8
PCB 126	<3.7	<3.0
PCB 167	<1.7	<1.8
PCB 156/157	<2.5	<2.7
PCB 169	<2.0	<2.7
PCB 189	<0.87	<2.0
Total Dioxins & Furans Only	<121	<149
Total PCBs Only	<121	<37.5
Total Dioxins & Furans and PCBs	<242	<186

"<" indicates that the amount detected is less than the detection limit
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m³	Test No. 2 pg TEQ/m³	Test No. 3 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.68	<1.03	<0.59	<0.77
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.94	<1.09	<1.18	<1.07
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.21	<0.32	<0.27	<0.27
123678-hexachlorodibenzo-p-dioxin	0.10000	0.85	0.85	<0.75	<0.81
123789-hexachlorodibenzo-p-dioxin	0.10000	0.41	0.38	0.42	0.40
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.68	0.76	0.67	0.71
Octachlorodibenzo-p-dioxin	0.00030	0.028	0.042	0.028	0.033
2378-tetrachlorodibenzofuran	0.10000	<0.053	<0.082	<0.052	<0.062
12378-pentachlorodibenzofuran	0.03000	<0.038	<0.030	<0.014	<0.027
23478-pentachlorodibenzofuran	0.30000	<0.49	0.52	<0.46	<0.49
123478-hexachlorodibenzofuran	0.10000	<0.17	<0.14	<0.14	<0.15
123678-hexachlorodibenzofuran	0.10000	<0.17	0.20	<0.18	<0.18
234678-hexachlorodibenzofuran	0.10000	<0.087	<0.40	0.39	<0.29
123789-hexachlorodibenzofuran	0.10000	<0.098	<0.17	<0.099	<0.12
1234678-heptachlorodibenzofuran	0.01000	0.12	0.13	0.11	0.12
1234789-heptachlorodibenzofuran	0.01000	0.023	0.023	<0.021	<0.022
Octachlorodibenzofuran	0.00030	0.0030	0.0048	0.0031	0.0036
PCB 81	0.00030	0.0014	<0.00024	<0.00027	<0.00064
PCB 77	0.00010	0.011	0.00071	0.0013	0.0042
PCB 123	0.00003	0.0043	<0.000046	0.00016	<0.0015
PCB 118	0.00003	0.29	0.0042	0.0058	0.099
PCB 114	0.00003	0.0072	<0.000092	<0.00015	<0.0025
PCB 105	0.00003	0.073	0.0013	0.0016	0.025
PCB 126	0.10000	0.31	0.15	0.13	0.19
PCB 167	0.00003	0.0013	0.000052	0.000061	0.00046
PCB 156/157	0.00003	0.0029	0.00017	0.00020	0.0011
PCB 169	0.03000	<0.024	<0.021	<0.019	<0.021
PCB 189	0.00003	0.000032	0.000024	0.000015	0.000024
Total Dioxins & Furans Only		<5.06	<6.16	<5.38	<5.53
Total PCBs Only		<0.72	<0.18	<0.15	<0.35
Total Dioxins & Furans and PCBs		<5.78	<6.34	<5.53	<5.88

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<1.16	<1.77	<1.01	<1.31
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.60	<1.87	<2.03	<1.83
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.36	<0.55	<0.47	<0.46
123678-hexachlorodibenzo-p-dioxin	0.10000	1.45	1.46	<1.28	<1.39
123789-hexachlorodibenzo-p-dioxin	0.10000	0.71	0.65	0.71	0.69
1234678-heptachlorodibenzo-p-dioxin	0.01000	1.16	1.31	1.15	1.21
Octachlorodibenzo-p-dioxin	0.00030	0.048	0.072	0.049	0.056
2378-tetrachlorodibenzofuran	0.10000	<0.091	<0.14	<0.089	<0.11
12378-pentachlorodibenzofuran	0.03000	<0.065	<0.051	<0.024	<0.047
23478-pentachlorodibenzofuran	0.30000	<0.83	0.90	<0.79	<0.84
123478-hexachlorodibenzofuran	0.10000	<0.30	<0.24	<0.24	<0.26
123678-hexachlorodibenzofuran	0.10000	<0.30	0.34	<0.30	<0.31
234678-hexachlorodibenzofuran	0.10000	<0.15	<0.69	0.67	<0.50
123789-hexachlorodibenzofuran	0.10000	<0.17	<0.28	<0.17	<0.21
1234678-heptachlorodibenzofuran	0.01000	0.20	0.22	0.18	0.20
1234789-heptachlorodibenzofuran	0.01000	0.039	0.040	<0.036	<0.038
Octachlorodibenzofuran	0.00030	0.0051	0.0083	0.0053	0.0062
PCB 81	0.00030	0.0024	<0.00041	<0.00047	<0.0011
PCB 77	0.00010	0.018	0.0012	0.0022	0.0072
PCB 123	0.00003	0.0073	<0.000079	0.00028	<0.0025
PCB 118	0.00003	0.49	0.0072	0.0098	0.17
PCB 114	0.00003	0.012	<0.00016	<0.00025	<0.0042
PCB 105	0.00003	0.12	0.0022	0.0027	0.043
PCB 126	0.10000	0.52	0.26	0.21	0.33
PCB 167	0.00003	0.0022	0.000089	0.00011	0.00078
PCB 156/157	0.00003	0.0050	0.00029	0.00034	0.0019
PCB 169	0.03000	<0.041	<0.035	<0.032	<0.036
PCB 189	0.00003	0.000054	0.000041	0.000026	0.000041
Total Dioxins & Furans Only		<8.63	<10.6	<9.21	<9.47
Total PCBs Only		<1.22	<0.30	<0.26	<0.60
Total Dioxins & Furans and PCBs		<9.85	<10.9	<9.47	<10.1

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.92	<1.41	<0.79	<1.04
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.27	<1.49	<1.59	<1.45
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.28	<0.44	<0.37	<0.36
123678-hexachlorodibenzo-p-dioxin	0.10000	1.14	1.16	<1.00	<1.10
123789-hexachlorodibenzo-p-dioxin	0.10000	0.56	0.52	0.56	0.55
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.92	1.04	0.90	0.95
Octachlorodibenzo-p-dioxin	0.00030	0.038	0.058	0.038	0.045
2378-tetrachlorodibenzofuran	0.10000	<0.072	<0.11	<0.070	<0.085
12378-pentachlorodibenzofuran	0.03000	<0.052	<0.041	<0.019	<0.037
23478-pentachlorodibenzofuran	0.30000	<0.66	0.72	<0.62	<0.66
123478-hexachlorodibenzofuran	0.10000	<0.23	<0.19	<0.19	<0.21
123678-hexachlorodibenzofuran	0.10000	<0.23	0.27	<0.24	<0.25
234678-hexachlorodibenzofuran	0.10000	<0.12	<0.55	0.52	<0.40
123789-hexachlorodibenzofuran	0.10000	<0.13	<0.23	<0.13	<0.16
1234678-heptachlorodibenzofuran	0.01000	0.16	0.17	0.14	0.16
1234789-heptachlorodibenzofuran	0.01000	0.031	0.032	<0.029	<0.030
Octachlorodibenzofuran	0.00030	0.0040	0.0066	0.0041	0.0049
PCB 81	0.00030	0.0019	<0.00033	<0.00037	<0.00086
PCB 77	0.00010	0.014	0.00097	0.0018	0.0057
PCB 123	0.00003	0.0058	<0.000063	0.00022	<0.0020
PCB 118	0.00003	0.39	0.0057	0.0077	0.13
PCB 114	0.00003	0.0097	<0.000126	<0.00020	<0.0033
PCB 105	0.00003	0.099	0.0017	0.0021	0.034
PCB 126	0.10000	0.41	0.21	0.17	0.26
PCB 167	0.00003	0.0017	0.000071	0.000082	0.00062
PCB 156/157	0.00003	0.0039	0.00023	0.00027	0.0015
PCB 169	0.03000	<0.033	<0.028	<0.025	<0.029
PCB 189	0.00003	0.000043	0.000033	0.000021	0.000032
Total Dioxins & Furans Only		<6.82	<8.45	<7.22	<7.50
Total PCBs Only		<0.97	<0.24	<0.21	<0.47
Total Dioxins & Furans and PCBs		<7.79	<8.69	<7.42	<7.97

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 46A
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	0.46	0.71	0.40	0.52
12378-pentachlorodibenzo-p-dioxin	1.00000	0.63	0.75	0.79	0.72
123478-hexachlorodibenzo-p-dioxin	0.10000	0.14	0.22	0.18	0.18
123678-hexachlorodibenzo-p-dioxin	0.10000	1.14	1.16	0.50	0.94
123789-hexachlorodibenzo-p-dioxin	0.10000	0.56	0.52	0.56	0.55
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.92	1.04	0.90	0.95
Octachlorodibenzo-p-dioxin	0.00030	0.038	0.058	0.038	0.045
2378-tetrachlorodibenzofuran	0.10000	0.036	0.056	0.035	0.042
12378-pentachlorodibenzofuran	0.03000	0.026	0.020	0.0093	0.018
23478-pentachlorodibenzofuran	0.30000	0.33	0.72	0.31	0.45
123478-hexachlorodibenzofuran	0.10000	0.12	0.097	0.095	0.10
123678-hexachlorodibenzofuran	0.10000	0.12	0.27	0.12	0.17
234678-hexachlorodibenzofuran	0.10000	0.059	0.28	0.52	0.29
123789-hexachlorodibenzofuran	0.10000	0.066	0.11	0.067	0.082
1234678-heptachlorodibenzofuran	0.01000	0.16	0.17	0.14	0.16
1234789-heptachlorodibenzofuran	0.01000	0.031	0.032	0.014	0.026
Octachlorodibenzofuran	0.00030	0.0040	0.0066	0.0041	0.0049
PCB 81	0.00030	0.0019	0.00016	0.00018	0.00075
PCB 77	0.00010	0.014	0.00097	0.0018	0.0057
PCB 123	0.00003	0.0058	0.000032	0.00022	0.0020
PCB 118	0.00003	0.39	0.0057	0.0077	0.13
PCB 114	0.00003	0.0097	0.000063	0.000098	0.0033
PCB 105	0.00003	0.099	0.0017	0.0021	0.034
PCB 126	0.10000	0.41	0.21	0.17	0.26
PCB 167	0.00003	0.0017	0.000071	0.000082	0.00062
PCB 156/157	0.00003	0.0039	0.00023	0.00027	0.0015
PCB 169	0.03000	0.016	0.014	0.013	0.014
PCB 189	0.00003	0.000043	0.000033	0.000021	0.000032
Total Dioxins & Furans Only		4.84	6.21	4.69	5.25
Total PCBs Only		0.95	0.23	0.19	0.46
Total Dioxins & Furans and PCBs		5.79	6.44	4.89	5.71

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 46B
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.92	<1.41	<0.79	<1.04
12378-pentachlorodibenzo-p-dioxin	0.500	<0.63	<0.75	<0.79	<0.72
123478-hexachlorodibenzo-p-dioxin	0.100	<0.28	<0.44	<0.37	<0.36
123678-hexachlorodibenzo-p-dioxin	0.100	1.14	1.16	<1.00	<1.10
123789-hexachlorodibenzo-p-dioxin	0.100	0.56	0.52	0.56	0.55
1234678-heptachlorodibenzo-p-dioxin	0.010	0.92	1.04	0.90	0.95
Octachlorodibenzo-p-dioxin	0.001	0.13	0.19	0.13	0.15
2378-tetrachlorodibenzofuran	0.100	<0.072	<0.11	<0.070	<0.085
12378-pentachlorodibenzofuran	0.050	<0.086	<0.068	<0.031	<0.062
23478-pentachlorodibenzofuran	0.500	<1.09	1.19	<1.03	<1.11
123478-hexachlorodibenzofuran	0.100	<0.23	<0.19	<0.19	<0.21
123678-hexachlorodibenzofuran	0.100	<0.23	0.27	<0.24	<0.25
234678-hexachlorodibenzofuran	0.100	<0.12	<0.55	0.52	<0.40
123789-hexachlorodibenzofuran	0.100	<0.13	<0.23	<0.13	<0.16
1234678-heptachlorodibenzofuran	0.010	0.16	0.17	0.14	0.16
1234789-heptachlorodibenzofuran	0.010	0.031	0.032	<0.029	<0.030
Octachlorodibenzofuran	0.001	0.013	0.022	0.014	0.016
Total Dioxins & Furans		<6.76	<8.35	<6.95	<7.35
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.98	<1.48	<0.85	<1.10
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.35	<1.56	<1.71	<1.54
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.30	<0.46	<0.39	<0.38
123678-hexachlorodibenzo-p-dioxin	0.10000	1.22	1.22	<1.08	<1.17
123789-hexachlorodibenzo-p-dioxin	0.10000	0.59	0.54	0.60	0.58
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.98	1.09	0.97	1.01
Octachlorodibenzo-p-dioxin	0.00030	0.041	0.061	0.041	0.047
2378-tetrachlorodibenzofuran	0.10000	<0.076	<0.12	<0.075	<0.090
12378-pentachlorodibenzofuran	0.03000	<0.055	<0.043	<0.020	<0.039
23478-pentachlorodibenzofuran	0.30000	<0.70	0.75	<0.67	<0.70
123478-hexachlorodibenzofuran	0.10000	<0.25	<0.20	<0.21	<0.22
123678-hexachlorodibenzofuran	0.10000	<0.25	0.28	<0.26	<0.26
234678-hexachlorodibenzofuran	0.10000	<0.12	<0.58	0.56	<0.42
123789-hexachlorodibenzofuran	0.10000	<0.14	<0.24	<0.14	<0.17
1234678-heptachlorodibenzofuran	0.01000	0.17	0.18	0.15	0.17
1234789-heptachlorodibenzofuran	0.01000	0.033	0.033	<0.031	<0.032
Octachlorodibenzofuran	0.00030	0.0043	0.0069	0.0045	0.0052
PCB 81	0.00030	0.0020	<0.00034	<0.00039	<0.00092
PCB 77	0.00010	0.015	0.0010	0.0019	0.0060
PCB 123	0.00003	0.0061	<0.000066	0.00023	<0.0021
PCB 118	0.00003	0.41	0.0060	0.0083	0.14
PCB 114	0.00003	0.010	<0.00013	<0.00021	<0.0036
PCB 105	0.00003	0.11	0.0018	0.0023	0.036
PCB 126	0.10000	0.44	0.22	0.18	0.28
PCB 167	0.00003	0.0018	0.000074	0.000089	0.00066
PCB 156/157	0.00003	0.0042	0.00024	0.00029	0.0016
PCB 169	0.03000	<0.035	<0.030	<0.027	<0.031
PCB 189	0.00003	0.000046	0.000035	0.000022	0.000034
Total Dioxins & Furans Only		<7.26	<8.86	<7.76	<7.96
Total PCBs Only		<1.03	<0.26	<0.22	<0.50
Total Dioxins & Furans and PCBs		<8.29	<9.11	<7.98	<8.46

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.019	<0.027	<0.016	<0.021
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.025	<0.029	<0.032	<0.029
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.0057	<0.0085	<0.0073	<0.0071
123678-hexachlorodibenzo-p-dioxin	0.10000	0.023	0.023	<0.020	<0.022
123789-hexachlorodibenzo-p-dioxin	0.10000	0.011	0.010	0.011	0.011
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.019	0.020	0.018	0.019
Octachlorodibenzo-p-dioxin	0.00030	0.00077	0.0011	0.00076	0.00088
2378-tetrachlorodibenzofuran	0.10000	<0.0014	<0.0022	<0.0014	<0.0017
12378-pentachlorodibenzofuran	0.03000	<0.0010	<0.00079	<0.00037	<0.00073
23478-pentachlorodibenzofuran	0.30000	<0.013	0.014	<0.012	<0.013
123478-hexachlorodibenzofuran	0.10000	<0.0047	<0.0038	<0.0038	<0.0041
123678-hexachlorodibenzofuran	0.10000	<0.0047	0.0052	<0.0047	<0.0049
234678-hexachlorodibenzofuran	0.10000	<0.0024	<0.011	0.010	<0.0078
123789-hexachlorodibenzofuran	0.10000	<0.0027	<0.0044	<0.0027	<0.0032
1234678-heptachlorodibenzofuran	0.01000	0.0032	0.0034	0.0028	0.0031
1234789-heptachlorodibenzofuran	0.01000	0.00062	0.00061	<0.00057	<0.00060
Octachlorodibenzofuran	0.00030	0.000081	0.00013	0.000082	0.000097
PCB 81	0.00030	0.000038	<0.0000063	<0.0000073	<0.000017
PCB 77	0.00010	0.00029	0.000019	0.000035	0.00011
PCB 123	0.00003	0.00012	<0.0000012	0.0000043	<0.000040
PCB 118	0.00003	0.0078	0.00011	0.00015	0.0027
PCB 114	0.00003	0.00019	<0.0000025	<0.0000039	<0.000067
PCB 105	0.00003	0.0020	0.000034	0.000043	0.00069
PCB 126	0.10000	0.0083	0.0040	0.0034	0.0052
PCB 167	0.00003	0.000034	0.0000014	0.0000016	0.000012
PCB 156/157	0.00003	0.000079	0.0000044	0.0000053	0.000030
PCB 169	0.03000	<0.00066	<0.00055	<0.00050	<0.00057
PCB 189	0.00003	0.00000086	0.00000064	0.00000041	0.00000064
Total Dioxins & Furans Only		<0.14	<0.16	<0.14	<0.15
Total PCBs Only		<0.019	<0.0047	<0.0041	<0.0094
Total Dioxins & Furans and PCBs		<0.16	<0.17	<0.15	<0.16

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg TEQ/m^3	pg TEQ/Rm^3*	pg TEQ/Rm^3**	pg TEQ/Rm^3*	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.77	<1.31	<1.04	<1.10	<0.021
12378-pentachlorodibenzo-p-dioxin	<1.07	<1.83	<1.45	<1.54	<0.029
123478-hexachlorodibenzo-p-dioxin	<0.27	<0.46	<0.36	<0.38	<0.0071
123678-hexachlorodibenzo-p-dioxin	<0.81	<1.39	<1.10	<1.17	<0.022
123789-hexachlorodibenzo-p-dioxin	0.40	0.69	0.55	0.58	0.011
1234678-heptachlorodibenzo-p-dioxin	0.71	1.21	0.95	1.01	0.019
Octachlorodibenzo-p-dioxin	0.033	0.056	0.045	0.047	0.00088
2378-tetrachlorodibenzofuran	<0.062	<0.11	<0.085	<0.090	<0.0017
12378-pentachlorodibenzofuran	<0.027	<0.047	<0.037	<0.039	<0.00073
23478-pentachlorodibenzofuran	<0.49	<0.84	<0.66	<0.70	<0.013
123478-hexachlorodibenzofuran	<0.15	<0.26	<0.21	<0.22	<0.0041
123678-hexachlorodibenzofuran	<0.18	<0.31	<0.25	<0.26	<0.0049
234678-hexachlorodibenzofuran	<0.29	<0.50	<0.40	<0.42	<0.0078
123789-hexachlorodibenzofuran	<0.12	<0.21	<0.16	<0.17	<0.0032
1234678-heptachlorodibenzofuran	0.12	0.20	0.16	0.17	0.0031
1234789-heptachlorodibenzofuran	<0.022	<0.038	<0.030	<0.032	<0.00060
Octachlorodibenzofuran	0.0036	0.0062	0.0049	0.0052	0.000097
PCB 81	<0.00064	<0.0011	<0.00086	<0.00092	<0.000017
PCB 77	0.0042	0.0072	0.0057	0.0060	0.00011
PCB 123	<0.0015	<0.0025	<0.0020	<0.0021	<0.000040
PCB 118	0.099	0.17	0.13	0.14	0.0027
PCB 114	<0.0025	<0.0042	<0.0033	<0.0036	<0.000067
PCB 105	0.025	0.043	0.034	0.036	0.00069
PCB 126	0.19	0.33	0.26	0.28	0.0052
PCB 167	0.00046	0.00078	0.00062	0.00066	0.000012
PCB 156/157	0.0011	0.0019	0.0015	0.0016	0.000030
PCB 169	<0.021	<0.036	<0.029	<0.031	<0.00057
PCB 189	0.000024	0.000041	0.000032	0.000034	0.00000064
Total Dioxins & Furans Only	<5.53	<9.47	<7.50	<7.96	<0.15
Total PCBs Only	<0.35	<0.60	<0.47	<0.50	<0.0094
Total Dioxins & Furans and PCBs	<5.88	<10.1	<7.97	<8.46	<0.16

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.38	0.66	0.52	0.55	0.010
12378-pentachlorodibenzo-p-dioxin	0.54	0.92	0.72	0.77	0.014
123478-hexachlorodibenzo-p-dioxin	0.13	0.23	0.18	0.19	0.0036
123678-hexachlorodibenzo-p-dioxin	0.69	1.18	0.94	0.99	0.019
123789-hexachlorodibenzo-p-dioxin	0.40	0.69	0.55	0.58	0.011
1234678-heptachlorodibenzo-p-dioxin	0.71	1.21	0.95	1.01	0.019
Octachlorodibenzo-p-dioxin	0.033	0.056	0.045	0.047	0.00088
2378-tetrachlorodibenzofuran	0.031	0.053	0.042	0.045	0.00083
12378-pentachlorodibenzofuran	0.014	0.023	0.018	0.020	0.00037
23478-pentachlorodibenzofuran	0.33	0.57	0.45	0.48	0.0089
123478-hexachlorodibenzofuran	0.076	0.13	0.10	0.11	0.0020
123678-hexachlorodibenzofuran	0.12	0.21	0.17	0.18	0.0033
234678-hexachlorodibenzofuran	0.21	0.36	0.29	0.31	0.0057
123789-hexachlorodibenzofuran	0.061	0.10	0.082	0.087	0.0016
1234678-heptachlorodibenzofuran	0.12	0.20	0.16	0.17	0.0031
1234789-heptachlorodibenzofuran	0.019	0.032	0.026	0.027	0.00051
Octachlorodibenzofuran	0.0036	0.0062	0.0049	0.0052	0.000097
PCB 81	0.00055	0.00095	0.00075	0.00080	0.000015
PCB 77	0.0042	0.0072	0.0057	0.0060	0.00011
PCB 123	0.0015	0.0025	0.0020	0.0021	0.000040
PCB 118	0.099	0.17	0.13	0.14	0.0027
PCB 114	0.0024	0.0042	0.0033	0.0035	0.000066
PCB 105	0.025	0.043	0.034	0.036	0.00069
PCB 126	0.19	0.33	0.26	0.28	0.0052
PCB 167	0.00046	0.00078	0.00062	0.00066	0.000012
PCB 156/157	0.0011	0.0019	0.0015	0.0016	0.000030
PCB 169	0.011	0.018	0.014	0.015	0.00028
PCB 189	0.000024	0.000041	0.000032	0.000034	0.00000064
Total Dioxins & Furans Only	3.87	6.63	5.25	5.57	0.10
Total PCBs Only	0.34	0.58	0.46	0.49	0.0091
Total Dioxins & Furans and PCBs	4.21	7.21	5.71	6.06	0.11

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1690	196	334	264	281	5.31
1,3-Dichlorobenzene	155	18.0	30.6	24.2	25.7	0.49
1,4-Dichlorobenzene	123	14.2	24.3	19.2	20.4	0.39
1,2-Dichlorobenzene	100	11.6	19.7	15.6	16.6	0.31
Total Dichlorobenzene	378	43.8	74.6	59.0	62.8	1.19
1,3,5-trichlorobenzene	12.7	1.47	2.51	1.98	2.11	0.040
1,2,4-trichlorobenzene	36.3	4.20	7.17	5.67	6.03	0.11
1,2,3-trichlorobenzene	19.0	2.20	3.75	2.97	3.16	0.060
Total Trichlorobenzene	68.0	7.88	13.4	10.6	11.3	0.21
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.39	<2.37	<1.87	<1.99	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Total Tetrachlorobenzene	<24.0	<2.78	<4.74	<3.75	<3.99	<0.075
Pentachlorobenzene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Hexachlorobenzene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Total Chlorobenzenes	<2184	<253	<431	<341	<363	<6.86

Dry Gas Volume Sampled (Rm^3*) :	5.065
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	2000	237	406	324	340	6.29
1,3-Dichlorobenzene	189	22.4	38.4	30.6	32.1	0.59
1,4-Dichlorobenzene	166	19.6	33.7	26.9	28.2	0.52
1,2-Dichlorobenzene	89.8	10.6	18.2	14.6	15.3	0.28
Total Dichlorobenzene	445	52.6	90.3	72.1	75.6	1.40
1,3,5-trichlorobenzene	15.6	1.84	3.17	2.53	2.65	0.049
1,2,4-trichlorobenzene	41.7	4.93	8.46	6.76	7.09	0.13
1,2,3-trichlorobenzene	32.8	3.88	6.66	5.32	5.58	0.10
Total Trichlorobenzene	90.1	10.7	18.3	14.6	15.3	0.28
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.42	<2.44	<1.95	<2.04	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Total Tetrachlorobenzene	<24.0	<2.84	<4.87	<3.89	<4.08	<0.076
Pentachlorobenzene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Hexachlorobenzene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Total Chlorobenzenes	<2583	<305	<524	<419	<439	<8.13

Dry Gas Volume Sampled (Rm^3*) :	4.927
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1920	227	389	305	328	6.07
1,3-Dichlorobenzene	178	21.1	36.1	28.3	30.4	0.56
1,4-Dichlorobenzene	108.0	12.8	21.9	17.2	18.5	0.34
1,2-Dichlorobenzene	100	11.8	20.3	15.9	17.1	0.32
Total Dichlorobenzene	386	45.7	78.2	61.3	66.0	1.22
1,3,5-trichlorobenzene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
1,2,4-trichlorobenzene	36.2	4.29	7.34	5.75	6.19	0.11
1,2,3-trichlorobenzene	32.5	3.85	6.59	5.16	5.55	0.10
Total Trichlorobenzene	<80.7	<9.55	<16.4	<12.8	<13.8	<0.26
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.42	<2.43	<1.91	<2.05	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Total Tetrachlorobenzene	<24.0	<2.84	<4.86	<3.81	<4.10	<0.076
Pentachlorobenzene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Hexachlorobenzene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Total Chlorobenzenes	<2435	<288	<493	<387	<416	<7.70

Dry Gas Volume Sampled (Rm^3*) :	4.935
Actual Flowrate (m^3/s) :	26.7
Dry Reference Flowrate (Rm^3/s*) :	15.6
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	18.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	196	237	227	220	9.7
1,3-Dichlorobenzene	18.0	22.4	21.1	20.5	11.1
1,4-Dichlorobenzene	14.2	19.6	12.8	15.6	23.2
1,2-Dichlorobenzene	11.6	10.6	11.8	11.3	5.7
Total Dichlorobenzene	43.8	52.6	45.7	47.4	9.8
1,3,5-trichlorobenzene	1.47	1.84	<1.42	<1.58	14.7
1,2,4-trichlorobenzene	4.20	4.93	4.29	4.47	8.9
1,2,3-trichlorobenzene	2.20	3.88	3.85	3.31	29.0
Total Trichlorobenzene	7.88	10.7	<9.55	<9.36	14.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.39	<1.42	<1.42	<1.41	1.2
1,2,3,4-tetrachlorobenzene	<1.39	<1.42	<1.42	<1.41	1.2
Total Tetrachlorobenzene	<2.78	<2.84	<2.84	<2.82	1.2
Pentachlorobenzene	<1.39	<1.42	<1.42	<1.41	1.2
Hexachlorobenzene	<1.39	<1.42	<1.42	<1.41	1.2
Total Chlorobenzenes	<253	<305	<288	<282	9.5

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	334	406	389	376	10.0
1,3-Dichlorobenzene	30.6	38.4	36.1	35.0	11.4
1,4-Dichlorobenzene	24.3	33.7	21.9	26.6	23.4
1,2-Dichlorobenzene	19.7	18.2	20.3	19.4	5.5
Total Dichlorobenzene	74.6	90.3	78.2	81.0	10.1
1,3,5-trichlorobenzene	2.51	3.17	<2.43	<2.70	15.0
1,2,4-trichlorobenzene	7.17	8.46	7.34	7.66	9.2
1,2,3-trichlorobenzene	3.75	6.66	6.59	5.66	29.3
Total Trichlorobenzene	13.4	18.3	<16.4	<16.0	15.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.37	<2.44	<2.43	<2.41	1.5
1,2,3,4-tetrachlorobenzene	<2.37	<2.44	<2.43	<2.41	1.5
Total Tetrachlorobenzene	<4.74	<4.87	<4.86	<4.82	1.5
Pentachlorobenzene	<2.37	<2.44	<2.43	<2.41	1.5
Hexachlorobenzene	<2.37	<2.44	<2.43	<2.41	1.5
Total Chlorobenzenes	<431	<524	<493	<483	9.8

* At 25°C and 1 atmosphere

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	%
Monochlorobenzene	264	324	305	298	10.4
1,3-Dichlorobenzene	24.2	30.6	28.3	27.7	11.8
1,4-Dichlorobenzene	19.2	26.9	17.2	21.1	24.4
1,2-Dichlorobenzene	15.6	14.6	15.9	15.4	4.6
Total Dichlorobenzene	59.0	72.1	61.3	64.2	10.9
1,3,5-trichlorobenzene	1.98	2.53	<1.91	<2.14	15.9
1,2,4-trichlorobenzene	5.67	6.76	5.75	6.06	10.0
1,2,3-trichlorobenzene	2.97	5.32	5.16	4.48	29.3
Total Trichlorobenzene	10.6	14.6	<12.8	<12.7	15.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.87	<1.95	<1.91	<1.91	1.9
1,2,3,4-tetrachlorobenzene	<1.87	<1.95	<1.91	<1.91	1.9
Total Tetrachlorobenzene	<3.75	<3.89	<3.81	<3.82	1.9
Pentachlorobenzene	<1.87	<1.95	<1.91	<1.91	1.9
Hexachlorobenzene	<1.87	<1.95	<1.91	<1.91	1.9
Total Chlorobenzenes	<341	<419	<387	<382	10.2

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	281	340	328	316	9.9
1,3-Dichlorobenzene	25.7	32.1	30.4	29.4	11.2
1,4-Dichlorobenzene	20.4	28.2	18.5	22.4	23.1
1,2-Dichlorobenzene	16.6	15.3	17.1	16.3	5.8
Total Dichlorobenzene	62.8	75.6	66.0	68.1	9.8
1,3,5-trichlorobenzene	2.11	2.65	<2.05	<2.27	14.6
1,2,4-trichlorobenzene	6.03	7.09	6.19	6.44	8.9
1,2,3-trichlorobenzene	3.16	5.58	5.55	4.76	29.2
Total Trichlorobenzene	11.3	15.3	<13.8	<13.5	15.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.99	<2.04	<2.05	<2.03	1.5
1,2,3,4-tetrachlorobenzene	<1.99	<2.04	<2.05	<2.03	1.5
Total Tetrachlorobenzene	<3.99	<4.08	<4.10	<4.06	1.5
Pentachlorobenzene	<1.99	<2.04	<2.05	<2.03	1.5
Hexachlorobenzene	<1.99	<2.04	<2.05	<2.03	1.5
Total Chlorobenzenes	<363	<439	<416	<406	9.7

* At 25°C and 1 atmosphere

TABLE 58
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
Monochlorobenzene	5.31	6.29	6.07	5.89	8.8
1,3-Dichlorobenzene	0.49	0.59	0.56	0.55	10.1
1,4-Dichlorobenzene	0.39	0.52	0.34	0.42	22.6
1,2-Dichlorobenzene	0.31	0.28	0.32	0.30	6.2
Total Dichlorobenzene	1.19	1.40	1.22	1.27	9.0
1,3,5-trichlorobenzene	0.040	0.049	<0.038	<0.042	14.1
1,2,4-trichlorobenzene	0.11	0.13	0.11	0.12	8.2
1,2,3-trichlorobenzene	0.060	0.10	0.10	0.089	28.3
Total Trichlorobenzene	0.21	0.28	<0.26	<0.25	14.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.038	<0.038	<0.038	<0.038	0.4
1,2,3,4-tetrachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.4
Total Tetrachlorobenzene	<0.075	<0.076	<0.076	<0.076	0.4
Pentachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.4
Hexachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.4
Total Chlorobenzenes	<6.86	<8.13	<7.70	<7.56	8.5

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	220	376	298	316	5.89
1,3-Dichlorobenzene	20.5	35.0	27.7	29.4	0.55
1,4-Dichlorobenzene	15.6	26.6	21.1	22.4	0.42
1,2-Dichlorobenzene	11.3	19.4	15.4	16.3	0.30
Total Dichlorobenzene	47.4	81.0	64.2	68.1	1.27
1,3,5-trichlorobenzene	<1.58	<2.70	<2.14	<2.27	<0.042
1,2,4-trichlorobenzene	4.47	7.66	6.06	6.44	0.12
1,2,3-trichlorobenzene	3.31	5.66	4.48	4.76	0.089
Total Trichlorobenzene	<9.36	<16.0	<12.7	<13.5	<0.25
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.41	<2.41	<1.91	<2.03	<0.038
1,2,3,4-tetrachlorobenzene	<1.41	<2.41	<1.91	<2.03	<0.038
Total Tetrachlorobenzene	<2.82	<4.82	<3.82	<4.06	<0.076
Pentachlorobenzene	<1.41	<2.41	<1.91	<2.03	<0.038
Hexachlorobenzene	<1.41	<2.41	<1.91	<2.03	<0.038
Total Chlorobenzenes	<282	<483	<382	<406	<7.56

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Laboratory Blank Total ng
Monochlorobenzene	<12	<12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	<12	<12
1,2-Dichlorobenzene	26.9	<12
Total Dichlorobenzene	<50.9	<36.0
1,3,5-trichlorobenzene	<12	<12
1,2,4-trichlorobenzene	<12	<12
1,2,3-trichlorobenzene	<12	<12
Total Trichlorobenzene	<36.0	<36.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<12
1,2,3,4-tetrachlorobenzene	<12	<12
Total Tetrachlorobenzene	<24.0	<24.0
Pentachlorobenzene	<12	<12
Hexachlorobenzene	<12	<12
Total Chlorobenzenes	<147	<132

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
3-monochlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
4-monochlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
Total Monochlorophenols	<180	<20.9	<35.5	<28.1	<29.9	<0.57
2,6-dichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
2,4 & 2,5-dichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
3,5-dichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
2,3-dichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
3,4-dichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
Total Dichlorophenols	<300	<34.8	<59.2	<46.9	<49.8	<0.94
2,4,6-trichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
2,3,6-trichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
2,3,5-trichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
2,4,5-trichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
2,3,4-trichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
3,4,5-trichlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
Total Trichlorophenols	<360	<41.7	<71.1	<56.2	<59.8	<1.13
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
2,3,4,5-tetrachlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
Total Tetrachlorophenols	<120	<13.9	<23.7	<18.7	<19.9	<0.38
Pentachlorophenol	<60	<6.95	<11.8	<9.37	<9.97	<0.19
Total Chlorophenols	<1020	<118	<201	<159	<169	<3.20

Dry Gas Volume Sampled (Rm^3*) :	5.065
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 62
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
3-monochlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
4-monochlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
Total Monochlorophenols	<180	<21.3	<36.5	<29.2	<30.6	<0.57
2,6-dichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
3,5-dichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
2,3-dichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
3,4-dichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
Total Dichlorophenols	<300	<35.5	<60.9	<48.6	<51.0	<0.94
2,4,6-trichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
2,3,6-trichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
2,3,5-trichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
2,4,5-trichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
2,3,4-trichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
3,4,5-trichlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
Total Trichlorophenols	<360	<42.6	<73.1	<58.4	<61.2	<1.13
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
Total Tetrachlorophenols	<120	<14.2	<24.4	<19.5	<20.4	<0.38
Pentachlorophenol	<60	<7.10	<12.2	<9.73	<10.2	<0.19
Total Chlorophenols	<1020	<121	<207	<165	<173	<3.21

Dry Gas Volume Sampled (Rm^3*) :	4.927
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 63
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
3-monochlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
4-monochlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
Total Monochlorophenols	<180	<21.3	<36.5	<28.6	<30.8	<0.57
2,6-dichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
3,5-dichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
2,3-dichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
3,4-dichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
Total Dichlorophenols	<300	<35.5	<60.8	<47.7	<51.3	<0.95
2,4,6-trichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
2,3,6-trichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
2,3,5-trichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
2,4,5-trichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
2,3,4-trichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
3,4,5-trichlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
Total Trichlorophenols	<360	<42.6	<72.9	<57.2	<61.5	<1.14
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
Total Tetrachlorophenols	<120	<14.2	<24.3	<19.1	<20.5	<0.38
Pentachlorophenol	<60	<7.10	<12.2	<9.53	<10.3	<0.19
Total Chlorophenols	<1020	<121	<207	<162	<174	<3.22

Dry Gas Volume Sampled (Rm^3*) :	4.935
Actual Flowrate (m^3/s) :	26.7
Dry Reference Flowrate (Rm^3/s*) :	15.6
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	18.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 64
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
3-monochlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
4-monochlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
Total Monochlorophenols	<20.9	<21.3	<21.3	<21.1	1.2
2,6-dichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
2,4 & 2,5-dichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
3,5-dichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
2,3-dichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
3,4-dichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
Total Dichlorophenols	<34.8	<35.5	<35.5	<35.2	1.2
2,4,6-trichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
2,3,6-trichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
2,3,5-trichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
2,4,5-trichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
2,3,4-trichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
3,4,5-trichlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
Total Trichlorophenols	<41.7	<42.6	<42.6	<42.3	1.2
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
2,3,4,5-tetrachlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
Total Tetrachlorophenols	<13.9	<14.2	<14.2	<14.1	1.2
Pentachlorophenol	<6.95	<7.10	<7.10	<7.05	1.2
Total Chlorophenols	<118	<121	<121	<120	1.2

TABLE 65
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
3-monochlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
4-monochlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
Total Monochlorophenols	<35.5	<36.5	<36.5	<36.2	1.5
2,6-dichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
2,4 & 2,5-dichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
3,5-dichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
2,3-dichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
3,4-dichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
Total Dichlorophenols	<59.2	<60.9	<60.8	<60.3	1.5
2,4,6-trichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
2,3,6-trichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
2,3,5-trichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
2,4,5-trichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
2,3,4-trichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
3,4,5-trichlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
Total Trichlorophenols	<71.1	<73.1	<72.9	<72.4	1.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
2,3,4,5-tetrachlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
Total Tetrachlorophenols	<23.7	<24.4	<24.3	<24.1	1.5
Pentachlorophenol	<11.8	<12.2	<12.2	<12.1	1.5
Total Chlorophenols	<201	<207	<207	<205	1.5

* At 25°C and 1 atmosphere

TABLE 66
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
3-monochlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
4-monochlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
Total Monochlorophenols	<28.1	<29.2	<28.6	<28.6	1.9
2,6-dichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
2,4 & 2,5-dichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
3,5-dichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
2,3-dichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
3,4-dichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
Total Dichlorophenols	<46.9	<48.6	<47.7	<47.7	1.9
2,4,6-trichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
2,3,6-trichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
2,3,5-trichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
2,4,5-trichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
2,3,4-trichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
3,4,5-trichlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
Total Trichlorophenols	<56.2	<58.4	<57.2	<57.3	1.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
2,3,4,5-tetrachlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
Total Tetrachlorophenols	<18.7	<19.5	<19.1	<19.1	1.9
Pentachlorophenol	<9.37	<9.73	<9.53	<9.54	1.9
Total Chlorophenols	<159	<165	<162	<162	1.9

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 67
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
3-monochlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
4-monochlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
Total Monochlorophenols	<29.9	<30.6	<30.8	<30.4	1.5
2,6-dichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
2,4 & 2,5-dichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
3,5-dichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
2,3-dichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
3,4-dichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
Total Dichlorophenols	<49.8	<51.0	<51.3	<50.7	1.5
2,4,6-trichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
2,3,6-trichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
2,3,5-trichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
2,4,5-trichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
2,3,4-trichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
3,4,5-trichlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
Total Trichlorophenols	<59.8	<61.2	<61.5	<60.8	1.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
2,3,4,5-tetrachlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
Total Tetrachlorophenols	<19.9	<20.4	<20.5	<20.3	1.5
Pentachlorophenol	<9.97	<10.2	<10.3	<10.1	1.5
Total Chlorophenols	<169	<173	<174	<172	1.5

* At 25°C and 1 atmosphere

TABLE 68
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
2-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
3-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
4-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
Total Monochlorophenols	<0.57	<0.57	<0.57	<0.57	0.4
2,6-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
2,4 & 2,5-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
3,5-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
2,3-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
3,4-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
Total Dichlorophenols	<0.94	<0.94	<0.95	<0.94	0.4
2,4,6-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
2,3,6-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
2,3,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
2,4,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
2,3,4-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
3,4,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
Total Trichlorophenols	<1.13	<1.13	<1.14	<1.13	0.4
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
2,3,4,5-tetrachlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
Total Tetrachlorophenols	<0.38	<0.38	<0.38	<0.38	0.4
Pentachlorophenol	<0.19	<0.19	<0.19	<0.19	0.4
Total Chlorophenols	<3.20	<3.21	<3.22	<3.21	0.4

TABLE 69
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
3-monochlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
4-monochlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
Total Monochlorophenols	<21.1	<36.2	<28.6	<30.4	<0.57
2,6-dichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
2,4 & 2,5-dichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
3,5-dichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
2,3-dichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
3,4-dichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
Total Dichlorophenols	<35.2	<60.3	<47.7	<50.7	<0.94
2,4,6-trichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
2,3,6-trichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
2,3,5-trichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
2,4,5-trichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
2,3,4-trichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
3,4,5-trichlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
Total Trichlorophenols	<42.3	<72.4	<57.3	<60.8	<1.13
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
2,3,4,5-tetrachlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
Total Tetrachlorophenols	<14.1	<24.1	<19.1	<20.3	<0.38
Pentachlorophenol	<7.05	<12.1	<9.54	<10.1	<0.19
Total Chlorophenols	<120	<205	<162	<172	<3.21

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 70
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Lab Blank Total ng	Blank Train Total ng
2-monochlorophenol	<60	<60
3-monochlorophenol	<60	<60
4-monochlorophenol	<60	<60
Total Monochlorophenols	<180	<180
2,6-dichlorophenol	<60	<60
2,4 & 2,5-dichlorophenol	<60	<60
3,5-dichlorophenol	<60	<60
2,3-dichlorophenol	<60	<60
3,4-dichlorophenol	<60	<60
Total Dichlorophenols	<300	<300
2,4,6-trichlorophenol	<60	<60
2,3,6-trichlorophenol	<60	<60
2,3,5-trichlorophenol	<60	<60
2,4,5-trichlorophenol	<60	<60
2,3,4-trichlorophenol	<60	<60
3,4,5-trichlorophenol	<60	<60
Total Trichlorophenols	<360	<360
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<60
2,3,4,5-tetrachlorophenol	<60	<60
Total Tetrachlorophenols	<120	<120
Pentachlorophenol	<60	<60
Total Chlorophenols	<1020	<1020

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 71
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Acenaphthylene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Anthracene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Benzo(a)Anthracene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Benzo(b)Fluoranthene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Benzo(k)Fluoranthene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Benzo(a)fluorene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Benzo(b)fluorene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Benzo(g,h,i)Perylene	64.0	7.41	12.6	10.0	10.6	0.20
Benzo(a)Pyrene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Benzo(e)Pyrene	18.4	2.13	3.63	2.87	3.06	0.058
Biphenyl	32.0	3.71	6.32	5.00	5.32	0.10
2-Chloronaphthalene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Chrysene/Triphenylene	17.0	1.97	3.36	2.66	2.82	0.053
Coronene	95.2	11.0	18.8	14.9	15.8	0.30
Dibenzo(a,c/a,h)Anthracene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Dibenzo(a,e)pyrene	<60	<6.95	<11.8	<9.37	<9.97	<0.19
9,10-dimethylanthracene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Fluoranthene	127	14.7	25.1	19.8	21.1	0.40
Fluorene	20.0	2.32	3.95	3.12	3.32	0.063
Indeno(1,2,3-cd)Pyrene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
2-methylanthracene	197	22.8	38.9	30.8	32.7	0.62
3-Methylcholanthrene	<60	<6.95	<11.8	<9.37	<9.97	<0.19
1-Methylnaphthalene	20.8	2.41	4.11	3.25	3.45	0.065
2-Methylnaphthalene	29.5	3.42	5.82	4.61	4.90	0.093
1-Methylphenanthrene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
9-Methylphenanthrene	88.7	10.3	17.5	13.9	14.7	0.28
Naphthalene	96.2	11.1	19.0	15.0	16.0	0.30
Perylene	<12	<1.39	<2.37	<1.87	<1.99	<0.038
Phenanthrene	573	66.4	113	89.5	95.2	1.80
Picene	<60	<6.95	<11.8	<9.37	<9.97	<0.19
Pyrene	103	11.9	20.3	16.1	17.1	0.32
Tetralin	67.6	7.8	13.3	10.6	11.2	0.21
m-terphenyl	27.3	3.16	5.39	4.26	4.53	0.086
o-Terphenyl	33.1	3.83	6.54	5.17	5.50	0.10
p-terphenyl	13.2	1.53	2.61	2.06	2.19	0.041
Total	<1995	<231	<394	<312	<331	<6.26

Dry Gas Volume Sampled (Rm³*) :	5.065
Actual Flowrate (m³/s) :	27.1
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 72
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 2

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Acenaphthylene	52.0	6.15	10.6	8.43	8.84	0.16
Anthracene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Benzo(a)Anthracene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Benzo(b)Fluoranthene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Benzo(k)Fluoranthene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Benzo(a)fluorene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Benzo(b)fluorene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Benzo(g,h,i)Perylene	46.8	5.53	9.50	7.59	7.96	0.15
Benzo(a)Pyrene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Benzo(e)Pyrene	16.0	1.89	3.25	2.59	2.72	0.050
Biphenyl	60.5	7.16	12.3	9.81	10.3	0.19
2-Chloronaphthalene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Chrysene/Triphenylene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Coronene	<60	<7.10	<12.2	<9.73	<10.2	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Dibenzo(a,e)pyrene	<60	<7.10	<12.2	<9.73	<10.2	<0.19
9,10-dimethylanthracene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Fluoranthene	23.5	2.78	4.77	3.81	4.00	0.074
Fluorene	15.6	1.84	3.17	2.53	2.65	0.049
Indeno(1,2,3-cd)Pyrene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
2-methylanthracene	28.0	3.31	5.68	4.54	4.76	0.088
3-Methylcholanthrene	<60	<7.10	<12.2	<9.73	<10.2	<0.19
1-Methylnaphthalene	96.3	11.4	19.5	15.6	16.4	0.30
2-Methylnaphthalene	222	26.3	45.1	36.0	37.8	0.70
1-Methylphenanthrene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
9-Methylphenanthrene	27.7	3.28	5.62	4.49	4.71	0.087
Naphthalene	614	72.6	125	99.6	104	1.93
Perylene	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Phenanthrene	70.9	8.39	14.4	11.5	12.1	0.22
Picene	<60	<7.10	<12.2	<9.73	<10.2	<0.19
Pyrene	28.3	3.35	5.74	4.59	4.81	0.089
Tetralin	66.8	7.90	13.6	10.8	11.4	0.21
m-terphenyl	<12	<1.42	<2.44	<1.95	<2.04	<0.038
o-Terphenyl	<12	<1.42	<2.44	<1.95	<2.04	<0.038
p-terphenyl	<12	<1.42	<2.44	<1.95	<2.04	<0.038
Total	<1836	<217	<373	<298	<312	<5.78

Dry Gas Volume Sampled (Rm^3*) :	4.927
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 73
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Acenaphthylene	13.8	1.63	2.80	2.19	2.36	0.044
Anthracene	17.8	2.11	3.61	2.83	3.04	0.056
Benzo(a)Anthracene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Benzo(b)Fluoranthene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Benzo(k)Fluoranthene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Benzo(a)fluorene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Benzo(b)fluorene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Benzo(g,h,i)Perylene	30.9	3.66	6.26	4.91	5.28	0.098
Benzo(a)Pyrene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Benzo(e)Pyrene	13.7	1.62	2.78	2.18	2.34	0.043
Biphenyl	31.3	3.71	6.34	4.97	5.35	0.099
2-Chloronaphthalene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Chrysene/Triphenylene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Coronene	<60	<7.10	<12.2	<9.53	<10.3	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Dibenzo(a,e)pyrene	<60	<7.10	<12.2	<9.53	<10.3	<0.19
9,10-dimethylanthracene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Fluoranthene	59.6	7.06	12.1	9.47	10.2	0.19
Fluorene	23.6	2.79	4.78	3.75	4.03	0.075
Indeno(1,2,3-cd)Pyrene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
2-methylanthracene	26.8	3.17	5.43	4.26	4.58	0.085
3-Methylcholanthrene	<60	<7.10	<12.2	<9.53	<10.3	<0.19
1-Methylnaphthalene	16.0	1.89	3.24	2.54	2.73	0.051
2-Methylnaphthalene	27.3	3.23	5.53	4.34	4.66	0.086
1-Methylphenanthrene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
9-Methylphenanthrene	12.4	1.47	2.51	1.97	2.12	0.039
Naphthalene	154	18.2	31.2	24.5	26.3	0.49
Perylene	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Phenanthrene	298	35.3	60.4	47.3	50.9	0.94
Picene	<60	<7.10	<12.2	<9.53	<10.3	<0.19
Pyrene	56.4	6.68	11.4	8.96	9.64	0.18
Tetralin	123	14.6	24.9	19.5	21.0	0.39
m-terphenyl	<12	<1.42	<2.43	<1.91	<2.05	<0.038
o-Terphenyl	<12	<1.42	<2.43	<1.91	<2.05	<0.038
p-terphenyl	<12	<1.42	<2.43	<1.91	<2.05	<0.038
Total	<1361	<161	<276	<216	<232	<4.30

Dry Gas Volume Sampled (Rm³*) :	4.935
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.6
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	18.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 74
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<1.39	<1.42	<1.42	<1.41	1.2
Acenaphthylene	<1.39	6.15	1.63	<3.06	87.7
Anthracene	<1.39	<1.42	2.11	<1.64	24.8
Benzo(a)Anthracene	<1.39	<1.42	<1.42	<1.41	1.2
Benzo(b)Fluoranthene	<1.39	<1.42	<1.42	<1.41	1.2
Benzo(k)Fluoranthene	<1.39	<1.42	<1.42	<1.41	1.2
Benzo(a)fluorene	<1.39	<1.42	<1.42	<1.41	1.2
Benzo(b)fluorene	<1.39	<1.42	<1.42	<1.41	1.2
Benzo(g,h,i)Perylene	7.41	5.53	3.66	5.54	33.9
Benzo(a)Pyrene	<1.39	<1.42	<1.42	<1.41	1.2
Benzo(e)Pyrene	2.13	1.89	1.62	1.88	13.5
Biphenyl	3.71	7.16	3.71	4.86	41.0
2-Chloronaphthalene	<1.39	<1.42	<1.42	<1.41	1.2
Chrysene/Triphenylene	1.97	<1.42	<1.42	<1.60	19.8
Coronene	11.0	<7.10	<7.10	<8.41	27.0
Dibenzo(a,c/a,h)Anthracene	<1.39	<1.42	<1.42	<1.41	1.2
Dibenzo(a,e)pyrene	<6.95	<7.10	<7.10	<7.05	1.2
9,10-dimethylanthracene	<1.39	<1.42	<1.42	<1.41	1.2
7,12-Dimethylbenzo(a)anthracene	<1.39	<1.42	<1.42	<1.41	1.2
Fluoranthene	14.7	2.78	7.06	8.18	73.9
Fluorene	2.32	1.84	2.79	2.32	20.5
Indeno(1,2,3-cd)Pyrene	<1.39	<1.42	<1.42	<1.41	1.2
2-methylanthracene	22.8	3.31	3.17	9.77	116
3-Methylcholanthrene	<6.95	<7.10	<7.10	<7.05	1.2
1-Methylnaphthalene	2.41	11.4	1.89	5.23	102
2-Methylnaphthalene	3.42	26.3	3.23	11.0	121
1-Methylphenanthrene	<1.39	<1.42	<1.42	<1.41	1.2
9-Methylphenanthrene	10.3	3.28	1.47	5.01	92.9
Naphthalene	11.1	72.6	18.2	34.0	98.9
Perylene	<1.39	<1.42	<1.42	<1.41	1.2
Phenanthrene	66.4	8.39	35.3	36.7	79.1
Picene	<6.95	<7.10	<7.10	<7.05	1.2
Pyrene	11.9	3.35	6.68	7.32	59.1
Tetralin	7.8	7.90	14.6	10.1	38.3
m-terphenyl	3.16	<1.42	<1.42	<2.00	50.3
o-Terphenyl	3.83	<1.42	<1.42	<2.22	62.7
p-terphenyl	1.53	<1.42	<1.42	<1.46	4.3
Total	<231	<217	<161	<203	18.2

TABLE 75
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.37	<2.44	<2.43	<2.41	1.5
Acenaphthylene	<2.37	10.6	2.80	<5.24	87.9
Anthracene	<2.37	<2.44	3.61	<2.80	24.8
Benzo(a)Anthracene	<2.37	<2.44	<2.43	<2.41	1.5
Benzo(b)Fluoranthene	<2.37	<2.44	<2.43	<2.41	1.5
Benzo(k)Fluoranthene	<2.37	<2.44	<2.43	<2.41	1.5
Benzo(a)fluorene	<2.37	<2.44	<2.43	<2.41	1.5
Benzo(b)fluorene	<2.37	<2.44	<2.43	<2.41	1.5
Benzo(g,h,i)Perylene	12.6	9.50	6.26	9.47	33.7
Benzo(a)Pyrene	<2.37	<2.44	<2.43	<2.41	1.5
Benzo(e)Pyrene	3.63	3.25	2.78	3.22	13.3
Biphenyl	6.32	12.3	6.34	8.31	41.3
2-Chloronaphthalene	<2.37	<2.44	<2.43	<2.41	1.5
Chrysene/Triphenylene	3.36	<2.44	<2.43	<2.74	19.4
Coronene	18.8	<12.2	<12.2	<14.4	26.6
Dibenzo(a,c/a,h)Anthracene	<2.37	<2.44	<2.43	<2.41	1.5
Dibenzo(a,e)pyrene	<11.8	<12.2	<12.2	<12.1	1.5
9,10-dimethylanthracene	<2.37	<2.44	<2.43	<2.41	1.5
7,12-Dimethylbenzo(a)anthracene	<2.37	<2.44	<2.43	<2.41	1.5
Fluoranthene	25.1	4.77	12.1	14.0	73.6
Fluorene	3.95	3.17	4.78	3.97	20.4
Indeno(1,2,3-cd)Pyrene	<2.37	<2.44	<2.43	<2.41	1.5
2-methylanthracene	38.9	5.68	5.43	16.7	115
3-Methylcholanthrene	<11.8	<12.2	<12.2	<12.1	1.5
1-Methylnaphthalene	4.11	19.5	3.24	8.96	102
2-Methylnaphthalene	5.82	45.1	5.53	18.8	121
1-Methylphenanthrene	<2.37	<2.44	<2.43	<2.41	1.5
9-Methylphenanthrene	17.5	5.62	2.51	8.55	92.6
Naphthalene	19.0	125	31.2	58.3	99.2
Perylene	<2.37	<2.44	<2.43	<2.41	1.5
Phenanthrene	113	14.4	60.4	62.6	78.9
Picene	<11.8	<12.2	<12.2	<12.1	1.5
Pyrene	20.3	5.74	11.4	12.5	58.8
Tetralin	13.3	13.6	24.9	17.3	38.3
m-terphenyl	5.39	<2.44	<2.43	<3.42	49.9
o-Terphenyl	6.54	<2.44	<2.43	<3.80	62.3
p-terphenyl	2.61	<2.44	<2.43	<2.49	4.0
Total	<394	<373	<276	<347	18.1

* At 25°C and 1 atmosphere

TABLE 76
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.87	<1.95	<1.91	<1.91	1.9
Acenaphthylene	<1.87	8.43	2.19	<4.17	88.8
Anthracene	<1.87	<1.95	2.83	<2.22	24.0
Benzo(a)Anthracene	<1.87	<1.95	<1.91	<1.91	1.9
Benzo(b)Fluoranthene	<1.87	<1.95	<1.91	<1.91	1.9
Benzo(k)Fluoranthene	<1.87	<1.95	<1.91	<1.91	1.9
Benzo(a)fluorene	<1.87	<1.95	<1.91	<1.91	1.9
Benzo(b)fluorene	<1.87	<1.95	<1.91	<1.91	1.9
Benzo(g,h,i)Perylene	10.0	7.59	4.91	7.50	33.9
Benzo(a)Pyrene	<1.87	<1.95	<1.91	<1.91	1.9
Benzo(e)Pyrene	2.87	2.59	2.18	2.55	13.8
Biphenyl	5.00	9.81	4.97	6.59	42.3
2-Chloronaphthalene	<1.87	<1.95	<1.91	<1.91	1.9
Chrysene/Triphenylene	2.66	<1.95	<1.91	<2.17	19.4
Coronene	14.9	<9.73	<9.53	<11.4	26.6
Dibenzo(a,c/a,h)Anthracene	<1.87	<1.95	<1.91	<1.91	1.9
Dibenzo(a,e)pyrene	<9.37	<9.73	<9.53	<9.54	1.9
9,10-dimethylanthracene	<1.87	<1.95	<1.91	<1.91	1.9
7,12-Dimethylbenzo(a)anthracene	<1.87	<1.95	<1.91	<1.91	1.9
Fluoranthene	19.8	3.81	9.47	11.0	73.6
Fluorene	3.12	2.53	3.75	3.13	19.5
Indeno(1,2,3-cd)Pyrene	<1.87	<1.95	<1.91	<1.91	1.9
2-methylanthracene	30.8	4.54	4.26	13.2	115
3-Methylcholanthrene	<9.37	<9.73	<9.53	<9.54	1.9
1-Methylnaphthalene	3.25	15.6	2.54	7.14	103
2-Methylnaphthalene	4.61	36.0	4.34	15.0	122
1-Methylphenanthrene	<1.87	<1.95	<1.91	<1.91	1.9
9-Methylphenanthrene	13.9	4.49	1.97	6.77	92.5
Naphthalene	15.0	99.6	24.5	46.4	99.9
Perylene	<1.87	<1.95	<1.91	<1.91	1.9
Phenanthrene	89.5	11.5	47.3	49.4	79.0
Picene	<9.37	<9.73	<9.53	<9.54	1.9
Pyrene	16.1	4.59	8.96	9.88	58.8
Tetralin	10.6	10.8	19.5	13.6	37.4
m-terphenyl	4.26	<1.95	<1.91	<2.71	49.9
o-Terphenyl	5.17	<1.95	<1.91	<3.01	62.3
p-terphenyl	2.06	<1.95	<1.91	<1.97	4.1
Total	<312	<298	<216	<275	18.7

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 77
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.99	<2.04	<2.05	<2.03	1.5
Acenaphthylene	<1.99	8.84	2.36	<4.40	87.6
Anthracene	<1.99	<2.04	3.04	<2.36	25.1
Benzo(a)Anthracene	<1.99	<2.04	<2.05	<2.03	1.5
Benzo(b)Fluoranthene	<1.99	<2.04	<2.05	<2.03	1.5
Benzo(k)Fluoranthene	<1.99	<2.04	<2.05	<2.03	1.5
Benzo(a)fluorene	<1.99	<2.04	<2.05	<2.03	1.5
Benzo(b)fluorene	<1.99	<2.04	<2.05	<2.03	1.5
Benzo(g,h,i)Perylene	10.6	7.96	5.28	7.96	33.6
Benzo(a)Pyrene	<1.99	<2.04	<2.05	<2.03	1.5
Benzo(e)Pyrene	3.06	2.72	2.34	2.71	13.2
Biphenyl	5.32	10.3	5.35	6.98	41.0
2-Chloronaphthalene	<1.99	<2.04	<2.05	<2.03	1.5
Chrysene/Triphenylene	2.82	<2.04	<2.05	<2.30	19.5
Coronene	15.8	<10.2	<10.3	<12.1	26.7
Dibenzo(a,c/a,h)Anthracene	<1.99	<2.04	<2.05	<2.03	1.5
Dibenzo(a,e)pyrene	<9.97	<10.2	<10.3	<10.1	1.5
9,10-dimethylanthracene	<1.99	<2.04	<2.05	<2.03	1.5
7,12-Dimethylbenzo(a)anthracene	<1.99	<2.04	<2.05	<2.03	1.5
Fluoranthene	21.1	4.00	10.2	11.8	73.6
Fluorene	3.32	2.65	4.03	3.34	20.7
Indeno(1,2,3-cd)Pyrene	<1.99	<2.04	<2.05	<2.03	1.5
2-methylanthracene	32.7	4.76	4.58	14.0	116
3-Methylcholanthrene	<9.97	<10.2	<10.3	<10.1	1.5
1-Methylnaphthalene	3.45	16.4	2.73	7.52	102
2-Methylnaphthalene	4.90	37.8	4.66	15.8	121
1-Methylphenanthrene	<1.99	<2.04	<2.05	<2.03	1.5
9-Methylphenanthrene	14.7	4.71	2.12	7.19	92.7
Naphthalene	16.0	104	26.3	48.9	98.9
Perylene	<1.99	<2.04	<2.05	<2.03	1.5
Phenanthrene	95.2	12.1	50.9	52.7	78.9
Picene	<9.97	<10.2	<10.3	<10.1	1.5
Pyrene	17.1	4.81	9.64	10.5	58.9
Tetralin	11.2	11.4	21.0	14.5	38.6
m-terphenyl	4.53	<2.04	<2.05	<2.88	50.0
o-Terphenyl	5.50	<2.04	<2.05	<3.20	62.4
p-terphenyl	2.19	<2.04	<2.05	<2.09	4.1
Total	<331	<312	<232	<292	18.0

* At 25°C and 1 atmosphere

TABLE 78
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate				Coefficient
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	of Variation %
Acenaphthene	<0.038	<0.038	<0.038	<0.038	0.4
Acenaphthylene	<0.038	0.16	0.044	<0.082	87.0
Anthracene	<0.038	<0.038	0.056	<0.044	24.4
Benzo(a)Anthracene	<0.038	<0.038	<0.038	<0.038	0.4
Benzo(b)Fluoranthene	<0.038	<0.038	<0.038	<0.038	0.4
Benzo(k)Fluoranthene	<0.038	<0.038	<0.038	<0.038	0.4
Benzo(a)fluorene	<0.038	<0.038	<0.038	<0.038	0.4
Benzo(b)fluorene	<0.038	<0.038	<0.038	<0.038	0.4
Benzo(g,h,i)Perylene	0.20	0.15	0.098	0.15	34.7
Benzo(a)Pyrene	<0.038	<0.038	<0.038	<0.038	0.4
Benzo(e)Pyrene	0.058	0.050	0.043	0.050	14.3
Biphenyl	0.10	0.19	0.099	0.13	40.3
2-Chloronaphthalene	<0.038	<0.038	<0.038	<0.038	0.4
Chrysene/Triphenylene	0.053	<0.038	<0.038	<0.043	20.8
Coronene	0.30	<0.19	<0.19	<0.23	28.0
Dibenzo(a,c/a,h)Anthracene	<0.038	<0.038	<0.038	<0.038	0.4
Dibenzo(a,e)pyrene	<0.19	<0.19	<0.19	<0.19	0.4
9,10-dimethylanthracene	<0.038	<0.038	<0.038	<0.038	0.4
7,12-Dimethylbenzo(a)anthracene	<0.038	<0.038	<0.038	<0.038	0.4
Fluoranthene	0.40	0.074	0.19	0.22	74.8
Fluorene	0.063	0.049	0.075	0.062	20.6
Indeno(1,2,3-cd)Pyrene	<0.038	<0.038	<0.038	<0.038	0.4
2-methylanthracene	0.62	0.088	0.085	0.26	116
3-Methylcholanthrene	<0.19	<0.19	<0.19	<0.19	0.4
1-Methylnaphthalene	0.065	0.30	0.051	0.14	101
2-Methylnaphthalene	0.093	0.70	0.086	0.29	120
1-Methylphenanthrene	<0.038	<0.038	<0.038	<0.038	0.4
9-Methylphenanthrene	0.28	0.087	0.039	0.13	93.8
Naphthalene	0.30	1.93	0.49	0.91	98.4
Perylene	<0.038	<0.038	<0.038	<0.038	0.4
Phenanthrene	1.80	0.22	0.94	0.99	79.8
Picene	<0.19	<0.19	<0.19	<0.19	0.4
Pyrene	0.32	0.089	0.18	0.20	60.1
Tetralin	0.21	0.21	0.39	0.27	37.9
m-terphenyl	0.086	<0.038	<0.038	<0.054	51.4
o-Terphenyl	0.10	<0.038	<0.038	<0.060	63.7
p-terphenyl	0.041	<0.038	<0.038	<0.039	5.3
Total	<6.26	<5.78	<4.30	<5.45	18.8

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<1.41	<2.41	<1.91	<2.03	<0.038
Acenaphthylene	<3.06	<5.24	<4.17	<4.40	<0.082
Anthracene	<1.64	<2.80	<2.22	<2.36	<0.044
Benzo(a)Anthracene	<1.41	<2.41	<1.91	<2.03	<0.038
Benzo(b)Fluoranthene	<1.41	<2.41	<1.91	<2.03	<0.038
Benzo(k)Fluoranthene	<1.41	<2.41	<1.91	<2.03	<0.038
Benzo(a)fluorene	<1.41	<2.41	<1.91	<2.03	<0.038
Benzo(b)fluorene	<1.41	<2.41	<1.91	<2.03	<0.038
Benzo(g,h,i)Perylene	5.54	9.47	7.50	7.96	0.15
Benzo(a)Pyrene	<1.41	<2.41	<1.91	<2.03	<0.038
Benzo(e)Pyrene	1.88	3.22	2.55	2.71	0.050
Biphenyl	4.86	8.31	6.59	6.98	0.13
2-Chloronaphthalene	<1.41	<2.41	<1.91	<2.03	<0.038
Chrysene/Triphenylene	<1.60	<2.74	<2.17	<2.30	<0.043
Coronene	<8.41	<14.4	<11.4	<12.1	<0.23
Dibenzo(a,c/a,h)Anthracene	<1.41	<2.41	<1.91	<2.03	<0.038
Dibenzo(a,e)pyrene	<7.05	<12.1	<9.54	<10.1	<0.19
9,10-dimethylanthracene	<1.41	<2.41	<1.91	<2.03	<0.038
7,12-Dimethylbenzo(a)anthracene	<1.41	<2.41	<1.91	<2.03	<0.038
Fluoranthene	8.18	14.0	11.0	11.8	0.22
Fluorene	2.32	3.97	3.13	3.34	0.062
Indeno(1,2,3-cd)Pyrene	<1.41	<2.41	<1.91	<2.03	<0.038
2-methylanthracene	9.77	16.7	13.2	14.0	0.26
3-Methylcholanthrene	<7.05	<12.1	<9.54	<10.1	<0.19
1-Methylnaphthalene	5.23	8.96	7.14	7.52	0.14
2-Methylnaphthalene	11.0	18.8	15.0	15.8	0.29
1-Methylphenanthrene	<1.41	<2.41	<1.91	<2.03	<0.038
9-Methylphenanthrene	5.01	8.55	6.77	7.19	0.13
Naphthalene	34.0	58.3	46.4	48.9	0.91
Perylene	<1.41	<2.41	<1.91	<2.03	<0.038
Phenanthrene	36.7	62.6	49.4	52.7	0.99
Picene	<7.05	<12.1	<9.54	<10.1	<0.19
Pyrene	7.32	12.5	9.88	10.5	0.20
Tetralin	10.1	17.3	13.6	14.5	0.27
m-terphenyl	<2.00	<3.42	<2.71	<2.88	<0.054
o-Terphenyl	<2.22	<3.80	<3.01	<3.20	<0.060
p-terphenyl	<1.46	<2.49	<1.97	<2.09	<0.039
Total	<203	<347	<275	<292	<5.45

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 80
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Laboratory Blank ng
Acenaphthene	<12	<12
Acenaphthylene	15.2	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	12.8	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	21.1	<12
2-Methylnaphthalene	45.7	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	153	32.1
Perylene	<12	<12
Phenanthrene	13.7	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	48.5	59.6
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<862	<704

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 81
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Acetaldehyde, Formaldehyde and Acrolein Emission Data

Acetaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acetaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acetaldehyde Emission Rate mg/s
1	9.42	0.0301	184	313	248	264	4.98
2	9.07	0.0297	178	305	243	256	4.72
3	12.0	0.0308	228	391	311	328	6.05
Average			196	336	267	283	5.25
Blank	12.3						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Formaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Formaldehyde Emission Rate mg/s
1	2.57	0.0301	50.1	85.4	67.7	72.0	1.36
2	3.17	0.0297	62.1	107	84.9	89.5	1.65
3	2.16	0.0308	40.9	70.1	55.9	58.9	1.09
Average			51.0	87.4	69.5	73.4	1.37
Blank	3.01						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acrolein Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acrolein Emission Rate mg/s
1	<0.1	0.0301	<1.95	<3.32	<2.63	<2.80	<0.053
2	<0.1	0.0297	<1.96	<3.36	<2.68	<2.82	<0.052
3	<0.1	0.0308	<1.89	<3.25	<2.59	<2.73	<0.050
Average			<1.93	<3.31	<2.63	<2.78	<0.052
Blank	<0.1						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

Sampling was conducted at a single point. Volumetric flowrates from corresponding isokinetic tests were used to calculate emission data.

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 82
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	0.083	2.44	4.16	3.29	3.50	0.066
Benzene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Bromodichloromethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Bromoform	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Bromomethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
1,3-Butadiene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
2-Butanone	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Carbon Tetrachloride	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Chloroform	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Cumene (Isopropylbenzene)	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Dibromochloromethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Dichlorodifluoromethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
1,2-Dichloroethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
trans,1,2-Dichloroethene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
1,1-Dichloroethene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
1,2-Dichloropropane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Ethylbenzene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Ethylene Dibromide	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Methylene Chloride	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Styrene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Tetrachloroethene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Toluene	0.35	10.2	17.3	13.7	14.6	0.28
1,1,1-Trichloroethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Trichlorotrifluoroethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Trichlorofluoromethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
M&P-Xylene	<0.10	<2.94	<5.01	<3.97	<4.22	<0.080
O-Xylene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Vinyl Chloride	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Total	<1.88	<55.3	<94.2	<74.5	<79.3	<1.50

Dry Gas Volume Sampled (Rm^3*) :	0.0199
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 83
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 2

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	0.063	1.76	2.99	2.37	2.52	0.048
Benzene	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Bromodichloromethane	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Bromoform	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Bromomethane	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
1,3-Butadiene	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
2-Butanone	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Carbon Tetrachloride	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Chloroform	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Cumene (Isopropylbenzene)	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Dibromochloromethane	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Dichlorodifluoromethane	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
1,2-Dichloroethane	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
trans,1,2-Dichloroethene	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
1,1-Dichloroethene	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
1,2-Dichloropropane	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Ethylbenzene	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Ethylene Dibromide	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Methylene Chloride	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Styrene	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Tetrachloroethene	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Toluene	0.092	2.57	4.37	3.46	3.68	0.070
1,1,1-Trichloroethane	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Trichlorotrifluoroethane	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Trichlorofluoromethane	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
M&P-Xylene	<0.10	<2.79	<4.75	<3.76	<4.00	<0.076
O-Xylene	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Vinyl Chloride	<0.050	<1.39	<2.38	<1.88	<2.00	<0.038
Total	<1.61	<44.8	<76.3	<60.3	<64.2	<1.21

Dry Gas Volume Sampled (Rm^3*) :	0.0210
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 4

Compound	Total Collected µg	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3**	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Acetone	0.34	10.1	17.2	13.6	14.4	0.27
Benzene	0.091	2.68	4.56	3.61	3.84	0.073
Bromodichloromethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Bromoform	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Bromomethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
1,3-Butadiene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
2-Butanone	0.086	2.53	4.31	3.41	3.63	0.069
Carbon Tetrachloride	0.052	1.53	2.61	2.06	2.19	0.041
Chloroform	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Cumene (Isopropylbenzene)	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Dibromochloromethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Dichlorodifluoromethane	0.068	2.00	3.41	2.70	2.87	0.054
1,2-Dichloroethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
trans,1,2-Dichloroethene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
1,1-Dichloroethene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
1,2-Dichloropropane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Ethylbenzene	0.051	1.50	2.56	2.02	2.15	0.041
Ethylene Dibromide	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Methylene Chloride	0.68	20.0	34.2	27.0	28.7	0.54
Styrene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Tetrachloroethene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Toluene	0.74	21.6	36.9	29.2	31.0	0.59
1,1,1-Trichloroethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Trichlorotrifluoroethane	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Trichlorofluoromethane	0.053	1.56	2.66	2.10	2.24	0.042
M&P-Xylene	0.25	7.36	12.5	9.92	10.5	0.20
O-Xylene	0.090	2.65	4.51	3.57	3.80	0.072
Vinyl Chloride	<0.050	<1.47	<2.51	<1.98	<2.11	<0.040
Total	<3.45	<102	<173	<137	<146	<2.75

Dry Gas Volume Sampled (Rm^3*) :	0.0199
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 85
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 4	Average	
	µg/m^3	µg/m^3	µg/m^3	µg/m^3	%
Acetone	2.44	1.76	10.1	4.75	97.0
Benzene	<1.47	<1.39	2.68	<1.85	39.0
Bromodichloromethane	<1.47	<1.39	<1.47	<1.45	3.1
Bromoform	<1.47	<1.39	<1.47	<1.45	3.1
Bromomethane	<1.47	<1.39	<1.47	<1.45	3.1
1,3-Butadiene	<1.47	<1.39	<1.47	<1.45	3.1
2-Butanone	<1.47	<1.39	2.53	<1.80	35.3
Carbon Tetrachloride	<1.47	<1.39	1.53	<1.47	4.7
Chloroform	<1.47	<1.39	<1.47	<1.45	3.1
Cumene (Isopropylbenzene)	<1.47	<1.39	<1.47	<1.45	3.1
Dibromochloromethane	<1.47	<1.39	<1.47	<1.45	3.1
Dichlorodifluoromethane	<1.47	<1.39	2.00	<1.62	20.4
1,2-Dichloroethane	<1.47	<1.39	<1.47	<1.45	3.1
trans,1,2-Dichloroethene	<1.47	<1.39	<1.47	<1.45	3.1
1,1-Dichloroethene	<1.47	<1.39	<1.47	<1.45	3.1
1,2-Dichloropropane	<1.47	<1.39	<1.47	<1.45	3.1
Ethylbenzene	<1.47	<1.39	1.50	<1.46	3.8
Ethylene Dibromide	<1.47	<1.39	<1.47	<1.45	3.1
Mesitylene (1,3,5-Trimethylbenzene)	<1.47	<1.39	<1.47	<1.45	3.1
Methylene Chloride	<1.47	<1.39	20.0	<7.64	141
Styrene	<1.47	<1.39	<1.47	<1.45	3.1
Tetrachloroethene	<1.47	<1.39	<1.47	<1.45	3.1
Toluene	10.2	2.57	21.6	11.5	83.8
1,1,1-Trichloroethane	<1.47	<1.39	<1.47	<1.45	3.1
Trichloroethene/1,1,2-Trichloroethene	<1.47	<1.39	<1.47	<1.45	3.1
Trichlorotrifluoroethane	<1.47	<1.39	<1.47	<1.45	3.1
Trichlorofluoromethane	<1.47	<1.39	1.56	<1.48	5.6
M&P-Xylene	<2.94	<2.79	7.36	<4.36	59.5
O-Xylene	<1.47	<1.39	2.65	<1.84	38.3
Vinyl Chloride	<1.47	<1.39	<1.47	<1.45	3.1
Total	<55.3	<44.8	<102	<67.2	44.9

TABLE 86
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 4	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	4.16	2.99	17.2	8.10	97.0
Benzene	<2.51	<2.38	4.56	<3.15	39.0
Bromodichloromethane	<2.51	<2.38	<2.51	<2.46	3.1
Bromoform	<2.51	<2.38	<2.51	<2.46	3.1
Bromomethane	<2.51	<2.38	<2.51	<2.46	3.1
1,3-Butadiene	<2.51	<2.38	<2.51	<2.46	3.1
2-Butanone	<2.51	<2.38	4.31	<3.07	35.3
Carbon Tetrachloride	<2.51	<2.38	2.61	<2.50	4.7
Chloroform	<2.51	<2.38	<2.51	<2.46	3.1
Cumene (Isopropylbenzene)	<2.51	<2.38	<2.51	<2.46	3.1
Dibromochloromethane	<2.51	<2.38	<2.51	<2.46	3.1
Dichlorodifluoromethane	<2.51	<2.38	3.41	<2.76	20.4
1,2-Dichloroethane	<2.51	<2.38	<2.51	<2.46	3.1
trans,1,2-Dichloroethene	<2.51	<2.38	<2.51	<2.46	3.1
1,1-Dichloroethene	<2.51	<2.38	<2.51	<2.46	3.1
1,2-Dichloropropane	<2.51	<2.38	<2.51	<2.46	3.1
Ethylbenzene	<2.51	<2.38	2.56	<2.48	3.8
Ethylene Dibromide	<2.51	<2.38	<2.51	<2.46	3.1
Mesitylene (1,3,5-Trimethylbenzene)	<2.51	<2.38	<2.51	<2.46	3.1
Methylene Chloride	<2.51	<2.38	34.2	<13.0	141
Styrene	<2.51	<2.38	<2.51	<2.46	3.1
Tetrachloroethene	<2.51	<2.38	<2.51	<2.46	3.1
Toluene	17.3	4.37	36.9	19.5	83.8
1,1,1-Trichloroethane	<2.51	<2.38	<2.51	<2.46	3.1
Trichloroethene/1,1,2-Trichloroethene	<2.51	<2.38	<2.51	<2.46	3.1
Trichlorotrifluoroethane	<2.51	<2.38	<2.51	<2.46	3.1
Trichlorofluoromethane	<2.51	<2.38	2.66	<2.51	5.6
M&P-Xylene	<5.01	<4.75	12.5	<7.44	59.5
O-Xylene	<2.51	<2.38	4.51	<3.13	38.3
Vinyl Chloride	<2.51	<2.38	<2.51	<2.46	3.1
Total	<94.2	<76.3	<173	<115	44.9

* At 25°C and 1 atmosphere

TABLE 87
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 4	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	3.29	2.37	13.6	6.41	97.0
Benzene	<1.98	<1.88	3.61	<2.49	39.0
Bromodichloromethane	<1.98	<1.88	<1.98	<1.95	3.1
Bromoform	<1.98	<1.88	<1.98	<1.95	3.1
Bromomethane	<1.98	<1.88	<1.98	<1.95	3.1
1,3-Butadiene	<1.98	<1.88	<1.98	<1.95	3.1
2-Butanone	<1.98	<1.88	3.41	<2.43	35.3
Carbon Tetrachloride	<1.98	<1.88	2.06	<1.98	4.7
Chloroform	<1.98	<1.88	<1.98	<1.95	3.1
Cumene (Isopropylbenzene)	<1.98	<1.88	<1.98	<1.95	3.1
Dibromochloromethane	<1.98	<1.88	<1.98	<1.95	3.1
Dichlorodifluoromethane	<1.98	<1.88	2.70	<2.19	20.4
1,2-Dichloroethane	<1.98	<1.88	<1.98	<1.95	3.1
trans,1,2-Dichloroethene	<1.98	<1.88	<1.98	<1.95	3.1
1,1-Dichloroethene	<1.98	<1.88	<1.98	<1.95	3.1
1,2-Dichloropropane	<1.98	<1.88	<1.98	<1.95	3.1
Ethylbenzene	<1.98	<1.88	2.02	<1.96	3.8
Ethylene Dibromide	<1.98	<1.88	<1.98	<1.95	3.1
Mesitylene (1,3,5-Trimethylbenzene)	<1.98	<1.88	<1.98	<1.95	3.1
Methylene Chloride	<1.98	<1.88	27.0	<10.3	141
Styrene	<1.98	<1.88	<1.98	<1.95	3.1
Tetrachloroethene	<1.98	<1.88	<1.98	<1.95	3.1
Toluene	13.7	3.46	29.2	15.4	83.8
1,1,1-Trichloroethane	<1.98	<1.88	<1.98	<1.95	3.1
Trichloroethene/1,1,2-Trichloroethene	<1.98	<1.88	<1.98	<1.95	3.1
Trichlorotrifluoroethane	<1.98	<1.88	<1.98	<1.95	3.1
Trichlorofluoromethane	<1.98	<1.88	2.10	<1.99	5.6
M&P-Xylene	<3.97	<3.76	9.92	<5.88	59.5
O-Xylene	<1.98	<1.88	3.57	<2.48	38.3
Vinyl Chloride	<1.98	<1.88	<1.98	<1.95	3.1
Total	<74.5	<60.3	<137	<90.6	44.9

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 88
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 4	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	3.50	2.52	14.4	6.82	97.0
Benzene	<2.11	<2.00	3.84	<2.65	39.0
Bromodichloromethane	<2.11	<2.00	<2.11	<2.07	3.1
Bromoform	<2.11	<2.00	<2.11	<2.07	3.1
Bromomethane	<2.11	<2.00	<2.11	<2.07	3.1
1,3-Butadiene	<2.11	<2.00	<2.11	<2.07	3.1
2-Butanone	<2.11	<2.00	3.63	<2.58	35.3
Carbon Tetrachloride	<2.11	<2.00	2.19	<2.10	4.7
Chloroform	<2.11	<2.00	<2.11	<2.07	3.1
Cumene (Isopropylbenzene)	<2.11	<2.00	<2.11	<2.07	3.1
Dibromochloromethane	<2.11	<2.00	<2.11	<2.07	3.1
Dichlorodifluoromethane	<2.11	<2.00	2.87	<2.33	20.4
1,2-Dichloroethane	<2.11	<2.00	<2.11	<2.07	3.1
trans,1,2-Dichloroethene	<2.11	<2.00	<2.11	<2.07	3.1
1,1-Dichloroethene	<2.11	<2.00	<2.11	<2.07	3.1
1,2-Dichloropropane	<2.11	<2.00	<2.11	<2.07	3.1
Ethylbenzene	<2.11	<2.00	2.15	<2.09	3.8
Ethylene Dibromide	<2.11	<2.00	<2.11	<2.07	3.1
Mesitylene (1,3,5-Trimethylbenzene)	<2.11	<2.00	<2.11	<2.07	3.1
Methylene Chloride	<2.11	<2.00	28.7	<10.9	141
Styrene	<2.11	<2.00	<2.11	<2.07	3.1
Tetrachloroethene	<2.11	<2.00	<2.11	<2.07	3.1
Toluene	14.6	3.68	31.0	16.4	83.8
1,1,1-Trichloroethane	<2.11	<2.00	<2.11	<2.07	3.1
Trichloroethene/1,1,2-Trichloroethene	<2.11	<2.00	<2.11	<2.07	3.1
Trichlorotrifluoroethane	<2.11	<2.00	<2.11	<2.07	3.1
Trichlorofluoromethane	<2.11	<2.00	2.24	<2.11	5.6
M&P-Xylene	<4.22	<4.00	10.5	<6.26	59.5
O-Xylene	<2.11	<2.00	3.80	<2.64	38.3
Vinyl Chloride	<2.11	<2.00	<2.11	<2.07	3.1
Total	<79.3	<64.2	<146	<96.3	44.9

* At 25°C and 1 atmosphere

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 4 mg/s	Average mg/s	%
Acetone	0.066	0.048	0.27	0.13	97.0
Benzene	<0.040	<0.038	0.073	<0.050	39.0
Bromodichloromethane	<0.040	<0.038	<0.040	<0.039	3.1
Bromoform	<0.040	<0.038	<0.040	<0.039	3.1
Bromomethane	<0.040	<0.038	<0.040	<0.039	3.1
1,3-Butadiene	<0.040	<0.038	<0.040	<0.039	3.1
2-Butanone	<0.040	<0.038	0.069	<0.049	35.3
Carbon Tetrachloride	<0.040	<0.038	0.041	<0.040	4.7
Chloroform	<0.040	<0.038	<0.040	<0.039	3.1
Cumene (Isopropylbenzene)	<0.040	<0.038	<0.040	<0.039	3.1
Dibromochloromethane	<0.040	<0.038	<0.040	<0.039	3.1
Dichlorodifluoromethane	<0.040	<0.038	0.054	<0.044	20.4
1,2-Dichloroethane	<0.040	<0.038	<0.040	<0.039	3.1
trans,1,2-Dichloroethene	<0.040	<0.038	<0.040	<0.039	3.1
1,1-Dichloroethene	<0.040	<0.038	<0.040	<0.039	3.1
1,2-Dichloropropane	<0.040	<0.038	<0.040	<0.039	3.1
Ethylbenzene	<0.040	<0.038	0.041	<0.039	3.8
Ethylene Dibromide	<0.040	<0.038	<0.040	<0.039	3.1
Mesitylene (1,3,5-Trimethylbenzene)	<0.040	<0.038	<0.040	<0.039	3.1
Methylene Chloride	<0.040	<0.038	0.54	<0.21	141
Styrene	<0.040	<0.038	<0.040	<0.039	3.1
Tetrachloroethene	<0.040	<0.038	<0.040	<0.039	3.1
Toluene	0.28	0.070	0.59	0.31	83.8
1,1,1-Trichloroethane	<0.040	<0.038	<0.040	<0.039	3.1
Trichloroethene/1,1,2-Trichloroethene	<0.040	<0.038	<0.040	<0.039	3.1
Trichlorotrifluoroethane	<0.040	<0.038	<0.040	<0.039	3.1
Trichlorofluoromethane	<0.040	<0.038	0.042	<0.040	5.6
M&P-Xylene	<0.080	<0.076	0.20	<0.12	59.5
O-Xylene	<0.040	<0.038	0.072	<0.050	38.3
Vinyl Chloride	<0.040	<0.038	<0.040	<0.039	3.1
Total	<1.50	<1.21	<2.75	<1.82	44.9

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³*	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	4.75	8.10	6.41	6.82	0.13
Benzene	<1.85	<3.15	<2.49	<2.65	<0.050
Bromodichloromethane	<1.45	<2.46	<1.95	<2.07	<0.039
Bromoform	<1.45	<2.46	<1.95	<2.07	<0.039
Bromomethane	<1.45	<2.46	<1.95	<2.07	<0.039
1,3-Butadiene	<1.45	<2.46	<1.95	<2.07	<0.039
2-Butanone	<1.80	<3.07	<2.43	<2.58	<0.049
Carbon Tetrachloride	<1.47	<2.50	<1.98	<2.10	<0.040
Chloroform	<1.45	<2.46	<1.95	<2.07	<0.039
Cumene (Isopropylbenzene)	<1.45	<2.46	<1.95	<2.07	<0.039
Dibromochloromethane	<1.45	<2.46	<1.95	<2.07	<0.039
Dichlorodifluoromethane	<1.62	<2.76	<2.19	<2.33	<0.044
1,2-Dichloroethane	<1.45	<2.46	<1.95	<2.07	<0.039
trans,1,2-Dichloroethene	<1.45	<2.46	<1.95	<2.07	<0.039
1,1-Dichloroethene	<1.45	<2.46	<1.95	<2.07	<0.039
1,2-Dichloropropane	<1.45	<2.46	<1.95	<2.07	<0.039
Ethylbenzene	<1.46	<2.48	<1.96	<2.09	<0.039
Ethylene Dibromide	<1.45	<2.46	<1.95	<2.07	<0.039
Mesitylene (1,3,5-Trimethylbenzene)	<1.45	<2.46	<1.95	<2.07	<0.039
Methylene Chloride	<7.64	<13.0	<10.3	<10.9	<0.21
Styrene	<1.45	<2.46	<1.95	<2.07	<0.039
Tetrachloroethene	<1.45	<2.46	<1.95	<2.07	<0.039
Toluene	11.5	19.5	15.4	16.4	0.31
1,1,1-Trichloroethane	<1.45	<2.46	<1.95	<2.07	<0.039
Trichloroethene/1,1,2-Trichloroethene	<1.45	<2.46	<1.95	<2.07	<0.039
Trichlorotrifluoroethane	<1.45	<2.46	<1.95	<2.07	<0.039
Trichlorofluoromethane	<1.48	<2.51	<1.99	<2.11	<0.040
M&P-Xylene	<4.36	<7.44	<5.88	<6.26	<0.12
O-Xylene	<1.84	<3.13	<2.48	<2.64	<0.050
Vinyl Chloride	<1.45	<2.46	<1.95	<2.07	<0.039
Total	<67.2	<115	<90.6	<96.3	<1.82

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank 1 Tube 5A/5B	Field Blank 2 Tube 13A/13B	Trip Blank Tube 15A/15B	Method Blank
	µg	µg	µg	µg
Acetone	<0.050	4.04	1.62	<0.050
Benzene	<0.050	<0.050	<0.050	<0.050
Bromodichloromethane	<0.050	<0.050	<0.050	<0.050
Bromoform	<0.050	<0.050	<0.050	<0.050
Bromomethane	<0.050	<0.050	<0.050	<0.050
1,3-Butadiene	<0.050	<0.050	<0.050	<0.050
2-Butanone	<0.050	0.18	<0.050	<0.050
Carbon Tetrachloride	<0.050	<0.050	<0.050	<0.050
Chloroform	<0.050	<0.050	<0.050	<0.050
Cumene (Isopropylbenzene)	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	<0.050	<0.050	<0.050	<0.050
trans,1,2-Dichloroethene	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethene	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	<0.050	<0.050	<0.050	<0.050
Ethylene Dibromide	<0.050	<0.050	<0.050	<0.050
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	1.08	1.74	0.053	<0.050
Styrene	<0.050	<0.050	<0.050	<0.050
Tetrachloroethene	<0.050	<0.050	<0.050	<0.050
Toluene	0.067	0.15	0.072	<0.050
1,1,1-Trichloroethane	<0.050	<0.050	<0.050	<0.050
Trichloroethene/1,1,2-Trichloroethene	<0.050	<0.050	<0.050	<0.050
Trichlorotrifluoroethane	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	<0.050	<0.050	<0.050	<0.050
M&P-Xylene	<0.10	<0.10	<0.10	<0.10
O-Xylene	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	<0.050	<0.050	<0.050	<0.050
Total	<2.60	<7.47	<3.15	<1.55

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

APPENDIX 3

Notice of Testing and ECA No. 7306-8FDKNX
(99 pages)

If you require this information in an accessible format, please contact The Regional Municipality of Durham at 1-800-372-1102 ext. 3560.

Sent via standard mail and email (celeste.dugas@ontario.ca and julie.schroeder@ontario.ca)

March 4, 2021

Celeste Dugas, Manager,
York Durham District Office
Ministry of the Environment, Conservation and Parks
230 Westney Road South, Floor 5
Ajax, Ontario L1S 7J5

and

Dr. Julie Schroeder, Director
Technical Assessment and Standards Development Branch
Ministry of the Environment, Conservation and Parks
40 St. Clair Avenue West, Floor 7 - Foster Building
Toronto, Ontario M4V 1M2

Dear Ms. Dugas and Ms. Schroeder:

RE: Durham York Energy Centre
Voluntary Spring 2021 Source Test
Environmental Compliance Approval #7306-8FDKNX

The Regional Municipalities of Durham and York (Regions) are planning to complete a voluntary Source Test at the Durham York Energy Centre (DYEC) commencing on May 10, 2021. The purpose of this Source Test is to measure DYEC emissions under a directive from the Regional Municipality of Durham's Council. Conduct of this Source Test is not a requirement of the Environmental Assessment (EA) approval or the Environmental Compliance Approval (ECA) for the facility.

ORTECH Consulting Inc. (ORTECH) is the contractor selected to conduct the Source Test. ORTECH will be following the September 2020 Pre-Test Plan for Source Testing (Pre-Test Plan #22050).

The analytical laboratory will be ALS Environmental in Burlington, Ontario. This laboratory is certified to conduct the analysis for all test parameters.

Please accept this courtesy notification of the planned voluntary Source Test. If you have any questions regarding this notification and the impending conduct of the DYEC Source Testing Program, please do not hesitate to contact the undersigned.

Sincerely,

Gioseph Anello, M.Eng., P.Eng., PMP
Director, Waste Management Services

The Regional Municipality of Durham
905-668-7711 extension 3445
Gioseph.Anello@durham.ca

Laura McDowell, P.Eng.
Director, Environmental Promotion and Protection
The Regional Municipality of York
905-830-4444 extension 75077
Laura.McDowell@york.ca

c. G. Azocar, Source Assessment Specialist, Technology Standards Section, MECP
B. Fullerton, Source Assessment Specialist (Acting), Technology Standards Section, MECP
P. Dunn, Senior Environmental Officer, York Durham District Office, MECP
M. Neild, Facility Manager, Covanta
R. Kohler, Environmental Engineer, Covanta
L. Kwan, Environmental Specialist, Covanta
A. Evans, Project Manager, Waste Planning and Technical Services, Durham Region
M. Farid, Contract Management Engineer, Environmental Promotion and Protection, York Region

If you require this information in an accessible format, please contact The Regional Municipality of Durham at 1-800-372-1102 ext. 3560.

Sent via standard mail and email (mohsen.keyvani@ontario.ca)

May 14, 2021

Mohsen Keyvani, Manager, Waste Approvals
Environmental Permissions Branch
Ministry of the Environment, Conservation and Parks
135 St Clair Avenue West
Toronto, Ontario M4V 1P5

Dear Mr. Keyvani:

RE: Durham York Energy Centre
Emergency Environmental Compliance Approval (ECA) Amendment
ECA #7306-8FDKNX

The Regional Municipality of Durham and the Regional Municipality of York (Regions) are currently undertaking a streamlined Environmental Assessment (EA) process to increase the processing capacity for the Durham York Energy Centre (DYEC) by 20,000 tonnes per year, thereby, revising the processing capacity up to a maximum of 160,000 tonnes per year. The proposed processing limit increase will allow the DYEC to operate more efficiently and produce more energy with no modifications to existing infrastructure while reducing bypass waste to other disposal facilities that could otherwise be processed at the DYEC to maintain and increase diversion rates. If approved, the added flexibility to use the supplementary capacity will decrease reliance on alternate waste disposal facilities outside the Regions' borders. It is expected that this additional capacity will also provide the necessary transition required to implement the Regional Municipality of Durham's proposed mixed waste pre-sort and anaerobic digestor project. The Regions are hopeful that this streamlined EA and ECA amendment process will be completed by the Fall of 2021.

However, in the event that the streamlined EA and ECA amendment process is not completed by October of 2021, the Regions will need an Emergency Amendment to the Environmental Compliance Approval #7306-8FDKNX (ECA) for the DYEC, in response to the ongoing COVID-19 pandemic. Since the onset of the pandemic, the multiple stay at home orders that have continued into 2021 have proved challenging for the Regions due to the change in behaviour

patterns at home impacting waste generation and curbside tonnages. The Emergency Amendment granted in 2020 assisted the Regions in providing continuity of service to our residents uninterruptedly while demonstrating compliance with permit conditions at increased processing volumes, further supporting the case for permanent increase to 160,000 tonnes per year through the streamlined EA process as described above. Similar to the situation in 2020, the amendment would allow the DYEC to process up to an additional 20,000 tonnes of material in 2021. The Emergency ECA Amendment request is being made presently to provide needed operational certainty during the year.

Logistical and operational challenges within and risks to the Regions' waste management systems as well as at the DYEC, mean that should the streamlined EA and ECA amendment process be further delayed as a result of the pandemic or other reasons, the Regions would find it difficult to manage materials during the later portions of the year without an Emergency Amendment as a temporary bridging mechanism.

Other than the capacity increase request, the DYEC will continue to operate within current ECA restrictions for all conditions. Should you have any questions regarding this request, please do not hesitate to contact the undersigned.

Sincerely,

Gioseph Anello, M.Eng., P.Eng., PMP
Director, Waste Management Services

The Regional Municipality of Durham
905-668-7711 extension 3445
Gioseph.Anello@durham.ca

Laura McDowell, P.Eng.
Director, Environmental Promotion and Protection
The Regional Municipality of York
905-830-4444 extension 75077
Laura.McDowell@york.ca

c. L. Trevisan, Director, Central Region, MECP
C. Dugas, Manager, York Durham District Office, MECP
P. Dunn, Senior Environmental Officer, York Durham District Office, MECP
J. Butchart, Issues Project Coordinator, York Durham District Office, MECP
M. Neild, Facility Manager, Covanta
L. Kwan, Environmental Specialist, Covanta
E. Mahoney, Commissioner, Environmental Services, York Region
S. Siopis, Commissioner, Works, Durham Region
M. Farid, Contract Management Engineer, Promotion and Protection, York Region
A. Evans, Project Manager, Waste Planning and Technical Services, Durham Region

Ontario

Ministry of the Environment
Ministère de l'Environnement

CERTIFICATE OF APPROVAL

MULTI-MEDIA
Number 7306-8FDKNX
Issue Date: June 28, 2011

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Road
Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham

You have applied in accordance with Sections 9 and 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act for approval of:

A thermal treatment facility to be used for the receipt and manual and/or mechanical sorting of solid non-hazardous post-diversion municipal waste (Waste), temporary storage and thermal treatment of the Waste, abatement of the emissions from the processes and activities undertaken at the Site, handling, screening, sorting and/or conditioning of the residual wastes and management of the wastewater and the non-contact stormwater generated at the Site. The Facility's maximum Waste thermal treatment rate is 140,000 tonnes per year of Waste, the nominal electricity generation rate is 20 Megawatts and the nominal steam generation rate 72,000 kilograms per hour of steam.

The facility consists of the following major processes and support units:

(1) two (2) identical combustion trains, each having a nominal capacity of 218 tonnes of Waste per day venting into the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

Each combustion train is an independent process train and it consists of the following main components:

(a) a stoker grate steam Boiler, having a design heat input of 118 Gigajoules per hour, equipped with a natural gas fired auxiliary Low NOx burner, having a nominal heat input of 59.5 Gigajoules per hour; and

(b) the following air pollution control equipment:

(i) a Selective Non Catalytic Reduction System (SNCR System) with ammonia injection for NOx control;
(ii) an activated carbon injection system, to reduce mercury and dioxins in flue gas;
(iii) a dry recirculation lime injection scrubber to control acid gases;
(iv) a pulse jet type baghouse to control particulate emissions;

(2) one (1) steam turbine generator set having a rated capacity of 20 Megawatts;

(3) waste and reagent storage as described in Condition 2.:

(4) fly ash conditioning system including two (2) surge bins, two (2) pugmills and seven (7) curing/storage bunkers;

(5) bottom ash sorting system including conveyors, screens, a rotary drum magnet and an eddy separator;

(6) one (1) emergency diesel generator, rated at 250 Kilowatts;

(7) natural gas-fired combustion equipment for comfort heating;

(8) a wastewater management system for collection, recirculation and reuse of the process water; and

(9) a stormwater management facility for collection, transmission and discharge of non-contact runoff at the Site, as described in the attached Schedule "G",

Note: Use of the site for any other type of waste is not approved under this Certificate, and requires obtaining a separate approval amending this Certificate.

For the purpose of this Provisional Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"***Acoustic Assessment Report***" means the report, prepared in accordance with *Publication NPC-233* by Paul Niejadlik / Golder Associates Ltd. and dated March 2011 submitted in support of the application, that documents all sources of noise emissions and Noise Control Measures present at the Facility;

"**Acoustic Assessment Summary Table**" means a table summarizing the results of the Acoustic Assessment Report;

"**Acoustic Audit**" means an investigative procedure consisting of measurements of all noise emissions due to the operation of the Facility, assessed in comparison to the Performance Limits for the Facility regarding noise emissions, completed in accordance with the procedures set in the Ministry's *Publication NPC-103* and reported in accordance with the Ministry's *Publication NPC-233;*

"**Acoustic Audit Report**" means a report presenting the results of an Acoustic Audit, prepared in accordance with the Ministry's *Publication NPC-233;*

"**Acoustical Consultant**" means a person currently active in the field of environmental acoustics and noise/vibration control, who is familiar with Ministry noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from a Facility;

"**Air Standards Manager**" means the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**APC Building**" means the building at the Site where the APC Equipment and the reagent indoor storage tanks are located;

"**APC Equipment**" means all the air pollution control equipment at the Facility, including the SNCR System, the activated carbon injection system, the dry recirculation lime injection scrubber and the pulse jet type baghouse to control emissions from the combustion chamber of the Boilers, the dust collectors to control emissions from the Residue Building and the dust collectors to control emissions from the reagent storage silos;

"**Boiler Building**" means the building at the Site where the Boilers, turbine generator and the air cooled condenser(s) are located;

"**Boilers**" means the two (2) steam boilers firing the approved Waste described in this Certificate;

"**Bulky Unprocessable Items**" means the incoming Waste received at the Site that cannot be processed in the Equipment;

"**CEM Systems**" means the continuous monitoring and recording systems used to measure and record the temperature and the emissions from the Boilers as specified in the attached Schedule "F";

"**Certificate**" means this entire provisional Certificate of Approval, issued in accordance with Sections 39 and 9 of the *EPA* and Section 53 of the *OWRA,* and includes any schedules attached to it, the application and the supporting documentation listed in the attached Schedule "A;

"***40 CFR 60***" means title 40, part 60 under the Code of Federal Regulations (Air Programs, U.S. Environmental Protection Agency), revised as of July 1, 1990, published by the Office of the Federal Register, National Archives and Records, Administration in the United States of America;

"**Complaint**" means a complaint received either by the Owner or the District Manager that has been confirmed by staff of the Ministry and the cause of which is attributed to the Owner's activities at the Facility;

"**Commencement Date of Operation**" means the date when the approved Waste is first received at the Site;

"**Compound of Concern**" means a contaminant that, based on generally available information, may be emitted to the atmosphere in a quantity from any source at the Facility that is significant either in comparison to the relevant Ministry Point of Impingement Limit or if a Ministry Point of Impingement Limit is not available for the compound then, based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the *EPA* at a Point of Impingement;

"**Controlled Shutdown**" means an immediate cut-off of all waste into the Boilers, while maintaining the operation of the combustion chamber and the APC Equipment within the Performance Requirements;

"**Description Section**" means the section on page one of the Certificate describing the Owner's operations and the Equipment located at the Facility and specifying the Facility Production Limit for the Facility;

"**Dioxins and Furans**" means polychlorinated dibenzo-dioxins and polychlorinated dibenzofurans;

"**Director**" means any person appointed in writing by the Minister of the Environment pursuant to section 5 of the *EPA* and pursuant to section 5 of the *OWRA* as a Director for the purposes of Part V of the *EPA,* section 9 of the *EPA* and section 53 of the *OWRA;*

"**District Manager**" means the District Manager of the York Durham District Office of the Ministry;

"**Emergency Shutdown**" means an immediate cut-off of all waste feed into the Boilers, followed by an accelerated extinction of all combustion in the Boilers, while maintaining the combustion temperature within the Performance Requirements, except when unreasonable;

"**Emission Summary Table**" means the table prepared in accordance with *O. Reg. 419/05* and the Procedure Document listing the appropriate Point of Impingement concentrations of each Compound of Concern from the Facility and providing comparison to the corresponding Ministry Point of Impingement Limit;

"***EAA***" means the Environmental Assessment Act, R.S.O. 1990, c. E.18, as amended;

"**EA Approval**" means the Notice of Approval to Proceed with the Undertaking signed by the Minister of the Environment on November 3, 2010, EA File No. 04-EA-02-08;

"***EPA***" means the Environmental Protection Act, R.S.O. 1990, c. E.19, as amended;

"**Equipment**" means equipment or processes associated with the thermal treatment of the approved Waste described in this Certificate and in the Supporting Documentation referred to herein and any other equipment or processes handling wastes and reagents;

"**ESDM Report**" means the Emission Summary and Dispersion Modelling Report prepared in accordance with the Procedure Document by Golder Associates and dated March 2011 submitted in support of the application, and includes any amendments to the ESDM Report listed in the attached Schedule "A" and all subsequent up-dated ESDM Reports as applicable;

"**Facility**" means the entire operation associated with thermal treatment of Waste located on the property where the Equipment is located;

"**Facility Production Limit**" means the production limit placed on the main product(s) or raw materials used by the Facility that represents the design capacity of the Facility and assists in the definition of the operations approved by the Director;

"**Grizzly Building**" means the building at the Site where the bottom ash is screened and where the oversized constituents of the bottom ash (grizzly overs) are temporarily stored prior to transport for subsequent storage in the Residue Building;

"**Independent Acoustical Consultant**" means an Acoustical Consultant who is not representing the Owner and was not involved in preparing the Acoustic Assessment Report or the design/implementation of Noise Control Measures for the Facility and/or Equipment. The Independent Acoustical Consultant shall not be retained by the Acoustical Consultant involved in the noise impact assessment or the design/implementation of Noise Control Measures for the Facility and/or Equipment;

"**I-TEF**" means International Toxic Equivalency Factor derived for each dioxin and furan congener by comparing its toxicity to the toxicity of 2,3,7,8 tetrachloro dibenzo-p-dioxin, as recommended by the North Atlantic Treaty Organization Committee on Challenges to Modern Society (NATO CCMS) in 1989 and adopted by Canada in 1990;

"**I-TEQ**" means International Toxic Equivalent of dioxins and furans calculated using the I-TEFs, as recommended by the NATO CCMS in 1989 and adopted by Canada in 1990;

"**Manager**" means the Manager, Technology Standards Section, Standards Development Branch, who has been appointed under Section 5 of the *EPA* for the purposes of Section 11(1)2 of the *O. Reg. 419/05,* or any other person who represents and carries out the duties of the Manager,

Technology Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**Ministry**" means the ministry of the government of Ontario responsible for the *EPA* and the *OWRA* and includes all officials, employees or other persons acting on its behalf or the Ontario Ministry of the Environment;

"**Municipality**" means the Municipality of Clarington;

"***NMA***" means the *Nutrient Management Act*, 2002, S.O. 2002, c. 4, as amended;

"**Noise Control Measures**" means measures to reduce the noise emission from the Facility and/or Equipment including, but not limited to silencers, acoustic louvers, enclosures, absorptive treatment, plenums and barriers;

"**LDR**" means the Lands Disposal Restrictions referred to in sections 74 through 85 of the *O. Reg. 347,* which prohibit the disposal of hazardous wastes on land until they have been treated to meet the treatment standards under the *O. Reg. 347;*

"**Leachate Toxicity Criteria**" means the concentrations of any of the contaminants listed in Schedule 4 at a concentration equal to or in excess of the concentration specified for that contaminant in Schedule 4 using the Toxicity Characteristic Leaching Procedure, defined in the *O. Reg. 347*;

"***O. Reg. 419/05***" means the *Ontario Regulation 419/05,* Air Pollution – Local Air Quality enacted under the *EPA,* as amended;

*"**O. Reg. 347**"* means the *Ontario Regulation 347,* R.R.O 1990 (General –Waste Management) enacted under the *EPA,* as amended;

"***OWRA***" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;

"**Owner**" means any person that is responsible for the establishment and operation of the Site being approved by this Certificate, and it includes The Regional Municipality of Durham, The Regional Municipality of York, and Covanta Durham York Renewable Energy Limited Partnership (operator), their successors and assignees;

"***PA***" means the *Pesticides Act*, R.S.O. 1990, c.P. 11, as amended;

"**Performance Requirements**" means the performance requirements and emission limits specified in the section of this Certificate entitled "Performance Requirements";

"**Point of Impingement**" means any point outside the Facility in the natural environment and as defined by s.2 of the *O. Reg. 419/05;*

"**Point of Reception**" means the Point of Reception as defined by *Publication NPC-205* and/or *Publication NPC-232*, as applicable;

"**Pre-test Information**" means the information outlined in Section 1.1 of the Source Testing Code;

"**Procedure Document**" means the Ministry's document entitled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;

"**Professional Engineer**" means a Professional Engineer as defined within the *Professional Engineers Act*, R.S.O. 1990, c. P.28, as amended;

"**Provincial Officer**" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA* or Section 5 of the *EPA* or Section 17 of the *PA* or Section 4 of the *NMA* or Section 8 of the *SDWA;*

"***Publication NPC-103***" means the Ministry's Publication NPC-103 of the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-205***" means the Ministry's Publication NPC-205, entitled "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)", dated October, 1995, as amended;

"***Publication NPC-207***" means the Ministry's draft technical publication entitled "Impulse Vibration in Residential Buildings", dated November 1983, supplementing the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-232***" means the Ministry's Publication NPC-232, entitled "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)", dated October, 1995, as amended;

"***Publication NPC-233***" means the Ministry's Publication NPC-233, entitled "Information to be Submitted for Approval of Stationary Sources of Sound", dated October, 1995, as amended;

"**Rejected Waste**" means either municipal waste which cannot be processed at the Facility or waste which the Site is not approved to accept. Rejected Waste includes but is not limited to the Bulky Unprocessable Items and the Unacceptable Waste;

"**Regional Director**" means the Regional Director of the Central Region of the Ministry;

"**Regions**" means The Regional Municipality of Durham and The Regional Municipality of York;

*"**Report EPS 1/PG/7**"* means the Environment Canada Report EPS 1/PG/7, entitled "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Generation", dated September, 1993, as amended;

"**Residual Waste**" means waste resulting from the Waste processing activities at the Site. Residual Waste is limited to the recovered ferrous metals, the recovered non-ferrous metals, the bottom ash (consisting of the ash fines and the grizzly overs) and the fly ash (untreated and following conditioning);

"**Residue Building**" means the building at the Site where the bottom ash and the fly ash are processed, temporarily stored and loaded in transport vehicles for off-site disposal;

"**Schedules**" means the following schedules "A", "B", "C", "D", "F" and "G", attached to the Certificate and forming part of the Certificate;

"***SDWA***" means the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, as amended;

"**Sensitive Receptor**" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from odour discharges from the Facility, including one or a combination of:

(a) private residences or public facilities where people sleep (e.g.: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.);

(b) institutional facilities (e.g.: schools, churches, community centres, day care centres, recreational centres, etc.);

(c) outdoor public recreational areas (e.g.: trailer parks, play grounds, picnic areas, etc.); and

(d) other outdoor public areas where there are continuous human activities (e.g.: commercial plazas and office buildings);

"**Site**" means the property where the Owner has located and operates the Facility and the Works and located at 72 Osbourne Road, 27, Concession Broken Front, Part 1 in the Municipality of Clarington, Regional Municipality of Durham;

"**Source Testing**" means monitoring, sampling and testing to measure emissions resulting from operating the Facility under conditions which yield the worst case emissions within the approved operating range of the Facility;

"***Source Testing Code***" means the Ministry's document entitled "Source Testing Code, Version 2, Report No. ARB-66-80", dated November 1980, as amended;

"**Stack**" means the stack that discharges emissions from the Boilers after those emissions have been controlled by the associated APC Equipment;

"**Substantial Completion**" has the same meaning as “substantial performance” in the *Construction Lien Act* R.S.O. 1990, c.C-30, as amended;

"**Supporting Documentation**" means the documents listed in the attached Schedule "A" of this Certificate which forms part of this Certificate;

"**Test Contaminants**" means the contaminants set out in the attached Schedule "D";

"**Tipping Building**" means the building at the Site where the incoming Waste is received, sorted and temporarily stored;

"**Total Power Failure**" means the loss of the external power supply and concurrent loss of all in-plant power generation;

"**Trained Personnel**" means one or more Site personnel trained in accordance with the requirements of Condition 9.;

"**Waste**" means municipal solid waste as defined in the *O. Reg. 347* and limited to the approved waste set out in Condition No. 2.(2);

"**Waste Processing Rate** means the mass of Waste fed into one of the Boilers;

"**Works**" means the sewage works described in the Owner's application, this Certificate and in the Supporting Documentation referred to herein, to the extent approved by this Certificate;

"**Unacceptable Waste**" means the incoming Waste received at the Site that does not meet the incoming Waste quality criteria set out in this Certificate, is of hazardous nature and requires caution when handling; and

"**Undiluted Gases**" means the flue gas stream which contains oxygen, carbon monoxide, total hydrocarbons and all contaminants in the same concentrations as they exist in the flue gas stream emerging from an individual piece of equipment, such as the combustion chamber of one Boiler or one baghouse, and into which gas stream no ambient air and/or no other gas stream originating from another piece of equipment, except for dilution air introduced within the CEM Systems, has been introduced.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

GENERAL PROVISIONS

1. GENERAL

Compliance

(1) The Owner shall ensure compliance with all the conditions of this Certificate and shall ensure that any person authorized to carry out work on or operate any aspect of the Site, including the Works, is notified of this Certificate and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Certificate.

Build in Accordance

(3) (a) Except as otherwise provided by this Certificate, the Site shall be designed, developed, built, operated, monitored, inspected and maintained in accordance with the following applications:

(i) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of

Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(ii) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(iii) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(b) (i) Any design optimization or modification that is inconsistent with the conceptual design set out in the Supporting Documentation in Schedule "A" shall be clearly identified, along with an explanation of the reasons for the change and submitted to the Director for approval.

(ii) If a change to the conceptual design is submitted to the Director for approval, no construction of the Site shall commence prior to the Director approving, in writing, the final conceptual design of the Site.

As-built Drawings

(4) (a) Within ninety (90) days of the completion of the initial successful Source Testing program, a set of as-built drawings showing the Facility and the Works and bearing the stamp of a Professional Engineer, shall be prepared and retained at the Site.

(b) These drawings shall be kept up-to-date through revisions undertaken from time to time and a copy shall be retained at the location of the Site or at the operational office of the Owner for the operational life of the Site.

(c) Notwithstanding provisions of Condition 1.(4)(b), an amendment to this Certificate shall be sought for changes to the as-built drawings, requiring approval.

(d) The as-built drawings shall be made available to Ministry staff upon request.

Interpretation

(5) Where there is a conflict between a provision of any document, including the application referred to in this Certificate and the conditions of this Certificate, the conditions in this Certificate shall take precedence.

(6) Where there is a conflict between the applications and a provision in any documents listed in Schedule "A", the applications shall take precedence, unless it is clear that the purpose of the document was to amend the applications and that the Ministry approved the amendment.

(7) Where there is a conflict between any two documents listed in Schedule "A", other than the applications, the document bearing the most recent date shall take precedence.

(8) The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.

Other Legal Obligations

(9) The issuance of, and compliance with the conditions of this Certificate does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

(b) limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner to furnish any further information related to compliance with this Certificate.

Adverse Effects

(10) The Site shall be constructed, operated and maintained in a manner which ensures the health and safety of all persons and prevents adverse effects on the natural environment or on any persons.

(11) The Owner shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the approved operations at the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

(12) Despite the Owner or any other person fulfilling any obligations imposed by this Certificate, the person remains responsible for any contravention of any other condition of this Certificate or any applicable statute, regulation, or other legal requirement resulting from any act or emission that caused the adverse effect to the natural environment or impairment of water quality.

(13) If at any time odours, pests, litter, dust, noise or other such negative effects are generated at this Site and cause an adverse effect, the Owner shall take immediate appropriate remedial action that may be necessary to alleviate the adverse effect, including suspension of all waste management activities if necessary.

Change of Ownership

(14) The Owner shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Owner;
(d) the partners, where the Owner is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act,* R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Owner is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Owner shall notify the successor of and provide the successor with a copy of this Certificate, and the Owner shall provide a copy of the notification to the District Manager and the Director.

Inspections by the Ministry

(16) No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the *OWRA,* the *EPA,* the *PA,* the *SDWA* or the *NMA* of any place to which this Certificate relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved processing is undertaken, or the location where the records required by the conditions of this Certificate are kept;
(b) to have access to, inspect, and copy any records required to be kept by the conditions of this Certificate;
(c) to inspect the Site, related equipment and appurtenances;
(d) to inspect the practices, procedures, or operations required by the conditions of this Certificate;
(e) to conduct interviews with staff, contractors, agents and assignees of the Owner; and
(f) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Certificate or the *EPA,* the *OWRA,* the *PA,* the *SDWA* or the *NMA.*

Information

(17) Any information requested by the Ministry, concerning the operation of the Site and its operation under this Certificate, including but not limited to any records required to be kept by this Certificate, manuals, plans, records, data, procedures and supporting documentation shall be provided to the Ministry, in a timely manner, upon request**.**

(18) The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this Certificate or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Certificate or any statute, regulation or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

(19) The Owner shall ensure that a copy of this Certificate, in its entirety and including all its Notices of Amendment and the Supporting Documentation listed in Schedule "A" are retained at the Site at all times.

2. **SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE**

(1) The service area for the Site is the area within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(2) The operation of this Site is limited to:

(a) receipt, temporary storage, transfer and processing, including thermal treatment, of solid non-hazardous waste remaining after Waste Diversion required by the EA Approval, limited to Waste from the following sources:

(i) domestic waste and Industrial Commercial and Institutional waste from the Regions' curbside collection and/or from the Regions' waste management facilities; and

(ii) waste generated on-Site through activities not relating to the handling and processing of Waste (ie. office, lunch room, etc.);

(b) collection and management of the stormwater run-off generated at the Site.

(3) The following Unacceptable Waste is prohibited from being accepted at the Site:

(a) hazardous waste, as defined in the *O. Reg. 347;*
(b) wastes which have been source-separated for the purposes of diversion;

(c) international waste generated outside of Canada, but collected within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(4) Waste Receipt Rate:

(a) The maximum daily amount of Waste that is approved to be accepted at the Site shall not exceed 1,520 tonnes per day.

(5) Storage Restrictions:

Solids:

(a) A maximum of 7,350 cubic metres shall be stored inside the Waste pit within the Tipping Building as shown in the Supporting Documentation.

(b) Rejected Waste, limited to the Bulky Unprocessable Items removed from the incoming Waste in the Tipping Building shall be stored:

(i) in two (2) roll-off bins having a maximum total storage capacity of 30 cubic metres, located within the confines of the Tipping Building; and/or

(ii) in the appropriate dedicated bunkers, located within the confines of the Residue Building and described in Conditions 2.(5)(c), 2.(5)(d) and 2.(5)(d), below.

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of thirty six (36) days.

(g) A maximum of 85 cubic metres of activated carbon for the carbon injection system shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(h) A maximum of 150 cubic metres of lime for the dry scrubber shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(i) If required, recirculated residue shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(j) A maximum of 35 tonnes or 25 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

(k) A maximum of 25 tonnes or 45 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

Liquids:

(l) (i) A maximum of 36 cubic metres or 40 tonnes of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(ii) The Owner shall ensure that the aqueous ammonia storage tank is equipped with a liquid level monitoring device designed to provide a visual and an auditory alarm when the high level setpoint is reached.

(iii) The aqueous ammonia storage tank spill containment area and the loading area shall be designed in accordance with the requirements in the Ministry's document entitled *"Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities"* dated May 2007, as amended.

(6) No outdoor storage of waste, including storage in vehicles, is approved under this Certificate.

(7) The Owner shall ensure that storage of all wastes is undertaken in a manner that does not cause an adverse effect or a hazard to the environment or any person.

(8) (a) Waste received at the Site shall be processed within four (4) days from its receipt at the Site.

(b) Emergency Waste storage duration extension:

(i) The Owner may store the incoming Waste inside the tipping pit within the confines of the Tipping Building for up-to seven (7) days from its receipt at the Site, on an emergency basis only.

(ii) Within twenty four (24) hours from the start of the emergency storage of the incoming Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste is being stored longer then four (4) days.

(iii) Should there be public complaints about the extended incoming Waste storage, the Owner, in consultation with the District Manager, shall determine the cause of the complaints, propose appropriate abatement measures, including but not be limited to the removal and off-site disposal of the Waste contained in the tipping pit, and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(9) In the event that Waste cannot be processed at the Site and the Site is at its approved storage capacity, the Owner shall cease accepting additional Waste. Receipt of additional Waste may be resumed once such receipt complies with the waste storage limitations approved in this Certificate.

3. **SIGNS and SITE SECURITY**

(1) Prior to receipt of Waste at the Site, the Owner shall ensure that a sign is posted at the entrance to the Site. The sign shall be visible from the main road leading to the Site. The following information shall be included on the sign:

(a) name of the Owner;
(b) this Certificate number;
(c) hours during which the Site is open;
(d) waste types that are approved to be accepted at the Site;
(e) Owner's telephone number to which complaints may be directed;
(f) Owner's twenty-four hour emergency telephone number (if different from above);
(g) a warning against unauthorized access; and
(h) a warning against dumping at the Site.

(2) The Owner shall ensure that appropriate and visible signs are posted at the Site clearly identifying the wastes and the process reagents and stating warnings about the nature and any possible hazards of the wastes and the reagents.

(3) The Owner shall ensure that appropriate and visible signs are posted at the Site to prohibit smoking, open flames or sources of ignition from being allowed near any flammable materials storage areas.

(4) The Owner shall install and maintain appropriate and visible signs at the Site to direct vehicles to the Waste receiving and Residual Waste removal areas and to the reagent unloading areas.

(5) The Owner shall post appropriate and visible signs along the traffic route providing clear directions to the Site.

(6) The Owner shall ensure that the Site is fenced in and that all entrances are secured by lockable gates to restrict access only to authorized personnel when the Site is not open.

(7) The Owner shall ensure that access to the Site, with the exception of the area designated as a Public Information Centre, is regulated and that no unauthorized persons are permitted at the Site without the Trained Personnel escort.

(8) The Owner shall ensure that the Site is operated in a safe and secure manner, and that Waste, the Residual Waste and the Unacceptable Waste are properly handled, packaged or contained and stored so as not to pose any threat to the general public and the Site personnel.

4. SITE OPERATIONS

(1) Operating hours:

(a) The Site is approved to operate twenty-four (24) hours per day three hundred and sixty-five (365) days per year.

(b) Notwithstanding Condition 4.(1)(a), Waste shall only be received at the Site and the Residual Waste shall only be transferred from the Site between 7:00 a.m. and 7:00 p.m. Monday to Saturday. No receipt of the Waste or transfer of the Residual Waste shall be undertaken on statutory holidays.

(c) Emergency Receipt of Waste:

(i) The Owner may receive Waste at the Site outside of the operating hours specified in Condition 4.(1)(b), above, on an emergency basis only.

(ii) Within twenty four (24) hours from the receipt of Waste outside of the approved receiving hours, the Owner shall notify, in writing, the District Manager that Waste was received outside of the approved receiving hours.

(iii) Should there be complaints about Waste shipments outside of the approved hours, the Owner, in consultation with the District Manager, shall determine the cause of the complaint, propose appropriate abatement measures and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(2) Incoming Waste receipt:

(a) At the weigh scale, the Trained Personnel shall:

(i) inspect the required documentation prior to acceptance of the incoming Waste at the Site; and

(ii) inspect the incoming Waste with radiation detection equipment.

(b) In the Tipping Building, the Trained Personnel shall:

(i) visually inspect all incoming Waste being unloaded into the Waste pit; and

(ii) once per hour, or as accepted by the District Manager, unload the incoming Waste on the tipping floor for a manual visual inspection and sorting of the incoming Waste.

(c) The Owner shall only accept the incoming Waste that is delivered in vehicles that have been approved by the Ministry.

(d) The Owner shall ensure that all unloading of incoming Waste at the Site takes place entirely within the confines of the Tipping Building.

(3) **Unacceptable Waste handling:**

(a) In the event that waste that is not approved under this Certificate is inadvertently accepted at the Site, the Owner shall ensure that the Unacceptable Waste:

(i) is stored in a way that ensures that no adverse effects result from its storage;
(ii) is segregated from all other waste;
(iii) is handled and removed from the Site in accordance with the *O. Reg. 347* and the *EPA*; and
(iv) is removed from the Site within (4) days of its receipt or as acceptable to the District Manager.

(b) The Owner shall ensure that all loading of the Unacceptable Waste into transport vehicles is carried out entirely within the confines of the Tipping Building.

(4) **Waste Sorting:**

(a) The Trained Personnel shall remove the Bulky Unprocessable Items and Unacceptable Waste from the incoming Waste prior to charging of the Waste to the Boilers.

(b) All sorting of the incoming Waste at the Site shall be undertaken indoors, within the confines of the Tipping Building and/or the Refuse Building.

(5) **Residual Waste Handling and Disposal:**

(a) (i) Except for transportation of the Residual Waste between the Grizzly Building and the Residue Building, the Owner shall ensure that all

handling of the bottom ash and its segregated constituents, and of the fly ash, is undertaken within the confines of enclosed conveyors and enclosed buildings.

(ii) The Owner shall ensure that all loading of the Residual Waste into vehicles for its transport from the Site is carried out entirely within the confines of the Residue Building.

(b) (i) Different constituents of the Residual Waste shall not be comingled prior to the required compliance testing, unless all Residual Waste is to be disposed of at a Waste Disposal Site that is approved to accept hazardous waste.

(ii) The Owner shall ensure that the equipment used in handling of the hazardous wastes or that came in direct contact with the hazardous wastes is not used to handle other wastes.

(iii) On an emergency basis, the Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

(c) (i) Only haulers approved by the Ministry shall be used to transport the Residual Waste from the Site.

(ii) The Residual Waste shall be transported from the Site in appropriately covered vehicles that will not allow fugitive dust emissions to be emitted into the natural environment during the said transport.

d) Residual Waste generated at the Site shall be disposed of shall only be disposed of at an approved waste disposal site in accordance with the requirements in the *EPA* and the *O. Reg. 347* or at a location with the appropriate jurisdictional approval or a license, if required.

(e) Should the Residual Waste limited to the conditioned fly ash and/or the bottom ash be deemed a hazardous waste, the ash shall be disposed of at an approved waste disposal site in accordance with the Land Disposal Restrictions requirements in the *EPA* and the *O. Reg.* 347 or at a location with the appropriate jurisdictional approval or a license, if required.

(6) **Wastewater Management**

(a) The Owner shall ensure that all wastewater generated at the Site is contained within enclosed buildings, tanks, pipes and conveyors at the Site and the approved outdoor Wastewater Settling Basin.

(b) The Owner shall ensure that all wastewater generated at the Site is collected in leak-proof and sufficiently designed wastewater storage facilities:

(i) Wastewater Holding Tank, to collect the continuous reject water flow from the Boiler make-up water treatment system and the Boiler blowdown, having an approximate holding capacity of 100 cubic metres, located within the confines of the Boiler Building and venting to the atmosphere; and

(ii) Wastewater Settling Basin, to collect the wastewater from the floor drains in the buildings at the Site, except for the Tipping Building and the Residue Building, the ash discharger overflow and drain water, the Boiler and turbine-generator washdown water and the APC Equipment area washdown water, having an approximate holding capacity of 38 cubic metres, located outdoors, open to the atmosphere and equipped with a filter basket and an oil skimmer board.

(c) The wastewater pumps shall be located in the area designed in accordance with the Supporting Documentation to ensure that any potential leaks or drips are contained and directed to the Wastewater Settling Basin.

(d) (i) The wastewater level in the Wastewater Holding Tank shall be monitored and controlled to ensure that the wastewater inflow to the Tank does not cause the Tank overflow.

(ii) The wastewater level in the Wastewater Settling Basin shall be monitored and controlled to ensure that the atmospheric precipitation does not cause an overflow from the Basin.

(e) The Owner shall regularly empty, and clean as necessary, all sumps, wastewater storage/holding areas and equipment that are used to contain, collect and handling the wastewater generated at the Site.

(f) Should the Owner find it necessary to remove the wastewater from the Site, the wastewater shall only be disposed of at a Ministry-approved site in accordance with the site's certificate of approval or be discharged to the sanitary sewer in accordance with the agreement with the municipality accepting the discharge.

(g) The floors of the Tipping Building and the Residue Building shall be sufficiently sloped to facilitate the flow of the wastewater generated from the floor cleaning activities and from the truck washdown towards the designated wastewater collection area.

(h) The Owner shall ensure that the Wastewater Settling Basin is regularly cleaned out and that it does not become a source of odour emissions.

(7) All activities approved under this Certificate shall only be carried out by appropriately Trained Personnel.

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Operation and Maintenance

(1) Prior to the receipt of the Waste at the Site, the Owner shall prepare and update as necessary, an Operation and Maintenance Manual for all the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility. The Manual shall be prepared in accordance with the written manufacturer's and/or supplier's specifications and good engineering practice.

As a minimum, the Operation and Maintenance Manual shall specify:

(a) operation procedures of the Equipment, the APC Equipment, the CEM Systems, the Works, and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility, in accordance with manufacturers' recommendations and good engineering practices to achieve compliance with this Certificate, the *EPA,* the *OWRA* and their Regulations;
(b) calibration procedures for the CEM Systems as required by this Certificate;
(c) procedures for start-up and shutdown, including Controlled Shutdown and Emergency Shutdown;
(d) quality assurance procedures for the operation and calibration of the CEM Systems in accordance with *40 CFR 60*, Appendix F or *Report EPS 1/PG/7,* as appropriate;
(e) Waste receiving and screening procedures;
(f) Waste, Rejected Waste and Residual Waste handling procedures;
(g) testing and monitoring procedures as required by this Certificate;
(h) maintenance and preventative maintenance procedures as required by this Certificate;
(i) Facility inspection, including frequency of inspections, procedures;
(j) procedure for handling complaints as required by this Certificate.
(k) contingency measures to resolve upset conditions and/or minimize the environmental impacts from the Facility;
(l) emergency response procedures, including procedures for dealing with power failure, fire, explosion, spills and any other potential emergencies;
(m) procedures for record keeping activities as required by this Certificate;
(n) description of the responsibilities of the Site personnel and the personnel training protocols; and
(o) a list of personnel positions responsible for operation and maintenance, including supervisory personnel and personnel responsible for handling of the emergency situations, recording and reporting pursuant to the requirements of this Certificate, along with the training and experience required for the positions and a description of the responsibilities.

(2) A copy of this Operations and Maintenance Manual shall be kept at the Site, be accessible to the Site personnel at all times and be updated, as required. The Operations and Maintenance Manual shall be available for inspection by a Provincial Officer upon request.

(3) The Owner shall implement the operation, maintenance, preventative maintenance and calibration procedures set out in the Operations and Maintenance Manual required by this Certificate.

Critical Spare Parts

(4) (a) The Owner shall prepare a list of critical spare parts, update this list annually or more frequently, if necessary, to ensure that this list is maintained up-to-date and shall be available for inspection by a Provincial Officer upon request.

(b) The Owner shall ensure that the critical spare parts are available at the Site at all times or are immediately available from an off-Site supplier.

Inspections

(5) Prior to receipt of the Waste at the Site, the Owner shall prepare a comprehensive written inspection program which includes inspections of all aspects of the Site's operations including, but not limited to the following:

(a) buildings and the indoor waste storage facilities and presence of dust and odour and leaks in or near any openings, such as doorways, window, vent, louver or any other opening;
(b) outdoor Residual Waste transport equipment, and the presence of dust and leaks at or near transfer points or the equipment seams;
(c) the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility;
(d) spill containment areas, loading areas and the conditions around the Wastewater Settling Basin;
(e) security fencing, gates, barriers and signs;
(f) off-site nuisance impacts such as odour, dust, litter, etc.
(g) presence of stormwater pooling at the Site; and
(h) condition of the on-Site roads for presence of leaks and drips from the waste delivery trucks or excessive dust emissions.

(6) The inspections, except for the inspection of the Works, are to be undertaken daily by the Trained Personnel in accordance with the inspection program to ensure that the Facility is maintained in good working order at all times and that no off-Site impacts are occurring. Any deficiencies detected during these regular inspections must be promptly corrected.

Inspections and Maintenance of the Works

(7) The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

6. PERFORMANCE REQUIREMENTS

(1) The Owner shall, ensure that the Facility/Equipment is designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) the maximum 10-minute average concentration of odour at the most impacted Sensitive Receptor, resulting from the operation of the Facility/Equipment, calculated in accordance with the procedures outlined in the attached Schedule "B", shall not exceed 1 odour unit;

(b) the noise emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-205;*

(c) the vibration emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-207.*

(2) The Owner shall ensure that the Boilers and the associated APC Equipment and the CEM Systems are designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) (i) The temperature in the combustion zone of each Boiler shall reach a minimum of 1000 degrees Celsius (^{o}C) for one second, prior to introduction of the Waste into the combustion chamber of the Boiler during the start-up, and thereafter maintained during the entire thermal treatment cycle and subsequent shutdown until all Waste combustion is completed.

(ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000°C (the Target Location) or by correlation of the required temperature of 1000°C for one second to the temperature measured downstream of the Target Location as proven by a method acceptable to the Director.

(b) The concentration of residual oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be less than 6 percent by volume on a dry basis.

(c) (i) The operational target for the concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler is 40 milligrams per dry cubic metre, as a 4-hour rolling average, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, as measured and recorded by the CEM System, for the period from and including initial commissioning of the facility to twelve months following the completion of the first Source Testing program.

(ii) The 4-hour average concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be more than 40 milligrams per dry cubic metre, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, after the first twelve months following the completion of the first Source Testing program.

(d) The emissions from the Boilers after those emissions have been controlled by the associated APC Equipment for discharge into the atmosphere via the Stack shall comply with the emission concentration limits listed in the attached Schedule "C", as measured by a CEM System or by Source Testing as applicable.

(e) The Boilers shall include combustion air control systems, which are capable of automatically adjusting the distribution and the quantity of combustion air, in such a manner that changes in the Waste Processing Rate and/or Waste composition or irregularities in the loading and/or combustion shall not adversely affect the performance of the Boilers.

(f) The Boilers shall provide and maintain a high degree of gas turbulence and mixing in the combustion chamber.

(g) The Boilers shall achieve the temperature, oxygen availability and turbulence requirements over the complete range of operating parameters, including feed rate, feed characteristics, combustion air, flue gas flow rate and heat losses.

(h) The inlet temperature into each baghouse of the APC Equipment of the Boilers shall not be less than 120°C and not more than 185°C.

(3) The Owner shall install and maintain visual and audible alarm systems to alert the Facility/Equipment operators of any potential deviation from the above Performance Requirements for parameters that are continuously monitored by applicable CEM Systems and shall forthwith take all reasonable actions to bring the Equipment/Facility into compliance with all Performance Conditions.

(4) In the event that the CEM Systems indicate that emissions from the Boilers and the Stack exceed any Performance Requirements in the attached Schedule "C" for a continuous three (3) hour period, the Owner shall forthwith cut-off all Waste feed into the affected Boiler and initiate an Emergency Shutdown, while maintaining a temperature of 1000°C, as practicable, in the combustion zone of the Boiler.

Residual Waste Compliance Criteria

(5) (a) The Residual Waste generated at the Site and destined for a non-hazardous waste disposal site in Ontario shall not meet any of the criteria from the definition of "hazardous waste" set out in the *O. Reg. 347.*

(b) The Residual Waste that meets any of the criteria from the definition of "hazardous waste" set out in the *O. Reg.* 347 shall be handled and disposed of in accordance with the LDR requirements set out in the *EPA* and the *O. Reg. 347*.

(6) The Residual Waste, limited to the bottom ash, destined for a non-hazardous waste disposal site shall meet the definition of "incinerator ash" set out in the *O. Reg. 347*.

7. **TESTING, MONITORING** and **AUDITING**

Source Testing

(1) The Owner shall perform annual Source Testing in accordance with the procedures and schedule outlined in the attached Schedule "E", to determine the rate of emission of the Test Contaminants from the Stack. The first Source Testing program shall be conducted not later than six (6) months after the Commencement Date of Operation of the Facility/Equipment and subsequent Source Testing program shall be conducted once (1) every calendar year thereafter.

Continuous Monitoring

(2) The Owner shall select, test and install appropriate CEM Systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule "F" to conduct and maintain a program to continuously monitor, as a minimum, the following parameters prior to commencement of operation of the Boilers:

(a) the temperature at one (1) second downstream of the combustion zone of each Boiler where most of the combustion has been completed and the combustion temperature is fully developed;

(b) the inlet temperature of the gases into each baghouse of the APC Equipment of each Boiler;

(c) the concentration of carbon monoxide, oxygen and organic matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler;

(d) the opacity and moisture content of the flue gas and the concentration of oxygen, nitrogen oxides, sulphur dioxide, hydrogen chloride, hydrogen fluoride and ammonia in the Undiluted Gases leaving the baghouse of the APC Equipment of each Boiler.

Long-Term Sampling for Dioxins and Furans

(3) (a) The Owner shall develop, install, maintain and update as necessary a long-term sampling system, with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the APC Equipment associated with each Boiler. The performance of

this sampling system will be evaluated during the annual Source Testing programs in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4.

(b) The Owner shall evaluate the performance of the long-term sampling system in determining Dioxins and Furans emission trends and/or fluctuations as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers.

Ambient Air Monitoring

(4) (a) The Regions shall develop and implement the Ambient Air Monitoring and Reporting Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable by the Regional Director.

(b) The Regions shall report the results of the Ambient Air Monitoring program to the Regional Director in accordance with the Ambient Air Monitoring and Reporting Plan and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

Residual Waste Testing

(7) (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg.* 347 and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.

(b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.

(c) The Testing Protocol shall include the rationale for the proposed methods and the following:

(i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;

(ii) sample(s) handling and preserving procedures;

(iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and

(iv) a testing protocol for the bottom ash during the Site commissioning period.

(d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.

(8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:

(a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;

(b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the “incinerator ash” definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

(c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the "incinerator ash" definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re‑establish compliance with the "incinerator ash" definition from the *O. Reg. 347* and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and

(d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re‑establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.

(9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347*.

(b) The Owner shall follow the following schedule for compliance testing:

(i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;

(ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and

(iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re‑establish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

Soil Testing:

(10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.

(b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

Disposal of Residual Waste

(11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.

(12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347,* may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

(13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

Groundwater and Surface Water Monitoring

(14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

8. NUISANCE IMPACT CONTROL and HOUSEKEEPING

Odour Management

(1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.

(b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.

(ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained

to maintain a negative air pressure atmosphere throughout the Tipping Building.

(c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.

(3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.

(4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.

(5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.

(6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.

(7) (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.

(ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.

(iii) These tests shall be repeated as directed or agreed by the District Manager.

(8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(9) (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:

(i) identification of all potential sources of odourous emissions;

(ii) description of the preventative and control measures to minimize odourous emissions from the identified sources;
(iii) procedures for the implementation of the Odour Management and Mitigation Plan;
(iv) inspection and maintenance procedures to ensure effective implementation of the Odour Management and Mitigation Plan; and
(v) procedures for verification and recording the progress of the implementation of the Odour Management and Mitigation Plan.

(b) The Owner shall continue to submit an updated Odour Management and Mitigation Plan until such time as the Regional Director notifies the Owner in writing that further submissions are no longer required.

Vehicles and Traffic

(10) (a) The Owner shall ensure that all vehicles transporting waste to and from the Site are not leaking or dripping waste when arriving at or leaving the Site.

(b) Should the Owner become aware that the truck(s) delivering waste to the Site have leaked wastewater on the municipal roadways, the Owner shall immediately report the violation to the owner of the vehicle(s) and to the District Manager.

(c) The Owner shall ensure that the exterior of all vehicles delivering Waste to the Site or hauling waste from the Site is washed prior to the trucks' departure from the Site, if necessary.

(d) Any necessary truck washing shall occur only in the designated wash down area of the Tipping Building or the Residue Building.

(11) The Owner shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Site on any roadway that is not a distinct part of the Site.

Litter

(12) The Owner shall:

(a) take all practical steps to prevent the escape of litter from the Site;
(b) pick up litter around the Site on a daily basis, or more frequently if necessary; and
(c) if necessary, erect litter fences around the areas causing a litter problem.

Dust

(13) The Owner shall ensure that all on-site roads and operations/yard areas are regularly swept/washed to prevent dust impacts off-Site.

Vermin and Vectors

(14) The Owner shall:

(a) implement necessary housekeeping procedures to eliminate sources and potential sources of attraction for vermin and vectors; and

(b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the Site. The pest control plan shall remain in place, and be updated from time to time as necessary, until the Site has been closed and this Certificate has been revoked.

Visual Screening

(15) The Owner shall provide visual screening for the Site in accordance with the documentation included in the attached Schedule "A".

9. **STAFF TRAINING**

(1) (a) The Owner shall ensure that all operators of the Site are trained with respect to the following, as per the specific job requirements of each individual operator:

(i) terms and conditions of this Certificate and the requirements of the EA Approval;
(ii) operation and management of the Site, or area(s) within the Site, as per the specific job requirements of each individual operator, and which may include procedures for receiving, screening and identifying Waste, refusal, handling, processing and temporarily storing wastes, operation of the Equipment, the APC Equipment, the CEM System and the Works;
(iii) testing, monitoring and operating requirements;
(iv) maintenance and inspection procedures;
(v) recording procedures;
(vi) nuisance impact control and housekeeping procedures;
(vii) procedures for recording and responding to public complaints;
(viii) an outline of the responsibilities of Site personnel including roles and responsibilities during emergency situations;
(ix) the Contingency and Emergency Response Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
(x) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
(xi) emergency first-aid information; and
(xii) relevant waste management legislation and regulations, including the *EPA,* the *OWRA,* the *O. Reg. 347,* the *O. Reg. 419/05* and the Ministry guidelines affecting thermal treatment facilities.

(2) The Owner shall ensure that all personnel are trained in the requirements of this Certificate relevant to the employee's position:

(a) upon commencing employment at the Site in a particular position;
(b) whenever items listed in Condition 9.(1) are changed or updated; and
(c) during the planned refresher training.

10. COMPLAINTS / ODOUR-CONTAMINANT EMISSIONS RESPONSE PROCEDURE

(1) The Owner or a designated representative of the Owner shall be available to receive public complaints caused by the operations at the Site twenty-four (24) hours per day, seven (7) days per week.

(2) If at any time, the Owner or the Ministry receives a complaint or the Owner or the Provincial Officer detects an emission of odour or any contaminant, (Emission Event), from the Site, in addition to the requirements set out in the EA approval, the Owner shall record all relevant information in the computerized tracking system and shall respond to the complaint/Emission Event according to the following procedure:

Step 1: Record of Complaint/Emission Event

(a) (i) The Owner shall record each complaint/Emission Event and each record shall include the following:

(A) name, address and the telephone number of the complainant, if known;
(B) time and date of the complaint/Emission Event;
(C) details of the complaint; and

(ii) After the complaint/Emission Event has been recorded in the tracking system, the Owner shall immediately report to the District Manager by phone or e-mail during office hours and to the Ministry's Spills Actions Centre at 1-800-268-6060 after office hours on the receipt of the complaint or occurrence of the Emission Event.

Step 2: Investigation and Handling of Complaint/Emission Event

(b) The Owner shall immediately initiate investigation of the complaint/Emission Event. As a minimum, the investigation shall include the following:

(i) determination of the activities being undertaken at the Site at the time of the complaint/Emission Event;
(ii) meteorological conditions including, but not limited to the ambient temperature, approximate wind speed and its direction.
(iii) determination if the complaint is attributed to activities being undertaken at the Site and if so, the possible cause(s) of the complaint/Emission Event; and

(iv) determination of the remedial action(s) to address the cause(s) of the Complaint/Emission Event, and the schedule for the implementation of the necessary remedial action(s).

(c) The Owner shall respond to the complainant, if known, and the response shall include the results of the investigation of the Complaint, the action(s) taken or planned to be taken to address the cause(s) of the Complaint, and if any follow-up response(s) will be provided.

(d) Upon completed investigation of the Complaint/Emission event, the Owner shall, within three (3) business days, submit a report to the District Manager on the Complaint, on the action(s) taken or planned to be taken to address the cause(s) of the Complaint and on all proposed action(s) to prevent recurrence of the Complaint/Emission Event in the future.

(3) If, in the opinion of the District Manager, failure of the APC Equipment and/or any other process or equipment upset or malfunction results in off-site Complaint/Emission Event, confirmed by the Owner or a Provincial Officer of the Ministry, the Owner shall, immediately upon notification from the District Manager, implement any necessary additional control measures, including, but not necessarily limited to, those in the Contingency and Emergency Response Plan required by this Certificate.

(4) If the District Manager deems the additional control measures taken as per condition 10.(3) to be unsuitable, insufficient or ineffective, the District Manager may direct the Owner, in writing, to take further measures to address the noted failure, upset or malfunction including pursuant to section 39 of the *EPA* requiring a reduction in the receipt of Waste, cessation of the receipt of Waste, removal and off-site disposal of Waste from the Tipping Building as well as making repairs or modifications to equipment or processes.

11. CONTINGENCY and EMERGENCY RESPONSE PLAN

(1) (a) The Owner shall develop and implement a Contingency and Emergency Response Plan in accordance with the requirements set out in the EA Approval.

(b) Notwithstanding the requirements set out in the EA Approval, the Contingency and Emergency Response Plan shall be prepared in consultation with the District Manager or designate, the local Municipality and the Fire Department.

(2) In addition to the requirements set out in the EA Approval, the Contingency and Emergency Response Plan, as a minimum, shall include the following:

(a) the Site plan clearly showing the equipment layout and all storage areas for wastes and reagents;

(b) a list of Site personnel responsible for the implementation of the contingency measures and various emergency response tasks and their training requirements;
(c) a list of equipment and materials required for the implementation of the contingency measures and the emergency situation response;
(d) maintenance and testing program for equipment required for the implementation of the contingency measures and the emergency situation response;
(e) procedures to be undertaken as part of the implementation of the contingency measures and the emergency situation response;
(f) names and telephone numbers of waste management companies available for emergency response;
(g) notification protocol, with names and telephone numbers of persons to be contacted, including the Owner, the Site personnel, the Ministry of the Environment Spills Action Centre and the York Durham District, the local Fire and Police Departments, the local Municipality, the local Medical Officer of Health, and the Ministry of Labour;
(h) procedures and actions to be taken should the incoming Waste not meet the applicable quality criteria specified in this Certificate;
(i) procedures and actions to be taken should the outgoing Residual Waste fail to meet the criteria specified in this Certificate;
(j) procedures and actions to be taken should the current disposal options for the outgoing Residual Waste become unavailable;
(k) design of the contingency measure, procedures and actions should the emissions from the Site, including the fugitive odour/dust emissions, cause occurrences of public Complaints;
(l) procedures and actions to be taken should the Owner be unable to maintain the negative pressure in the Tipping Building;
(m) procedures and actions to be taken should the occurrence of Complaints require the Owner to suspend the waste processing activities at the Site; and
(n) identification and risk assessment of all reasonably foreseeable incidents that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate, including but not limited to:
    (i) a breakdown of the Facility/Equipment or part of the Facility/Equipment, including the APC Equipment and the CEM Systems associated with the Boilers;
    (ii) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements;
    (iii) any change in process parameters which may result in non compliance with the Performance Requirements;
    (iv) power failure resulting in the use of the Emergency Diesel Generator or Total Power Failure; and
    (v) description of the preventative and control measures to minimize the occurrence or impacts of the above incidents; and
    (vi) procedures for corrective measures and timelines to take to address the above incidents in a timely manner to effectively prevent or minimize the discharge of any contaminant into the natural environment and continue to maintain compliance with the *EPA* , the Regulations and

this Certificate, including procedures for Waste Processing Rate reduction, waste feed cut-off, Controlled Shutdown or Emergency Shutdown of the Boilers as applicable.

(3) The Owner shall submit the finalized Contingency and Emergency Response Plan to the Director a minimum of one hundred and twenty (120) days prior to the Commencement Date of Operation, for approval.

(4) An up-to-date version of the Contingency and Emergency Response Plan shall be kept at the Site at all times, in a central location available to all staff, and it shall be available for inspection by a Provincial Officer upon request.

(5) The Owner shall ensure that the names and telephone numbers of the persons to be contacted in the event of an emergency situation are kept up-to-date, and that these numbers are prominently displayed at the Site and at all times available to all staff and emergency response personnel.

(6) The Contingency and Emergency Response Plan shall be reviewed on a regular basis and updated, as necessary. The revised version of the Contingency and Emergency Response Plan shall be submitted to the local Municipality and the Fire Department for comments and to the District Manager for comments and concurrence.

(7) The Owner shall implement the recommendations of the updated Contingency and Emergency Response Plan, immediately upon receipt of the written concurrence from the District Manager.

12. **EMERGENCY SITUATION RESPONSE and REPORTING**

(1) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site and manage any emergency situation in accordance with the Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the equipment and materials listed in the Contingency and Emergency Response Plan are immediately available at the Site, are in a good state of repair, and fully operational at all times.

(3) The Owner shall ensure that all Site personnel responsible for the emergency situation response are fully trained in the use of the equipment and related materials, and in the procedures to be employed in the event of an emergency.

(4) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

13. **SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER**

(1) The Owner shall notify the District Manager in writing, at least six (60) days prior to the scheduled date for the first receipt of Waste at the Site, as to whether or not the construction of the Facility has been carried out in accordance with this Certificate to a point of Substantial Completion.

(2) (a) The Owner shall forthwith notify the District Manager and the Spills Action Centre by telephone, when any of the following incidents occur that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate:

(i) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements triggering a Waste Processing Rate Reduction, Waste Feed cut-off, Controlled Shutdown or Emergency Shutdown as specified in the Emergency Response and Contingency Plan;
(ii) failure of the APC Equipment associated with the Boilers; and
(iii) power failure resulting in the use of the emergency diesel generator or Total Power Failure;

(b) In addition to fulfilling the notification requirements from the *EPA,* the Owner shall prepare and submit a written report to the District Manager with respect to any of the above said occurrences, within five (5) calendar days of the occurrence, in the following format:

(i) date of the occurrence;
(ii) general description of the occurrence;
(iii) duration of the occurrence;
(iv) effect of the occurrence on the emissions from the Facility;
(v) measures taken to alleviate the effect of the occurrence on the emissions from the Facility; and
(vi) measures taken to prevent the occurrence of the same or similar occurrence in the future.

(3) Should a Spill, as defined in the *EPA*, occur at the Site, in addition to fulfilling the requirements from the *EPA* and applicable regulations, the Owner shall submit to the District Manager a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the Site.

(4) (a) Within ninety (90) days from the date of this Certificate, the Regions shall prepare and submit to the District Manager for concurrence, a Soil Testing Plan to monitor the impact of the Site operations at the locations where the ambient air monitoring is proposed by the Owner in accordance with the requirements set out in the EA Approval.

(b) (i) This Plan shall ensure that representative samples of the soil to be tested are collected in sufficient numbers and that the samples are properly preserved and tested so that reliable data on the soil characteristics is collected.

(ii) As a minimum, the Plan shall include testing for cadmium, lead, chromium, nickel, cobalt, copper, molybdenum, selenium, zinc and mercury, Dioxins and Furans.

(iii) This Plan shall comply with the Ministry's regulatory requirements for sampling and testing of soil and it shall include the rationale for the proposed methods.

(iv) This Plan be kept at the Site at all times and be available for inspection by a Provincial Officer upon request.

14. RECORDS KEEPING

(1) Any information requested by the Ministry concerning the Facility and its operation under this Certificate, including, but not limited to, any records required to be kept by this Certificate, shall be provided to the Ministry, upon request**,** in a timely manner.

(2) The Owner shall retain, for a minimum of seven (7) years from the date of their creation, except as noted below, all reports, records and information described in this Certificate.

Daily Activities

(3) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) date of record and the name and signature of the person completing the report;
(b) quantity and source of the incoming Waste received at the Site;
(c) records of the estimated quantity of Waste thermally treated in the Boilers;
(d) quantity of the Unacceptable Waste received at the Site by the end of the approved Waste receipt period and the type(s) of the Unacceptable Waste received;
(e) quantity and type of the Residual Waste shipped from the Site, including any required outgoing Residual Waste characterization results;
(f) destination and/or receiving site(s) for the Residual Waste shipped from the Site;
(g) quantity and type of any Rejected Waste accepted at the Site;
(h) destination and/or receiving site(s) for the Rejected Waste shipped from the Site;
(i) housekeeping activities, including litter collection and washing/cleaning activities, etc.
(j) amount of electricity produced;

(k) amount of excess electricity exported to the electrical grid.

Monitoring and Testing Records

(4) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) day and time of the activity;
(b) all original records produced by the recording devices associated with the CEM Systems;
(c) a summary of daily records of readings of the CEM Systems, including:
  (i) the daily minimum and maximum 4-hour average readings for carbon monoxide;
  (ii) the daily minimum and maximum one hour average readings for oxygen;
  (iii) the daily minimum and maximum 10-minute average readings for organic matter;
  (iv) the daily minimum and maximum 24-hour average readings for sulphur dioxide;
  (v) the daily minimum and maximum 24-hour average readings for nitrogen oxides;
  (vi) the daily minimum and maximum 24-hour average readings for hydrogen chloride;
  (vii) the daily minimum and maximum 6-minute average and 2-hour average opacity readings; and
  (viii) the daily minimum and maximum one-hour average readings for temperature measurements.
(d) records of all excursions from the applicable Performance Requirements as measured by the CEM Systems, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions;
(e) all records produced during any Acoustic Audit;
(f) all records produced during any Source Testing;
(g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;
(h) all records produced during the Residual Waste compliance testing;
(i) all records produced during the Soil Testing;
(j) all records produced during the Groundwater and Surface Water Monitoring required by this Certificate;
(k) all records produced during the Ambient Air Monitoring required by this Certificate;
(l) all records associated with radiation monitoring of the incoming Waste, including but not limited to:
  (i) transaction number;
  (ii) hauler;
  (iii) vehicle ID;
  (iv) alarm level;
  (v) maximum CPS;
  (vi) uSv/hr;

(vii) comment;
(viii) background CPS;
(ix) driver time in and out; and
(x) name of the Trainer Personnel that carried out the monitoring.

(m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;
(n) results the negative pressure in the Tipping Building carried out, as required.

Inspections/Maintenance/Repairs

(5) The Owner shall maintain an on-Site written or digital record of inspections and maintenance as required by this Certificate. As a minimum, the record shall include the following:

(a) the name and signature of the Trained Personnel that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered, including the need for a maintenance or repair activity;
(d) the recommendations for remedial action;
(e) the date, time and description of actions (repair or maintenance) undertaken;
(f) the name and signature of the Trained Personnel who undertook the remedial action; and
(g) an estimate of the quantity of any materials removed during cleaning of the Works.

Emergency Situations

(6) The Owner shall maintain an on-Site written or digital record of the emergency situations. As a minimum, the record shall include the following:

(a) the type of an emergency situation;
(b) description of how the emergency situation was handled;
(c) the type and amount of material spilled, if applicable;
(d) a description of how the material was cleaned up and stored, if generated; and
(e) the location and time of final disposal, if applicable; and
(f) description of the preventative and control measures undertaken to minimize the potential for re-occurrence of the emergency situation in the future.

Complaints Response Records

(7) The Owner shall establish and maintain a written or digital record of complaints received and the responses made as required by this Certificate.

Training

(8) The Owner shall maintain an on-Site written or digital record of training as required by this Certificate. As a minimum, the record shall include the following:

(a) date of training;
(b) name and signature of person who has been trained; and
(c) description of the training provided.

Reports

(9) The Owner shall keep at the Site the following reports required by this Certificate:

(a) the ESDM Report
(b) the Acoustic Assessment Report;
(c) the Annual Report; and
(d) the Third Party Audit.

15. **REPORTING**

Annual Report

(1) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager and to the Advisory Committee, an Annual Report summarizing the operation of the Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:

(a) a summary of the quality and the quantity of the Wastes accepted at the Site, including the maximum amount of the Waste received annually and daily and the sources of the Waste;

(b) a summary of the quality and the quantity of the Residual Waste shipped from the Site, including the analytical data required to characterize the Residual Waste, the off-Site destinations for the Residual Waste and its subsequent use, if known;

(c) estimated material balance for each month documenting the maximum amount of wastes stored at the Site;

(d) annual water usage;

(e) annual amount of the electricity produced and the annual amount of the electricity exported to the electrical grid;

(f) summaries and conclusions from the records required by Conditions 14.(3) through 14.(8) of this Certificate;

(g) the Emission Summary Table and the Acoustic Assessment Summary Table for the Facility as of December 31 from the previous calendar year;

(h) a summary of dates, duration and reasons for any environmental and operational problems, Boilers downtime, APC Equipment and CEM System malfunctions that may have negatively impacted the quality of the environment or any incidents triggered by the Emergency Response and

Contingency Plan and corrective measures taken to eliminate the environmental impacts of the incidents;

(i) a summary of the dates, duration and reasons for all excursions from the applicable Performance Requirements as measured by the CEM Systems or as reported by the annual Source Testing, reasons for the excursions and corrective measures taken to eliminate the excursions;

(j) results of the evaluation of the performance of the long-term sampling system in determining the Dioxins and Furans emission trends and/or fluctuations for the year reported on as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers;

(k) dates of all environmental complaints relating to the Site together with cause of the Complaints and actions taken to prevent future Complaints and/or events that could lead to future Complaints;

(l) any environmental and operational problems that could have negatively impacted the environment, discovered as a result of daily inspections or otherwise and any mitigative actions taken;

(m) a summary of any emergency situations that have occurred at the Site and how they were handled;

(n) the results and an interpretive analysis of the results of the groundwater and surface water, including an assessment of the need to amend the monitoring programs;

(o) summaries of the Advisory Committee meetings, including the issues raised by the public and their current status;

(p) any recommendations to improve the environmental and process performance of the Site in the future;

(q) statement of compliance with this Certificate, including compliance with the *O. Reg. 419/05* and all air emission limits based on the results of source testing, continuous monitoring and engineering calculations, as may be appropriate; and

(r) interpretation of the results and comparison to the results from previous Annual Reports to demonstrate the Facility's impact on the environment.

Third Party Audit

(2) (a) The Regions shall ensure that an independent technical review of the operations at the Site is undertaken in accordance with the requirements of the EA Approval.

(b) In addition to the Third Party Audit requirements set out in the EA approval, the Third Party Audit shall include the following:

(i) a review of the data from the monitoring and testing required by this Certificate;
(ii) a review of all complaints received about the operation of the Facility;
(iii) any recommendations for improving the operation of the Facility received from the Advisory Committee; and
(iv) a recommendation of any improvements that could be made to ensure that the operation of the Facility is optimized and is protective of the health and safety of people and the environment.

(3) The Regions shall submit a Written Audit Report on the results of the independent technical review to the Regional Director in accordance with the Audit Plan and retain a copy at the Site.

Soil Testing Report

(4) Within one (1) month of completion of each Soil Testing event, the Regions shall submit to the District Manager a Soil Testing Report, which includes the details on the sampling/testing procedures, the results of the testing and a comparison with the results obtained during the previous Soil Testing.

16. PUBLIC ACCESS TO DOCUMENTATION

(1) The Owner shall, at all times, maintain documentation that describes the current operations of the Facility. The Owner shall post the documentation at the website for the undertaking and during regular business hours, the Owner shall make the following documents available for inspection at the Site by any interested member of the public, upon submission to the Ministry for review:

(a) a current ESDM Report that demonstrates compliance with the Performance Limits for the Facility regarding all Compounds of Concern;

(b) a current Acoustic Assessment Report that demonstrates compliance with the Performance Limits for the Facility regarding noise emissions;

(c) the most recent Annual Report;

(d) the most current Third Party Audit Report;

(e) Odour Management and Mitigation Plan, prepared in accordance with the requirements of the EA Approval;

(f) Noise Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval; and

(g) Groundwater and Surface Water Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval.

(2) The Owner shall ensure that necessary hardware and software are provided at a location available to the public, to provide on-line real-time reporting of the operating parameter data for the Facility, including acceptable operating limits, stack emissions, and all other parameters for which continuous monitoring is required and that continuous records of the same be kept and made available to the public.

17. ADVISORY COMMITTEE

(1) The Regions shall establish an Advisory Committee in accordance with the requirements set out in the EA Approval.

18. CLOSURE of the SITE

(1) A minimum of nine (9) months prior to closure of the Site, the Owner shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Owner shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

SCHEDULE "A"

Supporting Documentation

(1) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) Emission Summary and Dispersion Modelling Report, dated March 2011, prepared by Golder Associates;

(b) Acoustic Assessment Report prepared by Golder Associates Ltd., dated March 2011 and signed by Paul Niejadlik.

(2) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) Attachment #1 containing the "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.;

(b) Attachment #3 containing the "Public Consultation Report", dated March 2011, prepared by Golder Associates Ltd.;

(c) Attachment #4 containing the Host Community Agreement

(d) Attachment #5 containing the proof of legal name for Covanta Durham York Renewable Energy Limited Partnership; and

(e) A letter May 24, 2011 from Anthony Ciccone, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, providing additional technical information on the proposal and attaching a report entitled "Amendment #1 Durham York Energy Centre Design and Operations Report", dated May 2011;

(3) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of Durham and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) "Surface Water and Groundwater Technical Study Report" dated July 2009, prepared by Jacques Whitford, Markham, Ontario (CD Report).

(b) "Stormwater Design Model Output" prepared by Sigma Energy, dated March 2001 (CD Report).

(c) Clearance letter from Central Lake Ontario Conservation date February 22, 2011.

(d) A letter dated March 23, 2011, from Brian Bahor, Covanta Energy Corporation, to Stefanos Habtom, Ontario Ministry of the Environment, providing additional technical design information on the proposed stormwater management ponds.

SCHEDULE "B"

Procedure to calculate and record the 10-minute average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor

(a) Calculate and record one-hour average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor, employing CALPUFF atmospheric dispersion model or the dispersion model acceptable to the Director that employs at least five (5) years of hourly local meteorological data and that can provide results reported as individual one-hour average odour concentrations.

(b) Convert and record each of the one-hour average concentrations predicted over the five (5) years of hourly local meteorological data at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations using the One-hour Average to 10-Minute Average Conversion described below; and

(c) Record and present the 10-Minute Average concentrations predicted to occur over a five (5) year period at the Point of Impingement and at the most impacted Sensitive Receptor in a histogram. The histogram shall identify all predicted 10-minute average odour concentration occurrences in terms of frequency, identifying the number of occurrences over the entire range of predicted odour concentration in increments of not more than 1/10 of one odour unit. The maximum 10-minute average concentration of odour at the Sensitive Receptor will be considered to be the maximum odour concentration at the most impacted Sensitive Receptor that occurs and is represented in the histogram, disregarding outlying data points on the histogram as agreed to by the Director.

One-hour Average To 10-minute Average Conversion

1. Use the following formula to convert and record one-hour average concentrations predicted by the CALPUFF atmospheric dispersion model or by the dispersion model acceptable to the Director to 10-minute average concentrations:

X10min = X60min*1.65

where X10min = 10-minute average concentration
X60min = one-hour average concentration

SCHEDULE "C"

PERFORMANCE REQUIREMENTS
In-Stack Emission Limits

Parameter	In-Stack Emission Limit	Verification of Compliance
Total Suspended Particulate Matter (filterable particulate measured in accordance with the Ontario Source Testing Code)	9 mg/Rm3	Results from compliance Source Testing
cadmium	7 µg/Rm3	Results from compliance Source Testing
lead	50 µg/Rm3	Results from compliance Source Testing
mercury	15 µg/Rm3	Results from compliance Source Testing
dioxins and furans	60 pg/Rm3	Results from compliance Source Testing; results expressed as I-TEQ
hydrochloric acid (HCl)	9 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
sulphur dioxide (SO2)	35 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
nitrogen oxides (NOx)	121 mg/ Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
organic matter (undiluted, expressed as equivalent methane)	50 ppmdv (33 mg/ Rm3)	Results from compliance source testing
carbon monoxide	35 ppmdv (40 mg/Rm3)	Calculated as the rolling arithmetic average of four (4) hours of data measured by a CEM System that provides data at least once every fifteen minutes, in accordance with condition 6 (2) (c)
opacity	10 percent	Calculated as the rolling arithmetic average of six (6) minutes of data measured by a CEM System that provides data at least once every minute
	5 percent	Calculated as the rolling arithmetic average of two (2) hours of data measured by a CEM System that provides data at least once every

		fifteen minutes

mg/Rm3- milligrams per reference cubic metre;

pg/Rm3 - picograms per reference cubic metre

ppmdv parts per million by dry volume,

µg/Rm3 - micrograms per reference cubic metre

R- reference conditions - 25 degrees Celsius, 101.3 kilopascals, dry basis, 11% oxygen

SCHEDULE "D"

TEST CONTAMINANTS

Hydrogen Chloride
Hydrogen Fluoride
Oxides of Nitrogen expressed as Nitrogen Dioxide
Sulphur Dioxide
Total Hydrocarbons, expressed as methane on wet basis
Carbon Dioxide
Total Suspended Particulate Matter (< 44 microns)
Total PM-10 including condensables
Total PM-2.5 including condensables

Metals

Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Mercury
Molybdenum
Nickel
Selenium
Silver
Thallium
Vanadium
Zinc

Schedule "D" - Cont'd

Chlorobenzenes	Chlorophenols
Monochlorobenzene (MCB) 1,2-Dichlorobenzene (1,2-DCB) 1,3-Dichlorobenzene (1,3-DCB) 1,4-Dichlorobenzene (1,4-DCB) 1,2,3-Trichlorobenzene (1,2,3-TCB) 1,2,4-Trichlorobenzene (1,2,4-TCB) 1,3,5-Trichlorobenzene (1,3,5-TCB) 1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB) 1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB) 1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB) Pentachlorobenzene (PeCB) Hexachlorobenzene (HxCB)	2-monochlorophenol (2-MCP) 3-monochlorophenol (3-MCP) 4-monochlorophenol (4-MCP) 2,3-dichlorophenol (2,3-DCP) 2,4-dichlorophenol (2,4-DCP) 2,5-dichlorophenol (2,5-DCP) 2,6-dichlorophenol (2,6-DCP) 3,4-dichlorophenol (3,4-DCP) 3,5-dichlorophenol (3,5-DCP) 2,3,4-trichlorophenol (2,3,4-T3CP) 2,3,5-trichlorophenol (2,3,5-T3CP) 2,3,6-trichlorophenol (2,3,6-T3CP) 2,4,5-trichlorophenol (2,4,5-T3CP) 2,4,6-trichlorophenol (2,4,6-T3CP) 3,4,5-trichlorophenol (3,4,5-T3CP) 2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP) 2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP) 2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP) Pentachlorophenol (PeCP)

Schedule "D" - Cont'd

Co-Planar PCBs (Dioxin-like PCBs)	Volatile Organic Matter
PCB-077 (3,3',4,4'-TCB)	Acetaldehyde
PCB-081 (3,4,4',5-TCB)	Acetone
PCB-105 (2,3,3',4,4'-PeCB)	Acrolein
PCB-114 (2,3,4,4',5-PeCB)	Benzene
PCB-118 (2,3',4,4',5-PeCB)	Bromodichloromethane
PCB-123 (2',3,4,4',5-PeCB)	Bromoform
PCB-126 (3,3',4,4',5-PeCB)	Bromomethane
PCB-156 (2,3,3',4,4',5-HxCB)	Butadiene, 1,3 -
PCB-157 (2,3,3',4,4',5'-HxCB)	Butanone, 2 -
PCB-167 (2,3',4,4',5,5'-HxCB)	Carbon Tetrachloride
PCB-169 (3,3',4,4',5,5'-HxCB)	Chloroform
PCB-189 (2,3,3',4,4',5,5'-HpCB)	Cumene
	Dibromochloromethane
	Dichlorodifluoromethane
	Dichloroethane, 1,2 -
	Dichloroethene, Trans - 1,2
	Dichloroethene, 1,1 -
	Dichloropropane, 1,2 -
	Ethylbenzene
	Ethylene Dibromide
	Formaldehyde
	Mesitylene
	Methylene Chloride
	Styrene
	Tetrachloroethene
	Toluene
	Trichloroethane, 1,1,1 -
	Trichloroethene
	Trichloroethylene, 1,1,2 -
	Trichlorotrifluoroethane
	Trichlorofluoromethane
	Xylenes, M-, P- and O-
	Vinyl Chloride

Schedule "D" - Cont'd

Polycyclic Organic Matter	Dioxin/Furan Isomers
Acenaphthylene	
Acenaphthene	2,3,7,8-Tetrachlorodibenzo-p-dioxin
Anthracene	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
Benzo(a)anthracene	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
Benzo(b)fluoranthene	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
Benzo(k)fluoranthene	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
Benzo(a)fluorene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
Benzo(b)fluorene	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin
Benzo(ghi)perylene	
Benzo(a)pyrene	2,3,7,8-Tetrachlorodibenzofuran
Benzo(e)pyrene	2,3,4,7,8-Pentachlorodibenzofuran
Biphenyl	1,2,3,7,8-Pentachlorodibenzofuran
2-Chloronaphthalene	1,2,3,4,7,8-Hexachlorodibenzofuran
Chrysene	1,2,3,6,7,8-Hexachlorodibenzofuran
Coronene	1,2,3,7,8,9-Hexachlorodibenzofuran
Dibenzo(a,c)anthracene	2,3,4,6,7,8-Hexachlorodibenzofuran
Dibenzo(a,h)anthracene	1,2,3,4,6,7,8-Heptachlorodibenzofuran
Dibenzo(a,e)pyrene	1,2,3,4,7,8,9-Heptachlorodibenzofuran
9,10-Dimethylanthracene	1,2,3,4,6,7,8,9-Octachlorodibenzofuran
7,12-Dimethylbenzo(a)anthracene	
Fluoranthene	
Fluorene	
Indeno(1,2,3-cd)pyrene	
2-Methylanthracene	
3-Methylcholanthrene	
1-Methylnaphthalene	
2-Methylnaphthalene	
1-Methylphenanthrene	
9-Methylphenanthrene	
Naphthalene	
Perylene	
Phenanthrene	
Picene	
Pyrene	
Tetralin	
M-terphenyl	
O-terphenyl	
P-terphenyl	
Triphenylene	

SCHEDULE "E"

SOURCE TESTING PROCEDURES

1. The Owner shall submit, to the Manager a test protocol including the Pre-Test Information required by the Source Testing Code, at least two (2) months prior to the scheduled Source Testing date.

2. (1) For the purpose of the Source Testing program, the Owner is temporarily permitted to operate the Boilers at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b) during the period of the Source Testing. The Owner shall ensure that the concentration of residual oxygen in the Undiluted Gases leaving the combustion zone of the Boilers, as measured and recorded by the CEM System, shall not be less than 5 percent by volume on a dry basis, during this Source Testing program.

   (2) If the Source Testing results demonstrate that compliance with the Performance Requirements can be maintained at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b), the Owner may apply to the Director for approval to alter the required residual oxygen concentration.

3. The Owner shall finalize the test protocol in consultation with the Manager.

4. The Owner shall not commence the Source Testing until the Manager has accepted the test protocol.

5. The Owner shall complete the first Source Testing not later than six (6) months after Commencement of Operation of the Facility/Equipment.

6. The Owner shall conduct subsequent Source Testing at least once (1) every calendar year thereafter.

7. The Owner shall notify the District Manager and the Manager in writing of the location, date and time of any impending Source Testing required by this Certificate, at least fifteen (15) days prior to the Source Testing.

8. The Owner shall submit a report on the Source Testing programs to the District Manager and the Manager not later than three (3) months after completing each Source Testing program. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:

   (1) an executive summary;
   (2) records of operating conditions; including process description, records of waste composition and feed rate during the Source Testing;
   (3) all records produced by the CEM Equipment;
   (4) procedures followed during the Source Testing and any deviation from the proposed test protocol and the reasons therefore;
   (5) the results of the analyses of the stack emissions;

(6) a summary table that compares the Source Testing results, the monitoring data and the records of operating conditions during the Source Testing to the requirements imposed by the *EPA*, the Regulation and/or the Performance Requirements;
(7) the results of dispersion calculations in accordance with the *O. Reg. 419/05*, indicating the maximum concentration of the Test Contaminants, at the Point of Impingement.
(8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the Test Contaminants.

9. The Owner shall ensure that the Source Testing Report is made available and easily accessible for review by the public at the Facility, immediately after the document is submitted to the Ministry.

10. The Director may not accept the results of the Source Testing if:
(1) the Source Testing Code or the requirements of the Manager were not followed; or
(2) the Owner did not notify the District Manager and the Manager of the Source Testing; or
(3) the Owner failed to provide a complete report on the Source Testing.

11. If the Director does not accept the results of the Source Testing, the Director may require re-testing.

SCHEDULE "F"

PARAMETER:
Temperature

LOCATION:
The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000°C for a period of not less than one second. Compliance shall be proven by direct measurement or/and a correlation between the measured temperature and the intended target proven by a method acceptable to the Director.

PERFORMANCE:
The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	SPECIFICATION
1)	Type:	"K", "J" or other type or alternative measurement device with equivalent measurement accuracy and suitable to the temperature range being measured
2)	Accuracy:	± 1.5 percent of the minimum gas temperature

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 1 minutes or better. Temperature readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

PARAMETER:
Carbon Monoxide

INSTALLATION:
The Continuous Carbon Monoxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2.5 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤5 percent of span value
8) Response Time (90 percent response to a step change):	≤180 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Oxygen

INSTALLATION:
The Continuous Oxygen Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (percentage):	0 - 20 or 0 - 25
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (percentage):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data
3) Calibration Error:	0.25 percent O_2
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 0.5 percent O_2
7) Span Calibration Drift (24-hour):	≤ 0.5 percent O_2
8) Response Time (90 percent response to a step change):	≤ 90 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Oxygen concentration readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Hydrogen Chloride

INSTALLATION:
The Continuous Hydrogen Chloride Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of hydrogen chloride in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Hydrogen Chloride Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 20 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated daily at the sample point, to ensure that it meets the drift limits specified above, during the periods of the operation of the . The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 5 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Nitrogen Oxides

INSTALLATION:
The Continuous Nitrogen Oxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of nitrogen oxides in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Analyzer Operating Range (parts per million, ppm):	0 to ≥200 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Nitrogen Oxides Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Sulphur Dioxide

INSTALLATION:
The Continuous Sulphur Dioxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of sulphur dioxide in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	**SPECIFICATION**
1. Range (parts per million, ppm):	0 to ≥100 ppm
2. Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	**SPECIFICATION**
1. Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2. Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3. Calibration Error:	≤ 2 percent of actual concentration
4. System Bias:	≤ 4 percent of the mean value of the reference method test data
5. Procedure for Zero and Span Calibration Check:	all system components checked
6. Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7. Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8. Response Time (90 percent response to a step change):	≤ 200 seconds
9. Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and shall meet the following installation specifications.

	PARAMETERS	**SPECIFICATION**
1.	Detector Type:	Flame Ionization
2.	Oven Temperature:	160°C minimum
3.	Flame Temperature:	1800 ^{o}C minimum at the corona of the hydrogen flame
4.	Range (parts per million, ppm):	0 to ≥200 ppm
5.	Calibration Gas:	propane in air or nitrogen
6.	Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	**SPECIFICATION**
1.	Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2.	Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3.	System Bias:	≤ 4 percent of the mean value of the reference method test data
4.	Noise:	≤ 1 percent of span value on most sensitive range
5.	Repeatability:	≤ 1 percent of span value
6.	Linearity (response with propane in air):	≤ 3 percent of span value over all ranges
7.	Calibration Error:	≤ 2 percent of actual concentration
8.	Procedure for Zero and Span Calibration Check:	all system components checked on all ranges
9.	Zero Calibration Drift (24-hours):	≤ 2.5 percent of span value on all ranges
10.	Span Calibration Drift (24-hours):	≤ 2.5 percent of span value
11.	Response Time (90 percent response to a step change):	≤ 60 seconds
12.	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER: Opacity

INSTALLATION: The Continuous Opacity Monitor shall be installed at an accessible location where the measurements are representative of the actual opacity of the Undiluted Gases leaving the APC Equipment associated with each Boiler and shall meet the following design and installation specifications.

PARAMETERS		**SPECIFICATION**
1)	Wavelength at Peak Spectral Response (nanometres, nm):	500 - 600
2)	Wavelength at Mean Spectral Response (nm):	500 - 600
3)	Detector Angle of View:	≤ 5 degrees
4)	Angle of Projection:	≤ 5 degrees
5)	Range (percent of opacity):	0 -100

PERFORMANCE:
The Continuous Opacity Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS		**SPECIFICATION**
1)	Span Value (percent opacity):	2 times the average normal opacity of the source
2)	Calibration Error:	≤3 percent opacity
3)	Attenuator Calibration:	≤2 percent opacity
4)	Response Time (95 percent response to a step change):	≤ 10 seconds
5)	Schedule for Zero and Calibration Checks:	daily minimum
6)	Procedure for Zero and Calibration Checks:	all system components checked
7)	Zero Calibration Drift (24-hours):	≤ 2 percent opacity
8)	Span Calibration Drift (24-hours):	≤ 2 percent opacity
9)	Conditioning Test Period:	≥ 168 hours without corrective maintenance
10)	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated, to ensure that it meets the drift limits specified above, during the periods of the operation of the Equipment. The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 30 seconds or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Moisture, Hydrogen Fluoride and Ammonia

Selection and Installation

The Owner shall select and install a CEM System, to measure moisture content of the stack gases, the concentration of hydrogen fluoride and ammonia in the Undiluted Gases leaving the APC Equipment associated with each Boiler, as follows:

a) Design and Performance Specifications shall be in accordance with 40 CFR 60, Appendix B, Specification 4.

b) The Owner shall select the probe locations in compliance with 40 CFR 60, Appendix B, Specification 2.

Test Procedures

The Owner shall verify compliance with the Design and Performance Specifications in accordance with 40 CFR 60, Appendix B, Specification 4, with the reference method for the relative accuracy test being Method 4. of the Source Testing Code.

In furtherance of, but without limiting the generality of the foregoing, the mean difference between the calibration gas value and the analyzer response value at each of the four test concentrations shall be less than 5 percent of the measurement range.

SCHEDULE "G"

A stormwater management facility to service a 10.0 ha drainage area of the Durham York Energy Centre located on the west side of Osbourne Road and north of the CN Rail, Lot 27, Concession Broken Front, Part, Municipality of Clarington, Regional Municipality of Durham, designed to provide quality and quantity control of stormwater run-off by attenuating runoff from storm events up to 1:100 years return frequency to or below the pre-development levels, consisting of:

East Stormwater Management Pond (East SWM Pond)

A stormwater management facility to service a 5.7 ha drainage area comprising of the eastern part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 128 m long drainage ditch collecting stormwater runoff from the north eastern part of the site, having an average horizontal slope of 1.56%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- one (1) approximately 199 m long drainage ditch collecting stormwater runoff from the eastern part of the site, having an average horizontal slope of 2.77%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately fourteen (14) catch basins/maintenance holes and a total of 466.8 m long 450 mm diameter and 34.6 m of 600 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the north and north eastern part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 11.0 m wide and 34.8 m long and depth of 1.0 m, equipped with 600 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south east part of the site, with approximate bottom dimensions of 21.0 m wide and 71.4 m long and a maximum depth of 2.7 m at 96.70 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent pool storage capacity of 1,008 m^3 at elevation 95.0 m masl, an active storage capacity of 3,099 m^3 at 96.70 m masl elevation, and total storage capacity of 4,107 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 97.0 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

West Stormwater Management Pond (West SWM Pond)

A stormwater management facility to service a 4.3 ha drainage area comprising of the western part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 296 m long drainage ditch collecting stormwater runoff from the north western part of the site, having an average horizontal slope of 1.0%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately five (5) catch basins/maintenance holes and a total of 272.2 m long 450 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the western part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 13.0 m wide and 26.0 m long and depth of 1.0 m, equipped with 450 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south western part of the site, with approximate bottom dimensions of 13.0 m wide and 58.0 m long and a maximum depth of 2.5 m at 96.5 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent storage capacity of 623 m^3 at elevation 95.0 m masl, an active storage capacity of 2,054 m^3 at 96.50 m masl elevation, and total storage capacity of 2,677 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 96.80 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

including all associated controls and appurtenances.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

Conditions 1.(1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), (17), (18) and (19) are included to clarify the legal rights and responsibilities of the Owner.

Conditions Nos.1.(3) and (4) are included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

Condition No. 1.(14) is included to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

Condition No.1.(15) is included to restrict potential transfer or encumbrance of the Site without the notification to the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate.

Condition No. 1.(16) is included to ensure that the appropriate Ministry staff has ready access to the operations of the Site which are approved under this Certificate. The Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.

SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

Condition No. 2. is included to specify the approved waste receipt rates, the approved waste types and the service area from which waste may be accepted at the Site based on the Owner's application and supporting documentation. Condition No. 2. is also included to specify the maximum amount of waste that is approved to be stored at the Site.

SIGNS and SITE SECURITY

Condition No. 3. is included to ensure that the Site's users, operators and the public are fully aware of important information and restrictions related to the operation of the Site. Condition No. 3. is also included to ensure that the Site is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site personnel is on duty.

SITE OPERATIONS

Condition No. 4. is included to outline the operational requirements for the Facility to ensure that the said operation does not result in an adverse effect or a hazard to the natural environment or any person.

EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Condition No. 5. is included to require the Site to be maintained and inspected thoroughly on a regular basis to ensure that the operations at the Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

PERFORMANCE REQUIREMENTS

Condition No. 6 is included to set out the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

TESTING, **MONITORING** and **AUDITING**

Condition No. 7. is to require the Owner to gather accurate information on the operation of the Facility so that the environmental impact and subsequent compliance with the *EPA*, the *OWRA*, their Regulations and this Certificate can be verified.

NUISANCE IMPACT CONTROL and HOUSEKEEPING

Condition No. 8. is included to ensure that the Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person. Condition No. 8 is also included to specify odour control measures to minimize a potential for odour emissions from the Site.

STAFF TRAINING

Condition No. 9. is included to ensure that staff are properly trained in the operation of the equipment and instrumentation used at the Site, in the emergency response procedures and on the requirements and restrictions related to the Site operations under this Certificate.

COMPLAINTS RECORDING PROCEDURE

Condition No.10. is included to require the Owner to respond to any environmental complaints resulting from the Facility appropriately and in a timely manner and that appropriate actions are taken to prevent any further incidents that may cause complaints in the future.

CONTINGENCY and EMERGENCY RESPONSE PLAN and EMERGENCY SITUATIONS RESPONSE AND REPORTING

Conditions Nos.11. and 12. are included to ensure that the Owner is prepared and properly equipped to take immediate action in the event of an emergency situation.

SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER

Condition No. 13. is included to set out the requirements for the submissions to the District Manager and the Regional Director regarding the operation of the Facility and the activities required by this Certificate.

RECORDS KEEPING

Condition No.14. is included to ensure that detailed records of Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

REPORTING

Condition No.15. is to ensure that regular review of site, operations and monitoring is carried out and findings documented by a third party for determining whether or not the Site is being operated in compliance with this Certificate of Approval, the EPA and its regulations and whether or not any changes should be considered.

PUBLIC ACCESS to DOCUMENTATION

Condition No.16. is included to ensure that the public has access to information on the operation of the Site in order to participate in the activities of the Advisory Committee in a meaningful and effective way.

ADVISORY COMMITTEE

Condition No.17. is included to require the Owner to establish a forum for the exchange of information and public dialogue on activities carried out at the Site and to ensure that the local residents are properly informed of the activities at the Site and that their concerns can be heard and acted upon , as necessary. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Site and protection of the natural environment. Condition 16. is also included to ensure that the requirements of the EA Approval are fulfilled.

CLOSURE of the SITE

Condition No.18. is included to ensure that the final closure of the Site is completed in accordance with Ministry's standards.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, and in accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written Notice served upon me, the Environmental Review Tribunal, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act and Section 101 of the

Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 9 and 39, *Environmental Protection Act*
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted site is approved under Section 9 and Section 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of June, 2011

Signature
Ian Parrott, P .Eng.
Director
Section 9, *EPA*
Section 39, *EPA*
Section 53, *OWRA*

MW,QN,SH/

c: District Manager, MOE York-Durham
Regional Director, MOE Central Region

Content Copy Of Original

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: August 12, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

1. The following definition has been added:

"Contingency and Emergency Response Plan" also means the document entitled "Spill Contingency and Emergency Response Plan";

2. The following Conditions are amended to read as follows:

2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

4.(5)(e) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is as follows:

(i) The storage duration is limited to a maximum of seven (7) days.

(ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The notification shall include the duration of the extension and the reasons.

3. The following Conditions are added:

7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.

11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).

4. The following documents have been added to Schedule "A":

4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by by Golder Associates and dated June 2014.

5. Document entitled "Durham York Energy Centre, Spill Contingency & Emergency Response Plan" prepared by Covanta Durham York Renewable Energy Limited Partnership and dated January 13, 2014, excluding section entitled "Containment Evaluation".

6. Document entitled "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations", prepared by Covanta Durham York Renewable Energy Limited Partnership and dated June 2014.

7. Document entitled "Durham York Energy Centre, Noise Monitoring and Reporting Plan", prepared by Golder Associates and dated September 2011.

The reasons for this amendment to the Approval are as follows:

to approve the "Ash Sampling and Testing Protocol" as required Condition 7.(7)(a), the "Durham York Energy Centre, Spill Contingency & Emergency Response Plan", as required Condition 11.(3), "Durham York Energy Centre, Noise Monitoring and Reporting Plan" as required Condition 7.(5)(a) and "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations" as proposed by the applicant.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served

upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 12th day of August, 2014

Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MOE York-Durham
n/a, The Regional Municipality of Durham

Content Copy Of Original

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: October 24, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

1. The address of the Site has been changed to read as follows:

Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

2. The following definitions have been added:

" **Operator** " means any person other than the Regions' employees, authorized by the Regions as having the charge, management or control of any aspect of the Site and includes TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change, and includes its successors and assignees, their successors and assignees;

" **Regions** " means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and it includes The Regional Municipality of Durham and The Regional Municipality of York, their successors and assignees;

2. The following definition has been amended to read as follows:

" **Site** " means the property referred to as Durham York Energy Centre where the Owner has located and operates the Facility and the Works and located at 1835 Energy Drive in the Municipality of Clarington, Regional Municipality of Durham;

" **Owner** " within the context of this Approval, means the Regions and the Operator;

3. The following Conditions have been amended to read as follows:

"General: Change of Ownership" Conditions 1.(14) and 1.(15):

(14) The Regions shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Regions;
(d) the partners, where the Regions are or at any time become a partnership and a copy of the most recent declaration filed under the *Business Names Act ,* R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Regions are or at any time become a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act ,* R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Regions shall notify the successor of and provide the successor with a copy of this Approval, and the Regions shall provide a copy of the notification to the District Manager and the Director.

"Service Area, Approved Waste Types, Rates And Storage: Storage Restrictions" Condition 2.(5)(e):

2.(5)(e) (i) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(ii) The storage duration of bottom ash in the bunkers is limited to a maximum of seven (7) days.

(iii) Should additional storage location(s) and a longer storage duration be required during testing, a minimum of forty eight (48) hours before the storage parameters are changed from those approved in Condition 2.(5)(e)(i) and (ii), the Owner shall notify the District Manager, in writing, of the proposed changes and provide the reasons for the changes.

"Site Operations: Residual Waste Handling and Disposal" Condition 4.(5)(b)(iii):

4.(5)(b)(iii) The Owner may use the equipment that comes in contact with the hazardous wastes to handle other wastes provided that prior to such use, the equipment has been cleaned, as confirmed by visual inspections, to ensure the removal of any hazardous waste residues and to prevent cross contamination.

"Closure of the Site" Conditions 18.(1) and 18.(2):

(1) A minimum of nine (9) months prior to closure of the Site, the Regions shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Regions shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

4. "Covanta Durham York Renewable Energy Limited Partnership" is replaced with "TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change and includes its successors and assignees", in the Environmental Compliance Approval dated June 28, 2011 and in the Notice of Amendment dated August 12, 2014.

5. The following documents are added to Schedule "A":

8. Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Matthew R. Mulcahy, Covanta Durham York Renewable Energy Limited Partnership, Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Cliff Curtis, The Regional Municipality of Durham and Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Laura McDowell, The Regional Municipality of York, including the following attached supporting documentation:

(a) revised Section 8.0 "Ash Handling and Associated System" and revised Section 10.0 "Potable Process and Wastewater" dated May 2014, of the document entitled "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.

(b) Drawing No. M-2530, entitled "Piping & Instrumentation Diagram Bottom Ash Lime Slurry System"

(c) Drawing No. 70258-1-ME-GA-SK-001, entitled "Covanta Durham York Hydrated Lime System for Boiler Bottom Ash"

9. E-mail dated September 10, 2014 (2:26 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Margaret Wojcik, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the proposal, including an attachment entitled "M-1500^0360 Highlighted for MOE.pdf".

10. E-mail dated October 13, 2014 (3:23 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Ricki Allum, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the legal name of the applicant,

including an attachment entitled "Partnership Legal Clarification.pdf".

The reasons for this amendment to the Approval are as follows:

to approve the proposed Bottom Ash Lime Conditioning System, to correct the typographical errors in the Notice of Amendment dated August 12, 2014, to clarify the intent of the Residual Waste equipment cleaning condition and to allow different bottom ash storage conditions during testing.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*****
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of October, 2014

Tesfaye Gebrezghi, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

MW/
c: District Manager, MOE York-Durham
Leon Brasowski, Covanta Energy Corporation

Content Copy Of Original

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 3
Issue Date: December 23, 2015

The Regional Municipality of Durham
605 Rossland Road Level 5
Whitby, Ontario
L1N 6A3

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

The following Conditions are revoked:

7. TESTING, MONITORING and AUDITING

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment and

M5G 1E5

Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 23rd day of December, 2015

Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

HM/
c: District Manager, MOECC York-Durham
Kathryn Katsiroumpas, Valcoustics Canada Ltd.

Content Copy Of Original

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 4
Issue Date: February 24, 2016

The Regional Municipality of Durham
605 Rossland Road East, Level 5
Whitby, Ontario
L1N 6A3

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

TransRiver Canada Incorporated operating as Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for a Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

The following Conditions are revoked:

7. **TESTING** , **MONITORING** and **AUDITING**

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233*

and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of February, 2016

Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

HM/
c: District Manager, MOECC York-Durham
Kathryn Katsiroumpas, Valcoustics Canada Ltd.

Content Copy Of Original

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 5
Issue Date: March 14, 2016

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

I. The following conditions have been amended to read as follows:

2 . SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

(5) Storage Restrictions:

Solids:

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. (d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals,

shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation.

(e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(j) A maximum of 65 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

(k) A maximum of 105 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

Liquids: (l) (i) A maximum of 57 cubic metres of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the Residue Building.

(8) (a) Waste received at the Site shall be processed within six (6) days from its receipt at the Site.

(b) Emergency storage of Waste requirements:

(i) On an emergency basis only, the storage duration of Waste inside the tipping pit may be extended beyond the limit set out in Condition 2.(8)(a), above, subject to compliance with the following requirements:

(A) prior to the start of the emergency storage of Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste will be stored longer than six (6) days from its receipt;

(B) any additional information that the District Manager may require shall be submitted within a time period acceptable to the District Manager;

(C) the proposed preventative measures for emergency storage of Waste as identified in the Operations and Maintenance Manual shall be implemented upon commencement of the emergency storage of Waste and shall remain in effect for the entire duration of the emergency storage, unless otherwise advised by the District Manager; and

(D) the Owner shall notify, in writing, the District Manager when emergency storage is no longer required.

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

(p) all measures deemed necessary to prevent an occurrence of an adverse effect from the emergency storage of Waste.

II. The following section of Schedule "F" has been amended to read as follows:

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler or at any other location that has been determined in consultation with the Ministry to be suitable/equivalent for the determination of Total Hydrocarbons leaving the combustion zone of each Boiler and has been approved by the Director. The Total Hydrocarbons Monitor shall meet the following installation specifications:

PARAMETERS SPECIFICATION

1. Detector Type: Flame Ionization
2. Oven Temperature: 160 o C minimum
3. Flame Temperature: 1800 o C minimum at the corona of the hydrogen flame
4. Range (parts per million, ppm): 0 to ³ 200 ppm
5. Calibration Gas: propane in air or nitrogen
6. Calibration Gas Ports: close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS SPECIFICATION

1. Span Value (nearest ppm equivalent): 2 times the average normal concentration of the source
2. Relative Accuracy: £ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3. System Bias: £ 4 percent of the mean value of the reference method test data
4. Noise: £ 1 percent of span value on most sensitive range
5. Repeatability: £ 1 percent of span value
6. Linearity (response with propane in air): £ 3 percent of span value over all ranges
7. Calibration Error: £ 2 percent of actual concentration
8. Procedure for Zero and Span Calibration Check: all system components checked on all ranges
9. Zero Calibration Drift (24-hours): £ 2.5 percent of span value on all ranges
10. Span Calibration Drift (24-hours): £ 2.5 percent of span value
11. Response Time (90 percent response £ 60 seconds to a step change):
12. Operational Test Period: ³ 168 hours without corrective

maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter .

III. The following Item #4 in Schedule "A" has been amended to read as follows:

4. Letter dated October 31, 2013 from Mirka Januszkiewicz, The Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", excluding a reference to the Loss-on-Ignition test method on page 6, prepared by Golder Associates and dated June 2014.

IV. The following document has been added to Schedule "A":

5. Letter dated February 29, 2016 from Leon Brasowski, TransRiver Canada Incorporated, to Dale Gable, Ministry of the Environment and Climate Change, requesting change to the total hydrocarbon monitor location as reviewed and accepted by the Ministry`s Standards Development Branch.

The reasons for this amendment to the Approval are as follows:

1. to remove the storage duration limits on storage of recovered ferrous and non-ferrous metals since such storage does not pose an environmental risk;

2. to increase the amounts of cement, pozzolan and aqueous ammonia approved for storage at the Site since the currently approved amounts result in partial filling of the tanks, necessitating more frequent deliveries resulting in increased truck traffic and a chance of interrupting fly ash and flue gas treatment;

3. to revise the protocol for an emergency storage of the incoming Waste so that the Owner is able to deal more effectively with emergency situations occurring at the Site while providing more flexibility to the Districting Manager to oversee management of such situations;

4. to remove a reference to an incorrect bottom ash testing method erroneously included within the text of the DYEC Ash Sampling and Testing Protocol included as Item #4 in Schedule “A” in order to ensure that only the approved testing method for compliance testing is referenced in the supporting documentation.

5. to approve the revised location of the Total Hydrocarbons Monitor following the Ministry's acceptance of the results of the test program in which two (2) Total Hydrocarbons Monitor monitors were operated in the existing and the proposed locations simultaneously.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*****
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the
purposes of Part II.1 of the
Environmental Protection Act
Ministry of the Environment and
Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 14th day of March, 2016

Dale Gable, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

MW/
c: District Manager, MOECC York-Durham

n/a, TransRiver Canada Incorporated operating as Covanta Durham York Renewable Energy Limited Partnership

Content Copy Of Original

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: April 22, 2020

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

Notwithstanding the existing conditions of this Environmental Compliance Approval, the following provisions of this Emergency Approval are in effect for the time durations set out as follows:

1. Until December 31, 2020, the Owner may temporarily increase the amount of Waste to be received and thermally treated at the Site up-to 160,000 tonnes per year.

2. From the date of this Approval to the date that corresponds to up-to ninety (90) days after the Ontario Government ends the current Declaration of Emergency to Protect the Public Health, unless an extension has been issued in writing by the District Manager, the following Conditions Nos. 3 through 10 are in effect.

3. The Owner shall provide a written notification to the District Manager when any of the following Conditions Nos. 4 through 9 are implemented.

4. All conditions that set out limitations on hours/days for shipping and receiving of materials including the Waste, the reagents and the Residual Waste are temporarily rescinded.

5. The Owner may temporarily increase the maximum tonnage amounts for the bottom and fly ash within the Residue Building up-to 80% of the total achievable storage capacity of the Residue Building.

6. The Owner may temporarily store the Residual Waste and the reagents in the outdoor locations at the Site and the storage shall be done as follows:

a. the storage shall be in covered and leak-proof trailers or bins or containers;
b. trailers or bins or containers shall be parked or located away from catchbasins, if possible; and
c. if trailers or bins or containers must be parked or be located near catchbasins, covers or booms shall be readily available to protect catchbasins in the event of a spill or leak.

7. All conditions that set out limitations on receipt and storage of reagents are temporarily rescinded.

8. The Owner may temporarily reduce the number of loads tipped on the tipping floor for a manual visual inspection and sorting of the incoming Waste from one load per hour to two loads per shift, unless instructed otherwise by the local Medical Officer of Health to cease inspections on the tipping floor.

9. Following commencement of the outdoor storage of the Residual Waste or the reagents at the Site, the Owner shall conduct daily inspections of any outdoor storage location for evidence of spills, odour, vermin/vectors, dust, litter and other nuisance impacts, and shall maintain a written or electronic log of these inspections. The log shall be kept at the Site for the duration acceptable to the District Manager and it shall contain the following information:

a. the date of the inspection;
b. the location of the inspection;
c. the name of person undertaking the inspection;
d. any impacts identified during the inspection; and
e. any remedial actions taken to address those impacts.

10. By the end of the ninety (90) day-period from the date when the Ontario Government ends the current Declaration of Emergency to Protect the Public Health,

the Owner shall provide to the District Manager a summary report of the expected timelines for the storage and the operational practices to return to normal operating levels/protocols as approved in this Approval.

The reasons for this amendment to the Approval are as follows:

to provide temporary additional thermal treatment capacity at the Site and the operational flexibility as requested in the letter dated March 20, 2020 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham and Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York to respond to the current Declaration of Emergency to Protect the Public Health and to alleviate impacts and prevent any danger to the health and safety of the public and the environment.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or** www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 22nd day of April, 2020

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York

APPENDIX 4

Particulate and Metals Field Data Sheets
(30 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals #1
Test Date	June 15/21
Test Location	APC Outlet No. 1
Operator	PV

Project No.:	22081
Page	1 of 5
Probe No.:	
Meter Box No.:	Team #2
Impinger Box No.:	

Pitot Factor	0.841	
DGMCF	0.994	
Barometric Pressure	29.55	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	0.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	457.5	g
WCBDA	23.3	g

Combustion Gas Concentration

Oxygen	8.38	%
Carbon Dioxide	10.75	%
Carbon Monoxide	14.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	S4
Trendicator	
Control Box	COG 20092
Incline Manometer	COG 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can.
Calipers	B03906

Nozzle Measurements	
1	0.2520
2	0.2530
3	0.2535
4	0.2525
Average:	0.2528

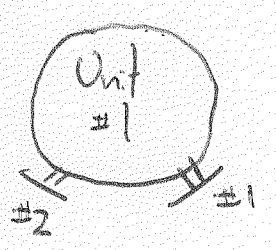
Probe Liner Glass / Metal /Teflon / Other_____

Nozzle Glass / Metal / Other_____

Union None /Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram



Notes:

Field Data Sheet

Date: June 15/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T1	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	80.14	0.85	0.73	280	269	257	61	138	71	72	2.0	4
	2.5	82.03	0.75	0.73	281	270	258	57	241	72	72	2.0	4
	5	83.93	0.80	0.75	281	271	256	56	243	72	72	2.0	4
2	7.5	85.83	0.80	0.75	281	271	258	56	243	72	72	2.0	4
	10	87.74	0.80	0.76	281	271	259	57	248	72	73	2.0	4
	12.5	~~89.27~~ 89.65	0.80	0.76	281	271	260	57	249	72	73	2.0	4
3	15	91.55	0.75	0.73	281	270	258	55	249	72	74	1.9	4
	17.5	93.45	0.77	0.74	283	270	259	55	248	72	74	1.9	4
	20	95.32	0.80	0.76	283	270	258	55	250	72	75	2.0	4
4	22.5	97.24	0.77	0.74	283	270	258	55	250	73	76	1.9	4
	25	99.14	0.75	0.73	284	271	258	55	250	74	76	1.9	4
	27.5	101.04	0.75	0.73	284	271	258	55	250	74	76	1.9	4
5	30	103.03	0.70	0.71	284	271	258	55	250	73	77	1.8	4
	32.5	104.74	0.70	0.71	284	271	258	54	250	74	77	1.8	4
	35	106.55	0.70	0.71	284	271	258	53	211	75	78	1.8	4
6	37.5	108.38	0.70	0.71	284	271	258	53	211	75	78	1.8	4
	40	110.17	0.60	0.66	284	271	258	53	226	75	78	1.6	4
	42.5	111.93	0.60	0.66	284	269	259	51	248	74	78	1.6	4
7	45	113.64	0.65	0.69	284	269	259	51	250	75	79	1.7	4
	47.5	115.42	0.65	0.69	284	272	259	50	248	77	80	1.7	4
	50	117.18	0.70	0.71	284	271	259	50	249	77	80	1.8	4

Traverse: 1 NW					
Start Time: 9:00	Initial Leak Check:	.002	cfm@	15	"Hg
Finish Time: 10:30	Final Leak Check:	<.002	cfm@	15	"Hg

Project No.: 22081

Operator: R

Field Data Sheet

Date: June 15/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T1	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	119.02	0.70	0.71	284	272	259	49	250	75	80	1.8	4
	55	120.82	0.70	0.71	284	272	259	49	250	75	80	1.8	4
	57.5	122.68	0.70	0.71	284	271	259	48	249	74	81	1.8	4
9	60	124.50	0.66	0.69	284	271	259	48	249	74	81	1.8	4
	62.5	126.31	0.66	0.69	284	269	259	48	249	76	81	1.8	4
	65	128.14	0.66	0.69	284	269	259	48	249	76	81	1.8	4
10	67.5	129.95	0.70	0.71	283	270	259	48	249	77	81	1.8	4
	70	131.77	0.72	0.73	283	270	259	48	249	78	81	1.8	4
	72.5	133.63	0.72	0.73	283	270	259	48	249	78	81	1.8	4
11	75	135.45	0.70	0.71	284	270	259	48	248	77	82	1.8	4
	77.5	137.32	0.70	0.71	284	270	259	48	248	77	82	1.8	4
	80	139.14	0.72	0.74	284	268	259	48	248	79	82	1.8	4
12	82.5	140.96	0.72	0.73	284	268	259	48	248	79	82	1.8	4
	85	142.80	0.70	0.72	284	268	259	48	248	78	82	1.8	4
	87.5	144.63	0.70	0.72	284	268	259	48	248	78	82	1.8	4
	90	146.52											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22081

Operator : R

Field Data Sheet

Date:	Jun 15/21	Plant:	Covanta DYEC	Test No.:	Particulate/Metals #1	Page 4 of 5
		Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	146.95	0.6	0.66	284	262	259	65	159	80	80	1.6	4
	2.5	148.77	0.6	0.66	284	260	258	65	237	78	78	1.6	4
	5	150.52	0.65	0.69	284	260	258	63	241	78	78	1.6	4
2	7.5	152.27	0.62	0.67	284	271	259	66	236	78	78	1.6	4
	10	153.99	0.62	0.67	284	271	259	66	236	78	78	1.6	4
	12.5	155.73	0.62	0.67	284	271	259	65	245	78	78	1.6	4
3	15	157.45	0.62	0.67	284	271	259	65	244	78	78	1.6	4
	17.5	159.22	0.65	0.69	284	271	259	65	248	78	79	1.6	4
	20	160.93	0.65	0.69	284	271	259	65	248	78	80	1.6	4
4	22.5	162.65	0.65	0.69	279	271	259	65	248	78	80	1.6	4
	25	164.38	0.66	0.69	282	271	259	65	248	78	80	1.6	4
	27.5	166.14	0.69	0.71	284	270	259	64	248	78	81	1.7	4
5	30	167.91	0.69	0.71	284	270	259	64	248	78	81	1.7	4
	32.5	169.67	0.67	0.70	285	269	259	65	249	78	82	1.6	4
	35	171.43	0.67	0.70	285	269	259	65	249	78	82	1.6	4
6	37.5	173.18	0.70	0.71	285	267	259	64	249	78	82	1.8	4
	40	174.99	0.65	0.69	285	267	259	64	249	78	82	1.6	4
	42.5	176.76	0.64	0.68	285	268	259	65	249	79	83	1.6	4
7	45	178.49	0.64	0.68	285	268	259	65	249	79	83	1.6	4
	47.5	180.23	0.60	0.66	285	268	259	66	249	79	83	1.5	4
	50	181.92	0.55	0.63	285	268	259	66	249	78	83	1.4	4

Traverse:	2	NW				
Start Time:	~~10:55~~ 11:00	Initial Leak Check:	.002	cfm@	15	"Hg
Finish Time:	12:36	Final Leak Check:	C.002	cfm@	15	"Hg

Project No.: 22081

Operator : R

Field Data Sheet

Date: June 15/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T1	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	183.57	0.55	0.63	286	258	259	85	250	79	83	1.4	4
	55	185.21	0.55	0.63	286	258	259	82	250	79	83	1.4	4
	57.5	186.90	0.55	0.63	286	258	259	80	250	79	83	1.4	4
9	60	188.52	0.55	0.63	286	249	259	80	250	79	83	1.4	4
	62.5	190.16	0.76	0.72	286	249	259	82	250	79	83	1.8	4
	65	192.10	0.70	0.72	286	244	259	60	251	80	82	1.8	4
10	67.5	193.87	0.70	0.72	286	244	259	60	251	80	82	1.8	4
	70	195.69	0.70	0.72	286	271	259	59	251	80	84	1.8	4
	72.5	197.55	0.70	0.72	286	270	259	59	251	80	84	1.8	4
11	75	199.39	0.78	0.76	286	271	259	59	251	82	84	2.0	4
	77.5	201.33	0.78	0.76	286	271	259	59	251	82	84	2.0	4
	80	203.29	0.78	0.76	286	270	259	59	252	82	85	2.0	4
12	82.5	205.24	0.78	0.76	286	270	259	59	252	82	85	2.0	4
	85	207.14	0.78	0.76	286	270	259	58	252	83	85	2.0	4
	87.5	209.04	0.78	0.76	286	270	259	58	252	83	85	2.0	4
	90	~~210.03~~ 211.03											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date	June 15/21
Test Location	APC Outlet No. 1
Operator	R

Project No.:	22081
Page	1 of 5
Probe No.:	
Meter Box No.:	Team #2
Impinger Box No.:	

Pitot Factor	0.841	
DGMCF	0.994	
Barometric Pressure	29.55	"Hg
Static Pressure	-10.0	"H2O
Nozzle Size	0.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	553.2	g
WCBDA	31.4	g

Combustion Gas Concentration

Oxygen	8.35	%
Carbon Dioxide	10.72	%
Carbon Monoxide	14.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	SY
Trendicator	
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Gr. Cn
Calipers	B03906

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: June 15/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T2	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	11.92	0.7	0.71	284	259	220	75	48	79	80	2.0	3.5
	2.5	13.90	0.8	0.76	287	262	276	70	164	79	80	2.1	3.5
	5	15.83	0.80	0.76	287	260	253	70	184	79	80	2.1	3.5
2	7.5	17.80	0.85	0.79	287	260	253	68	184	79	80	2.1	3.5
	10	19.88	0.85	0.79	287	260	254	68	192	79	80	2.1	3.5
	12.5	21.80	0.85	0.79	287	260	254	67	191	79	80	2.1	3.5
3	15	23.89	0.8	0.76	287	259	254	69	203	79	81	2.0	3.5
	17.5	25.73	0.8	0.76	287	259	254	69	205	79	81	2.0	3.5
	20	27.78	0.82	0.77	287	259	254	69	205	79	81	2.0	3.5
4	22.5	29.65	0.85	0.79	288	259	270	65	209	80	82	2.1	3.5
	25	31.64	0.85	0.79	288	259	269	64	209	80	82	2.1	3.5
	27.5	33.62	0.85	0.79	288	259	269	64	209	81	84	2.1	3.5
5	30	35.60	0.6	0.66	288	259	269	62	221	80	85	1.7	3.5
	32.5	37.39	0.6	0.66	288	259	269	62	221	80	85	1.7	3.5
	35	39.18	0.6	0.66	289	259	269	61	222	80	85	1.7	3.5
6	37.5	40.80	0.62	0.67	289	259	264	61	225	81	85	1.7	3.5
	40	42.44	0.62	0.68	289	259	264	61	225	81	86	1.7	3.5
	42.5	44.40	0.6	0.66	289	259	264	61	225	81	86	1.7	3.5
7	45	46.06	0.6	0.66	289	259	265	60	227	81	86	1.7	3.5
	47.5	47.82	0.7	0.72	289	259	265	60	227	81	86	2.0	3.5
	50	49.69	0.7		289	259	265	60	227	81	86	2.0	3.5

Traverse: 2 FW					
Start Time: 13:27	Initial Leak Check: .003	cfm@ 15	"Hg		
Finish Time:	Final Leak Check:	cfm@	"Hg		

Project No.: 22081

Operator : RV

Field Data Sheet

Date: June 15/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T2	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	X 51.64	0.7	0.72	289	258	260	59	230	82	87	2	3.5
	55	53.52	0.72	~~.73~~	290	259	259	59	232	82	87	2	3.5
	57.5	55.53	.71	.73	290	259	257	59	232	82	87	2	3.5
9	60	57.42	.71	.72	290	256	262	59	230	83	88	2	3.5
	62.5	59.32	.75	.74	290	250	262	59	233	83	88	2.1	3.5
	65	61.27	.76	.75	291	233	262	59	230	84	88	2.1	3.5
10	67.5	63.19	.73	.73	291	226	262	59	232	83	88	2.1	3.5
	70	65.15	.7	.75	~~291~~ 233	~~229~~	263	59	230	83	88	2.1	3.5
	72.5	67.09	.7	.75	232	~~215~~	261	59	229	84	88	2.1	3.5
11	75	69.07	.62	.74	176	209	259	59	227	84	89	2.1	3.5
	77.5	71.05	.64	.75	167	206	263	59	227	84	89	2.1	3.5
	80	72.99	.64	.76	165	194	260	59	225	84	89	2.1	3.5
12	82.5	74.98	.64	.76	163	~~197~~	267	59	224	84	89	2.2	4
	85	76.96	.64	.76	163	188	261	59	223	84	89	2.2	4
	87.5	78.98	.64	.76	164	184	264	60	222	85	89	2.2	4
	90	81.04											

Traverse:			
Start Time:	Initial Leak Check:	cfm@ 15	"Hg
Finish Time: 14:56	Final Leak Check: 0.004	cfm@ 15	"Hg

Project No.: 22081

Operator : RV

Field Data Sheet

Date: June 15/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T2	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	81.47	0.80	0.77	284	260	259	71	134	86	87	2	4
	2.5	83.45	0.85	0.79	292	220	257	63	213	85	87	2.1	4
	5	85.45	0.85	0.79	293	212	263	55	167	85	87	2.1	4
2	7.5	87.45	0.85	0.79	293	232	263	48	208	85	87	2.1	4
	10	89.44	0.85	0.79	293	271	260	46	212	85	87	2.1	4
	12.5	91.44	0.85	0.79	293	284	262	44	212	85	87	2.1	4
3	15	93.43	0.85	0.79	293	286	263	44	214	85	87	2.1	4
	17.5	95.42	0.85	0.79	293	287	278	43	213	85	88	2.1	4
	20	97.42	0.85	0.79	293	284	281	43	213	85	85	2.1	4
4	22.5	99.40	0.82	0.78	293	282	269	42	213	85	89	2.1	4
	25	101.40	0.82	0.78	293	282	272	42	213	85	89	2.1	4
	27.5	103.42	0.82	0.78	293	284	273	42	213	86	90	2.1	4
5	30	105.42	0.80	0.77	294	285	262	42	212	86	90	2.1	4
	32.5	107.40	0.80	0.77	295	285	263	42	212	86	90	2.1	4
	35	109.35	0.80	0.77	295	285	271	42	212	86	90	2.1	4
6	37.5	111.37	0.80	0.77	296	286	265	43	210	86	90	2.1	4
	40	113.30	0.72	0.73	296	286	264	43	210	86	90	1.9	4
	42.5	115.20	0.72	0.73	296	286	264	43	210	86	90	1.9	4
7	45	117.00	0.72	0.73	296	286	261	44	223	86	90	1.9	4
	47.5	118.91	0.80	0.77	296	286	261	44	224	86	90	2.1	4
	50	120.92	0.80	0.77	296	286	261	44	224	86	90	2.1	4

Traverse: 1 PW					
Start Time: 15:06	Initial Leak Check:	.005	cfm@	15	"Hg
Finish Time: 16:36	Final Leak Check:	.002	cfm@	15	"Hg

Project No.: 22081

Operator : R

Field Data Sheet

Date: June 15/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T2	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	122.91	0.80	0.77	296	286	261	44	224	87	90	2.1	4
	55	124.88	0.80	0.77	296	286	261	44	224	87	91	2.1	4
	57.5	126.85	0.80	0.77	297	286	266	44	225	87	91	2.1	4
9	60	128.83	0.80	0.77	297	286	266	44	225	87	91	2.1	4
	62.5	130.80	0.80	0.77	297	259	264	45	225	87	91	2.1	4
	65	132.78	0.80	0.77	297	266	264	45	225	87	91	2.1	4
10	67.5	134.75	0.80	0.77	297	281	263	44	212	87	91	2.1	4
	70	136.72	0.80	0.77	297	281	263	44	212	87	91	2.1	4
	72.5	138.73	0.80	0.77	297	281	263	44	214	87	91	2.1	4
11	75	140.69	0.85	0.80	295	283	264	44	214	87	91	2.2	4
	77.5	142.68	0.85	0.80	295	287	264	44	214	87	91	2.2	4
	80	144.71	0.85	0.80	295	283	264	44	214	87	91	2.2	4
12	82.5	146.75	0.82	0.78	291	281	266	44	212	88	91	2.1	4
	85	148.73	0.82	0.78	291	281	266	44	212	88	92	2.1	4
	87.5	150.70	0.82	0.78	291	283	267	45	213	88	92	2.1	4
	90	152.79											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22081

Operator : R

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date	June 16 2021
Test Location	APC Outlet No. 1
Operator	

Project No.:	22081
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	.842	
DGMCF	.993	
Barometric Pressure	29.66	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.2511	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	476.7	g
WCBDA	220	g

Combustion Gas Concentration

Oxygen	8.25	%
Carbon Dioxide	10.86	%
Carbon Monoxide	9.7	ppm

Measuring Device	MII Numbers
Probe / Pitot S2	
Trendicator	
Control Box	Team 3
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal /(Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: June 16 2021	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	39.34	.70	.70	271	261	228	74	90	75	75	1.7	3
	2.5	41.09	.71	.71	261	260	248	66	193	75	77	1.8	3.5
	5	42.87	.71	.71	263	246	249	65	205	75	78	1.8	3.5
2	7.5	44.65	.81	.75	286	250	249	64	214	75	79	2.0	3.5
	10	46.53	.79	.74	293	258	250	65	220	76	80	1.95	3.5
	12.5	48.40	.79	.74	293	263	250	66	224	76	81	1.95	3.5
3	15	50.26	.80	.74	293	259	250	66	227	76	82	2.0	3.5
	17.5	52.14	.78	.74	293	247	250	66	229	77	83	2.0	3.5
	20	54.03	.78	.74	293	252	250	63	230	77	84	2.0	3.5
4	22.5	55.89	.75	.72	293	260	250	62	231	78	84	1.85	3.5
	25	57.72	.75	.72	293	263	250	60	232	78	85	1.85	3.5
	27.5	59.54	.71	.70	294	253	250	60	232	78	85	1.75	3.5
5	30	61.32	.69	.69	293	248	250	59	232	79	85	1.7	3.5
	32.5	63.08	.70	.70	293	257	249	58	232	79	86	1.75	3.5
	35	64.85	.68	.69	293	262	250	58	232	80	86	1.7	3.5
6	37.5	66.60	.62	.66	293	263	250	58	233	80	86	1.5	3.5
	40	68.26	.64	.67	293	249	250	58	232	80	86	1.6	3.5
	42.5	69.94	.64	.67	293	251	250	58	232	81	87	1.6	3.5
7	45	71.65	.69	.70	293	256	250	59	233	81	87	1.7	3.5
	47.5	73.40	.68	.69	293	263	249	59	233	81	87	1.7	3.5
	50	75.16	.70	.70	293	258	250	59	233	81	87	1.8	3.5

Traverse:					
Start Time: 15:36	Initial Leak Check: .003	cfm@	15	"Hg	
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg	

Project No.: 22081

Operator :

Field Data Sheet

Date: June 16 2021	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	76.95	.68	.69	293	248	250	59	233	81	87	1.7	3.5
	55	78.71	.73	.72	293	256	250	59	234	82	88	1.85	3.5
	57.5	80.54	.72	.71	293	263	250	58	234	82	88	1.8	3.5
9	60	82.35	.75	.73	293	262	250	58	234	82	88	1.9	3.5
	62.5	84.20	.74	.72	293	248	250	57	235	82	88	1.85	3.5
	65	86.03	.75	.73	293	255	250	57	235	82	88	1.9	3.5
10	67.5	87.88	.75	.73	293	262	250	56	235	82	88	1.9	3.5
	70	89.72	.75	.73	293	261	250	56	236	82	88	1.9	3.5
	72.5	91.56	.76	.73	293	249	250	56	236	83	88	1.9	3.5
11	75	93.40	.82	.76	293	258	250	56	236	83	88	2.05	4
	77.5	95.31	.83	.77	293	263	250	56	237	83	89	2.1	4
	80	97.26	.81	.76	293	257	250	56	237	83	89	2.05	4
12	82.5	99.18	.81	.76	293	252	250	55	237	83	89	2.05	4
	85	101.10	.80	.75	294	260	250	55	237	83	89	2	4
	87.5	102.99	.81	.76	294	263	250	55	236	83	89	2.05	4
	90	104.93											

Traverse:					
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg		
Finish Time: 17:06	Final Leak Check: .006	cfm@ 14	"Hg		

Project No.: 22081

Operator :

Field Data Sheet

Date: June 16 2021	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	105.23	.80	.75	293	259	259	248	63	83	84	2	4
	2.5	107.15	.82	.76	292	260	248	55	207	83	85	2.05	4
	5	109.07	.81	.76	292	265	250	53	214	83	86	2.05	4
2	7.5	110.99	.84	.77	292	248	251	52	213	83	87	2.1	4
	10	112.92	.84	.77	292	251	251	52	212	83	87	2.1	4
	12.5	114.98	.81	.76	292	261	251	52	225	83	88	2.05	4
3	15	116.80	.81	.76	292	264	250	53	235	83	88	2.05	4
	17.5	118.73	.81	.76	292	264	250	53	235	83	88	2.05	4
	20	120.65	.83	.77	292	249	250	53	235	83	88	2.1	4
4	22.5	122.58	.74	.72	293	257	250	53	237	83	88	1.9	4
	25	124.44	.75	.73	293	262	250	52	236	83	88	1.9	4
	27.5	126.30	.71	.71	293	261	250	53	236	83	88	1.8	4
5	30	128.11	.74	.72	293	249	250	53	236	83	88	1.9	4
	32.5	129.96	.72	.71	293	253	250	53	236	83	88	1.8	4
	35	131.77	.72	.71	293	262	250	53	236	83	88	1.8	4
6	37.5	133.57	.57	.64	293	260	250	53	236	83	88	1.4	3.5
	40	135.17	.58	.64	294	251	250	53	234	83	88	1.4	3.5
	42.5	136.77	.58	.64	294	253	250	53	233	83	88	1.4	3.5
7	45	138.37	.63	.67	293	255	250	51	232	83	88	1.6	3.5
	47.5	140.07	.65	.68	293	264	250	50	233	83	88	1.65	3.5
	50	141.80	.65	.68	293	252	250	49	234	83	88	1.65	3.5

Traverse:					
Start Time: 17:12	Initial Leak Check: .005	cfm@	14	"Hg	
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg	

Project No.: 22081

Operator :

Field Data Sheet

Date: June 16 2011	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	143.53	.65	.68	293	249	250	48	234	83	88	1.65	3.5
	55	145.26	.68	.69	293	260	250	48	234	83	88	1.7	3.5
	57.5	147.02	.68	.69	293	264	250	48	234	83	88	1.7	3.5
9	60	148.78	.68	.69	293	255	250	48	234	83	89	1.7	3.5
	62.5	150.54	.70	.70	293	252	250	48	234	83	89	1.8	4
	65	152.33	.69	.70	293	260	250	48	234	84	89	1.75	4
10	67.5	154.10	.69	.70	291	264	249	48	233	84	89	1.75	4
	70	155.87	.66	.68	292	256	250	48	233	84	89	1.7	3.5
	72.5	157.62	.68	.70	291	250	250	48	233	84	89	1.7	3.5
11	75	159.36	.41	.54	291	250	250	48	232	84	89	.92	3
	77.5	160.75	.41	.54	291	262	249	48	229	84	88	.92	3
	80	162.07	.40	.53	290	260	249	49	227	84	88	.90	3
12	82.5	163.39	.42	.55	290	248	249	49	226	84	88	.98	3
	85	164.74	.42	.55	290	248	249	49	226	84	88	1.1	3
	87.5	166.13	.42	.55	290	260	249	49	227	83	88	1.1	3
	90	167.54											

Traverse: 2			
Start Time: —	Initial Leak Check: — cfm@ — "Hg		
Finish Time: 18:42	Final Leak Check: .004 cfm@ 15 "Hg		

Project No.: 22081

Operator : [signature]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Metals
Test Date	June 15 2021
Test Location	APC Outlet No. 2
Operator	~~FF~~ JA

Project No.:	22081
Page	1 of 5
Probe No.:	7 series
Meter Box No.:	Team 3
Impinger Box No.:	

Pitot Factor	.842	
DGMCF	.993	
Barometric Pressure	29.58	"Hg
Static Pressure	-9.8	"H2O
Nozzle Size	.2511	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	452.9	g
WCBDA	22.0	g

Combustion Gas Concentration

Oxygen	8.61	%
Carbon Dioxide	10.49	%
Carbon Monoxide	14.1	ppm

Measuring Device	MII Numbers
Probe / Pitot S2	
Trendicator	COE 2009
Control Box	COE 2009
Incline Manometer	COE 2009
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: June 15 2021	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	81.76	.71	.71	271	265	249	78	164	78	79	1.9	3
	2.5	83.54	.71	.71	278	251	248	77	215	79	81	1.9	3
	5	85.36	.72	.72	278	245	245	77	223	79	82	1.8	3
2	7.5	~~85.17~~ 87.15	.70	.71	279	246	251	76	228	80	82	1.9	3
	10	~~88~~.90	.70	.71	278	250	250	76	231	80	83	1.8	3
	12.5	~~90.87~~ 90.71	.68	.70	279	262	250	76	232	80	83	1.7	3
3	15	~~92~~. 92.45	.68	.70	279	262	250	76	232	80	83	1.7	3
	17.5	94.20	.68	.70	279	250	250	75	234	81	85	1.7	3
	20	95.95	.65	.68	278	248	250	74	235	81	85	1.7	
4	22.5	97.52	.68	.70	278	248	250	74	235	81	85	1.7	3
	25	99.23	.69	.70	278	262	250	74	235	81	86	1.75	3
	27.5	100.99	.69	.70	280	260	249	62	235	~~86~~82	86	1.75	3
5	30	102.78	.67	.69	282	254	250	61	235	82	86	1.7~~8~~	3
	32.5	104.55	.70	.71	288	247	250	60	235	82	87	1.8	3
	35	106.34	.69	.70	288	253	250	60	236	83	87	1.75	3
6	37.5	108.10	.69	.70	288	251	250	68	283	83	87	1.75	3
	40	109.91	.68	.70	288	262	250	61	229	83	87	1.75	3
	42.5	111.68	.63	.67	287	255	250	61	231	83	87	1.6	3
7	45	113.38	.60	.66	287	248	250	61	234	83	88	1.5	3
	47.5	115.05	.60	.66	287	255	250	60	235	84	88	1.5	3
	50	116.71	.58	.65	287	260	250	58	235	84	88	1.45	3

Traverse:					
Start Time: 17:02	Initial Leak Check:	.008	cfm@	15	"Hg
Finish Time:	Final Leak Check:		cfm@		"Hg

Project No.: 22081

Operator :

Field Data Sheet

Date: June 15 2021	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	118.34	.60	.66	286	263	250	58	234	84	88	1.5	3
	55	119.99	.70	.71	286	258	250	58	234	84	89	1.8	3
	57.5	121.78	.69	.70	286	247	250	58	236	84	89	1.8	3.5
9	60	123.59	.80	.76	286	252	250	58	236	84	89	2.05	3.5
	62.5	125.50	.78	.75	286	258	250	56	237	85	89	2.0	3.5
	65	127.40	.76	.74	286	262	250	55	237	85	89	1.95	3.5
10	67.5	129.28	.79	.76	286	260	250	57	237	85	90	2.05	3.5
	70	131.19	.80	.76	286	251	250	58	235	85	90	2.05	3.5
	72.5	133.13	.81	.77	286	249	251	60	236	85	90	2.1	3.5
11	75	135.07	.80	.76	285	255	250	59	238	86	90	2.05	3.5
	77.5	136.99	.80	.76	285	261	250	59	239	86	90	2.05	3.5
	80	138.95	.80	.76	285	262	250	59	239	86	91	2.05	3.5
12	82.5	140.89	.80	.76	285	260	250	60	239	86	91	2.05	3.5
	85	142.83	.79	.76	284	247	251	61	240	86	91	2.05	3.5
	87.5	144.77	.77	.75	284	251	250	61	240	86	91	2	3.5
	90	146.72											

Traverse:					
Start Time:	–	Initial Leak Check:	–	cfm@	– "Hg
Finish Time:	18:32	Final Leak Check:	.005	cfm@	16 "Hg

Project No.: 22081

Operator :

Field Data Sheet

Date: June 15 2021	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	147.44	.71	.72	280	251	248	56	188	87	87	1.8	3.5
	2.5	149.27	.73	.73	285	251	249	57	229	86	89	1.9	3.5
	5	151.11	.73	.73	284	260	250	58	237	86	89	1.9	3.5
2	7.5	152.96	.74	.73	285	262	251	58	239	86	90	1.9	3.5
	10	154.90	.71	.72	286	257	251	60	240	86	90	1.8	3.5
	12.5	156.70	.70	.71	285	248	251	60	240	86	90	1.8	3.5
3	15	158.48	.70	.71	285	263	250	61	239	86	91	2	3.5
	17.5	160.26	.80	.76	285	263	250	61	239	86	91	2	3.5
	20	162.14	.82	.77	285	252	250	61	241	87	92	2.1	4
4	22.5	164.09	.78	.75	285	251	250	56	229	87	91	2	4
	25	166.05	.74	.74	285	263	250	54	237	87	91	2	4
	27.5	168.03	.75	.74	285	263	250	56	241	87	91	1.9	3.5
5	30	169.86	.7	.71	285	263	250	56	241	87	91	1.8	3.5
	32.5	171.69	.72	.72	285	249	250	59	240	87	91	1.8	3.5
	35	173.52	.72	.72	286	258	250	60	240	87	91	1.8	3.5
6	37.5	175.34	.73	.73	286	262	251	60	240	87	91	1.9	3.5
	40	177.20	.68	.68	286	263	250	62	240	87	91	1.6	3
	42.5	179.03	.64	.68	286	248	250	62	240	87	91	1.6	3
7	45	180.68	.64	.68	286	256	250	62	240	87	91	1.6	3
	47.5	182.38	.63	.68	286	264	250	62	240	87	91	1.6	3
	50	184.09	.64	.68	286	253	250	63	239	87	92	1.6	3

Traverse:							
Start Time:	18:38	Initial Leak Check:	.004	cfm@	16	"Hg	/
Finish Time:	—	Final Leak Check:	—	cfm@	—	"Hg	

Project No.: 22081

Operator :

Field Data Sheet

Date: June 15, 2021	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	185.83	.68	.76	287	257	250	63	239	87	92	1.7	3.5
	55	187.59	.67	.70	287	255	250	64	240	87	92	1.7	3.5
	57.5	189.37	.69	.69	287	254	250	63	240	87	92	1.7	3.5
9	60	191.15	.72	.72	285	252	250	63	240	87	92	1.8	3.6
	62.5	192.98	.7	.71	287	249	250	63	241	87	92	1.8	3.5
	65	194.8	.71	.72	287	255	250	63	241	87	92	1.8	3.5
10	67.5	196.63	.73	.73	287	255	250	63	241	87	92	1.9	3.5
	70	198.49	.74	.73	289	263	251	64	241	88	92	1.9	3.5
	72.5	200.37	.73	.73	287	255	250	64	241	87	91	1.9	3.5
11	75	202.24	.73	.73	290	253	250	64	241	87	92	1.9	3.5
	77.5	204.11	.65	.69	274	248	250	62	241	87	91	1.7	3.5
	80	205.89	.64	.64	270	262	250	61	241	87	91	1.7	3.5
12	82.5	207.66	.67	.71	269	262	249	61	240	87	91	1.8	3.5
	85	209.45	.66	.70	268	259	249	62	240	87	91	1.7	3.5
	87.5	211.2	.68	.71	267	250	249	63	240	87	91	1.8	3.5
	90	213.03											

Traverse:			
Start Time:	Initial Leak Check: 0.004	cfm@ 16	"Hg
Finish Time: 20:09	Final Leak Check:	cfm@	"Hg

Project No.: 22081

Operator: Jake Arbabello

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date	June 16/21
Test Location	APC Outlet No. 2
Operator	N

Project No.:	22081
Page	1 of 5
Probe No.:	
Meter Box No.:	Team #2
Impinger Box No.:	

Pitot Factor	0.841	
DGMCF	0.994	
Barometric Pressure	29.71	"Hg
Static Pressure	-9.9	"H2O
Nozzle Size	0.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	465.3	g
WCBDA	23.8	g

Combustion Gas Concentration

Oxygen	8.53	%
Carbon Dioxide	10.72	%
Carbon Monoxide	14.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	S4
Trendicator	
Control Box	COE 2007
Incline Manometer	COE 2009
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

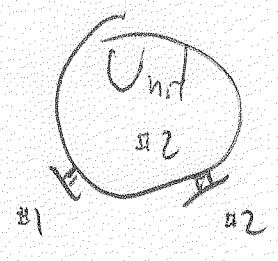
Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram



Notes:

Field Data Sheet

Date: June 16/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T2	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	53.22	0.74	0.72	286	288	252	59	59	65	67	1.8	3.5
	2.5	55.10	0.79	0.74	286	289	263	47	207	66	67	1.9	3.5
	5	56.96	0.81	0.76	262	259	267	45	210	66	67	2.2	3.5
2	7.5	58.89	0.77	0.74	270	289	266	43	210	66	67	2.1	3.5
	10	60.80	0.81	0.76	262	288	264	42	206	66	67	2.2	3.5
	12.5	62.77	0.79	0.75	1~~7~~262	288	264	42	206	66	67	2.2	4
3	15	64.75	0.75	0.75	283	288	264	42	206	66	67	2.0	4
	17.5	66.66	0.75	0.72	283	288	264	42	206	66	67	2.0	4
	20	68.53	0.77	0.73	282	288	262	43	225	67	69	2.0	4
4	22.5	70.41	0.75	0.73	283	288	258	43	225	67	71	2.0	4
	25	72.27	0.75	0.73	283	288	257	43	225	68	71	2.0	4
	27.5	74.14	0.75	0.73	283	288	259	44	225	67	72	2.0	4
5	30	76.01	0.75	0.73	283	288	259	44	225	67	72	2.0	4
	32.5	77.88	0.73	0.72	283	288	259	44	225	67	72	1.9	4
	35	79.70	0.75	0.73	283	288	259	45	224	68	74	1.9	4
6	37.5	81.55	0.75	0.73	283	288	259	45	224	68	74	1.9	4
	40	83.40	0.75	0.73	283	288	259	45	224	68	74	1.9	4
	42.5	85.23	0.73	0.73	285	288	259	46	224	68	75	1.9	4
7	45	87.05	0.65	0.68	285	288	259	46	224	68	75	1.7	4
	47.5	88.82	0.65	0.68	285	288	259	47	224	68	75	1.7	4
	50	90.56	0.68	0.67	285	287	258	47	224	69	76	1.7	4

Traverse:	1 NW					
Start Time:	8:16	Initial Leak Check:	.004	cfm@	16	"Hg
Finish Time:	9:46	Final Leak Check:	.004	cfm@	15	"Hg

Project No.: 22081

Operator : [illegible]

Field Data Sheet

Date: June 16/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T2	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	92.30	0.68	0.69	285	287	258	48	224	69	76	1.7	4
	55	94.04	0.68	0.69	285	287	258	48	224	69	76	1.7	4
	57.5	95.78	0.68	0.69	285	287	258	48	224	69	76	1.7	4
9	60	97.52	0.75	0.73	285	289	260	48	225	70	77	1.9	4
	62.5	99.39	0.75	0.73	285	289	260	48	225	70	77	1.9	4
	65	101.33	0.75	0.73	285	289	260	48	225	71	77	1.9	4
10	67.5	103.15	0.75	0.73	286	288	260	48	225	72	77	1.9	4
	70	105.04	0.75	0.73	286	288	260	48	225	72	77	1.9	4
	72.5	106.93	0.78	0.75	286	288	260	48	225	72	77	2.0	4
11	75	108.84	0.68	0.70	285	290	260	48	225	73	78	1.7	4
	77.5	110.77	0.68	0.70	285	~~285~~ 290	260	48	225	74	78	1.7	4
	80	112.62	0.68	0.70	285	290	260	48	225	74	78	1.7	4
12	82.5	114.37	0.68	0.70	285	290	259	48	224	73	78	1.7	4
	85	116.13	0.68	0.70	285	290	259	48	224	73	78	1.7	4
	87.5	117.88	0.68	0.70	285	290	259	48	224	73	78	1.7	4
	90	119.65											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22081

Operator : R

Field Data Sheet

Date: June 16/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T2	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	120.04	0.68	0.70	285	288	253	61	113	74	76	1.7	4
	2.5	121.80	0.68	0.70	285	291	265	49	221	75	76	1.7	4
	5	123.55	0.68	0.70	285	290	269	45	222	74	76	1.7	4
2	7.5	125.34	0.68	0.70	285	289	266	44	222	74	76	1.7	4
	10	127.08	0.68	0.70	285	289	264	44	222	74	76	1.7	4
	12.5	128.87	0.68	0.70	285	289	261	44	228	74	76	1.7	4
3	15	130.63	0.68	0.70	285	289	258	43	228	74	77	1.7	4
	17.5	132.38	0.68	0.70	285	289	258	43	228	74	77	1.7	4
	20	134.16	0.68	0.70	285	289	260	43	229	74	77	1.7	4
4	22.5	135.89	0.68	0.70	284	289	260	43	229	74	77	1.7	4
	25	137.65	0.68	0.70	284	287	260	43	229	74	78	1.7	4
	27.5	139.4	0.68	0.70	284	289	260	43	229	74	78	1.7	4
5	30	141.16	0.68	0.70	284	289	260	43	229	74	78	1.7	4
	32.5	142.91	0.68	0.70	284	289	260	43	229	74	79	1.7	4
	35	144.66	0.68	0.70	285	289	260	43	230	75	79	1.7	4
6	37.5	146.45	0.68	0.70	285	289	260	43	230	75	79	1.7	4
	40	148.17	0.68	0.70	285	289	260	43	231	75	79	1.7	4
	42.5	149.91	0.68	0.70	285	289	260	44	231	75	79	1.7	4
7	45	151.65	0.68	0.70	285	289	260	44	231	75	79	1.7	4
	47.5	153.40	0.60	0.66	285	289	260	44	231	75	79	1.6	4
	50	155.11	0.60	0.66	285	290	259	44	230	75	80	1.6	4

Traverse: 2 NW			
Start Time: 9:57	Initial Leak Check: .002	cfm@ 15	"Hg
Finish Time: 11:27	Final Leak Check:	cfm@	"Hg

Project No.: 22081

Operator : R

Field Data Sheet

Date: June 16/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T2	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	156.80	0.57	0.64	285	290	259	44	230	75	80	1.5	3.5
	55	158.44	0.57	0.64	285	290	259	44	230	75	80	1.5	3.5
	57.5	160.10	0.57	0.64	285	289	260	45	229	76	80	1.5	3.5
9	60	161.77	0.70	0.71	285	289	260	45	229	76	80	1.8	4
	62.5	163.56	0.70	0.71	285	289	260	45	229	76	80	1.8	4
	65	165.37	0.70	0.71	285	289	260	45	229	76	80	1.8	4
10	67.5	167.17	0.80	0.76	286	290	261	45	231	77	80	2.0	4
	70	169.07	0.80	0.76	286	290	261	45	231	77	80	2.0	4
	72.5	171.01	0.80	0.76	286	290	261	45	231	78	80	2.0	4
11	75	172.92	0.80	0.76	285	290	261	45	231	78	80	2.0	4
	77.5	174.83	0.80	0.76	285	289	261	46	232	77	81	2.0	4
	80	176.74	0.80	0.76	285	289	261	46	232	77	81	2.0	4
12	82.5	178.67	0.80	0.76	285	289	261	46	232	77	81	2.0	4
	85	180.56	0.80	0.76	285	290	262	46	232	77	81	2.0	4
	87.5	182.47	0.80	0.76	285	290	262	46	232	77	81	2.0	4
	90	184.39											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22081

Operator : RV

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals T3
Test Date	June 16/21
Test Location	APC Outlet No. 2
Operator	RV

Project No.:	22081
Page	1 of 5
Probe No.:	
Meter Box No.:	Team #2
Impinger Box No.:	

Pitot Factor	0.841	
DGMCF	0.994	
Barometric Pressure	29.67	"Hg
Static Pressure	-9.9	"H2O
Nozzle Size	0.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	526.0	g
WCBDA	22.9	g

Combustion Gas Concentration

Oxygen	8.33	%
Carbon Dioxide	10.82	%
Carbon Monoxide	14.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	54
Trendicator	
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner (Glass) / Metal / Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None / Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: June 16/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T3	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	84.95	0.85	0.78	285	290	258	66	111	76	77	2.1	3.5
	2.5	86.93	0.90	0.80	284	294	256	60	200	76	76	2.2	3.5
	5	88.95	0.90	0.80	282	292	258	60	212	76	76	2.2	3.5
2	7.5	90.96	0.90	0.80	285	290	258	60	217	76	76	2.2	3.5
	10	92.98	0.90	0.80	285	291	258	60	228	76	76	2.2	3.5
	12.5	95.00	0.90	0.80	285	291	258	60	235	76	77	2.2	3.5
3	15	97.01	0.90	0.80	285	291	258	60	237	76	77	2.2	3.5
	17.5	99.03	0.90	0.80	285	291	258	60	238	76	77	2.2	3.5
	20	101.02	0.90	0.80	285	291	258	60	244	76	79	2.2	3.5
4	22.5	103.03	0.80	0.76	285	290	259	60	246	76	79	2.1	3.5
	25	104.95	0.75	0.73	285	290	259	60	246	76	79	2.1	3.5
	27.5	106.91	0.75	0.73	285	290	259	60	246	76	79	2.1	3.5
5	30	108.80	0.80	0.77	285	291	259	60	249	78	80	2.0	3.5
	32.5	110.74	0.80	0.76	285	291	259	60	249	78	80	2.0	3.5
	35	112.66	0.80	0.76	285	291	259	60	249	78	80	2.0	3.5
6	37.5	114.61	0.60	0.66	285	290	259	60	252	77	82	1.6	3.5
	40	116.32	0.60	0.66	285	290	259	60	252	77	82	1.6	3.5
	42.5	118.07	0.60	0.66	285	291	259	61	252	77	82	1.6	3.5
7	45	119.82	0.65	0.69	285	291	259	51	252	77	82	1.7	3.5
	47.5	121.58	0.65	0.69	286	290	259	50	252	78	82	1.7	3.5
	50	123.33	0.65	0.69	286	290	259	50	252	78	83	1.7	3.5

Traverse:	1-~~FW~~ FW				
Start Time:	12:10	Initial Leak Check:	.005	cfm@ 15	"Hg
Finish Time:	13:40	Final Leak Check:	.004	cfm@ 14	"Hg

Project No.: 22081

Operator : [signature]

Field Data Sheet

Date: June 16/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T3	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	125.09	0.65	0.69	286	290	259	49	252	80	83	1.7	3.5
	55	126.84	0.65	0.69	286	290	259	49	252	80	83	1.7	3.5
	57.5	128.62	0.65	0.69	286	290	259	49	252	80	83	1.7	3.5
9	60	130.36	0.65	0.69	286	290	260	51	253	79	84	1.7	3.5
	62.5	132.14	0.65	0.69	286	290	260	51	253	79	84	1.7	3.5
	65	133.88	0.65	0.69	286	290	260	51	253	79	84	1.7	3.5
10	67.5	135.64	0.65	0.69	286	290	260	51	253	79	84	1.7	3.5
	70	137.39	0.65	0.69	286	290	260	52	253	79	84	1.7	3.5
	72.5	139.16	0.65	0.69	286	290	260	52	253	79	84	1.7	3.5
11	75	140.90	0.63	0.68	286	290	260	53	253	79	84	1.7	3.5
	77.5	142.66	0.60	0.66	286	290	260	53	253	79	84	1.6	3.5
	80	144.39	0.60	0.66	286	290	260	53	253	79	85	1.6	3.5
12	82.5	146.10	0.60	0.66	286	290	260	54	253	80	85	1.6	3.5
	85	147.83	0.60	0.66	286	290	260	54	253	80	85	1.6	3.5
	87.5	149.55	0.60	0.66	286	290	260	55	253	80	85	1.6	3.5
	90	151.29											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22081

Operator : AV

Field Data Sheet

Date: June 16/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T3	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	151.69	0.9	0.81	286	288	260	59	197	81	83	2.4	4
	2.5	153.75	0.9	0.81	287	292	260	60	239	81	84	2.4	4
	5	155.86	0.9	0.81	288	292	262	59	254	81	84	2.4	4
2	7.5	158.01	0.9	0.81	288	292	262	59	254	81	84	2.4	4
	10	160.09	0.92	0.82	288	292	261	58	257	81	84	2.5	4
	12.5	162.25	0.93	0.82	289	291	261	58	257	81	84	2.5	4
3	15	164.4	0.93	0.82	289	292	261	58	258	81	84	2.5	4
	17.5	166.47	0.95	0.87	289	291	261	58	258	81	84	2.5	4
	20	168.61	0.95	0.83	289	290	261	58	258	81	84	2.5	4
4	22.5	170.77	0.95	0.83	290	292	259	59	259	81	84	2.5	4
	25	172.89	0.96	0.84	290	291	261	59	259	81	84	2.5	4
	27.5	175.02	0.94	0.83	291	292	260	59	259	81	85	2.5	4
5	30	177.14	0.79	0.76	290	292	261	59	259	81	85	2.2	4
	32.5	179.18	0.82	0.77	290	292	261	59	258	81	85	2.2	4
	35	181.18	0.8	0.76	290	292	261	59	258	82	85	2.2	4
6	37.5	183.19	0.81	0.77	290	292	261	59	258	82	85	2.2	4
	40	185.22	0.82	0.77	290	292	261	59	258	82	86	2.3	4
	42.5	187.27	0.65	0.68	289	290	259	60	230	79	79	1.7	4
7	45	189.02	0.70	0.71	290	293	261	60	246	79	79	1.8	4
	47.5	190.83	0.70	0.71	291	292	261	60	250	79	79	1.8	4
	50	192.66	0.71	0.71	290	292	261	60	252	79	79	1.8	4

Traverse: 2. FW						
Start Time: 13:47	Initial Leak Check:	.003	cfm@	15	"Hg	
Finish Time: 18:32	Final Leak Check:	.002	cfm@	16	"Hg	

test paused @ 14:28 (40 min) → client seeing spikes on particulate monitor
restarted @ 17:42

Project No.: 22081

Operator: RV/JA

Field Data Sheet

Date: June 16/21	Plant: Covanta DYEC	Test No.: Particulate/Metals T3	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	194.50	0.80	0.76	290	291	261	60	253	79	80	2.1	4
	55	196.39	0.80	0.76	290	291	261	59	254	79	80	2.1	4
	57.5	198.34	0.80	0.76	290	291	261	58	255	79	81	2.1	4
9	60	200.30	0.78	0.75	291	291	261	58	255	79	81	2.1	4
	62.5	202.25	0.80	0.76	291	291	261	57	255	79	82	2.1	4
	65	204.19	0.80	0.76	291	291	261	57	255	79	82	2.1	4
10	67.5	206.15	0.92	0.82	291	291	261	57	255	80	83	2.2	4
	70	208.16	0.89	0.80	291	291	261	57	255	80	83	2.2	4
	72.5	210.18	0.89	0.80	291	291	261	58	256	80	83	2.2	4
11	75	212.19	0.90	0.80	291	291	261	58	256	80	83	2.2	4
	77.5	214.21	0.90	0.81	291	291	261	58	256	80	83	2.2	4
	80	216.23	0.92	0.82	291	290	261	59	256	80	84	2.2	4
12	82.5	218.25	0.92	0.82	291	290	261	59	256	80	84	2.2	4
	85	220.18	0.92	0.82	291	290	261	59	256	80	85	2.2	4
	87.5	222.30	0.90	0.81	291	290	261	60	256	81	85	2.2	4
	90	224.30											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22081

Operator : RV

APPENDIX 5

Particle Size Distribution Field Data Sheets
(12 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particle Size
Test Date	JUNE 16, 2021
Test Location	APC Outlet No. 1
Operator	RM

Project No.:	22081
Page	1 of 2
Probe No.:	5C
Meter Box No.:	71
Impinger Box No.:	16

Pitot Factor	0.845	
DGMCF	0.957	
Barometric Pressure	29.72	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	146.8	g
WCBDA	10.0	g

Combustion Gas Concentration

Oxygen	8.48	%
Carbon Dioxide	10.75	%
Carbon Monoxide	0.8	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	1
Comb.Gas.Analyzer	
Micromanometer	UNIT 2
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / (Metal) / Other_____

Union None / (Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes: READ @ 8am

Field Data Sheet

Date:	Jan 16/21	Plant:	Covanta DYEC	Test No.:	1	Particle Size		Page 2 of 2
		Plant Location:	Courtice, Ontario	Test Location:		APC Outlet No.	1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	16.60	.70	.35	285	254	254	66	69	66	66	.38	3
2	10.9	20.50	.70		285	253	248	56	59	67	66	.38	3
3	21.7	24.31	.67		285	251	247	55	58	68	66	.38	3
4	32.3	28.04	.63		285	251	248	54	59	68	67	.38	3
5	42.0	31.44	.52		285	252	250	55	58	69	67	.38	3
6	51.3	34.65	.51		285	252	250	56	59	69	67	.38	3
	60.1	37.65											
1	0	37.65	.70		285	252	249	56	58	69	67	.38	3
2	10.3	41.24	.68		285	251	250	52	57	70	68	.38	3
3	20.3	44.91	.62		285	252	250	52	59	70	68	.38	3
4	30.7	48.85	.50		285	251	251	53	57	70	68	.38	3
5	40.9	52.40	.55		285	251	250	53	58	71	69	.38	3
6	50.9	55.93	.53		285	251	250	49	55	70	69	.38	3
	59.9	59.07											

Traverse:	1					Traverse:	2			
Start Time:	808	Initial Leak Check:	.005	cfm@	16 "Hg	Start Time:	910	Initial Leak Check:		cfm @ "Hg
Finish Time:	908	Final Leak Check:		cfm@	"Hg	Finish Time:	1010	Final Leak Check:		cfm @ "Hg

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	JUNE 16, 2021
Test Location	APC Outlet No. 1
Operator	RM

Project No.:	22081
Page	1 of 2
Probe No.:	SC
Meter Box No.:	T1
Impinger Box No.:	11

Pitot Factor	.845	
DGMCF	.987	
Barometric Pressure	29.69	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	141.1	g
WCBDA	9.6	g

Combustion Gas Concentration

Oxygen	8.49	%
Carbon Dioxide	10.69	%
Carbon Monoxide	18.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST 1
Incline Manometer	
Comb.Gas.Analyzer	UNIT
Micromanometer	2
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / (Metal) / Other_____

Union None /(Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Jun 16/21	Plant: Covanta DYEC	Test No.: 2 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	59.20	.89	.35	287	251	251	69	75	72	71	.38	3
2	10.7	63.04	.85		287	251	251	56	59	72	71	.38	3
3	21.4	66.83	.80		286	251	250	56	59	72	71	.38	3
4	31.8	70.52	.71		285	251	251	57	58	73	71	.38	3
5	41.9	74.08	.64		285	251	249	57	59	74	72	.38	3
6	51.1	77.35	.55		285	251	249	58	61	74	72	.38	3
	60.3	80.49											
1	0	80.49	.87		285	251	256	57	61	74	73	.38	3
2	10.7	84.22	.83		283	251	255	52	60	73	71	.38	3
3	21.2	87.67	.82		283	252	255	49	57	73	72	.38	3
4	31.3	91.25	.77		285	251	250	49	57	73	72	.38	3
5	41.0	94.69	.73		286	251	250	50	56	74	73	.38	3
6	50.4	98.02	.63		286	250	251	51	57	74	73	.38	3
	59.7	101.27											

Traverse: 1						Traverse: 2					
Start Time:	1104	Initial Leak Check:	.004	cfm@	17 "Hg	Start Time:	1206	Initial Leak Check:		cfm @	"Hg
Finish Time:	1204	Final Leak Check:		cfm@	"Hg	Finish Time:	1306	Final Leak Check:		cfm @	"Hg

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date	JUNE 16, 2021
Test Location	APC Outlet No. 1
Operator	RM

Project No.:	22081
Page	1 of 2
Probe No.:	5C
Meter Box No.:	T1
Impinger Box No.:	16

Pitot Factor	.845	
DGMCF	.987	
Barometric Pressure	29.66	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	172.1	g
WCBDA	10.6	g

Combustion Gas Concentration

Oxygen	7.91	%
Carbon Dioxide	11.14	%
Carbon Monoxide	15.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST 1
Incline Manometer	
Comb.Gas.Analyzer	UNIT 2
Micromanometer	
Barometer	
Calipers	

Reading Interval	DUCT
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other N/A

Nozzle Glass / (Metal) / Other_____

Union None / (Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: JUNE 16/21	Plant: Covanta DYEC	Test No.: 3	Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 3	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	1.50	.47	.35	287	250	253	69	77	75	74	.38	3/4
2	10.7	5.35	.83		286	251	252	60	65	76	75	.38	4
3	21.2	9.19	.77		286	251	252	60	63	76	75	.38	4
4	31.7	12.98	.72		288	250	251	51	57	76	75	.38	4
5	41.8	16.61	.64		288	251	250	51	56	76	75	.38	4
6	51.6	20.07	.59		290	251	252	52	55	78	76	.38	4
	60.8	23.31											
1	0	23.31	.83		286	250	250	52	58	77	76	.38	4
2	10.9	27.19	.86		289	250	251	55	57	77	76	.38	4
3	21.5	30.99	.83		290	250	251	55	58	77	76	.38	4
4	31.8	34.70	.73		291	249	250	60	62	77	76	.38	4
5	41.5	38.15	.62		291	249	250	55	61	77	76	.38	4
6	50.7	41.45	.58		292	251	250	56	61	78	77	.38	4
	59.2	44.51											

Traverse: 2					Traverse: 1			
Start Time: 1402	Initial Leak Check: .003	cfm@ 16	"Hg		Start Time: 1505	Initial Leak Check:	cfm @	"Hg
Finish Time: 1503	Final Leak Check:	cfm@	"Hg		Finish Time: 1604	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particle Size
Test Date	JUNE 15, 2021
Test Location	APC Outlet No. 2
Operator	RW

Project No.:	22081
Page	1 of 2
Probe No.:	5
Meter Box No.:	TEAM 1
Impinger Box No.:	11

Pitot Factor	.845	
DGMCF	0.9507	
Barometric Pressure	29.55	"Hg
Static Pressure	-9.8	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	~~146.8~~	137.8	g
WCBDA	~~10.0~~	9.2	g

Combustion Gas Concentration

Oxygen	8.47	%
Carbon Dioxide	10.67	%
Carbon Monoxide	10.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	RM10/25
Trendicator	2
Control Box	ECOE2009U
Incline Manometer	3
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV. CAN
Calipers	203906

Nozzle Measurements	
1	.1780
2	.1775
3	.1775
4	.1775
Average:	

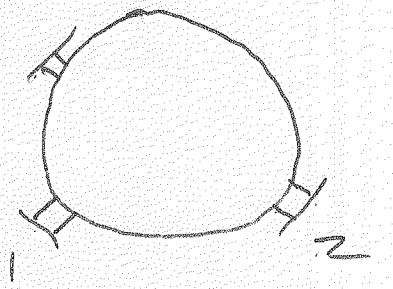
Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / (Metal) / Other_____

Union None / (Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram



Notes:

Field Data Sheet

Date: JUNE 15, 21	Plant: Covanta DYEC	Test No.: 1 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	89.32	.95	.35	289	249	250	69	55	70	70	.38	3
2	10.6	93.03	.93		289	249	251	56	57	71	71	.38	3
3	21.2	96.80	.89		288	250	251	54	56	70	69	.38	3
4	31.6	100.44	.84		286	250	251	54	55	70	70	.38	3
5	41.6	103.93	.73		288	250	251	54	55	71	70	.38	3
6	51.2	107.50	.64		287	250	250	53	56	71	70	.38	3
	60.5	110.72											
1	0	110.72	.95		284	250	254	54	57	72	71	.38	3
2	10.1	114.17	.98		286	249	256	46	57	72	71	.38	3
3	20.4	117.76	.89		286	249	251	47	56	72	71	.38	3
4	30.7	121.05	.84		287	249	251	49	55	72	72	.38	3
5	40.6	124.37	.81		286	250	258	48	56	72	72	.38	3
6	50.4	127.67	.71		286	250	251	48	55	72	72	.38	3
	59.5	130.85											

Traverse: 2			Traverse: 1		
Start Time: 905	Initial Leak Check: .005 cfm@ 15 "Hg		Start Time: 1012	Initial Leak Check:	cfm @ "Hg
Finish Time: 1009	Final Leak Check: cfm@ "Hg		Finish Time: 1112	Final Leak Check:	cfm @ "Hg

ready to test 905

Project No.: 22081

Operator : DK

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	2 Particle Size
Test Date	JUNE 15, 2021
Test Location	APC Outlet No. 2
Operator	RW

Project No.:	22081
Page	1 of 2
Probe No.:	5
Meter Box No.:	16 TEAM 1
Impinger Box No.:	16

Pitot Factor	0.845	
DGMCF	.987	
Barometric Pressure	29.55	"Hg
Static Pressure	-9.8	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	1520.0	g
WCBDA	9.6	g

Combustion Gas Concentration

Oxygen	8.47	%
Carbon Dioxide	10.66	%
Carbon Monoxide	7.4	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	42
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other N/A

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Sept 15/21	Plant: Covanta DYEC	Test No.: 2 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	30.78	.92	.35	286	250	260	71	70	72	72	.36	4
2	10.6	34.43	.91		287	250	249	60	60	72	72	.38	4
3	21.4	38.16	.89		287	251	249	56	59	73	73	.38	4
4	31.7	41.69	.86		288	251	247	55	57	73	73	.38	4
5	41.6	45.10	.82		289	251	248	55	56	74	73	.38	4
6	51.4	48.54	.72		289	251	248	56	57	74	74	.36	4
	60.6	51.76											
1	0	51.76	.93		287	249	248	59	56	75	75	.38	4
2	10.6	55.46	.91		287	249	248	59	56	75	75	.38	4
3	21.1	59.13	.89		286	248	249	59	57	75	75	.38	4
4	31.4	62.69	.87		289	248	250	59	57	75	75	.38	4
5	41.4	66.20	.83		289	248	250	59	56	75	75	.38	4
6	50.7	69.42	.79		291	249	249	59	57	77	77	.38	4
	59.4	72.45											

Traverse: 1					Traverse: 2				
Start Time: 1216	Initial Leak Check: .005	cfm@ 16	"Hg		Start Time: 1319	Initial Leak Check:	cfm @	"Hg	
Finish Time: 1317	Final Leak Check:	cfm@	"Hg		Finish Time: 1418	Final Leak Check:	cfm @	"Hg	

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date	JUNE 15, 2021
Test Location	APC Outlet No. 2
Operator	RL

Project No.:	22081
Page	1 of 2
Probe No.:	5
Meter Box No.:	T1
Impinger Box No.:	11

Pitot Factor	.845	
DGMCF	987	
Barometric Pressure	29.55	"Hg
Static Pressure	-9.8	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	162.2	g
WCBDA	11.8	g

Combustion Gas Concentration

Oxygen	8.58	%
Carbon Dioxide	10.45	%
Carbon Monoxide	14.7	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	42
Calipers	

Reading Interval	RUN
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other PM

Nozzle Glass / (Metal) / Other_____

Union None / (Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date:	June 5/21	Plant:	Covanta DYEC	Test No.:	3	Particle Size	Page 2 of 2
		Plant Location:	Courtice, Ontario	Test Location:		APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	72.55	.96	.35	295	254	247	75	80	78	78	.38	4
2	10.4	76.36	.94		294	251	248	50	59	78	78	.38	4
3	20.7	80.17	.90		294	250	249	50	57	78	78	.38	4
4	30.8	83.85	.84		295	250	250	51	56	79	78	.38	4
5	40.9	87.54	.76		295	251	249	51	55	79	79	.38	4
6	50.7	91.09	.67		294	251	249	50	56	80	79	.38	4
	60.3	94.54											
1	0	94.54	.93		290	251	249	50	56	80	80	.38	4
2	10.3	98.36	.93		288	251	249	51	55	81	81	.38	4
3	20.6	102.27	.91		286	251	249	49	59	80	80	.38	4
4	30.8	105.93	.89		286	251	249	50	57	81	80	.38	4
5	40.8	109.33	.76		287	249	250	50	56	81	81	.38	4
6	50.5	112.75	.69		287	249	250	50	55	81	81	.38	4
	59.7	115.95											

Traverse:	2				Traverse:	1			
Start Time:	1528	Initial Leak Check:	.004	cfm@ 17 "Hg	Start Time:	1630	Initial Leak Check:		cfm @ "Hg
Finish Time:	1628	Final Leak Check:		cfm@ "Hg	Finish Time:	1730	Final Leak Check:		cfm @ "Hg

Project No.: 22081

Operator :

APPENDIX 6

SVOC Data Sheets
(30 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	June 17 2021
Test Location	APC Outlet No. 1
Operator	TT

Project No.:	22081
Page	1 of 5
Probe No.:	7 series
Meter Box No.:	Team 3
Impinger Box No.:	8

Pitot Factor	.846	
DGMCF	.993	
Barometric Pressure	29.73	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.2511	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	590.1	g
WCBDA	14.7	g

Combustion Gas Concentration

Oxygen	8.46	%
Carbon Dioxide	10.66	%
Carbon Monoxide	15.0	ppm

Measuring Device	MII Numbers
Probe / Pitot S10	B03771
Trendicator	COE 20093
Control Box	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env Canada
Calipers	

Nozzle Measurements	
1	.2515
2	.2510
3	.2510
4	.2510
Average:	.2511

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: June 17 2024	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	67.89	.76	.71	283	255	253	51	53	66	66	1.8	6
	5	71.40	.76	.71	285	256	255	45	43	67	69	1.8	6
2	10	74.99	.78	.72	285	259	254	45	43	67	71	1.85	6
	15	78.55	.80	.73	285	259	254	46	43	68	72	2.0	6.5
3	20	82.23	.74	.71	285	254	254	46	45	68	73	1.85	6.5
	25	85.82	.75	.71	286	251	254	47	46	69	74	1.85	6.5
4	30	89.42	.73	.71	286	259	254	45	45	70	75	1.85	6.5
	35	93.02	.72	.70	287	250	254	44	45	70	76	1.8	6.5
5	40	96.56	.64	.66	287	253	254	44	45	71	76	1.55	6
	45	99.86	.65	.67	286	258	254	44	44	71	76	1.65	6
6	50	103.23	.56	.62	287	250	254	45	45	71	77	1.35	5.5
	55	106.33	.56	.62	286	255	254	45	44	72	77	1.4	5.5
7	60	109.42	.61	.65	286	258	254	45	44	72	78	1.6	6
	65	112.71	.61	.65	286	249	254	45	45	72	78	1.6	6
8	70	116.02	.64	.66	286	256	253	46	45	73	78	1.6	6
	75	119.37	.64	.67	286	257	254	46	44	73	79	1.65	6
9	80	122.75	.66	.68	286	249	253	46	41	74	79	1.7	6
	85	126.19	.64	.67	286	258	254	46	42	74	79	1.65	6
10	90	129.59	.66	.68	286	256	253	47	42	74	79	1.65	6
	95	132.99	.66	.68	287	251	253	47	42	74	79	1.65	6
11	100	136.38	.54	.61	285	257	254	47	43	74	79	1.3	5.5

Traverse: 2					Traverse:				
Start Time: 8:56	Initial Leak Check:	.004	cfm@ 16	"Hg	Start Time:		Initial Leak Check:		cfm @ "Hg
Finish Time: —	Final Leak Check:	—	cfm@ —	"Hg	Finish Time:		Final Leak Check:		cfm @ "Hg

-10.2

Project No.: 22081

Operator :

Field Data Sheet

Date: June 17 2021	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	139.43	.53	.61	285	255	253	47	42	75	79	1.3	5.5
12	110	142.47	.61	.65	285	248	254	47	42	75	80	1.55	6
	115	145.73	.61	.66	277	256	253	47	42	75	80	1.55	6
	120	149.03											

Traverse: 2					
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg	Traverse:	
Finish Time:	Final Leak Check: .008	cfm@ 14	"Hg	Start Time: /	Initial Leak Check: / cfm @ / "Hg
				Finish Time: /	Final Leak Check: / cfm @ / "Hg

Project No.: 22081

Operator :

Field Data Sheet

Date: June 17 2021	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	149.32	.78	.73	288	256	254	58	44	74	75	1.95	7
	5	152.98	.79	.74	288	259	253	43	42	74	77	2.0	7
2	10	156.70	.79	.74	288	249	254	41	43	74	77	2	7
	15	160.39	.79	.74	288	259	254	41	44	74	78	2	7
3	20	164.12	.76	.72	289	255	254	41	46	75	79	1.95	7
	25	167.81	.76	.72	289	250	254	41	45	75	79	1.95	7
4	30	171.51	.71	.70	289	258	254	41	44	75	79	1.75	7
	35	175.04	.67	.68	288	251	254	41	43	75	79	1.65	7
5	40	178.48	.63	.66	288	254	254	42	42	75	80	1.55	6.5
	45	181.80	.63	.66	287	259	254	42	42	75	80	1.55	6.5
6	50	185.12	.58	.63	288	249	253	42	42	76	80	1.4	6.5
	55	188.34	.60	.65	288	257	254	43	42	76	80	1.45	6.5
7	60	191.60	.63	.66	288	254	254	43	43	76	80	1.55	6.5
	65	194.97	.63	.66	287	249	254	43	43	76	80	1.6	6.5
8	70	198.21	.65	.67	287	259	254	43	44	76	81	1.65	7
	75	201.63	.66	.68	287	253	253	44	44	76	81	1.7	7
9	80	205.10	.68	.69	287	253	253	44	45	76	81	1.7	7
	85	208.61	.66	.68	287	259	253	44	45	76	80	1.65	7
10	90	212.06	.71	.70	286	250	253	45	45	76	80	1.75	7
	95	215.58	.73	.71	285	253	253	45	46	76	80	1.8	7
11	100	219.15	.59	.64	285	259	253	45	46	76	81	1.4	6.5

Traverse:	1					
Start Time:	11:06	Initial Leak Check:	.008	cfm@	14	"Hg
Finish Time:	—	Final Leak Check:	—	cfm@	—	"Hg

Traverse:					
Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time:		Final Leak Check:		cfm @	"Hg

Project No.: 22081

Operator :

Field Data Sheet

Date: June 17 2024	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	222.35	.58	.64	278	250	253	46	46	76	81	1.5	6.5
12	110	225.56	.58	.64	278	253	253	46	46	76	81	1.5	6.5
	115	228.82	.58	.64	278	259	253	46	49	76	81	1.5	6.5
	120	232.03											

Traverse: 1					Traverse:				
Start Time: –	Initial Leak Check: –	cfm@ –	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg	
Finish Time: 13:06	Final Leak Check: .006	cfm@ 14.5	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg	

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	JUNE 17, 21
Test Location	APC Outlet No. 1
Operator	TF

Project No.:	22081
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	.846	
DGMCF	.997	
Barometric Pressure	29.68	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.2511	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	620.3	g
WCBDA	18.3	g

Combustion Gas Concentration

Oxygen	8.35	%
Carbon Dioxide	10.60	%
Carbon Monoxide	17.8	ppm

Measuring Device	MII Numbers
Probe / Pitot 910	B03771
Trendicator	COE 20093
Control Box	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements	
1	
2	See Test 4
3	
4	
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: June 17 2021	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
		32.46											
1	0	~~22.56~~	.81	.74	282	247	225	68	46	72	72	2.0	8
	5	36.11	.79	.73	288	254	250	52	50	72	74	2	8
2	10	39.84	.83	.75	289	262	251	51	51	73	76	2.05	9
	15	43.66	.86	.77	289	250	250	51	51	73	76	2.15	9
3	20	47.54	.82	.75	290	255	251	52	52	74	77	2.05	9
	25	51.37	.81	.75	290	263	251	52	52	74	78	2.05	9
4	30	55.16	.75	.72	291	248	252	53	53	75	78	1.85	9
	35	58.83	.75	.72	291	262	252	53	54	75	79	1.85	9
5	40	62.47	.66	.67	291	250	252	52	53	75	79	1.6	8
	45	65.86	.66	.68	291	260	252	51	53	76	80	1.6	8
6	50	69.27	.56	.62	290	263	252	51	53	76	80	1.35	7
	55	72.41	.55	.62	290	257	252	51	49	76	81	1.35	7
7	60	75.54	.59	.64	289	256	252	50	48	76	81	1.4	7
	65	78.73	.60	.65	289	250	252	50	48	77	82	1.5	7
8	70	81.97	.64	.67	289	264	252	49	49	77	82	1.6	7.5
	75	85.32	.61	.66	289	254	251	49	50	78	82	1.6	8
9	80	88.64	.63	.66	288	257	251	49	50	78	82	1.55	8
	85	92.04	.62	.66	288	258	251	48	49	77	83	1.5	8
10	90	95.35	.61	.66	279	255	252	49	51	78	83	1.55	8
	95	98.68	.65	.68	281	263	251	49	52	79	83	1.65	8
11	100	102.10	.60	.65	281	253	251	49	53	79	83	1.5	8

Traverse:					Traverse:			
Start Time: 14:19	Initial Leak Check:	.006	cfm@ 15	"Hg	Start Time:	Initial Leak Check:		cfm @ "Hg
Finish Time:	Final Leak Check:		cfm@	"Hg	Finish Time:	Final Leak Check:		cfm @ "Hg

Project No.: 22081

Operator :

Field Data Sheet

Date: June 17 2021	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	105.43	.61	.66	281	258	251	50	53	79	83	1.55	8
12	110	108.76	.61	.66	281	264	251	50	54	79	83	1.55	8
	115	112.08	.58	.64	281	254	251	50	54	79	83	1.4	8
	120	115.31											

Traverse: 2					Traverse:				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg		Start Time:		Initial Leak Check:	cfm @	"Hg
Finish Time: 16:19	Final Leak Check: .004	cfm@ 17	"Hg		Finish Time:		Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator :

Field Data Sheet

Date: June 17 2024	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	115.62	.80	.75	286	248	251	64	52	79	80	2.0	10
	5	119.39	.80	.75	292	261	251	47	55	79	81	2.0	10
2	10	123.11	.83	.76	293	253	252	45	54	79	82	2.1	10.5
	15	126.95	.83	.76	293	264	251	44	56	79	82	2.1	10.5
3	20	130.79	.80	.75	293	249	252	44	53	79	82	2	10
	25	134.60	.83	.76	293	264	252	44	52	79	82	2.1	10.5
4	30	138.44	.77	.73	294	250	252	44	52	79	83	1.95	10
	35	142.20	.77	.73	294	264	252	44	52	79	83	1.9	10
5	40	145.90	.75	.72	294	248	251	44	52	79	83	1.85	10
	45	149.54	.73	.71	295	264	251	45	52	79	83	1.8	10
6	50	153.15	.65	.67	295	252	252	45	52	79	83	1.6	9
	55	156.57	.66	.68	295	264	251	45	51	80	83	1.65	9
7	60	~~159~~ 160.01	.72	.71	294	249	252	46	52	80	84	1.8	9
	65	163.56	.74	.72	294	259	252	46	53	80	84	1.85	10
8	70	167.19	.74	.72	295	248	251	46	51	80	84	1.85	10
	75	170.78	.76	.73	294	264	251	46	51	80	83	1.9	10
9	80	174.44	.76	.73	292	249	251	47	52	80	83	1.9	10
	85	178.12	.76	.73	294	263	251	47	51	80	83	1.9	10
10	90	181.83	.74	.72	294	258	251	47	51	80	83	1.85	10
	95	185.49	.75	.72	294	259	251	47	53	80	83	1.85	10
11	100	189.16	.70	.70	291	254	251	48	52	80	83	1.75	10

Traverse: 1					Traverse:				
Start Time: 16:26	Initial Leak Check:	.005	cfm@	17 "Hg	Start Time:	/	Initial Leak Check:	/	cfm @ / "Hg
Finish Time: –	Final Leak Check:	–	cfm@	– "Hg	Finish Time:	/	Final Leak Check:	/	cfm @ / "Hg

Project No.: 22081

Operator :

Field Data Sheet

Date: June 17 2021	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	192.73	.68	.69	291	256	251	48	51	80	83	1.7	9.5
12	110	196.22	.66	.68	291	262	251	48	51	80	84	1.65	9.5
	115	199.69	.69	.70	290	250	251	48	51	80	84	1.7	9.5
	120	203.20											

Traverse: 1					Traverse:				
Start Time: –	Initial Leak Check: –	cfm@ –	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg	
Finish Time: 18:26	Final Leak Check: .006	cfm@ 13	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg	

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	June 18, 2021
Test Location	APC Outlet No. 1
Operator	Jake Artibello

Project No.:	22081
Page	1 of 5
Probe No.:	7 series
Meter Box No.:	beam 9
Impinger Box No.:	8/3

Pitot Factor	0.842	
DGMCF	.993	
Barometric Pressure	29.50	"Hg
Static Pressure	-10.3	"H2O
Nozzle Size	.251	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	~~598.7~~ ~~598.7~~	g
WCBDA	15.0	g

Combustion Gas Concentration

Oxygen	8.04	%
Carbon Dioxide	10.94	%
Carbon Monoxide	10.4	ppm

Measuring Device	MII Numbers
Probe / Pitot S2	~~0.84~~
Trendicator	COE20093
Control Box	COE20093
Incline Manometer	COE20093
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENVCANADA
Calipers	

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	
2	SEEtesL #1
3	
4	
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: 18/06/2021	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	3.51	.83	.71	280	256	252	69	53	73	73	2	6
	5	7.00	.81	.76	287	259	251	54	49	73	75	7.1	6.5
2	10	10.74	.81	.75	277	263	252	52	50	74	76	2.1	7
	15	14.52	.81	.75	286	250	252	51	48	74	77	2.1	7
3	20	18.31	.78	.74	287	259	252	50	47	74	78	2	7
	25	22.06	.77	.73	286	262	252	51	47	75	78	2	7
4	30	25.79	.72	.71	286	257	252	53	49	75	79	1.9	7
	35	29.46	.69	.70	286	263	252	54	49	76	79	1.85	7
5	40	33.09	.60	.65	286	248	252	54	52	76	79	1.6	7
	45	36.53	.60	.65	281	262	252	53	53	76	80	1.6	7
6	50	39.87	.56	.63	286	252	252	52	52	76	80	1.5	6
	55	43.12	.56	.63	286	251	252	52	51	77	81	1.5	6
7	60	46.39	.60	.65	286	264	252	51	48	77	81	1.6	6
	65	49.72	.62	.66	286	256	252	51	49	77	81	1.7	6
8	70	53.16	.65	.68	286	263	252	51	50	77	81	1.8	6.5
	75	56.72	.64	.67	286	252	252	51	51	77	81	1.7	7
9	80	60.22	.64	.67	285	264	252	50	52	77	81	1.7	7
	85	63.72	.63	.67	284	263	252	49	50	74	81	1.7	7
10	90	67.23	.62	.66	284	254	252	49	49	78	81	1.7	7
	95	70.7	.60	.65	284	263	252	49	49	75	81	1.65	7
11	100	74.17	.56	.63	284	249	252	49	49	78	81	1.6	6.5

Traverse:	1					Traverse:	/				
Start Time:	9:10	Initial Leak Check:	0.004	cfm@	16 "Hg	Start Time:	/	Initial Leak Check:	/	cfm @	/ "Hg
Finish Time:	10:10	Final Leak Check:	0.003	cfm@	11 "Hg	Finish Time:	/	Final Leak Check:	/	cfm @	/ "Hg

Project No.: 22081

Operator : Jake Antinello

Field Data Sheet

Date:	18/06/2021	Plant:	Covanta DYEC	Test No.:	3 SVOC	Page 3 of 5
		Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	77.48	.54	.62	284	260	251	49	49	78	82	1.5	6
12	110	80.74	.33	.48	284	255	252	49	49	75	82	0.9	5
	115	83.37	.33	.49	280	248	250	50	49	78	82	0.9	5
	120	85.91											

Traverse:				Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator : JA

Field Data Sheet

Date:	8/06/2021	Plant:	Covanta DYEC	Test No.:	3 SVOC	Page 4 of 5
		Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O .82	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	86.19	.~~4~~	.76	284	260	250	63	53	77	78	2	7
	5	89.78	.8	.75	288	248	249	47	50	77	79	2.1	8
2	10	93.63	.8	.75	288	259	250	45	49	77	80	2.1	8
	15	97.47	.78	.74	286	262	250	44	47	77	80	2.05	8
3	20	101.29	.77	.74	286	254	250	45	48	77	80	2.05	8
	25	~~105~~ 105.1	.~~7~~8	.73	287	264	250	45	4~~8~~	77	80	2	8
4	30	108.88	.70	.76	288	253	251	45	49	77	80	1.9	8
	35	112.55	.73	.72	288	261	250	45	49	77	81	1.95	7.5
5	40	116.28	.66	.68	289	256	250	45	48	77	81	1.8	7.5
	45	119.88	.66	.68	288	264	250	46	49	78	81	1.8	7.5
6	50	123.44	.673	.67	288	249	251	46	49	78	81	1.8	7
	55	122.79	.61	.66	288	259	250	47	48	78	81	1.6	7
7	60	130.15	.67	.69	287	262	250	47	48	78	82	1.7	7
	65	133.58	.70	.70	286	257	250	47	49	78	82	1.8	7.5
8	70	137.13	.74	.72	287	264	250	47	49	78	82	1.9	7.5
	75	140.78	.69	.70	289	253	250	47	50	78	82	1.8	7.5
9	80	144.37	.76	.70	289	257	250	47	47	78	81	1.9	~~8~~.8
	85	148.04	.75	.73	289	259	250	48	48	78	81	1.9	8
10	90	151.73	.73	.72	288	264	250	48	46	78	81	1.9	8
	95	155.39	.75	.73	287	258	250	49	47	78	81	1.9	8
11	100	159.08	.70	.71	275	264	250	49	47	78	81	1.8	8

Traverse:	2					Traverse:					
Start Time:	11:22	Initial Leak Check:	0.006	cfm@	16 "Hg	Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time:	12:22	Final Leak Check:	0.008	cfm@	17 "Hg	Finish Time:		Final Leak Check:		cfm @	"Hg

Project No.: 22081

Operator: Jake Arbello

Field Data Sheet

Date: 18/06/2021	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp		Meter Temp		Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
								Outlet °F	Inlet/Trap °F	Outlet °F	Inlet °F		
	105	162.67	.71	.71	273	264	249	49	47	75	81	1.9	8
12	110	166.27	.59	.61	250	251	251	49	47	78	81	1.6	8
	115	169.69	.61	.67	251	261	250	49	47	77	81	1.6	8
	120	173.1											

Traverse:				Traverse:			
Start Time:		Initial Leak Check:	cfm@ "Hg	Start Time:		Initial Leak Check:	cfm @ "Hg
Finish Time:		Final Leak Check:	cfm@ "Hg	Finish Time:		Final Leak Check:	cfm @ "Hg

Project No.: 22081

Operator : JA

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Semi-Volatile Organic Compounds
Test Date	June 17/21
Test Location	APC Outlet No. 2
Operator	RV

Project No.:	22081
Page	1 of 5
Probe No.:	
Meter Box No.:	Team # 2
Impinger Box No.:	

Pitot Factor	0.843	
DGMCF	0.994	
Barometric Pressure	29.73	"Hg
Static Pressure	-10.6	"H2O
Nozzle Size	0.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	674.9	g
WCBDA	21.5	g

Combustion Gas Concentration

Oxygen	8.40	%
Carbon Dioxide	10.68	%
Carbon Monoxide	16.7	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP6
Trendicator	
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	0.2528

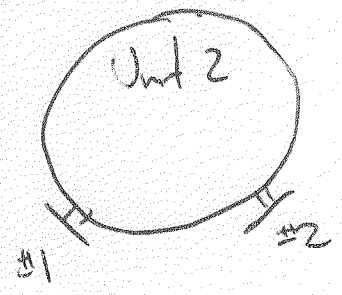
Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram



Notes:

Field Data Sheet

Date: June 17	Plant: Covanta DYEC	Test No.: SVOC T1	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F 281	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	24.68	.75	.72	~~275~~	281	254	65	64	65	66	1.8	6
	5	28.35	.75	.72	281	279	258	53	50	66	68	1.8	6
2	10	32.02	.77	.73	281	282	257	46	47	67	68	1.8	6
	15	35.67	.74	.72	284	279	256	44	49	67	69	1.8	6
3	20	39.31	.74	.72	285	283	256	43	47	67	70	1.8	6
	25	42.97	.75	.72	285	287	256	42	44	68	71	1.8	6
4	30	46.60	.70	.70	285	284	257	42	45	68	72	1.7	6
	35	50.10	.70	.70	285	284	257	42	45	69	73	1.7	6
5	40	53.59	.65	.68	285	282	257	42	45	69	74	1.6	6
	45	56.96	.69	.70	285	284	257	43	45	70	73	1.7	6
6	50	60.44	.67	.69	285	282	257	42	44	70	75	1.7	6
	55	63.93	.67	.69	286	281	257	43	44	71	75	1.7	6
7	60	67.42	.67	.69	286	279	258	43	46	71	76	1.7	6
	65	70.87	.67	.69	286	279	257	43	48	71	76	1.7	6
8	70	74.33	.75	.73	286	279	257	44	49	72	77	1.8	6
	75	77.91	.75	.73	287	279	257	44	52	72	77	1.8	6
9	80	81.49	.81	.76	287	277	257	45	53	73	77	2.0	6
	85	85.25	.85	.78	287	281	257	45	47	73	77	2.0	6
10	90	89.13	.86	.78	287	282	258	46	47	72	76	2.0	6
	95	93.02	.90	.80	287	285	258	47	48	74	78	2.1	7
11	100	96.89	.87	.79	288	282	258	48	48	74	78	2.1	7

Traverse: Z- AW					Traverse:			
Start Time: 8:54	Initial Leak Check: .004	cfm@ 17	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 10:54	Final Leak Check: .004	cfm@ 23	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator : RV

Field Data Sheet

Date: June 17	Plant: Covanta DYEC	Test No.: SVOC T1	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	101.07	.87	.79	287	278	258	47	49	75	77	2.1	7
12	110	105.05	.90	.80	287	284	258	49	49	74	77	2.1	7
	115	109.18	.90	.80	286	282	258	50	52	74	77	2.1	7
	120	113.28											

Traverse:				Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator : R

Field Data Sheet

Date: June 17	Plant: Covanta DYEC	Test No.: SVOC T1	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	113.73	0.87	.79	286	282	258	62	46	74	75	2.1	7
	5	117.52	0.92	.81	287	281	259	48	43	74	74	2.4	8
2	10	121.70	0.93	.81	285	282	258	44	44	74	74	2.3	8
	15	125.86	0.97	.83	286	281	259	44	44	74	75	2.4	8
3	20	130.05	0.90	.80	288	278	259	44	44	75	76	2.2	9
	25	134.17	.90	.80	288	282	258	44	45	74	77	2.2	8
4	30	138.24	.91	.81	289	285	259	45	45	74	78	2.2	8
	35	142.33	.87	.79	289	285	259	45	44	74	78	2.1	8
5	40	146.36	.75	.73	287	284	258	45	44	75	78	1.9	8
	45	150.17	.80	.76	287	279	258	45	45	75	79	2.0	8
6	50	153.95	.65	.68	287	280	258	45	45	76	79	1.7	7.5
	55	157.48	.65	.68	287	280	258	46	44	75	79	1.7	7
7	60	161.04	.75	.73	287	282	258	46	45	75	79	1.9	8.5
	65	164.73	.72	.72	287	287	258	45	45	75	80	1.8	7.5
8	70	168.33	.70	.71	286	285	258	46	43	76	80	1.8	7.5
	75	171.98	.70	.71	286	283	258	46	43	76	80	1.8	7.5
9	80	175.64	.72	.72	286	280	258	46	43	76	80	1.8	7.5
	85	179.29	.74	.73	285	279	258	46	43	76	80	1.8	7.5
10	90	182.95	.76	.74	285	281	258	46	44	77	80	1.8	7.5
	95	186.59	.77	.75	285	284	258	46	45	77	81	1.8	7.5
11	100	190.30	.70	.71	281	278	258	47	45	77	81	1.8	7.5

Traverse: PW - 1						
Start Time: 11:09	Initial Leak Check: ~~PW~~ .004	cfm@	20	"Hg		
Finish Time: 13:09	Final Leak Check: .004	cfm@	14	"Hg		

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator :

Field Data Sheet

Date: June 17/21	Plant: Covanta DYEC	Test No.: SVOC T1	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	193.93	.70	.71	281	284	258	47	45	77	81	1.8	7.5
12	110	197.56	.60	.66	281	282	258	47	45	77	81	1.6	7.5
	115	200.99	.60	.66	281	279	258	47	46	77	81	1.6	7.5
	120	204.45											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator : RV

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	2 Semi-Volatile Organic Compounds T2
Test Date	June 17/21
Test Location	APC Outlet No. 2
Operator	RW

Project No.:	22081
Page	1 of 5
Probe No.:	
Meter Box No.:	Team #2
Impinger Box No.:	

Pitot Factor	0.841	
DGMCF	0.994	
Barometric Pressure	29.68	"Hg
Static Pressure	-10.6	"H2O
Nozzle Size	0.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	676.1	g
WCBDA	116.5	g

Combustion Gas Concentration

Oxygen	8.47	%
Carbon Dioxide	10.56	%
Carbon Monoxide	21.4	ppm

Measuring Device	MII Numbers
Probe / Pitot	S4
Trendicator	
Control Box	COG 20092
Incline Manometer	COG 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	0.2528

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: June 17/21	Plant: Covanta DYEC	Test No.: SVOC T2	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	5.13	0.85	0.78	286	273	245	71	53	76	77	2.1	5
	5	9.08	.87	.79	288	275	258	57	42	76	76	2.1	5
2	10	12.95	.90	.80	288	274	257	54	42	76	76	2.2	5
	15	16.93	.90	.80	288	274	259	51	41	76	77	2.2	5
3	20	20.90	.86	.78	286	274	258	50	43	76	79	2.2	5
	25	24.84	.80	.76	288	274	258	49	42	76	80	2.1	5
4	30	28.69	.80	.76	288	274	258	50	43	76	81	2.1	5
	35	32.55	.79	.75	287	275	258	50	42	76	81	2.1	5
5	40	36.38	.80	.76	287	275	258	50	42	77	82	2.1	5
	45	40.20	.70	.71	287	275	259	51	42	77	82	1.8	5
6	50	43.84	.60	.66	287	275	259	51	43	79	82	1.6	5
	55	47.32	.65	.69	286	275	259	51	43	78	83	1.7	5
7	60	50.79	.60	.66	286	275	259	51	43	78	83	1.6	5
	65	54.27	.60	.66	286	275	259	49	42	78	83	1.6	5
8	70	57.67	.65	.69	285	275	259	49	42	79	83	1.7	5
	75	61.13	.65	.69	285	276	259	49	43	79	84	1.7	5
9	80	64.50	.67	.70	285	276	260	49	45	79	84	1.7	5
	85	68.00	.65	.69	284	276	260	50	45	79	84	1.7	5
10	90	71.45	.66	.69	284	275	260	50	46	80	84	1.7	5
	95	75.05	.66	.69	284	276	259	50	47	80	84	1.7	5
11	100	78.50	.65	.69	284	276	260	50	48	80	84	1.7	5

Traverse: 2 - FW					Traverse:			
Start Time: 141.03	Initial Leak Check: .004	cfm@ 14	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 161.03	Final Leak Check: .005	cfm@ 14	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator :

Field Data Sheet

Date: June 17/21	Plant: Covanta DYEC	Test No.: SVOC T2	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	82.05	.65	.69	284	276	260	51	49	80	84	1.7	5
12	110	85.46	.68	.71	284	275	259	51	51	80	85	1.7	5
	115	88.93	.69	.71	284	275	260	51	54	81	85	1.8	5
	120	92.52											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator : KV

Field Data Sheet

Date:	Jun 17	Plant:	Covanta DYEC	Test No.:	SVOC 2	Page 4 of 5
		Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	92.83	.85	.79	284	274	258	63	56	81	83	2.1	6
	5	96.74	.85	.78	290	277	261	50	51	81	83	2.1	6
2	10	100.68	.84	.78	290	276	259	49	49	81	83	2.1	6
	15	104.50	.90	.81	290	276	260	49	47	81	84	2.2	6
3	20	108.72	.87	.79	290	277	260	49	45	81	84	2.1	6
	25	112.69	.85	.79	289	277	260	49	45	81	84	2.1	6
4	30	116.67	.76	.74	289	277	261	49	44	81	85	1.9	6
	35	120.46	.75	.75	289	277	260	49	45	81	85	2	6
5	40	124.27	.74	.73	289	277	260	50	46	81	85	1.9	6
	45	127.98	.75	.74	289	277	260	50	44	81	85	1.9	6
6	50	131.68	.67	.70	289	277	260	50	44	81	85	1.7	6
	55	135.22	.68	.70	289	277	260	50	45	81	85	1.7	6
7	60	138.75	.73	.73	289	277	261	51	45	81	85	1.8	6
	65	142.36	.71	.72	289	277	260	51	46	82	85	1.8	6
8	70	145.95	.72	.72	289	277	260	49	47	82	85	1.8	6
	75	149.55	.73	.73	289	277	260	47	44	82	86	1.8	6
9	80	153.19	.75	.74	289	277	260	47	41	82	86	1.8	6
	85	156.83	.74	.74	288	277	260	47	41	82	86	1.8	6
10	90	160.48	.78	.76	289	277	260	47	41	83	86	1.9	6
	95	164.20	.79	.76	289	277	260	47	41	82	86	1.9	6
11	100	168.00	.70	.72	289	277	260	47	42	82	86	1.8	6

Traverse:	1-DW					
Start Time:	16:10	Initial Leak Check:	.003	cfm@	14	"Hg
Finish Time:	19:10	Final Leak Check:	.004	cfm@	14	"Hg

Traverse:					
Start Time:	Initial Leak Check:		cfm @		"Hg
Finish Time:	Final Leak Check:		cfm @		"Hg

Project No.: 22081

Operator : RV

Field Data Sheet

Date: Sun 17/21	Plant: Covanta DYEC	Test No.: SVOC 2	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	171.69	.72	.73	289	277	260	48	42	82	86	1.8	6
12	110	175.35	.65	.69	289	277	260	48	42	82	86	1.8	6
	115	178.88	.65	.69	289	276	260	49	42	82	86	1.7	6
	120	182.45											

Traverse:				Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator : RV

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Semi-Volatile Organic Compounds T3
Test Date	June 18/21
Test Location	APC Outlet No. 2
Operator	R

Project No.:	22081
Page	1 of 5
Probe No.:	
Meter Box No.:	Team #2
Impinger Box No.:	

Pitot Factor	0.841	
DGMCF	0.994	
Barometric Pressure	29.56	"Hg
Static Pressure	-9.5	"H2O
Nozzle Size	0.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	660.7	g
WCBDA	170	g

Combustion Gas Concentration

Oxygen	8.27	%
Carbon Dioxide	10.72	%
Carbon Monoxide	13.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	34
Trendicator	
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Gr. Can
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	.2528

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: June 18/24	Plant: Covanta DYEC	Test No.: SVOC T3	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	82.72	0.90	.80	286	272	260	71	45	73	74	2.2	6
	5	86.67	.90	.80	286	276	261	51	39	74	74	2.2	6
2	10	90.63	.90	.80	285	274	261	49	40	74	74	2.2	6.5
	15	94.67	.92	.81	287	274	261	48	41	74	75	2.2	6.5
3	20	98.68	.92	.81	287	274	262	49	41	74	76	2.2	6.5
	25	102.68	.92	.81	288	274	262	49	42	74	77	2.2	6.5
4	30	106.69	.83	.77	288	274	262	49	43	75	79	2.1	7
	35	110.53	.82	.77	288	274	262	48	42	76	79	2.1	7
5	40	114.41	.75	.73	289	274	263	50	43	75	80	1.9	7
	45	118.17	.78	.74	288	274	262	51	43	76	80	1.9	7
6	50	121.92	.65	.68	289	276	262	51	44	76	81	1.7	6.5
	55	125.43	.66	.69	289	274	262	52	44	76	81	1.7	6.5
7	60	128.95	.66	.69	288	274	262	52	45	78	80	1.7	6.5
	65	132.46	.66	.69	288	274	262	52	46	78	81	1.7	6.5
8	70	135.96	.70	.71	287	274	263	52	96	77	81	1.8	6.5
	75	139.55	.70	.71	287	274	262	49	43	77	82	1.8	6.5
9	80	143.14	.72	.72	286	274	262	48	42	78	81	1.8	6.5
	85	146.69	.72	.72	286	274	262	48	42	78	82	1.8	6.5
10	90	150.28	.73	.74	284	274	262	48	43	78	82	1.9	6.5
	95	153.95	.72	.72	284	274	262	48	43	78	82	1.9	6.5
11	100	157.62	.65		284	274	263	48	44	78	82	~~1.8~~ 1.6 1.7	6.5

Traverse: 1 - FW					Traverse:			
Start Time: 9:15	Initial Leak Check: .003	cfm@ 14	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 11:15	Final Leak Check: <.002	cfm@ 14	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator :

Field Data Sheet

Date: June 18/21	Plant: Covanta DYEC	Test No.: SVOC T3	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	161.13	.65	.69	284	277	263	48	44	79	82	1.7	6.2
12	110	164.63	.64	.68	284	273	262	48	45	79	82	1.7	6.5
	115	168.05	.64	.68	284	274	262	48	45	79	82	1.7	6.5
	120	171.52											

Traverse:				Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator : RV

Field Data Sheet

Date: Jun 18/21	Plant: Covanta DYEC	Test No.: SVOC T3	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	171.78	.79	.76	286	271	263	51	48	79	80	2.0	6.5
	5	175.49	.80	.76	286	275	263	41	48	78	79	2.0	6.5
2	10	179.29	.80	.76	286	274	263	40	40	78	79	2.0	6.5
	15	183.16	.80	.76	287	275	262	40	40	78	79	2.0	6.5
3	20	186.99	.82	.77	287	274	263	40	40	78	80	2.0	7
	25	190.82	.83	.77	287	275	262	40	39	78	80	2.0	7
4	30	194.66	.80	.76	287	275	263	41	40	78	81	2.0	7
	35	198.48	.80	.76	287	275	263	41	39	78	81	2.0	7
5	40	202.33	.73	.73	287	275	263	41	41	78	81	1.8	7
	45	206.00	.72	.72	287	276	263	41	40	78	81	1.8	7
6	50	209.67	.65	.69	287	276	262	41	41	78	81	1.7	7
	55	213.24	.66	.69	287	276	263	42	43	78	81	1.7	7
7	60	216.80	.71	.72	287	275	262	43	43	79	81	1.8	7
	65	220.41	.70	.71	287	276	262	43	43	78	82	1.8	7
8	70	224.07	.72	.72	287	276	263	44	44	78	81	1.8	7
	75	227.62	.75	.74	287	276	263	44	45	78	81	1.8	7
9	80	231.26	.72	.72	287	276	263	44	45	78	81	1.8	7
	85	234.93	.71	.72	287	276	263	45	45	78	82	1.8	7
10	90	238.59	.74	.73	287	276	263	45	50	78	82	1.8	7
	95	242.33	.76	.74	287	276	263	46	49	78	82	1.8	7
11	100	246.03	.65	.69	287	276	263	46	46	78	82	1.7	7

Traverse: 2-FW					
Start Time: 11:30	Initial Leak Check: .003	cfm@ 14	"Hg		
Finish Time: 13:30	Final Leak Check: .004	cfm@ 15	"Hg		

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator : N

Field Data Sheet

Date: June 18/21	Plant: Covanta DYEC	Test No.: SVOC T3	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	249.69	.65	.69	286	275	263	46	46	78	82	1.7	7
12	110	253.17	.65	.68	286	275	263	46	47	78	81	1.7	7
	115	256.62	.65	.69	286	275	263	46	47	78	82	1.7	7
	120	260.06											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22081

Operator : RV

APPENDIX 7

Acid Gas Field Data Sheets
(12 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	M26A
Test Date	June 15 2021
Test Location	APC Outlet No. 1
Operator	T. Timar

Project No.:	22081
Page	1 of 2
Probe No.:	7 Series
Meter Box No.:	Team 3
Impinger Box No.:	

Pitot Factor	.842	
DGMCF	.993	
Barometric Pressure	29.54	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.2405	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	5
Number of Ports	21
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	127.3	g
WCBDA	9.0	g

Combustion Gas Concentration

Oxygen	8.65	%
Carbon Dioxide	10.44	%
Carbon Monoxide	17.5	ppm

Measuring Device	MII Numbers
Probe / Pitot S2	B03762
Trendicator	COE 20093
Control Box	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2400
2	.2410
3	.2405
4	.2405
Average:	.2405

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: June 15 2021	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	59.12	.80	.68	274	248	250	70	250	74	73	1.6	3
2	5	62.53	.80	.68	285	263	251	62	250	74	75	1.6	3
3	10	65.84	.79	.67	286	255	245	59	250	74	76	1.6	3
4	15	69.16	.76	.66	287	253	251	59	250	75	78	1.55	3
5	20	72.46	.69	.63	287	263	252	61	250	75	79	1.4	3
6	25	75.59	.62	.60	287	251	251	59	250	75	79	1.2	2.5
7	30	78.51	.70	.64	288	250	251	56	250	77	80	1.45	3
8	35	81.68	.70	.64	288	261	251	54	250	77	81	1.5	3
9	40	84.91	.69	.63	287	255	251	53	250	77	81	1.45	3
10	45	88.11	.70	.64	287	254	251	53	250	77	81	1.5	3
11	50	91.31	.50	.54	287	264	251	53	250	77	81	1.0	3
12	55	94.09	.50	.54	287	248	251	53	221	76	81	.95	3
	60	96.70											

Traverse: 2					
Start Time: 9:51	Initial Leak Check: .003	cfm@	17	"Hg
Finish Time: 9:51	Final Leak Check: .005	cfm@	14	"Hg

Traverse:					
Start Time: /	Initial Leak Check: /	cfm @	/	"Hg
Finish Time: /	Final Leak Check: /	cfm @	/	"Hg

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	June 15 2021
Test Location	APC Outlet No. 1
Operator	

Project No.:	22081
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 3
Impinger Box No.:	

Pitot Factor	.842	
DGMCF	.993	
Barometric Pressure	29.55	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.2405	inches
Stack Diameter	4.5	feet
Length	–	feet
Width	–	feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2 1
Number of Points/Port	12 1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	142.0	g
WCBDA	10.5	g

Combustion Gas Concentration

Oxygen	8.45	%
Carbon Dioxide	10.76	%
Carbon Monoxide	12.7	ppm

Measuring Device	MII Numbers
Probe / Pitot S2	
Trendicator	COE 20093
Control Box	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: June 15 2024	Plant: Covanta DYEC	Test No.: 2 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	97.22	.76	.67	275	255	250	63	116	75	76	1.65	4
~~2~~	5	100.57	.83	.70	287	252	252	54	216	75	78	1.8	4
~~3~~	10	104.10	.78	.68	288	264	251	52	213	76	79	1.7	4
* ~~4~~	15	107.34	.75	.66	289	251	251	53	213	76	78	1.9	4
~~5~~	20	110.73	.68	.69	288	263	252	52	213	76	79	1.8	4
~~6~~	25	114.26	.62	.66	288	251	251	52	214	77	80	1.65	4
~~7~~	30	117.67	.72	.71	289	259	251	54	230	77	81	1.9	4
~~8~~	35	121.33	.72	.71	289	253	251	54	235	77	81	1.8	4
~~9~~	40	124.90	.71	.71	289	260	251	55	235	78	81	1.8	4
~~10~~	45	128.46	.70	.70	287	262	251	56	235	78	81	1.75	4
~~11~~	50	131.99	.70	.70	287	262	251	56	235	78	81	1.75	4
~~12~~	55	135.51	.64	.67	287	258	251	57	234	78	82	1.6	4
	60	138.89											

Traverse: 1					
Start Time: 10:45	Initial Leak Check:	.008	cfm@	14	"Hg
Finish Time: 11:49	Final Leak Check:	.006	cfm@	15	"Hg

Traverse:					
Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time:		Final Leak Check:		cfm @	"Hg

12:56 - 11:00 ⇒ changed nozzle new ~~[illegible]~~ .2511
train collided at mid point when M29 was inserted into stack

Project No.: 22081
Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	June 15 2021
Test Location	APC Outlet No. 1
Operator	

Project No.:	22081
Page	1 of 2
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	.842	
DGMCF	.993	
Barometric Pressure	29.55	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.2511	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	156.8	g
WCBDA	120	g

Combustion Gas Concentration

Oxygen	7.91	%
Carbon Dioxide	11.11	%
Carbon Monoxide	16.7	ppm

Measuring Device	MII Numbers
Probe / Pitot S2	B03762
Trendicator	COE 20093
Control Box	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Nozzle Measurements	
1	.2515
2	.2510
3	.2510
4	.2510
Average:	.2511

Probe Liner ~~Glass~~ / Metal /Teflon / Other_____

Nozzle ~~Glass~~ / Metal / Other_____

Union None /Metal /~~Teflon~~ / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: June 15 2021	Plant: Covanta DYEC	Test No.: 3 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	39.22	.71	.70	284	264	250	75	127	77	77	1.75	3
	5	42.82	.71	.70	289	250	250	65	124	77	79	1.85	3
	10	46.30	.71	.70	289	260	250	56	218	77	81	1.85	3
	15	49.56	.72	.71	289	258	250	54	228	78	82	1.85	3
	20	53.12	.71	.71	290	253	250	55	233	78	83	1.8	3
	25	56.59	.73	.72	290	263	250	57	232	79	84	1.8	3
	30	60.27	.73	.72	291	263	250	57	232	79	84	1.8	3
	35	63.82	.75	.73	291	264	250	62	235	79	85	1.9	3
	40	67.48	.72	.71	292	249	250	62	228	80	85	1.8	3
	45	71.04	.69	.70	292	263	250	61	235	80	85	1.7	3
	50	74.51	.69	.70	292	248	250	61	236	80	85	1.75	3
	55	78.03	.70	.70	291	262	250	62	237	81	86	1.8	3
	60	81.59											

Traverse: 1					
Start Time: 12:36	Initial Leak Check:	.005	cfm@	16	"Hg
Finish Time: 13:36	Final Leak Check:	.005	cfm@	17	"Hg

Traverse:					
Start Time:	Initial Leak Check:		cfm @		"Hg
Finish Time:	Final Leak Check:		cfm @		"Hg

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	M26A
Test Date	June 16 2021
Test Location	APC Outlet No. 2
Operator	TT

Project No.:	22081
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 3
Impinger Box No.:	

Pitot Factor	.842	
DGMCF	.993	
Barometric Pressure	29.72	"Hg
Static Pressure	-9.9	"H2O
Nozzle Size	.2511	inches
Stack Diameter	4.5	feet
Length	–	feet
Width	–	feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	1154	g
WCBDA	120	g

Combustion Gas Concentration

Oxygen	8.57	%
Carbon Dioxide	10.72	%
Carbon Monoxide	15.2	ppm

Measuring Device	MII Numbers
Probe / Pitot S2	B03762
Trendicator	COE 20093
Control Box	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Nozzle Measurements	
1	°
2	
3	
4	
Average:	

Notes:

Field Data Sheet

Date: June 16 202	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

*	*	*	*	*	*	*	*	*	*	*	*	*

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp		Meter Temp		Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
								Outlet °F	Inlet/Trap °F	Outlet °F	Inlet °F		
1	0	13,37	.67	.67	286	249	254	60	55	66	66	1.6	3.5
	5	16.66	.68	.68	288	256	254	48	82	66	69	1.65	3.5
	10	20.04	.68	.68	288	254	255	46	95	66	70	1.65	3.5
	15	23.43	.64	.66	288	265	255	46	97	67	71	1.65	3.5
	20	26.78	.63	.66	287	249	255	48	89	68	72	1.6	3.5
	25	30.10	.64	.66	287	261	255	49	205	68	73	1.6	3.5
	30	33.44	.63	.66	287	259	255	51	211	69	74	1.6	3.5
	35	36.78	.66	.67	287	255	255	52	213	69	74	1.6	3.5
	40	40.17	.68	.68	288	264	255	54	215	70	75	1.7	4
	45	43.62	.68	.68	288	251	255	56	216	70	75	1.7	4
	50	47.09	.70	.69	289	265	255	58	216	71	75	1.75	4
	55	50.60	.71	.70	289	248	255	60	216	71	75	1.8	4
	60	54.16											

Traverse:					
Start Time:	8:15	Initial Leak Check:	.005	cfm@	17 "Hg
Finish Time:	9:10	Final Leak Check:	.005	cfm@	22 "Hg

Traverse:					
Start Time:	/	Initial Leak Check:	/	cfm @	"Hg
Finish Time:	/	Final Leak Check:		cfm @	"Hg

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	June 16 2021
Test Location	APC Outlet No. 2
Operator	TT

Project No.:	22081
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 3
Impinger Box No.:	

Pitot Factor	.842	
DGMCF	.993	
Barometric Pressure	29.71	"Hg
Static Pressure	-9.9	"H2O
Nozzle Size	.2511	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	141.5	g
WCBDA	10.2	g

Combustion Gas Concentration

Oxygen	8.45	%
Carbon Dioxide	10.77	%
Carbon Monoxide	10.8	ppm

Measuring Device	MII Numbers
Probe / Pitot S2	B03762
Trendicator	COE 20093
Control Box	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Nozzle Measurements

1 _____
2 _____
3 _____
4 _____
Average:

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: June 16 2021	Plant: Covanta DYEC	Test No.: 2 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

	*	*	*		*			*		*	*	*	*
Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	54.57	.71	.70	290	256	254	66	127	71	71	1.7	3
	5	58.10	.70	.69	290	255	254	61	128	71	73	1.7	3
	10	61.58	.70	.69	290	265	255	56	128	71	75	1.7	3
	15	65.93	.70	.69	290	249	255	54	129	71	76	1.7	3
	20	68.40	.71	.70	290	264	254	54	122	72	77	1.75	3
	25	71.93	.70	.69	290	256	254	50	124	72	78	1.7	3
	30	75.43	.69	.69	289	256	254	49	126	73	79	1.7	3
	35	78.94	.68	.69	289	256	254	49	126	73	79	1.7	3
	40	82.42	.68	.69	289	260	254	47	129	74	79	1.7	3
	45	85.93	.75	.72	289	257	254	47	129	74	79	1.85	3
	50	89.56	.71	.70	289	255	254	48	129	74	80	1.75	3
	55	93.11	.71	.70	289	263	255	49	129	75	80	1.75	3
	60	96.65											

Traverse:						Traverse:				
Start Time:	9:55	Initial Leak Check:	.005	cfm@	22 "Hg	Start Time:	/	Initial Leak Check:		cfm @ "Hg
Finish Time:	10:55	Final Leak Check:	.005	cfm@	14 "Hg	Finish Time:	/	Final Leak Check:	/	cfm @ "Hg

Project No.: 22081

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	June 16 2021
Test Location	APC Outlet No. 2
Operator	T. Timar

Project No.:	22081
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 3
Impinger Box No.:	

Pitot Factor	.842	
DGMCF	.993	
Barometric Pressure	29.70	"Hg
Static Pressure	-.99	"H2O
Nozzle Size	.2511	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	137.7	g
WCBDA	7.3	g

Combustion Gas Concentration

Oxygen	8.66	%
Carbon Dioxide	10.56	%
Carbon Monoxide	21.8	ppm

Measuring Device	MII Numbers
Probe / Pitot S2	
Trendicator	COE 20093
Control Box	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / ~~Teflon~~ / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: June 16 2021	Plant: Covanta DYEC	Test No.: 3 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3 *	Pitot Δ P $"H_2O$ *	Desired cfm *	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H $"H_2O$ *	Pump Vacuum "Hg Gauge *
1	0	96.94	.68	.68	295	248	254	66	127	73	73	1.65	4
	5	100.38	.67	.68	288	261	254	46	123	73	75	1.65	4
	10	103.80	.65	.67	288	251	254	43	125	73	77	1.6	4
	15	107.18	.65	.67	288	255	254	43	126	73	78	1.6	4
	20	110.57	.66	.68	288	264	254	43	127	74	79	1.65	4
	25	113.99	.69	.69	288	255	254	42	129	74	80	1.7	4
	30	117.52	.68	.69	288	265	254	43	131	75	81	1.7	4
	35	120.99	.70	.70	289	249	254	43	132	76	81	1.75	4
	40	124.54	.71	.71	288	265	254	42	130	76	82	1.8	4
	45	128.14	.70	.70	289	252	254	43	131	76	82	1.75	4
	50	131.68	.69	.70	289	264	254	43	133	77	82	1.75	4
	55	135.22	.69	.70	289	248	254	44	131	77	83	1.75	4
	60	138.75											

Traverse:					
Start Time: 11:38	Initial Leak Check:	.005	cfm@	15	"Hg
Finish Time: 12:38	Final Leak Check:	.004	cfm@	14	"Hg

Traverse:					
Start Time: /	Initial Leak Check:	/	cfm @		"Hg
Finish Time: /	Final Leak Check:	/	cfm @		"Hg

Project No.: 22081

Operator :

APPENDIX 8

VOST Field Data Sheets
(6 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organics Sampling Train
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
1	1.008	5647.00	5669.00	22.00	29.74	0.41	22.1	22.28	0.0223
2	1.008	5669.50	5692.20	22.70	29.74	0.40	24.7	22.79	0.0228
3	1.008	5693.00	5715.30	22.30	29.74	0.40	26.6	22.25	0.0222
4	1.008	5716.70	5740.00	23.30	29.73	0.40	26.3	23.26	0.0233

* Dry at 25°C and 1 atmosphere

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organics Sampling Train
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
1	1.000	31.40	51.30	19.90	29.74	1.19	23.4	19.94	0.0199
2	1.000	51.70	73.00	21.30	29.74	1.20	27.8	21.04	0.0210
3	1.000	73.20	94.50	21.30	29.74	1.20	29.6	20.91	0.0209
4	1.000	95.70	116.10	20.40	29.73	1.20	30.9	19.94	0.0199

* Dry at 25°C and 1 atmosphere

ORTECH Consulting Inc.

Vost Data Sheet

A12012

Plant: Covanta DYEC		
Plant Location: Courtice, ON	Test Condition: VOLUNTARY	Control Box ID: VOST #3
Test location: APC Outlet No. 1	DGMCF: 1.008	Operator: JG.
Date: JUNE 17, 2021	Barometric Pressure: "Hg	Project No: 22081
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 5A, 5B

L2573966-72

Test 1 Start Time: 0850			Initial Leak Check NDL @ 18 "Hg			Sample ID: 9A 9B	
Test 1 End Time: 0930			Final Leak Check NDL @ 16 "Hg			Lab ID: L2573966-68	
Clock Time	Dry Gas Meter L	PBAR = 29.74 Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	5647.0	132	138	12	17	0.5	2.0
5	5650.2	128	139	11	20	0.4	2.0
10	5652.8	127	140	10	22	0.4	2.0
15	5655.6	128	140	10	22	0.4	2.0
20	5658.2	129	130	10	23	0.4	2.0
25	5661.0	131	138	10	25	0.4	2.0
30	5664.0	136	139	9	24	0.4	2.0
35	5666.3	130	139	9	24	0.4	2.0
40	5668.0	130	135	9	24	0.4	2.0

Test 2 Start Time: 0935			Initial Leak Check NDL @ 16 "Hg			Sample ID: 10A 10B	
Test 2 End Time: 1015			Final Leak Check @ "Hg			Lab ID:	
Clock Time	Dry Gas Meter L	PBAR = 29.74 Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	5669.5	135	139	11	23	0.4	2.0
5	5672.0	136	139	9	23	0.4	2.0
10	5674.6	137	139	8	24	0.4	2.0
15	5677.6	139	139	8	24	0.4	2.0
20	5680.5	131	138	9	25	0.4	2.0
25	5683.1	137	138	7	24	0.4	2.0
30	5686.5	138	139	9	26	0.4	2.0
35	5689.4	138	139	9	26	0.4	2.0
40	5692.2	137	138	10	27	0.4	2.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			A12010
Plant Location: Courtice, ON	Test Condition: VOLUNTARY		Control Box ID: Box #3
Test location: APC Outlet No. 1	DGMCF: 1.008		Operator: JG.
Date: JUNE 17, 22.	Barometric Pressure:	"Hg	Project No: 22081
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak		Field Blank Pair ID: 5A, 5B

L2573966-72

Test 3 Start Time: 1020			Initial Leak Check NDL @ 19 "Hg				Sample ID: 11A 11B
Test 3 End Time: 1100			Final Leak Check NDL @ 19 "Hg				Lab ID: L2573966-70
Clock Time	Dry Gas Meter L	PBAR=29.74 Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	5693.0	130	139	11	25	.40	3.0
5	5696.0	130	139	9	26	.40	3.0
10	5699.3	130	139	9	26	.40	3.0
15	5701.1	132	139	12	27	.40	4.0
20	5703.5	131	139	12	27	.40	6.0
25	5706.2	131	139	9	27	.40	6.0
30	5708.5	131	140	8	27	.40	6.0
35	5712.1	130	140	8	27	.40	6.0
40	5715.3	130	140	8	27	.40	6.0

Test 4 Start Time: 1105			Initial Leak Check NDL @ 19 "Hg				Sample ID: 12A 12B
Test 4 End Time: 1145			Final Leak Check NDL @ 18 "Hg				Lab ID: L2573966-71
Clock Time	Dry Gas Meter L	PBAR=29.73 Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	5716.7	138	139	10	25	.40	3.0
5	5719.0	137	140	8	27	.40	3.0
10	5721.8	139	139	6	26	.40	4.0
15	5725.0	139	139	8	26	.40	4.0
20	5728.0	139	139	8	26	.40	4.0
25	5731.0	139	140	9	26	.40	4.0
30	5734.9	135	139	9	27	.40	4.0
35	5738.9	133	140	8	26	.40	5.0
40	5740.0	136	139	8	28	.40	5.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: M05798
Test location: APC Outlet No. 2	DGMCF: 1,000		Operator: QM
Date: JUNE 17, 2021	Barometric Pressure: "Hg		Project No: 22081
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: L2573966-64 5A/5B	

Test 1 Start Time: 849			Initial Leak Check NDL @ 15 "Hg			Sample ID: 1A, 1B	
Test 1 End Time: 929			Final Leak Check NDL @ 15 "Hg			Lab ID: L2573966-60	
Clock Time	Dry Gas Meter L	PBAR = 29.74 Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	31.4	132	141	18	19	1.1	4
5	33.9	132	142	4	20	1.2	4
10	36.2	132	142	4	22	1.2	4
15	39.0	132	142	4	23	1.2	4
20	41.6	131	141	4	24	1.2	4
25	44.1	131	142	4	25	1.2	4
30	46.7	132	143	4	26	1.2	4.5
35	48.7	131	143	6	26	1.2	5
40	51.3	131	143	6	26	1.2	5

Test 2 Start Time: 934			Initial Leak Check NDL @ 13 "Hg			Sample ID: 2A, 2B	
Test 2 End Time: 1014			Final Leak Check NDL @ 8 "Hg			Lab ID: L2573966-61	
Clock Time	Dry Gas Meter L	PBAR = 29.74 Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	51.7	131	143	11	26	1.2	3.5
5	54.5	131	143	12	27	1.2	4
10	57.0	131	143	12	27	1.2	4
15	60.0	132	143	12	27	1.2	4
20	62.4	132	143	11	27	1.2	4
25	65.0	132	143	10	29	1.2	4
30	68.0	132	143	10	29	1.2	4
35	70.4	132	142	10	29	1.2	4
40	73.0	132	142	10	29	1.2	4

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: M05498
Test location: APC Outlet No. 2	DGMCF: 1.000		Operator: [illegible]
Date: JUNE 17, 202	Barometric Pressure: "Hg		Project No: 22081
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: L2573966 -64 5A/B	

Test 3 Start Time: 1020			Initial Leak Check NDL @ 15 "Hg			Sample ID: 3A/B	
Test 3 End Time: 1100			Final Leak Check NDL @ 8 "Hg			Lab ID: L2573966-62	
Clock Time	Dry Gas Meter L	PBAR=29.74 Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	73.2	131	143	9	29	1.2	3.5
5	75.8	132	142	9	29	1.2	4
10	78.5	132	143	9	29	1.2	4
15	81.3	132	143	8	29	1.2	4
20	84.0	133	143	8	30	1.2	4.5
25	87.3	133	143	8	30	1.2	5
30	89.9	132	142	8	30	1.2	5
35	92.0	132	142	8	30	1.2	5
40	94.5	132	142	8	30	1.2	5

Test 4 Start Time: 1105			Initial Leak Check NDL @ 16 "Hg			Sample ID: 4A/4B	
Test 4 End Time: 1145			Final Leak Check NDL @ 10 "Hg			Lab ID: L2573966-63	
Clock Time	Dry Gas Meter L	PBAR=29.73 Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	95.7	131	143	10	31	1.2	4
5	98.2	131	142	10	30	1.2	4
10	100.7	131	142	9	31	1.2	4.5
15	103.2	132	142	9	31	1.2	4.5
20	105.7	132	142	9	31	1.2	4.5
25	108.1	132	142	9	31	1.2	4.5
30	110.6	133	142	9	31	1.2	4.5
35	113.4	133	142	9	31	1.2	4.5
40	116.1	132	142	9	31	1.2	4.5

APPENDIX 9

Aldehydes Field Data Sheets
(8 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Aldehydes
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H_2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm^3)*
1	1.008	5740.80	5775.00	34.20	29.73	0.40	26.7	34.10	0.0341
2	1.008	5775.60	5812.20	36.60	29.71	0.40	27.5	36.36	0.0364
3	1.008	5812.80	5848.80	36.00	29.70	0.40	28.0	35.70	0.0357

* Dry at 25°C and 1 atmosphere.

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Aldehydes
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H_2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm^3)*
1	1.000	16.40	47.10	30.70	29.73	1.20	30.2	30.08	0.0301
2	1.000	47.20	77.80	30.60	29.71	1.10	32.3	29.74	0.0297
3	1.000	78.40	110.20	31.80	29.70	1.10	33.3	30.79	0.0308

* Dry at 25°C and 1 atmosphere.

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 1
Date:	JUNE 17, 2021
Project No.:	22081

Measuring Device	MII Number
Control Module	VOST#3 A 12060
Barometer	Env Canada

Barometric Pressure: 29.73 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	5740.8	127	138	138	16	20	0.4	2.0
5	5742.9	128	139	133	15	25	0.4	2.0
10	5746.0	131	139	133	15	26	0.4	2.0
15	5748.8	131	139	133	15	26	0.4	2.0
20	5752.6	132	139	135	15	27	0.4	2.0
25	5755.3	130	139	134	12	27	0.4	2.0
30	5758.2	131	139	135	11	27	0.4	2.0
35	5761.0	130	139	135	11	27	0.4	2.0
40	5763.8	132	138	134	11	28	0.4	2.0
45	5767.5	129	139	133	11	28	0.4	2.0
50	5769.12	129	139	134	11	28	0.4	2.0
55	5772.0	130	140	135	11	29	0.4	2.0
60	5775.0	130	140	135	11	29	0.4	2.0

Start Time:	1205		
Finish Time:	1305		
Initial Leak Check:	< .01	Lpm @ 19	" Hg
Final Leak Check:	< .01	Lpm @ 14	" Hg

DGMCF:	total 1.008
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 1
Date:	JUNE 17, 2021
Project No.:	22081

Measuring Device	MII Number
Control Module	Vaisala A1010
Barometer	Env Canada

Barometric Pressure:	29.71	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	5775.6	137	138	117	16	26	0.4	2.0
5	5779.0	136	139	132	17	27	0.4	2.0
10	5783.0	137	138	133	16	27	0.4	2.0
15	5785.0	137	138	133	16	27	0.4	2.0
20	5788.7	140	138	132	16	27	0.4	2.0
25	5791.1	139	138	132	17	28	0.4	2.0
30	5794.1	140	138	133	16	28	0.4	2.0
35	5797.2	140	139	132	16	28	0.4	2.0
40	5800.2	140	139	132	16	28	0.4	2.0
45	5803.1	141	141	134	15	30	0.4	2.0
50	5806.2	136	140	136	15	27	0.4	2.0
55	5809.2	139	140	135	14	28	0.4	2.0
60	5812.2	139	140	136	18	27		

Start Time:	1210		
Finish Time:	1440 1431		
Initial Leak Check:	<.01	Lpm @ 19	" Hg
Final Leak Check:	<.01	Lpm @ 19	" Hg

DGMCF:	1.008
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments: PAUSE @ 145 MIN MARK OR 1355 TO CHECK RUN TIME WITH T2 SVEC. ONE 1416

: sample @ ~0.5 lpm for 60 minutes.

Operator:

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 1
Date:	June 17, 2021
Project No.:	22081

Measuring Device	MII Number
Control Module	Vost#3 A12010.
Barometer	Env Canada

Barometric Pressure: 29.70 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	5812.8	130	141	134	19	27	0.40	2.0
5	5815.9	129	140	133	18	26	0.40	2.0
10	5819.3	130	141	133	18	26	0.40	2.0
15	5822.7	135	141	135	14	28	0.40	2.0
20	5825.2	140	141	134	13	28	0.40	2.0
25	5828.0	140	141	134	12	28	0.40	2.0
30	5831.0	141	141	137	11	28	0.40	2.0
35	5833.9	142	142	139	11	28	0.40	2.0
40	5836.7	140	140	134	11	29	0.40	2.0
45	5839.7	141	142	136	11	29	0.40	2.0
50	5842.4	137	140	136	11	29	0.40	2.0
55	5845.2	135	140	135	11	29	0.40	2.0
60	5848.2	135	140	137	11	29	0.40	2.0

Start Time:	1440
Finish Time:	1540
Initial Leak Check:	<.01 Lpm @ 19 " Hg
Final Leak Check:	<.01 Lpm @ 15 " Hg

DGMCF:	1.008
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: Jay

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 2
Date:	June 17, 2021
Project No.:	22081

Measuring Device	MII Number
Control Module	M05498
Barometer	Env Canada

Barometric Pressure: 29.73 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	16.4	132	142	126	19	28	1.2	2
5	18.9	131	142	126	19	29	1.2	2
10	21.1	132	142	128	19	29	1.2	2
15	23.8	132	142	129	19	29	1.2	2
20	26.3	133	142	129	18	30	1.2	2
25	28.8	133	142	129	18	30	1.2	2
30	32.3	132	142	129	18	30	1.2	2
35	34.3	133	142	129	18	30	1.2	2
40	36.8	133	142	129	18	31	1.2	2
45	39.3	133	142	129	18	31	1.2	2
50	42.0	132	142	129	18	31	1.2	2
55	44.4	132	142	129	18	32	1.2	2
60	47.1	132	142	129	18	32	1.2	2

Start Time:	1215		
Finish Time:	1315		
Initial Leak Check:	<.01	Lpm @ 10	" Hg
Final Leak Check:	<.01	Lpm @ 11	" Hg

DGMCF:	1.000
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: RM

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 2
Date:	JUNE 17, 2021
Project No.:	22081

Measuring Device	MII Number
Control Module	M05498
Barometer	Env Canada

Barometric Pressure: 29.71 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	47.20	142	128	129	19	31	1.1	3
5	49.6	133	143	128	19	31	1.1	3
10	52.2	133	143	130	18	32	1.1	3
15	54.7	133	143	130	18	32	1.1	3
20	57.5	133	143	131	18	32	1.1	3
25	60.0	132	143	130	18	32	1.1	3
30	62.5	133	143	130	18	32	1.1	3
35	65.0	133	143	130	18	33	1.1	3
40	67.1	133	143	130	18	33	1.1	3
45	70.2	133	143	130	18	33	1.1	3
50	72.5	133	143	129	18	33	1.1	3
55	75.3	133	144	131	18	33	1.1	3
60	77.9	133	144	130	18	33	1.1	3

Start Time:	1323		
Finish Time:	1423		
Initial Leak Check:	<0.1	Lpm @ 10	" Hg
Final Leak Check:		Lpm @	" Hg

DGMCF:	1.090
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

1430

: sample @ ~0.5 lpm for 60 minutes.

Operator: KR

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 2
Date:	June 17, 2021
Project No.:	22081

Measuring Device	MII Number
Control Module	M05498
Barometer	Env Canada

Barometric Pressure:	29.70	"Hg

Clock Time	Dry Gas Meter L-794	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	~~79~~	133	143	129	21	33	1.1	3
5	~~80~~.7	133	143	129	20	32	1.1	3
10	~~83~~.8	133	142	129	19	32	1.1	3
15	~~86~~.9	132	142	129	19	32	1.1	3
20	89.1	133	142	128	18	33	1.1	3
25	91.7	133	142	129	19	33	1.1	3
30	94.2	133	142	130	19	34	1.1	3
35	96.7	133	142	130	19	34	1.1	3
40	~~100~~ 99.5	133	142	129	19	34	1.1	3
45	102.2	134	142	130	18	34	1.1	3
50	104.7	133	142	131	17	34	1.1	3
55	107.5	133	142	130	17	34	1.1	3
60	110.2	132	141	131	16	34	1.1	3

Start Time:	1430		
Finish Time:	1530		
Initial Leak Check:	2.01	Lpm @ 10	" Hg
Final Leak Check:		Lpm @	" Hg

DGMCF:	1.000
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

APPENDIX 10

ORTECH Sample Log/Chain of Custody Forms
(9 pages)

ORTECH Consulting Inc. - Sample Log
Particulate and Metals Samples
Covanta

Client: Covanta
Project Number: 22081
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22081-J2774

ORTECH Sample ID 21-22081-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
1	JUNE 15, 21	#1 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
2				Probe Rinse Nitric	0.1N Nitric	Metals
3				Filter	Particulate	Particulate & Metals
4				Impinger 1-4 Solution	Nitric/Peroxide	Metals
5				Impinger 5-6 Solution	Acid. KMnO4	Mercury
6				Impinger 5-6 Rinse	8N HCl	Mercury
7	JUNE 15, 21	#1 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
8				Probe Rinse Nitric	0.1N Nitric	Metals
9				Filter	Particulate	Particulate & Metals
10				Impinger 1-4 Solution	Nitric/Peroxide	Metals
11				Impinger 5-6 Solution	Acid. KMnO4	Mercury
12				Impinger 5-6 Rinse	8N HCl	Mercury
13	JUNE 16, 21	#1 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
14				Probe Rinse Nitric	0.1N Nitric	Metals
15				Filter	Particulate	Particulate & Metals
16				Impinger 1-4 Solution	Nitric/Peroxide	Metals
17				Impinger 5-6 Solution	Acid. KMnO4	Mercury
18				Impinger 5-6 Rinse	8N HCl	Mercury
19	JUNE 16, 21	Blank 1	Blank 1	Probe Rinse Acetone	Acetone	Particulate & Metals
20				Probe Rinse Nitric	0.1N Nitric	Metals
21				Filter	Particulate	Particulate & Metals
22				Impinger 1-4 Solution	Nitric/Peroxide	Metals
23				Impinger 5-6 Solution	Acid. KMnO4	Mercury
24				Impinger 5-6 Rinse	8N HCl	Mercury

ORTECH Consulting Inc. - Sample Log
Particulate and Metals Samples
Covanta

Client: Covanta
Project Number: 22081
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22081-J2774

ORTECH Sample ID 21-22081-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
25	JUNE 15, 21	#2 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
26				Probe Rinse Nitric	0.1N Nitric	Metals
27				Filter	Particulate	Particulate & Metals
28				Impinger 1-4 Solution	Nitric/Peroxide	Metals
29				Impinger 5-6 Solution	Acid. KMnO4	Mercury
30				Impinger 5-6 Rinse	8N HCl	Mercury
31	JUNE 16, 21	#2 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
32				Probe Rinse Nitric	0.1N Nitric	Metals
33				Filter	Particulate	Particulate & Metals
34				Impinger 1-4 Solution	Nitric/Peroxide	Metals
35				Impinger 5-6 Solution	Acid. KMnO4	Mercury
36				Impinger 5-6 Rinse	8N HCl	Mercury
37	JUNE 16, 21	#2 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
38				Probe Rinse Nitric	0.1N Nitric	Metals
39				Filter	Particulate	Particulate & Metals
40				Impinger 1-4 Solution	Nitric/Peroxide	Metals
41				Impinger 5-6 Solution	Acid. KMnO4	Mercury
42				Impinger 5-6 Rinse	8N HCl	Mercury
43	JUNE 16, 21	Blank 2	Blank 2	Probe Rinse Acetone	Acetone	Particulate & Metals
44				Probe Rinse Nitric	0.1N Nitric	Metals
45				Filter	Particulate	Particulate & Metals
46				Impinger 1-4 Solution	Nitric/Peroxide	Metals
47				Impinger 5-6 Solution	Acid. KMnO4	Mercury
48				Impinger 5-6 Rinse	8N HCl	Mercury

Relinquished By: Chris Belore Date: June 17, 2021

Relinquished To: AARON BURTON Date: 17-June-2021 11:15

4.0°C

ORTECH Consulting Inc. - Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 22081
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22081-J2774

ORTECH Sample ID 21-22081-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
1	June 16, 21	1	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
2				PM 2.5 cyclone Rinse	Acetone	Particulate
3				PM 2.5 exit & connectors	Acetone	Particulate
4				Back up filter	filter	Particulate
5				Impinger Soln & rinse	Water	Particulate
6				Secondary Filter	Filter	Particulate*
7				Impinger Rinse	Acetone & Hexane	Particulate
8	June 16, 21	2	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
9				PM 2.5 cyclone Rinse	Acetone	Particulate
10				PM 2.5 exit & connectors	Acetone	Particulate
11				Back up filter	filter	Particulate
12				Impinger Soln & rinse	Water	Particulate
13				Secondary Filter	Filter	Particulate*
14				Impinger Rinse	Acetone & Hexane	Particulate
15	June 16, 21	3	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
16				PM 2.5 cyclone Rinse	Acetone	Particulate
17				PM 2.5 exit & connectors	Acetone	Particulate
18				Back up filter	filter	Particulate
19				Impinger Soln & rinse	Water	Particulate
20				Secondary Filter	Filter	Particulate*
21				Impinger Rinse	Acetone & Hexane	Particulate
22	June 15, 21	1	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
23				PM 2.5 cyclone Rinse	Acetone	Particulate
24				PM 2.5 exit & connectors	Acetone	Particulate
25				Back up filter	filter	Particulate
26				Impinger Soln & rinse	Water	Particulate
27				Secondary Filter	Filter	Particulate*
28				Impinger Rinse	Acetone & Hexane	Particulate
29	June 15, 21	2	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
30				PM 2.5 cyclone Rinse	Acetone	Particulate
31				PM 2.5 exit & connectors	Acetone	Particulate
32				Back up filter	Filter	Particulate
33				Impinger Soln & rinse	Water	Particulate
34				Secondary Filter	Filter	Particulate*
35				Impinger Rinse	Acetone & Hexane	Particulate

Client: Covanta
Job/Report Number: 22081
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22081-J2774

ORTECH Sample ID 21-22081-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
36	June 15, 21	3	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
37				PM 2.5 cyclone Rinse	Acetone	Particulate
38				PM 2.5 exit & connectors	Acetone	Particulate
39				Back up filter	Filter	Particulate
40				Impinger Soln & rinse	Water	Particulate
41				Secondary Filter	Filter	Particulate*
42				Impinger Rinse	Acetone & Hexane	Particulate
43	June 16, 21	Blank	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
44				PM 2.5 cyclone Rinse	Acetone	Particulate
45				PM 2.5 exit & connectors	Acetone	Particulate
46				Back up filter	filter	Particulate
47				Impinger Soln & rinse	Water	Particulate
48				Secondary Filter	Filter	Particulate*
49				Impinger Rinse	Acetone & Hexane	Particulate
50	June 16, 21	Blank	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
51				PM 2.5 cyclone Rinse	Acetone	Particulate
52				PM 2.5 exit & connectors	Acetone	Particulate
53				Back up filter	Filter	Particulate
54				Impinger Soln & rinse	Water	Particulate
55				Secondary Filter	Filter	Particulate*
56				Impinger Rinse	Acetone & Hexane	Particulate

Note: *To be included in condensible particulate analysis as per US EPA Method 202.

Relinquished To: AARON BURTON Date: 17-June-2021 11:54 AM

Relinquished By: Chris Belore Date: June 17, 2021

ORTECH Consulting Inc. - Sample Log

Acid Gases

Covanta

Client: Covanta
Job/Report Number: 22081
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22081-J2774

ORTECH Sample ID 21-22081-M26A-	Sample Date	Location	Sample Description	Media	Initial Volume(ml)	Final Volume(ml)	Sample Analysis
1	JUNE 15, 21	APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	442	HCl, HF & Ammonia
2	↓	APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	417	HCl, HF & Ammonia
3	↓	APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	461	HCl, HF & Ammonia
4	JUNE 16, 21	APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	453	HCl, HF & Ammonia
5	↓	APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	424	HCl, HF & Ammonia
6	↓	APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	421	HCl, HF & Ammonia
Blank 1	↓	APC # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	468	HCl, HF & Ammonia
Blank 2	↓	APC # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	417	HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By: _____ Date: June 17, 2021

Relinquished To: AARON BOLTON Date: 17-June-2021 11:15

4.0°C

ORTECH Consulting Inc. - Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 22081
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: 22081-J2774

ORTECH Sample ID 21-22081 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
1		Test 1 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
2		Test 1 Filter		Particulate	SVOC
3		Test 1 XAD-II Trap		N.A.	SVOC
4		Test 1 Impinger Solution		Ethylene Glycol	SVOC
5		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
6		Test 2 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
7		Test 2 Filter		Particulate	SVOC
8		Test 2 XAD-II Trap		N.A.	SVOC
9		Test 2 Impinger Solution		Ethylene Glycol	SVOC
10		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
11		Test 3 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
12		Test 3 Filter		Particulate	SVOC
13		Test 3 XAD-II Trap		N.A.	SVOC
14		Test 3 Impinger Solution		Ethylene Glycol	SVOC
15		Test 3 Impinger Rinse		Hexane/Acetone	SVOC
16		Blank 1 Probe Rinse	Blank	Hexane/Acetone	SVOC
17		Blank 1 Filter		Particulate	SVOC
18		Blank 1 XAD-II Trap		N.A.	SVOC
19		Blank 1 Impinger Solution		Ethylene Glycol	SVOC
20		Blank 1 Impinger Rinse		Hexane/Acetone	SVOC

Refer to letter dated August 20, 2018 for lists of analytes.

Relinquished To: _____ Date: _____

Relinquished By: _____ Date: _____

ORTECH Consulting Inc. - Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 22081
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: 22081-J2774

ORTECH Sample ID 21-22081 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
21		Test 1 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
22		Test 1 Filter		Particulate	SVOC
23		Test 1 XAD-II Trap		N.A.	SVOC
24		Test 1 Impinger Solution		Ethylene Glycol	SVOC
25		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
26		Test 2 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
27		Test 2 Filter		Particulate	SVOC
28		Test 2 XAD-II Trap		N.A.	SVOC
29		Test 2 Impinger Solution		Ethylene Glycol	SVOC
30		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
31		Test 3 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
32		Test 3 Filter		Particulate	SVOC
33		Test 3 XAD-II Trap		N.A.	SVOC
34		Test 3 Impinger Solution		Ethylene Glycol	SVOC
35		Test 3 Impinger Rinse		Hexane/Acetone	SVOC
36		Blank 2 Probe Rinse	Blank	Hexane/Acetone	SVOC
37		Blank 2 Filter		Particulate	SVOC
38		Blank 2 XAD-II Trap		N.A.	SVOC
39		Blank 2 Impinger Solution		Ethylene Glycol	SVOC
40		Blank 2 Impinger Rinse		Hexane/Acetone	SVOC

Refer to letter dated August 20, 2018 for lists of analytes.

Relinquished To: _____ Date: _____

Relinquished By: _____ Date: _____

ORTECH Consulting Inc. - Sample Log
VOCs

Client: Covanta
Project Number: 22081
Received By: C Belore
Job Assigned To: ALS
Quote / PO : 22081-J2774

L2604250-COFC

Test Location	Test Number	ORTECH Sample ID 21-22081-VOST-	Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	1 A,B	June 17, 2021	Tenax and Tenax/Charcoal	VOCs 1
	2	2 A,B		Tenax and Tenax/Charcoal	VOCs 2
	3	3 A,B		Tenax and Tenax/Charcoal	VOCs 3
	4	4 A,B		Tenax and Tenax/Charcoal	archive 4
	Field Blank	5A,B		Tenax and Tenax/Charcoal	VOCs 5
	Combined Condesate			Archived @ ORTECH	
# 2 APC Outlet	1	9 A,B	June 17, 2021	Tenax and Tenax/Charcoal	VOCs 6
	2	10 A,B		Tenax and Tenax/Charcoal	VOCs 7
	3	11 A,B		Tenax and Tenax/Charcoal	archive 8
	4	12 A,B		Tenax and Tenax/Charcoal	VOCs 9
	Field Blank	13 A,B		Tenax and Tenax/Charcoal	VOCs 10
	Trip Blank	15A,B		Tenax and Tenax/Charcoal	VOCs 11
	Combined Condesate			Archived @ ORTECH	

Refer to letter dated April 5, 2021 for lists of analytes.

Custody Relinquished by: [signature] Date: June 21, 21

Custody Received by: Aaron Barton Date: 21-June-2021

10:50 8.9°C

ORTECH Consulting Inc. - Recovery & Sample Log
NCASI Method ISS/FP-A105.01

Client: Covanata DYEC
Job/Report Number: 22081
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22081-J2774

L2604313-COFC

Test Number	Test Location	ORTECH Sample ID 21-22081-	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle (g)	Initial Weight Sample Bottle + BHA (g)	Final Weight of BHA Sample Bottle (g)	Weight of Sample Bottle BHA & H2O (g)	Weight of Sample Bottle BHA & H2O & Hexane (g)
1	APC Outlet #1	ALD-1	JUNE 17,21	ALD-1	110.9	159.6	161.3	175.1	180.7
2	APC Outlet #1	ALD-2	|	ALD-2	111.0	160.8	163.0	173.0	178.6
3	APC Outlet #1	ALD-3	|	ALD-3	110.8	163.7	166.1	177.2	184.3
Blank 1	APC Outlet #1	Blank 1	|	ALD-4	111.3	162.0	161.9	172.6	180.8
1	APC Outlet #2	ALD-5	|	ALD-5	110.9	158.6	159.5	174.2	180.5
2	APC Outlet #2	ALD-6	|	ALD-6	111.1	161.2	162.2	176.2	182.9
3	APC Outlet #2	ALD-7	|	ALD-7	110.6	161.2	162.6	176.1	185.9
Blank 2	APC Outlet #2	Blank 2	V	ALD-8	110.6	160.4	160.3	170.4	176.2
				-9	110.5	159.3			
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				-10	110.4	160.4			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: [signature] Date: June 21, 21

Relinquished to: AARON BURTON Date: 21-June-2021 10:50

8.9°C

APPENDIX 11

Particulate and Metals Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 15, 21
Test No.: 1
Test Location: UNIT 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	376.0
Total TS1:	94.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.5
After 0.1N HNO_3 Rinse:	396.5
Total TS2:	115.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: Q29198

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	21-22081-PM-
TS1 (Probe Rinse-Acetone)	1
TS2 (Probe Rinse-0.1N HNO_3)	2
TS3 (Filter)	3
TS4 (Impinger 1-4 Sol'n-HNO_3)	4
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	5
TS5-B (Impinger 5,6 Rinse-HCl)	6

Train Loaded By: Jake Archbold DM
Train Recovered By: DT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	622.6
Final Wt:	841.0
1 Gain:	218.4
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	~~664.1~~ 1660.6
Initial Wt:	768.1
Final Wt:	948.0
2 Gain:	179.9
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	664.0
Initial Wt:	772.0
Final Wt:	818.0
3 Gain:	46.0
Colour:	clear

Impinger #4 Empty	
Empty Wt:	599.0
Final Wt:	601.0
4 Gain:	2.0
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	399.0
w/ Imp. 1-4 Soln:	1052.5
After HNO_3 Rinse:	1166.0
Total TS4:	767.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	671.5
Initial Wt:	~~787.9~~
Final Wt:	795.5
5 Gain:	7.6
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	~~660.7~~ 665.1
Initial Wt:	782.4
Final Wt:	786.0
6 Gain:	3.6
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	401.0
With Imp. 5&6 Soln:	637.5
After $KMnO_4$ Rinse:	793.7
After100g H_2O Rinse:	858.0
Total TS5-A:	457.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.5
With 150 mL DI H_2O:	431.5
After HCl Rinse:	474.0
After DI H_2O Rinse:	646.0
Total TS5-B:	364.5

MARK FLUID LEVEL
SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 457.5 ✓

WCBDA= 7: 23.3

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	966.7
Final Wt:	990.0
7 Gain:	23.3

Impinger Box ID: 1

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 15, 21
Test No.: 2
Test Location: UNIT 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	281.0
After Act. Rinse:	395.0
Total TS1:	114.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.5
After 0.1N HNO_3 Rinse:	388.5
Total TS2:	106.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: OZ 8195

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	611.7
Final Wt:	830.0
1 Gain:	218.7
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	642.4
Initial Wt:	742.1
Final Wt:	911.6
2 Gain:	169.5
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	658.5
Initial Wt:	770.7
Final Wt:	905.5
3 Gain:	134.8
Colour:	clear

Impinger #4 Empty	
Empty Wt:	588.6
Final Wt:	597.5
4 Gain:	8.9
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	401.0
w/ Imp. 1-4 Soln:	1132.6
After HNO_3 Rinse:	1249.5
Total TS4:	848.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	674.4
Initial Wt:	785.4
Final Wt:	798.0
5 Gain:	12.6
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	679.6
Initial Wt:	768.3
Final Wt:	776.0
6 Gain:	8.7
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	400.0
With Imp. 5&6 Soln:	643.5
After $KMnO_4$ Rinse:	763.3
After100g H_2O Rinse:	865.3
Total TS5-A:	465.3

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.5
With 150 mL DI H_2O:	431.5
After HCl Rinse:	455.5
After DI H_2O Rinse:	~~580.5~~ 601.5
Total TS5-B:	320.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	955.1
Final Wt:	986.5
7 Gain:	31.4

Impinger Box ID: 7

SAMPLE IDENTIFICATION	21-22081-PM-
TS1 (Probe Rinse-Acetone)	7
TS2 (Probe Rinse-0.1N HNO_3)	8
TS3 (Filter)	9
TS4 (Impinger 1-4 Sol'n-HNO_3)	10
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	11
TS5-B (Impinger 5,6 Rinse-HCl)	12

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 533.2 ✓

WCBDA= 7: 31.4

Train Loaded By: Jake A. Libell
Train Recovered By: DT

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 16, 21
Test No.: 3
Test Location: V. 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	447.0
Total TS1:	165.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.0
After 0.1N HNO_3 Rinse:	399.5
Total TS2:	118.5

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: Q28180

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	21-22081-PM-
TS1 (Probe Rinse-Acetone)	13
TS2 (Probe Rinse-0.1N HNO_3)	14
TS3 (Filter)	15
TS4 (Impinger 1-4 Sol'n-HNO_3)	16
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	17
TS5-B (Impinger 5,6 Rinse-HCl)	18

Train Loaded By: DT
Train Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	616.0
Final Wt:	743.5
1 Gain:	127.5
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	643.3
Initial Wt:	753.7
Final Wt:	954.7
2 Gain:	201.0
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	660.0
Initial Wt:	768.5
Final Wt:	874.0
3 Gain:	105.5
Colour:	clear

Impinger #4 Empty	
Empty Wt:	589.6
Final Wt:	597.6
4 Gain:	8.0
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	431.7
w/ Imp. 1-4 Soln:	1089.3
After HNO_3 Rinse:	1214.0
Total TS4:	782.3

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	617.0
Initial Wt:	787.7
Final Wt:	807.4
5 Gain:	19.7
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	652.0
Initial Wt:	770.0
Final Wt:	785.0
6 Gain:	15.0
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	424.0
With Imp. 5&6 Soln:	695.2
After $KMnO_4$ Rinse:	807.4
After100g H_2O Rinse:	911.0
Total TS5-A:	487.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.0
With 150 mL DI H_2O:	434.5
After HCl Rinse:	484.5
After DI H_2O Rinse:	662.0
Total TS5-B:	379

MARK FLUID LEVEL
SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	476.7
WCBDA= 7:	22.0

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	909.5
Final Wt:	931.5
7 Gain:	22.0

Impinger Box ID: 7

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 13, 21
Test No.: 1
Test Location: UNIT 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	281.0
After Act. Rinse:	480.5
Total TS1:	199.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.5
After 0.1N HNO_3 Rinse:	490.5
Total TS2:	209.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 028197

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	21-22081-PM-
TS1 (Probe Rinse-Acetone)	25
TS2 (Probe Rinse-0.1N HNO_3)	26
TS3 (Filter)	27
TS4 (Impinger 1-4 Sol'n-HNO_3)	28
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	29
TS5-B (Impinger 5,6 Rinse-HCl)	30

Train Loaded By: DT
Train Recovered By: DT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	629.5
Final Wt:	883.9
1 Gain:	254.4
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	661.0
Initial Wt:	773.5
Final Wt:	941.0
2 Gain:	167.5
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	665.0
Initial Wt:	763.0
Final Wt:	791.0
3 Gain:	28
Colour:	clear

Impinger #4 Empty	
Empty Wt:	600.5
Final Wt:	601.5
4 Gain:	1.0
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	401.0
w/ Imp. 1-4 Soln:	~~785.0~~ 1058.5
After HNO_3 Rinse:	1123.0
Total TS4:	722.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	674.5
Initial Wt:	784.5
Final Wt:	796.2
5 Gain:	1.7
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	668.2
Initial Wt:	786.3
Final Wt:	796.6
6 Gain:	0.3
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	401.0
With Imp. 5&6 Soln:	633.0
After $KMnO_4$ Rinse:	748.1
After100g H_2O Rinse:	854.5
Total TS5-A:	444.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.5
With 150 mL DI H_2O:	436.0
After HCl Rinse:	472.2
After DI H_2O Rinse:	695.5
Total TS5-B:	412.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 482.9 ✓

WCBDA= 7: 22.0

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	989.7
Final Wt:	1011.7
7 Gain:	22.0

Impinger Box ID: 1

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 16, 24
Test No.: 2
Test Location: U2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	291.0
After Act. Rinse:	369.0
Total TS1:	78.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	291.5
After 0.1N HNO_3 Rinse:	369.0
Total TS2:	87.5

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: QZ 28198

CONTAINER TS3

Initial Wt:	0
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	613.3
Final Wt:	739.3
1 Gain:	126.0
Colour:	Clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	643.9
Initial Wt:	741.0
Final Wt:	903.0
2 Gain:	162.0
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	659.5
Initial Wt:	795.5
Final Wt:	932.3
3 Gain:	136.8
Colour:	clear

Impinger #4 Empty	
Empty Wt:	589.0
Final Wt:	599.7
4 Gain:	10.7
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	401.0
w/ Imp. 1-4 Soln:	1043.2
After HNO_3 Rinse:	1131.7
Total TS4:	730.7

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	677.6
Initial Wt:	789.0
Final Wt:	809.3
5 Gain:	19.3
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	651.6
Initial Wt:	770.0
Final Wt:	780.5
6 Gain:	10.5
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	400.2
With Imp. 5&6 Soln:	846.6
After $KMnO_4$ Rinse:	766.4
After100g H_2O Rinse:	867.0
Total TS5-A:	766.8

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.7
With 150 mL DI H_2O:	432.8
After HCl Rinse:	470.9
After DI H_2O Rinse:	625.7
Total TS5-B:	344.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	885.7
Final Wt:	909.5
7 Gain:	23.8

Impinger Box ID: 7

SAMPLE IDENTIFICATION	21-22081-PM-
TS1 (Probe Rinse-Acetone)	31
TS2 (Probe Rinse-0.1N HNO_3)	32
TS3 (Filter)	33
TS4 (Impinger 1-4 Sol'n-HNO_3)	34
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	35
TS5-B (Impinger 5,6 Rinse-HCl)	36

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	465.3 ✓
WCBDA= 7:	23.8

Train Loaded By: DT
Train Recovered By: DT

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 16, 21
Test No.: 3
Test Location: U2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.0
After Act. Rinse:	413.5
Total TS1:	133.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.0
After 0.1N HNO_3 Rinse:	383.5
Total TS2:	102.5

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 228199

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	623.0
Final Wt:	911.8
1 Gain:	288.8
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	665.0
Initial Wt:	776.5
Final Wt:	953.5
2 Gain:	177.0
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	661.5
Initial Wt:	762.0
Final Wt:	815.3
3 Gain:	53.3
Colour:	clear

Impinger #4 Empty	
Empty Wt:	600.0
Final Wt:	602.5
4 Gain:	2.5
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	923.4
w/ Imp. 1-4 Soln:	1152.1
After HNO_3 Rinse:	1258.0
Total TS4:	334.6

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	673.0
Initial Wt:	780.7
Final Wt:	784.6
5 Gain:	3.9
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	666.5
Initial Wt:	791.0
Final Wt:	791.5
6 Gain:	0.5
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A

Empty Wt:	422.5
With Imp. 5&6 Soln:	656.7
After $KMnO_4$ Rinse:	767.3
After100g H_2O Rinse:	867.5
Total TS5-A:	445.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B

Empty Wt:	282.5
With 150 mL DI H_2O:	432.5
After HCl Rinse:	470.8
After DI H_2O Rinse:	673.5
Total TS5-B:	391.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	965.0
Final Wt:	987.9
7 Gain:	22.9

Impinger Box ID: 1

SAMPLE IDENTIFICATION	21-22081-PM-
TS1 (Probe Rinse-Acetone)	37
TS2 (Probe Rinse-0.1N HNO_3)	38
TS3 (Filter)	39
TS4 (Impinger 1-4 Sol'n-HNO_3)	40
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	41
TS5-B (Impinger 5,6 Rinse-HCl)	42

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 526.0 ✓

WCBDA= 7: 22.9

Train Loaded By: DT
Train Recovered By: DT

ORTECH Consulting Inc.

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 16, 21
Test No.:
Test Location: BLANK

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	503.5
Total TS1:	221.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.0
After 0.1N HNO_3 Rinse:	590.0
Total TS2:	309.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 22.8181

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	21-22081-PM-
TS1 (Probe Rinse-Acetone)	19
TS2 (Probe Rinse-0.1N HNO_3)	20
TS3 (Filter)	21
TS4 (Impinger 1-4 Sol'n-HNO_3)	22
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	23
TS5-B (Impinger 5,6 Rinse-HCl)	24

Train Loaded By: DT
Train Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Empty	
Empty Wt:	
Final Wt:	
4 Gain:	
Colour:	

CONTAINER TS4 WEIGHTS	
Empty Wt:	400.0
w/ Imp. 1-4 Soln:	607.3
After HNO_3 Rinse:	708.5
Total TS4:	308.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
5 Gain:	
Colour:	

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	401.0
With Imp. 5&6 Soln:	629.0
After $KMnO_4$ Rinse:	751.7
After100g H_2O Rinse:	851.5
Total TS5-A:	450.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.5
With 150 mL DI H_2O:	432.5
After HCl Rinse:	470.4
After DI H_2O Rinse:	625.5
Total TS5-B:	343.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:

WCBDA= 7:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 16, 21
Test No.:
Test Location: BLANK 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	283.0
After Act. Rinse:	421.5
Total TS1:	198.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.0
After 0.1N HNO_3 Rinse:	518.0
Total TS2:	235.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: BZ9182

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	21-22081-PM-
TS1 (Probe Rinse-Acetone)	43
TS2 (Probe Rinse-0.1N HNO_3)	44
TS3 (Filter)	45
TS4 (Impinger 1-4 Sol'n-HNO_3)	46
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	47
TS5-B (Impinger 5,6 Rinse-HCl)	48

Train Loaded By:
Train Recovered By: AT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Empty	
Empty Wt:	
Final Wt:	
4 Gain:	
Colour:	

CONTAINER TS4 WEIGHTS	
Empty Wt:	490.0
w/ Imp. 1-4 Soln:	610.6
After HNO_3 Rinse:	912.0
Total TS4:	312.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
5 Gain:	
Colour:	

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	427.5
With Imp. 5&6 Soln:	659.3
After $KMnO_4$ Rinse:	771.5
After100g H_2O Rinse:	972.0
Total TS5-A:	444.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.0
With 150 mL DI H_2O:	432.0
After HCl Rinse:	778.5
After DI H_2O Rinse:	625.0
Total TS5-B:	343.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:

WCBDA= 7:

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

APPENDIX 12

Inorganics Analytical Reports
(32 pages)

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2602503		Mississauga, ON L5J 2Y4
Date of Report	5-Jul-21		Canada
Date of Sample Receipt	17-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 5 (TPH 29-Jun-21)

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Account Manager

Results in this certificate relate only to the samples as submitted to the laboratory.

This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1		21-22081-PM-(7 THRU 12) #1 APC OUTLET TEST#2		21-22081-PM-(13 THRU 18) #1 APC OUTLET TEST#3	21-22081-PM-(19 THRU 24) BLANK#1	21-22081-PM-(25 THRU 30) #2 APC OUTLET TEST#1	
ALS Sample ID		L2602503-1		L2602503-2		L2602503-3	L2602503-4	L2602503-5	
Matrix		Stack		Stack		Stack	Stack	Stack	
Analysis type		Sample		Sample		Sample	Sample	Sample	
Sampling Date/Time		15-Jun-21		15-Jun-21		16-Jun-21	16-Jun-21	15-Jun-21	
Date of Receipt		17-Jun-21		17-Jun-21		17-Jun-21	17-Jun-21	17-Jun-21	
PM via Gravimetric Analysis Method 5	**LOR**								
	mg	**mg**		**mg**		**mg**	**mg**	**mg**	
Filter Particulate Matter	0.8	0.7	J	0.3	J	1.8	3.3	0.3	J
Acetone Particulate Matter	0.4	2.2		2.1		3.7	<0.1	1.0	
	g	**g**		**g**		**g**	**g**	**g**	
Acetone Mass	0.02	90.5		111		164	221	195	

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-PM-(31 THRU 36) #2 APC OUTLET TEST#2		21-22081-PM-(37 THRU 42) #2 APC OUTLET TEST#3		21-22081-PM-(43 THRU 48) BLANK#2		MB	
ALS Sample ID		L2602503-6		L2602503-7		L2602503-8		L2602503-MB	
Matrix		Stack		Stack		Stack		n/a	
Analysis type		Sample		Sample		Sample		Sample	
Sampling Date/Time		16-Jun-21		16-Jun-21		16-Jun-21		n/a	
Date of Receipt		17-Jun-21		17-Jun-21		17-Jun-21		n/a	
PM via Gravimetric Analysis	**LOR**								
Method 5	**mg**	**mg**		**mg**		**mg**		**mg**	
Filter Particulate Matter	0.8	<0.1		0.2	J	0.5	J	0.2	J
Acetone Particulate Matter	0.4	1.3		0.6		<0.1		<0.1	
	g	**g**		**g**		**g**		**g**	
Acetone Mass	0.02	76.4		130		198		31.0	

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2603027		Mississauga, ON L5J 2Y4
Date of Report	9-Jul-21		Canada
Date of Sample Receipt	17-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 201 (TPH 08-JUL-2021)
Sample Particulate Analysis via Gravimetric USEPA Method 202 (TPH 09-JUL-2021)

ANALYST COMMENTS:

47mm filter samples show evidence of damage around the non-sampled areas (i.e. the edges). Filter data may show a potential low bias. **PE 9-Jul-21**

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Project Manager

Results in this certificate relate only to the samples as submitted to the laboratory.

This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-M201A-1 TEST#1 APC OUTLET #1		21-22081-M201A-2 TEST#1 APC OUTLET #1		21-22081-M201A-3 TEST#1 APC OUTLET #1	21-22081-M201A-4 TEST#1 APC OUTLET #1		21-22081-M201A-(5-7) TEST#1 APC OUTLET #1
ALS Sample ID		L2603027-1		L2603027-2		L2603027-3	L2603027-4		L2603027-5
Matrix		Stack		Stack		Stack	Stack		Stack
Analysis type		Sample		Sample		Sample	Sample		Sample
Sampling Date/Time		16-Jun-21		16-Jun-21		16-Jun-21	16-Jun-21		16-Jun-21
Date of Receipt		17-Jun-21		17-Jun-21		17-Jun-21	17-Jun-21		17-Jun-21
PM via Gravimetric Analysis Method 201	**LOR**								
	mg	**mg**		**mg**		**mg**	**mg**		**mg**
Filter Particulate Matter	0.8	-		-		-	0.4	J	-
Acetone Particulate Matter	0.4	1.6		0.3	J	0.5	-		-
	g	**g**		**g**		**g**	**g**		**g**
Acetone Mass	0.02	45.1		40.2		20.9	-		-
PM via Gravimetric Analysis Method 202	**LOR**								
	mg	**mg**		**mg**		**mg**	**mg**		**mg**
Extractable Condensable Particulates	0.4	-		-		-	-		3.3
Non-Extractable Condensable Particulates	0.4	-		-		-	-		3.8
	g	**g**		**g**		**g**	**g**		**g**
Water Mass	0.02	-		-		-	-		218

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-M201A-8 TEST#2 APC OUTLET #1		21-22081-M201A-9 TEST#2 APC OUTLET #1		21-22081-M201A-10 TEST#2 APC OUTLET #1	21-22081-M201A-11 TEST#2 APC OUTLET #1	21-22081-M201A-(12-14) TEST#2 APC OUTLET #1
ALS Sample ID		L2603027-6		L2603027-7		L2603027-8	L2603027-9	L2603027-10
Matrix		Stack		Stack		Stack	Stack	Stack
Analysis type		Sample		Sample		Sample	Sample	Sample
Sampling Date/Time		16-Jun-21		16-Jun-21		16-Jun-21	16-Jun-21	16-Jun-21
Date of Receipt		17-Jun-21		17-Jun-21		17-Jun-21	17-Jun-21	17-Jun-21
PM via Gravimetric Analysis Method 201	**LOR**							
	mg	**mg**		**mg**		**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-		-		-	<0.1	-
Acetone Particulate Matter	0.4	0.5		0.2	J	<0.1	-	-
	g	**g**		**g**		**g**	**g**	**g**
Acetone Mass	0.02	37.8		35.9		17.7	-	-
PM via Gravimetric Analysis Method 202	**LOR**							
	mg	**mg**		**mg**		**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-		-		-	-	3.2
Non-Extractable Condensable Particulates	0.4	-		-		-	-	2.7
	g	**g**		**g**		**g**	**g**	**g**
Water Mass	0.02	-		-		-	-	199

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-M201A-15 TEST#3 APC OUTLET #1	21-22081-M201A-16 TEST#3 APC OUTLET #1		21-22081-M201A-17 TEST#3 APC OUTLET #1	21-22081-M201A-18 TEST#3 APC OUTLET #1	21-22081-M201A-(19-21) TEST#3 APC OUTLET #1
ALS Sample ID		L2603027-11	L2603027-12		L2603027-13	L2603027-14	L2603027-15
Matrix		Stack	Stack		Stack	Stack	Stack
Analysis type		Sample	Sample		Sample	Sample	Sample
Sampling Date/Time		16-Jun-21	16-Jun-21		16-Jun-21	16-Jun-21	16-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21		17-Jun-21	17-Jun-21	17-Jun-21
PM via Gravimetric Analysis	**LOR**						
Method 201	**mg**	**mg**	**mg**		**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-		-	<0.1	-
Acetone Particulate Matter	0.4	0.5	0.2	J	<0.1	-	-
	g	**g**	**g**		**g**	**g**	**g**
Acetone Mass	0.02	67.8	51.2		17	-	-
PM via Gravimetric Analysis	**LOR**						
Method 202	**mg**	**mg**	**mg**		**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-		-	-	2.8
Non-Extractable Condensable Particulates	0.4	-	-		-	-	3.1
	g	**g**	**g**		**g**	**g**	**g**
Water Mass	0.02	-	-		-	-	255

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-M201A-22 TEST#1 APC OUTLET #2	21-22081-M201A-23 TEST#1 APC OUTLET #2	21-22081-M201A-24 TEST#1 APC OUTLET #2	21-22081-M201A-25 TEST#1 APC OUTLET #2	21-22081-M201A-(26-28) TEST#1 APC OUTLET #2
ALS Sample ID		L2603027-16	L2603027-17	L2603027-18	L2603027-19	L2603027-20
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
PM via Gravimetric Analysis Method 201	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	0.3 J	-
Acetone Particulate Matter	0.4	0.3 J	0.4	0.4	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	29.9	24.6	17.0	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	2.8
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.0
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	197

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-M201A-29 TEST#2 APC OUTLET #2	21-22081-M201A-30 TEST#2 APC OUTLET #2	21-22081-M201A-31 TEST#2 APC OUTLET #2	21-22081-M201A-32 TEST#2 APC OUTLET #2	21-22081-M201A-(33-35) TEST#2 APC OUTLET #2
ALS Sample ID		L2603027-21	L2603027-22	L2603027-23	L2603027-24	L2603027-25
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
PM via Gravimetric Analysis Method 201	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.1 J	0.1 J	<0.1	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	34.1	23.2	14.2	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	3.8
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.1
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	226

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-M201A-36 TEST#3 APC OUTLET #2	21-22081-M201A-37 TEST#3 APC OUTLET #2	21-22081-M201A-38 TEST#3 APC OUTLET #2	21-22081-M201A-39 TEST#3 APC OUTLET #2	21-22081-M201A-(40-42) TEST#3 APC OUTLET #2
ALS Sample ID		L2603027-26	L2603027-27	L2603027-28	L2603027-29	L2603027-30
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
PM via Gravimetric Analysis Method 201	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	<0.1	<0.1	<0.1	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	39.0	35.5	24.4	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	4.5
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.2
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	217

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-M201A-43 BLANK APC OUTLET #1		21-22081-M201A-44 BLANK APC OUTLET #1		21-22081-M201A-45 BLANK APC OUTLET #1	21-22081-M201A-46 BLANK APC OUTLET #1		21-22081-M201A-(47-49) BLANK APC OUTLET #1
ALS Sample ID		L2603027-31		L2603027-32		L2603027-33	L2603027-34		L2603027-35
Matrix		Stack		Stack		Stack	Stack		Stack
Analysis type		Sample		Sample		Sample	Sample		Sample
Sampling Date/Time		16-Jun-21		16-Jun-21		16-Jun-21	16-Jun-21		16-Jun-21
Date of Receipt		17-Jun-21		17-Jun-21		17-Jun-21	17-Jun-21		17-Jun-21
PM via Gravimetric Analysis Method 201	LOR								
	mg	mg		mg		mg	mg		mg
Filter Particulate Matter	0.8	-		-		-	0.3	J	-
Acetone Particulate Matter	0.4	0.2	J	0.2	J	<0.1	-		-
	g	g		g		g	g		g
Acetone Mass	0.02	33.5		38.9		43.6	-		-
PM via Gravimetric Analysis Method 202	LOR								
	mg	mg		mg		mg	mg		mg
Extractable Condensable Particulates	0.4	-		-		-	-		1.3
Non-Extractable Condensable Particulates	0.4	-		-		-	-		0.6
	g	g		g		g	g		g
Water Mass	0.02	-		-		-	-		251

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-M201A-50 BLANK APC OUTLET #2	21-22081-M201A-51 BLANK APC OUTLET #2	21-22081-M201A-52 BLANK APC OUTLET #2	21-22081-M201A-53 BLANK APC OUTLET #2	21-22081-M201A-(54-56) BLANK APC OUTLET #2
ALS Sample ID		L2603027-36	L2603027-37	L2603027-38	L2603027-39	L2603027-40
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
PM via Gravimetric Analysis Method 201	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	0.5 J	-
Acetone Particulate Matter	0.4	0.6	0.4	0.2 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	49.3	41.1	44.4	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	1.0
Non-Extractable Condensable Particulates	0.4	-	-	-	-	0.5
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	149

ALS Environmental

Sample Analysis Summary Report

Sample Name		MB1		MB2
ALS Sample ID		L2603027-MB1		L2603027-MB2
Matrix		n/a		n/a
Analysis type		Sample		Sample
Sampling Date/Time		n/a		n/a
Date of Receipt		n/a		n/a
PM via Gravimetric Analysis Method 201	**LOR**			
	mg	**mg**		**mg**
Filter Particulate Matter	0.8	0.4	J	-
Acetone Particulate Matter	0.4	<0.1		<0.1
	g	**g**		**g**
Acetone Mass	0.02	31.7		32.0
PM via Gravimetric Analysis Method 202	**LOR**			
	mg	**mg**		**mg**
Extractable Condensable Particulates	0.4	0.2	J	-
Non-Extractable Condensable Particulates	0.4	0.1	J	-
	g	**g**		**g**
Water Mass	0.02	201		-

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2602779		Mississauga, ON L5J 2Y4
Date of Report	30-Jun-21		Canada
Date of Sample Receipt	17-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS:

Cl as HCl Anion Analyzed via Ion Chromatography USEPA Method 26/26A (GN 23-Jun-21)
F as HF Anion Analyzed via Ion Chromatography USEPA Method 26/26A (GN 23-Jun-21)
Ammonia, Total (as NH_3) via Ion Chromatography USEPA Method CTM-027 (GN 22-Jun-21)

LOR = Limit of Reporting
MB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: 90-110%)
MS = Matrix Spike Sample (limits: 90-110%, NH_3: 85-115%)
RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)

Certified by: L. Wrona

Lynne Wrona
Account Manager

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Environmental

Sample Analysis Summary Report

Sample Name	21-22081-M26A-1 APC OUTLET #1	21-22081-M26A-2 APC OUTLET #1	21-22081-M26A-3 APC OUTLET #1	21-22081-M26A-4 APC OUTLET #2	21-22081-M26A-5 APC OUTLET #2
ALS Sample ID	L2602779-1	L2602779-2	L2602779-3	L2602779-4	L2602779-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	15-Jun-21	15-Jun-21	15-Jun-21	16-Jun-21	16-Jun-21
Date of Receipt	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.153	<0.146	<0.160	<0.156	<0.146
Analysis 1	<0.153	<0.146	<0.160	<0.156	<0.146
Analysis 2	<0.153	<0.146	<0.160	<0.156	<0.146
Total Cl^- as HCl (ave)	4.23	5.16	4.48	5.02	4.99
Analysis 1	4.23	5.17	4.48	5.03	5.00
Analysis 2	4.23	5.15	4.48	5.01	4.99
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**mg**	**mg**
Total Ammonia as NH_3	3.05	2.30	1.95	1.32	1.10

ALS Environmental

Sample Analysis Summary Report

Sample Name	21-22081-M26A-6 APC OUTLET #2	21-22081-M26A-BLANK1 APC OUTLET #1	21-22081-M26A-BLANK2 APC OUTLET #2
ALS Sample ID	L2602779-6	L2602779-7	L2602779-8
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	16-Jun-21	16-Jun-21	16-Jun-21
Date of Receipt	17-Jun-21	17-Jun-21	17-Jun-21
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.146	<0.161	<0.145
Analysis 1	<0.146	<0.161	<0.145
Analysis 2	<0.146	<0.161	<0.145
Total Cl^- as HCl (ave)	4.86	<0.236	<0.212
Analysis 1	4.87	<0.236	<0.212
Analysis 2	4.86	<0.236	<0.212
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**
Total Ammonia as NH_3	0.932	<0.222	<0.198

ALS Environmental

Sample QC Summary Report

Sample Name	MB	LCS	LCS
ALS Sample ID	MB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	n/a	n/a	n/a
Date of Receipt	n/a	n/a	n/a
Ion Chromatography Analysis			
USEPA Method 26/26A	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	0.00785	0.0616	102%
Analysis 1	0.00790	0.0616	
Analysis 2	0.00780	0.0615	
Total Cl^- as HCl (ave)	0.00325	0.0785	98%
Analysis 1	0.00332	0.0787	
Analysis 2	0.00319	0.0783	
Ion Chromatography Analysis			
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	<0.0472	1.04	110%

ALS Environmental

Sample QC Summary Report

Sample Name	21-22081-M26A-1 APC OUTLET #1	21-22081-M26A-1 APC OUTLET #1	21-22081-M26A-1 APC OUTLET #1	21-22081-M26A-1 APC OUTLET #1
ALS Sample ID	L2602779-1	L2602779-1DUP	L2602779-1MS	L2602779-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
Date of Receipt	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	<0.153	<0.153	4.90	98%
Analysis 1	<0.153	<0.153	4.90	
Analysis 2	<0.153	<0.153	4.90	
Total Cl^- as HCl (ave)	4.23	4.19	11.8	105%
Analysis 1	4.23	4.20	11.8	
Analysis 2	4.23	4.19	11.8	
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	3.05	2.99	7.20	99%

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2602503		Mississauga, ON L5J 2Y4
Date of Report	14-Jul-21		Canada
Date of Sample Receipt	17-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS:

Sample Preparation via USEPA Method 29 (TP 08-Jul-2021)
Mercury Analysis via CVAA using Method USEPA 7470A (GN 11,12-Jul-2021)

LOR = Limit of Reporting
LCB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: hivol, solids: 85-115%, stack: 90-110%)
MS = Matrix Spike Sample (limits: 75-125%)
RPD = Relative Percent Difference (limits: <20%)
CCV/CVS = Calibration Verification Standard (limits: 85-115%)

Certified by: L. Wrona

Lynne Wrona
Account Manager

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Environmental

Sample Analysis Summary Report

Sample Name			21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(7 THRU 12) #1 APC OUTLET TEST#2	21-22081-PM-(13 THRU 18) #1 APC OUTLET TEST#3	21-22081-PM-(19 THRU 24) BLANK#1	21-22081-PM-(25 THRU 30) #2 APC OUTLET TEST#1
ALS Sample ID			L2602503-1	L2602503-2	L2602503-3	L2602503-4	L2602503-5
Matrix			Stack	Stack	Stack	Stack	Stack
Analysis type			Sample	Sample	Sample	Sample	Sample
Sampling Date/Time			15-Jun-21	15-Jun-21	16-Jun-21	16-Jun-21	15-Jun-21
Date of Receipt			17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
Mercury via CVAA		**LOR**					
	Method 29	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
	Analytical Fraction 1B	0.015	<0.015	<0.015	<0.015	<0.015	<0.015
	Analytical Fraction 2B	0.050	0.403	<0.42	<0.385	<0.15	0.362
	Analytical Fraction 3B	0.025	<0.03	<0.03	<0.03	<0.03	<0.03
	Analytical Fraction 3C	0.25	<0.25	<0.25	<0.25	<0.25	<0.25

ALS Environmental

Sample Analysis Summary Report

Sample Name			21-22081-PM-(31 THRU 36) #2 APC OUTLET TEST#2	21-22081-PM-(37 THRU 42) #2 APC OUTLET TEST#3	21-22081-PM-(43 THRU 48) BLANK#2
ALS Sample ID			L2602503-6	L2602503-7	L2602503-8
Matrix			Stack	Stack	Stack
Analysis type			Sample	Sample	Sample
Sampling Date/Time			16-Jun-21	16-Jun-21	16-Jun-21
Date of Receipt			17-Jun-21	17-Jun-21	17-Jun-21
Mercury via CVAA		LOR			
	Method 29	**ug**	**ug**	**ug**	**ug**
	Analytical Fraction 1B	0.015	<0.015	<0.015	<0.015
	Analytical Fraction 2B	0.050	<0.36	0.410	<0.15
	Analytical Fraction 3B	0.025	<0.03	<0.03	<0.03
	Analytical Fraction 3C	0.25	<0.25	<0.25	<0.25

ALS Environmental

Sample QC Summary Report

Sample Name		LCB	LCS	LCS	LCSD	LCSD
ALS Sample ID		LCB	LCS	LCS	LCSD	LCSD
Analysis type		Method Blank	Blank Spike	Blank Spike	Blank Spike Dup	Blank Spike Dup
Sampling Date/Time		N/A	N/A	N/A	N/A	N/A
Date of Receipt		N/A	N/A	N/A	N/A	N/A
Mercury via CVAA	LOR					
Method 29	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Analytical Fraction 1B	0.015	<0.015	0.303	101%	0.306	102%
Analytical Fraction 2B	0.050	<0.05	1.01	101%	1.01	101%
Analytical Fraction 3B	0.025	<0.025	0.486	98%	0.494	99%
Analytical Fraction 3C	0.25	<0.25	4.92	99%	4.99	100%

ALS Environmental

Sample QC Summary Report

Sample Name		21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1
ALS Sample ID		L2602503-1	L2602503-1DUP	L2602503-1MS	L2602503-1MS	L2602503-1MSD	L2602503-1MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date/Time		15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
Mercury via CVAA	LOR						
Method 29	**ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Analytical Fraction 1B	0.015	<0.015	<0.015	0.292	97%	0.290	96%
Analytical Fraction 2B	0.050	0.403	0.388	7.52	94%	7.60	95%
Analytical Fraction 3B	0.025	<0.03	<0.03	0.556	92%	0.560	93%
Analytical Fraction 3C	0.250	<0.25	<0.25	4.97	95%	5.00	96%

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2602503		Mississauga, ON L5J 2Y4
Date of Report Revision	16-Jul-21		Canada
Date of Sample Receipt	17-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS:

Metals analysed via ICP-MS Method USEPA 6020B (SA 08-Jul-21 and 09-Jul-21)
Sample Preparation via USEPA Method 29 (TPH 08-Jul-21)

*** **Revised Report** ***

This report supersedes all prior reports for the above-noted workorder and test. The report has been revised as follows:
The metals target list has been amended.

*** **Original Report Comments** ***

ANALYST COMMENTS:

1A HF:

Cu, Mo, and Ni observed in the method blank (MB) at levels significantly above their LORs. Cr, Mn, and Ni also observed at lower levels. These analytes were also observed in the client-supplied blank sample. Sample data is likely to be biased as a result of this background contribution.

2A:

Ba recoveries in the MS and MSD are outside ALS DQOs (found: 77,77%, limits: 80-120%). This may be due to a matrix interference which is providing an overall low bias for this analyte. Ba data may be biased low. **PE 13-Jul-21**

LCB = Laboratory Control Blank
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Account Manager

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(7 THRU 12) #1 APC OUTLET TEST#2	21-22081-PM-(13 THRU 18) #1 APC OUTLET TEST#3	21-22081-PM-(19 THRU 24) BLANK#1	21-22081-PM-(25 THRU 30) #2 APC OUTLET TEST#1	21-22081-PM-(31 THRU 36) #2 APC OUTLET TEST#2
ALS Sample ID		L2602503-1	L2602503-2	L2602503-3	L2602503-4	L2602503-5	L2602503-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		15-Jun-21	15-Jun-21	16-Jun-21	16-Jun-21	15-Jun-21	16-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Front Half HNO3 Fraction 1A							
Antimony	0.2	<	<	<	<	0.207	<
Arsenic	1	<	<	<	<	<	<
Barium	5	6.44	5.85	9.46	<	6.47	5.88
Beryllium	0.2	<	<	<	<	<	<
Cadmium	0.1	<	0.486	0.273	<	0.154	0.215
Chromium	1	3.31	3.23	2.97	2.30	2.93	2.45
Cobalt	0.2	<	<	<	<	<	<
Copper	1	7.70	8.13	7.04	5.86	7.25	7.08
Lead	0.5	0.874	1.08	1.08	<	0.826	0.883
Molybdenum	0.2	23.7	22.3	22.0	23.6	22.7	23.9
Nickel	0.2	2.69	3.21	2.95	2.27	2.93	2.50
Selenium	2	<	<	<	<	<	<
Silver	0.2	<	<	<	<	<	<
Thallium	0.2	<	<	<	<	<	<
Vanadium	1	<	<	<	<	<	<
Zinc	6	15.8	18.6	29.7	<	15.1	13.9

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-PM-(37 THRU 42) #2 APC OUTLET TEST#3	21-22081-PM-(43 THRU 48) BLANK#2	MB
ALS Sample ID		L2602503-7	L2602503-8	L2602503-MB
Matrix		Stack	Stack	n/a
Analysis Type		Sample	Sample	Sample
Sampling Date		16-Jun-21	16-Jun-21	n/a
Date of Receipt		17-Jun-21	17-Jun-21	n/a
Multi-Metals via ICP-MS	**LOR**			
	ug	**ug**	**ug**	**ug**
Front Half HNO3 Fraction 1A				
Antimony	0.2	0.200	<	<
Arsenic	1	<	<	<
Barium	5	6.03	<	<
Beryllium	0.2	<	<	<
Cadmium	0.1	0.165	<	<
Chromium	1	2.66	2.25	1.88
Cobalt	0.2	<	<	<
Copper	1	6.99	5.72	3.78
Lead	0.5	0.926	<	<
Molybdenum	0.2	23.2	22.8	33.2
Nickel	0.2	2.74	2.18	0.924
Selenium	2	<	<	<
Silver	0.2	<	<	<
Thallium	0.2	<	<	<
Vanadium	1	<	<	<
Zinc	6	14.0	<	<

ALS Environmental

Sample QC Summary Report

Sample Name		RB	LCS	LCS	LCSD	LCSD
ALS Sample ID		RB	LCS	LCS	LCSD	LCSD
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis Type		Blank	LCS	LCS	LCS	LCS
Sampling Date		n/a	n/a	n/a	n/a	n/a
Date of Receipt		n/a	n/a	n/a	n/a	n/a
Multi-Metals via ICP-MS	**LOR**					
	ug	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HNO3 Fraction 1A						
Antimony	0.2	<	11.2	93	11.5	96
Arsenic	1	<	58.4	97	58.8	98
Barium	5	<	56.4	94	56.0	93
Beryllium	0.2	<	57.2	95	58.0	97
Cadmium	0.1	<	29.0	97	29.9	100
Chromium	1	<	58.5	97	59.8	100
Cobalt	0.2	<	58.1	97	58.7	98
Copper	1	<	58.8	98	59.4	99
Lead	0.5	<	60.9	101	60.8	101
Molybdenum	0.2	<	28.5	95	29.3	98
Nickel	0.2	<	59.1	98	59.9	100
Selenium	2	<	55.7	93	56.6	94
Silver	0.2	<	22.0	73	28.2	94
Thallium	0.2	<	62.3	104	62.4	104
Vanadium	1	<	59.6	99	60.2	100
Zinc	6	<	117	98	118	99

ALS Environmental

Sample QC Summary Report

Sample Name		21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1
ALS Sample ID		L2602503-1	L2602503-1	MS	MS	MSD	MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date		15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HNO3 Fraction 1A							
Antimony	0.2	<	<	22.2	92	22.2	92
Arsenic	1	<	<	111	92	110	92
Barium	5	6.44	6.39	113	89	111	87
Beryllium	0.2	<	<	109	91	109	91
Cadmium	0.1	<	<	58.7	98	58.6	97
Chromium	1	3.31	3.31	115	93	115	93
Cobalt	0.2	<	<	110	91	110	92
Copper	1	7.70	7.77	119	93	120	93
Lead	0.5	0.874	0.906	120	99	118	98
Molybdenum	0.2	23.7	23.1	77.9	90	78.4	91
Nickel	0.2	2.69	2.74	115	94	116	95
Selenium	2	<	<	108	90	110	91
Silver	0.2	<	<	53.2	89	53.7	89
Thallium	0.2	<	<	121	101	116	97
Vanadium	1	<	<	112	93	113	94
Zinc	6	15.8	16.4	242	94	243	95

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(7 THRU 12) #1 APC OUTLET TEST#2	21-22081-PM-(13 THRU 18) #1 APC OUTLET TEST#3	21-22081-PM-(19 THRU 24) BLANK#1	21-22081-PM-(25 THRU 30) #2 APC OUTLET TEST#1	21-22081-PM-(31 THRU 36) #2 APC OUTLET TEST#2
ALS Sample ID		L2602503-1	L2602503-2	L2602503-3	L2602503-4	L2602503-5	L2602503-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		15-Jun-21	15-Jun-21	16-Jun-21	16-Jun-21	15-Jun-21	16-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	<	<	<	<
Arsenic	0.2	<	<	<	<	<	<
Barium	0.5	1.45	1.42	0.931	0.884	1.39	1.17
Beryllium	0.1	<	<	<	<	<	<
Cadmium	0.05	0.0939	0.116	<	<	0.0864	<
Chromium	0.15	0.957	0.632	0.337	0.397	0.989	0.616
Cobalt	0.1	0.537	0.515	<	<	0.210	<
Copper	0.3	8.77	21.7	7.12	4.00	11.0	9.45
Lead	0.05	0.898	1.94	0.352	0.291	0.841	0.559
Molybdenum	0.1	<	<	<	<	0.110	<
Nickel	0.1	1.94	7.85	0.416	0.374	1.59	1.29
Selenium	1	1.08	<	<	<	<	<
Silver	0.1	<	<	<	<	<	<
Thallium	0.05	<	<	<	0.0561	<	<
Vanadium	0.1	<	<	<	<	0.168	<
Zinc	3	13.0	18.5	6.22	<	22.0	7.38

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22081-PM-(37 THRU 42) #2 APC OUTLET TEST#3	21-22081-PM-(43 THRU 48) BLANK#2
ALS Sample ID		L2602503-7	L2602503-8
Matrix		Stack	Stack
Analysis Type		Sample	Sample
Sampling Date		16-Jun-21	16-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21
Multi-Metals via ICP-MS	**LOR**		
	ug	**ug**	**ug**
Back Half (HNO3 / H2O2) Fraction 2A			
Antimony	0.1	<	<
Arsenic	0.2	<	<
Barium	0.5	1.41	0.990
Beryllium	0.1	<	<
Cadmium	0.05	<	<
Chromium	0.15	0.945	0.447
Cobalt	0.1	0.105	<
Copper	0.3	12.1	5.36
Lead	0.05	0.437	0.238
Molybdenum	0.1	<	<
Nickel	0.1	0.995	0.301
Selenium	1	<	<
Silver	0.1	<	<
Thallium	0.05	<	<
Vanadium	0.1	<	<
Zinc	3	13.7	<

ALS Environmental

Sample QC Summary Report

Sample Name		RB	LCS	LCS	LCSD	LCSD
ALS Sample ID		RB	LCS	LCS	LCSD	LCSD
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis Type		Blank	LCS	LCS	LCS	LCS
Sampling Date		n/a	n/a	n/a	n/a	n/a
Date of Receipt		n/a	n/a	n/a	n/a	n/a
Multi-Metals via ICP-MS	**LOR**					
	ug	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Back Half (HNO3 / H2O2) Fraction 2A						
Antimony	0.1	<	5.42	90	5.32	89
Arsenic	0.2	<	27.9	93	28.4	95
Barium	0.5	<	26.3	88	26.4	88
Beryllium	0.1	<	28.7	96	28.7	96
Cadmium	0.05	<	14.2	95	14.2	95
Chromium	0.15	<	28.5	95	28.5	95
Cobalt	0.1	<	28.2	94	28.3	94
Copper	0.3	<	28.8	96	29.0	96
Lead	0.05	<	30.0	100	30.6	102
Molybdenum	0.1	<	14.0	93	13.8	92
Nickel	0.1	<	29.0	96	29.2	97
Selenium	1	<	26.2	87	26.5	88
Silver	0.1	<	13.8	92	13.6	91
Thallium	0.05	<	31.7	106	31.1	104
Vanadium	0.1	<	28.6	95	28.8	96
Zinc	3	<	56.6	94	57.0	95

ALS Environmental

Sample QC Summary Report

Sample Name		21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1	21-22081-PM-(1 THRU 6) #1 APC OUTLET TEST#1
ALS Sample ID		L2602503-1	L2602503-1	MS	MS	MSD	MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date		15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
Date of Receipt		17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	11.0	91	11.2	92
Arsenic	0.2	<	<	56.8	95	56.8	95
Barium	0.5	1.45	1.42	47.4	77	47.8	77
Beryllium	0.1	<	<	58.4	97	59.7	99
Cadmium	0.05	0.0939	0.0925	28.5	95	29.4	98
Chromium	0.15	0.957	0.918	59.4	97	60.3	99
Cobalt	0.1	0.537	0.543	58.8	97	59.7	99
Copper	0.3	8.77	8.66	67.2	97	68.5	100
Lead	0.05	0.898	0.904	57.6	95	60.4	99
Molybdenum	0.1	<	<	28.4	95	29.1	97
Nickel	0.1	1.94	1.96	61.8	100	62.9	102
Selenium	1	1.08	1.07	54.7	89	55.4	91
Silver	0.1	<	<	28.1	94	28.4	95
Thallium	0.05	<	<	62.9	105	64.6	108
Vanadium	0.1	<	<	58.9	98	59.9	100
Zinc	3	13.0	13.0	127	95	129	97

APPENDIX 13

Particle Size Distribution Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 16, 21

Test No.: 1
Test Location: UNIT 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3

SAMPLE IDENTIFICATION	21-22081-M201A-
TS1 (Part. > 10)	1
TS2 (Part. > 2.5)	2
TS3 (Part. < 2.5)	3
TS4 (Back Up Filter, <2.5)	4
TS5 (Imp 2 H_2O and rinse)	5
TS6 (Secondary Filter)	6
TS7 (Acetone / Hexane rinse)	7

Train Loaded By: JH/DT
Train Recovered By: JH/DT

Back-Up Filter

Filter ID: Q28352

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	490.5
Final Wt:	637.8
1 Gain:	147.3
Colour:	clear

Impinger #2 Empty	
Empty Wt:	647.5
Final Wt:	648.0
2 Gain:	0.5
Colour:	clear

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	640.0
Initial Wt:	741.7
Final Wt:	740.7
3 Gain:	-1.0
Colour:	clear

Impinger #4 Silica Gel	
Initial Wt:	904.2
Final Wt:	914.2
4 Gain:	10.0
% Spent:	—

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	10:25
Purge Off:	11:25

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3: 146.8 ✓

WCBDA=4: 10

16

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: June 16, 21

Test No.: 2
Test Location: U 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3

SAMPLE IDENTIFICATION	21-22081-M201A-
TS1 (Part. > 10)	8
TS2 (Part. > 2.5)	9
TS3 (Part. < 2.5)	10
TS4 (Back Up Filter, <2.5)	11
TS5 (Imp 2 H_20 and rinse)	12
TS6 (Secondary Filter)	13
TS7 (Acetone / Hexane rinse)	14

Train Loaded By: DT/DH
Train Recovered By: DH/DT

Back-Up Filter

Filter ID: 228353

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	516.5
	Final Wt:	658.7
1	Gain:	142.2
	Colour:	clear

	Impinger #2 Empty	
	Empty Wt:	651.0
	Final Wt:	651.0
2	Gain:	0
	Colour:	clear

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	663.9
	Initial Wt:	763.4
	Final Wt:	762.3
3	Gain:	-1.1
	Colour:	clear

	Impinger #4 Silica Gel	
	Initial Wt:	997.4
	Final Wt:	1007.0
4	Gain:	9.6
	% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
* *if there is no gain purge is not required.*

Purge On:	13.25
Purge Off:	14.25

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3: 141.1

WCBDA=4: 9.6

11

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 16, 21

Test No.: 3
Test Location: U1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Filter ID: 22354	Empty Wt: 490.5	* if there is no gain purge is not required.	Acetone/Hexane Rinse
			Initial Wt:	Final Wt: 665.2		
			Final Wt:	1 Gain: 174.7	Purge On: 16:15	Mark Fluid Level and Seal and Label Container
			Gain:	Colour: clear	Purge Off: 17:15	
			Colour: wild ITC	Impinger #2 Empty		
			Seal and label container TS4	Empty Wt: 647.5	Rinse all glassware from filter to 2nd u-tube with di H2O into TS3	
				Final Wt: 647.5		
				2 Gain: 0		
				Colour: clear		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 640.0	Mark Fluid Level and Seal and Label Container	
				Initial Wt: 740.7		
				Final Wt: 738.1		
				3 Gain: 72.6		
				Colour: clear	CONTAINER TS6	
				Impinger #4 Silica Gel	Secondary Filter	
				Initial Wt: 914.2		
				Final Wt: 924.8	Seal and label container TS6	
				4 Gain: 10.6		
				% Spent:		

SAMPLE IDENTIFICATION	21-22081-M201A-
TS1 (Part. > 10)	15
TS2 (Part. > 2.5)	16
TS3 (Part. < 2.5)	17
TS4 (Back Up Filter, <2.5)	18
TS5 (Imp 2 H_2O and rinse)	19
TS6 (Secondary Filter)	20
TS7 (Acetone / Hexane rinse)	21

Train Loaded By: AT/DM
Train Recovered By: DM/AT

CWTR=1+2+3: 172.1

WCBDA=4: 10.6

16

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 19, 21

Test No.: 1
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter
			Filter ID: 82 0349
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
			Initial Wt:
			Final Wt:
			Gain:
			Colour: WHITE
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

SAMPLE IDENTIFICATION	21-22081-M201A-
TS1 (Part. > 10)	22
TS2 (Part. > 2.5)	23
TS3 (Part. < 2.5)	24
TS4 (Back Up Filter, <2.5)	25
TS5 (Imp 2 H_20 and rinse)	26
TS6 (Secondary Filter)	27
TS7 (Acetone / Hexane rinse)	28

Train Loaded By: DU
Train Recovered By: DU/ST

Impingers 1, 2, 3, 4		
	Impinger #1	Knock Out
	Empty Wt:	516.6
	Final Wt:	655.0
1	Gain:	138.4
	Colour:	clear
	Impinger #2	Empty
	Empty Wt:	650.9
	Final Wt:	650.9
2	Gain:	0
	Colour:	clear
	Secondary Filter	
	Impinger #3 H_2O	
	Empty Wt:	663.9
	Initial Wt:	765.5
	Final Wt:	764.9
3	Gain:	-0.6
	Colour:	clear
	Impinger #4	Silica Gel
	Initial Wt:	976.4
	Final Wt:	985.6
4	Gain:	9.2
	% Spent:	

CONTAINER TS5 & TS6
Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr) * *if there is no gain purge is not required.*
Purge On: 11:30
Purge Off: 12:30
Rinse all glassware from filter to 2nd u-tube with di H2O into TS3
CONTAINER TS5
Mark Fluid Level and Seal and Label Container
CONTAINER TS6
Secondary Filter
Seal and label container TS6

CONTAINER TS7
Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
Acetone/Hexane Rinse
Mark Fluid Level and Seal and Label Container

CWTR=1+2+3: 137.8 ✓

WCBDA=4: 9.2

11

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 15, 21

Test No.: 2
Test Location: 4 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: 22 8350 CONTAINER TS4 Initial Wt: Final Wt: Gain: Colour: WHITE Seal and label container TS4	Impinger #1 Knock Out Empty Wt: 490.6 Final Wt: 643.5 1 Gain: 152.9 Colour: clear Impinger #2 Empty Empty Wt: 641.5 Final Wt: 641.5 2 Gain: 0 Colour: Secondary Filter Impinger #3 H_2O Empty Wt: 639.9 Initial Wt: 742.6 Final Wt: 741.7 3 Gain: -0.9 Colour: clear Impinger #4 Silica Gel Initial Wt: 894.6 Final Wt: 904.2 4 Gain: 9.6 % Spent:	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr) * if there is no gain purge is not required. Purge On: 15:10 Purge Off: 16:10 Rinse all glassware from filter to 2nd u-tube with di H2O into TS3 CONTAINER TS5 Mark Fluid Level and Seal and Label Container CONTAINER TS6 Secondary Filter Seal and label container TS6	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7 Acetone/Hexane Rinse Mark Fluid Level and Seal and Label Container CWTR=1+2+3: 152.0 WCBDA=4: 9.6
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3				

SAMPLE IDENTIFICATION	21-22081-M201A-
TS1 (Part. > 10)	29
TS2 (Part. > 2.5)	30
TS3 (Part. < 2.5)	31
TS4 (Back Up Filter, <2.5)	32
TS5 (Imp 2 H_2O and rinse)	33
TS6 (Secondary Filter)	34
TS7 (Acetone / Hexane rinse)	35

Train Loaded By: RM
Train Recovered By: JH/DT

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 15/21

Test No.: 3
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: 02835 1	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	CONTAINER TS4	Empty Wt: 516.5	* if there is no gain purge is not required.	Acetone/Hexane Rinse
			Initial Wt:	Final Wt: 680.3		
			Final Wt:	1 Gain: 163.8	Purge On: 18:10	Mark Fluid Level and Seal and Label Container
			Gain:	Colour: clean	Purge Off: 19:10	
			Colour: WHITE	Impinger #2 Empty		
				Empty Wt: 651.0	Rinse all glassware from filter to 2nd u-tube with di H2O into TS3	
			Seal and label container TS4	Final Wt: 651.0		
				2 Gain: 0		
				Colour: —		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 663.9	Mark Fluid Level and Seal and Label Container	
				Initial Wt: 765.0		
				Final Wt: 763.4		
				3 Gain: -1.6		
				Colour: clean	CONTAINER TS6	
				Impinger #4 Silica Gel	Secondary Filter	
				Initial Wt: 985.6		
				Final Wt: 997.4	Seal and label container TS6	
				4 Gain: 11.8		
				% Spent: —		

SAMPLE IDENTIFICATION	21-22081-M201A-
TS1 (Part. > 10)	36
TS2 (Part. > 2.5)	37
TS3 (Part. < 2.5)	38
TS4 (Back Up Filter, <2.5)	39
TS5 (Imp 2 H_2O and rinse)	40
TS6 (Secondary Filter)	41
TS7 (Acetone / Hexane rinse)	42

Train Loaded By: DT / DU
Train Recovered By: DU / DT

CWTR=1+2+3: 162.2

WCBDA=4: 11.8

11

11

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: June 16, 21

Test No.: BLANK 1
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter
			Filter ID: 228357
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
			Initial Wt:
			Final Wt:
			Gain:
			Colour: WHITE
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

SAMPLE IDENTIFICATION	21-22081-M201A-
TS1 (Part. > 10)	43
TS2 (Part. > 2.5)	44
TS3 (Part. < 2.5)	45
TS4 (Back Up Filter, <2.5)	46
TS5 (Imp 2 H_20 and rinse)	47
TS6 (Secondary Filter)	48
TS7 (Acetone / Hexane rinse)	49

Train Loaded By: DT
Train Recovered By: DT

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 Empty	
Empty Wt:	
Final Wt:	
2 Gain:	
Colour:	

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	
% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter
Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3:

WCBDA=4:

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22081
Date: JUNE 16, 21

Test No.: BLANK 2
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3

SAMPLE IDENTIFICATION	21-22081-M201A-
TS1 (Part. > 10)	50
TS2 (Part. > 2.5)	51
TS3 (Part. < 2.5)	52
TS4 (Back Up Filter, <2.5)	53
TS5 (Imp 2 H_2O and rinse)	54
TS6 (Secondary Filter)	55
TS7 (Acetone / Hexane rinse)	56

Train Loaded By: DT
Train Recovered By:

Back-Up Filter

Filter ID: QZ8356

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out
	Empty Wt:
	Final Wt:
1	Gain:
	Colour:

	Impinger #2 Empty
	Empty Wt:
	Final Wt:
2	Gain:
	Colour:

Secondary Filter

	Impinger #3 H_2O
	Empty Wt:
	Initial Wt:
	Final Wt:
3	Gain:
	Colour:

	Impinger #4 Silica Gel
	Initial Wt:
	Final Wt:
4	Gain:
	% Spent:

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3:

WCBDA=4:

APPENDIX 14

SVOC Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22081
Sample Batch No.:	21-22081-SVOC-

Test No.:	1
Test Date:	JUNE 17, 21
Test Location:	UT

Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	
1	2	3	4	5	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 422.5	Colour: WHITE	Initial Wt: 397.2	Impinger #1 Empty	Empty Wt: 432.0	Initial Wt: 929.5
After Acetone/ Hexane Rinse: 689.0	FOLD IN FOIL	Final Wt: 403.9	Empty Wt: 654.9	After Acetone/ Hexane Rinse: 614.1	Final Wt: 944.3
Total TS1: 266.5	SEAL AND LABEL CONTAINER TS2	1 Gain: 6.7	Final Wt: 992.4	Total TS5: 182.1	5 Gain: 14.7
MARK FLUID LEVEL	SEAL TRAP	Colour: WHITE	2 Gain: 337.5		% Spent:
SEAL AND LABEL CONTAINER TS1	WRAP IN FOIL	LABEL AS CONTAINER TS3	Colour: clear		
			Impinger #2 Ethylene Glycol		
			Empty Wt: 658.0		
			Initial Wt: 760.0		
			Final Wt: 990.5		
			3 Gain: 230.5		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 612.4		
			Final Wt: 626.8		
			4 Gain: 14.4		
			Colour: clear		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	10
Trap ID:	
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Container TS4 Weights	
Empty Wt:	427.5
With Imp Soln:	1098.0
After ~100g H_2O Rinse:	1248.0
Total TS4:	820.5

CWTR = 1 + 2 + 3 + 4:	390.1 ✓
WCBDA=5:	14.7

Impinger Box ID: 8

Train Loaded By:	DT
Train Recovered By:	DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22081
Sample Batch No.:	21-22081-SVOC-

Test No.:	2
Test Date:	JUNE 17, 21
Test Location:	U1

Sample ID	6	Sample ID	7	Sample ID	8	Sample ID	9	Sample ID	10	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser		Filter		XAD-II Trap		Impingers 1, 2 & 3		Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers		Impinger 4 Silica Gel
CONTAINER TS1		CONTAINER TS2		CONTAINER TS3		CONTAINER TS4		CONTAINER TS5		CONTAINER TS6 (Impinger)
Empty Wt:	420.5	Colour:	WHITE	Initial Wt:	349.6	Impinger #1 Empty		Empty Wt:	425.5	Initial Wt: 923.8
After Acetone/ Hexane Rinse:	710.8	FOLD IN FOIL		1 Final Wt:	354.4	Empty Wt:	553.0	After Acetone/ Hexane Rinse:	613.8	5 Final Wt: 942.1
Total TS1:	290.3	SEAL AND LABEL CONTAINER TS2		Gain:	4.8	2 Final Wt:	931.0	Total TS5:	188.3	Gain: 18.3
MARK FLUID LEVEL				Colour:	WHITE	Gain:	378.0			% Spent:
SEAL AND LABEL CONTAINER TS1				SEAL TRAP		Colour:	clear			
				WRAP IN FOIL		Impinger #2 Ethylene Glycol				
				LABEL AS CONTAINER TS3		Empty Wt:	653.8			
						Initial Wt:	754.0			
						Final Wt:	973.3			
						3 Gain:	219.3			
						Colour:	clear			
						Impinger #3 Empty				
						Empty Wt:	465.5			
						Final Wt:	483.7			
						4 Gain:	18.2			
						Colour:	clear			
						Container TS4 Weights				
						Empty Wt:	434.0			
						With Imp Soln:	1178.8			
						After ~100g H_2O Rinse:	1253.3			
						Total TS4:	819.3			

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	9
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Impinger Box ID: 5

Train Loaded By:	DT
Train Recovered By:	

CWTR = 1 + 2 + 3 + 4:	620.3
WCBDA=5:	18.3

✓ TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22081
Sample Batch No.:	21-22081-SVOC-

Test No.:	3
Test Date:	JUNE 16, 21
Test Location:	U1

Sample ID	11	Sample ID	12	Sample ID	13	Sample ID	14	Sample ID	15
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser		Filter		XAD-II Trap		Impingers 1, 2 & 3		Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	
CONTAINER TS1		CONTAINER TS2		CONTAINER TS3		CONTAINER TS4		CONTAINER TS5	
Empty Wt:	402.5	Colour:	WHITE	Initial Wt:	374.1	Impinger #1 Empty		Empty Wt:	402.0
After Acetone/ Hexane Rinse:	563.5	FOLD IN FOIL		Final Wt:	381.4	Empty Wt:	532.6	After Acetone/ Hexane Rinse:	627.0
Total TS1:	161.0	SEAL AND LABEL CONTAINER TS2		1 Gain:	7.3	Final Wt:	897.6	Total TS5:	225.0
MARK FLUID LEVEL				Colour:	WHITE	2 Gain:	365.0		
SEAL AND LABEL CONTAINER TS1				SEAL TRAP		Colour:	clear		
				WRAP IN FOIL		Impinger #2 Ethylene Glycol			
				LABEL AS CONTAINER TS3		Empty Wt:	528.4		
						Initial Wt:	528.0		
						Final Wt:	753.6		
						3 Gain:	225.6		
						Colour:	clear		
						Impinger #3 Empty			
						Empty Wt:	498.4		
						Final Wt:	499.2		
						4 Gain:	0.8		
						Colour:	clear		
						Container TS4 Weights			
						Empty Wt:	401.5		
						With Imp Soln:	1080.0		
						After ~100g H_2O Rinse:	1194.0		
						Total TS4:			

Impinger 4 Silica Gel	
CONTAINER TS6 (Impinger)	
Initial Wt:	956.0
Final Wt:	971.0
5 Gain:	15.0
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	5
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	198612
Hexane Batch No.:	
Acetone Batch No.:	

Impinger Box ID: 13

Train Loaded By:	DF
Train Recovered By:	DF

CWTR = 1 + 2 + 3 + 4:	598.7
WCBDA=5:	15.0

✓ TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22081
Sample Batch No.:	21-22081-SVOC-

Test No.:	1
Test Date:	JUNE 17, 21
Test Location:	U2

Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	
21	22	23	24	25	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 420.0	Colour: WHITE	Initial Wt: 409.3	Impinger #1 Empty	Empty Wt: 423.5	Initial Wt: 997.8
After Acetone/ Hexane Rinse: 756.2	FOLD IN FOIL	1 Final Wt: 415.6	Empty Wt: 661.2	After Acetone/ Hexane Rinse: 657.4	Final Wt: 1019.3
Total TS1: 336.2		Gain: 6.3	Final Wt: 992.6	5 Total TS5: 233.9	Gain: 21.5
	SEAL AND LABEL CONTAINER TS2	Colour: WHITE	2 Gain: 331.4		% Spent:
MARK FLUID LEVEL		SEAL TRAP	Colour: clear		
SEAL AND LABEL CONTAINER TS1		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 695.0		
			Initial Wt: 799.0		
			Final Wt: 971.2		
			3 Gain: 172.2		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 596.5		
			Final Wt: 761.9		
			4 Gain: 165.0		
			Colour: clear		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	1
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	198612
Hexane Batch No.:	105963
Acetone Batch No.:	106020

Container TS4 Weights	
Empty Wt:	426.0
With Imp Soln:	1185.8
After ~100g H_2O Rinse:	1301.4
Total TS4:	875.4

CWTR = 1 + 2 + 3 + 4:	674.9 ✓
WCBDA=5:	21.5

Impinger Box ID: G

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: BT

Train Recovered By: BT

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22081
Sample Batch No.: 21-22081-SVOC-

Test No.: 2
Test Date: JUNE 17, 21
Test Location: U2

Sample ID 26	Sample ID 27	Sample ID 28	Sample ID 29	Sample ID 30	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 420.2	Colour: WHITE	Initial Wt: 390.9	Impinger #1 Empty	Empty Wt: 424.0	Initial Wt: 986.5
After Acetone/ Hexane Rinse: 710.2	FOLD IN FOIL	Final Wt: 399.1	Empty Wt: 668.3	After Acetone/ Hexane Rinse: 663.5	Final Wt: 1003.0
Total TS1: 290.0	SEAL AND LABEL CONTAINER TS2	1 Gain: 8.2	Final Wt: 1009.9	Total TS5: 239.5	5 Gain: 16.5
MARK FLUID LEVEL		Colour: WHITE	2 Gain: 341.6		% Spent:
SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour: clear		
		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 653.3		
			Initial Wt: 754.0		
			Final Wt: 958.0		
			3 Gain: 204.0		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 555.1		
			Final Wt: 677.4		
			4 Gain: 122.3		
			Colour: clear		
			Container TS4 Weights		
			Empty Wt: ~~423.2~~		
			With Imp Soln: 1176.6		
			After ~100g H_2O Rinse: 1277.7		
			Total TS4: 854.4		

Impinger Box ID: 2

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	2
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

CWTR = 1 + 2 + 3 + 4: 676.1

WCBDA=5: 16.5

Train Loaded By: Jake Arbiball
Train Recovered By: DT

✓ TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22081
Sample Batch No.: 21-22081-SVOC-

Test No.: 3
Test Date: JUNE 12, 21
Test Location: U2 /

Sample ID 31	Sample ID 32	Sample ID 33	Sample ID 34	Sample ID 35	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 402.0	Colour: WHITE	Initial Wt: 388.7	Impinger #1 Empty	Empty Wt: 700.7	Initial Wt: 944.5
After Acetone/ Hexane Rinse: 715.3	FOLD IN FOIL	1 Final Wt: 394.0	Empty Wt: 536.2	After Acetone/ Hexane Rinse: 633.8	Final Wt: 961.5
Total TS1: 313.3	SEAL AND LABEL CONTAINER TS2	Gain: 6.3	Final Wt: 932.1	Total TS5: 233.1	5 Gain: 17.0
MARK FLUID LEVEL	SEAL TRAP	Colour: WHITE	2 Gain: 405.9		% Spent:
SEAL AND LABEL CONTAINER TS1	WRAP IN FOIL		Colour: clear		
	LABEL AS CONTAINER TS3		Impinger #2 Ethylene Glycol		
			Empty Wt: 649.5		
			Initial Wt: 753.0		
			Final Wt: 985.0		
			3 Gain: 232.0		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 507.0		
			Final Wt: 523.5		
			4 Gain: 16.5		
			Colour: clear		

Impinger Box ID: 10

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	11
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Container TS4 Weights	
Empty Wt:	401.5
With Imp Soln:	1148.0
After ~100g H_2O Rinse:	1332.0
Total TS4:	930.5

CWTR = 1 + 2 + 3 + 4: 660.7 ✓

WCBDA=5: 17.0

Train Loaded By: DT
Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22081
Sample Batch No.: 21-22081-SVOC-

Test No.: BLANK 1
Test Date: JUNE 18, 21
Test Location:

Sample ID 16	Sample ID 17	Sample ID 18	Sample ID 19	Sample ID 20	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 426.4	Colour: WHITE	Initial Wt: 382.3	Impinger #1 Empty	Empty Wt: 428.5	Initial Wt: 966.6
After Acetone/ Hexane Rinse: 710.8	FOLD IN FOIL	1 Final Wt: 382.3	Empty Wt: 534.5	After Acetone/ Hexane Rinse: 591.0	Final Wt: 966.6
Total TS1: 334.4		Gain: —	Final Wt: 534.5	Total TS5: 162.5	5 Gain: —
	SEAL AND LABEL CONTAINER TS2	Colour: WHITE	2 Gain: —		% Spent:
MARK FLUID LEVEL		SEAL TRAP	Colour: —		
SEAL AND LABEL CONTAINER TS1		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 689.0		
			Initial Wt: 791.5		
			Final Wt: 791.5		
			3 Gain: —		
			Colour: —		
			Impinger #3 Empty		
			Empty Wt: 608.4		
			Final Wt: 608.4		
			4 Gain: —		
			Colour: —		
			Container TS4 Weights		
			Empty Wt: 426.2		
			With Imp Soln: 524.2		
			After ~100g H_2O Rinse: 634.3		
			Total TS4: 208.1		

Impinger Box ID: 14

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	7
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By: DT

CWTR = 1 + 2 + 3 + 4:

WCBDA=5:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22081
Sample Batch No.: 21-22081-SVOC-

Test No.: BLANK 2
Test Date: JUNE 18, 21
Test Location:

Sample ID 36	Sample ID 37	Sample ID 38	Sample ID 39	Sample ID 40	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 401.4	Colour: WHITE	Initial Wt: 364.7	Impinger #1 Empty	Empty Wt: 401.2	Initial Wt: 990.9
After Acetone/ Hexane Rinse: 563.1	FOLD IN FOIL	1 Final Wt: 364.7	Empty Wt: 654.5	After Acetone/ Hexane Rinse: 548.8	Final Wt: 990.9
Total TS1: 161.7	SEAL AND LABEL CONTAINER TS2	Gain:	Final Wt: 654.5	Total TS5: 147.6	5 Gain:
MARK FLUID LEVEL		Colour: WHITE	2 Gain:		% Spent:
SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour: clear		
		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 544.3		
			Initial Wt: 649.8		
			Final Wt: 649.8		
			3 Gain:		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 607.3		
			Final Wt: 607.3		
			4 Gain:		
			Colour: Beer		

Impinger Box ID: X 3

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	3
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Container TS4 Weights	
Empty Wt:	401.3
With Imp Soln:	497.0
After ~100g H_2O Rinse:	609.0
Total TS4:	207.7

Train Loaded By: DT
Train Recovered By: DT

CWTR = 1 + 2 + 3 + 4:

WCBDA=5:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

APPENDIX 15

SVOC Analytical Report
(70 pages)

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2603845		Mississauga,ON
Date of Report	27-Jul-21		L5J 2Y4
Date of Sample Receipt	21-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **PCDD/F by EPA M23**

Certified by:

Bradley Reimer
GC/MS Laboratory Senior Technical Specialist

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Life Sciences

Sample Analysis summary Report

Sample Name	21-22081-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1	21-22081-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1	21-22081-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1	21-22081-SVOC-(16 THRU 20) BLANK APC OUTLET #1	21-22081-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	21-22081-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2
ALS Sample ID	L2603845-1	L2603845-2	L2603845-3	L2603845-4	L2603845-5	L2603845-6
Sample Size	1	1	1	1	1	1
Sample size units	sample	sample	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	17-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21	17-Jun-21	17-Jun-21
Extraction Date	30-Jun-21	30-Jun-21	30-Jun-21	30-Jun-21	30-Jun-21	30-Jun-21
Target Analytes	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<4.4	<6.8	<4.0	<2.4	<5.9	<8.7
1,2,3,7,8-PeCDD	<4.9	<5.9	<3.8	<1.3	<8.1	<9.2
1,2,3,4,7,8-HxCDD	<9.2	<13	<10	<1.6	<18	<27
1,2,3,6,7,8-HxCDD	<15	36.8	22.6	<1.4	73.3	71.8
1,2,3,7,8,9-HxCDD	<8.2	<17	<8.6	<1.5	35.8	32.0
1,2,3,4,6,7,8-HpCDD	243	340	238	<6.9	590	643
OCDD	410	541	414	112	813	1190
2,3,7,8-TCDF	<3.7	<5.7	<4.4	<1.3	<4.6	<6.9
1,2,3,7,8-PeCDF	<5.9	<5.3	7.38	<1.3	<11	<8.4
2,3,4,7,8-PeCDF	10.2	11.1	<6.1	<1.2	<14	14.7
1,2,3,4,7,8-HxCDF	<7.0	<9.0	<4.5	<1.6	<15	<12
1,2,3,6,7,8-HxCDF	<7.0	<10	<6.0	<1.4	<15	16.6
2,3,4,6,7,8-HxCDF	<5.8	<4.8	17.2	<1.5	<7.5	<34
1,2,3,7,8,9-HxCDF	<6.6	<5.5	<5.1	<1.8	<8.5	<14
1,2,3,4,6,7,8-HpCDF	69.1	76.6	59.6	<2.4	102	107
1,2,3,4,7,8,9-HpCDF	<13	17.7	<8.8	<2.8	19.7	19.5
OCDF	56.7	65.6	57.0	12.4	85.9	136
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	97	99	93	101	94	97
13C12-1,2,3,4,7,8-HxCDD	93	91	79	96	83	92
13C12-2,3,4,7,8-PeCDF	106	103	97	107	101	113
13C12-1,2,3,4,7,8-HxCDF	91	87	83	95	79	86
13C12-1,2,3,4,7,8,9-HpCDF	91	83	76	90	76	86
Extraction Standards						
13C12-2,3,7,8-TCDD	47	52	59	58	58	38
13C12-1,2,3,7,8-PeCDD	49	52	57	67	58	33
13C12-1,2,3,6,7,8-HxCDD	51	60	82	72	74	40
13C12-1,2,3,4,6,7,8-HpCDD	38	40	55	57	46	24
13C12-OCDD	33	28	40	48	33	18
13C12-2,3,7,8-TCDF	51	52	62	60	61	42
13C12-1,2,3,7,8-PeCDF	47	50	57	61	56	31
13C12-1,2,3,6,7,8-HxCDF	50	62	86	69	79	42
13C12-1,2,3,4,6,7,8-HpCDF	40	48	65	62	56	28
Cleanup Standard						
13C12-1,2,3,7,8,9-HxCDF	46	51	68	67	61	31
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
Total-TCDD	72.2	76.2	63.3	<2.4	202	223
Total-PeCDD	174	72.9	57.3	<1.3	432	520
Total-HxCDD	413	605	320	<1.6	973	1280
Total-HpCDD	243	340	238	<6.7	590	1360
Total-TCDF	<3.7	<5.7	<4.4	<1.3	<4.6	<6.9
Total-PeCDF	37.6	29.0	18.6	<1.3	85.1	57.6
Total-HxCDF	<6.6	31.0	29.6	<1.8	15.2	38.3
Total-HpCDF	69.1	94.3	78.4	<2.8	122	144
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)	6.32	11.5	7.32	0.0373	18.3	24.5
Mid Point PCDD/F TEQ (WHO 2005)	15.8	23.7	16.1	2.79	39.7	40.0
Upper Bound PCDD/F TEQ (WHO 2005)	22.2	30.9	20.9	5.47	43.7	52.1

ALS Life Sciences

Sample Analysis summary Report

Sample Name	21-22081-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	21-22081-SVOC-(36 THRU 40) BLANK APC OUTLET #2
ALS Sample ID	L2603845-7	L2603845-8
Sample Size	1	1
Sample size units	sample	sample
Percent Moisture	n/a	n/a
Sample Matrix	Stack	Stack
Sampling Date	18-Jun-21	18-Jun-21
Extraction Date	30-Jun-21	30-Jun-21
Target Analytes	**pg**	**pg**
2,3,7,8-TCDD	<5.0	<2.1
1,2,3,7,8-PeCDD	<10	<1.3
1,2,3,4,7,8-HxCDD	<23	<1.7
1,2,3,6,7,8-HxCDD	<63	<1.5
1,2,3,7,8,9-HxCDD	35.2	<1.5
1,2,3,4,6,7,8-HpCDD	567	7.77
OCDD	799	83.5
2,3,7,8-TCDF	<4.4	<1.1
1,2,3,7,8-PeCDF	<3.9	<1.2
2,3,4,7,8-PeCDF	<13	<1.1
1,2,3,4,7,8-HxCDF	<12	<0.99
1,2,3,6,7,8-HxCDF	<15	<0.92
2,3,4,6,7,8-HxCDF	33.0	<0.99
1,2,3,7,8,9-HxCDF	<8.4	<1.1
1,2,3,4,6,7,8-HpCDF	89.4	<1.5
1,2,3,4,7,8,9-HpCDF	<18	<1.8
OCDF	86.9	10.8
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	99	99
13C12-1,2,3,4,7,8-HxCDD	86	93
13C12-2,3,4,7,8-PeCDF	99	109
13C12-1,2,3,4,7,8-HxCDF	90	93
13C12-1,2,3,4,7,8,9-HpCDF	80	90
Extraction Standards		
13C12-2,3,7,8-TCDD	61	60
13C12-1,2,3,7,8-PeCDD	60	68
13C12-1,2,3,6,7,8-HxCDD	81	77
13C12-1,2,3,4,6,7,8-HpCDD	55	63
13C12-OCDD	39	59
13C12-2,3,7,8-TCDF	62	62
13C12-1,2,3,7,8-PeCDF	61	62
13C12-1,2,3,6,7,8-HxCDF	83	72
13C12-1,2,3,4,6,7,8-HpCDF	64	68
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	67	62
Homologue Group Totals	**pg**	**pg**
Total-TCDD	176	<2.1
Total-PeCDD	279	<1.3
Total-HxCDD	1070	<1.7
Total-HpCDD	1120	7.77
Total-TCDF	<4.4	<1.1
Total-PeCDF	10.1	<1.2
Total-HxCDF	47.5	<1.1
Total-HpCDF	122	<1.8
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	13.6	0.106
Mid Point PCDD/F TEQ (WHO 2005)	42.3	2.50
Upper Bound PCDD/F TEQ (WHO 2005)	45.4	4.88

ALS Life Sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG3563440-1	WG3563440-2
Sample Size	1	1
Sample size units	sample	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	30-Jun-21	30-Jun-21
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<1.3	89
1,2,3,7,8-PeCDD	<0.62	110
1,2,3,4,7,8-HxCDD	<0.93	100
1,2,3,6,7,8-HxCDD	<0.78	112
1,2,3,7,8,9-HxCDD	<0.82	98
1,2,3,4,6,7,8-HpCDD	<7.9	101
OCDD	110	86
2,3,7,8-TCDF	<0.64	92
1,2,3,7,8-PeCDF	<1.1	108
2,3,4,7,8-PeCDF	<1.0	102
1,2,3,4,7,8-HxCDF	<1.2	99
1,2,3,6,7,8-HxCDF	<1.1	115
2,3,4,6,7,8-HxCDF	<1.2	96
1,2,3,7,8,9-HxCDF	<2.3	83
1,2,3,4,6,7,8-HpCDF	<3.5	94
1,2,3,4,7,8,9-HpCDF	<1.3	80
OCDF	<13	87
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	NS	NS
13C12-1,2,3,4,7,8-HxCDD	NS	NS
13C12-2,3,4,7,8-PeCDF	NS	NS
13C12-1,2,3,4,7,8-HxCDF	NS	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS
Extraction Standards		
13C12-2,3,7,8-TCDD	60	46
13C12-1,2,3,7,8-PeCDD	65	34
13C12-1,2,3,6,7,8-HxCDD	65	48
13C12-1,2,3,4,6,7,8-HpCDD	62	30
13C12-OCDD	61	20
13C12-2,3,7,8-TCDF	61	53
13C12-1,2,3,7,8-PeCDF	60	37
13C12-1,2,3,6,7,8-HxCDF	63	54
13C12-1,2,3,4,6,7,8-HpCDF	65	38
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	65	43
Homologue Group Totals	**pg**	
Total-TCDD	<1.3	
Total-PeCDD	<0.62	
Total-HxCDD	<0.93	
Total-HpCDD	<1.0	
Total-TCDF	<0.64	
Total-PeCDF	<1.1	
Total-HxCDF	<1.4	
Total-HpCDF	<1.3	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.0330	
Mid Point PCDD/F TEQ (WHO 2005)	1.85	
Upper Bound PCDD/F TEQ (WHO 2005)	3.31	

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**		Sampling Date	17-Jun-21	
ALS Sample ID	L2603845-1		Extraction Date	30-Jun-21	
Analysis Method	EPA M23		Sample Size	1	sample
Analysis Type	Sample		Percent Moisture	n/a	
Sample Matrix	Stack		Split Ratio	6	

Approved:
Ella Gdyczynski
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	9-210726A10
Run Date	26-Jul-21 19:07
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 DB5ms US1184748H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<4.4	4.4	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<4.9	4.9	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<9.2	9.2	U		150
1,2,3,6,7,8-HxCDD	0.1	34.34	<15	7.8	J,R	15	150
1,2,3,7,8,9-HxCDD	0.1	34.47	<8.2	8.2	U	3.9	150
1,2,3,4,6,7,8-HpCDD	0.01	35.92	243	4.8			150
OCDD	0.0003	37.34	410	5.0	B		300
2,3,7,8-TCDF	0.1	NotFnd	<3.7	3.7	U		30
1,2,3,7,8-PeCDF	0.03	30.99	<5.9	5.9	U	2.8	150
2,3,4,7,8-PeCDF	0.3	31.75	10.2	5.4	J		150
1,2,3,4,7,8-HxCDF	0.1	33.75	<7.0	5.8	J,R	7.0	150
1,2,3,6,7,8-HxCDF	0.1	33.83	<7.0	5.4	J,R	7.0	150
2,3,4,6,7,8-HxCDF	0.1	34.18	<5.8	5.8	U	3.2	150
1,2,3,7,8,9-HxCDF	0.1	34.62	<6.6	6.6	U	6.2	150
1,2,3,4,6,7,8-HpCDF	0.01	35.38	69.1	2.4	M,J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.16	<13	2.9	J,R	13	150
OCDF	0.0003	37.41	56.7	3.5	J		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	27.12	97	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	34.27	93	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.82	106	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.74	91	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.15	91	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.11	47	40-130
13C12-1,2,3,7,8-PeCDD	12000	32.06	49	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.33	51	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.92	38	25-130
13C12-OCDD	24000	37.33	33	25-130
13C12-2,3,7,8-TCDF	12000	26.21	51	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.97	47	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.81	50	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.37	40	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.60	46	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	1	72.2	4.4		30
Total-PeCDD	3	174	4.9		150
Total-HxCDD	3	413	9.2		150
Total-HpCDD	1	243	4.8		150
Total-TCDF	0	<3.7	3.7	U	30
Total-PeCDF	3	37.6	5.9		150
Total-HxCDF	0	<6.6	6.6	U	150
Total-HpCDF	1	69.1	2.9		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	6.32
Mid Point PCDD/F TEQ (WHO 2005)	15.8
Upper Bound PCDD/F TEQ (WHO 2005)	22.2

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	17-Jun-21		
ALS Sample ID	L2603845-2	Extraction Date	30-Jun-21		Approved:
Analysis Method	EPA M23	Sample Size	1	sample	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		23-Jul-2021

Run Information	**Run 1**
Filename	9-210726A11
Run Date	26-Jul-21 19:52
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 DB5ms US1184748H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<6.8	6.8	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<5.9	5.9	U		150
1,2,3,4,7,8-HxCDD	0.1	34.27	<13	8.2	J,R	13	150
1,2,3,6,7,8-HxCDD	0.1	34.33	36.8	6.9	J		150
1,2,3,7,8,9-HxCDD	0.1	34.45	<17	7.2	M,J,R	17	150
1,2,3,4,6,7,8-HpCDD	0.01	35.92	340	12	M		150
OCDD	0.0003	37.32	541	11	M,B		300
2,3,7,8-TCDF	0.1	NotFnd	<5.7	5.7	U		30
1,2,3,7,8-PeCDF	0.03	30.85	<5.3	5.2	J,R	5.3	150
2,3,4,7,8-PeCDF	0.3	31.75	11.1	4.8	J		150
1,2,3,4,7,8-HxCDF	0.1	33.74	<9.0	4.8	J,R,1.	9.0	150
1,2,3,6,7,8-HxCDF	0.1	33.81	<10	4.5	J,R,1.	10	150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<4.8	4.8	M,U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<5.5	5.5	U		150
1,2,3,4,6,7,8-HpCDF	0.01	35.37	76.6	6.2	J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.15	17.7	7.4	J		150
OCDF	0.0003	37.41	65.6	6.0	M,J		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	27.12	99	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.26	91	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.81	103	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.74	87	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.15	83	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.09	52	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.05	52	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.32	60	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.90	40	25-130			
13C12-OCDD	24000	37.32	28	25-130			
13C12-2,3,7,8-TCDF	12000	26.21	52	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.96	50	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.81	62	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.36	48	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.59	51	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	1	76.2	6.8		30
Total-PeCDD	1	72.9	5.9		150
Total-HxCDD	5	605	8.2		150
Total-HpCDD	1	340	12		150
Total-TCDF	0	<5.7	5.7	U	30
Total-PeCDF	2	29.0	5.2		150
Total-HxCDF	3	31.0	5.5		150
Total-HpCDF	2	94.3	7.4		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	11.5
Mid Point PCDD/F TEQ (WHO 2005)	23.7
Upper Bound PCDD/F TEQ (WHO 2005)	30.9

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure
1.	This result is an EMPC

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	18-Jun-21		Approved:
ALS Sample ID	L2603845-3	Extraction Date	30-Jun-21		*Ella Gdyczynski*
Analysis Method	EPA M23	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		23-Jul-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	9-210726A12
Run Date	26-Jul-21 20:38
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 DB5ms US1184748H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<4.0	4.0	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<3.8	3.8	U		150
1,2,3,4,7,8-HxCDD	0.1	34.26	<10	9.7	M,J,R	10	150
1,2,3,6,7,8-HxCDD	0.1	34.32	22.6	8.1	M,J		150
1,2,3,7,8,9-HxCDD	0.1	34.46	<8.6	8.6	M,U	5.6	150
1,2,3,4,6,7,8-HpCDD	0.01	35.90	238	6.2			150
OCDD	0.0003	37.32	414	8.6	B		300
2,3,7,8-TCDF	0.1	NotFnd	<4.4	4.4	U		30
1,2,3,7,8-PeCDF	0.03	30.86	7.38	3.4	J		150
2,3,4,7,8-PeCDF	0.3	31.75	<6.1	3.1	J,R	6.1	150
1,2,3,4,7,8-HxCDF	0.1	33.73	<4.5	4.5	U,1.	3.7	150
1,2,3,6,7,8-HxCDF	0.1	33.80	<6.0	4.2	J,R,1.	6.0	150
2,3,4,6,7,8-HxCDF	0.1	34.19	17.2	4.5	M,J		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<5.1	5.1	U		150
1,2,3,4,6,7,8-HpCDF	0.01	35.36	59.6	4.0	J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.13	<8.8	4.7	J,R	8.8	150
OCDF	0.0003	37.40	57.0	4.8	J		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	27.11	93	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.26	79	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.81	97	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.73	83	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.13	76	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.09	59	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.04	57	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.31	82	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.90	55	25-130			
13C12-OCDD	24000	37.31	40	25-130			
13C12-2,3,7,8-TCDF	12000	26.20	62	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.96	57	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.80	86	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.36	65	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.58	68	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	1	63.3	4.0		30
Total-PeCDD	1	57.3	3.8		150
Total-HxCDD	3	320	9.7		150
Total-HpCDD	1	238	6.2		150
Total-TCDF	0	<4.4	4.4	U	30
Total-PeCDF	2	18.6	3.4		150
Total-HxCDF	2	29.6	5.1		150
Total-HpCDF	2	78.4	4.7		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	7.32
Mid Point PCDD/F TEQ (WHO 2005)	16.1
Upper Bound PCDD/F TEQ (WHO 2005)	20.9

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
1.	This result is an EMPC

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(16 THRU 20) BLANK APC OUTLET #1**	Sampling Date	18-Jun-21		Approved:
ALS Sample ID	L2603845-4	Extraction Date	30-Jun-21		*Ella Gdyczynski*
Analysis Method	EPA M23	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		23-Jul-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	9-210726A08
Run Date	26-Jul-21 17:36
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 DB5ms US1184748H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.4	2.4	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<1.3	1.3	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.6	1.6	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<1.4	1.4	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<1.5	1.5	U		150
1,2,3,4,6,7,8-HpCDD	0.01	35.92	<6.9	6.7	J,R	6.9	150
OCDD	0.0003	37.32	112	2.9	J,B		300
2,3,7,8-TCDF	0.1	NotFnd	<1.3	1.3	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<1.3	1.3	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.2	1.2	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<1.6	1.6	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<1.4	1.4	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<1.5	1.5	U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<1.8	1.8	U		150
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<2.4	2.4	U		150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<2.8	2.8	U		150
OCDF	0.0003	37.40	12.4	1.9	J		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	27.11	101	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.25	96	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.81	107	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.73	95	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.13	90	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.09	58	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.04	67	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.31	72	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.90	57	25-130			
13C12-OCDD	24000	37.31	48	25-130			
13C12-2,3,7,8-TCDF	12000	26.20	60	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.96	61	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.80	69	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.36	62	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.58	67	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	0	<2.4	2.4	U	30
Total-PeCDD	0	<1.3	1.3	U	150
Total-HxCDD	0	<1.6	1.6	U	150
Total-HpCDD	0	<6.7	6.7	U	150
Total-TCDF	0	<1.3	1.3	U	30
Total-PeCDF	0	<1.3	1.3	U	150
Total-HxCDF	0	<1.8	1.8	U	150
Total-HpCDF	0	<2.8	2.8	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.0373
Mid Point PCDD/F TEQ (WHO 2005)	2.79
Upper Bound PCDD/F TEQ (WHO 2005)	5.47

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	17-Jun-21		
ALS Sample ID	L2603845-5	Extraction Date	30-Jun-21		Approved:
Analysis Method	EPA M23	Sample Size	1	sample	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		23-Jul-2021

Run Information	**Run 1**
Filename	9-210726A13
Run Date	26-Jul-21 21:23
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 DB5ms US1184748H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<5.9	5.9	U		30
1,2,3,7,8-PeCDD	1	32.08	<8.1	5.2	J,R	8.1	150
1,2,3,4,7,8-HxCDD	0.1	34.28	<18	8.1	J,R	18	150
1,2,3,6,7,8-HxCDD	0.1	34.34	73.3	6.8	M,J		150
1,2,3,7,8,9-HxCDD	0.1	34.46	35.8	7.2	J		150
1,2,3,4,6,7,8-HpCDD	0.01	35.93	590	8.3			150
OCDD	0.0003	37.33	813	10	B		300
2,3,7,8-TCDF	0.1	NotFnd	<4.6	4.6	U		30
1,2,3,7,8-PeCDF	0.03	31.01	<11	4.4	M,J,R	11	150
2,3,4,7,8-PeCDF	0.3	31.76	<14	4.0	J,R	14	150
1,2,3,4,7,8-HxCDF	0.1	33.76	<15	7.5	J,R,1.	15	150
1,2,3,6,7,8-HxCDF	0.1	33.82	<15	7.0	M,J,1.	15	150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<7.5	7.5	M,U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<8.5	8.5	U		150
1,2,3,4,6,7,8-HpCDF	0.01	35.38	102	5.5	J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.16	19.7	6.5	J		150
OCDF	0.0003	37.41	85.9	6.0	J		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	27.12	94	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.27	83	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.82	101	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.74	79	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.16	76	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.11	58	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.06	58	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.33	74	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.92	46	25-130			
13C12-OCDD	24000	37.33	33	25-130			
13C12-2,3,7,8-TCDF	12000	26.21	61	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.97	56	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.81	79	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.37	56	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.60	61	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	4	202	5.9		30
Total-PeCDD	5	432	5.2		150
Total-HxCDD	5	973	8.1		150
Total-HpCDD	1	590	8.3		150
Total-TCDF	0	<4.6	4.6	U	30
Total-PeCDF	4	85.1	4.4		150
Total-HxCDF	2	15.2	8.5		150
Total-HpCDF	2	122	6.5		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	18.3
Mid Point PCDD/F TEQ (WHO 2005)	39.7
Upper Bound PCDD/F TEQ (WHO 2005)	43.7

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
1.	This result is an EMPC

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	17-Jun-21		Approved:
ALS Sample ID	L2603845-6	Extraction Date	30-Jun-21		*Ella Gdyczynski*
Analysis Method	EPA M23	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		23-Jul-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	9-210726A14
Run Date	26-Jul-21 22:08
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 DB5ms US1184748H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<8.7	8.7	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<9.2	9.2	U		150
1,2,3,4,7,8-HxCDD	0.1	34.28	<27	27	U	12	150
1,2,3,6,7,8-HxCDD	0.1	34.33	71.8	23	J		150
1,2,3,7,8,9-HxCDD	0.1	34.47	32.0	24	J		150
1,2,3,4,6,7,8-HpCDD	0.01	35.92	643	16			150
OCDD	0.0003	37.33	1190	17			300
2,3,7,8-TCDF	0.1	26.23	<6.9	6.9	U	1.7	30
1,2,3,7,8-PeCDF	0.03	31.00	<8.4	8.4	U	5.2	150
2,3,4,7,8-PeCDF	0.3	31.76	14.7	7.7	J		150
1,2,3,4,7,8-HxCDF	0.1	33.77	<12	12	M,U	12	150
1,2,3,6,7,8-HxCDF	0.1	33.82	16.6	11	M,J		150
2,3,4,6,7,8-HxCDF	0.1	34.19	<34	12	M,J,R	34	150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<14	14	U		150
1,2,3,4,6,7,8-HpCDF	0.01	35.38	107	9.2	J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.16	19.5	11	J		150
OCDF	0.0003	37.41	136	13	M,J		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	27.14	97	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.27	92	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.82	113	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.74	86	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.15	86	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.11	38	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.06	33	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.33	40	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.92	24	25-130			
13C12-OCDD	24000	37.32	18	25-130			
13C12-2,3,7,8-TCDF	12000	26.23	42	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.99	31	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.81	42	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.37	28	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.60	31	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	2	223	8.7		30
Total-PeCDD	3	520	9.2		150
Total-HxCDD	4	1280	27		150
Total-HpCDD	2	1360	16		150
Total-TCDF	0	<6.9	6.9	U	30
Total-PeCDF	4	57.6	8.4		150
Total-HxCDF	2	38.3	14		150
Total-HpCDF	3	144	11		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	24.5
Mid Point PCDD/F TEQ (WHO 2005)	40.0
Upper Bound PCDD/F TEQ (WHO 2005)	52.1

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	18-Jun-21		Approved:
ALS Sample ID	L2603845-7	Extraction Date	30-Jun-21		*Ella Gayczynski*
Analysis Method	EPA M23	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		23-Jul-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	9-210726A15
Run Date	26-Jul-21 22:54
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 DB5ms US1184748H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<5.0	5.0	U		30
1,2,3,7,8-PeCDD	1	32.05	<10	4.1	J,R	10	150
1,2,3,4,7,8-HxCDD	0.1	34.27	<23	8.4	J,R	23	150
1,2,3,6,7,8-HxCDD	0.1	34.33	<63	7.1	J,R	63	150
1,2,3,7,8,9-HxCDD	0.1	34.45	35.2	7.5	M,J		150
1,2,3,4,6,7,8-HpCDD	0.01	35.90	567	5.1			150
OCDD	0.0003	37.32	799	7.1	B		300
2,3,7,8-TCDF	0.1	NotFnd	<4.4	4.4	U		30
1,2,3,7,8-PeCDF	0.03	30.97	<3.9	3.8	J,R	3.9	150
2,3,4,7,8-PeCDF	0.3	31.75	<13	3.5	J,R	13	150
1,2,3,4,7,8-HxCDF	0.1	33.74	<12	7.4	J,R,1.	12	150
1,2,3,6,7,8-HxCDF	0.1	33.81	<15	6.9	J,1.	15	150
2,3,4,6,7,8-HxCDF	0.1	34.19	33.0	7.4	M,J		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<8.4	8.4	U		150
1,2,3,4,6,7,8-HpCDF	0.01	35.37	89.4	3.0	J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.15	<18	3.6	J,R	18	150
OCDF	0.0003	37.40	86.9	4.4	M,J		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	27.11	99	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.25	86	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.81	99	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.73	90	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.13	80	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.09	61	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.05	60	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.31	81	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.90	55	25-130			
13C12-OCDD	24000	37.31	39	25-130			
13C12-2,3,7,8-TCDF	12000	26.20	62	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.96	61	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.80	83	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.36	64	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.58	67	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	3	176	5.0		30
Total-PeCDD	2	279	4.1		150
Total-HxCDD	4	1070	8.4		150
Total-HpCDD	2	1120	5.1		150
Total-TCDF	0	<4.4	4.4	U	30
Total-PeCDF	1	10.1	3.8		150
Total-HxCDF	2	47.5	8.4		150
Total-HpCDF	2	122	3.6		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	13.6
Mid Point PCDD/F TEQ (WHO 2005)	42.3
Upper Bound PCDD/F TEQ (WHO 2005)	45.4

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
1.	This result is an EMPC

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(36 THRU 40) BLANK APC OUTLET #2**	Sampling Date	18-Jun-21		Approved:
ALS Sample ID	L2603845-8	Extraction Date	30-Jun-21		*Ella Gdyczynski*
Analysis Method	EPA M23	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		23-Jul-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	9-210726A09
Run Date	26-Jul-21 18:22
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 DB5ms US1184748H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.1	2.1	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<1.3	1.3	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.7	1.7	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<1.5	1.5	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<1.5	1.5	U		150
1,2,3,4,6,7,8-HpCDD	0.01	35.92	7.77	0.93	J		150
OCDD	0.0003	37.33	83.5	2.4	J,B		300
2,3,7,8-TCDF	0.1	NotFnd	<1.1	1.1	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<1.2	1.2	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.1	1.1	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<0.99	0.99	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<0.92	0.92	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.99	0.99	U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<1.1	1.1	U		150
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<1.5	1.5	U		150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<1.8	1.8	U		150
OCDF	0.0003	37.41	10.8	1.2	J		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	27.12	99	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.26	93	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.81	109	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.74	93	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.15	90	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.09	60	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.05	68	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.32	77	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.90	63	25-130			
13C12-OCDD	24000	37.32	59	25-130			
13C12-2,3,7,8-TCDF	12000	26.20	62	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.96	62	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.81	72	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.36	68	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.59	62	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	0	<2.1	2.1	U	30
Total-PeCDD	0	<1.3	1.3	U	150
Total-HxCDD	0	<1.7	1.7	U	150
Total-HpCDD	1	7.77	0.93		150
Total-TCDF	0	<1.1	1.1	U	30
Total-PeCDF	0	<1.2	1.2	U	150
Total-HxCDF	0	<1.1	1.1	U	150
Total-HpCDF	0	<1.8	1.8	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.106
Mid Point PCDD/F TEQ (WHO 2005)	2.50
Upper Bound PCDD/F TEQ (WHO 2005)	4.88

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		
ALS Sample ID	WG3563440-1	Extraction Date	30-Jun-21		Approved:
Analysis Method	EPA M23	Sample Size	1	sample	*Ella Gdyczynski*
Analysis Type	Blank	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	6		23-Jul-2021

Run Information	**Run 1**
Filename	9-210726A06
Run Date	26-Jul-21 16:05
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 DB5ms US1184748H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.3	1.3	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<0.62	0.62	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<0.93	0.93	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<0.78	0.78	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<0.82	0.82	U		150
1,2,3,4,6,7,8-HpCDD	0.01	35.90	<7.9	1.0	J,R	7.9	150
OCDD	0.0003	37.33	110	1.2	J		300
2,3,7,8-TCDF	0.1	NotFnd	<0.64	0.64	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<1.1	1.1	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.0	1.0	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<1.2	1.2	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<1.1	1.1	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<1.2	1.2	U		150
1,2,3,7,8,9-HxCDF	0.1	34.59	<2.3	1.4	J,R	2.3	150
1,2,3,4,6,7,8-HpCDF	0.01	35.37	<3.5	1.1	J,R	3.5	150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<1.3	1.3	U		150
OCDF	0.0003	37.41	<13	1.0	M,J,R	13	300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD			NS				
13C12-1,2,3,4,7,8-HxCDD			NS				
13C12-2,3,4,7,8-PeCDF			NS				
13C12-1,2,3,4,7,8-HxCDF			NS				
13C12-1,2,3,4,7,8,9-HpCDF			NS				
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.09	60	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.05	65	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.31	65	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.90	62	25-130			
13C12-OCDD	24000	37.33	61	25-130			
13C12-2,3,7,8-TCDF	12000	26.20	61	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.96	60	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.80	63	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.36	65	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.58	65	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**			
Total-TCDD	0	<1.3	1.3	U		30
Total-PeCDD	0	<0.62	0.62	U		150
Total-HxCDD	0	<0.93	0.93	U		150
Total-HpCDD	0	<1.0	1.0	U		150
Total-TCDF	0	<0.64	0.64	U		30
Total-PeCDF	0	<1.1	1.1	U		150
Total-HxCDF	0	<1.4	1.4	U		150
Total-HpCDF	0	<1.3	1.3	U		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.0330
Mid Point PCDD/F TEQ (WHO 2005)	1.85
Upper Bound PCDD/F TEQ (WHO 2005)	3.31

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this compounds was not spiked
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG3563440-2	Extraction Date	30-Jun-21		Approved:
Analysis Method	EPA M23	Sample Size	1	n/a	*Ella Gdyczynski*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	6		23-Jul-2021

Run Information	**Run 1**
Filename	9-210723A02
Run Date	23-Jul-21 04:47
Final Volume	10 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-9 DB5ms US1184748H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1200	27.15	89	70-130	
1,2,3,7,8-PeCDD	6000	32.08	110	70-130	
1,2,3,4,7,8-HxCDD	6000	34.29	100	70-130	
1,2,3,6,7,8-HxCDD	6000	34.34	112	70-130	
1,2,3,7,8,9-HxCDD	6000	34.47	98	70-130	
1,2,3,4,6,7,8-HpCDD	6000	35.93	101	70-130	
OCDD	12000	37.33	86	70-130	
2,3,7,8-TCDF	1200	26.27	92	70-130	
1,2,3,7,8-PeCDF	6000	31.01	108	70-130	
2,3,4,7,8-PeCDF	6000	31.85	102	70-130	
1,2,3,4,7,8-HxCDF	6000	33.76	99	70-130	
1,2,3,6,7,8-HxCDF	6000	33.83	115	70-130	
2,3,4,6,7,8-HxCDF	6000	34.19	96	70-130	
1,2,3,7,8,9-HxCDF	6000	34.62	83	70-130	
1,2,3,4,6,7,8-HpCDF	6000	35.38	94	70-130	
1,2,3,4,7,8,9-HpCDF	6000	36.17	80	70-130	
OCDF	12000	37.41	87	70-130	
Extraction Standards					
13C12-2,3,7,8-TCDD	12000	27.14	46	40-130	
13C12-1,2,3,7,8-PeCDD	12000	32.07	34	40-130	
13C12-1,2,3,6,7,8-HxCDD	12000	34.33	48	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.92	30	25-130	
13C12-OCDD	24000	37.33	20	25-130	
13C12-2,3,7,8-TCDF	12000	26.24	53	40-130	
13C12-1,2,3,7,8-PeCDF	12000	30.99	37	40-130	
13C12-1,2,3,6,7,8-HxCDF	12000	33.82	54	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.38	38	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	12000	34.61	43	40-130	

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2603845		Mississauga,ON
Date of Report	26-Jul-21		L5J 2Y4
Date of Sample Receipt	21-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **PCB Congeners by EPA 1668C**

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	21-22081-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1	21-22081-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1	21-22081-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1	21-22081-SVOC-(16 THRU 20) BLANK APC OUTLET #1	21-22081-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	21-22081-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2
ALS Sample ID	L2603845-1	L2603845-2	L2603845-3	L2603845-4	L2603845-5	L2603845-6
Sample Size	1	1	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	17-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21	17-Jun-21	17-Jun-21
Extraction Date	30-Jun-21	30-Jun-21	30-Jun-21	30-Jun-21	30-Jun-21	30-Jun-21
Target Analytes	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
PCB-081	<8.2	<6.9	<4.3	<7.4	40.5	<6.7
PCB-077	238	354	68.8	<7.2	915	60.0
PCB-123	105	43.2	24.8	<4.0	1230	<13
PCB-118	6190	3320	1900	52.1	82700	1180
PCB-114	142	83.6	42.5	<3.9	2070	<26
PCB-105	1630	986	477	18.4	21100	359
PCB-126	18.7	14.1	7.00	<2.8	26.4	12.7
PCB-167	40.0	33.3	16.5	<1.9	364	14.6
PCB-156/157	109	96.8	39.6	<2.7	841	47.1
PCB-169	16.0	5.89	<3.2	<2.1	<7.0	<5.8
PCB-189	4.99	7.02	3.32	<0.74	9.15	6.81
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-081	40	41	49	50	48	38
13C12-PCB-077	48	45	53	55	51	41
13C12-PCB-123	62	69	87	62	75	71
13C12-PCB-118	57	63	81	57	71	65
13C12-PCB-114	61	69	88	61	75	72
13C12-PCB-105	71	73	92	65	78	74
13C12-PCB-126	56	52	65	68	52	52
13C12-PCB-167	59	66	86	63	77	69
13C12-PCB-156/157	54	62	80	61	70	66
13C12-PCB-169	57	60	65	76	49	53
13C12-PCB-189	75	83	108	79	91	84
Field Spike Standards						
13C12-PCB-031	102	111	108	121	113	118
13C12-PCB-095	53	63	55	65	71	62
13C12-PCB-153	112	111	100	105	110	109
Cleanup Standards						
13C12-PCB-028	46	51	59	46	65	55
13C12-PCB-111	66	66	76	60	75	73
13C12-PCB-178	65	68	77	63	76	75
Homologue Group Totals	pg	pg	pg	pg	pg	pg
Total MonoCB	1020	572	1420	24.1	523	381
Total DiCB	10000	12500	2590	153	11200	5210
Total TriCB	12700	9200	2760	123	34100	1230
Total TetraCB	70600	47200	18200	333	614000	8850
Total PentaCB	60900	34000	13900	354	995000	6980
Total HexaCB	9380	7600	2720	109	189000	1980
Total HeptaCB	516	644	216	10.6	7430	231
Total OctaCB	66.0	147	37.4	4.90	624	53.4
Total NonaCB	8.40	15.2	6.62	<1.7	49.7	13.9
DecaCB	6.40	3.30	5.16	<0.77	10.5	10.4
Total PCB	165000	112000	41900	1110	1850000	24900
Toxic Equivalency - (WHO 2005)						
Lower Bound PCB TEQ	2.62	1.76	0.782	0.00212	5.99	1.32
Mid Point PCB TEQ	2.62	1.76	0.831	0.175	6.20	1.50
Upper Bound PCB TEQ	2.62	1.76	0.879	0.348	6.20	1.50

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	21-22081-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	21-22081-SVOC-(36 THRU 40) BLANK APC OUTLET #2
ALS Sample ID	L2603845-7	L2603845-8
Sample Size	1	1
Sample size units	Sample	Sample
Percent Moisture	n/a	n/a
Sample Matrix	Stack	Stack
Sampling Date	18-Jun-21	18-Jun-21
Extraction Date	30-Jun-21	30-Jun-21
Target Analytes	**pg**	**pg**
PCB-081	<7.7	<7.9
PCB-077	111	10.5
PCB-123	45.4	<3.6
PCB-118	1620	62.6
PCB-114	<41	<3.4
PCB-105	449	22.5
PCB-126	10.6	<3.7
PCB-167	17.3	<1.7
PCB-156/157	56.2	<2.5
PCB-169	<5.3	<2.0
PCB-189	4.34	<0.87
Extraction Standards	**% Rec**	**% Rec**
13C12-PCB-081	50	49
13C12-PCB-077	53	54
13C12-PCB-123	73	64
13C12-PCB-118	67	59
13C12-PCB-114	73	65
13C12-PCB-105	76	71
13C12-PCB-126	66	65
13C12-PCB-167	68	66
13C12-PCB-156/157	64	62
13C12-PCB-169	64	67
13C12-PCB-189	98	82
Field Spike Standards		
13C12-PCB-031	122	104
13C12-PCB-095	57	55
13C12-PCB-153	102	101
Cleanup Standards		
13C12-PCB-028	47	45
13C12-PCB-111	65	62
13C12-PCB-178	64	65
Homologue Group Totals	**pg**	**pg**
Total MonoCB	358	26.3
Total DiCB	7960	5240
Total TriCB	1610	149
Total TetraCB	6930	343
Total PentaCB	8310	388
Total HexaCB	2280	106
Total HeptaCB	169	13.2
Total OctaCB	26.8	3.70
Total NonaCB	10.0	<1.8
DecaCB	7.88	<0.68
Total PCB	27700	6260
Toxic Equivalency - (WHO 2005)		
Lower Bound PCB TEQ	1.14	0.00360
Mid Point PCB TEQ	1.30	0.220
Upper Bound PCB TEQ	1.30	0.436

ALS Life Sciences

Quality Control Summary Report

Sample Name	Method Blank
ALS Sample ID	WG3563440-1
Sample Size	1
Sample size units	Sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	30-Jun-21
Target Analytes	**pg**
PCB-081	<9.0
PCB-077	<8.2
PCB-123	<2.1
PCB-118	<2.1
PCB-114	<2.1
PCB-105	<1.8
PCB-126	<3.0
PCB-167	<1.8
PCB-156/157	<2.7
PCB-169	<2.7
PCB-189	<2.0
Extraction Standards	**% Rec**
13C12-PCB-081	53
13C12-PCB-077	60
13C12-PCB-123	75
13C12-PCB-118	70
13C12-PCB-114	75
13C12-PCB-105	87
13C12-PCB-126	66
13C12-PCB-167	78
13C12-PCB-156/157	71
13C12-PCB-169	76
13C12-PCB-189	95
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	51
13C12-PCB-111	72
13C12-PCB-178	68
Homologue Group Totals	**pg**
Total MonoCB	6.76
Total DiCB	<11
Total TriCB	10.8
Total TetraCB	16.6
Total PentaCB	<1.8
Total HexaCB	<1.1
Total HeptaCB	2.00
Total OctaCB	4.30
Total NonaCB	<3.3
DecaCB	<0.89
Total PCB	40.4
Toxic Equivalency - (WHO 2005)	
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.193
Upper Bound PCB TEQ	0.385

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample
ALS Sample ID	WG3563440-2
Sample Size	1
Sample size units	n/a
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	30-Jun-21
Target Analytes	**% Rec**
PCB-081	104
PCB-077	103
PCB-123	107
PCB-118	109
PCB-114	103
PCB-105	101
PCB-126	105
PCB-167	107
PCB-156/157	104
PCB-169	103
PCB-189	108
Extraction Standards	**% Rec**
13C12-PCB-081	60
13C12-PCB-077	74
13C12-PCB-123	68
13C12-PCB-118	62
13C12-PCB-114	66
13C12-PCB-105	79
13C12-PCB-126	84
13C12-PCB-167	71
13C12-PCB-156/157	64
13C12-PCB-169	83
13C12-PCB-189	84
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	43
13C12-PCB-111	66
13C12-PCB-178	65

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	17-Jun-21	
ALS Sample ID	L2603845-1	Extraction Date	30-Jun-21	Approved:
Analysis Method	EPA 1668C	Sample Size	1 Sample	S. Jin
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	25-Jul-2021

Run Information	**Run 1**	**Run 2**
Filename	5-210708A21	5-210723A10
Run Date	08-Jul-21 15:22	23-Jul-21 21:17
Final Volume	25 ul	25 uL
Dilution Factor	1	1
Analysis Units	pg	pg
Instrument - Column	HRMS-5 SPBOctyl 256608-05	HRMS-5 SPBOctyl 256608-08

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003							NotFnd	<8.2	8.2	U		150
PCB-077	0.0001							22.04	238	7.1			150
PCB-123	0.00003	23.07	105	5.4	M,J		150						
PCB-118	0.00003	23.26	6190	5.4			150						
PCB-114	0.00003	23.57	142	5.2	J		150						
PCB-105	0.00003	23.92	1630	4.6			150						
PCB-126	0.1							25.48	18.7	4.7	M,J		150
PCB-167	0.00003	26.38	40.0	2.8	J		150						
PCB-156/157	0.00003	27.02	109	4.2	J		300						
PCB-169	0.03							28.70	16.0	4.6	M,J		150
PCB-189	0.00003	29.95	4.99	1.5	M,J		150						

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000				21.74	40	10-145
13C12-PCB-077	12000				22.03	48	10-145
13C12-PCB-123	12000	23.08	62	10-145			
13C12-PCB-118	12000	23.25	57	10-145			
13C12-PCB-114	12000	23.56	61	10-145			
13C12-PCB-105	12000	23.91	71	10-145			
13C12-PCB-126	12000				25.46	56	10-145
13C12-PCB-167	12000	26.37	59	10-145			
13C12-PCB-156/157	24000	27.02	54	10-145			
13C12-PCB-169	12000				28.69	57	10-145
13C12-PCB-189	12000	29.94	75	10-145			
Field Spike Standards							
13C12-PCB-031	10000	15.83	102	70-130			
13C12-PCB-095	10000	19.12	53	70-130			
13C12-PCB-153	10000	24.16	112	70-130			
Cleanup Standards							
13C12-PCB-028	12000	16.00	46	5-145			
13C12-PCB-111	12000	22.00	66	10-145			
13C12-PCB-178	12000	25.04	65	10-145			

Homologue Group Totals	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
Total MonoCB	1020	3.3	J		600
Total DiCB	10000	13	J		1200
Total TriCB	12700	3.4	J		1200
Total TetraCB	70600	2.7	J		2400
Total PentaCB	60900	4.1	J		2400
Total HexaCB	9380	2.0	J		2400
Total HeptaCB	516	1.5	J		1200
Total OctaCB	66.0	1.2	J		1200
Total NonaCB	8.40	2.0	J		600
DecaCB	6.40	0.58	J		600
Total PCB	165000		J		4800

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	2.62
Mid Point PCB TEQ	2.62
Upper Bound PCB TEQ	2.62

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	17-Jun-21	
ALS Sample ID	L2603845-2	Extraction Date	30-Jun-21	Approved:
Analysis Method	EPA 1668C	Sample Size	1 Sample	*S. Jin*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	25-Jul-2021

Run Information	**Run 1**	**Run 2**
Filename	5-210708A22	5-210723A11
Run Date	08-Jul-21 16:04	23-Jul-21 21:59
Final Volume	25 ul	25 uL
Dilution Factor	1	1
Analysis Units	pg	pg
Instrument - Column	HRMS-5 SPBOctyl 256608-05	HRMS-5 SPBOctyl 256608-08

Target Analytes	**TEF (WHO 2005)**	**Rat. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**	**Rat. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003							NotFnd	<6.9	6.9	U		150
PCB-077	0.0001							22.05	354	6.4			150
PCB-123	0.00003	23.08	43.2	5.6	M,J		150						
PCB-118	0.00003	23.26	3320	5.7			150						
PCB-114	0.00003	23.57	83.6	5.2	J		150						
PCB-105	0.00003	23.92	986	5.1			150						
PCB-126	0.1							25.49	14.1	4.3	M,J		150
PCB-167	0.00003	26.39	33.3	3.7	J		150						
PCB-156/157	0.00003	27.01	96.8	5.4	J		300						
PCB-169	0.03							28.72	5.89	2.9	M,J		150
PCB-189	0.00003	29.96	7.02	1.2	M,J		150						
Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**				**Time**	**% Rec**	**Limits**			
13C12-PCB-081	12000							21.74	41	10-145			
13C12-PCB-077	12000							22.04	45	10-145			
13C12-PCB-123	12000	23.07	69	10-145									
13C12-PCB-118	12000	23.24	63	10-145									
13C12-PCB-114	12000	23.56	69	10-145									
13C12-PCB-105	12000	23.91	73	10-145									
13C12-PCB-126	12000							25.48	52	10-145			
13C12-PCB-167	12000	26.37	66	10-145									
13C12-PCB-156/157	24000	27.01	62	10-145									
13C12-PCB-169	12000							28.70	60	10-145			
13C12-PCB-189	12000	29.94	83	10-145									
Field Spike Standards													
13C12-PCB-031	10000	15.02	111	70-130									
13C12-PCB-095	10000	19.12	63	70-130									
13C12-PCB-153	10000	24.16	111	70-130									
Cleanup Standards													
13C12-PCB-028	12000	16.00	51	5-145									
13C12-PCB-111	12000	22.00	66	10-145									
13C12-PCB-178	12000	25.04	68	10-145									

Homologue Group Totals	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
Total MonoCB	572	4.0	J		600
Total DiCB	12500	7.1	J		1200
Total TriCB	9200	2.3	J		1200
Total TetraCB	47200	2.2	J		2400
Total PentaCB	34000	2.2	J		2400
Total HexaCB	7600	1.6	J		2400
Total HeptaCB	644	1.2	J		1200
Total OctaCB	147	1.2	J		1200
Total NonaCB	15.2	2.0	J		600
DecaCB	3.30	0.66	J		600
Total PCB	112000		J		4800

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	1.76
Mid Point PCB TEQ	1.76
Upper Bound PCB TEQ	1.76

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
EMPC	Estimated Maximum Possible Concentration -- elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	18-Jun-21	
ALS Sample ID	L2603845-3	Extraction Date	30-Jun-21	Approved:
Analysis Method	EPA 1668C	Sample Size	1 Sample	*S. Jin*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	25-Jul-2021

Run Information	**Run 1**	**Run 2**
Filename	5-210708A23	5-210723A12
Run Date	08-Jul-21 16:47	23-Jul-21 22:41
Final Volume	25 ul	25 uL
Dilution Factor	1	1
Analysis Units	pg	pg
Instrument - Column	HRMS-5 SPBOctyl 256608-05	HRMS-5 SPBOctyl 256608-08

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003							NotFnd	<4.3	4.3	U		150
PCB-077	0.0001							22.05	68.8	4.0	J		150
PCB-123	0.00003	23.07	24.8	3.2	M,J		150						
PCB-118	0.00003	23.25	1900	3.2			150						
PCB-114	0.00003	23.56	42.5	3.0	J		150						
PCB-105	0.00003	23.91	477	3.0			150						
PCB-126	0.1							25.48	7.00	3.2	M,J		150
PCB-167	0.00003	26.37	16.5	1.6	M,J		150						
PCB-156/157	0.00003	27.01	39.6	2.4	J		300						
PCB-169	0.03							NotFnd	<3.2	3.2	U		150
PCB-189	0.00003	29.94	3.32	1.3	J		150						
Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**				**Time**	**% Rec**	**Limits**			
13C12-PCB-081	12000							21.73	49	10-145			
13C12-PCB-077	12000							22.03	53	10-145			
13C12-PCB-123	12000	23.07	87	10-145									
13C12-PCB-118	12000	23.24	81	10-145									
13C12-PCB-114	12000	23.54	88	10-145									
13C12-PCB-105	12000	23.89	92	10-145									
13C12-PCB-126	12000							25.46	65	10-145			
13C12-PCB-167	12000	26.37	86	10-145									
13C12-PCB-156/157	24000	27.01	80	10-145									
13C12-PCB-169	12000							28.69	65	10-145			
13C12-PCB-189	12000	29.94	108	10-145									
Field Spike Standards													
13C12-PCB-031	10000	15.81	108	70-130									
13C12-PCB-095	10000	19.10	55	70-130									
13C12-PCB-153	10000	24.15	100	70-130									
Cleanup Standards													
13C12-PCB-028	12000	15.99	59	5-145									
13C12-PCB-111	12000	21.99	76	10-145									
13C12-PCB-178	12000	25.03	77	10-145									

Homologue Group Totals	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
Total MonoCB	1420	3.9	J		600
Total DiCB	2590	7.2	J		1200
Total TriCB	2760	2.5	J		1200
Total TetraCB	18200	1.8	J		2400
Total PentaCB	13900	2.1	J		2400
Total HexaCB	2720	0.85	J		2400
Total HeptaCB	216	1.1	J		1200
Total OctaCB	37.4	0.76	J		1200
Total NonaCB	6.62	1.2	J		600
DecaCB	5.16	0.49	J		500
Total PCB	41900		J		4800

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.782
Mid Point PCB TEQ	0.831
Upper Bound PCB TEQ	0.879

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(16 THRU 20) BLANK APC OUTLET #1**	Sampling Date	18-Jun-21	
ALS Sample ID	L2603845-4	Extraction Date	30-Jun-21	Approved:
Analysis Method	EPA 1668C	Sample Size	1 Sample	S. Jin
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	25-Jul-2021

Run Information	**Run 1**	**Run 2**
Filename	5-210708A24	5-210723A08
Run Date	08-Jul-21 17:29	23-Jul-21 19:52
Final Volume	25 ul	25 uL
Dilution Factor	1	1
Analysis Units	pg	pg
Instrument - Column	HRMS-5 SPBOctyl 256608-05	HRMS-5 SPBOctyl 256608-06

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.00003							NotFnd	<7.4	7.4	U		150
PCB-077	0.0001							NotFnd	<7.2	7.2	U		150
PCB-123	0.00003	23.08	<4.0	4.0	M,U		150						
PCB-118	0.00003	23.26	52.1	4.0	M,J		150						
PCB-114	0.00003	23.57	<3.9	3.9	U	1.6	150						
PCB-105	0.00003	23.93	18.4	3.9	J		150						
PCB-126	0.1							NotFnd	<2.8	2.8	U		150
PCB-167	0.00003	NotFnd	<1.9	1.9	U		150						
PCB-156/157	0.00003	NotFnd	<2.7	2.7	U		300						
PCB-169	0.03							NotFnd	<2.1	2.1	U		150
PCB-189	0.00003	NotFnd	<0.74	0.74	U		150						
Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**				**Time**	**% Rec**	**Limits**			
13C12-PCB-081	12000							21.73	50	10-145			
13C12-PCB-077	12000							22.03	55	10-145			
13C12-PCB-123	12000	23.08	62	10-145									
13C12-PCB-118	12000	23.25	57	10-145									
13C12-PCB-114	12000	23.56	61	10-145									
13C12-PCB-105	12000	23.91	65	10-145									
13C12-PCB-126	12000							25.46	68	10-145			
13C12-PCB-167	12000	26.37	63	10-145									
13C12-PCB-156/157	24000	27.01	61	10-145									
13C12-PCB-169	12000							28.69	76	10-145			
13C12-PCB-189	12000	29.94	79	10-145									
Field Spike Standards													
13C12-PCB-031	10000	15.83	121	70-130									
13C12-PCB-095	10000	19.12	65	70-130									
13C12-PCB-153	10000	24.16	105	70-130									
Cleanup Standards													
13C12-PCB-028	12000	16.00	46	5-145									
13C12-PCB-111	12000	22.00	60	10-145									
13C12-PCB-178	12000	25.04	63	10-145									

Homologue Group Totals	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
Total MonoCB	24.1	2.6	J		600
Total DiCB	153	9.2	J		1200
Total TriCB	123	3.0	J		1200
Total TetraCB	333	1.8	J		2400
Total PentaCB	354	2.7	J		2400
Total HexaCB	109	1.4	J		2400
Total HeptaCB	10.6	0.74	J		1200
Total OctaCB	4.90	1.1	J		1200
Total NonaCB	<1.7	1.7	U		600
DecaCB	<0.77	0.77	U		600
Total PCB	1110		J		4800

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.00212
Mid Point PCB TEQ	0.175
Upper Bound PCB TEQ	0.348

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	17-Jun-21	
ALS Sample ID	L2603845-5	Extraction Date	30-Jun-21	Approved:
Analysis Method	EPA 1668C	Sample Size	1 Sample	*S. Jin*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	25-Jul-2021

Run Information	**Run 1**	**Run 2**
Filename	5-210708A25	5-210723A13
Run Date	08-Jul-21 18:11	23-Jul-21 23:23
Final Volume	25 ul	25 uL
Dilution Factor	1	1
Analysis Units	pg	pg
Instrument - Column	HRMS-5 SPBOctyl 256608-05	HRMS-5 SPBOctyl 256608-08

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003							21.74	40.5	6.5	J		150
PCB-077	0.0001							22.03	915	6.5			150
PCB-123	0.00003	23.07	1230	5.3	M		150						
PCB-118	0.00003	23.25	82700	5.1			150						
PCB-114	0.00003	23.56	2070	5.3			150						
PCB-105	0.00003	23.92	21100	5.1			150						
PCB-126	0.1							25.46	26.4	3.8	M,J		150
PCB-167	0.00003	26.38	364	2.9			150						
PCB-156/157	0.00003	27.01	841	4.3			300						
PCB-169	0.03							28.70	<7.0	3.1	M,J,R	7.0	150
PCB-189	0.00003	29.95	9.15	1.1	J		150						

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000				21.73	48	10-145
13C12-PCB-077	12000				22.02	51	10-145
13C12-PCB-123	12000	23.07	75	10-145			
13C12-PCB-118	12000	23.24	71	10-145			
13C12-PCB-114	12000	23.54	75	10-145			
13C12-PCB-105	12000	23.91	78	10-145			
13C12-PCB-126	12000				25.46	52	10-145
13C12-PCB-167	12000	26.37	77	10-145			
13C12-PCB-156/157	24000	27.01	70	10-145			
13C12-PCB-169	12000				28.69	49	10-145
13C12-PCB-189	12000	29.94	91	10-145			
Field Spike Standards							
13C12-PCB-031	10000	15.82	113	70-130			
13C12-PCB-095	10000	19.11	71	70-130			
13C12-PCB-153	10000	24.16	110	70-130			
Cleanup Standards							
13C12-PCB-028	12000	15.99	65	5-145			
13C12-PCB-111	12000	22.00	75	10-145			
13C12-PCB-178	12000	25.04	76	10-145			

Homologue Group Totals	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
Total MonoCB	523	2.7	J		600
Total DiCB	11200	5.1	J		1200
Total TriCB	34100	2.1	J		1200
Total TetraCB	614000	2.3	J		2400
Total PentaCB	995000	2.4	J		2400
Total HexaCB	189000	2.0	J		2400
Total HeptaCB	7430	1.1	J		1200
Total OctaCB	624	0.78	J		1200
Total NonaCB	49.7	1.2	J		600
DecaCB	10.5	0.53	J		600
Total PCB	1850000		J		4800

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	5.99
Mid Point PCB TEQ	6.20
Upper Bound PCB TEQ	6.20

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	17-Jun-21	
ALS Sample ID	L2603845-6	Extraction Date	30-Jun-21	Approved:
Analysis Method	EPA 1668C	Sample Size	1 Sample	*S. Jin*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	25-Jul-2021

Run Information	**Run 1**	**Run 2**
Filename	5-210708A26	5-210723A14
Run Date	08-Jul-21 18:53	24-Jul-21 00:05
Final Volume	25 ul	25 uL
Dilution Factor	1	1
Analysis Units	pg	pg
Instrument - Column	HRMS-5 SPBOctyl 256608-05	HRMS-5 SPBOctyl 256608-08

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003							21.76	<6.7	5.9	J,R	8.7	150
PCB-077	0.0001							22.06	60.0	5.8	J		150
PCB-123	0.00003	23.06	<13	5.8	M,J,R	13	150						
PCB-118	0.00003	23.24	1180	5.8			150						
PCB-114	0.00003	23.54	<26	5.6	J,R	26	150						
PCB-105	0.00003	23.91	359	5.5			150						
PCB-126	0.1							25.48	12.7	4.5	M,J		150
PCB-167	0.00003	26.37	14.6	2.6	J		150						
PCB-156/157	0.00003	26.99	47.1	3.8	J		300						
PCB-169	0.03							28.70	<5.8	3.9	J,R	5.8	150
PCB-189	0.00003	29.95	6.81	1.4	J		150						
Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**				**Time**	**% Rec**	**Limits**			
13C12-PCB-081	12000							21.75	38	10-145			
13C12-PCB-077	12000							22.04	41	10-145			
13C12-PCB-123	12000	23.06	71	10-145									
13C12-PCB-118	12000	23.23	65	10-145									
13C12-PCB-114	12000	23.53	72	10-145									
13C12-PCB-105	12000	23.89	74	10-145									
13C12-PCB-126	12000							25.46	52	10-145			
13C12-PCB-167	12000	26.36	69	10-145									
13C12-PCB-156/157	24000	27.00	66	10-145									
13C12-PCB-169	12000							28.69	53	10-145			
13C12-PCB-189	12000	29.92	84	10-145									
Field Spike Standards													
13C12-PCB-031	10000	15.81	118	70-130									
13C12-PCB-095	10000	19.10	62	70-130									
13C12-PCB-153	10000	24.15	109	70-130									
Cleanup Standards													
13C12-PCB-028	12000	15.98	55	5-145									
13C12-PCB-111	12000	21.98	73	10-145									
13C12-PCB-178	12000	25.03	75	10-145									

Homologue Group Totals	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
Total MoneCB	381	5.0	J		600
Total DiCB	5210	11	J		1200
Total TriCB	1230	2.6	J		1200
Total TetraCB	8850	2.3	J		2400
Total PentaCB	6980	3.2	J		2400
Total HexaCB	1980	1.3	J		2400
Total HeptaCB	231	1.4	J		1200
Total OctaCB	53.4	1.1	J		1200
Total NonaCB	13.9	1.8	J		600
DecaCB	10.4	0.98	J		600
Total PCB	24900		J		4800

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	1.32
Mid Point PCB TEQ	1.50
Upper Bound PCB TEQ	1.50

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	18-Jun-21	
ALS Sample ID	L2603845-7	Extraction Date	30-Jun-21	Approved:
Analysis Method	EPA 1668C	Sample Size	1 Sample	*S. Jin*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	25-Jul-2021

Run Information	**Run 1**	**Run 2**
Filename	5-210708A27	5-210723A15
Run Date	08-Jul-21 19:35	24-Jul-21 00:47
Final Volume	25 ul	25 uL
Dilution Factor	1	1
Analysis Units	pg	pg
Instrument - Column	HRMS-5 SPBOctyl 256608-05	HRMS-5 SPBOctyl 256608-05

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003							21.73	<7.7	4.2	J,R	7.7	150
PCB-077	0.0001							22.04	111	4.1	J		150
PCB-123	0.00003	23.07	45.4	12	M,J		150						
PCB-118	0.00003	23.26	1620	12			150						
PCB-114	0.00003	23.56	<41	12	J,R	41	150						
PCB-105	0.00003	23.92	449	12			150						
PCB-126	0.1							25.46	10.6	3.5	M,J		150
PCB-167	0.00003	26.37	17.3	6.8	J		150						
PCB-156/157	0.00003	27.01	56.2	10	J		300						
PCB-169	0.03							28.70	<5.3	2.2	M,J,R	5.3	150
PCB-189	0.00003	29.96	4.34	3.2	M,J		150						
Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**				**Time**	**% Rec**	**Limits**			
13C12-PCB-081	12000							21.73	50	10-145			
13C12-PCB-077	12000							22.02	53	10-145			
13C12-PCB-123	12000	23.08	73	10-145									
13C12-PCB-118	12000	23.25	67	10-145									
13C12-PCB-114	12000	23.56	73	10-145									
13C12-PCB-105	12000	23.91	76	10-145									
13C12-PCB-126	12000							25.46	66	10-145			
13C12-PCB-167	12000	26.37	68	10-145									
13C12-PCB-156/157	24000	27.01	64	10-145									
13C12-PCB-169	12000							28.69	64	10-145			
13C12-PCB-189	12000	29.94	98	10-145									
Field Spike Standards													
13C12-PCB-031	10000	15.83	122	70-130									
13C12-PCB-095	10000	19.12	57	70-130									
13C12-PCB-153	10000	24.16	102	70-130									
Cleanup Standards													
13C12-PCB-028	12000	16.01	47	5-145									
13C12-PCB-111	12000	22.00	65	10-145									
13C12-PCB-178	12000	25.04	64	10-145									

Homologue Group Totals	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
Total MonoCB	358	17	J		600
Total DiCB	7960	40	J		1200
Total TriCB	1610	12	J		1200
Total TetraCB	6930	4.1	J		2400
Total PentaCB	8310	3.5	J		2400
Total HexaCB	2280	2.2	J		2400
Total HeptaCB	169	3.2	J		1200
Total OctaCB	26.8	1.9	J		1200
Total NonaCB	10.0	3.4	J		600
DecaCB	7.88	1.2	J		600
Total PCB	27700		J		4800

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	1.14
Mid Point PCB TEQ	1.30
Upper Bound PCB TEQ	1.30

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported valve represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(36 THRU 40) BLANK APC OUTLET #2**	Sampling Date	18-Jun-21	
ALS Sample ID	L2603845-8	Extraction Date	30-Jun-21	Approved:
Analysis Method	EPA 1668C	Sample Size	1 Sample	*S. Jin*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	25-Jul-2021

Run Information	**Run 1**	**Run 2**
Filename	5-210708A28	5-210723A09
Run Date	08-Jul-21 20:17	23-Jul-21 20:34
Final Volume	25 ul	25 uL
Dilution Factor	1	1
Analysis Units	pg	pg
Instrument - Column	HRMS-5 SPBOctyl 256608-05	HRMS-5 SPBOctyl 256608-08

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003							NotFnd	<7.9	7.9	U		150
PCB-077	0.0001							22.05	10.5	7.5	J		150
PCB-123	0.00003	NotFnd	<3.6	3.6	U		150						
PCB-118	0.00003	23.25	62.6	3.6	M,J		150						
PCB-114	0.00003	NotFnd	<3.4	3.4	U		150						
PCB-105	0.00003	23.92	22.5	3.3	J		150						
PCB-126	0.1							NotFnd	<3.7	3.7	U		150
PCB-167	0.00003	26.38	<1.7	1.7	U	1.3	150						
PCB-156/157	0.00003	NotFnd	<2.5	2.5	U		300						
PCB-169	0.03							NotFnd	<2.0	2.0	U		150
PCB-189	0.00003	NotFnd	<0.87	0.87	U		150						

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000				21.74	49	10-145
13C12-PCB-077	12000				22.04	54	10-145
13C12-PCB-123	12000	23.07	64	10-145			
13C12-PCB-118	12000	23.24	59	10-145			
13C12-PCB-114	12000	23.54	65	10-145			
13C12-PCB-105	12000	23.89	71	10-145			
13C12-PCB-126	12000				25.48	65	10-145
13C12-PCB-167	12000	26.36	66	10-145			
13C12-PCB-156/157	24000	27.01	62	10-145			
13C12-PCB-169	12000				28.70	67	10-145
13C12-PCB-189	12000	29.94	82	10-145			
Field Spike Standards							
13C12-PCB-031	10000	15.81	104	70-130			
13C12-PCB-095	10000	19.11	55	70-130			
13C12-PCB-153	10000	24.15	101	70-130			
Cleanup Standards							
13C12-PCB-028	12000	15.99	45	5-145			
13C12-PCB-111	12000	21.99	62	10-145			
13C12-PCB-178	12000	25.03	65	10-145			

Homologue Group Totals	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
Total MonoCB	26.3	3.8	J		600
Total DiCB	5240	9.5	J		1200
Total TriCB	149	2.2	J		1200
Total TetraCB	343	1.8	J		2400
Total PentaCB	388	3.0	J		2400
Total HexaCB	106	1.0	J		2400
Total HeptaCB	13.2	0.87	J		1200
Total OctaCB	3.70	0.97	J		1200
Total NonaCB	<1.8	1.8	U		600
DecaCB	<0.68	0.68	U		600
Total PCB	6260		J		4800

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.00360
Mid Point PCB TEQ	0.220
Upper Bound PCB TEQ	0.436

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		Approved:
ALS Sample ID	WG3563440-1	Extraction Date	30-Jun-21		*S. Jin*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Blank	Percent Moisture	n/a		25-Jul-2021
Sample Matrix	QC	Split Ratio	6		

Run Information	**Run 1**	**Run 2**
Filename	5-210708A19	5-210723A06
Run Date	08-Jul-21 13:58	23-Jul-21 18:28
Final Volume	25 ul	25 uL
Dilution Factor	1	1
Analysis Units	pg	pg
Instrument - Column	HRMS-5 SPBOctyl 256608-05	HRMS-5 SPBOctyl 256608-08

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003							NotFnd	<9.0	9.0	U		150
PCB-077	0.0001							NotFnd	<8.2	8.2	U		150
PCB-123	0.00003	NotFnd	<2.1	2.1	U		150						
PCB-118	0.00003	NotFnd	<2.1	2.1	U		150						
PCB-114	0.00003	NotFnd	<2.1	2.1	U		150						
PCB-105	0.00003	23.91	<1.8	1.8	U	1.7	150						
PCB-126	0.1							NotFnd	<3.0	3.0	U		150
PCB-167	0.00003	NotFnd	<1.8	1.8	U		150						
PCB-156/157	0.00003	NotFnd	<2.7	2.7	U		300						
PCB-169	0.03							NotFnd	<2.7	2.7	U		150
PCB-189	0.00003	29.95	<2.0	1.5	J,R	2.0	150						

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000				21.74	53	10-145
13C12-PCB-077	12000				22.04	60	10-145
13C12-PCB-123	12000	23.07	75	10-145			
13C12-PCB-118	12000	23.24	70	10-145			
13C12-PCB-114	12000	23.54	75	10-145			
13C12-PCB-105	12000	23.91	87	10-145			
13C12-PCB-126	12000				25.48	66	10-145
13C12-PCB-167	12000	26.37	78	10-145			
13C12-PCB-156/157	24000	27.01	71	10-145			
13C12-PCB-169	12000				28.70	76	10-145
13C12-PCB-189	12000	29.94	95	10-145			
Field Spike Standards							
13C12-PCB-031			NS	70-130			
13C12-PCB-095			NS	70-130			
13C12-PCB-153			NS	70-130			
Cleanup Standards							
13C12-PCB-028	12000	16.00	51	5-145			
13C12-PCB-111	12000	22.00	72	10-145			
13C12-PCB-178	12000	25.04	68	10-145			

Homologue Group Totals	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
Total MoneCB	6.76	3.6	J		600
Total DiCB	<11	11	U		1200
Total TriCB	10.8	2.7	J		1200
Total TetraCB	16.6	2.1	J		2400
Total PentaCB	<1.8	1.8	U		2400
Total HexaCB	<1.1	1.1	U		2400
Total HeptaCB	2.00	1.1	J		1200
Total OctaCB	4.30	1.2	J		1200
Total NonaCB	<3.3	3.3	U		600
DecaCB	<0.89	0.89	U		600
Total PCB	40.4		J		4800

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.193
Upper Bound PCB TEQ	0.385

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
NS	Indicates that this compound was not added.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG3563440-2	Extraction Date	30-Jun-21		Approved:
Analysis Method	EPA 1668C	Sample Size	1	n/a	*S. Jin*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	6		25-Jul-2021

Run Information	**Run 1**	**Run 2**
Filename	5-210708A17	5-210723A04
Run Date	08-Jul-21 12:34	23-Jul-21 17:04
Final Volume	25 ul	25 uL
Dilution Factor	1	1
Analysis Units	% Rec	% Rec
Instrument - Column	HRMS-5 SPBOctyl 256608-05	HRMS-5 SPBOctyl 256608-08

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**	**Ret. Time**	**% Rec**	**Flags**
PCB-081	6000	21.84	104	60-135				
PCB-077	6000	22.14	103	60-135				
PCB-123	6000	23.10	107	60-135				
PCB-118	6000	23.28	109	60-135				
PCB-114	6000	23.58	103	60-135				
PCB-105	6000	23.93	101	60-135				
PCB-126	6000	25.52	105	60-135				
PCB-167	6000	26.40	107	60-135				
PCB-156/157	12000	27.04	104	60-135				
PCB-169	6000	28.70	103	60-135				
PCB-189	6000	29.96	108	60-135				
Extraction Standards		**Time**	**% Rec**	**Limits**		**Time**	**% Rec**	
13C12-PCB-081	12000	21.83	60	40-145				
13C12-PCB-077	12000	22.13	74	40-145				
13C12-PCB-123	12000	23.08	68	40-145				
13C12-PCB-118	12000	23.25	62	40-145				
13C12-PCB-114	12000	23.57	66	40-145				
13C12-PCB-105	12000	23.92	79	40-145				
13C12-PCB-126	12000	25.51	84	40-145				
13C12-PCB-167	12000	26.38	71	40-145				
13C12-PCB-156/157	24000	27.02	64	40-145				
13C12-PCB-169	12000	28.69	83	40-145				
13C12-PCB-189	12000	29.95	84	40-145				
Field Spike Standards								
13C12-PCB-031			NS	70-130				
13C12-PCB-095			NS	70-130				
13C12-PCB-153			NS	70-130				
Cleanup Standards								
13C12-PCB-028	12000	16.01	43	15-145				
13C12-PCB-111	12000	22.02	66	40-145				
13C12-PCB-178	12000	25.05	65	40-145				

NS Indicates that this compound was not added.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2603845		Mississauga, ON L5J 2Y4
Date of Report	20-Jul-21		Canada
Date of Sample Receipt	21-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **CB by LRGC/MS - Isotope dilution**

The field spike target was observed in all field samples but was not quantifiable due to interference.

Certified by: _____
Ron McLeod, Ph.D.
Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Media Blank		21-22081-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		21-22081-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		21-22081-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		21-22081-SVOC-(16 THRU 20) BLANK APC OUTLET #1	
ALS Sample ID	WG3563440-1		L2603845-1		L2603845-2		L2603845-3		L2603845-4	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		17-Jun-21		17-Jun-21		18-Jun-21		18-Jun-21	
Extraction Date	30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Chlorobenzene	<12	U	2100	R	3020		2460	R	NQ	
1,3-Dichlorobenzene	<12	U	170		221		207		<12	U
1,4-Dichlorobenzene	<12	U	116		127		126		<12	U
1,2-Dichlorobenzene	<12	U	75.4		136		122		<12	U
1,3,5-Trichlorobenzene	<12	U	<12	U	12.7	M	16.4		<12	U
1,2,4-Trichlorobenzene	<12	U	<12	U	58	M	53.4	M	<12	U
1,2,3-Trichlorobenzene	<12	U	<12	U	26.7	M	12.9	M	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
1,2,3,4-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Pentachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Hexachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
13C6-Chlorobenzene	36		52		55		53		NR	
13C6-1,4-Dichlorobenzene	66		106		106		78		74	
13C6-1,2,3-Trichlorobenzene	53		92		89		71		69	
13C6-1,2,3,4-Tetrachlorobenzene	66		32		42		60		27	
13C6-Pentachlorobenzene	76		32		47		72		28	
13C6-Hexachlorobenzene	95		31		48		72		32	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NQ	Indicates that this compound is not quantifiable due to ES loss
NR	Indicates that this compound was not recovered

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	21-22081-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2		21-22081-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2		21-22081-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2		21-22081-SVOC-(36 THRU 40) BLANK APC OUTLET #2		Laboratory Control Sample	Laboratory Control Sample
ALS Sample ID	L2603845-5		L2603845-6		L2603845-7		L2603845-8		WG3563440-2	WG3563440-5
Sample Size	1		1		1		1		1	1
Sample units	sample		sample		sample		sample		n/a	n/a
Moisture Content	n/a		n/a		n/a		n/a		n/a	n/a
Matrix	Stack		Stack		Stack		Stack		QC	QC
Sampling Date	17-Jun-21		17-Jun-21		18-Jun-21		18-Jun-21		n/a	n/a
Extraction Date	30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21	30-Jun-21
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**	**% Recovery**
Chlorobenzene	1690		2000	R	1920	R	<12	U		
1,3-Dichlorobenzene	155		189		178		<12	U	130	126
1,4-Dichlorobenzene	123	M	166		108		<12	U	100	131
1,2-Dichlorobenzene	100		89.8	M	100		26.9	M,R	105	99
1,3,5-Trichlorobenzene	12.7		15.6		<12	U	<12	U	108	136
1,2,4-Trichlorobenzene	36.3		41.7		36.2		<12	U	94	120
1,2,3-Trichlorobenzene	19		32.8	M	32.5		<12	U	105	131
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	119	115
1,2,3,4-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	129	101
Pentachlorobenzene	<12	U	<12	U	<12	U	<12	U	124	132
Hexachlorobenzene	<12	U	<12	U	<12	U	<12	U	110	125
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	**%Rec**
13C6-Chlorobenzene	26		44		39		48		74	40
13C6-1,4-Dichlorobenzene	95		93		88		93		88	62
13C6-1,2,3-Trichlorobenzene	90		79		84		81		94	54
13C6-1,2,3,4-Tetrachlorobenzene	62		58		60		30		91	54
13C6-Pentachlorobenzene	70		59		70		31		92	56
13C6-Hexachlorobenzene	66		56		68		29		94	65

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**Media Blank**	Sampling Date	n/a
ALS Sample ID	WG3563440-1	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071607.D
Run Date	7/16/2021 9:01
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<12	U
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	6.87	<12	U
1,2-Dichlorobenzene	NotFnd	<12	U
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Extraction Standards			**%Rec**
13C6-Chlorobenzene	300	4.57	36
13C6-1,4-Dichlorobenzene	300	6.86	66
13C6-1,2,3-Trichlorobenzene	300	9.27	53
13C6-1,2,3,4-Tetrachlorobenzene	300	11.00	66
13C6-Pentachlorobenzene	300	12.36	76
13C6-Hexachlorobenzene	300	14.00	95

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	17-Jun-21
ALS Sample ID	L2603845-1	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071611.D
Run Date	7/16/2021 10:24
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.55	2100	R
1,3-Dichlorobenzene	6.80	170	
1,4-Dichlorobenzene	6.88	116	
1,2-Dichlorobenzene	7.17	75.4	
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.21	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.54	52	M
13C6-1,4-Dichlorobenzene	300	6.87	106	
13C6-1,2,3-Trichlorobenzene	300	9.27	92	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.99	32	
13C6-Pentachlorobenzene	300	12.34	32	
13C6-Hexachlorobenzene	300	13.98	31	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	17-Jun-21
ALS Sample ID	L2603845-2	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071612.D
Run Date	7/16/2021 10:44
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.59	3020	
1,3-Dichlorobenzene	6.80	221	
1,4-Dichlorobenzene	6.88	127	
1,2-Dichlorobenzene	7.17	136	
1,3,5-Trichlorobenzene	8.34	12.7	M
1,2,4-Trichlorobenzene	8.86	58	M
1,2,3-Trichlorobenzene	9.25	26.7	M
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.59	55	M
13C6-1,4-Dichlorobenzene	300	6.88	106	
13C6-1,2,3-Trichlorobenzene	300	9.27	89	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.99	42	
13C6-Pentachlorobenzene	300	12.34	47	
13C6-Hexachlorobenzene	300	13.98	48	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-3	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071613.D
Run Date	7/16/2021 11:05
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.58	2460	R
1,3-Dichlorobenzene	6.81	207	
1,4-Dichlorobenzene	6.89	126	
1,2-Dichlorobenzene	7.17	122	
1,3,5-Trichlorobenzene	8.34	16.4	
1,2,4-Trichlorobenzene	8.86	53.4 M	
1,2,3-Trichlorobenzene	9.27	12.9 M	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.50	<12	U
1,2,3,4-Tetrachlorobenzene	10.99	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.58	53 M	
13C6-1,4-Dichlorobenzene	300	6.88	78	
13C6-1,2,3-Trichlorobenzene	300	9.27	71	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.99	60	
13C6-Pentachlorobenzene	300	12.34	72	
13C6-Hexachlorobenzene	300	13.98	72	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(16 THRU 20) BLANK APC OUTLET #1**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-4	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071609.D
Run Date	7/16/2021 9:42
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		NQ	
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	6.81	<12	U
1,2-Dichlorobenzene	7.07	<12	U
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Extraction Standards			**%Rec**
13C6-Chlorobenzene			NR
13C6-1,4-Dichlorobenzene	300	6.89	74
13C6-1,2,3-Trichlorobenzene	300	9.27	69
13C6-1,2,3,4-Tetrachlorobenzene	300	10.99	27
13C6-Pentachlorobenzene	300	12.34	28
13C6-Hexachlorobenzene	300	13.99	32

U	Indicates that this compound was not detected above the MDL.
NR	Indicates that this compound was not recovered.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	17-Jun-21
ALS Sample ID	L2603845-5	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071614.D
Run Date	7/16/2021 11:26
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.59	1690	
1,3-Dichlorobenzene	6.78	155	
1,4-Dichlorobenzene	6.86	123	M
1,2-Dichlorobenzene	7.16	100	
1,3,5-Trichlorobenzene	8.34	12.7	
1,2,4-Trichlorobenzene	8.86	36.3	
1,2,3-Trichlorobenzene	9.28	19	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.50	<12	U
1,2,3,4-Tetrachlorobenzene	11.16	<12	U
Pentachlorobenzene	12.33	<12	U
Hexachlorobenzene	13.98	<12	U

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.59	26	M R
13C6-1,4-Dichlorobenzene	300	6.86	95	
13C6-1,2,3-Trichlorobenzene	300	9.27	90	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.99	62	
13C6-Pentachlorobenzene	300	12.34	70	
13C6-Hexachlorobenzene	300	13.98	66	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	17-Jun-21
ALS Sample ID	L2603845-6	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071615.D
Run Date	7/16/2021 11:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.58	2000	R
1,3-Dichlorobenzene	6.78	189	
1,4-Dichlorobenzene	6.86	166	
1,2-Dichlorobenzene	7.16	89.8	M
1,3,5-Trichlorobenzene	8.34	15.6	
1,2,4-Trichlorobenzene	8.87	41.7	
1,2,3-Trichlorobenzene	9.26	32.8	M
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.57	44	M
13C6-1,4-Dichlorobenzene	300	6.86	93	
13C6-1,2,3-Trichlorobenzene	300	9.27	79	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.99	58	
13C6-Pentachlorobenzene	300	12.34	59	
13C6-Hexachlorobenzene	300	13.98	56	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-7	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071616.D
Run Date	7/16/2021 12:07
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.58	1920	R
1,3-Dichlorobenzene	6.79	178	
1,4-Dichlorobenzene	6.87	108	
1,2-Dichlorobenzene	7.17	100	
1,3,5-Trichlorobenzene	8.34	<12	U
1,2,4-Trichlorobenzene	8.86	36.2	
1,2,3-Trichlorobenzene	9.25	32.5	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	12.34	<12	U
Hexachlorobenzene	NotFnd	<12	U

Extraction Standards			**%Rec**
13C6-Chlorobenzene	300	4.58	39
13C6-1,4-Dichlorobenzene	300	6.87	88
13C6-1,2,3-Trichlorobenzene	300	9.27	84
13C6-1,2,3,4-Tetrachlorobenzene	300	10.99	60
13C6-Pentachlorobenzene	300	12.34	70
13C6-Hexachlorobenzene	300	13.98	68

U Indicates that this compound was not detected above the MDL.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(36 THRU 40) BLANK APC OUTLET #2**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-8	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071610.D
Run Date	7/16/2021 10:03
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<12	U
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	6.87	<12	U
1,2-Dichlorobenzene	7.06	26.9 M	R
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.57	48 M	
13C6-1,4-Dichlorobenzene	300	6.87	93	
13C6-1,2,3-Trichlorobenzene	300	9.27	81	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.00	30	
13C6-Pentachlorobenzene	300	12.34	31	
13C6-Hexachlorobenzene	300	13.99	29	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3563440-2	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071605.D
Run Date	7/16/2021 8:19
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene			NS	
1,3-Dichlorobenzene	300	6.84	130	
1,4-Dichlorobenzene	300	6.91	100	
1,2-Dichlorobenzene	300	7.19	105	
1,3,5-Trichlorobenzene	300	8.35	108	
1,2,4-Trichlorobenzene	300	8.87	94	
1,2,3-Trichlorobenzene	300	9.27	105	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	600	10.50	119	
1,2,3,4-Tetrachlorobenzene	300	11.00	129	
Pentachlorobenzene	300	12.36	124	
Hexachlorobenzene	300	14.00	110	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.59	74	
13C6-1,4-Dichlorobenzene	300	6.91	88	
13C6-1,2,3-Trichlorobenzene	300	9.27	94	R
13C6-1,2,3,4-Tetrachlorobenzene	300	10.99	91	
13C6-Pentachlorobenzene	300	12.35	92	
13C6-Hexachlorobenzene	300	14.00	94	

NS Indicates that this compound was not spiked in

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3563440-5	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
20-Jul-2021

Run Information	**Run 1**
Filename	21071604.D
Run Date	7/16/2021 7:58
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene			NS	
1,3-Dichlorobenzene	30	6.78	126	
1,4-Dichlorobenzene	30	6.87	131	
1,2-Dichlorobenzene	30	7.16	99	
1,3,5-Trichlorobenzene	30	8.34	136	
1,2,4-Trichlorobenzene	30	8.86	120	
1,2,3-Trichlorobenzene	30	9.27	131	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	60	10.50	115	
1,2,3,4-Tetrachlorobenzene	30	11.00	101	
Pentachlorobenzene	30	12.38	132	
Hexachlorobenzene	30	14.01	125	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.55	40	
13C6-1,4-Dichlorobenzene	300	6.86	62	
13C6-1,2,3-Trichlorobenzene	300	9.27	54	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.00	54	
13C6-Pentachlorobenzene	300	12.37	56	
13C6-Hexachlorobenzene	300	14.01	65	

NS Indicates that this compound was not spiked in.

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2603845		Mississauga, ON L5J 2Y4
Date of Report	28-Jul-21		Canada
Date of Sample Receipt	21-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		21-22081-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		21-22081-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		21-22081-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		21-22081-SVOC-(16 THRU 20) BLANK APC OUTLET #1	
ALS Sample ID	WG3563440-1		L2603845-1		L2603845-2		L2603845-3		L2603845-4	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		17-Jun-21		17-Jun-21		18-Jun-21		18-Jun-21	
Extraction Date	30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
2-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
4-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,6-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4/2,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3,4-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,4-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,4,5-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
Pentachlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	21	M	62		61		52		21	
13C6-2,4-Dichlorophenol (ES)	6		68		62		51		11	
13C6-2,4,5-Trichlorophenol (ES)	24		47		46		43		28	
13C6-2,3,4,5-Tetrachlorophenol (ES)	47		48		49		43		80	
13C6-Pentachlorophenol (ES)	122	M	39		42		38		138	

U	Indicates that this compound was not detected above the LOR.
M	Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Summary Report

Sample Name	21-22081-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2		21-22081-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2		21-22081-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2		21-22081-SVOC-(36 THRU 40) BLANK APC OUTLET #2		Laboratory Control Sample (1200ng)		Laboratory Control Sample (120ng)	
ALS Sample ID	L2603845-5		L2603845-6		L2603845-7		L2603845-8		WG3563440-2		WG3563440-5	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		n/a		n/a	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	Stack		Stack		Stack		Stack		QC		QC	
Sampling Date	17-Jun-21		17-Jun-21		18-Jun-21		18-Jun-21		n/a		n/a	
Extraction Date	30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**		**% Recovery**	
2-Chlorophenol	<60	U	<60	U	<60	U	<60	U	92		119	M
3-Chlorophenol	<60	U	<60	U	<60	U	<60	U				
4-Chlorophenol	<60	U	<60	U	<60	U	<60	U				
2,6-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	72		85	M
2,4/2,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	100		113	M
3,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U				
2,3-Dichlorophenol	<60	U	<60	U	<60	U	<60	U				
3,4-Dichlorophenol	<60	U	<60	U	<60	U	<60	U				
2,4,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	91	M	98	M
2,3,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U				
2,3,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U				
2,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	96		110	M
2,3,4-Trichlorophenol	<60	U	<60	U	<60	U	<60	U				
3,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U				
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	119	M	89	M
2,3,4,5-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	99		116	M
Pentachlorophenol	<60	U	<60	U	<60	U	<60	U	111		94	M
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	29		37		21		60		64	M	46	
13C6-2,4-Dichlorophenol (ES)	23		20		10		49		55		41	
13C6-2,4,5-Trichlorophenol (ES)	30		36		30		50		51		24	
13C6-2,3,4,5-Tetrachlorophenol (ES)	34		46		45		62		74		25	
13C6-Pentachlorophenol (ES)	50		18	M	17	M	135		92	M	8	M

U	Indicates that this compound was not detected above the LOR.
M	Indicates that a peak has been manually integrated.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3563440-1	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072707.D
Run Date	7/27/2021 12:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	21	M	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	6		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	24		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	47		20-150
13C6-Pentachlorophenol (ES)	1200	13.56	122	M	20-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22081-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	17-Jun-21
ALS Sample ID	L2603845-1	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072711.D
Run Date	7/27/2021 14:11
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.39	62	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.54	68	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.99	47	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	48	20-150
13C6-Pentachlorophenol (ES)	1200	13.56	39	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22081-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	17-Jun-21
ALS Sample ID	L2603845-2	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072712.D
Run Date	7/27/2021 14:35
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.43	61	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.55	62	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.99	46	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	49	20-150
13C6-Pentachlorophenol (ES)	1200	13.56	42	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22081-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-3	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072713.D
Run Date	7/27/2021 14:59
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.44	52	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.56	51	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.00	43	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	43	20-150
13C6-Pentachlorophenol (ES)	1200	13.56	38	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22081-SVOC-(16 THRU 20) BLANK APC OUTLET #1**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-4	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072709.D
Run Date	7/27/2021 13:23
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.37	21	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.53	11	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.99	28	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	80	20-150
13C6-Pentachlorophenol (ES)	1200	13.56	138	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22081-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	17-Jun-21
ALS Sample ID	L2603845-5	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072714.D
Run Date	7/27/2021 15:23
Final Volume	1 mL
Dilution Factor	1
Analysis Units	n/a
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.44	29	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.56	23	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.00	30	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	34	20-150
13C6-Pentachlorophenol (ES)	1200	13.57	50	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22081-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	17-Jun-21
ALS Sample ID	L2603845-6	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072715.D
Run Date	7/27/2021 15:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.39	37		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.54	20		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.99	36		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	46		20-150
13C6-Pentachlorophenol (ES)	1200	13.56	18	M	20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22081-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-7	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072716.D
Run Date	7/27/2021 16:11
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	600	8.36	21	20-150
13C6-2,4-Dichlorophenol (ES)	600	NotFnd	10	20-150
13C6-2,4,5-Trichlorophenol (ES)	600	10.98	30	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	600	12.59	45	20-150
13C6-Pentachlorophenol (ES)	600	13.56	17 M	20-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22081-SVOC-(36 THRU 40) BLANK APC OUTLET #2**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-8	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072710.D
Run Date	7/27/2021 13:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	300	8.43	60	20-150
13C6-2,4-Dichlorophenol (ES)	300	9.55	49	20-150
13C6-2,4,5-Trichlorophenol (ES)	300	10.99	50	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	300	12.59	62	20-150
13C6-Pentachlorophenol (ES)	300	13.56	135	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3563440-2	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072705.D
Run Date	7/27/2021 11:48
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	1200	8.00	92		50-150
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	1200	9.32	72		50-150
2,4/2,5-Dichlorophenol	1200	9.52	100		50-150
3,5-Dichlorophenol					
2,3-Dichlorophenol					
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	1200	10.44	91	M	50-150
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	1200	10.98	96		50-150
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	2400	12.06	119	M	50-150
2,3,4,5-Tetrachlorophenol	1200	12.59	99		50-150
Pentachlorophenol	1200	13.56	111		50-150
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.34	64	M	50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	55		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	51		50-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	74		50-150
13C6-Pentachlorophenol (ES)	1200	13.56	92	M	50-150

M Indicates that a peak has been manually integrated.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3563440-5	Extraction Date	30-Jun-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jul-2021

Run Information	**Run 1**
Filename	21072704.D
Run Date	7/27/2021 11:24
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP5MS US0730366H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	120	8.00	119	M	50-150
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	120	9.31	85	M	50-150
2,4/2,5-Dichlorophenol	120	9.52	113	M	50-150
3,5-Dichlorophenol					
2,3-Dichlorophenol					
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	120	10.44	98	M	50-150
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	120	10.98	110	M	50-150
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	240	12.09	89	M	50-150
2,3,4,5-Tetrachlorophenol	120	12.59	116	M	50-150
Pentachlorophenol	120	13.63	94	M	50-150
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	46		50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	41		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	24		50-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	25		50-150
13C6-Pentachlorophenol (ES)	1200	13.56	8	M	50-150

M Indicates that a peak has been manually integrated.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2603845		Mississauga, ON L5J 2Y4
Date of Report	20-Jul-21		Canada
Date of Sample Receipt	21-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Bias to a high field spike recovery for sample L2603845-5 likely due to interference on the peak response.

Certified by:

Ron McLeod, Ph.D.
Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Media Blank		21-22081-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		21-22081-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		21-22081-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		21-22081-SVOC-(16 THRU 20) BLANK APC OUTLET #1	
ALS Sample ID	WG3563440-1		L2603845-1		L2603845-2		L2603845-3		L2603845-4	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		17-Jun-21		17-Jun-21		18-Jun-21		18-Jun-21	
Extraction Date	30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21	
Target Analytes	**ng**		**ng**		**ng**		**ng**		**ng**	
Naphthalene	32.1	M,R	124	M,R,B	111	M,R,B	240	M,R,B	84.8	M,R,B
2-Methylnaphthalene	<12	U	28.7		46.5		103		12.0	M
1-Methylnaphthalene	<12	U	26.3	R	31.8	R	45.5	M	<12	U
Acenaphthylene	<12	U	<12	U	<12	U	29.9		<12	U
Acenaphthene	<12	U	<12	U	<12	U	<12	U	<12	U
Fluorene	<12	U	18.3	M	29.2	M	15.5	M	<12	U
Phenanthrene	<12	U	317		344		204		<12	U
Anthracene	<12	U	<12	U	12.1	M	13.3		<12	U
Fluoranthene	<12	U	45.5	M	45.4		43.7		<12	U
Pyrene	<12	U	36.8	M	39.1	M	44.3	M	<12	U
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Chrysene/Triphenylene	<12	U	<12	U	16.0	M	<12	U	<12	U
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(k)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(e)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Perylene	<12	U	<12	U	<12	U	<12	U	<12	U
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Dibenzo(a,h/a,c)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(g,h,i)Perylene	<12	U	<12	U	<12	U	27.4		<12	U
Additional Analytes										
Tetralin	59.6	M,R	138	B	154	B	109	B	13.7	M,R,B
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U
Biphenyl	<12	U	92.8		36.1	M	366		<12	U
o-Terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U
1-Methylphenanthrene	<12	U	<12	U	<12	U	<12	U	<12	U
9-Methylphenanthrene	<12	U	42.1		34.0		14.8		<12	U
2-methylanthracene	<12	U	92.5		74.8		28.2		<12	U
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U	<12	U
m-terphenyl	<12	U	12.1	M	<12	U	<12	U	<12	U
p-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U	<60	U
Picene	<60	U	<60	U	<60	U	<60	U	<60	U
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U	<60	U
Coronene	<60	U	<60	U	<60	U	<60	U	<60	U
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	NS		74.5		77.9		75.1		81.2	
Fluorene D10	NS		109.8		111.9		108.7		91.4	
Terphenyl D14(Surr.)	NS		102.0		103.0		100.2		102.3	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	89.4		65.6		58.8		64.1		67.6	
2-Methylnaphthalene-D10	96.8		79.5		73.7		74.3		76.8	
Acenaphthylene D8	83.2		78.9		61.2		72.2		74.8	
Phenanthrene D10	112.3		78.4		76.5		78.9		88.3	
Anthracene-D10	91.4		76.1		62.3		71.2		73.3	
Fluoranthene D10	102.7		91.7		88.0		87.5		90.8	
Benz(a)Anthracene-D12	70.3		93.3		91.7		82.3		77.4	
Chrysene D12	79.4		83.8		85.2		78.6		80.9	
Benzo(b)Fluoranthene-D12	97.9		81.9		96.3		76.2		75.5	
Benzo(k)Fluoranthene-D12	70.0		56.0		62.1		52.9		53.4	M
Benzo(a)Pyrene D12	79.4		59.8		63.6		54.5		52.8	
Perylene D12	77.8		61.3		69.5		55.3		52.8	
Indeno(1,2,3,cd)Pyrene-D12	89.6		63.5		85.0		57.0		58.3	
Dibenz(a,h)Anthracene-D14	81.7		57.6		78.0		52.7		53.9	
Benzo(g,h,i)Perylene D12	92.0		62.6		81.7		60.0		62.6	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this standard was not spiked to sample

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	21-22081-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2		21-22081-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2		21-22081-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2		21-22081-SVOC-(36 THRU 40) BLANK APC OUTLET #2		Laboratory Control Sample	
ALS Sample ID	L2603845-5		L2603845-6		L2603845-7		L2603845-8		WG3563440-2	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		LCS	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	Stack		Stack		Stack		Stack		QC	
Sampling Date	17-Jun-21		17-Jun-21		18-Jun-21		18-Jun-21		n/a	
Extraction Date	30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21		30-Jun-21	
Target Analytes	**ng**		**ng**		**ng**		**ng**		**%**	
Naphthalene	96.2	M,R,B	614	M,R	154	M,R,B	153	M,R,B	100.1	M,R
2-Methylnaphthalene	29.5		222		27.3	M	45.7	M	101.1	
1-Methylnaphthalene	20.8	R	96.3	R	16.0	M,R	21.1	R	107.1	
Acenaphthylene	<12	U	52.0	M	13.8	M,R	15.2	M	96.5	
Acenaphthene	<12	U	<12	U	<12	U	<12	U	104.4	
Fluorene	20.0	M	15.6	M	23.6		<12	U	90.0	
Phenanthrene	573		70.9		298		13.7		95.4	
Anthracene	<12	U	<12	U	17.8		<12	U	96.2	
Fluoranthene	127	M	23.5		59.6		<12	U	93.7	
Pyrene	103	R	28.3	R	56.4	R	<12	U	93.9	
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	100.2	
Chrysene/Triphenylene	17.0	M	<12	U	<12	U	<12	U	98.7	
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	82.4	
Benzo(k)Fluoranthene	<12	U	<12	U	<12	U	<12	U	93.4	
Benzo(e)Pyrene	18.4	M	16.0	M	13.7	M	<12	U	96.2	
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	95.1	
Perylene	<12	U	<12	U	<12	U	<12	U	93.7	
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	83.8	
Dibenzo(a,h/a,c)Anthracene	<12	U	<12	U	<12	U	<12	U	87.1	
Benzo(g,h,i)Perylene	64.0		46.8		30.9		<12	U	85.4	
Additional Analytes										
Tetralin	67.6	M,B	66.8	M,B	123	M,R,B	48.5	B		
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U		
Biphenyl	32.0	R	60.5	M	31.3	M	12.8	M		
o-Terphenyl	33.1	M	<12	U	<12	U	<12	U		
1-Methylphenanthrene	<12	U	<12	U	<12	U	<12	U		
9-Methylphenanthrene	88.7		27.7	M,R	12.4		<12	U		
2-methylanthracene	197		28.0	M	26.8		<12	U		
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U		
m-terphenyl	27.3	M	<12	U	<12	U	<12	U		
p-terphenyl	13.2	M	<12	U	<12	U	<12	U		
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U		
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U		
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U		
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U		
Picene	<60	U	<60	U	<60	U	<60	U		
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U		
Coronene	95.2		<60	U	<60	U	<60	U		
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	73.5		74.5		78.1		77.8		NS	
Fluorene D10	220.9		100.4		101.6		88.3		NS	
Terphenyl D14(Surr.)	99.4		104.9		105.2		98.7		NS	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	75.1		77.8		61.5		68.4		77.3	
2-Methylnaphthalene-D10	75.8		80.9		78.1		80.5		87.2	
Acenaphthylene D8	69.3		61.6		56.5		67.1		79.9	
Phenanthrene D10	74.8		81.3		81.3		93.0		105.0	
Anthracene-D10	68.9		55.1		53.4		63.3		87.7	
Fluoranthene D10	88.3		90.9		89.7		92.7		96.1	
Benz(a)Anthracene-D12	93.1		90.3		85.2		76.0		70.1	
Chrysene D12	82.3		86.1		83.3		82.4		87.7	
Benzo(b)Fluoranthene-D12	85.4		84.6		79.8		73.4		97.9	
Benzo(k)Fluoranthene-D12	52.6	R	59.5		53.1		52.1		85.9	
Benzo(a)Pyrene D12	59.0	R	51.8		42.6		56.0		75.3	
Perylene D12	64.2		57.9		48.4		53.6		72.3	
Indeno(1,2,3,cd)Pyrene-D12	87.2		81.9		57.3		57.3		74.7	
Dibenz(a,h)Anthracene-D14	82.3		76.5		55.2		52.2		71.9	
Benzo(g,h,i)Perylene D12	82.2		80.1		60.5		61.5		82.9	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this standard was not spiked to sample

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Media Blank**	Sampling Date	n/a
ALS Sample ID	WG3563440-1	Extraction Date	30-Jun-21
Analysis Method	PAH by CARB 429		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3563440

Approved:
T.Patterson
--e-signature--
15-Jul-2021

Run Information	**Run 1**
Filename	210712A08.D
Run Date	7/12/2021 16:07
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MSUS1263126H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.75	32.1 M	R
2-Methylnaphthalene	3.33	<12	U
1-Methylnaphthalene	3.44	<12	U
Acenaphthylene	4.47	<12	U
Acenaphthene	4.76	<12	U
Fluorene	5.69	<12	U
Phenanthrene	7.89	<12	U
Anthracene	8.02	<12	U
Fluoranthene	11.31	<12	U
Pyrene	11.96	<12	U
Benzo(a)Anthracene	15.89	<12	U
Chrysene/Triphenylene	16.01	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	20.11	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	2.62	59.6 M	R
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.86	<12	U
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	NotFnd	<12	U
2-methylanthracene	9.64	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.36	<12	U
p-terphenyl	NotFnd	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**% Rec**
1-Methylnaphthalene-D10	NS
Fluorene D10	NS
Terphenyl D14(Surr.)	NS

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.73	89.4	50-150
2-Methylnaphthalene-D10	600	3.30	96.8	50-150
Acenaphthylene D8	600	4.45	83.2	50-150
Phenanthrene D10	600	7.84	112.3	50-150
Anthracene-D10	600	7.96	91.4	50-150
Fluoranthene D10	600	11.26	102.7	50-150
Benz(a)Anthracene-D12	600	15.82	70.3	50-150
Chrysene D12	600	15.93	79.4	50-150
Benzo(b)Fluoranthene-D12	600	19.18	97.9	50-150
Benzo(k)Fluoranthene-D12	600	19.26	70.0	50-150
Benzo(a)Pyrene D12	600	20.06	79.4	50-150
Perylene D12	600	20.30	77.8	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.77	89.6	50-150
Dibenz(a,h)Anthracene-D14	600	23.94	81.7	50-150
Benzo(g,h,i)Perylene D12	600	24.75	92.0	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this standard was not spiked to sample

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	17-Jun-21
ALS Sample ID	L2603845-1	Extraction Date	30-Jun-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3563440

Approved:
T.Patterson
--e-signature--
15-Jul-2021

Run Information	**Run 1**
Filename	210712A11.D
Run Date	7/12/2021 18:01
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MSUS1263126H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.74	124	M R B
2-Methylnaphthalene	3.32	28.7	
1-Methylnaphthalene	3.44	26.3	R
Acenaphthylene	NotFnd	<12	U
Acenaphthene	4.77	<12	U
Fluorene	5.69	18.3	M
Phenanthrene	7.90	317	
Anthracene	8.02	<12	U
Fluoranthene	11.32	45.5	M
Pyrene	11.96	36.8	M
Benzo(a)Anthracene	15.89	<12	U
Chrysene/Triphenylene	16.01	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	19.99	<12	U
Benzo(a)Pyrene	20.10	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.87	<12	U
Dibenzo(a,h/a,c)Anthracene	24.11	<12	U
Benzo(g,h,i)Perylene	24.87	<12	U
Additional Analytes			
Tetralin	2.62	138	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.86	92.8	
o-Terphenyl	9.19	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.58	42.1	
2-methylanthracene	9.65	92.5	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.36	12.1	M
p-terphenyl	12.85	<12	U
Benzo(a)fluorene	13.11	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	29.50	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	3.40	74.5
Fluorene D10	500	5.64	109.8
Terphenyl D14(Surr.)	500	12.78	102

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.73	65.6	50-150
2-Methylnaphthalene-D10	600	3.29	79.5	50-150
Acenaphthylene D8	600	4.45	78.9	50-150
Phenanthrene D10	600	7.85	78.4	50-150
Anthracene-D10	600	7.97	76.1	50-150
Fluoranthene D10	600	11.26	91.7	50-150
Benz(a)Anthracene-D12	600	15.82	93.3	50-150
Chrysene D12	600	15.94	83.8	50-150
Benzo(b)Fluoranthene-D12	600	19.18	81.9	50-150
Benzo(k)Fluoranthene-D12	600	19.27	56.0	50-150
Benzo(a)Pyrene D12	600	20.07	59.8	50-150
Perylene D12	600	20.30	61.3	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.78	63.5	50-150
Dibenz(a,h)Anthracene-D14	600	23.95	57.6	50-150
Benzo(g,h,i)Perylene D12	600	24.76	62.6	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	17-Jun-21
ALS Sample ID	L2603845-2	Extraction Date	30-Jun-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3563440

Approved:
T.Patterson
--e-signature--
15-Jul-2021

Run Information	**Run 1**
Filename	210712A12.D
Run Date	7/12/2021 18:39
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MSUS1263126H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.75	111	M R B
2-Methylnaphthalene	3.33	46.5	
1-Methylnaphthalene	3.44	31.8	R
Acenaphthylene	4.47	<12	U
Acenaphthene	4.77	<12	U
Fluorene	5.69	29.2	M
Phenanthrene	7.90	344	
Anthracene	8.02	12.1	M
Fluoranthene	11.31	45.4	
Pyrene	11.96	39.1	M
Benzo(a)Anthracene	15.89	<12	U
Chrysene/Triphenylene	16.00	16.0	M
Benzo(b)Fluoranthene	19.26	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	19.99	<12	U
Benzo(a)Pyrene	20.10	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.86	<12	U
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.88	<12	U
Additional Analytes			
Tetralin	2.63	154	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.86	36.1	M
o-Terphenyl	9.19	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.58	34.0	
2-methylanthracene	9.65	74.8	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.35	<12	U
p-terphenyl	12.84	<12	U
Benzo(a)fluorene	13.11	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	3.41	77.9
Fluorene D10	500	5.64	111.9
Terphenyl D14(Surr.)	500	12.78	103

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.73	58.8	50-150
2-Methylnaphthalene-D10	600	3.30	73.7	50-150
Acenaphthylene D8	600	4.45	61.2	50-150
Phenanthrene D10	600	7.84	76.5	50-150
Anthracene-D10	600	7.97	62.3	50-150
Fluoranthene D10	600	11.26	88.0	50-150
Benz(a)Anthracene-D12	600	15.82	91.7	50-150
Chrysene D12	600	15.94	85.2	50-150
Benzo(b)Fluoranthene-D12	600	19.18	96.3	50-150
Benzo(k)Fluoranthene-D12	600	19.27	62.1	50-150
Benzo(a)Pyrene D12	600	20.07	63.6	50-150
Perylene D12	600	20.30	69.5	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.78	85.0	50-150
Dibenz(a,h)Anthracene-D14	600	23.95	78.0	50-150
Benzo(g,h,i)Perylene D12	600	24.77	81.7	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-3	Extraction Date	30-Jun-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3563440

Approved:
T.Patterson
--e-signature--
15-Jul-2021

Run Information	**Run 1**
Filename	210712A13.D
Run Date	7/12/2021 19:17
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MSUS1263126H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.74	240	M R B
2-Methylnaphthalene	3.33	103	
1-Methylnaphthalene	3.44	45.5	M
Acenaphthylene	4.47	29.9	
Acenaphthene	4.77	<12	U
Fluorene	5.68	15.5	M
Phenanthrene	7.89	204	
Anthracene	8.01	13.3	
Fluoranthene	11.31	43.7	
Pyrene	11.96	44.3	M
Benzo(a)Anthracene	15.89	<12	U
Chrysene/Triphenylene	16.00	<12	U
Benzo(b)Fluoranthene	19.27	<12	U
Benzo(k)Fluoranthene	19.31	<12	U
Benzo(e)Pyrene	19.99	<12	U
Benzo(a)Pyrene	20.09	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.87	<12	U
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.87	27.4	
Additional Analytes			
Tetralin	2.62	109	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.86	366	
o-Terphenyl	9.19	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.58	14.8	
2-methylanthracene	9.64	28.2	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.35	<12	U
p-terphenyl	12.84	<12	U
Benzo(a)fluorene	13.13	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	29.50	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	3.41	75.1
Fluorene D10	500	5.64	108.7
Terphenyl D14(Surr.)	500	12.78	100.2

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.73	64.1	50-150
2-Methylnaphthalene-D10	600	3.29	74.3	50-150
Acenaphthylene D8	600	4.45	72.2	50-150
Phenanthrene D10	600	7.84	78.9	50-150
Anthracene-D10	600	7.96	71.2	50-150
Fluoranthene D10	600	11.26	87.5	50-150
Benz(a)Anthracene-D12	600	15.82	82.3	50-150
Chrysene D12	600	15.93	78.6	50-150
Benzo(b)Fluoranthene-D12	600	19.18	76.2	50-150
Benzo(k)Fluoranthene-D12	600	19.27	52.9	50-150
Benzo(a)Pyrene D12	600	20.07	54.5	50-150
Perylene D12	600	20.30	55.3	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.78	57.0	50-150
Dibenz(a,h)Anthracene-D14	600	23.94	52.7	50-150
Benzo(g,h,i)Perylene D12	600	24.76	60.0	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(16 THRU 20) BLANK APC OUTLET #1**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-4	Extraction Date	30-Jun-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3563440

Approved:
T.Patterson
--e-signature--
15-Jul-2021

Run Information	**Run 1**
Filename	210712A14.D
Run Date	7/12/2021 19:55
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MSUS1263126H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.74	84.8 M	R B
2-Methylnaphthalene	3.32	12.0 M	
1-Methylnaphthalene	3.44	<12	U
Acenaphthylene	4.48	<12	U
Acenaphthene	4.74	<12	U
Fluorene	5.68	<12	U
Phenanthrene	7.90	<12	U
Anthracene	8.01	<12	U
Fluoranthene	11.31	<12	U
Pyrene	11.96	<12	U
Benzo(a)Anthracene	15.89	<12	U
Chrysene/Triphenylene	16.01	<12	U
Benzo(b)Fluoranthene	19.27	<12	U
Benzo(k)Fluoranthene	19.32	<12	U
Benzo(e)Pyrene	19.99	<12	U
Benzo(a)Pyrene	20.10	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.87	<12	U
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.87	<12	U
Additional Analytes			
Tetralin	2.63	13.7 M	R B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.86	<12	U
o-Terphenyl	9.19	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.59	<12	U
2-methylanthracene	9.64	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.35	<12	U
p-terphenyl	12.84	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	29.50	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	3.41	81.2
Fluorene D10	500	5.63	91.4
Terphenyl D14(Surr.)	500	12.78	102.3

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.73	67.6	50-150
2-Methylnaphthalene-D10	600	3.29	76.8	50-150
Acenaphthylene D8	600	4.45	74.8	50-150
Phenanthrene D10	600	7.84	88.3	50-150
Anthracene-D10	600	7.96	73.3	50-150
Fluoranthene D10	600	11.26	90.8	50-150
Benz(a)Anthracene-D12	600	15.82	77.4	50-150
Chrysene D12	600	15.94	80.9	50-150
Benzo(b)Fluoranthene-D12	600	19.18	75.5	50-150
Benzo(k)Fluoranthene-D12	600	19.26	53.4 M	50-150
Benzo(a)Pyrene D12	600	20.07	52.8	50-150
Perylene D12	600	20.30	52.8	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.78	58.3	50-150
Dibenz(a,h)Anthracene-D14	600	23.94	53.9	50-150
Benzo(g,h,i)Perylene D12	600	24.76	62.6	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**		Sampling Date	17-Jun-21	
ALS Sample ID	L2603845-5		Extraction Date	30-Jun-21	
Analysis Method	PAH by CARB 429				
Analysis Type	sample				
Sample Matrix	Stack				Approved:
Sample Size	1	sample			*T.Patterson*
Percent Moisture	n/a				--e-signature--
Split Ratio	6		Workgroup	WG3563440	15-Jul-2021

Run Information	**Run 1**
Filename	210712A15.D
Run Date	7/12/2021 20:33
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MSUS1263126H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.75	96.2 M	R B
2-Methylnaphthalene	3.33	29.5	
1-Methylnaphthalene	3.45	20.8	R
Acenaphthylene	4.47	<12	U
Acenaphthene	4.77	<12	U
Fluorene	5.69	20.0 M	
Phenanthrene	7.90	573	
Anthracene	8.02	<12	U
Fluoranthene	11.32	127 M	
Pyrene	11.96	103	R
Benzo(a)Anthracene	15.89	<12	U
Chrysene/Triphenylene	16.01	17.0 M	
Benzo(b)Fluoranthene	19.27	<12	U
Benzo(k)Fluoranthene	19.31	<12	U
Benzo(e)Pyrene	19.99	18.4 M	
Benzo(a)Pyrene	20.11	<12	U
Perylene	20.36	<12	U
Indeno(1,2,3-cd)Pyrene	23.87	<12	U
Dibenzo(a,h/a,c)Anthracene	24.07	<12	U
Benzo(g,h,i)Perylene	24.87	64.0	
Additional Analytes			
Tetralin	2.63	67.6 M	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.86	32.0	R
o-Terphenyl	9.19	33.1 M	
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.58	88.7	
2-methylanthracene	9.65	197	
9,10-dimethylanthracene	12.21	<12	U
m-terphenyl	12.36	27.3 M	
p-terphenyl	12.85	13.2 M	
Benzo(a)fluorene	13.12	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	29.51	95.2	

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	500	3.41	73.5	
Fluorene D10	500	5.65	220.9	
Terphenyl D14(Surr.)	500	12.78	99.4	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.73	75.1	50-150
2-Methylnaphthalene-D10	600	3.30	75.8	50-150
Acenaphthylene D8	600	4.45	69.3	50-150
Phenanthrene D10	600	7.85	74.8	50-150
Anthracene-D10	600	7.97	68.9	50-150
Fluoranthene D10	600	11.26	88.3	50-150
Benz(a)Anthracene-D12	600	15.82	93.1	50-150
Chrysene D12	600	15.94	82.3	50-150
Benzo(b)Fluoranthene-D12	600	19.19	85.4	50-150
Benzo(k)Fluoranthene-D12	600	19.26	52.6 R	50-150
Benzo(a)Pyrene D12	600	20.07	59.0 R	50-150
Perylene D12	600	20.30	64.2	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.78	87.2	50-150
Dibenz(a,h)Anthracene-D14	600	23.95	82.3	50-150
Benzo(g,h,i)Perylene D12	600	24.77	82.2	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	17-Jun-21	
ALS Sample ID	L2603845-6	Extraction Date	30-Jun-21	
Analysis Method	PAH by CARB 429			
Analysis Type	sample			
Sample Matrix	Stack			Approved:
Sample Size	1 sample			*T.Patterson*
Percent Moisture	n/a			--e-signature--
Split Ratio	6	Workgroup	WG3563440	15-Jul-2021

Run Information	**Run 1**
Filename	210712A16.D
Run Date	7/12/2021 21:11
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MSUS1263126H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**	
Naphthalene	2.74	614	M	R
2-Methylnaphthalene	3.33	222		
1-Methylnaphthalene	3.44	96.3		R
Acenaphthylene	4.47	52.0	M	
Acenaphthene	4.77	<12	U	
Fluorene	5.69	15.6	M	
Phenanthrene	7.90	70.9		
Anthracene	8.02	<12	U	
Fluoranthene	11.31	23.5		
Pyrene	11.96	28.3		R
Benzo(a)Anthracene	15.89	<12	U	
Chrysene/Triphenylene	16.01	<12	U	
Benzo(b)Fluoranthene	19.27	<12	U	
Benzo(k)Fluoranthene	19.30	<12	U	
Benzo(e)Pyrene	19.99	16.0	M	
Benzo(a)Pyrene	20.10	<12	U	
Perylene	NotFnd	<12	U	
Indeno(1,2,3-cd)Pyrene	23.87	<12	U	
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U	
Benzo(g,h,i)Perylene	24.87	46.8		
Additional Analytes				
Tetralin	2.63	66.8	M	B
2-Chloronaphthalene	NotFnd	<12	U	
Biphenyl	3.86	60.5	M	
o-Terphenyl	9.18	<12	U	
1-Methylphenanthrene	NotFnd	<12	U	
9-Methylphenanthrene	9.61	27.7	M	R
2-methylanthracene	9.62	28.0	M	
9,10-dimethylanthracene	NotFnd	<12	U	
m-terphenyl	12.35	<12	U	
p-terphenyl	12.84	<12	U	
Benzo(a)fluorene	13.13	<12	U	
Benzo(b)fluorene	NotFnd	<12	U	
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U	
3-Methylcholanthrene	NotFnd	<60	U	
Picene	NotFnd	<60	U	
Dibenzo(a,e)pyrene	NotFnd	<60	U	
Coronene	29.50	<60	U	

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	3.41	74.5
Fluorene D10	500	5.64	100.4
Terphenyl D14(Surr.)	500	12.78	104.9

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.73	77.8	50-150
2-Methylnaphthalene-D10	600	3.29	80.9	50-150
Acenaphthylene D8	600	4.45	61.6	50-150
Phenanthrene D10	600	7.84	81.3	50-150
Anthracene-D10	600	7.96	55.1	50-150
Fluoranthene D10	600	11.26	90.9	50-150
Benz(a)Anthracene-D12	600	15.82	90.3	50-150
Chrysene D12	600	15.94	86.1	50-150
Benzo(b)Fluoranthene-D12	600	19.18	84.6	50-150
Benzo(k)Fluoranthene-D12	600	19.27	59.5	50-150
Benzo(a)Pyrene D12	600	20.07	51.8	50-150
Perylene D12	600	20.30	57.9	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.78	81.9	50-150
Dibenz(a,h)Anthracene-D14	600	23.95	76.5	50-150
Benzo(g,h,i)Perylene D12	600	24.76	80.1	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-7	Extraction Date	30-Jun-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3563440

Approved:
T.Patterson
--e-signature--
15-Jul-2021

Run Information	**Run 1**
Filename	210712A17.D
Run Date	7/12/2021 21:49
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MSUS1263126H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.75	154	M R B
2-Methylnaphthalene	3.33	27.3	M
1-Methylnaphthalene	3.44	16.0	M R
Acenaphthylene	4.47	13.8	M R
Acenaphthene	4.77	<12	U
Fluorene	5.68	23.6	
Phenanthrene	7.89	298	
Anthracene	8.01	17.8	
Fluoranthene	11.31	59.6	
Pyrene	11.97	56.4	R
Benzo(a)Anthracene	15.89	<12	U
Chrysene/Triphenylene	16.01	<12	U
Benzo(b)Fluoranthene	19.25	<12	U
Benzo(k)Fluoranthene	19.29	<12	U
Benzo(e)Pyrene	19.99	13.7	M
Benzo(a)Pyrene	20.10	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.87	<12	U
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.87	30.9	
Additional Analytes			
Tetralin	2.64	123	M R B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.86	31.3	M
o-Terphenyl	9.18	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.59	12.4	
2-methylanthracene	9.64	26.8	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.36	<12	U
p-terphenyl	12.84	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	29.50	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	3.41	78.1
Fluorene D10	500	5.63	101.6
Terphenyl D14(Surr.)	500	12.77	105.2

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.73	61.5	50-150
2-Methylnaphthalene-D10	600	3.30	78.1	50-150
Acenaphthylene D8	600	4.45	56.5	50-150
Phenanthrene D10	600	7.84	81.3	50-150
Anthracene-D10	600	7.96	53.4	50-150
Fluoranthene D10	600	11.27	89.7	50-150
Benz(a)Anthracene-D12	600	15.82	85.2	50-150
Chrysene D12	600	15.93	83.3	50-150
Benzo(b)Fluoranthene-D12	600	19.18	79.8	50-150
Benzo(k)Fluoranthene-D12	600	19.26	53.1	50-150
Benzo(a)Pyrene D12	600	20.06	42.6	50-150
Perylene D12	600	20.30	48.4	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.78	57.3	50-150
Dibenz(a,h)Anthracene-D14	600	23.94	55.2	50-150
Benzo(g,h,i)Perylene D12	600	24.76	60.5	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-SVOC-(36 THRU 40) BLANK APC OUTLET #2**	Sampling Date	18-Jun-21
ALS Sample ID	L2603845-8	Extraction Date	30-Jun-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3563440

Approved:
T.Patterson
--e-signature--
15-Jul-2021

Run Information	**Run 1**
Filename	210712A10.D
Run Date	7/12/2021 17:23
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MSUS1263126H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.74	153 M	R B
2-Methylnaphthalene	3.32	45.7 M	
1-Methylnaphthalene	3.44	21.1	R
Acenaphthylene	4.46	15.2 M	
Acenaphthene	4.76	<12	U
Fluorene	5.68	<12	U
Phenanthrene	7.89	13.7	
Anthracene	8.01	<12	U
Fluoranthene	11.31	<12	U
Pyrene	11.96	<12	U
Benzo(a)Anthracene	15.89	<12	U
Chrysene/Triphenylene	16.01	<12	U
Benzo(b)Fluoranthene	19.27	<12	U
Benzo(k)Fluoranthene	19.29	<12	U
Benzo(e)Pyrene	19.99	<12	U
Benzo(a)Pyrene	20.10	<12	U
Perylene	20.36	<12	U
Indeno(1,2,3-cd)Pyrene	23.87	<12	U
Dibenzo(a,h/a,c)Anthracene	24.07	<12	U
Benzo(g,h,i)Perylene	24.88	<12	U
Additional Analytes			
Tetralin	2.62	48.5	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.86	12.8 M	
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.60	<12	U
2-methylanthracene	9.64	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.36	<12	U
p-terphenyl	NotFnd	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	3.41	77.8
Fluorene D10	500	5.63	88.3
Terphenyl D14(Surr.)	500	12.78	98.7

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.73	68.4	50-150
2-Methylnaphthalene-D10	600	3.29	80.5	50-150
Acenaphthylene D8	600	4.45	67.1	50-150
Phenanthrene D10	600	7.84	93.0	50-150
Anthracene-D10	600	7.96	63.3	50-150
Fluoranthene D10	600	11.26	92.7	50-150
Benz(a)Anthracene-D12	600	15.82	76.0	50-150
Chrysene D12	600	15.94	82.4	50-150
Benzo(b)Fluoranthene-D12	600	19.18	73.4	50-150
Benzo(k)Fluoranthene-D12	600	19.27	52.1	50-150
Benzo(a)Pyrene D12	600	20.07	56.0	50-150
Perylene D12	600	20.30	53.6	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.77	57.3	50-150
Dibenz(a,h)Anthracene-D14	600	23.94	52.2	50-150
Benzo(g,h,i)Perylene D12	600	24.76	61.5	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a	
ALS Sample ID	WG3563440-2	Extraction Date	30-Jun-21	
Analysis Method	PAH by CARB 429			
Analysis Type	LCS			
Sample Matrix	QC			Approved:
Sample Size	1 LCS			*T.Patterson*
Percent Moisture	n/a			--e-signature--
Split Ratio	6	Workgroup	WG3563440	15-Jul-2021

Run Information	**Run 1**
Filename	210712A06.D
Run Date	7/12/2021 14:51
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP5MSUS1263126H

Target Analytes	**ng spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	2.75	100.1	M R	50-150
2-Methylnaphthalene	600	3.33	101.1		50-150
1-Methylnaphthalene	600	3.45	107.1		50-150
Acenaphthylene	600	4.47	96.5		50-150
Acenaphthene	600	4.77	104.4		50-150
Fluorene	600	5.69	90		50-150
Phenanthrene	600	7.89	95.4		50-150
Anthracene	600	8.01	96.2		50-150
Fluoranthene	600	11.31	93.7		50-150
Pyrene	600	11.96	93.9		50-150
Benzo(a)Anthracene	600	15.89	100.2		50-150
Chrysene/Triphenylene	600	16.01	98.7		50-150
Benzo(b)Fluoranthene	600	19.24	82.4		50-150
Benzo(k)Fluoranthene	600	19.32	93.4		50-150
Benzo(e)Pyrene	600	19.99	96.2		50-150
Benzo(a)Pyrene	600	20.12	95.1		50-150
Perylene	600	20.36	93.7		50-150
Indeno(1,2,3-cd)Pyrene	600	23.86	83.8		50-150
Dibenzo(a,h/a,c)Anthracene	600	24.06	87.1		50-150
Benzo(g,h,i)Perylene	600	24.86	85.4		50-150

Field Sampling Standards	**% Rec**
1-Methylnaphthalene-D10	NS
Fluorene D10	NS
Terphenyl D14(Surr.)	NS

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.73	77.3	30-150
2-Methylnaphthalene-D10	600	3.30	87.2	30-150
Acenaphthylene D8	600	4.45	79.9	30-150
Phenanthrene D10	600	7.84	105.0	50-150
Anthracene-D10	600	7.96	87.7	50-150
Fluoranthene D10	600	11.26	96.1	50-150
Benz(a)Anthracene-D12	600	15.82	70.1	50-150
Chrysene D12	600	15.93	87.7	50-150
Benzo(b)Fluoranthene-D12	600	19.18	97.9	50-150
Benzo(k)Fluoranthene-D12	600	19.26	85.9	50-150
Benzo(a)Pyrene D12	600	20.06	75.3	30-150
Perylene D12	600	20.30	72.3	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.77	74.7	50-150
Dibenz(a,h)Anthracene-D14	600	23.94	71.9	50-150
Benzo(g,h,i)Perylene D12	600	24.76	82.9	50-150

M	Indicates that a peak has been manually integrated.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this standard was not spiked to sample

APPENDIX 16

Acid Gas Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22081

Date: June 15, 20

Test No.: 1

Test Location: UNIT 1

QZ8194.

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	546.6
Initial Wt:	646.4
Final Wt:	744.0
1 Gain:	97.6
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	644.4
Initial Wt:	748.3
Final Wt:	774.0
2 Gain:	25.7
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	595.0
Final Wt:	599.0
3 Gain:	4.0
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.0
With Imp. 1,2,3 Soln:	612.0
Imp. 1,2,3 Volume:	331
After Rinse:	723.0
Total TS3:	442.0

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	1012.3
Final Wt:	1021.3
4 Gain:	9.0

Box ID: 15

CWTR = 1+2+3:	127.3 ✓
WCBDA= 4:	9.0

SAMPLE ID: 21-22081-M26A-	1

Train Loaded By: JG

Train Recovered By: ST

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22081

Date: JUNE 15, 21

Test No.: 2

Test Location: UNIT 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	663.4
Initial Wt:	763.0
Final Wt:	877.0
1 Gain:	114.0
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	682.0
Initial Wt:	762.5
Final Wt:	787.0
2 Gain:	24.5
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	600.5
Final Wt:	604.0
3 Gain:	3.5
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	284.5
With Imp. 1,2,3 Soln:	627.0
Imp. 1,2,3 Volume:	342.5
After Rinse:	701.5
Total TS3:	417.0

Train Loaded By: DT

Train Recovered By: DT

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	942.0
Final Wt:	952.5
4 Gain:	10.5

Box ID: 12

CWTR = 1+2+3:	142.0

WCBDA= 4:	10.5

SAMPLE ID: 21-22081-M26A-	2

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22081
Date:	JUNE 15, 21
Test No.:	3
Test Location:	UNIT 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	542.3
Initial Wt:	651.0
Final Wt:	785.3
1 Gain:	134.3
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	641.0
Initial Wt:	~~755~~ 735.0
Final Wt:	755.0
2 Gain:	20.0
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	593.5
Final Wt:	596.0
3 Gain:	2.5
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	283.5
With Imp. 1,2,3 Soln:	635.5
Imp. 1,2,3 Volume:	~~352~~ 352.0
After Rinse:	744.5
Total TS3:	461

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	1021.3
Final Wt:	1033.3
4 Gain:	12.0

Box ID:

CWTR = 1+2+3:	156.8 ✓
WCBDA= 4:	12.0

SAMPLE ID: 21-22081-M26A- 3

Train Loaded By: DT

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22081
Date:	JUNE 16, 21
Test No.:	1
Test Location:	UNIT 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	663.5
Initial Wt:	764.5
Final Wt:	852.5
1 Gain:	88.0
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	662.0
Initial Wt:	763.0
Final Wt:	786.4
2 Gain:	23.4
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	600.5
Final Wt:	604.5
3 Gain:	4.0
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	284.0
With Imp. 1,2,3 Soln:	602.0
Imp. 1,2,3 Volume:	318.0
After Rinse:	736.5
Total TS3:	452.5

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	952.5
Final Wt:	964.5
4 Gain:	12.0

Box ID:

CWTR = 1+2+3:	115.4 ✓
WCBDA= 4:	12.0

SAMPLE ID: 21-22081-M26A- 4

Train Loaded By: DT

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22081

Date: June 16, 21

Test No.: 2

Test Location: U 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

Impinger #1 0.1 N H_2SO4	
Empty Wt:	542.0
Initial Wt:	642.5
Final Wt:	758.0
1 Gain:	115.5
Colour:	clear

Impinger #4 Silica Gel	
Initial Wt:	1033.0
Final Wt:	1043.2
4 Gain:	10.2

Impinger #2 0.1 N H_2SO4	
Empty Wt:	641.0
Initial Wt:	742.0
Final Wt:	765.5
2 Gain:	23.5
Colour:	clear

Box ID:

Impinger #3 EMPTY	
Empty Wt:	594.0
Final Wt:	596.5
3 Gain:	2.5
Colour:	clear

CWTR = 1+2+3:	141.5 ✓

WCBDA= 4:	10.2

CONTAINER TS3 WEIGHTS	
Empty Wt:	283.0
With Imp. 1,2,3 Soln:	620.5
Imp. 1,2,3 Volume:	337.5
After Rinse:	706.9
Total TS3:	423.9

SAMPLE ID: 21-22081-M26A-	5

Train Loaded By:

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22081

Date: JUNE 16, 21

Test No.: 3

Test Location: UNIT 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	662.5
Initial Wt:	764.0
Final Wt:	880.5
1 Gain:	116.5
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	660.0
Initial Wt:	761.0
Final Wt:	779.7
2 Gain:	18.7
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	599.5
Final Wt:	602.0
3 Gain:	2.5
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.5
With Imp. 1,2,3 Soln:	619.5
Imp. 1,2,3 Volume:	337
After Rinse:	702.3
Total TS3:	420.8

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	964.5
Final Wt:	971.8
4 Gain:	7.3

Box ID:

CWTR = 1+2+3:	137.7 ✓
WCBDA= 4:	7.3

SAMPLE ID: 21-22081-M26A-	6

Train Loaded By: BT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22081

Date: JUNE 16, 21

Test No.:

Test Location: BLANK 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Box ID:

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

CWTR = 1+2+3:

WCBDA= 4:

CONTAINER TS3 WEIGHTS	
Empty Wt:	283.0
With Imp. 1,2,3 Soln:	483.5
Imp. 1,2,3 Volume:	200.5
After Rinse:	750.5
Total TS3:	467.5

SAMPLE ID: 21-22081-M26A- BLANK 1

Train Loaded By: DT

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22081

Date: JUNE 16, 21

Test No.:

Test Location: BLANK 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

	Impinger #1 0.1 N H_2SO4
	Empty Wt:
	Initial Wt:
	Final Wt:
1	Gain:
	Colour:

	Impinger #4 Silica Gel
	Initial Wt:
	Final Wt:
4	Gain:

	Impinger #2 0.1 N H_2SO4
	Empty Wt:
	Initial Wt:
	Final Wt:
2	Gain:
	Colour:

Box ID:

	Impinger #3 EMPTY
	Empty Wt:
	Final Wt:
3	Gain:
	Colour:

CWTR = 1+2+3:

WCBDA= 4:

CONTAINER TS3 WEIGHTS	
Empty Wt:	286.0
With Imp. 1,2,3 Soln:	486.0
Imp. 1,2,3 Volume:	200.0
After Rinse:	702.5
Total TS3:	416.5

SAMPLE ID: 21-22081-M26A- BLANK2

Train Loaded By: AT

Train Recovered By: DT

APPENDIX 17

VOST Analytical Report
(31 pages)

Your P.O. #: L2604250

Attention: Lynne Wrona

ALS Environmental
1435 Norjohn Court
Unit 1
Burlington, ON
CANADA L7L 0E6

Report Date: 2021/07/07
Report #: R6707953
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1H2817
Received: 2021/06/22, 13:58

Sample Matrix: Stack Sampling Train
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
VOST EPA5041A, 8260C for 0030, 0031	4	N/A	2021/06/24	BRL SOP-00302	EPA5041A, 8260C
VOST EPA5041A, 8260C for 0030, 0031	4	N/A	2021/06/25	BRL SOP-00302	EPA5041A, 8260C

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your P.O. #: L2604250

Attention: Lynne Wrona

ALS Environmental
1435 Norjohn Court
Unit 1
Burlington, ON
CANADA L7L 0E6

Report Date: 2021/07/07
Report #: R6707953
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1H2817
Received: 2021/06/22, 13:58

Encryption Key

Marinela Sim
Project Manager
07 Jul 2021 10:06:07

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marinela Sim, Project Manager
Email: Marinela.Sim@bureauveritas.com
Phone# (905)817-5828

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

BV Labs ID		PXI440	PXI441	PXI442		
Sampling Date		2021/06/17	2021/06/17	2021/06/17		
	UNITS	M0030- FB OUTLET 1 (5A/B)	M0030- OUTLET 1-T1 (1A/B)	M0030- OUTLET 1-T2 (2A/B)	RDL	QC Batch
Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ug	<0.050	<0.050	<0.050	0.050	7427011
Vinyl Chloride	ug	<0.050	<0.050	<0.050	0.050	7427011
Bromomethane	ug	<0.050	<0.050	<0.050	0.050	7427011
Trichlorofluoromethane (FREON 11)	ug	<0.050	<0.050	<0.050	0.050	7427011
Acetone (2-Propanone)	ug	<0.050	0.117	0.134	0.050	7427011
1,1-Dichloroethylene	ug	<0.050	<0.050	<0.050	0.050	7427011
Methylene Chloride(Dichloromethane)	ug	1.08	0.569	<0.050	0.050	7427011
trans-1,2-Dichloroethylene	ug	<0.050	<0.050	<0.050	0.050	7427011
Chloroform	ug	<0.050	0.087	0.095	0.050	7427011
1,2-Dichloroethane	ug	<0.050	<0.050	<0.050	0.050	7427011
Methyl Ethyl Ketone (2-Butanone)	ug	<0.050	0.052	0.053	0.050	7427011
1,1,1-Trichloroethane	ug	<0.050	<0.050	<0.050	0.050	7427011
Carbon Tetrachloride	ug	<0.050	<0.050	<0.050	0.050	7427011
Benzene	ug	<0.050	0.073	0.073	0.050	7427011
1,2-Dichloropropane	ug	<0.050	<0.050	<0.050	0.050	7427011
Trichloroethylene	ug	<0.050	<0.050	<0.050	0.050	7427011
Bromodichloromethane	ug	<0.050	0.072	0.082	0.050	7427011
Dibromochloromethane	ug	<0.050	<0.050	<0.050	0.050	7427011
Toluene	ug	0.067	0.624	0.418	0.050	7427011
Ethylene Dibromide	ug	<0.050	<0.050	<0.050	0.050	7427011
Tetrachloroethylene	ug	<0.050	<0.050	<0.050	0.050	7427011
Ethylbenzene	ug	<0.050	<0.050	<0.050	0.050	7427011
m / p-Xylene	ug	<0.10	<0.10	<0.10	0.10	7427011
Styrene	ug	<0.050	<0.050	<0.050	0.050	7427011
o-Xylene	ug	<0.050	<0.050	<0.050	0.050	7427011
Bromoform	ug	<0.050	<0.050	<0.050	0.050	7427011
Surrogate Recovery (%)						
Bromofluorobenzene	%	102	93	92		7427011
D10-Ethylbenzene (FS)	%	52	4.7 (1)	5.9 (1)		7427011
D4-1,2-Dichloroethane	%	102	103	103		7427011
D8-Toluene	%	102	100	99		7427011

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

BV Labs ID		PXI444		PXI494	PXI495		
Sampling Date		2021/06/17		2021/06/17	2021/06/17		
	UNITS	M0030- FB OUTLET 2 (13A/B)	QC Batch	M0030- TRIP BLK (15A/B)	M0030- OUTLET 2-T1 (9A/B)	RDL	QC Batch
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Vinyl Chloride	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Bromomethane	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Trichlorofluoromethane (FREON 11)	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Acetone (2-Propanone)	ug	4.04	7427011	1.62	0.083	0.050	7429481
1,1-Dichloroethylene	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Methylene Chloride(Dichloromethane)	ug	1.74	7427011	0.053	<0.050	0.050	7429481
trans-1,2-Dichloroethylene	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Chloroform	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
1,2-Dichloroethane	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Methyl Ethyl Ketone (2-Butanone)	ug	0.184	7427011	<0.050	<0.050	0.050	7429481
1,1,1-Trichloroethane	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Carbon Tetrachloride	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Benzene	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
1,2-Dichloropropane	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Trichloroethylene	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Bromodichloromethane	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Dibromochloromethane	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Toluene	ug	0.153	7427011	0.072	0.346	0.050	7429481
Ethylene Dibromide	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Tetrachloroethylene	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Ethylbenzene	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
m / p-Xylene	ug	<0.10	7427011	<0.10	<0.10	0.10	7429481
Styrene	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
o-Xylene	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Bromoform	ug	<0.050	7427011	<0.050	<0.050	0.050	7429481
Surrogate Recovery (%)							
Bromofluorobenzene	%	99	7427011	102	97		7429481
D10-Ethylbenzene (FS)	%	0.20 (1)	7427011	55	0.062 (1)		7429481
D4-1,2-Dichloroethane	%	103	7427011	103	106		7429481
D8-Toluene	%	103	7427011	102	103		7429481

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

BV Labs ID		PXI497	PXI501		
Sampling Date		2021/06/17	2021/06/17		
	UNITS	M0030- OUTLET 2-T2 (10A/B)	M0030- OUTLET 2-T4 (12A/B)	RDL	QC Batch
Volatile Organics					
Dichlorodifluoromethane (FREON 12)	ug	<0.050	0.068	0.050	7429481
Vinyl Chloride	ug	<0.050	<0.050	0.050	7429481
Bromomethane	ug	<0.050	<0.050	0.050	7429481
Trichlorofluoromethane (FREON 11)	ug	<0.050	0.053	0.050	7429481
Acetone (2-Propanone)	ug	0.063	0.342	0.050	7429481
1,1-Dichloroethylene	ug	<0.050	<0.050	0.050	7429481
Methylene Chloride(Dichloromethane)	ug	<0.050	0.681	0.050	7429481
trans-1,2-Dichloroethylene	ug	<0.050	<0.050	0.050	7429481
Chloroform	ug	<0.050	<0.050	0.050	7429481
1,2-Dichloroethane	ug	<0.050	<0.050	0.050	7429481
Methyl Ethyl Ketone (2-Butanone)	ug	<0.050	0.086	0.050	7429481
1,1,1-Trichloroethane	ug	<0.050	<0.050	0.050	7429481
Carbon Tetrachloride	ug	<0.050	0.052	0.050	7429481
Benzene	ug	<0.050	0.091	0.050	7429481
1,2-Dichloropropane	ug	<0.050	<0.050	0.050	7429481
Trichloroethylene	ug	<0.050	<0.050	0.050	7429481
Bromodichloromethane	ug	<0.050	<0.050	0.050	7429481
Dibromochloromethane	ug	<0.050	<0.050	0.050	7429481
Toluene	ug	0.092	0.735	0.050	7429481
Ethylene Dibromide	ug	<0.050	<0.050	0.050	7429481
Tetrachloroethylene	ug	<0.050	<0.050	0.050	7429481
Ethylbenzene	ug	<0.050	0.051	0.050	7429481
m / p-Xylene	ug	<0.10	0.25	0.10	7429481
Styrene	ug	<0.050	<0.050	0.050	7429481
o-Xylene	ug	<0.050	0.090	0.050	7429481
Bromoform	ug	<0.050	<0.050	0.050	7429481
Surrogate Recovery (%)					
Bromofluorobenzene	%	100	94		7429481
D10-Ethylbenzene (FS)	%	0 (1)	0.76 (1)		7429481
D4-1,2-Dichloroethane	%	103	105		7429481
D8-Toluene	%	102	102		7429481

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

TEST SUMMARY

BV Labs ID: PXI440
Sample ID: M0030- FB OUTLET 1 (5A/B)
Matrix: Stack Sampling Train

Collected: 2021/06/17
Shipped:
Received: 2021/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	7427011	N/A	2021/06/24	Yujie Yan

BV Labs ID: PXI441
Sample ID: M0030- OUTLET 1- T1 (1A/B)
Matrix: Stack Sampling Train

Collected: 2021/06/17
Shipped:
Received: 2021/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	7427011	N/A	2021/06/24	Yujie Yan

BV Labs ID: PXI442
Sample ID: M0030- OUTLET 1- T2 (2A/B)
Matrix: Stack Sampling Train

Collected: 2021/06/17
Shipped:
Received: 2021/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	7427011	N/A	2021/06/24	Yujie Yan

BV Labs ID: PXI444
Sample ID: M0030- FB OUTLET 2 (13A/B)
Matrix: Stack Sampling Train

Collected: 2021/06/17
Shipped:
Received: 2021/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	7427011	N/A	2021/06/24	Yujie Yan

BV Labs ID: PXI494
Sample ID: M0030- TRIP BLK (15A/B)
Matrix: Stack Sampling Train

Collected: 2021/06/17
Shipped:
Received: 2021/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	7429481	N/A	2021/06/25	Yujie Yan

BV Labs ID: PXI495
Sample ID: M0030- OUTLET 2- T1 (9A/B)
Matrix: Stack Sampling Train

Collected: 2021/06/17
Shipped:
Received: 2021/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	7429481	N/A	2021/06/25	Yujie Yan

BV Labs ID: PXI497
Sample ID: M0030- OUTLET 2- T2 (10A/B)
Matrix: Stack Sampling Train

Collected: 2021/06/17
Shipped:
Received: 2021/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	7429481	N/A	2021/06/25	Yujie Yan

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C1H2817
Report Date: 2021/07/07

ALS Environmental
Your P.O. #: L2604250

TEST SUMMARY

BV Labs ID: PXI501
Sample ID: M0030- OUTLET 2- T4 (12A/B)
Matrix: Stack Sampling Train

Collected: 2021/06/17
Shipped:
Received: 2021/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	7429481	N/A	2021/06/25	Yujie Yan

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

GENERAL COMMENTS

No results available for samples PXI443 due to restricted flow through sample tubes submitted.

Sample PXI440 [M0030- FB OUTLET 1 (5A/B)] : Dichloromethane is over the calibration range. Data should be considered an estimate only.

Sample PXI441 [M0030- OUTLET 1- T1 (1A/B)] : D10-Ethylbenzene surrogate recovery was below acceptance limit of 47%. Tubes were not supplied by Bureau Veritas Laboratories.

Sample PXI442 [M0030- OUTLET 1- T2 (2A/B)] : D10-Ethylbenzene surrogate recovery was below acceptance limit of 47%. Tubes were not supplied by Bureau Veritas Laboratories.

Sample PXI444 [M0030- FB OUTLET 2 (13A/B)] : Acetone and Dichloromethane are over the calibration range. Data should be considered an estimate only.

D10-Ethylbenzene surrogate recovery was below acceptance limit of 47%. Tubes were not supplied by Bureau Veritas Laboratories.

Sample PXI494 [M0030- TRIP BLK (15A/B)] : Acetone is over the calibration range. Data should be considered an estimate only.

Sample PXI495 [M0030- OUTLET 2- T1 (9A/B)] : D10-Ethylbenzene surrogate recovery was below acceptance limit of 47%. Tubes were not supplied by Bureau Veritas Laboratories.

Sample PXI497 [M0030- OUTLET 2- T2 (10A/B)] : D10-Ethylbenzene surrogate recovery was below acceptance limit of 47%. Tubes were not supplied by Bureau Veritas Laboratories.

Sample PXI501 [M0030- OUTLET 2- T4 (12A/B)] : D10-Ethylbenzene surrogate recovery was below acceptance limit of 47%. Tubes were not supplied by Bureau Veritas Laboratories.

Results relate only to the items tested.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
7427011	YYA	Spiked Blank	Bromofluorobenzene	2021/06/24		102	%	43 - 131
			D10-Ethylbenzene (FS)	2021/06/24		99	%	47 - 157
			D4-1,2-Dichloroethane	2021/06/24		99	%	64 - 133
			D8-Toluene	2021/06/24		100	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2021/06/24		72	%	50 - 150
			Vinyl Chloride	2021/06/24		94	%	50 - 150
			Bromomethane	2021/06/24		100	%	50 - 150
			Trichlorofluoromethane (FREON 11)	2021/06/24		98	%	50 - 150
			Acetone (2-Propanone)	2021/06/24		105	%	50 - 150
			1,1-Dichloroethylene	2021/06/24		106	%	50 - 150
			Methylene Chloride(Dichloromethane)	2021/06/24		100	%	50 - 150
			trans-1,2-Dichloroethylene	2021/06/24		102	%	50 - 150
			Chloroform	2021/06/24		108	%	50 - 150
			1,2-Dichloroethane	2021/06/24		100	%	50 - 150
			Methyl Ethyl Ketone (2-Butanone)	2021/06/24		99	%	50 - 150
			1,1,1-Trichloroethane	2021/06/24		106	%	50 - 150
			Carbon Tetrachloride	2021/06/24		107	%	50 - 150
			Benzene	2021/06/24		101	%	50 - 150
			1,2-Dichloropropane	2021/06/24		101	%	50 - 150
			Trichloroethylene	2021/06/24		99	%	50 - 150
			Bromodichloromethane	2021/06/24		106	%	50 - 150
			Dibromochloromethane	2021/06/24		106	%	50 - 150
			Toluene	2021/06/24		103	%	50 - 150
			Ethylene Dibromide	2021/06/24		101	%	50 - 150
			Tetrachloroethylene	2021/06/24		106	%	50 - 150
			Ethylbenzene	2021/06/24		105	%	50 - 150
			m / p-Xylene	2021/06/24		103	%	50 - 150
			Styrene	2021/06/24		107	%	50 - 150
			o-Xylene	2021/06/24		106	%	50 - 150
			Bromoform	2021/06/24		107	%	50 - 150
7427011	YYA	Method Blank	Bromofluorobenzene	2021/06/24		103	%	43 - 131
			D10-Ethylbenzene (FS)	2021/06/24		94	%	47 - 157
			D4-1,2-Dichloroethane	2021/06/24		104	%	64 - 133
			D8-Toluene	2021/06/24		102	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2021/06/24	<0.050		ug	
			Vinyl Chloride	2021/06/24	<0.050		ug	
			Bromomethane	2021/06/24	<0.050		ug	
			Trichlorofluoromethane (FREON 11)	2021/06/24	<0.050		ug	
			Acetone (2-Propanone)	2021/06/24	<0.050		ug	
			1,1-Dichloroethylene	2021/06/24	<0.050		ug	
			Methylene Chloride(Dichloromethane)	2021/06/24	<0.050		ug	
			trans-1,2-Dichloroethylene	2021/06/24	<0.050		ug	
			Chloroform	2021/06/24	<0.050		ug	
			1,2-Dichloroethane	2021/06/24	<0.050		ug	
			Methyl Ethyl Ketone (2-Butanone)	2021/06/24	<0.050		ug	
			1,1,1-Trichloroethane	2021/06/24	<0.050		ug	
			Carbon Tetrachloride	2021/06/24	<0.050		ug	
			Benzene	2021/06/24	<0.050		ug	
			1,2-Dichloropropane	2021/06/24	<0.050		ug	
			Trichloroethylene	2021/06/24	<0.050		ug	
			Bromodichloromethane	2021/06/24	<0.050		ug	
			Dibromochloromethane	2021/06/24	<0.050		ug	
			Toluene	2021/06/24	<0.050		ug	

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Ethylene Dibromide	2021/06/24	<0.050		ug	
			Tetrachloroethylene	2021/06/24	<0.050		ug	
			Ethylbenzene	2021/06/24	<0.050		ug	
			m / p-Xylene	2021/06/24	<0.10		ug	
			Styrene	2021/06/24	<0.050		ug	
			o-Xylene	2021/06/24	<0.050		ug	
			Bromoform	2021/06/24	<0.050		ug	
7429481	YYA	Spiked Blank	Bromofluorobenzene	2021/06/25		100	%	43 - 131
			D10-Ethylbenzene (FS)	2021/06/25		103	%	47 - 157
			D4-1,2-Dichloroethane	2021/06/25		97	%	64 - 133
			D8-Toluene	2021/06/25		101	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2021/06/25		88	%	50 - 150
			Vinyl Chloride	2021/06/25		99	%	50 - 150
			Bromomethane	2021/06/25		106	%	50 - 150
			Trichlorofluoromethane (FREON 11)	2021/06/25		99	%	50 - 150
			Acetone (2-Propanone)	2021/06/25		125	%	50 - 150
			1,1-Dichloroethylene	2021/06/25		110	%	50 - 150
			Methylene Chloride(Dichloromethane)	2021/06/25		106	%	50 - 150
			trans-1,2-Dichloroethylene	2021/06/25		109	%	50 - 150
			Chloroform	2021/06/25		113	%	50 - 150
			1,2-Dichloroethane	2021/06/25		103	%	50 - 150
			Methyl Ethyl Ketone (2-Butanone)	2021/06/25		80	%	50 - 150
			1,1,1-Trichloroethane	2021/06/25		112	%	50 - 150
			Carbon Tetrachloride	2021/06/25		111	%	50 - 150
			Benzene	2021/06/25		106	%	50 - 150
			1,2-Dichloropropane	2021/06/25		105	%	50 - 150
			Trichloroethylene	2021/06/25		104	%	50 - 150
			Bromodichloromethane	2021/06/25		109	%	50 - 150
			Dibromochloromethane	2021/06/25		113	%	50 - 150
			Toluene	2021/06/25		111	%	50 - 150
			Ethylene Dibromide	2021/06/25		109	%	50 - 150
			Tetrachloroethylene	2021/06/25		113	%	50 - 150
			Ethylbenzene	2021/06/25		111	%	50 - 150
			m / p-Xylene	2021/06/25		108	%	50 - 150
			Styrene	2021/06/25		113	%	50 - 150
			o-Xylene	2021/06/25		111	%	50 - 150
			Bromoform	2021/06/25		118	%	50 - 150
7429481	YYA	Method Blank	Bromofluorobenzene	2021/06/25		104	%	43 - 131
			D10-Ethylbenzene (FS)	2021/06/25		90	%	47 - 157
			D4-1,2-Dichloroethane	2021/06/25		106	%	64 - 133
			D8-Toluene	2021/06/25		104	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2021/06/25	<0.050		ug	
			Vinyl Chloride	2021/06/25	<0.050		ug	
			Bromomethane	2021/06/25	<0.050		ug	
			Trichlorofluoromethane (FREON 11)	2021/06/25	<0.050		ug	
			Acetone (2-Propanone)	2021/06/25	<0.050		ug	
			1,1-Dichloroethylene	2021/06/25	<0.050		ug	
			Methylene Chloride(Dichloromethane)	2021/06/25	<0.050		ug	
			trans-1,2-Dichloroethylene	2021/06/25	<0.050		ug	
			Chloroform	2021/06/25	<0.050		ug	
			1,2-Dichloroethane	2021/06/25	<0.050		ug	
			Methyl Ethyl Ketone (2-Butanone)	2021/06/25	<0.050		ug	
			1,1,1-Trichloroethane	2021/06/25	<0.050		ug	

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Carbon Tetrachloride	2021/06/25	<0.050		ug	
			Benzene	2021/06/25	<0.050		ug	
			1,2-Dichloropropane	2021/06/25	<0.050		ug	
			Trichloroethylene	2021/06/25	<0.050		ug	
			Bromodichloromethane	2021/06/25	<0.050		ug	
			Dibromochloromethane	2021/06/25	<0.050		ug	
			Toluene	2021/06/25	<0.050		ug	
			Ethylene Dibromide	2021/06/25	<0.050		ug	
			Tetrachloroethylene	2021/06/25	<0.050		ug	
			Ethylbenzene	2021/06/25	<0.050		ug	
			m / p-Xylene	2021/06/25	<0.10		ug	
			Styrene	2021/06/25	<0.050		ug	
			o-Xylene	2021/06/25	<0.050		ug	
			Bromoform	2021/06/25	<0.050		ug	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anke Macfarlane, Laboratory Manager, VOC

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: Method Blank

Field ID#: Method blank

Number of TICs found: 0

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.		Mesitylene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05 ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#:	PXI440
Field ID#:	M0030-FB OUTLET 1 (5A/B)

Number of TICs found: 0

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.		Mesitylene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05 ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: PXI441

Field ID#: M0030-OUTLET 1-T1 (1A/B)

Number of TICs found: 0

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.		Mesitylene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05 ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: PXI442

Field ID#: M0030-OUTLET 1-T2 (2A/B)

Number of TICs found: 0

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.		Mesitylene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05 ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#:	PXI444
Field ID#:	M0030-FB OUTLET 2 (13A/B)

Number of TICs found: 0

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.		Mesitylene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05 ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: PXI494

Field ID#: M0030-TRIP BLK (15A/B)

Number of TICs found: 0

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.		Mesitylene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05 ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: PXI495

Field ID#: M0030-OUTLET 2-T1 (9A/B)

Number of TICs found: 0

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.		Mesitylene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05 ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: PXI497

Field ID#: M0030-OUTLET 2-T2 (10A/B)

Number of TICs found: 0

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.		Mesitylene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05 ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: PXI501

Field ID#: M0030-OUTLET 2-T4 (12A/B)

Number of TICs found: 1

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.	000108-67-8	Mesitylene	12.49	0.072	94
4.		Trichlorotrifluoroethane < 0.05 ug			

Your P.O. #: L2604250

Attention: Lynne Wrona

ALS Environmental
1435 Norjohn Court
Unit 1
Burlington, ON
CANADA L7L 0E6

Report Date: 2021/07/16
Report #: R6721604
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1J3334
Received: 2021/07/13, 09:12

Sample Matrix: Stack Sampling Train
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
VOST EPA5041A, 8260C for 0030, 0031	1	N/A	2021/07/14	BRL SOP-00302	EPA5041A, 8260C

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your P.O. #: L2604250

Attention: Lynne Wrona

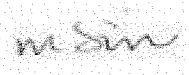
ALS Environmental
1435 Norjohn Court
Unit 1
Burlington, ON
CANADA L7L 0E6

Report Date: 2021/07/16
Report #: R6721604
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1J3334
Received: 2021/07/13, 09:12

Encryption Key



Marinela Sim
Project Manager
16 Jul 2021 08:56:30

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marinela Sim, Project Manager
Email: Marinela.Sim@bureauveritas.com
Phone# (905)817-5828

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

BV Labs ID		QBQ612		
Sampling Date		2021/06/17		
	UNITS	M0030- OUTLET #1 (4A/B)	RDL	QC Batch
Volatile Organics				
Dichlorodifluoromethane (FREON 12)	ug	<0.050	0.050	7461688
Vinyl Chloride	ug	<0.050	0.050	7461688
Bromomethane	ug	<0.050	0.050	7461688
Trichlorofluoromethane (FREON 11)	ug	<0.050	0.050	7461688
Acetone (2-Propanone)	ug	0.067	0.050	7461688
1,1-Dichloroethylene	ug	<0.050	0.050	7461688
Methylene Chloride(Dichloromethane)	ug	<0.050	0.050	7461688
trans-1,2-Dichloroethylene	ug	<0.050	0.050	7461688
Chloroform	ug	0.100	0.050	7461688
1,2-Dichloroethane	ug	<0.050	0.050	7461688
Methyl Ethyl Ketone (2-Butanone)	ug	<0.050	0.050	7461688
1,1,1-Trichloroethane	ug	<0.050	0.050	7461688
Carbon Tetrachloride	ug	<0.050	0.050	7461688
Benzene	ug	0.268	0.050	7461688
1,2-Dichloropropane	ug	<0.050	0.050	7461688
Trichloroethylene	ug	<0.050	0.050	7461688
Bromodichloromethane	ug	0.079	0.050	7461688
Dibromochloromethane	ug	<0.050	0.050	7461688
Toluene	ug	0.331	0.050	7461688
Ethylene Dibromide	ug	<0.050	0.050	7461688
Tetrachloroethylene	ug	<0.050	0.050	7461688
Ethylbenzene	ug	<0.050	0.050	7461688
m / p-Xylene	ug	<0.10	0.10	7461688
Styrene	ug	<0.050	0.050	7461688
o-Xylene	ug	<0.050	0.050	7461688
Bromoform	ug	<0.050	0.050	7461688
Surrogate Recovery (%)				
Bromofluorobenzene	%	91		7461688
D10-Ethylbenzene (FS)	%	6.9 (1)		7461688
D4-1,2-Dichloroethane	%	105		7461688
D8-Toluene	%	98		7461688

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C1J3334
Report Date: 2021/07/16

ALS Environmental
Your P.O. #: L2604250

TEST SUMMARY

BV Labs ID: QBQ612
Sample ID: M0030- OUTLET #1 (4A/B)
Matrix: Stack Sampling Train

Collected: 2021/06/17
Shipped:
Received: 2021/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	7461688	N/A	2021/07/14	Yujie Yan

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

GENERAL COMMENTS

Sample received and analyzed past hold time.
D10-Ethylbenzene surrogate recovery was below acceptance limit of 47%. Tubes were not supplied by Bureau Veritas Laboratories.

Results relate only to the items tested.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C1J3334
Report Date: 2021/07/16

ALS Environmental
Your P.O. #: L2604250

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
7461688	YYA	Spiked Blank	Bromofluorobenzene	2021/07/14		102	%	43 - 131
			D10-Ethylbenzene (FS)	2021/07/14		106	%	47 - 157
			D4-1,2-Dichloroethane	2021/07/14		100	%	64 - 133
			D8-Toluene	2021/07/14		100	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2021/07/14		89	%	50 - 150
			Vinyl Chloride	2021/07/14		98	%	50 - 150
			Bromomethane	2021/07/14		104	%	50 - 150
			Trichlorofluoromethane (FREON 11)	2021/07/14		100	%	50 - 150
			Acetone (2-Propanone)	2021/07/14		87	%	50 - 150
			1,1-Dichloroethylene	2021/07/14		109	%	50 - 150
			Methylene Chloride(Dichloromethane)	2021/07/14		102	%	50 - 150
			trans-1,2-Dichloroethylene	2021/07/14		104	%	50 - 150
			Chloroform	2021/07/14		112	%	50 - 150
			1,2-Dichloroethane	2021/07/14		102	%	50 - 150
			Methyl Ethyl Ketone (2-Butanone)	2021/07/14		76	%	50 - 150
			1,1,1-Trichloroethane	2021/07/14		109	%	50 - 150
			Carbon Tetrachloride	2021/07/14		108	%	50 - 150
			Benzene	2021/07/14		102	%	50 - 150
			1,2-Dichloropropane	2021/07/14		101	%	50 - 150
			Trichloroethylene	2021/07/14		102	%	50 - 150
			Bromodichloromethane	2021/07/14		106	%	50 - 150
			Dibromochloromethane	2021/07/14		105	%	50 - 150
			Toluene	2021/07/14		105	%	50 - 150
			Ethylene Dibromide	2021/07/14		99	%	50 - 150
			Tetrachloroethylene	2021/07/14		108	%	50 - 150
			Ethylbenzene	2021/07/14		105	%	50 - 150
			m / p-Xylene	2021/07/14		105	%	50 - 150
			Styrene	2021/07/14		109	%	50 - 150
			o-Xylene	2021/07/14		109	%	50 - 150
			Bromoform	2021/07/14		101	%	50 - 150
7461688	YYA	Method Blank	Bromofluorobenzene	2021/07/14		104	%	43 - 131
			D10-Ethylbenzene (FS)	2021/07/14		81	%	47 - 157
			D4-1,2-Dichloroethane	2021/07/14		105	%	64 - 133
			D8-Toluene	2021/07/14		103	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2021/07/14	<0.050		ug	
			Vinyl Chloride	2021/07/14	<0.050		ug	
			Bromomethane	2021/07/14	<0.050		ug	
			Trichlorofluoromethane (FREON 11)	2021/07/14	<0.050		ug	
			Acetone (2-Propanone)	2021/07/14	<0.050		ug	
			1,1-Dichloroethylene	2021/07/14	<0.050		ug	
			Methylene Chloride(Dichloromethane)	2021/07/14	<0.050		ug	
			trans-1,2-Dichloroethylene	2021/07/14	<0.050		ug	
			Chloroform	2021/07/14	<0.050		ug	
			1,2-Dichloroethane	2021/07/14	<0.050		ug	
			Methyl Ethyl Ketone (2-Butanone)	2021/07/14	<0.050		ug	
			1,1,1-Trichloroethane	2021/07/14	<0.050		ug	
			Carbon Tetrachloride	2021/07/14	<0.050		ug	
			Benzene	2021/07/14	<0.050		ug	
			1,2-Dichloropropane	2021/07/14	<0.050		ug	
			Trichloroethylene	2021/07/14	<0.050		ug	
			Bromodichloromethane	2021/07/14	<0.050		ug	
			Dibromochloromethane	2021/07/14	<0.050		ug	
			Toluene	2021/07/14	<0.050		ug	

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Ethylene Dibromide	2021/07/14	<0.050		ug	
			Tetrachloroethylene	2021/07/14	<0.050		ug	
			Ethylbenzene	2021/07/14	<0.050		ug	
			m / p-Xylene	2021/07/14	<0.10		ug	
			Styrene	2021/07/14	<0.050		ug	
			o-Xylene	2021/07/14	<0.050		ug	
			Bromoform	2021/07/14	<0.050		ug	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C1J3334
Report Date: 2021/07/16

ALS Environmental
Your P.O. #: L2604250

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anke Macfarlane, Laboratory Manager, VOC

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: Method Blank

Field ID#: Method blank

Number of TICs found: 0

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.		Mesitylene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05 ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: QBQ612

Field ID#: M0030- OUTLET #1 (4A/B)

Number of TICs found: 0

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05 ug			
2.		Cumene < 0.05 ug			
3.		Mesitylene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05 ug			

APPENDIX 18

Aldehydes Recovery Data Sheet
(1 page)

ORTECH Consulting Inc. - Recovery & Sample Log
NCASI Method ISS/FP-A105.01

Client: Covanata DYEC
Job/Report Number: 22081
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22081-J2774

Test Number	Test Location	ORTECH Sample ID 21-22081-	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle (g)	Initial Weight Sample Bottle + BHA (g)	Final Weight of BHA Sample Bottle (g)	Weight of Sample Bottle BHA & H2O (g)	Weight of Sample Bottle BHA & H2O & Hexane (g)
1	APC Outlet #1	ALD-1	JUNE 17,21	ALD-1	110.9	159.6	161.3	175.1	180.7
2	APC Outlet #1	ALD-2		ALD-2	111.0	160.8	163.0	173.0	178.6
3	APC Outlet #1	ALD-3		ALD-3	110.8	163.7	166.1	177.2	184.3
Blank 1	APC Outlet #1	Blank 1		ALD-4	111.3	162.0	161.9	172.6	180.8
1	APC Outlet #2	ALD-5		ALD-5	110.9	158.6	159.5	174.2	180.5
2	APC Outlet #2	ALD-6		ALD-6	111.1	161.2	162.2	178.2	182.9
3	APC Outlet #2	ALD-7		ALD-7	110.6	161.2	162.6	178.5	185.9
Blank 2	APC Outlet #2	Blank 2		ALD-8	110.6	160.4	160.3	170.4	176.2
				-9	110.5	158.3			
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				-10	110.4	160.4			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: _____ Date: _____

Relinquished to: _____ Date: _____

APPENDIX 19

Aldehydes Analytical Report
(14 pages)

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2604313 Revised Report		Mississauga, ON L5J 2Y4
Date of Report Revision	10-Jan-22		Canada
Date of Sample Receipt	21-Jun-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **Aldehydes as benzyloxime derivatives by SIM GC/MS**
REVISED REPORT: Correction to reporting units

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank	21-22081-ALD-1 TEST#1 APC OUTLET #1	21-22081-ALD-2 TEST#2 APC OUTLET #1	21-22081-ALD-3 TEST#3 APC OUTLET #1	21-22081-ALD-BLANK 1 APC OUTLET #1	21-22081-ALD-4 TEST#1 APC OUTLET #2
ALS Sample ID	WG3571114-1	L2604313-1	L2604313-2	L2604313-3	L2604313-4	L2604313-5
Sample Size	1	1	1	1	1	1
Sample units	sample	Train	Train	Train	Train	Train
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	QC	Stack	Stack	Stack	Stack	Stack
Sampling Date	n/a	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
Extraction Date	8-Jul-21	8-Jul-21	8-Jul-21	8-Jul-21	8-Jul-21	8-Jul-21
Target Analytes	**ug/sample**	**ug/sample**	**ug/sample**	**ug/sample**	**ug/sample**	**ug/sample**
Formaldehyde	0.68	60.8	16.9	5.99 B	3.64 B	2.57 B
Acetaldehyde	2.67	16.23 B	15.36 B	13.18 B	17.94 B	9.42 B
Acrolein	<0.1 U	<0.1 U	<0.1 U	<0.1 U	<0.1 U	<0.1 U

U Indicates that this compound was not detected above the LOD.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	21-22081-ALD-5 TEST#2 APC OUTLET #2		21-22081-ALD-6 TEST#3 APC OUTLET #2		21-22081-ALD-BLANK 2 APC OUTLET #2		Laboratory Control Sample (5ug)	Laboratory Control Sample (2.5ug)
ALS Sample ID	L2604313-6		L2604313-7		L2604313-8		WG3571114-2	WG3571114-4
Sample Size	1		1		1		1	1
Sample units	Train		Train		Train		n/a	n/a
Moisture Content	n/a		n/a		n/a		n/a	n/a
Matrix	Stack		Stack		Stack		QC	QC
Sampling Date	17-Jun-21		17-Jun-21		17-Jun-21		n/a	n/a
Extraction Date	8-Jul-21		8-Jul-21		8-Jul-21		8-Jul-21	8-Jul-21
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**% Rec**	**% Rec**
Formaldehyde	3.17	B	2.16	B	3.01	B	122	77
Acetaldehyde	9.07	B	12.03	B	12.34	B	105	60
Acrolein	<0.1	U	<0.1	U	<0.1	U	48	40

U Indicates that this compound was not detected above the LOD.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3571114-1	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072207.D
Run Date	7/22/2021 13:17
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde		0.68		
Acetaldehyde		2.67		
Acrolein		<0.1	U	

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-ALD-1 TEST#1 APC OUTLET #1**	Sampling Date	17-Jun-21
ALS Sample ID	L2604313-1	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072210.D
Run Date	7/22/2021 15:18
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde		60.8		
Acetaldehyde		16.23	B	
Acrolein		<0.1	U	

U	Indicates that this compound was not detected above the MDL.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-ALD-2 TEST#2 APC OUTLET #1**	Sampling Date	17-Jun-21
ALS Sample ID	L2604313-2	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072211.D
Run Date	7/22/2021 15:58
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde		16.9		
Acetaldehyde		15.36	B	
Acrolein		<0.1	U	

U	Indicates that this compound was not detected above the MDL.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-ALD-3 TEST#3 APC OUTLET #1**	Sampling Date	17-Jun-21
ALS Sample ID	L2604313-3	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072212.D
Run Date	7/22/2021 16:39
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde		5.99	B	
Acetaldehyde		13.18	B	
Acrolein		<0.1	U	

U	Indicates that this compound was not detected above the MDL.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-ALD-BLANK 1 APC OUTLET #1**	Sampling Date	17-Jun-21
ALS Sample ID	L2604313-4	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072208.D
Run Date	7/22/2021 13:57
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde		3.64	B	
Acetaldehyde		17.94	B	
Acrolein		<0.1	U	

U Indicates that this compound was not detected above the MDL.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-ALD-4 TEST#1 APC OUTLET #2**	Sampling Date	17-Jun-21
ALS Sample ID	L2604313-5	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072213.D
Run Date	7/22/2021 17:19
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde		2.57	B	
Acetaldehyde		9.42	B	
Acrolein		<0.1	U	

U	Indicates that this compound was not detected above the MDL.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-ALD-5 TEST#2 APC OUTLET #2**	Sampling Date	17-Jun-21
ALS Sample ID	L2604313-6	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072214.D
Run Date	7/22/2021 17:59
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde		3.17	B	
Acetaldehyde		9.07	B	
Acrolein		<0.1	U	

U Indicates that this compound was not detected above the MDL.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-ALD-6 TEST#3 APC OUTLET #2**	Sampling Date	17-Jun-21
ALS Sample ID	L2604313-7	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072215.D
Run Date	7/22/2021 18:39
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde		2.16	B	
Acetaldehyde		12.03	B	
Acrolein		<0.1	U	

U Indicates that this compound was not detected above the MDL.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22081-ALD-BLANK 2 APC OUTLET #2**	Sampling Date	17-Jun-21
ALS Sample ID	L2604313-8	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072209.D
Run Date	7/22/2021 14:38
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde		3.01	B	
Acetaldehyde		12.34	B	
Acrolein		<0.1	U	

U Indicates that this compound was not detected above the MDL.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3571114-2	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072204.D
Run Date	7/22/2021 11:17
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde			122		60-130
Acetaldehyde			105		60-130
Acrolein			48		40-130

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3571114-4	Extraction Date	8-Jul-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
23-Jul-2021

Run Information	**Run 1**
Filename	21072203.D
Run Date	7/22/2021 10:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	2.5		77		60-130
Acetaldehyde	2.5		60		60-130
Acrolein	2.5		40		40-130

APPENDIX 20

SVOC and VOST Proof Data
(14 pages)

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2573966		Mississauga, ON L5J 2Y4
Date of Report	29-Apr-21		Canada
Date of Sample Receipt	7-Apr-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **PCDD/F by EPA M23**

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Life Sciences

Sample Analysis summary Report

Sample Name	GLASSWARE PROOF (6 SETS)
ALS Sample ID	L2573966-57
Sample Size	1
Sample size units	Proof
Percent Moisture	n/a
Sample Matrix	Media Prep
Sampling Date	n/a
Extraction Date	21-Apr-21

Target Analytes	pg
2,3,7,8-TCDD	<2.3
1,2,3,7,8-PeCDD	1.59
1,2,3,4,7,8-HxCDD	<1.3
1,2,3,6,7,8-HxCDD	<1.3
1,2,3,7,8,9-HxCDD	<1.9
1,2,3,4,6,7,8-HpCDD	<6.0
OCDD	24.0
2,3,7,8-TCDF	<1.4
1,2,3,7,8-PeCDF	<2.3
2,3,4,7,8-PeCDF	<1.2
1,2,3,4,7,8-HxCDF	<1.1
1,2,3,6,7,8-HxCDF	1.46
2,3,4,6,7,8-HxCDF	2.79
1,2,3,7,8,9-HxCDF	<1.9
1,2,3,4,6,7,8-HpCDF	3.33
1,2,3,4,7,8,9-HpCDF	<2.0
OCDF	6.26
Extraction Standards	
13C12-2,3,7,8-TCDD	98
13C12-1,2,3,7,8-PeCDD	117
13C12-1,2,3,6,7,8-HxCDD	102
13C12-1,2,3,4,6,7,8-HpCDD	99
13C12-OCDD	86
13C12-2,3,7,8-TCDF	104
13C12-1,2,3,7,8-PeCDF	106
13C12-1,2,3,6,7,8-HxCDF	85
13C12-1,2,3,4,6,7,8-HpCDF	94
Homologue Group Totals	**pg**
Total-TCDD	6.45
Total-PeCDD	1.59
Total-HxCDD	<1.3
Total-HpCDD	3.74
Total-TCDF	<1.4
Total-PeCDF	<1.2
Total-HxCDF	4.25
Total-HpCDF	3.33
Toxic Equivalency - (WHO 2005)	
Lower Bound PCDD/F TEQ (WHO 2005)	2.06
Mid Point PCDD/F TEQ (WHO 2005)	4.17
Upper Bound PCDD/F TEQ (WHO 2005)	5.76

ALS Life Sciences

Quality Control Summary Report

Sample Name	Method Blank
ALS Sample ID	WG3521366-1
Sample Size	1
Sample size units	sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	21-Apr-21

Target Analytes	pg
2,3,7,8-TCDD	<1.3
1,2,3,7,8-PeCDD	<1.6
1,2,3,4,7,8-HxCDD	<1.2
1,2,3,6,7,8-HxCDD	<1.1
1,2,3,7,8,9-HxCDD	<2.1
1,2,3,4,6,7,8-HpCDD	3.40
OCDD	12.8
2,3,7,8-TCDF	<0.98
1,2,3,7,8-PeCDF	2.41
2,3,4,7,8-PeCDF	<0.89
1,2,3,4,7,8-HxCDF	<1.2
1,2,3,6,7,8-HxCDF	<1.0
2,3,4,6,7,8-HxCDF	<2.6
1,2,3,7,8,9-HxCDF	<2.9
1,2,3,4,6,7,8-HpCDF	<2.8
1,2,3,4,7,8,9-HpCDF	<1.5
OCDF	<2.5
Extraction Standards	
13C12-2,3,7,8-TCDD	120
13C12-1,2,3,7,8-PeCDD	118
13C12-1,2,3,6,7,8-HxCDD	116
13C12-1,2,3,4,6,7,8-HpCDD	124
13C12-OCDD	117
13C12-2,3,7,8-TCDF	122
13C12-1,2,3,7,8-PeCDF	120
13C12-1,2,3,6,7,8-HxCDF	109
13C12-1,2,3,4,6,7,8-HpCDF	134
Homologue Group Totals	**pg**
Total-TCDD	<1.3
Total-PeCDD	13.5
Total-HxCDD	2.89
Total-HpCDD	3.40
Total-TCDF	<0.98
Total-PeCDF	2.41
Total-HxCDF	<0.79
Total-HpCDF	<0.78
Toxic Equivalency - (WHO 2005)	
Lower Bound PCDD/F TEQ (WHO 2005)	0.110
Mid Point PCDD/F TEQ (WHO 2005)	3.68
Upper Bound PCDD/F TEQ (WHO 2005)	4.63

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2573966		Mississauga, ON L5J 2Y4
Date of Report	27-Apr-21		Canada
Date of Sample Receipt	7-Apr-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **PCB Congeners by EPA 1668C**

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

Certified by: _____

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	GLASSWARE PROOF (6 SETS)
ALS Sample ID	L2573966-57
Sample Size	1
Sample size units	Sample
Percent Moisture	n/a
Sample Matrix	Media Prep
Sampling Date	n/a
Extraction Date	21-Apr-21

Target Analytes	pg
PCB-081	<1.6
PCB-077	<1.6
PCB-123	<1.9
PCB-118	4.20
PCB-114	<1.8
PCB-105	<2.2
PCB-126	<2.1
PCB-167	<1.3
PCB-156/157	<1.8
PCB-169	<1.3
PCB-189	<1.4

Extraction Standards	% Rec
13C12-PCB-081	100
13C12-PCB-077	100
13C12-PCB-123	106
13C12-PCB-118	96
13C12-PCB-114	105
13C12-PCB-105	108
13C12-PCB-126	108
13C12-PCB-167	103
13C12-PCB-156/157	104
13C12-PCB-169	120
13C12-PCB-189	121

Toxic Equivalency - (WHO 2005)	
Lower Bound PCB TEQ	0.000126
Mid Point PCB TEQ	0.125
Upper Bound PCB TEQ	0.250

ALS Life Sciences

Quality Control Summary Report

Sample Name	Method Blank
ALS Sample ID	WG3521366-1
Sample Size	1
Sample size units	Sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	21-Apr-21

Target Analytes	pg
PCB-081	<1.5
PCB-077	<1.6
PCB-123	<3.3
PCB-118	<3.2
PCB-114	<3.1
PCB-105	<3.1
PCB-126	<3.3
PCB-167	<1.0
PCB-156/157	<1.3
PCB-169	<1.1
PCB-189	<1.0
Extraction Standards	**% Rec**
13C12-PCB-081	111
13C12-PCB-077	113
13C12-PCB-123	120
13C12-PCB-118	110
13C12-PCB-114	120
13C12-PCB-105	123
13C12-PCB-126	130
13C12-PCB-167	110
13C12-PCB-156/157	123
13C12-PCB-169	125
13C12-PCB-189	133

Toxic Equivalency - (WHO 2005)	
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.182
Upper Bound PCB TEQ	0.364

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2573966		Mississauga, ON L5J 2Y4
Date of Report	27-Apr-21		Canada
Date of Sample Receipt	7-Apr-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **CB by LRGC/MS - Isotope dilution**

Certified by: _____

Ron McLeod, Ph.D.
Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF (6 SETS)	
ALS Sample ID	WG3521366-1		L2573966-57	
Sample Size	1		1	
Sample units	sample		sample	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	21-Apr-21		21-Apr-21	
Target Analytes	**ng/sample**		**ng/sample**	
Chlorobenzene	<10	U	<10	U
1,3-Dichlorobenzene	<10	U	<10	U
1,4-Dichlorobenzene	<10	U	<10	U
1,2-Dichlorobenzene	<10	U	<10	U
1,3,5-Trichlorobenzene	<10	U	<10	U
1,2,4-Trichlorobenzene	<10	U	<10	U
1,2,3-Trichlorobenzene	<10	U	<10	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<10	U	<10	U
1,2,3,4-Tetrachlorobenzene	<10	U	<10	U
Pentachlorobenzene	<10	U	<10	U
Hexachlorobenzene	<10	U	<10	U
Extraction Standards	**%Rec**		**%Rec**	
13C6-Chlorobenzene	43		41	
13C6-1,4-Dichlorobenzene	77		74	
13C6-1,2,3-Trichlorobenzene	121		116	
13C6-1,2,3,4-Tetrachlorobenzene	122		125	
13C6-Pentachlorobenzene	78		124	
13C6-Hexachlorobenzene	104		130	

U Indicates that this compound was not detected above the LOD.

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2573966		Mississauga, ON L5J 2Y4
Date of Report	11-May-21		Canada
Date of Sample Receipt	7-Apr-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Target analytes were not detected in the proof.
Glassware is approved for the collection of samples for the analysis of chlorophenols.

Certified by:

Steve Kennedy
Technical Supervisor

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF (6 SETS)	
ALS Sample ID	WG3521366-1		L2573966-57	
Sample Size	1		1	
Sample units	sample		sample	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	21-Apr-21		21-Apr-21	
Target Analytes	**ng/sample**		**ng/sample**	
2-Chlorophenol	<50	U	<50	U
3-Chlorophenol	<50	U	<50	U
4-Chlorophenol	<50	U	<50	U
2,6-Dichlorophenol	<50	U	<50	U
2,4/2,5-Dichlorophenol	<50	U	<50	U
3,5-Dichlorophenol	<50	U	<50	U
2,3-Dichlorophenol	<50	U	<50	U
3,4-Dichlorophenol	<50	U	<50	U
2,4,6-Trichlorophenol	<50	U	<50	U
2,3,6-Trichlorophenol	<50	U	<50	U
2,3,5-Trichlorophenol	<50	U	<50	U
2,4,5-Trichlorophenol	<50	U	<50	U
2,3,4-Trichlorophenol	<50	U	<50	U
3,4,5-Trichlorophenol	<50	U	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<50	U	<50	U
2,3,4,5-Tetrachlorophenol	<50	U	<50	U
Pentachlorophenol	<50	U	<50	U
Hexachlorophene	<50	U	<50	U
Extraction Standards	**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	47		47	
13C6-2,4-Dichlorophenol (ES)	51		54	
13C6-2,4,5-Trichlorophenol (ES)	41		44	
13C6-2,3,4,5-Tetrachlorophenol (ES)	46		54	
13C6-Pentachlorophenol (ES)	41		47	

U Indicates that this compound was not detected above the LOR.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2573966		Mississauga, ON L5J 2Y4
Date of Report	26-Apr-21		Canada
Date of Sample Receipt	7-Apr-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Certified by: _____
Ron McLeod, Ph.D.
Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF (6 SETS)	
ALS Sample ID	WG3521366-1		L2573966-57	
Sample Size	1		1	
Sample units	sample		sample	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	21-Apr-21		21-Apr-21	
Target Analytes	**ng/sample**		**ng/sample**	
Naphthalene	21.0	M,R	20.4	M,B
2-Methylnaphthalene	<10	U	<10	U
1-Methylnaphthalene	<10	U	<10	U
Acenaphthylene	<10	U	<10	U
Acenaphthene	<10	U	<10	U
Fluorene	<10	U	<10	U
Phenanthrene	<10	U	<10	U
Anthracene	<10	U	<10	U
Fluoranthene	<10	U	<10	U
Pyrene	<10	U	<10	U
Benzo(a)Anthracene	<10	U	<10	U
Chrysene	<10	U	<10	U
Benzo(b)Fluoranthene	<10	U	<10	U
Benzo(k)Fluoranthene	<10	U	<10	U
Benzo(e)Pyrene	<10	U	<10	U
Benzo(a)Pyrene	<10	U	<10	U
Perylene	<10	U	<10	U
Indeno(1,2,3-cd)Pyrene	<10	U	<10	U
Dibenzo(a,h)Anthracene	<10	U	<10	U
Benzo(g,h,i)Perylene	<10	U	<10	U
Extraction Standards	**% Rec**		**% Rec**	
Naphthalene D8	77.5		73.8	
2-Methylnaphthalene-D10	96.7		92.8	
Acenaphthylene D8	74.7		87.6	
Phenanthrene D10	103.6		92.4	
Anthracene-D10	87.9		90.3	
Fluoranthene D10	88.2		97.4	
Benz(a)Anthracene-D12	42.9		90.8	
Chrysene D12	48.5		81.7	
Benzo(b)Fluoranthene-D12	79.6		96.6	
Benzo(k)Fluoranthene-D12	88.4	M	92.9	M
Benzo(a)Pyrene D12	77		94.2	
Perylene D12	64.5		85.4	
Indeno(1,2,3,cd)Pyrene-D12	79.6		91.4	
Dibenz(a,h)Anthracene-D14	60.9		76.4	
Benzo(g,h,i)Perylene D12	83.5		83.7	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2573966		Mississauga, ON L5J 2Y4
Date of Report	3-May-21		CANADA
Date of Sample Receipt	7-Apr-21	**Client Contact:**	Chris Belore
		Client Project ID:	22081 COVANTA

COMMENTS: **VOCs via SW846 Method 5041A/8260D**

Ketone data by VOST analyses are estimated values only

Certified by:

Ron McLeod
Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		VOST PROOF	
ALS Sample ID	WG3527769-1		L2573966-76	
Sample units	sample		sample	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	3-May-21		3-May-21	
Target Analytes	**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U
Trichlorofluoromethane	<0.02	U	<0.02	U
1,1-Dichloroethene	<0.01	U	<0.01	U
Acetone	<0.1	U	<0.1	U
Methylene Chloride	<0.1	U	<0.1	U
trans,1,2-Dichloroethene	<0.01	U	<0.01	U
2-Butanone	<0.01	U	<0.01	U
Chloroform	<0.01	U	<0.01	U
1,1,1-Trichloroethane	<0.01	U	<0.01	U
Carbon Tetrachloride	<0.01	U	<0.01	U
Benzene	<0.05	U	<0.05	U
1,2-Dichloroethane	<0.01	U	<0.01	U
Trichloroethene	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U
Bromodichloromethane	<0.01	U	<0.01	U
Toluene	<0.05	U	<0.05	U
1,1,2-Trichloroethane	<0.02	U	<0.02	U
Tetrachloroethene	<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U
Ethylbenzene	<0.01	U	<0.01	U
M&P-Xylene	<0.03	U	<0.03	U
O-Xylene	<0.01	U	<0.01	U
Styrene	<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U
Isopropylbenzene	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	<0.02	U	<0.02	U
1,3-Butadiene	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.02	U	<0.02	U
Field Standard	**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	97.4		113.6	
Surrogate Standards	**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	83.9		82.4	
d8-Toluene(SURR)	113.5		114.2	
4-Bromofluorobenzene(SURR)	109.8		106.5	
Internal Standards	**% Rec**		**% Rec**	
Bromochloromethane	89		82.6	
1,4-Difluorobenzene	125		84.8	
d5-Chlorobenzene	108.6		72.4	

U Indicates that this compound was not detected above the RL.

APPENDIX 21

ORTECH Equipment Calibration Data
(30 pages)

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22801	Date:	June 15, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.004				
High	89.4	A2	89.8	B2	C				
Mid	53.31	A4	52	B4		53.5	D4	-2.9	E4
Low	30.51	A3	30.6	B3		30.6	D3	-0.2	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0.1	-0.1
Mid	30.6	30.5	0.1

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22801	Date:	June 15, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.004				
High	89.4	A2	89.8	B2	C				
Mid	53.31	A4	52	B4		53.5	D4	-2.9	E4
Low	30.51	A3	30.6	B3		30.6	D3	-0.2	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.1	0.2	-0.1
Mid	30.5	30.6	-0.1

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22801	Date:	June 15, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.004				
High	89.4	A2	89.8	B2	C				
Mid	53.31	A4	52	B4		53.5	D4	-2.9	E4
Low	30.51	A3	30.6	B3		30.6	D3	-0.2	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.2	0.2	0
Mid	30.6	30.1	0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22801	Date:	June 15, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench Inlet	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0 B1	1.002		
High	89.4 A2	89.6 B2	C		
Mid	53.31 A4	54.2 B4		53.4 D4	1.4 E4
Low	30.51 A3	32 B3		30.6 D3	4.7 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	32	31.5	0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22801	Date:	June 15, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench Inlet	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.002					
High	89.4	A2	89.6	B2		C				
Mid	53.31	A4	54.2	B4			53.4	D4	1.4	E4
Low	30.51	A3	32	B3			30.6	D3	4.7	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	31.5	32.0	-0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22801	Date:	June 15, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench Inlet	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.002					
High	89.4	A2	89.6	B2		C				
Mid	53.31	A4	54.2	B4			53.4	D4	1.4	E4
Low	30.51	A3	32	B3			30.6	D3	4.7	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	32.0	33.0	-1.0

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22081	Date:	June 16, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC Outlet	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.2	B1	1.001					
High	89.4	A2	89.65	B2		C				
Mid	53.31	A4	52.65	B4			53.3	D4	-1.3	E4
Low	30.51	A3	30.08	B3			30.5	D3	-1.5	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.1	0.68	-0.58
Mid	30.3	30.9	-0.6

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22081	Date:	June 16, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC Outlet	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.2	B1	1.001				
High	89.4	A2	89.65	B2	C				
Mid	53.31	A4	52.65	B4		53.3	D4	-1.3	E4
Low	30.51	A3	30.08	B3		30.5	D3	-1.5	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.68	0.15	0.53
Mid	30.9	30.4	0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22081	Date:	June 16, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC Outlet	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.2	B1	1.001				
High	89.4	A2	89.65	B2	C				
Mid	53.31	A4	52.65	B4		53.3	D4	-1.3	E4
Low	30.51	A3	30.08	B3		30.5	D3	-1.5	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.15	0.3	-0.15
Mid	30.4	31.0	-0.6

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22081	Date:	June 16, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.4	B1	0.998					
High	89.4	A2	89.6	B2		C				
Mid	53.31	A4	52.7	B4			53.2	D4	-0.9	E4
Low	30.51	A3	30.17	B3			30.4	D3	-0.9	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.4	0.63	-0.23
Mid	30.17	31.4	-1.2

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		25
Run 2	30		25
Run 3	30		25
Average	**30**		**25**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22081	Date:	June 16, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.4	B1	0.998					
High	89.4	A2	89.6	B2		C				
Mid	53.31	A4	52.7	B4			53.2	D4	-0.9	E4
Low	30.51	A3	30.17	B3			30.4	D3	-0.9	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.63	0.15	0.48
Mid	31.4	31.8	-0.4

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		25
Run 2	30		25
Run 3	30		25
Average	**30**		**25**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22081	Date:	June 16, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.4	B1	0.998					
High	89.4	A2	89.6	B2		C				
Mid	53.31	A4	52.7	B4			53.2	D4	-0.9	E4
Low	30.51	A3	30.17	B3			30.4	D3	-0.9	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.15	0.35	-0.2
Mid	31.8	31.8	0.0

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		25
Run 2	30		25
Run 3	30		25
Average	**30**		**25**

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 16, 2021
Probe/Pitot ID	S2
MII Number	B03762
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0030
(0.25")	10.17	0.250	0.350	0.845	0.0030
	12.20	0.360	0.510	0.840	0.0020
	14.38	0.500	0.710	0.839	0.0030
	16.14	0.630	0.890	0.841	0.0009
			Mean	0.842	0.0024
Without Nozzle	7.88	0.150	0.215	0.835	0.0057
	9.86	0.235	0.330	0.843	0.0029
	12.20	0.360	0.510	0.840	0.0008
	14.73	0.525	0.750	0.836	0.0043
	16.64	0.670	0.930	0.848	0.0078
			Mean	0.841	0.0043

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 16, 2021
Probe/Pitot ID	S4
MII Number	B03765
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.74	0.145	0.205	0.841	0.0007
(0.25")	10.17	0.250	0.350	0.845	0.0034
	12.37	0.370	0.520	0.843	0.0018
	14.45	0.505	0.720	0.837	0.0042
	16.14	0.630	0.890	0.841	0.0004
			Mean	0.841	0.0021
Without Nozzle	8.01	0.155	0.220	0.839	0.0017
	10.27	0.255	0.360	0.841	0.0006
	12.12	0.355	0.500	0.842	0.0016
	14.38	0.500	0.710	0.839	0.0019
	16.52	0.660	0.930	0.842	0.0014
			Mean	0.841	0.0014

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 16, 2021
Probe/Pitot ID	S10
MII Number	B03771
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.61	0.140	0.195	0.847	0.0010
(0.25")	9.75	0.230	0.320	0.847	0.0015
	12.03	0.350	0.495	0.840	0.0054
	14.23	0.490	0.690	0.842	0.0036
	16.27	0.640	0.880	0.852	0.0065
			Mean	0.846	0.0036
Without Nozzle	7.74	0.145	0.205	0.841	0.0014
	9.54	0.220	0.310	0.842	0.0000
	12.03	0.350	0.490	0.845	0.0027
	13.79	0.460	0.650	0.841	0.0012
	15.88	0.610	0.860	0.842	0.0002
			Mean	0.842	0.0011

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 17, 2021
Probe/Pitot ID	SP6
MII Number	COE20098
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	8.01	0.155	0.220	0.839	0.0039
(0.25")	9.75	0.230	0.320	0.847	0.0046
	12.20	0.360	0.510	0.840	0.0031
	14.23	0.490	0.690	0.842	0.0005
	16.14	0.630	0.880	0.846	0.0029
			Mean	0.843	0.0030
Without Nozzle	8.13	0.160	0.225	0.843	0.0011
	9.86	0.235	0.330	0.843	0.0005
	12.03	0.350	0.490	0.845	0.0008
	14.09	0.480	0.670	0.846	0.0020
	16.27	0.640	0.900	0.843	0.0011
			Mean	0.844	0.0011

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 17, 2021
Probe/Pitot ID	PM 10 2.5
MII Number	COE 20132
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Nozzle Size inches	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
NA	7.88	0.150	0.210	0.845	0.0007
	9.75	0.230	0.320	0.847	0.0019
	12.20	0.360	0.500	0.848	0.0026
	13.79	0.460	0.640	0.847	0.0019
	15.75	0.600	0.850	0.840	0.0057
			Mean	0.845	0.0026

Note: Pitots must always be used in the orientation that they are calibrated in.

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 1
Meter MII Number	COE 20094
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.21	in Hg
Theoretical Critical Vacuum	13.8	in Hg
System Leak Check	<0.001 cfm @ 26" Hg	
Calibration Date	April 30, 2021	
Calibration Technician	Jake Artibello	
Reviewed and Accepted By		

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice DH	Volume Initial	Volume Final	Avg. DGM Temp Initial	Avg. DGM Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Q)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F			°F	°F	in Hg
8.0	0.26	82.705	85.147	66.0	64.0	UR-40	0.2352	70.7	70.7	24.0
8.0	0.57	85.147	88.581	64.0	65.0	UR-48	0.3308	70.7	70.7	23.0
8.0	1.20	88.581	93.316	65.0	66.0	UR-55	0.4520	70.7	70.7	20.0
8.0	1.95	93.316	99.475	66.0	67.0	UR-63	0.5874	70.7	70.7	18.0
9.0	3.70	99.475	109.049	67.0	68.0	UR-73	0.8107	70.7	70.7	16.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
2.399	0.300	2.386	0.298	0.994	0.008	0.298	1.644	-0.230
3.380	0.422	3.356	0.419	0.993	0.006	0.419	1.822	-0.052
4.659	0.582	4.585	0.573	0.984	-0.003	0.573	2.055	0.180
6.060	0.757	5.958	0.745	0.983	-0.004	0.745	1.977	0.103
9.443	1.049	9.251	1.028	0.980	-0.007	1.028	1.970	0.095
			DGMCF	0.987			1.875	DH@ Average

Individual values of DGM calibration factor (Y) must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value (Y) must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH

Manometer Calibration Data

Date	April 30, 2021	Calibrated By	Jake Arribello
Manometer Number	Team 1	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	Dual 3		
MII Number	COE 20008		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.270		0.283	4.6
0-1.0	0.542		0.530	-2.3
	0.767		0.760	-0.9
	2.55		2.58	1.2
1.0-10.0	5.10		5.16	1.2
	7.10		7.15	0.7

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading}) \times 100}{\text{Ref. Manometer}}$$

Acceptance Criteria:

The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.

(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP118
MII	COE 20094
Date	April 30, 2021
Calibrated By	Jake Artibello
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024)	Tredicator Display Value		Percent Difference
	Before Adjustment	After Adjustment	(%)
32		32	0.0
70		70	0.0
100		100	0.0
200		201	-0.5
250		251	-0.4
300		302	-0.7
400		400	0.0
500		500	0.0
600		601	-0.2
700		701	-0.1
800		801	-0.1
900		901	-0.1
1000		1001	-0.1
1100		1101	-0.1
1200		1201	-0.1
1250		1251	-0.1

$$\% \text{ Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team # 3
Meter MII Number	COE 20093
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.29	in Hg
Theoretical Critical Vacuum	13.8	in Hg
System Leak Check	<.001@25 " Hg	
Calibration Date	May 3, 2021	
Calibration Technician	Jake Artibello	
Reviewed and Accepted By		

Factors/ Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/ in Hg

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice DH	Volume Initial	Volume Final	Avg. DGM Temp Initial	Avg. DGM Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Q)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F			°F	°F	in Hg
8.0	0.30	277.755	280.212	69.0	70.0	UR-40	0.2352	70.7	70.7	23.5
8.0	0.63	274.305	277.755	69.0	69.0	UR-48	0.3308	70.7	70.7	21.5
8.0	1.20	280.212	284.945	70.0	70.0	UR-55	0.4520	70.7	70.7	20.5
9.0	2.10	284.945	291.881	70.0	71.5	UR-63	0.5874	70.7	70.7	18.0
8.0	3.85	291.881	300.370	71.5	71.5	UR-73	0.8107	70.7	70.7	16.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
2.400	0.300	2.392	0.299	0.997	0.004	0.299	1.887	-0.126
3.376	0.422	3.365	0.421	0.997	0.003	0.421	2.003	-0.010
4.630	0.579	4.598	0.575	0.993	0.000	0.575	2.044	0.031
6.790	0.754	6.722	0.747	0.990	-0.003	0.747	2.118	0.105
8.335	1.042	8.246	1.031	0.989	-0.004	1.031	2.038	0.025
			DGMCF	0.993			2.013	DH@ Average

Individual values of DGM calibration factor (Y) must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value (Y) must be 1.00 ± 0.05,
otherwise the meter must be repaired and/ or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/ RM/ 8, Section 6)

ORTECH Environmental
Manometer Calibration Data

Date	May 3, 2021	Calibrated By	Jake Artibello
Manometer Number	Team 3	Signature	
Manometer MII Numbe	COE 20093	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Back Leg

Manometer Scale "H_20	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.250		0.263	4.9
0-1.0	0.500		0.519	3.7
	0.760		0.783	2.9
	2.40		2.35	-2.1
1.0-10.0	5.10		5.00	-2.0
	7.40		7.42	0.3

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP116
MII	A12007
Date	May 3, 2021
Calibrated By	Jake Artibello
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	31	32	0.0
70	69	70	0.0
100	99	100	0.0
200	200	200	0.0
250	251	250	0.0
300	301	300	0.0
400	399	399	0.3
500	498	499	0.2
600	599	600	0.0
700	701	700	0.0
800	800	800	0.0
900	900	900	0.0
1000	1001	1000	0.0
1100	1101	1100	0.0
1200	1201	1200	0.0
1250	1251	1250	0.0

$$\%\,\text{Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C Method ON-2, 7.5 Appendix 2E)

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 2
Meter MII Number	COE 20092
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.23	in Hg
Theoretical Critical Vacuum	13.8	in Hg
System Leak Check	<0.001 cfm @ 26" Hg	
Calibration Date	April 30, 2021	
Calibration Technician	Jake Artibello	
Reviewed and Accepted By		

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice DH	Volume Initial	Volume Final	Avg. DGM Temp Initial	Avg. DGM Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Q)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F			°F	°F	in Hg
8.0	0.30	937.800	940.270	70.0	69.0	UR-40	0.2352	70.7	71.6	21.5
8.0	0.59	940.270	943.709	69.0	69.0	UR-48	0.3308	71.6	71.6	21.0
8.0	1.10	943.709	948.436	69.0	69.5	UR-55	0.4520	71.6	71.6	19.0
8.0	2.00	954.580	960.701	69.0	69.0	UR-63	0.5874	71.6	71.6	18.0
8.0	3.60	960.701	969.125	70.5	70.5	UR-73	0.8107	71.6	71.6	15.3

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
2.408	0.301	2.387	0.298	0.991	-0.003	0.298	1.896	-0.028
3.359	0.420	3.355	0.419	0.999	0.005	0.419	1.887	-0.037
4.620	0.578	4.585	0.573	0.992	-0.002	0.573	1.884	-0.040
5.999	0.750	5.958	0.745	0.993	-0.001	0.745	2.028	0.105
8.266	1.033	8.223	1.028	0.995	0.001	1.028	1.917	-0.007
			DGMCF	0.994			1.924	DH@ Average

Individual values of DGM calibration factor (Y) must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value (Y) must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH

Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP118
MII	COE 20094
Date	April 30, 2021
Calibrated By	Jake Artibello
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32		0.0
70	70		0.0
100	100		0.0
200	200		0.0
250	251		-0.4
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0
700	700		0.0
800	800		0.0
900	900		0.0
1000	1000		0.0
1100	1100		0.0
1200	1200		0.0
1250	1250		0.0

$$\% \text{ Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH

Manometer Calibration Data

Date	April 30, 2021	Calibrated By	Jake Artibello
Manometer Number	Team 1	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	Dual 3		
MII Number	COE 20008		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.300		0.312	3.8
0-1.0	0.540		0.560	3.6
	0.750		0.780	3.8
	2.00		2.05	2.4
1.0-10.0	4.30		4.39	2.1
	7.10		7.16	0.8

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading}) \times 100}{\text{Ref. Manometer}}$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 3
Date	February 8, 2021
Barometric Pressure	29.83
System Leak Check	NDL @ 19" LPM @ " Hg

MII NUMBERS	
DGM	A12010
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Jake Artibello
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C	Factor	min.	lpm
50.50	37.70	12.80	0.602	21.0	5024.57	5041.92	0.613	29.0	0.4	29.0	1.008	30	0.5
38.70	27.10	11.60	0.546	21.0	4955.81	4971.38	0.550	28.0	0.4	28.0	1.015	30	0.5
57.30	40.10	17.20	0.809	21.0	5082.13	5105.88	0.839	32.0	0.4	32.0	1.000	40	0.5

DGMCF AVERAGE

0.5Lpm	1.008

Acceptance Criteria:

Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH

Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Nutech**
MII	**A12010**
Date	**February 8, 2021**
Calibrated By	**Jake Artibello**
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	Tredicator Display Value		Percent Difference
	Before Adjustment (°C)	After Adjustment (°C)	(%)
0	1	0	0.0
20	21	20	0.0
50	51	50	0.0
100	101	100	0.0
150	152	151	-0.7
200	201	200	0.0
300	301	300	0.0
400	400	400	0.0
500	500	500	0.0
600	601	600	0.0

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	M05498
Date	February 26 2021
Barometric Pressure	29.91
System Leak Check	0.01 @ 23'"Hg

MII NUMBERS	
DGM	M05498
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Jake Artibello
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ ("Hg)}{(Pbar\ "Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C	Factor	min.	lpm
35.90	28.40	7.50	0.353	20.0	3589.38	3599.56	0.360	26.0	1.1	26.0	0.999	20	0.5
28.40	20.90	7.50	0.353	21.0	3599.56	3609.62	0.355	24.0	1.1	24.0	1.000	20	0.5
43.40	35.90	7.50	0.353	20.0	3579.25	3589.38	0.358	25.0	1.1	25.0	1.000	20	0.5

Acceptance Criteria:

Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE

0.5 LPM	1.000

Revision June 5, 2007

ORTECH
Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Nutech**
MII	**M05498**
Date	**February 26, 2021**
Calibrated By	**Jake Artibello**
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	**Tredicator Display Value**		**Percent Difference**
	Before Adjustment (°C)	**After Adjustment (°C)**	**(%)**
0	0		0.0
20	20		0.0
50	50		0.0
100	101		-1.0
150	151		-0.7
200	200		0.0
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading}) \times 100}{\text{micromite}}$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

APPENDIX 22

Particulate and Metals Test Emission Calculations
(24 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 - Particulate & Metals
Date:	June 15, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.841	
DGM CORRECTION FACTOR	0.994	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	3.638	m^3
AVGERGE ISOKINETICITY	102.0	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.0	°C
AVERAGE GAS MOISTURE BY VOLUME	15.2	%
AVERAGE GAS VELOCITY	17.32	m/s
BAROMETRIC PRESSURE (Station)	100.068	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	97.528	Kpa
OXYGEN CONCENTRATION	8.38	%
CARBON DIOXIDE CONCENTRATION	10.75	%
CARBON MONOXIDE CONCENTRATION	14.0	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.58	m^3/s
DRY REF GAS FLOWRATE	15.06	Rm^3/s
DRY ADJ GAS FLOWRATE	19.05	Rm^3/s
WET REF GAS FLOWRATE	17.77	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.2	mg
	-FILTER	0.7	mg
	-TOTAL	2.9	mg
DRY REF GAS VOLUME SAMPLED		3.638	m^3
PARTICULATE CONC. - ACTUAL		0.469	mg/m^3
PARTICULATE CONC. - DRY REF		0.797	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.630	mg/m^3
PARTICULATE CONC. - WET REF		0.676	mg/m^3
PARTICULATE EMISSION RATE		0.012006	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.7		
DGMCF	0.994	**Probe (mg)**	2.2		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	457.5		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	23.3		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.43 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.38
CO2%	10.75
COppm	14.0

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	80.14	0.75	280	61	71	72	2	4.0		18.05	
	2.5	82.03	0.75	281	57	72	72	2	4.0		18.06	102.8
	5	83.93	0.8	281	56	72	72	2	4.0		18.65	103.3
2	7.5	85.73	0.8	281	56	72	72	2	4.0		18.65	94.8
	10	87.74	0.8	281	57	72	73	2	4.0		18.65	105.9
	12.5	89.65	0.8	281	57	72	73	2	4.0		18.65	100.5
3	15	91.55	0.75	281	55	72	74	1.9	4.0		18.06	100.0
	17.5	93.45	0.77	283	55	72	74	1.9	4.0		18.32	103.1
	20	95.32	0.8	283	55	72	75	2	4.0		18.68	100.3
4	22.5	97.24	0.77	283	55	73	76	1.9	4.0		18.32	101.0
	25	99.14	0.75	284	55	74	76	1.9	4.0		18.09	101.6
	27.5	101.04	0.75	284	55	74	76	1.9	4.0		18.09	102.9
5	30	103.03	0.7	284	55	73	77	1.8	4.0		17.48	107.8
	32.5	104.74	0.7	284	54	74	77	1.8	4.0		17.48	95.9
	35	106.55	0.7	284	53	75	78	1.8	4.0		17.48	101.4
6	37.5	108.38	0.7	284	53	75	78	1.8	4.0		17.48	102.3
	40	110.17	0.6	284	53	75	78	1.6	4.0		16.18	100.1
	42.5	111.93	0.6	284	51	74	78	1.6	4.0		16.18	106.2
7	45	113.64	0.65	284	51	75	79	1.7	4.0		16.84	103.3
	47.5	115.42	0.65	284	50	77	80	1.7	4.0		16.84	103.2
	50	117.18	0.7	284	50	77	80	1.8	4.0		17.48	101.7
8	52.5	119.02	0.7	284	49	75	80	1.8	4.0		17.48	102.5
	55	120.82	0.7	284	49	75	80	1.8	4.0		17.48	100.5
	57.5	122.68	0.7	284	48	74	81	1.8	4.0		17.48	103.8
9	60	124.50	0.66	284	48	74	81	1.8	4.0		16.97	101.6
	62.5	126.31	0.66	284	48	76	81	1.8	4.0		16.97	104.0
	65	128.14	0.66	284	48	76	81	1.8	4.0		16.97	105.0
10	67.5	129.95	0.7	283	48	77	81	1.8	4.0		17.47	103.8
	70	131.77	0.72	283	48	78	81	1.8	4.0		17.72	101.2
	72.5	133.63	0.72	283	48	78	81	1.8	4.0		17.72	101.9
11	75	135.45	0.7	284	48	77	82	1.8	4.0		17.48	99.7
	77.5	137.32	0.7	284	48	77	82	1.8	4.0		17.48	104.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.7		
DGMCF	0.994	**Probe (mg)**	2.2		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	457.5		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	23.3		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.43 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.38
CO2%	10.75
COppm	14.0

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	139.14	0.72	284	48	79	82	1.8	4.0		17.73	101.2
12	82.5	140.96	0.72	284	48	79	82	1.8	4.0		17.73	99.6
	85	142.80	0.7	284	48	78	82	1.8	4.0		17.48	100.7
	87.5	144.63	0.7	284	48	78	82	1.8	4.0		17.48	101.7
	90	146.52								0.43		105.0
1	0	146.95	0.6	284	65	80	80	1.6	4.0		16.18	
	2.5	148.77	0.6	284	65	78	78	1.6	4.0		16.18	109.1
	5	150.52	0.65	284	63	78	78	1.6	4.0		16.84	105.3
2	7.5	152.27	0.62	284	66	78	78	1.6	4.0		16.45	101.2
	10	153.99	0.62	284	66	78	78	1.6	4.0		16.45	101.8
	12.5	155.73	0.62	284	65	78	78	1.6	4.0		16.45	103.0
3	15	157.45	0.62	284	65	78	78	1.6	4.0		16.45	101.8
	17.5	159.22	0.65	284	65	78	79	1.6	4.0		16.84	104.8
	20	160.93	0.65	284	65	78	80	1.6	4.0		16.84	98.8
4	22.5	162.65	0.65	279	65	78	80	1.6	4.0		16.79	99.3
	25	164.38	0.66	282	65	78	80	1.6	4.0		16.95	99.5
	27.5	166.14	0.69	284	64	78	81	1.7	4.0		17.36	100.7
5	30	167.91	0.69	284	64	78	81	1.7	4.0		17.36	99.1
	32.5	169.67	0.67	285	65	78	82	1.6	4.0		17.11	98.5
	35	171.43	0.67	285	65	78	82	1.6	4.0		17.11	99.9
6	37.5	173.18	0.7	285	64	78	82	1.8	4.0		17.49	99.4
	40	174.99	0.65	285	64	78	82	1.6	4.0		16.86	100.6
	42.5	176.76	0.64	285	65	79	83	1.6	4.0		16.73	102.1
7	45	178.49	0.64	285	65	79	83	1.6	4.0		16.73	100.3
	47.5	180.23	0.6	285	66	79	83	1.5	4.0		16.19	100.9
	50	181.92	0.55	285	66	79	83	1.4	4.0		15.51	101.2
8	52.5	183.57	0.55	286	65	79	83	1.4	4.0		15.52	103.2
	55	185.21	0.55	286	62	79	83	1.4	4.0		15.52	102.6
	57.5	186.90	0.55	286	60	79	83	1.4	4.0		15.52	105.7
9	60	188.52	0.55	286	60	79	83	1.4	4.0		15.52	101.4
	62.5	190.16	0.7	286	60	79	83	1.8	4.0		17.50	102.6

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.7		
DGMCF	0.994	**Probe (mg)**	2.2		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	457.5		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	23.3		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.43 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.38
CO2%	10.75
COppm	14.0

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	65	192.10	0.7	286	60	80	82	1.8	4.0		17.50	107.7
10	67.5	193.87	0.7	286	60	80	82	1.8	4.0		17.50	98.3
	70	195.69	0.7	286	59	80	84	1.8	4.0		17.50	101.0
	72.5	197.55	0.7	286	59	80	84	1.8	4.0		17.50	103.1
11	75	199.39	0.78	286	59	82	84	2	4.0		18.48	102.0
	77.5	201.33	0.78	286	59	82	84	2	4.0		18.48	101.7
	80	203.29	0.78	286	59	82	85	2	4.0		18.48	102.8
12	82.5	205.24	0.78	286	59	82	85	2	4.0		18.48	102.1
	85	207.14	0.78	286	58	83	85	2	4.0		18.48	99.5
	87.5	209.04	0.78	286	58	83	85	2	4.0		18.48	99.4
	90	211.13										109.4

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - Particulate & Metals
Date:	June 15, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.841	
DGM CORRECTION FACTOR	0.994	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	3.865	m^3
AVGERGE ISOKINETICITY	104.4	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	137.6	°C
AVERAGE GAS MOISTURE BY VOLUME	17.1	%
AVERAGE GAS VELOCITY	18.26	m/s
BAROMETRIC PRESSURE (Station)	100.068	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	97.528	Kpa
OXYGEN CONCENTRATION	8.35	%
CARBON DIOXIDE CONCENTRATION	10.72	%
CARBON MONOXIDE CONCENTRATION	14.2	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.98	m^3/s
DRY REF GAS FLOWRATE	15.63	Rm^3/s
DRY ADJ GAS FLOWRATE	19.82	Rm^3/s
WET REF GAS FLOWRATE	18.86	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.1	mg
	-FILTER	0.3	mg
	-TOTAL	2.4	mg
DRY REF GAS VOLUME SAMPLED		3.865	m^3
PARTICULATE CONC. - ACTUAL		0.360	mg/m^3
PARTICULATE CONC. - DRY REF		0.621	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.490	mg/m^3
PARTICULATE CONC. - WET REF		0.515	mg/m^3
PARTICULATE EMISSION RATE		0.009708	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.3		
DGMCF	0.994	**Probe (mg)**	2.1		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	553.2		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	31.4		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.43 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.35
CO2%	10.72
COppm	14.2

Measured H2O
17.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	11.92	0.7	284	75	79	80	2	3.5		17.55	
	2.5	13.90	0.8	287	70	79	80	2.1	3.5		18.80	112.1
	5	15.83	0.8	287	70	79	80	2.1	3.5		18.80	102.5
2	7.5	17.80	0.85	287	68	79	80	2.1	3.5		19.38	104.6
	10	19.88	0.85	287	68	79	80	2.1	3.5		19.38	107.1
	12.5	21.80	0.85	287	67	79	80	2.1	3.5		19.38	98.9
3	15	23.89	0.8	287	69	79	81	2	3.5		18.80	107.6
	17.5	25.73	0.8	287	69	79	81	2	3.5		18.80	97.6
	20	27.78	0.82	287	69	79	81	2	3.5		19.03	108.7
4	22.5	29.65	0.85	288	65	80	82	2.1	3.5		19.39	97.9
	25	31.64	0.85	288	64	80	82	2.1	3.5		19.39	102.3
	27.5	33.62	0.85	288	64	81	84	2.1	3.5		19.39	101.8
5	30	35.60	0.6	288	62	80	85	1.7	3.5		16.29	101.5
	32.5	37.39	0.6	288	62	80	85	1.7	3.5		16.29	109.1
	35	39.18	0.6	289	61	80	85	1.7	3.5		16.30	109.1
6	37.5	40.80	0.62	289	61	81	85	1.7	3.5		16.57	98.8
	40	42.44	0.62	289	61	81	86	1.7	3.5		16.57	98.3
	42.5	44.40	0.6	289	61	81	86	1.7	3.5		16.30	117.4
7	45	46.06	0.6	289	60	81	86	1.7	3.5		16.30	101.0
	47.5	47.82	0.7	289	60	81	86	2	3.5		17.61	107.1
	50	49.69	0.7	289	60	81	86	2	3.5		17.61	105.5
8	52.5	51.64	0.7	289	59	82	87	2	3.5		17.61	110.0
	55	53.52	0.72	290	59	82	87	2	3.5		17.87	105.8
	57.5	55.53	0.72	290	59	82	87	2	3.5		17.87	111.6
9	60	57.42	0.71	290	59	83	88	2	3.5		17.75	105.0
	62.5	59.32	0.75	290	59	83	88	2.1	3.5		18.24	106.1
	65	61.27	0.76	291	59	84	88	2.1	3.5		18.37	105.9
10	67.5	63.19	0.73	291	59	83	88	2.1	3.5		18.01	103.6
	70	65.15	0.7	233	59	83	88	2.1	3.5		16.94	108.0
	72.5	67.09	0.7	232	59	84	88	2.1	3.5		16.93	104.9
11	75	69.07	0.62	176	59	84	89	2.1	3.5		15.27	106.9
	77.5	71.05	0.64	167	59	84	89	2.1	3.5		15.41	108.8

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.3		
DGMCF	0.994	**Probe (mg)**	2.1		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	553.2		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	31.4		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.43 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.35
CO2%	10.72
COppm	14.2

Measured H2O
17.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	72.99	0.64	165	59	84	89	2.1	4.0		15.38	104.1
12	82.5	74.98	0.64	163	59	84	89	2.2	4.0		15.36	106.6
	85	76.96	0.64	163	59	84	89	2.2	4.0		15.36	106.0
	87.5	78.98	0.64	164	60	85	89	2.2	4.0		15.37	108.1
	90	81.04								0.43		110.2
1	0	81.47	0.8	284	71	86	87	2	4.0		18.76	
	2.5	83.45	0.85	292	63	85	87	2.1	4.0		19.44	103.5
	5	85.45	0.85	293	55	85	87	2.1	4.0		19.46	102.1
2	7.5	87.45	0.85	293	48	85	87	2.1	4.0		19.46	102.2
	10	89.44	0.85	293	46	85	87	2.1	4.0		19.46	101.7
	12.5	91.44	0.85	293	44	85	87	2.1	4.0		19.46	102.2
3	15	93.43	0.85	293	44	85	87	2.1	4.0		19.46	101.7
	17.5	95.42	0.85	293	43	85	88	2.1	4.0		19.46	101.7
	20	97.42	0.85	293	43	85	88	2.1	4.0		19.46	102.1
4	22.5	99.40	0.82	293	42	85	89	2.1	4.0		19.11	101.1
	25	101.40	0.82	293	42	85	89	2.1	4.0		19.11	103.8
	27.5	103.42	0.82	293	42	85	89	2.1	4.0		19.11	104.9
5	30	105.42	0.8	294	42	86	90	2.1	4.0		18.89	103.8
	32.5	107.40	0.8	295	42	86	90	2.1	4.0		18.90	104.0
	35	109.35	0.8	295	42	86	90	2.1	4.0		18.90	102.5
6	37.5	111.37	0.8	295	43	86	90	2.1	4.0		18.90	106.1
	40	113.30	0.72	296	43	86	90	1.9	4.0		17.94	101.4
	42.5	115.20	0.72	296	43	86	90	1.9	4.0		17.94	105.2
7	45	117.00	0.72	296	44	86	90	1.9	4.0		17.94	99.7
	47.5	118.91	0.8	296	44	86	90	2.1	4.0		18.91	105.8
	50	120.92	0.8	296	44	86	90	2.1	4.0		18.91	105.7
8	52.5	122.91	0.8	296	44	87	90	2.1	4.0		18.91	104.6
	55	124.88	0.8	296	44	87	91	2.1	4.0		18.91	103.5
	57.5	126.85	0.8	297	44	87	91	2.1	4.0		18.93	103.4
9	60	128.83	0.8	297	44	87	91	2.1	4.0		18.93	104.0
	62.5	130.80	0.8	297	45	87	91	2.1	4.0		18.93	103.5

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.3		
DGMCF	0.994	**Probe (mg)**	2.1		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	553.2		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	31.4		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.43 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.35
CO2%	10.72
COppm	14.2

Measured H2O
17.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	65	132.78	0.8	297	45	87	91	2.1	4.0		18.93	**104.0**
10	67.5	134.75	0.8	297	44	87	91	2.1	4.0		18.93	**103.5**
	70	136.72	0.8	297	44	87	91	2.1	4.0		18.93	**103.5**
	72.5	138.73	0.8	297	44	87	91	2.1	4.0		18.93	**105.6**
11	75	140.69	0.85	295	44	87	91	2.2	4.0		19.48	**102.9**
	77.5	142.68	0.85	295	44	87	91	2.2	4.0		19.48	**101.3**
	80	144.71	0.85	295	44	87	91	2.2	4.0		19.48	**103.3**
12	82.5	146.75	0.82	291	44	88	91	2.1	4.0		19.09	**103.8**
	85	148.73	0.82	291	44	88	92	2.1	4.0		19.09	**102.2**
	87.5	150.70	0.82	291	45	88	92	2.1	4.0		19.09	**101.6**
	90	152.79										**107.8**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - Particulate & Metals
Date:	June 16, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	3.536	m^3
AVGERGE ISOKINETICITY	100.7	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	144.1	°C
AVERAGE GAS MOISTURE BY VOLUME	16.1	%
AVERAGE GAS VELOCITY	17.56	m/s
BAROMETRIC PRESSURE (Station)	100.440	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	97.900	Kpa
OXYGEN CONCENTRATION	8.25	%
CARBON DIOXIDE CONCENTRATION	10.86	%
CARBON MONOXIDE CONCENTRATION	9.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.95	m^3/s
DRY REF GAS FLOWRATE	15.03	Rm^3/s
DRY ADJ GAS FLOWRATE	19.21	Rm^3/s
WET REF GAS FLOWRATE	17.92	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	3.7	mg
	-FILTER	1.8	mg
	-TOTAL	5.5	mg
DRY REF GAS VOLUME SAMPLED		3.536	m^3
PARTICULATE CONC. - ACTUAL		0.901	mg/m^3
PARTICULATE CONC. - DRY REF		1.555	mg/m^3
PARTICULATE CONC. - DRY ADJ		1.217	mg/m^3
PARTICULATE CONC. - WET REF		1.305	mg/m^3
PARTICULATE EMISSION RATE		0.023376	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 16, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	1.8		
DGMCF	0.993	**Probe (mg)**	3.7		
Barometric Pressure	29.66 "Hg	**CWTR (g)**	476.7		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	22		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.3 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.25
CO2%	10.86
COppm	9.7

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	39.34	0.7	271	74	75	75	1.7	3.0		17.34	
	2.5	41.09	0.71	261	66	75	77	1.8	3.0		17.35	99.4
	5	42.87	0.71	263	65	75	78	1.8	3.5		17.37	99.5
2	7.5	44.65	0.81	286	64	75	79	2	3.5		18.85	99.5
	10	46.53	0.79	293	65	76	80	1.95	3.5		18.70	99.9
	12.5	48.40	0.79	293	66	76	81	1.95	3.5		18.70	100.9
3	15	50.26	0.8	293	66	76	82	2	3.5		18.82	100.3
	17.5	52.14	0.78	293	66	77	83	2	3.5		18.58	100.7
	20	54.03	0.78	293	63	77	84	2	3.5		18.58	102.3
4	22.5	55.89	0.75	293	62	78	84	1.85	3.5		18.22	100.6
	25	57.72	0.75	293	60	78	85	1.85	3.5		18.22	100.8
	27.5	59.54	0.71	294	60	78	85	1.75	3.5		17.74	100.1
5	30	61.32	0.69	293	59	79	85	1.7	3.5		17.48	100.7
	32.5	63.08	0.7	293	58	79	86	1.75	3.5		17.60	100.8
	35	64.85	0.68	293	58	80	86	1.7	3.5		17.35	100.6
6	37.5	66.60	0.62	293	58	80	86	1.5	3.5		16.57	100.8
	40	68.26	0.64	293	58	80	86	1.6	3.5		16.83	100.1
	42.5	69.94	0.64	293	58	81	87	1.6	3.5		16.83	99.7
7	45	71.65	0.69	293	59	81	87	1.7	3.5		17.48	101.3
	47.5	73.40	0.68	293	59	81	87	1.7	3.5		17.35	99.9
	50	75.16	0.7	293	59	81	87	1.8	3.5		17.60	101.2
8	52.5	76.95	0.68	293	59	81	87	1.7	3.5		17.35	101.5
	55	78.71	0.73	293	59	82	88	1.85	3.5		17.98	101.2
	57.5	80.54	0.72	293	58	82	88	1.8	3.5		17.85	101.4
9	60	82.35	0.75	293	58	82	88	1.9	3.5		18.22	101.0
	62.5	84.20	0.74	293	57	82	88	1.85	3.5		18.10	101.1
	65	86.03	0.75	293	57	82	88	1.9	3.5		18.22	100.7
10	67.5	87.88	0.75	293	56	82	88	1.9	3.5		18.22	101.1
	70	89.72	0.75	293	56	82	88	1.9	3.5		18.22	100.6
	72.5	91.56	0.76	293	56	83	88	1.9	3.5		18.34	100.6
11	75	93.40	0.82	293	56	83	88	2.05	4.0		19.05	99.8
	77.5	95.31	0.83	293	56	83	89	2.1	4.0		19.17	99.8

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 16, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	1.8		
DGMCF	0.993	**Probe (mg)**	3.7		
Barometric Pressure	29.66 "Hg	**CWTR (g)**	476.7		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	22		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.3 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.25
CO2%	10.86
COppm	9.7

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	97.26	0.81	293	56	83	89	2.05	4.0		18.94	101.2
12	82.5	99.18	0.81	293	55	83	89	2.05	4.0		18.94	100.9
	85	101.10	0.8	294	55	83	89	2	4.0		18.83	100.9
	87.5	102.99	0.81	294	55	83	89	2.05	4.0		18.95	100.0
	90	104.93								0.3		102.0
1	0	105.23	0.8	293	63	83	84	2	4.0		18.82	
	2.5	107.15	0.82	292	55	83	85	2.05	4.0		19.04	101.9
	5	109.07	0.81	292	53	83	86	2.05	4.0		18.92	100.5
2	7.5	110.99	0.84	292	52	83	87	2.1	4.0		19.27	101.1
	10	112.92	0.84	292	52	83	87	2.1	4.0		19.27	99.7
	12.5	114.88	0.81	292	52	83	88	2.05	4.0		18.92	101.2
3	15	116.80	0.81	292	53	83	88	2.05	4.0		18.92	100.9
	17.5	118.73	0.81	292	53	83	88	2.05	4.0		18.92	101.4
	20	120.65	0.83	292	53	83	88	2.1	4.0		19.15	100.9
4	22.5	122.58	0.74	293	53	83	88	1.9	4.0		18.10	100.2
	25	124.44	0.75	293	52	83	88	1.9	4.0		18.22	102.3
	27.5	126.30	0.71	293	53	83	88	1.8	4.0		17.73	101.6
5	30	128.11	0.74	293	53	83	88	1.9	4.0		18.10	101.6
	32.5	129.96	0.72	293	53	83	88	1.8	4.0		17.85	101.7
	35	131.77	0.72	293	53	83	88	1.8	4.0		17.85	100.9
6	37.5	133.57	0.57	293	53	83	88	1.4	3.5		15.88	100.3
	40	135.17	0.58	294	53	83	88	1.4	3.5		16.03	100.1
	42.5	136.77	0.58	294	53	83	88	1.4	3.5		16.03	99.3
7	45	138.37	0.63	293	51	83	88	1.6	3.5		16.70	99.3
	47.5	140.07	0.65	293	50	83	88	1.65	3.5		16.96	101.2
	50	141.80	0.65	293	49	83	88	1.65	3.5		16.96	101.4
8	52.5	143.53	0.65	293	48	83	88	1.65	3.5		16.96	101.4
	55	145.26	0.68	293	48	83	88	1.7	3.5		17.35	101.4
	57.5	147.02	0.68	293	48	83	88	1.7	3.5		17.35	100.9
9	60	148.78	0.68	293	48	83	89	1.7	3.5		17.35	100.9
	62.5	150.54	0.7	293	48	83	88	1.8	4.0		17.60	100.8

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 16, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	1.8		
DGMCF	0.993	**Probe (mg)**	3.7		
Barometric Pressure	29.66 "Hg	**CWTR (g)**	476.7		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	22		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.3 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.25
CO2%	10.86
COppm	9.7

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	65	152.33	0.69	293	48	84	89	1.75	4.0		17.48	**101.2**
10	67.5	154.10	0.69	291	48	84	89	1.75	4.0		17.45	**100.6**
	70	155.87	0.66	292	48	84	88	1.7	3.5		17.08	**100.4**
	72.5	157.62	0.68	291	48	84	89	1.7	3.5		17.33	**101.7**
11	75	159.36	0.41	291	48	84	89	0.92	3.0		13.45	**99.5**
	77.5	160.75	0.41	291	48	84	88	0.92	3.0		13.45	**102.1**
	80	162.07	0.4	290	49	84	88	0.9	3.0		13.28	**97.1**
12	82.5	163.39	0.42	290	49	84	88	0.98	3.0		13.61	**98.2**
	85	164.74	0.42	290	49	84	88	1.1	3.0		13.61	**98.0**
	87.5	166.13	0.42	290	49	83	88	1.1	3.0		13.61	**101.0**
	90	167.54										**102.5**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 Particulate & Metals
Date:	June 15, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	3.582	m^3
AVGERGE ISOKINETICITY	100.0	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.7	°C
AVERAGE GAS MOISTURE BY VOLUME	15.3	%
AVERAGE GAS VELOCITY	17.57	m/s
BAROMETRIC PRESSURE (Station)	100.169	Kpa
STATIC PRESSURE	-2.440	Kpa
ABSOLUTE GAS PRESSURE	97.729	Kpa
OXYGEN CONCENTRATION	8.61	%
CARBON DIOXIDE CONCENTRATION	10.49	%
CARBON MONOXIDE CONCENTRATION	14.1	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.96	m^3/s
DRY REF GAS FLOWRATE	15.32	Rm^3/s
DRY ADJ GAS FLOWRATE	19.02	Rm^3/s
WET REF GAS FLOWRATE	18.09	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1	mg
	-FILTER	0.3	mg
	-TOTAL	1.3	mg
DRY REF GAS VOLUME SAMPLED		3.582	m^3
PARTICULATE CONC. - ACTUAL		0.214	mg/m^3
PARTICULATE CONC. - DRY REF		0.363	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.292	mg/m^3
PARTICULATE CONC. - WET REF		0.308	mg/m^3
PARTICULATE EMISSION RATE		0.005559	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 15, 2021	**Operator:**	TT / JA

Pitot Factor	0.842	**Filter (mg)**	0.3		
DGMCF	0.993	**Probe (mg)**	1		
Barometric Pressure	29.58 "Hg	**CWTR (g)**	452.9		
Static Pressure	-9.800 "H_2O	**WCBDA (g)**	22		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.72 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.61
CO2%	10.49
COppm	14.1

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	81.76	0.71	271	78	78	79	1.9	3.0		17.46	
	2.5	83.54	0.71	278	77	79	81	1.9	3.0		17.55	98.7
	5	85.36	0.72	278	77	79	82	1.8	3.0		17.67	101.1
2	7.5	87.15	0.7	279	76	80	82	1.9	3.0		17.43	98.7
	10	88.90	0.7	278	76	80	83	1.8	3.0		17.42	97.8
	12.5	90.71	0.68	279	76	80	83	1.7	3.0		17.18	101.0
3	15	92.45	0.68	279	76	80	83	1.7	3.0		17.18	98.5
	17.5	94.20	0.68	279	75	81	85	1.7	3.0		17.18	99.1
	20	95.95	0.65	279	75	81	85	1.7	3.0		16.80	98.8
4	22.5	97.52	0.68	278	74	81	85	1.7	3.0		17.17	90.7
	25	99.23	0.69	278	74	81	86	1.75	3.0		17.30	96.5
	27.5	100.99	0.69	280	62	82	86	1.75	3.0		17.32	98.5
5	30	102.78	0.67	282	61	82	86	1.7	3.0		17.09	100.2
	32.5	104.55	0.7	288	60	82	87	1.8	3.0		17.54	100.7
	35	106.34	0.69	288	60	83	87	1.75	3.0		17.41	100.0
6	37.5	108.10	0.69	288	68	83	87	1.75	3.0		17.41	98.9
	40	109.91	0.68	288	61	83	87	1.75	3.0		17.29	101.7
	42.5	111.68	0.63	287	61	83	87	1.6	3.0		16.63	100.2
7	45	113.38	0.6	287	61	83	88	1.5	3.0		16.23	99.9
	47.5	115.05	0.6	287	60	84	88	1.5	3.0		16.23	100.4
	50	116.71	0.58	287	58	84	88	1.45	3.0		15.96	99.7
8	52.5	118.34	0.6	286	58	84	88	1.5	3.0		16.22	99.6
	55	119.99	0.7	286	58	84	89	1.8	3.0		17.52	99.1
	57.5	121.78	0.69	286	58	84	89	1.8	3.5		17.39	99.5
9	60	123.59	0.8	286	58	84	89	2.05	3.5		18.73	101.3
	62.5	125.50	0.78	286	56	85	89	2	3.5		18.49	99.4
	65	127.40	0.76	286	55	85	89	1.95	3.5		18.25	100.0
10	67.5	129.28	0.79	286	57	85	90	2.05	3.5		18.61	100.2
	70	131.19	0.8	286	58	85	90	2.05	3.5		18.73	99.8
	72.5	133.13	0.81	286	60	85	90	2.1	3.5		18.84	100.7
11	75	135.07	0.8	285	59	86	90	2.05	3.5		18.71	100.1
	77.5	136.99	0.8	285	59	86	90	2.05	3.5		18.71	99.5

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 15, 2021	**Operator:**	TT / JA

Pitot Factor	0.842	**Filter (mg)**	0.3		
DGMCF	0.993	**Probe (mg)**	1		
Barometric Pressure	29.58 "Hg	**CWTR (g)**	452.9		
Static Pressure	-9.800 "H_2O	**WCBDA (g)**	22		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.72 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.61
CO2%	10.49
COppm	14.1

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	138.95	0.8	285	59	86	91	2.05	3.5		18.71	101.6
12	82.5	140.89	0.8	285	60	86	91	2.05	3.5		18.71	100.5
	85	142.83	0.79	284	61	86	91	2.05	3.5		18.58	100.5
	87.5	144.77	0.77	284	61	86	91	2	3.5		18.35	101.1
	90	146.72								0.72		102.9
1	0	147.44	0.71	280	56	87	87	1.8	3.5		17.57	
	2.5	149.27	0.73	285	57	86	89	1.9	3.5		17.88	100.5
	5	151.11	0.73	284	58	86	89	1.9	3.5		17.86	99.9
2	7.5	152.96	0.74	285	58	86	90	1.9	3.5		18.00	100.4
	10	154.90	0.71	286	60	86	90	1.8	3.5		17.64	104.5
	12.5	156.70	0.7	285	60	86	90	1.8	3.5		17.51	99.1
3	15	158.48	0.7	285	60	86	90	1.8	3.5		17.51	98.6
	17.5	160.26	0.8	285	61	86	90	2	3.5		18.71	98.6
	20	162.14	0.82	285	61	87	92	2.1	4.0		18.95	97.5
4	22.5	164.09	0.78	285	56	87	91	2	4.0		18.48	99.6
	25	166.05	0.74	285	54	87	91	2	4.0		18.00	102.7
	27.5	168.03	0.75	285	56	87	91	1.9	3.5		18.12	106.5
5	30	169.86	0.7	285	56	87	91	1.8	3.5		17.51	97.8
	32.5	171.69	0.72	285	59	87	91	1.8	3.5		17.75	101.2
	35	173.52	0.72	286	60	87	91	1.8	3.5		17.77	99.8
6	37.5	175.34	0.73	286	60	87	91	1.9	3.5		17.89	99.3
	40	177.20	0.63	286	62	87	91	1.6	3.0		16.62	100.8
	42.5	178.93	0.64	286	62	87	91	1.6	3.0		16.75	100.8
7	45	180.68	0.64	286	62	87	91	1.6	3.0		16.75	101.2
	47.5	182.38	0.63	286	62	87	91	1.6	3.0		16.62	98.3
	50	184.09	0.64	286	63	87	92	1.6	3.0		16.75	99.7
8	52.5	185.83	0.68	287	63	87	92	1.7	3.5		17.28	100.5
	55	187.59	0.67	287	64	87	92	1.7	3.5		17.15	98.7
	57.5	189.37	0.66	287	63	87	92	1.7	3.5		17.02	100.6
9	60	191.15	0.72	285	63	87	92	1.8	3.5		17.75	101.4
	62.5	192.98	0.7	287	63	87	92	1.8	3.5		17.53	99.7

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 15, 2021	**Operator:**	TT / JA

Pitot Factor	0.842	**Filter (mg)**	0.3		
DGMCF	0.993	**Probe (mg)**	1		
Barometric Pressure	29.58 "Hg	**CWTR (g)**	452.9		
Static Pressure	-9.800 "H_2O	**WCBDA (g)**	22		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.72 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.61
CO2%	10.49
COppm	14.1

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	65	194.80	0.71	287	63	87	92	1.8	3.5		17.65	100.7
10	67.5	196.63	0.73	287	63	87	92	1.9	3.5		17.90	100.5
	70	198.49	0.74	287	63	87	92	1.9	3.5		18.02	100.8
	72.5	200.37	0.73	287	64	87	91	1.9	3.5		17.90	101.2
11	75	202.24	0.73	290	64	87	92	1.9	3.5		17.94	101.4
	77.5	204.11	0.65	274	62	87	91	1.7	3.5		16.74	101.5
	80	205.89	0.64	270	61	87	91	1.7	3.5		16.57	101.3
12	82.5	207.66	0.67	269	61	87	91	1.8	3.5		16.94	101.3
	85	209.45	0.66	268	61	87	91	1.7	3.5		16.80	100.1
	87.5	211.20	0.68	267	61	87	91	1.8	3.5		17.04	98.5
	90	213.03										101.4

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - Particulate & Metals
Date:	June 16, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.841	
DGM CORRECTION FACTOR	0.994	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	3.694	m^3
AVGERGE ISOKINETICITY	101.3	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.8	°C
AVERAGE GAS MOISTURE BY VOLUME	15.3	%
AVERAGE GAS VELOCITY	17.59	m/s
BAROMETRIC PRESSURE (Station)	100.610	Kpa
STATIC PRESSURE	-2.465	Kpa
ABSOLUTE GAS PRESSURE	98.145	Kpa
OXYGEN CONCENTRATION	8.53	%
CARBON DIOXIDE CONCENTRATION	10.72	%
CARBON MONOXIDE CONCENTRATION	14.0	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.99	m^3/s
DRY REF GAS FLOWRATE	15.40	Rm^3/s
DRY ADJ GAS FLOWRATE	19.24	Rm^3/s
WET REF GAS FLOWRATE	18.18	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.3	mg
	-FILTER	0.1	mg
	-TOTAL	1.4	mg
DRY REF GAS VOLUME SAMPLED		3.694	m^3
PARTICULATE CONC. - ACTUAL		0.225	mg/m^3
PARTICULATE CONC. - DRY REF		0.379	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.303	mg/m^3
PARTICULATE CONC. - WET REF		0.321	mg/m^3
PARTICULATE EMISSION RATE		0.005837	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.1		
DGMCF	0.994	**Probe (mg)**	1.3		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	465.3		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	23.8		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.39 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.53
CO2%	10.72
COppm	14.0

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	53.22	0.74	286	59	65	67	1.8	3.5		17.94	
	2.5	55.10	0.79	286	47	66	67	1.9	3.5		18.54	104.7
	5	56.96	0.81	262	45	66	67	2.2	3.5		18.47	100.2
2	7.5	58.89	0.77	270	43	66	67	2.1	3.5		18.10	101.0
	10	60.80	0.81	262	42	66	67	2.2	3.5		18.47	103.1
	12.5	62.77	0.79	262	42	66	67	2.2	3.5		18.24	103.1
3	15	64.75	0.75	283	42	66	67	2	4.0		18.03	105.0
	17.5	66.66	0.75	283	42	66	67	2	4.0		18.03	105.4
	20	68.53	0.77	282	43	67	69	2	4.0		18.25	103.2
4	22.5	70.41	0.75	283	43	67	71	2	4.0		18.03	102.0
	25	72.27	0.75	283	43	68	71	2	4.0		18.03	102.1
	27.5	74.14	0.75	283	44	67	72	2	4.0		18.03	102.6
5	30	76.01	0.75	283	44	67	72	2	4.0		18.03	102.6
	32.5	77.88	0.73	283	44	67	72	1.9	4.0		17.78	102.6
	35	79.70	0.75	283	45	68	74	1.9	4.0		18.03	101.2
6	37.5	81.55	0.75	283	45	68	74	1.9	4.0		18.03	101.2
	40	83.40	0.75	283	45	68	74	1.9	4.0		18.03	101.2
	42.5	85.23	0.75	285	46	68	75	1.9	4.0		18.05	100.1
7	45	87.05	0.65	285	46	68	75	1.7	4.0		16.80	99.6
	47.5	88.82	0.65	285	46	68	75	1.7	4.0		16.80	104.0
	50	90.56	0.68	285	47	69	76	1.7	4.0		17.19	102.2
8	52.5	92.30	0.68	285	48	69	76	1.7	4.0		17.19	99.7
	55	94.04	0.68	285	48	69	76	1.7	4.0		17.19	99.7
	57.5	95.78	0.68	285	48	69	76	1.7	4.0		17.19	99.7
9	60	97.52	0.75	285	48	70	77	1.9	4.0		18.05	99.7
	62.5	99.39	0.75	285	48	70	77	1.9	4.0		18.05	101.9
	65	101.33	0.75	285	48	70	77	1.9	4.0		18.05	105.7
10	67.5	103.15	0.75	286	48	72	77	1.9	4.0		18.06	99.2
	70	105.04	0.75	286	48	72	77	1.9	4.0		18.06	102.9
	72.5	106.93	0.78	286	48	72	77	2	4.0		18.42	102.9
11	75	108.84	0.68	285	48	73	78	1.7	4.0		17.19	102.0
	77.5	110.77	0.68	285	48	74	78	1.7	4.0		17.19	110.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.1		
DGMCF	0.994	**Probe (mg)**	1.3		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	465.3		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	23.8		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.39 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.53
CO2%	10.72
COppm	14.0

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	112.62	0.68	285	48	74	78	1.7	4.0		17.19	105.3
12	82.5	114.37	0.68	285	48	73	78	1.7	4.0		17.19	99.7
	85	116.13	0.68	285	48	73	78	1.7	4.0		17.19	100.3
	87.5	117.88	0.68	285	48	73	78	1.7	4.0		17.19	99.7
	90	119.65								0.39		100.9
1	0	120.04	0.68	285	61	74	76	1.7	4.0		17.19	
	2.5	121.80	0.68	285	49	75	76	1.7	4.0		17.19	100.4
	5	123.55	0.68	285	45	74	76	1.7	4.0		17.19	99.7
2	7.5	125.34	0.68	285	44	74	76	1.7	4.0		17.19	102.1
	10	127.08	0.68	285	44	74	76	1.7	4.0		17.19	99.3
	12.5	128.87	0.68	285	44	74	76	1.7	4.0		17.19	102.1
3	15	130.63	0.68	285	43	74	77	1.7	4.0		17.19	100.4
	17.5	132.38	0.68	285	43	74	77	1.7	4.0		17.19	99.7
	20	134.16	0.68	285	43	74	77	1.7	4.0		17.19	101.5
4	22.5	135.89	0.68	284	43	74	77	1.7	4.0		17.18	98.6
	25	137.65	0.68	284	43	74	78	1.7	4.0		17.18	100.2
	27.5	139.40	0.68	284	43	74	78	1.7	4.0		17.18	99.6
5	30	141.16	0.68	284	43	74	78	1.7	4.0		17.18	100.2
	32.5	142.91	0.68	284	43	74	79	1.7	4.0		17.18	99.6
	35	144.66	0.68	285	43	75	79	1.7	4.0		17.19	99.5
6	37.5	146.45	0.68	285	43	75	79	1.7	4.0		17.19	101.7
	40	148.17	0.68	285	43	75	79	1.7	4.0		17.19	97.8
	42.5	149.91	0.68	285	44	75	79	1.7	4.0		17.19	98.9
7	45	151.65	0.68	285	44	75	79	1.7	4.0		17.19	98.9
	47.5	153.40	0.6	285	44	75	79	1.6	4.0		16.14	99.5
	50	155.11	0.6	285	44	75	80	1.6	4.0		16.14	103.4
8	52.5	156.80	0.57	285	44	75	80	1.5	3.5		15.74	102.1
	55	158.44	0.57	285	44	75	80	1.5	3.5		15.74	101.7
	57.5	160.10	0.57	285	45	76	80	1.5	3.5		15.74	102.9
9	60	161.77	0.7	285	45	76	80	1.8	4.0		17.44	103.4
	62.5	163.56	0.7	285	45	76	80	1.8	4.0		17.44	100.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.1		
DGMCF	0.994	**Probe (mg)**	1.3		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	465.3		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	23.8		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.39 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.53
CO2%	10.72
COppm	14.0

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	65	165.37	0.7	285	45	76	80	1.8	4.0		17.44	101.2
10	67.5	167.17	0.8	286	45	77	80	2	4.0		18.65	100.7
	70	169.07	0.8	286	45	77	80	2	4.0		18.65	99.4
	72.5	171.01	0.8	286	45	78	80	2	4.0		18.65	101.5
11	75	172.92	0.8	285	45	78	80	2	4.0		18.64	99.9
	77.5	174.83	0.8	285	46	77	81	2	4.0		18.64	99.8
	80	176.74	0.8	285	46	77	81	2	4.0		18.64	99.8
12	82.5	178.67	0.8	285	46	77	81	2	4.0		18.64	100.8
	85	180.56	0.8	285	46	77	81	2	4.0		18.64	98.7
	87.5	182.47	0.8	285	46	77	81	2	4.0		18.64	99.8
	90	184.39										100.3

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - Particulate & Metals
Date:	June 16, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.841	
DGM CORRECTION FACTOR	0.994	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	3.875	m^3
AVGERGE ISOKINETICITY	102.6	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.1	^oC
AVERAGE GAS MOISTURE BY VOLUME	16.2	%
AVERAGE GAS VELOCITY	18.54	m/s
BAROMETRIC PRESSURE (Station)	100.474	Kpa
STATIC PRESSURE	-2.465	Kpa
ABSOLUTE GAS PRESSURE	98.009	Kpa
OXYGEN CONCENTRATION	8.33	%
CARBON DIOXIDE CONCENTRATION	10.82	%
CARBON MONOXIDE CONCENTRATION	14.5	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.40	m^3/s
DRY REF GAS FLOWRATE	15.96	Rm^3/s
DRY ADJ GAS FLOWRATE	20.26	Rm^3/s
WET REF GAS FLOWRATE	19.04	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.6	mg
	-FILTER	0.2	mg
	-TOTAL	0.8	mg
DRY REF GAS VOLUME SAMPLED		3.875	m^3
PARTICULATE CONC. - ACTUAL		0.120	mg/m^3
PARTICULATE CONC. - DRY REF		0.206	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.163	mg/m^3
PARTICULATE CONC. - WET REF		0.173	mg/m^3
PARTICULATE EMISSION RATE		0.003294	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.2		
DGMCF	0.994	**Probe (mg)**	0.6		
Barometric Pressure	29.67 "Hg	**CWTR (g)**	526		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	22.9		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.4 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.33
CO2%	10.82
COppm	14.5

Measured H2O
16.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	84.95	0.85	285	66	76	77	2.1	3.5		19.26	
	2.5	86.93	0.9	284	60	76	76	2.2	3.5		19.81	101.7
	5	88.95	0.9	284	60	76	76	2.2	3.5		19.81	100.9
2	7.5	90.96	0.9	285	60	76	76	2.2	3.5		19.82	100.4
	10	92.98	0.9	285	60	76	76	2.2	3.5		19.82	100.9
	12.5	95.00	0.9	285	60	76	77	2.2	3.5		19.82	100.9
3	15	97.01	0.9	285	60	76	77	2.2	3.5		19.82	100.3
	17.5	99.03	0.9	285	60	76	77	2.2	3.5		19.82	100.8
	20	101.02	0.9	285	60	76	79	2.2	3.5		19.82	99.3
4	22.5	103.03	0.8	285	60	76	79	2.1	3.5		18.69	100.1
	25	104.95	0.75	285	60	76	79	2.1	3.5		18.10	101.4
	27.5	106.91	0.75	285	60	76	79	2.1	3.5		18.10	107.0
5	30	108.80	0.8	285	60	78	90	2	3.5		18.69	103.1
	32.5	110.74	0.8	285	60	78	80	2	3.5		18.69	101.2
	35	112.66	0.8	285	60	78	80	2	3.5		18.69	101.1
6	37.5	114.61	0.6	285	60	77	82	1.6	3.5		16.18	102.7
	40	116.32	0.6	285	60	77	82	1.6	3.5		16.18	103.8
	42.5	118.07	0.6	285	61	77	82	1.6	3.5		16.18	106.2
7	45	119.82	0.65	285	51	77	82	1.7	3.5		16.85	106.2
	47.5	121.58	0.65	286	50	78	82	1.7	3.5		16.86	102.7
	50	123.33	0.65	286	50	78	83	1.7	3.5		16.86	102.1
8	52.5	125.09	0.65	286	49	80	83	1.7	3.5		16.86	102.6
	55	126.84	0.65	286	49	80	83	1.7	3.5		16.86	101.8
	57.5	128.62	0.65	286	49	80	83	1.7	3.5		16.86	103.5
9	60	130.36	0.65	286	51	79	84	1.7	3.5		16.86	101.2
	62.5	132.14	0.65	286	51	79	84	1.7	3.5		16.86	103.5
	65	133.88	0.65	286	51	79	84	1.7	3.5		16.86	101.2
10	67.5	135.64	0.65	286	51	79	84	1.7	3.5		16.86	102.4
	70	137.39	0.65	286	52	79	84	1.7	3.5		16.86	101.8
	72.5	139.16	0.65	286	52	79	84	1.7	3.5		16.86	102.9
11	75	140.90	0.63	286	53	79	84	1.7	3.5		16.60	101.2
	77.5	142.66	0.6	286	53	79	84	1.6	3.5		16.20	104.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.2		
DGMCF	0.994	**Probe (mg)**	0.6		
Barometric Pressure	29.67 "Hg	**CWTR (g)**	526		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	22.9		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.4 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.33
CO2%	10.82
COppm	14.5

Measured H2O
16.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	144.39	0.6	286	53	79	85	1.6	3.5		16.20	104.7
12	82.5	146.10	0.6	286	54	80	85	1.6	3.5		16.20	103.4
	85	147.83	0.6	286	54	80	85	1.6	3.5		16.20	104.5
	87.5	149.55	0.6	286	55	80	85	1.6	3.5		16.20	103.9
	90	151.29								0.4		105.1
1	0	151.69	0.9	286	59	81	83	2.4	4.0		19.84	
	2.5	153.75	0.9	287	60	81	84	2.4	4.0		19.85	101.9
	5	155.86	0.9	288	59	81	84	2.4	4.0		19.86	104.4
2	7.5	158.01	0.9	288	59	81	84	2.4	4.0		19.86	106.4
	10	160.09	0.92	288	58	81	84	2.5	4.0		20.08	102.9
	12.5	162.25	0.93	289	58	81	84	2.5	4.0		20.20	105.8
3	15	164.40	0.93	289	58	81	84	2.5	4.0		20.20	104.8
	17.5	166.47	0.95	289	58	81	84	2.5	4.0		20.42	100.9
	20	168.61	0.95	289	58	81	84	2.5	4.0		20.42	103.2
4	22.5	170.77	0.95	290	58	81	84	2.5	4.0		20.43	104.1
	25	172.89	0.96	290	59	81	84	2.5	4.0		20.54	102.3
	27.5	175.02	0.94	291	59	81	85	2.5	4.0		20.34	102.2
5	30	177.14	0.79	290	59	81	85	2.2	4.0		18.63	102.8
	32.5	179.18	0.82	291	59	81	85	2.2	4.0		19.00	107.7
	35	181.18	0.8	290	59	81	85	2.2	4.0		18.75	103.8
6	37.5	183.19	0.81	292	59	82	85	2.2	4.0		18.89	105.5
	40	185.22	0.82	290	59	82	86	7	4.0		18.98	105.9
	42.5	187.27	0.65	289	60	79	79	1.7	4.0		16.89	107.3
7	45	189.02	0.7	290	60	79	79	1.8	4.0		17.54	102.5
	47.5	190.83	0.7	291	60	79	79	1.8	4.0		17.55	102.2
	50	192.66	0.71	290	60	79	79	1.8	4.0		17.67	103.4
8	52.5	194.50	0.8	290	60	79	80	2.1	4.0		18.75	103.2
	55	196.39	0.8	290	59	79	80	2.1	4.0		18.75	99.8
	57.5	198.34	0.8	290	58	79	81	2.1	4.0		18.75	103.0
9	60	200.30	0.78	291	58	79	81	2.1	4.0		18.53	103.4
	62.5	202.25	0.8	291	57	79	82	2.1	4.0		18.76	104.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0.2		
DGMCF	0.994	**Probe (mg)**	0.6		
Barometric Pressure	29.67 "Hg	**CWTR (g)**	526		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	22.9		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.4 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.33
CO2%	10.82
COppm	14.5

Measured H2O
16.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	65	204.19	0.8	291	57	79	82	2.1	4.0		18.76	102.3
10	67.5	206.15	0.92	291	57	80	83	2.2	4.0		20.12	103.4
	70	208.16	0.89	291	57	80	83	2.2	4.0		19.79	98.7
	72.5	210.18	0.89	291	58	80	83	2.2	4.0		19.79	100.9
11	75	212.19	0.9	291	58	80	83	2.2	4.0		19.90	100.4
	77.5	214.21	0.9	291	58	80	83	2.2	4.0		19.90	100.3
	80	216.23	0.92	291	59	80	84	2.2	4.0		20.12	100.3
12	82.5	218.25	0.92	291	59	80	84	2.2	4.0		20.12	99.1
	85	220.18	0.92	291	59	80	85	2.2	4.0		20.12	94.7
	87.5	222.30	0.9	291	60	81	85	2.2	4.0		19.90	103.9
	90	224.30										99.0

APPENDIX 23

Particle Size Distribution Test Emission Calculations
(12 pages)

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	June 16, 2021
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 1

Project No.: 22081
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.987
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.72
Static Pressure ("H_2O)	-10.20
Oxygen Content (%)	8.48
Carbon Dioxide Content (%)	10.75
Carbon Monoxide Content (PPM)	12.8
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	10.0 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	16.9 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.4 Rft^3*	1.200 Rm^3*
Average Cyclone I Cut Diameter		10.18 µm
Average Cyclone IV Cut Diameter		2.33 µm
Average Isokineticity		106.7 %
Stack Gas Physical Parameters		
B_{ws}	15.1 % v/v	
Average m	221.1 (dimensionless)	
M_d	30.06 lbs/lbs mole	
M_w	28.24 lbs/lbs mole	
Average T_s	285 °F	141 °C
Average U_s	53.9 ft/s	16.4 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	51535 ACFM	24.3 m^3/s
Wet Reference Q_s	35967 SCFM*	17.0 Rm^3/s*
Dry Reference Q_s	30544 SCFM*	14.4 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	**Emission Rate**
Total Part. (a)	2.33 mg/Rm^3*	0.0336 g/s
Total Part. (b)	8.25 mg/Rm^3*	0.119 g/s
PM_{10} Part. (b)	6.91 mg/Rm^3*	0.100 g/s
$PM_{2.5}$ Part. (b)	6.66 mg/Rm^3*	0.096 g/s
Cond. Part.	5.91 mg/Rm^3*	0.085 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	490.5	647.5	741.7	904.2	
final volume or weight (ml or mg)	637.8	648.0	740.7	914.2	
gain in volume or weight (ml or mg)	147.3	0.5	-1.0	10.0	0.0
				TOTAL	156.8

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	1.6	0.3	0.5	0.4	7.1

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: June 16, 2021	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22081
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 1	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.9	16.60	0.70	0.35	285	66	66	0.38	3.0	57.6	10.08	2.30	101.6
	2	10.9	10.8	20.50	0.70	0.35	285	67	66	0.38	3.0	57.6	10.16	2.33	100.4
	3	21.7	10.6	24.31	0.67	0.35	285	68	66	0.38	3.0	56.3	10.17	2.33	102.5
	4	32.3	9.7	28.04	0.63	0.35	285	68	67	0.38	3.0	54.6	10.25	2.36	104.6
	5	42.0	9.3	31.44	0.52	0.35	285	69	67	0.38	3.0	49.6	10.36	2.41	113.3
	6	51.3	8.8	34.65	0.51	0.35	285	69	67	0.38	3.0	49.1	10.44	2.44	113.2
		60.1		37.65											
2	1	0.00	10.26	37.65	0.70	0.35	285	69	67	0.38	3.0	57.6	10.25	2.37	99.1
	2	10.3	10.03	41.24	0.68	0.35	285	70	68	0.38	3.0	56.8	9.95	2.24	104.9
	3	20.3	10.41	44.91	0.62	0.35	285	70	68	0.38	3.0	54.2	10.08	2.29	107.9
	4	30.7	10.19	48.65	0.58	0.35	285	70	68	0.38	3.0	52.4	9.90	2.23	114.4
	5	40.9	10.03	52.40	0.55	0.35	285	71	69	0.38	3.0	51.0	10.24	2.36	112.0
	6	50.9	8.97	55.93	0.53	0.35	285	70	69	0.38	3.0	50.1	10.27	2.37	113.6
		59.9		59.07											
Averages					**0.62**		**285**	**68**		**0.38**		**53.9**	**10.18**	**2.33**	**106.7**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	June 16, 2021
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 1

Project No.: 22081
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.987
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.69
Static Pressure ("H_2O)	-10.20
Oxygen Content (%)	8.49
Carbon Dioxide Content (%)	10.69
Carbon Monoxide Content (PPM)	18
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.8 l/min*
Cyclone Qs_{actual}	0.58 ft^3/min	16.5 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.6 Rft^3*	1.178 Rm^3*
Average Cyclone I Cut Diameter		10.33 µm
Average Cyclone IV Cut Diameter		2.40 µm
Average Isokineticity		94.4 %
Stack Gas Physical Parameters		
B_{ws}	14.8 % v/v	
Average m	221.4 (dimensionless)	
M_d	30.05 lbs/lbs mole	
M_w	28.27 lbs/lbs mole	
Average T_s	285 °F	141 °C
Average U_s	59.8 ft/s	18.2 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	57132 ACFM	27.0 m^3/s
Wet Reference Q_s	39819 SCFM*	18.8 Rm^3/s*
Dry Reference Q_s	33920 SCFM*	16.0 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	**Emission Rate**
Total Part. (a)	0.76 mg/Rm^3*	0.0122 g/s
Total Part. (b)	5.77 mg/Rm^3*	0.092 g/s
PM_{10} Part. (b)	5.35 mg/Rm^3*	0.086 g/s
$PM_{2.5}$ Part. (b)	5.18 mg/Rm^3*	0.083 g/s
Cond. Part.	5.01 mg/Rm^3*	0.080 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	516.5	651.0	763.4	997.4	
final volume or weight (ml or mg)	658.7	651.0	762.3	1007.0	
gain in volume or weight (ml or mg)	142.2	0.0	-1.1	9.6	0.0
				TOTAL	150.7

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.5	0.2	<0.1	<0.1	5.9

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: June 16, 2021	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 22081
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 1	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.7	59.20	0.89	0.35	287	72	71	0.38	3.0	65.0	10.14	2.32	89.6
	2	10.7	10.7	63.04	0.85	0.35	287	72	71	0.38	3.0	63.5	10.23	2.36	90.5
	3	21.4	10.4	66.83	0.80	0.35	286	72	71	0.38	3.0	61.6	10.26	2.37	92.7
	4	31.8	10.1	70.52	0.71	0.35	285	73	71	0.38	3.0	58.0	10.31	2.39	97.8
	5	41.9	9.2	74.08	0.64	0.35	285	74	72	0.38	3.0	55.1	10.24	2.36	103.9
	6	51.1	9.1	77.35	0.55	0.35	285	74	72	0.38	3.0	51.0	10.47	2.45	108.7
		60.3		80.49											
2	1	0.00	10.7	80.49	0.87	0.35	285	74	73	0.38	3.0	64.2	10.37	2.41	87.6
	2	10.7	10.5	84.22	0.83	0.35	283	73	71	0.38	3.0	62.6	10.82	2.60	84.3
	3	21.2	10.1	87.67	0.82	0.35	283	73	72	0.38	3.0	62.2	10.21	2.35	92.0
	4	31.3	9.7	91.25	0.77	0.35	285	73	72	0.38	3.0	60.4	10.26	2.37	94.5
	5	41.0	9.5	94.69	0.73	0.35	286	74	73	0.38	3.0	58.8	10.32	2.39	96.3
	6	50.4	9.3	98.02	0.63	0.35	286	74	73	0.38	3.0	54.7	10.36	2.41	103.1
		59.7		101.27											
Averages					**0.76**		**285**	**72**		**0.38**		**59.8**	**10.33**	**2.40**	94.4

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date: June 16, 2021	**Project No.:** 22081
Client: Covanta	**Operator:** DU
Plant: DYEC	
Location: Courtice, Ontario	
Test No.: 3	
Test Location: APC Outlet No. 1	

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.987
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.66
Static Pressure ("H_2O)	-10.20
Oxygen Content (%)	7.91
Carbon Dioxide Content (%)	11.14
Carbon Monoxide Content (PPM)	15.5
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	10.0 l/min*
Cyclone Qs_{actual}	0.61 ft^3/min	17.4 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.2 Rft^3*	1.195 Rm^3*
Average Cyclone I Cut Diameter		9.98 µm
Average Cyclone IV Cut Diameter		2.27 µm
Average Isokineticity		99.1 %
Stack Gas Physical Parameters		
B_{ws}	17.2 % v/v	
Average m	220.3 (dimensionless)	
M_d	30.10 lbs/lbs mole	
M_w	28.02 lbs/lbs mole	
Average T_s	289 °F	143 °C
Average U_s	59.6 ft/s	18.2 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	56922 ACFM	26.9 m^3/s
Wet Reference Q_s	39424 SCFM*	18.6 Rm^3/s*
Dry Reference Q_s	32640 SCFM*	15.4 Rm^3/s*

Summary of Particulate Emission Rates	**Dry Ref. Conc.**	**Emission Rate**
Total Part. (a)	0.75 mg/Rm^3*	0.0116 g/s
Total Part. (b)	5.69 mg/Rm^3*	0.088 g/s
PM_{10} Part. (b)	5.27 mg/Rm^3*	0.081 g/s
$PM_{2.5}$ Part. (b)	5.11 mg/Rm^3*	0.079 g/s
Cond. Part.	4.94 mg/Rm^3*	0.076 g/s

(a) does not include condensibles

(b) includes condensibles

Impinger Recovery	**Impinger 1**	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**
initial volume or weight (ml or mg)	490.5	647.5	740.7	914.2	
final volume or weight (ml or mg)	665.2	647.5	738.1	924.8	
gain in volume or weight (ml or mg)	174.7	0.0	-2.6	10.6	0.0
				TOTAL	**182.7**

Particulate Weight Gains	**>10mm**	**<10mm, >2.5mm**	**<2.5mm**	**back-up filter**	**cond. part.**
particulate weight gains (mg)	0.5	0.2	<0.1	<0.1	5.9

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: June 16, 2021	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22081
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 1	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.7	1.50	0.87	0.35	287	77	75	0.38	4.0	64.6	9.97	2.26	91.7
	2	10.7	10.5	5.35	0.83	0.35	288	76	75	0.38	4.0	63.1	9.82	2.20	96.0
	3	21.2	10.4	9.19	0.77	0.35	288	76	75	0.38	4.0	60.8	9.87	2.22	99.0
	4	31.7	10.1	12.98	0.72	0.35	288	76	75	0.38	4.0	58.8	9.95	2.26	101.2
	5	41.8	9.8	16.61	0.66	0.35	288	76	75	0.38	4.0	56.3	10.10	2.32	103.5
	6	51.6	9.1	20.07	0.59	0.35	290	78	76	0.38	4.0	53.3	10.07	2.30	110.1
		60.8		23.31											
2	1	0.00	10.9	23.31	0.83	0.35	288	77	76	0.38	4.0	63.1	10.00	2.28	93.5
	2	10.9	10.6	27.19	0.86	0.35	289	77	76	0.38	4.0	64.3	9.99	2.27	92.1
	3	21.5	10.3	30.99	0.83	0.35	290	77	76	0.38	4.0	63.2	9.95	2.26	94.4
	4	31.8	9.7	34.70	0.73	0.35	291	77	76	0.38	4.0	59.3	10.04	2.29	99.5
	5	41.5	9.2	38.15	0.62	0.35	291	77	76	0.38	4.0	54.7	9.99	2.27	108.7
	6	50.7	8.5	41.45	0.58	0.35	292	78	77	0.38	4.0	52.9	10.00	2.28	112.3
		59.2		44.51											
Averages					**0.74**		**289**	**76**		**0.38**		**59.6**	**9.98**	**2.27**	**99.1**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date: June 15, 2021	**Project No.:** 22081
Client: Covanta	**Operator:** DU
Plant: DYEC	
Location: Courtice, Ontario	
Test No.: 1	
Test Location: APC Outlet No. 2	

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.987
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.55
Static Pressure ("H_2O)	-9.80
Oxygen Content (%)	8.47
Carbon Dioxide Content (%)	10.67
Carbon Monoxide Content (PPM)	10.2
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.34 Rft^3/min*	9.7 l/min*
Cyclone Qs_{actual}	0.58 ft^3/min	16.4 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.0 Rft^3*	1.161 Rm^3*
Average Cyclone I Cut Diameter		10.44 µm
Average Cyclone IV Cut Diameter		2.45 µm
Average Isokineticity		88.0 %
Stack Gas Physical Parameters		
B_{ws}	14.7 % v/v	
Average m	222.0 (dimensionless)	
M_d	30.05 lbs/lbs mole	
M_w	28.28 lbs/lbs mole	
Average T_s	287 °F	142 °C
Average U_s	63.4 ft/s	19.3 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	60604 ACFM	28.6 m^3/s
Wet Reference Q_s	41979 SCFM*	19.8 Rm^3/s*
Dry Reference Q_s	35816 SCFM*	16.9 Rm^3/s*

Summary of Particulate Emission Rates	**Dry Ref. Conc.**	**Emission Rate**
Total Part. (a)	1.21 mg/Rm^3*	0.0204 g/s
Total Part. (b)	6.20 mg/Rm^3*	0.105 g/s
PM_{10} Part. (b)	5.94 mg/Rm^3*	0.100 g/s
$PM_{2.5}$ Part. (b)	5.60 mg/Rm^3*	0.095 g/s
Cond. Part.	4.99 mg/Rm^3*	0.084 g/s

(a) does not include condensibles

(b) includes condensibles

Impinger Recovery	**Impinger 1**	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**
initial volume or weight (ml or mg)	516.6	650.9	765.5	976.4	
final volume or weight (ml or mg)	655.0	650.9	764.9	985.6	
gain in volume or weight (ml or mg)	138.4	0.0	-0.6	9.2	0.0
				TOTAL	**147.0**

Particulate Weight Gains	**>10mm**	**<10mm, >2.5mm**	**<2.5mm**	**back-up filter**	**cond. part.**
particulate weight gains (mg)	0.3	0.4	0.4	0.3	5.8

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: June 15, 2021	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22081
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.6	89.32	0.95	0.35	289	70	70	0.38	3.0	67.4	10.32	2.40	84.6
	2	10.6	10.6	93.03	0.93	0.35	289	71	71	0.38	3.0	66.7	10.27	2.38	86.2
	3	21.2	10.4	96.80	0.89	0.35	288	70	69	0.38	3.0	65.2	10.35	2.41	87.0
	4	31.6	10.0	100.44	0.84	0.35	288	70	70	0.38	3.0	63.3	10.33	2.40	89.8
	5	41.6	9.6	103.93	0.73	0.35	288	71	70	0.38	3.0	59.0	9.94	2.25	101.8
	6	51.2	9.2	107.50	0.64	0.35	287	71	70	0.38	3.0	55.2	10.41	2.43	101.8
		60.5		110.70											
2	1	0.00	10.12	110.72	0.95	0.35	284	72	71	0.38	3.0	67.2	10.54	2.48	81.7
	2	10.1	10.27	114.17	0.98	0.35	286	72	71	0.38	3.0	68.3	10.37	2.41	82.6
	3	20.4	10.27	117.76	0.89	0.35	286	72	71	0.38	3.0	65.1	11.03	2.69	79.4
	4	30.7	9.96	121.05	0.84	0.35	287	72	72	0.38	3.0	63.3	10.73	2.56	85.1
	5	40.6	9.80	124.37	0.81	0.35	286	72	72	0.38	3.0	62.1	10.65	2.53	87.5
	6	50.4	9.13	127.67	0.71	0.35	286	72	72	0.38	3.0	58.1	10.36	2.41	97.2
		59.5		130.87											
Averages					**0.85**		**287**	**71**		**0.38**		**63.4**	**10.44**	**2.45**	**88.0**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date: June 15, 2021	**Project No.:** 22081
Client: Covanta	**Operator:** DU
Plant: DYEC	
Location: Courtice, Ontario	
Test No.: 2	
Test Location: APC Outlet No. 2	

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.987
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.55
Static Pressure ("H_2O)	-9.80
Oxygen Content (%)	8.47
Carbon Dioxide Content (%)	10.66
Carbon Monoxide Content (PPM)	7.4
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.34 Rft^3/min*	9.7 l/min*
Cyclone Qs_{actual}	0.59 ft^3/min	16.6 l/min
Stack Gas Sampling Parameters		
V_{ms}	40.9 Rft^3*	1.158 Rm^3*
Average Cyclone I Cut Diameter		10.33 µm
Average Cyclone IV Cut Diameter		2.40 µm
Average Isokineticity		88.1 %
Stack Gas Physical Parameters		
B_{ws}	15.9 % v/v	
Average m	221.3 (dimensionless)	
M_d	30.04 lbs/lbs mole	
M_w	28.12 lbs/lbs mole	
Average T_s	288 °F	142 °C
Average U_s	64.3 ft/s	19.6 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	61435 ACFM	29.0 m^3/s
Wet Reference Q_s	42483 SCFM*	20.0 Rm^3/s*
Dry Reference Q_s	35710 SCFM*	16.9 Rm^3/s*

Summary of Particulate Emission Rates	**Dry Ref. Conc.**	**Emission Rate**
Total Part. (a)	0.35 mg/Rm^3*	0.0058 g/s
Total Part. (b)	6.30 mg/Rm^3*	0.106 g/s
PM_{10} Part. (b)	6.22 mg/Rm^3*	0.105 g/s
$PM_{2.5}$ Part. (b)	6.13 mg/Rm^3*	0.103 g/s
Cond. Part.	5.96 mg/Rm^3*	0.100 g/s

(a) does not include condensibles

(b) includes condensibles

Impinger Recovery	**Impinger 1**	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**
initial volume or weight (ml or mg)	490.6	647.5	742.6	894.6	
final volume or weight (ml or mg)	643.5	647.5	741.7	904.2	
gain in volume or weight (ml or mg)	152.9	0.0	-0.9	9.6	0.0
				TOTAL	**161.6**

Particulate Weight Gains	**>10mm**	**<10mm, >2.5mm**	**<2.5mm**	**back-up filter**	**cond. part.**
particulate weight gains (mg)	0.1	0.1	<0.1	<0.1	6.9

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: June 15, 2021	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 22081
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.6	30.78	0.92	0.35	288	72	72	0.38	4.0	66.4	10.37	2.42	84.9
	2	10.6	10.8	34.43	0.91	0.35	287	72	72	0.38	4.0	66.0	10.32	2.40	85.9
	3	21.4	10.3	38.16	0.89	0.35	287	73	73	0.38	4.0	65.3	10.39	2.43	86.1
	4	31.7	10.0	41.69	0.86	0.35	288	73	73	0.38	4.0	64.2	10.43	2.45	87.1
	5	41.6	9.8	45.10	0.82	0.35	289	74	73	0.38	4.0	62.8	10.24	2.37	91.6
	6	51.4	9.2	48.54	0.72	0.35	289	74	74	0.38	4.0	58.8	10.25	2.37	97.7
		60.6		51.76											
2	1	0.00	10.61	51.76	0.93	0.35	287	75	75	0.38	4.0	66.8	10.31	2.40	85.1
	2	10.6	10.50	55.46	0.91	0.35	287	75	75	0.38	4.0	66.0	10.29	2.39	86.2
	3	21.1	10.27	59.13	0.89	0.35	288	75	75	0.38	4.0	65.4	10.35	2.42	86.5
	4	31.4	9.98	62.69	0.87	0.35	289	75	75	0.38	4.0	64.7	10.25	2.37	88.9
	5	41.4	9.30	66.20	0.83	0.35	289	75	75	0.38	4.0	63.2	10.37	2.42	89.6
	6	50.7	8.71	69.42	0.79	0.35	291	77	77	0.38	4.0	61.7	10.36	2.42	92.0
		59.4		72.45											
Averages					**0.86**		**288**	**74**		**0.38**		**64.3**	**10.33**	**2.40**	**88.1**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	June 15, 2021
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 2

Project No.: 22081
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.987
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.55
Static Pressure ("H_2O)	-9.80
Oxygen Content (%)	8.58
Carbon Dioxide Content (%)	10.45
Carbon Monoxide Content (PPM)	14.7
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.9 l/min*
Cyclone Qs_{actual}	0.61 ft^3/min	17.3 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.2 Rft^3*	1.194 Rm^3*
Average Cyclone I Cut Diameter		10.06 µm
Average Cyclone IV Cut Diameter		2.30 µm
Average Isokineticity		92.4 %
Stack Gas Physical Parameters		
B_{ws}	16.5 % v/v	
Average m	221.9 (dimensionless)	
M_d	30.02 lbs/lbs mole	
M_w	28.03 lbs/lbs mole	
Average T_s	291 °F	144 °C
Average U_s	63.9 ft/s	19.5 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	61058 ACFM	28.8 m^3/s
Wet Reference Q_s	42054 SCFM*	19.8 Rm^3/s*
Dry Reference Q_s	35100 SCFM*	16.6 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.34 mg/Rm^3*	0.0056 g/s
Total Part. (b)	6.78 mg/Rm^3*	0.112 g/s
PM_{10} Part. (b)	6.70 mg/Rm^3*	0.111 g/s
$PM_{2.5}$ Part. (b)	6.62 mg/Rm^3*	0.110 g/s
Cond. Part.	6.45 mg/Rm^3*	0.107 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	516.5	651.0	765.0	985.6	
final volume or weight (ml or mg)	680.3	651.0	763.4	997.4	
gain in volume or weight (ml or mg)	163.8	0.0	-1.6	11.8	0.0
				TOTAL	174.0

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.1	<0.1	<0.1	<0.1	7.7

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: June 15, 2021	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22081
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.4	72.55	0.96	0.35	295	78	78	0.38	4.0	68.3	9.95	2.26	88.5
	2	10.4	10.3	76.36	0.94	0.35	294	78	78	0.38	4.0	67.5	9.87	2.23	90.4
	3	20.7	10.2	80.17	0.88	0.35	294	78	78	0.38	4.0	65.4	10.04	2.30	91.2
	4	30.8	10.1	83.85	0.84	0.35	295	79	78	0.38	4.0	63.9	9.95	2.26	94.7
	5	40.9	9.8	87.54	0.76	0.35	295	79	79	0.38	4.0	60.8	10.06	2.31	97.9
	6	50.7	9.6	91.09	0.67	0.35	294	80	79	0.38	4.0	57.0	10.09	2.32	103.7
		60.3		94.54											
2	1	0.00	10.34	94.54	0.93	0.35	290	80	80	0.38	4.0	67.0	9.91	2.24	90.0
	2	10.3	10.28	98.36	0.93	0.35	288	81	81	0.38	4.0	66.9	9.72	2.17	92.3
	3	20.6	10.17	102.27	0.91	0.35	288	80	80	0.38	4.0	66.2	10.29	2.39	86.1
	4	30.8	10.00	105.83	0.89	0.35	288	81	80	0.38	4.0	65.5	10.30	2.40	87.0
	5	40.8	9.76	109.33	0.76	0.35	287	81	81	0.38	4.0	60.5	10.30	2.39	94.1
	6	50.5	9.15	112.75	0.69	0.35	287	81	81	0.38	4.0	57.6	10.31	2.40	98.6
		59.7		115.95											
Averages					**0.85**		**291**	**79**		**0.38**		**63.9**	**10.06**	**2.30**	**92.4**

APPENDIX 24

Acid Gases Test Emission Calculations
(13 pages)

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	1 - M26A
Date:	June 15, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.11	mm
DRY REF GAS VOLUME SAMPLED	1.047	m^3
AVGERGE ISOKINETICITY	97.3	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.0	°C
AVERAGE GAS MOISTURE BY VOLUME	15.0	%
AVERAGE GAS VELOCITY	17.32	m/s
BAROMETRIC PRESSURE (Station)	100.034	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	97.494	Kpa
OXYGEN CONCENTRATION	8.65	%
CARBON DIOXIDE CONCENTRATION	10.44	%
CARBON MONOXIDE CONCENTRATION	17.5	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.59	m^3/s
DRY REF GAS FLOWRATE	15.06	Rm^3/s
DRY ADJ GAS FLOWRATE	18.64	Rm^3/s
WET REF GAS FLOWRATE	17.73	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.047	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.54 "Hg	**CWTR (g)**	127.3		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	9		
Nozzle	0.2405 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		12	

Combustion Gases	
O2%	8.65
CO2%	10.44
COppm	17.5

Measured H2O
15.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	59.12	0.8	274	70	74	73	1.6	3.0		18.59	
2	5	62.53	0.8	285	62	74	75	1.6	3.0		18.73	97.9
3	10	65.84	0.79	286	59	74	76	1.6	3.0		18.62	95.5
4	15	69.16	0.76	287	59	75	78	1.55	3.0		18.28	96.4
5	20	72.46	0.69	287	61	75	79	1.4	3.0		17.42	97.5
6	25	75.59	0.62	287	59	75	79	1.2	2.5		16.51	96.9
7	30	78.51	0.7	288	56	77	80	1.45	3.0		17.55	95.3
8	35	81.68	0.7	288	54	77	81	1.5	3.0		17.55	97.3
9	40	84.91	0.69	287	53	77	81	1.45	3.0		17.42	99.0
10	45	88.11	0.7	287	53	77	81	1.5	3.0		17.54	98.7
11	50	91.31	0.5	287	53	77	81	1	3.0		14.83	98.0
12	55	94.09	0.5	287	53	76	81	0.95	3.0		14.83	100.6
	60	96.70										94.6

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	2 - M26A
Date:	June 15, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.842
DGM CORRECTION FACTOR		0.993
NOZZLE DIAMETER		6.11 mm
DRY REF GAS VOLUME SAMPLED		0.192 m^3
AVGERGE ISOKINETICITY		99.3 %
STACK DIAMETER		1.37 m
LENGTH		0.00 m
WIDTH		0.00 m
AREA OF STACK or DUCT		1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE		138.3 °C
AVERAGE GAS MOISTURE BY VOLUME		15.2 %
AVERAGE GAS VELOCITY		18.61 m/s
BAROMETRIC PRESSURE (Station)		100.068 Kpa
STATIC PRESSURE		-2.540 Kpa
ABSOLUTE GAS PRESSURE		97.528 Kpa
OXYGEN CONCENTRATION		8.45 %
CARBON DIOXIDE CONCENTRATION		10.76 %
CARBON MONOXIDE CONCENTRATION		12.7 ppm

FLOWRATE

ACTUAL GAS FLOWRATE		27.49 m^3/s
DRY REF GAS FLOWRATE		16.26 Rm^3/s
DRY ADJ GAS FLOWRATE		20.45 Rm^3/s
WET REF GAS FLOWRATE		19.18 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		0.192 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	142		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	10.5		
Nozzle	0.2405 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	8.45
CO2%	10.76
COppm	12.7

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	97.22	0.76	275	63	75	76	1.65	4.0		18.12	
	5	100.57	0.83	287	54	75	78	1.8	4.0		19.09	**98.6**
	10	104.10										**100.1**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	142		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	10.5		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft³	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	8.45
CO2%	10.76
COppm	12.7

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	15	107.34	0.75	289	53	76	78	1.9	4.0		18.17	
	20	110.73	0.68	288	52	76	79	1.8	4.0		17.29	**92.8**
	25	114.26	0.62	288	52	77	80	1.65	4.0		16.51	**101.3**
	30	117.67	0.72	289	54	77	81	1.9	4.0		17.81	**102.3**
	35	121.33	0.72	289	54	77	81	1.8	4.0		17.81	**101.9**
	40	124.90	0.71	289	55	78	81	1.8	4.0		17.68	**99.4**
	45	128.46	0.7	287	56	78	81	1.75	4.0		17.53	**99.7**
	50	131.99	0.7	287	56	78	81	1.75	4.0		17.53	**99.4**
	55	135.51	0.64	287	57	78	82	1.6	4.0		16.77	**99.1**
	60	138.89										**99.4**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	3 - M26A
Date:	June 15, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	1.174	m^3
AVGERGE ISOKINETICITY	99.6	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	143.3	°C
AVERAGE GAS MOISTURE BY VOLUME	16.4	%
AVERAGE GAS VELOCITY	17.78	m/s
BAROMETRIC PRESSURE (Station)	100.068	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	97.528	Kpa
OXYGEN CONCENTRATION	7.91	%
CARBON DIOXIDE CONCENTRATION	11.11	%
CARBON MONOXIDE CONCENTRATION	16.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.27	m^3/s
DRY REF GAS FLOWRATE	15.14	Rm^3/s
DRY ADJ GAS FLOWRATE	19.87	Rm^3/s
WET REF GAS FLOWRATE	18.11	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.174	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - M26A	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	156.8		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	12		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	7.91
CO2%	11.11
COppm	16.7

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	39.22	0.71	284	75	77	77	1.75	3.0		17.66	
	5	42.82	0.71	289	65	77	79	1.85	3.0		17.72	102.1
	10	46.30	0.71	289	56	77	81	1.85	3.0		17.72	98.9
	15	49.56	0.72	289	54	78	82	1.85	3.0		17.84	92.5
	20	53.12	0.71	290	55	78	83	1.8	3.0		17.73	100.1
	25	56.59	0.73	290	57	79	84	1.8	3.0		17.98	98.2
	30	60.27	0.73	291	57	79	84	1.8	3.0		17.99	102.5
	35	63.82	0.75	291	62	79	85	1.9	3.0		18.23	99.0
	40	67.48	0.72	292	62	80	85	1.8	3.0		17.88	100.6
	45	71.04	0.69	292	61	80	85	1.7	3.0		17.50	99.8
	50	74.51	0.69	292	61	80	85	1.75	3.0		17.50	99.4
	55	78.03	0.7	291	62	81	86	1.8	3.0		17.62	100.8
	60	81.59										101.0

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	1 - M26A
Date:	June 16, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	1.159	m^3
AVGERGE ISOKINETICITY	98.0	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.0	^{o}C
AVERAGE GAS MOISTURE BY VOLUME	13.0	%
AVERAGE GAS VELOCITY	16.98	m/s
BAROMETRIC PRESSURE (Station)	100.643	Kpa
STATIC PRESSURE	-2.465	Kpa
ABSOLUTE GAS PRESSURE	98.178	Kpa
OXYGEN CONCENTRATION	8.57	%
CARBON DIOXIDE CONCENTRATION	10.72	%
CARBON MONOXIDE CONCENTRATION	15.2	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.09	m^3/s
DRY REF GAS FLOWRATE	15.18	Rm^3/s
DRY ADJ GAS FLOWRATE	18.91	Rm^3/s
WET REF GAS FLOWRATE	17.46	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.159	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.72 "Hg	**CWTR (g)**	115.4		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	12		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	8.57
CO2%	10.72
COppm	15.2

Measured H2O
13.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	13.37	0.67	286	60	66	66	1.6	3.5		17.01	
	5	16.66	0.68	288	48	66	69	1.65	3.5		17.16	95.3
	10	20.04	0.68	288	46	66	70	1.65	3.5		17.16	97.0
	15	23.43	0.64	288	46	67	71	1.65	3.5		16.64	97.2
	20	26.78	0.63	287	48	68	72	1.6	3.5		16.50	98.8
	25	30.10	0.64	287	49	68	73	1.6	3.5		16.63	98.4
	30	33.44	0.63	287	51	69	74	1.6	3.5		16.50	98.2
	35	36.78	0.66	287	52	69	74	1.6	3.5		16.89	98.8
	40	40.17	0.68	288	54	70	75	1.7	4.0		17.16	97.9
	45	43.62	0.68	288	56	70	75	1.7	4.0		17.16	98.1
	50	47.09	0.7	289	58	71	75	1.75	4.0		17.42	98.7
	55	50.60	0.71	289	60	71	75	1.8	4.0		17.54	98.4
	60	54.16										99.1

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	2 - M26A
Date:	June 16, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.842
DGM CORRECTION FACTOR		0.993
NOZZLE DIAMETER		6.38 mm
DRY REF GAS VOLUME SAMPLED		1.185 m^3
AVGERGE ISOKINETICITY		99.4 %
STACK DIAMETER		1.37 m
LENGTH		0.00 m
WIDTH		0.00 m
AREA OF STACK or DUCT		1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE		143.1 °C
AVERAGE GAS MOISTURE BY VOLUME		14.8 %
AVERAGE GAS VELOCITY		17.53 m/s
BAROMETRIC PRESSURE (Station)		100.610 Kpa
STATIC PRESSURE		-2.465 Kpa
ABSOLUTE GAS PRESSURE		98.145 Kpa
OXYGEN CONCENTRATION		8.45 %
CARBON DIOXIDE CONCENTRATION		10.77 %
CARBON MONOXIDE CONCENTRATION		10.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE		25.91 m^3/s
DRY REF GAS FLOWRATE		15.31 Rm^3/s
DRY ADJ GAS FLOWRATE		19.25 Rm^3/s
WET REF GAS FLOWRATE		17.98 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.185 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	141.5		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	10.2		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft°	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	8.45
CO2%	10.77
COppm	10.8

Measured H2O
14.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	54.57	0.71	290	66	71	71	1.7	3.0		17.62	
	5	58.10	0.7	290	61	71	73	1.7	3.0		17.50	100.3
	10	61.58	0.7	290	56	71	75	1.7	3.0		17.50	99.4
	15	64.93	0.7	290	54	71	76	1.7	3.0		17.50	95.5
	20	68.40	0.71	290	54	72	77	1.75	3.0		17.62	98.9
	25	71.93	0.7	290	50	72	78	1.7	3.0		17.50	99.7
	30	75.43	0.69	289	49	73	79	1.7	3.0		17.36	99.4
	35	78.94	0.68	289	49	73	79	1.7	3.0		17.24	100.2
	40	82.42	0.68	289	47	74	79	1.7	3.0		17.24	100.1
	45	85.93	0.75	289	47	74	79	1.85	3.0		18.10	100.8
	50	89.56	0.71	289	48	74	80	1.75	3.0		17.61	99.3
	55	93.11	0.71	289	49	75	80	1.75	3.0		17.61	99.7
	60	96.65										99.4

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	3 - M26A
Date:	June 16, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842
DGM CORRECTION FACTOR	0.993
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	1.173 m^3
AVGERGE ISOKINETICITY	99.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.3 ^oC
AVERAGE GAS MOISTURE BY VOLUME	14.4 %
AVERAGE GAS VELOCITY	17.23 m/s
BAROMETRIC PRESSURE (Station)	100.576 Kpa
STATIC PRESSURE	-2.465 Kpa
ABSOLUTE GAS PRESSURE	98.111 Kpa
OXYGEN CONCENTRATION	8.66 %
CARBON DIOXIDE CONCENTRATION	10.56 %
CARBON MONOXIDE CONCENTRATION	21.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.46 m^3/s
DRY REF GAS FLOWRATE	15.14 Rm^3/s
DRY ADJ GAS FLOWRATE	18.72 Rm^3/s
WET REF GAS FLOWRATE	17.69 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.173 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - M26A	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.7 "Hg	**CWTR (g)**	137.7		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	7.3		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft°	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	8.66
CO2%	10.56
COppm	21.8

Measured H2O
14.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	96.94	0.68	285	66	73	73	1.65	4.0		17.18	
	5	100.38	0.67	288	46	73	75	1.65	4.0		17.09	98.7
	10	103.80	0.65	288	43	73	77	1.6	4.0		16.83	98.9
	15	107.18	0.65	288	43	73	78	1.6	4.0		16.83	99.0
	20	110.57	0.66	288	43	74	79	1.65	4.0		16.96	99.2
	25	113.99	0.69	288	42	74	80	1.7	4.0		17.34	99.2
	30	117.52	0.68	288	43	75	81	1.7	4.0		17.22	100.0
	35	120.99	0.7	289	43	76	81	1.75	4.0		17.48	98.9
	40	124.54	0.71	288	42	76	82	1.8	4.0		17.59	99.7
	45	128.14	0.7	289	43	76	82	1.75	4.0		17.48	100.2
	50	131.68	0.69	289	43	77	82	1.75	4.0		17.36	99.3
	55	135.22	0.69	289	44	77	83	1.75	4.0		17.36	99.9
	60	138.75										99.6

APPENDIX 25

SVOC Test Emission Calculations
(21 pages)

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 - SVOC
Date:	June 17, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	4.611	m^3
AVGERGE ISOKINETICITY	99.0	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.0	^oC
AVERAGE GAS MOISTURE BY VOLUME	15.1	%
AVERAGE GAS VELOCITY	17.11	m/s
BAROMETRIC PRESSURE (Station)	100.677	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	98.138	Kpa
OXYGEN CONCENTRATION	8.46	%
CARBON DIOXIDE CONCENTRATION	10.66	%
CARBON MONOXIDE CONCENTRATION	15.0	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.28	m^3/s
DRY REF GAS FLOWRATE	14.96	Rm^3/s
DRY ADJ GAS FLOWRATE	18.79	Rm^3/s
WET REF GAS FLOWRATE	17.63	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.611	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	June 17, 2021	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.73 "Hg	**CWTR (g)**	590.1		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	14.7		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.29 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.46
CO2%	10.66
COppm	15.0

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	67.89	0.76	283	51	66	66	1.8	6.0		18.25	
	5	71.40	0.76	285	45	67	69	1.8	6.0		18.28	96.8
2	10	74.99	0.78	285	45	67	71	1.85	6.0		18.52	98.8
	15	78.55	0.8	285	46	68	72	2	6.5		18.75	96.5
3	20	82.23	0.74	285	46	68	73	1.85	6.5		18.04	98.3
	25	85.82	0.75	286	47	69	74	1.85	6.5		18.17	99.6
4	30	89.42	0.73	286	45	70	75	1.85	6.5		17.92	99.1
	35	93.02	0.72	287	44	70	76	1.8	6.5		17.81	100.3
5	40	96.56	0.64	287	44	71	76	1.55	6.0		16.79	99.2
	45	99.86	0.65	286	44	71	76	1.65	6.0		16.91	98.0
6	50	103.23	0.56	287	45	71	77	1.35	5.5		15.71	99.2
	55	106.33	0.56	286	45	72	77	1.4	5.5		15.70	98.3
7	60	109.42	0.61	286	45	72	78	1.6	6.0		16.39	97.8
	65	112.71	0.61	286	45	72	78	1.6	6.0		16.39	99.7
8	70	116.02	0.64	286	46	73	78	1.6	6.0		16.78	100.3
	75	119.37	0.64	286	46	73	79	1.65	6.0		16.78	99.0
9	80	122.75	0.66	286	46	74	79	1.7	6.0		17.04	99.8
	85	126.19	0.64	286	46	74	79	1.65	6.0		16.78	100.0
10	90	129.59	0.66	286	47	74	79	1.65	6.0		17.04	100.3
	95	132.99	0.66	287	47	74	79	1.65	6.0		17.06	98.8
11	100	136.38	0.54	285	47	74	79	1.3	5.5		15.41	98.6
	105	139.43	0.53	285	47	75	79	1.3	5.5		15.26	97.8
12	110	142.47	0.61	285	47	75	80	1.55	6.0		16.37	98.3
	115	145.73	0.61	277	47	75	80	1.55	6.0		16.29	98.3
	120	149.03								0.29		98.9
1	0	149.32	0.78	288	58	74	75	1.95	7.0		18.55	
	5	152.98	0.79	288	43	74	77	2	7.0		18.67	98.4
2	10	156.70	0.79	288	41	74	77	2	7.0		18.67	99.2
	15	160.39	0.79	288	41	74	78	2	7.0		18.67	98.4
3	20	164.12	0.76	289	41	75	79	1.95	7.0		18.33	99.4

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	June 17, 2021	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.73 "Hg	**CWTR (g)**	590.1		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	14.7		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.29 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.46
CO2%	10.66
COppm	15.0

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	167.81	0.76	289	41	75	79	1.95	7.0		18.33	100.1
4	30	171.51	0.71	289	41	75	79	1.75	7.0		17.71	100.4
	35	175.04	0.67	288	41	75	79	1.65	7.0		17.20	99.0
5	40	178.48	0.63	288	42	75	80	1.55	6.5		16.67	99.3
	45	181.80	0.63	287	42	75	80	1.55	6.5		16.66	98.7
6	50	185.12	0.58	288	42	76	80	1.4	6.5		16.00	98.6
	55	188.34	0.6	288	43	76	80	1.45	6.5		16.27	99.6
7	60	191.60	0.63	288	43	76	80	1.55	6.5		16.67	99.2
	65	194.87	0.63	287	43	76	80	1.6	6.5		16.66	97.1
8	70	198.21	0.65	287	43	76	81	1.65	7.0		16.93	99.1
	75	201.63	0.66	287	44	76	81	1.7	7.0		17.06	99.8
9	80	205.10	0.68	287	44	76	81	1.7	7.0		17.31	100.5
	85	208.61	0.66	287	44	76	80	1.65	7.0		17.06	100.2
10	90	212.06	0.71	286	45	76	80	1.75	7.0		17.68	100.0
	95	215.58	0.73	285	45	76	80	1.8	7.0		17.91	98.4
11	100	219.15	0.59	285	45	76	81	1.4	6.5		16.10	98.3
	105	222.35	0.58	278	46	76	81	1.5	6.5		15.89	97.9
12	110	225.56	0.58	278	46	76	81	1.5	6.5		15.89	98.6
	115	228.82	0.58	278	46	76	81	1.5	6.5		15.89	100.1
	120	232.03										98.6

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - SVOC
Date:	June 17, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.993
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	4.754 m^3
AVGERGE ISOKINETICITY	99.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	143.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.4 %
AVERAGE GAS VELOCITY	17.74 m/s
BAROMETRIC PRESSURE (Station)	100.508 Kpa
STATIC PRESSURE	-2.540 Kpa
ABSOLUTE GAS PRESSURE	97.968 Kpa
OXYGEN CONCENTRATION	8.35 %
CARBON DIOXIDE CONCENTRATION	10.60 %
CARBON MONOXIDE CONCENTRATION	17.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.21 m^3/s
DRY REF GAS FLOWRATE	15.34 Rm^3/s
DRY ADJ GAS FLOWRATE	19.44 Rm^3/s
WET REF GAS FLOWRATE	18.15 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.754 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	June 17, 2021	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.68 "Hg	**CWTR (g)**	620.3		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	18.3		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.31 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.35
CO2%	10.60
COppm	17.8

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	32.46	0.81	282	68	72	72	2	8.0		18.86	
	5	36.11	0.79	288	52	72	74	2	8.0		18.70	96.6
2	10	39.84	0.83	289	51	73	76	2.05	9.0		19.18	100.1
	15	43.66	0.86	289	51	73	76	2.1	9.0		19.53	99.9
3	20	47.54	0.82	290	52	74	77	2.05	9.0		19.08	99.7
	25	51.37	0.81	290	52	74	78	2	9.0		18.96	100.6
4	30	55.16	0.75	291	53	75	78	1.85	9.0		18.26	100.1
	35	58.83	0.75	291	53	75	79	1.85	9.0		18.26	100.6
5	40	62.47	0.66	291	52	75	79	1.6	8.0		17.13	99.7
	45	65.86	0.66	291	51	76	80	1.6	8.0		17.13	98.9
6	50	69.27	0.56	290	51	76	80	1.35	7.0		15.77	99.3
	55	72.41	0.55	290	51	76	81	0.35	7.0		15.63	99.2
7	60	75.54	0.59	289	51	76	81	1.4	7.0		16.18	99.4
	65	78.73	0.6	289	50	77	82	1.5	7.0		16.31	98.0
8	70	81.97	0.64	289	49	77	82	1.6	7.5		16.85	98.6
	75	85.32	0.63	289	49	78	82	1.6	8.0		16.71	98.7
9	80	88.64	0.63	288	49	78	82	1.55	8.0		16.70	98.5
	85	92.04	0.62	288	48	77	83	1.5	8.0		16.57	100.8
10	90	95.35	0.61	279	49	78	83	1.55	8.0		16.34	98.9
	95	98.68	0.65	281	49	79	83	1.65	8.0		16.89	99.6
11	100	102.10	0.6	281	49	79	83	1.5	8.0		16.22	99.2
	105	105.43	0.61	281	50	79	83	1.55	8.0		16.36	100.5
12	110	108.76	0.61	281	50	79	83	1.55	8.0		16.36	99.7
	115	112.08	0.58	281	50	79	83	1.4	8.0		15.95	99.4
	120	115.31								0.31		99.1
1	0	115.62	0.8	286	64	79	80	2	10.0		18.80	
	5	119.39	0.8	292	47	79	81	2	10.0		18.87	99.2
2	10	123.11	0.83	293	45	79	82	2.1	10.5		19.24	98.2
	15	126.95	0.83	293	44	79	82	2.1	10.5		19.24	99.5
3	20	130.79	0.8	293	44	79	82	2	10.0		18.89	99.5

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	June 17, 2021	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.68 "Hg	**CWTR (g)**	620.3		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	18.3		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.31 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.35
CO2%	10.60
COppm	17.8

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	134.60	0.83	293	44	79	82	2.1	10.5		19.24	100.6
4	30	138.44	0.77	294	44	79	83	1.95	10.0		18.54	99.5
	35	142.20	0.77	294	44	79	83	1.9	10.0		18.54	101.1
5	40	145.90	0.75	294	44	79	83	1.85	10.0		18.30	99.5
	45	149.54	0.73	295	45	79	83	1.8	10.0		18.06	99.2
6	50	153.15	0.65	295	45	79	83	1.6	9.0		17.05	99.7
	55	156.57	0.66	295	45	80	83	1.65	9.0		17.18	100.1
7	60	160.01	0.72	294	46	80	84	1.8	9.0		17.93	99.8
	65	163.56	0.74	294	46	80	84	1.85	10.0		18.18	98.5
8	70	167.19	0.74	295	51	80	84	1.85	10.0		18.19	99.4
	75	170.78	0.76	294	46	80	83	1.9	10.0		18.42	98.4
9	80	174.44	0.76	292	47	80	83	1.9	10.0		18.39	99.0
	85	178.12	0.76	294	47	80	83	1.9	10.0		18.42	99.4
10	90	181.83	0.74	294	47	80	83	1.85	10.0		18.18	100.3
	95	185.49	0.75	294	47	80	83	1.85	10.0		18.30	100.3
11	100	189.16	0.7	291	48	80	83	1.75	10.0		17.64	99.9
	105	192.73	0.68	291	48	80	83	1.7	9.5		17.39	100.4
12	110	196.22	0.66	291	48	80	84	1.65	9.5		17.13	99.5
	115	199.69	0.69	290	48	80	84	1.7	9.5		17.50	100.3
	120	203.20										99.2

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - SVOC
Date:	June 18, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842
DGM CORRECTION FACTOR	0.993
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	4.714 m^3
AVGERGE ISOKINETICITY	101.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.2 °C
AVERAGE GAS MOISTURE BY VOLUME	15.0 %
AVERAGE GAS VELOCITY	17.12 m/s
BAROMETRIC PRESSURE (Station)	100.102 Kpa
STATIC PRESSURE	-2.565 Kpa
ABSOLUTE GAS PRESSURE	97.537 Kpa
OXYGEN CONCENTRATION	8.04 %
CARBON DIOXIDE CONCENTRATION	10.94 %
CARBON MONOXIDE CONCENTRATION	10.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.30 m^3/s
DRY REF GAS FLOWRATE	14.92 Rm^3/s
DRY ADJ GAS FLOWRATE	19.39 Rm^3/s
WET REF GAS FLOWRATE	17.57 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.714 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	June 18, 2021	**Operator:**	JA

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.56 "Hg	**CWTR (g)**	598.7		
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	15		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.28 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.04
CO2%	10.94
COppm	10.4

Measured H2O
15.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	3.51	0.83	280	69	73	73	2	6.0		18.99	
	5	7.00	0.81	287	54	73	75	2.1	6.5		18.85	90.9
2	10	10.74	0.82	287	52	74	76	2.1	7.0		18.97	98.9
	15	14.52	0.81	286	51	74	77	2.1	7.0		18.84	99.2
3	20	18.31	0.78	287	50	74	78	2	7.0		18.50	99.9
	25	22.06	0.77	286	51	75	78	2	7.0		18.37	100.7
4	30	25.79	0.72	286	53	75	78	1.9	7.0		17.76	100.6
	35	29.46	0.69	286	54	76	79	1.85	7.0		17.39	102.3
5	40	33.09	0.6	286	54	76	79	1.6	7.0		16.21	103.2
	45	36.53	0.6	286	53	76	80	1.6	7.0		16.21	104.8
6	50	39.87	0.56	286	52	76	80	1.5	6.0		15.66	101.7
	55	43.12	0.56	286	52	76	81	1.5	6.0		15.66	102.4
7	60	46.39	0.6	286	51	77	81	1.6	6.0		16.21	102.9
	65	49.72	0.62	286	51	77	86	1.7	6.0		16.48	101.2
8	70	53.16	0.65	286	51	77	81	1.8	6.5		16.88	102.4
	75	56.72	0.64	286	51	77	81	1.7	7.0		16.75	104.0
9	80	60.22	0.64	285	50	77	81	1.7	7.0		16.73	103.0
	85	63.72	0.63	284	49	78	81	1.7	7.0		16.59	102.9
10	90	67.23	0.62	284	49	78	81	1.7	7.0		16.46	103.9
	95	70.70	0.6	284	49	78	81	1.65	7.0		16.19	103.5
11	100	74.13	0.56	284	49	78	81	1.6	6.5		15.64	104.0
	105	77.48	0.54	284	49	78	82	1.5	6.0		15.36	105.1
12	110	80.74	0.33	284	49	78	82	0.9	5.0		12.01	104.0
	115	83.37	0.33	280	49	78	82	0.9	5.0		11.98	107.2
	120	85.91								0.28		103.3
1	0	86.19	0.82	284	63	77	78	2	7.0		18.93	
	5	89.78	0.8	288	47	77	79	2.1	8.0		18.75	93.5
2	10	93.63	0.8	288	45	77	80	2.1	8.0		18.75	101.8
	15	97.47	0.78	288	44	77	80	2.05	8.0		18.51	101.4
3	20	101.29	0.77	286	45	77	80	2.05	8.0		18.37	102.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	June 18, 2021	**Operator:**	JA

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.56 "Hg	**CWTR (g)**	598.7		
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	15		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.28 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.04
CO2%	10.94
COppm	10.4

Measured H2O
15.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	105.10	0.76	287	45	77	80	2	8.0		18.26	102.4
4	30	108.88	0.7	288	45	77	80	1.9	8.0		17.54	102.3
	35	112.55	0.73	288	45	77	81	1.95	7.5		17.91	103.5
5	40	116.28	0.66	289	45	77	81	1.8	7.5		17.04	103.0
	45	119.88	0.66	289	46	78	81	1.8	7.5		17.04	104.5
6	50	123.44	0.63	288	46	78	81	1.6	7.0		16.64	103.3
	55	126.79	0.61	288	47	78	81	1.6	7.0		16.37	99.4
7	60	130.15	0.67	287	47	78	82	1.7	7.0		17.14	101.3
	65	133.58	0.7	286	47	78	82	1.8	7.5		17.51	98.5
8	70	137.13	0.74	287	47	78	82	1.9	7.5		18.02	99.7
	75	140.78	0.69	289	47	78	82	1.8	7.5		17.42	99.8
9	80	144.37	0.76	289	47	78	81	1.9	8.0		18.28	101.8
	85	148.04	0.75	289	48	78	81	1.9	8.0		18.16	99.3
10	90	151.73	0.73	288	48	78	81	1.9	8.0		17.91	100.5
	95	155.39	0.75	287	49	78	81	1.9	8.0		18.14	100.9
11	100	159.08	0.7	278	49	78	81	1.9	8.0		17.42	100.3
	105	162.67	0.71	275	49	78	81	1.9	8.0		17.51	100.4
12	110	166.27	0.59	250	49	78	81	1.6	8.0		15.68	99.8
	115	169.69	0.61	250	49	78	81	1.6	8.0		15.95	102.1
	120	173.10										100.1

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	2 - M26A
Date:	June 15, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.11/6.38	mm
DRY REF GAS VOLUME SAMPLED	1.070	m^3
AVGERGE ISOKINETICITY	99.4	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.6	°C
AVERAGE GAS MOISTURE BY VOLUME	15.2	%
AVERAGE GAS VELOCITY	17.74	m/s
BAROMETRIC PRESSURE (Station)	100.068	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	97.528	Kpa
OXYGEN CONCENTRATION	8.45	%
CARBON DIOXIDE CONCENTRATION	10.76	%
CARBON MONOXIDE CONCENTRATION	12.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.21	m^3/s
DRY REF GAS FLOWRATE	15.37	Rm^3/s
DRY ADJ GAS FLOWRATE	19.33	Rm^3/s
WET REF GAS FLOWRATE	18.14	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED			m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	142		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	10.5		
Nozzle	0.2405 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	8.45
CO2%	10.76
COppm	12.7

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	97.22	0.76	275	63	75	76	1.65	4.0		18.12	
	5	100.57	0.83	287	54	75	78	1.8	4.0		19.09	98.6
	10	104.10										100.1

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2021	**Operator:**	TT

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.993	**Probe (mg)**	0		
Barometric Pressure	29.55 "Hg	**CWTR (g)**	142		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	10.5		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	8.45
CO2%	10.76
COppm	12.7

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	15	107.34	0.75	289	53	76	78	1.9	4.0		18.17	
	20	110.73	0.68	288	52	76	79	1.8	4.0		17.29	92.8
	25	114.26	0.62	288	52	77	80	1.65	4.0		16.51	101.3
	30	117.67	0.72	289	54	77	81	1.9	4.0		17.81	102.3
	35	121.33	0.72	289	54	77	81	1.8	4.0		17.81	101.9
	40	124.90	0.71	289	55	78	81	1.8	4.0		17.68	99.4
	45	128.46	0.7	287	56	78	81	1.75	4.0		17.53	99.7
	50	131.99	0.7	287	56	78	81	1.75	4.0		17.53	99.4
	55	135.51	0.64	287	57	78	82	1.6	4.0		16.77	99.1
	60	138.89										99.4

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - SVOC
Date:	June 17, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	0.994	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	5.065	m^3
AVGERGE ISOKINETICITY	100.9	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.9	°C
AVERAGE GAS MOISTURE BY VOLUME	15.8	%
AVERAGE GAS VELOCITY	18.34	m/s
BAROMETRIC PRESSURE (Station)	100.677	Kpa
STATIC PRESSURE	-2.639	Kpa
ABSOLUTE GAS PRESSURE	98.038	Kpa
OXYGEN CONCENTRATION	8.4	%
CARBON DIOXIDE CONCENTRATION	10.68	%
CARBON MONOXIDE CONCENTRATION	16.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.10	m^3/s
DRY REF GAS FLOWRATE	15.90	Rm^3/s
DRY ADJ GAS FLOWRATE	20.08	Rm^3/s
WET REF GAS FLOWRATE	18.88	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		5.065	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	June 17, 2021	**Operator:**	RW

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	0.994	**Probe (mg)**	0		
Barometric Pressure	29.73 "Hg	**CWTR (g)**	674.9		
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	21.5		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.45 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.4
CO2%	10.68
COppm	16.7

Measured H2O
15.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	24.68	0.75	281	65	65	66	1.8	6.0		18.08	
	5	28.35	0.75	281	53	66	68	1.8	6.0		18.08	101.6
2	10	32.02	0.77	281	46	67	68	1.8	6.0		18.32	101.3
	15	35.67	0.74	284	44	67	69	1.8	6.0		17.99	99.3
3	20	39.31	0.74	285	43	67	70	1.8	6.0		18.00	101.2
	25	42.97	0.75	285	42	68	71	1.8	6.0		18.13	101.7
4	30	46.60	0.7	285	42	68	72	1.7	6.0		17.51	100.0
	35	50.10	0.7	285	42	69	73	1.7	6.0		17.51	99.7
5	40	53.59	0.65	285	42	69	74	1.6	6.0		16.87	99.2
	45	56.96	0.69	285	43	70	73	1.7	6.0		17.39	99.3
6	50	60.44	0.67	285	42	70	75	1.7	6.0		17.13	99.5
	55	63.93	0.67	286	43	71	75	1.7	6.0		17.14	101.1
7	60	67.42	0.67	286	43	71	76	1.7	6.0		17.14	101.1
	65	70.87	0.67	286	43	71	76	1.7	6.0		17.14	99.8
8	70	74.33	0.75	286	44	72	77	1.8	6.0		18.14	100.1
	75	77.91	0.75	287	44	72	77	1.8	6.0		18.15	97.8
9	80	81.49	0.81	287	45	73	77	2	6.0		18.86	97.8
	85	85.25	0.85	287	45	73	77	2	6.0		19.32	98.8
10	90	89.13	0.86	287	46	72	76	2	6.0		19.43	99.5
	95	93.02	0.9	287	47	74	78	2.1	7.0		19.88	99.4
11	100	96.89	0.87	288	48	74	78	2.1	7.0		19.56	96.3
	105	101.07	0.87	287	47	75	77	2.1	7.0		19.55	105.9
12	110	105.05	0.9	287	49	74	77	2.1	7.0		19.88	100.8
	115	109.18	0.9	286	50	74	77	2.1	7.0		19.87	102.9
	120	113.28								0.45		102.1
1	0	113.73	0.87	286	62	74	75	2.1	7.0		19.53	
	5	117.52	0.92	287	48	74	74	2.4	8.0		20.10	96.2
2	10	121.70	0.93	285	44	74	74	2.3	8.0		20.18	103.4
	15	125.86	0.97	288	44	74	75	2.4	8.0		20.65	102.2

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	June 17, 2021	**Operator:**	RW

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	0.994	**Probe (mg)**	0		
Barometric Pressure	29.73 "Hg	**CWTR (g)**	674.9		
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	21.5		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.45 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.4
CO2%	10.68
COppm	16.7

Measured H2O
15.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	20	130.05	0.9	288	44	75	76	2.2	9.0		19.90	100.9
	25	134.17	0.9	288	44	74	77	2.2	8.0		19.90	102.7
4	30	138.24	0.91	289	45	74	78	2.2	8.0		20.02	101.5
	35	142.33	0.87	289	45	74	78	2.1	8.0		19.57	101.4
5	40	146.36	0.75	287	45	75	78	1.9	8.0		18.15	102.2
	45	150.17	0.8	287	45	75	79	2	8.0		18.74	103.7
6	50	153.95	0.65	287	45	76	79	1.7	7.5		16.90	99.6
	55	157.48	0.65	287	46	75	79	1.7	7.0		16.90	103.0
7	60	161.04	0.75	287	46	75	79	1.9	7.5		18.15	104.0
	65	164.73	0.72	287	45	75	80	1.8	7.5		17.78	100.4
8	70	168.33	0.7	286	46	76	80	1.8	7.5		17.52	99.8
	75	171.98	0.7	286	46	76	80	1.8	7.5		17.52	102.5
9	80	175.64	0.72	286	46	76	80	1.8	7.5		17.77	102.8
	85	179.29	0.74	285	46	76	80	1.8	7.5		18.00	101.1
10	90	182.95	0.76	285	46	77	80	1.8	7.5		18.25	99.9
	95	186.59	0.77	285	46	77	81	1.9	7.5		18.37	97.9
11	100	190.30	0.7	281	47	77	81	1.8	7.5		17.46	99.1
	105	193.93	0.7	281	47	77	81	1.8	7.5		17.46	101.4
12	110	197.56	0.6	281	47	77	81	1.6	7.5		16.17	101.4
	115	200.99	0.6	281	47	77	81	1.6	7.5		16.17	103.4
	120	204.45										104.3

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - SVOC
Date:	June 17, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.841	
DGM CORRECTION FACTOR	0.994	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	4.927	m^3
AVGERGE ISOKINETICITY	100.8	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.9	°C
AVERAGE GAS MOISTURE BY VOLUME	16.1	%
AVERAGE GAS VELOCITY	18.00	m/s
BAROMETRIC PRESSURE (Station)	100.508	Kpa
STATIC PRESSURE	-2.639	Kpa
ABSOLUTE GAS PRESSURE	97.869	Kpa
OXYGEN CONCENTRATION	8.47	%
CARBON DIOXIDE CONCENTRATION	10.56	%
CARBON MONOXIDE CONCENTRATION	21.4	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.59	m^3/s
DRY REF GAS FLOWRATE	15.49	Rm^3/s
DRY ADJ GAS FLOWRATE	19.44	Rm^3/s
WET REF GAS FLOWRATE	18.45	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.927	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	June 17, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0		
DGMCF	0.994	**Probe (mg)**	0		
Barometric Pressure	29.68 "Hg	**CWTR (g)**	676.1		
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	16.5		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.31 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.47
CO2%	10.56
COppm	21.4

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	5.13	0.85	286	71	76	77	2.1	5.0		19.30	
	5	9.08	0.87	288	57	76	76	2.1	5.0		19.55	101.4
2	10	12.95	0.9	288	54	76	76	2.2	5.0		19.88	98.5
	15	16.93	0.9	288	51	76	77	2.2	5.0		19.88	99.6
3	20	20.90	0.86	288	50	76	79	2.2	5.0		19.44	99.2
	25	24.84	0.8	288	49	76	80	2.1	5.0		18.75	100.6
4	30	28.69	0.8	288	50	76	81	2.1	5.0		18.75	101.8
	35	32.55	0.79	287	50	76	81	2.1	5.0		18.62	101.9
5	40	36.38	0.8	287	50	77	82	2.1	5.0		18.73	101.7
	45	40.20	0.7	287	51	77	82	1.8	5.0		17.52	100.6
6	50	43.84	0.6	287	51	79	82	1.6	5.0		16.22	102.4
	55	47.32	0.65	286	51	78	83	1.7	5.0		16.87	105.5
7	60	50.79	0.6	286	51	78	83	1.6	5.0		16.21	101.1
	65	54.27	0.6	286	49	78	83	1.6	5.0		16.21	105.5
8	70	57.67	0.65	285	49	79	83	1.7	5.0		16.86	103.0
	75	61.13	0.65	285	49	79	84	1.7	5.0		16.86	100.6
9	80	64.50	0.67	285	49	79	84	1.7	5.0		17.12	97.9
	85	68.00	0.65	284	50	79	84	1.7	5.0		16.85	100.1
10	90	71.45	0.66	284	50	80	84	1.7	5.0		16.98	100.1
	95	75.05	0.66	284	50	80	84	1.7	5.0		16.98	103.6
11	100	78.50	0.65	284	50	80	84	1.7	5.0		16.85	99.3
	105	82.05	0.65	284	51	80	84	1.7	5.0		16.85	103.0
12	110	85.46	0.68	284	51	80	85	1.7	5.0		17.24	98.9
	115	88.93	0.69	284	51	81	85	1.8	5.0		17.36	98.3
	120	92.52								0.31		100.9
1	0	92.83	0.85	284	63	81	83	2.1	6.0		19.27	
	5	96.74	0.85	290	50	81	83	2.1	6.0		19.35	99.3
2	10	100.68	0.84	290	49	81	83	2.1	6.0		19.23	100.4
	15	104.50	0.9	290	49	81	84	2.2	6.0		19.91	97.9

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	June 17, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0		
DGMCF	0.994	**Probe (mg)**	0		
Barometric Pressure	29.68 "Hg	**CWTR (g)**	676.1		
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	16.5		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.31 ft°	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.47
CO2%	10.56
COppm	21.4

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	20	108.72	0.87	290	49	81	84	2.1	6.0		19.57	104.5
	25	112.69	0.85	289	49	81	84	2.1	6.0		19.34	99.9
4	30	116.67	0.76	289	49	81	85	1.9	6.0		18.28	101.3
	35	120.46	0.78	289	49	81	85	2	6.0		18.52	101.9
5	40	124.27	0.74	289	50	81	85	1.9	6.0		18.04	101.1
	45	127.98	0.75	289	50	81	85	1.9	6.0		18.16	101.0
6	50	131.68	0.67	289	50	81	85	1.7	6.0		17.17	100.1
	55	135.22	0.68	289	50	81	85	1.7	6.0		17.29	101.3
7	60	138.75	0.73	289	51	81	85	1.8	6.0		17.92	100.2
	65	142.36	0.71	289	51	82	85	1.8	6.0		17.67	99.0
8	70	145.95	0.72	289	49	82	85	1.8	6.0		17.80	99.7
	75	149.55	0.73	289	47	82	86	1.8	6.0		17.92	99.3
9	80	153.19	0.75	289	47	82	86	1.8	6.0		18.16	99.6
	85	156.83	0.74	288	47	82	86	1.8	6.0		18.03	98.3
10	90	160.48	0.78	289	47	83	86	1.9	6.0		18.52	99.1
	95	164.20	0.79	289	47	82	86	1.9	6.0		18.64	98.4
11	100	168.00	0.7	289	47	82	86	1.8	6.0		17.55	100.0
	105	171.69	0.72	289	48	82	86	1.8	6.0		17.80	103.1
12	110	175.35	0.65	289	48	82	86	1.7	6.0		16.91	100.8
	115	178.88	0.65	289	49	82	86	1.7	6.0		16.91	102.3
	120	182.45										103.5

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - SVOC
Date:	June 18, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.841	
DGM CORRECTION FACTOR	0.994	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	4.935	m^3
AVGERGE ISOKINETICITY	100.4	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.5	°C
AVERAGE GAS MOISTURE BY VOLUME	15.7	%
AVERAGE GAS VELOCITY	18.04	m/s
BAROMETRIC PRESSURE (Station)	100.102	Kpa
STATIC PRESSURE	-2.365	Kpa
ABSOLUTE GAS PRESSURE	97.736	Kpa
OXYGEN CONCENTRATION	8.27	%
CARBON DIOXIDE CONCENTRATION	10.72	%
CARBON MONOXIDE CONCENTRATION	13.5	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.65	m^3/s
DRY REF GAS FLOWRATE	15.57	Rm^3/s
DRY ADJ GAS FLOWRATE	19.87	Rm^3/s
WET REF GAS FLOWRATE	18.49	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.935	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	June 18, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0		
DGMCF	0.994	**Probe (mg)**	0		
Barometric Pressure	29.56 "Hg	**CWTR (g)**	660.7		
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	17		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.26 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.27
CO2%	10.72
COppm	13.5

Measured H2O
15.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	82.72	0.9	286	71	73	74	2.2	6.0		19.85	
	5	86.67	0.9	286	51	74	74	2.2	6.0		19.85	98.6
2	10	90.63	0.9	287	49	74	74	2.2	6.5		19.86	98.7
	15	94.67	0.92	287	48	74	75	2.2	6.5		20.08	100.8
3	20	98.68	0.92	287	49	74	76	2.2	6.5		20.08	98.8
	25	102.68	0.92	288	49	74	77	2.2	6.5		20.10	98.5
4	30	106.69	0.83	288	49	75	79	2.1	7.0		19.09	98.7
	35	110.53	0.82	288	48	76	79	2.1	7.0		18.97	99.2
5	40	114.41	0.75	289	50	75	80	1.9	7.0		18.16	100.8
	45	118.17	0.76	288	51	76	80	1.9	7.0		18.27	102.1
6	50	121.92	0.65	289	51	76	81	1.7	6.5		16.90	101.0
	55	125.43	0.66	289	52	76	81	1.7	6.5		17.03	102.2
7	60	128.95	0.66	288	52	78	80	1.7	6.5		17.02	101.7
	65	132.46	0.66	288	52	78	81	1.7	6.5		17.02	101.2
8	70	135.96	0.7	287	52	77	81	1.8	6.5		17.52	100.9
	75	139.55	0.7	287	49	77	82	1.8	6.5		17.52	100.5
9	80	143.14	0.72	286	48	78	81	1.8	6.5		17.76	100.4
	85	146.69	0.72	286	48	78	82	1.8	6.5		17.76	97.8
10	90	150.28	0.75	284	48	78	82	1.9	6.5		18.10	98.8
	95	153.95	0.72	284	48	78	82	1.9	6.5		17.73	98.9
11	100	157.62	0.65	284	48	78	82	1.7	6.5		16.85	100.9
	105	161.13	0.65	284	48	79	82	1.7	6.5		16.85	101.5
12	110	164.63	0.64	284	48	79	82	1.7	6.5		16.72	101.2
	115	168.05	0.64	284	48	79	82	1.7	6.5		16.72	99.6
	120	171.52								0.26		101.1
1	0	171.78	0.79	286	51	79	80	2	6.5		18.60	
	5	175.49	0.8	286	41	78	79	2	6.5		18.72	97.7
2	10	179.29	0.8	286	40	78	79	2	6.5		18.72	99.6
	15	183.16	0.8	287	40	78	79	2	6.5		18.73	101.4

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	June 18, 2021	**Operator:**	RW

Pitot Factor	0.841	**Filter (mg)**	0		
DGMCF	0.994	**Probe (mg)**	0		
Barometric Pressure	29.56 "Hg	**CWTR (g)**	660.7		
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	17		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.26 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.27
CO2%	10.72
COppm	13.5

Measured H2O
15.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	20	186.99	0.82	287	40	78	80	2	7.0		18.96	100.4
	25	190.82	0.83	287	40	78	80	2	7.0		19.08	99.1
4	30	194.66	0.8	287	41	78	81	2	7.0		18.73	98.8
	35	198.48	0.8	287	41	78	81	2	7.0		18.73	100.0
5	40	202.33	0.73	287	41	78	81	1.8	7.0		17.89	100.8
	45	206.00	0.72	287	41	78	81	1.8	7.0		17.77	100.5
6	50	209.67	0.65	287	41	78	81	1.7	7.0		16.88	101.2
	55	213.24	0.66	287	42	78	81	1.7	7.0		17.01	103.6
7	60	216.80	0.71	287	43	79	81	1.8	7.0		17.64	102.5
	65	220.41	0.7	287	43	78	82	1.8	7.0		17.52	100.2
8	70	224.07	0.72	287	44	78	81	1.8	7.0		17.77	102.3
	75	227.62	0.75	287	44	78	81	1.8	7.0		18.13	97.9
9	80	231.26	0.72	287	44	78	81	1.8	7.0		17.77	98.4
	85	234.93	0.71	287	45	78	82	1.8	7.0		17.64	101.2
10	90	238.59	0.74	287	45	78	82	1.8	7.0		18.01	101.5
	95	242.33	0.76	287	46	78	82	1.8	7.0		18.25	101.6
11	100	246.08	0.65	287	46	78	82	1.7	7.0		16.88	100.6
	105	249.69	0.65	286	46	78	82	1.7	7.0		16.87	104.7
12	110	253.17	0.65	286	46	78	81	1.7	7.0		16.87	100.8
	115	256.62	0.65	286	46	78	82	1.7	7.0		16.87	100.0
	120	260.06										99.7

APPENDIX 26

ORTECH Total Hydrocarbon CEM Data
(4 pages)

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 1 Quench Inlet

Test No. 1 June 15, 2021			Test No. 2 June 15, 2021			Test No. 3 June 15, 2021		
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
09:50	0.0		11:00	0.8		12:25	1.0	
09:51	0.0		11:01	0.8		12:26	1.0	
09:52	0.0		11:02	0.9		12:27	1.0	
09:53	0.0		11:03	0.9		12:28	1.1	
09:54	0.0		11:04	0.9		12:29	0.6	
09:55	0.0		11:05	0.9		12:30	0.4	
09:56	0.0		11:06	0.9		12:31	0.4	
09:57	0.0		11:07	0.9		12:32	0.4	
09:58	0.0		11:08	0.9		12:33	0.4	
09:59	0.0	0.0	11:09	1.0	0.9	12:34	0.4	0.7
10:00	0.0	0.0	11:10	0.9	0.9	12:35	4.1	1.0
10:01	0.0	0.0	11:11	1.0	0.9	12:36	0.8	1.0
10:02	4.1	0.4	11:12	0.9	0.9	12:37	0.0	0.9
10:03	14.6	1.9	11:13	0.9	0.9	12:38	0.0	0.8
10:04	7.8	2.6	11:14	0.9	0.9	12:39	0.0	0.7
10:05	5.5	3.2	11:15	0.9	0.9	12:40	0.4	0.7
10:06	6.2	3.8	11:16	0.9	0.9	12:41	0.4	0.7
10:07	6.5	4.5	11:17	0.8	0.9	12:42	0.4	0.7
10:08	6.5	5.1	11:18	0.9	0.9	12:43	0.4	0.7
10:09	5.4	5.7	11:19	0.9	0.9	12:44	0.3	0.7
10:10	2.7	5.9	11:20	0.9	0.9	12:45	0.3	0.3
10:11	2.1	6.1	11:21	0.9	0.9	12:46	0.3	0.3
10:12	1.7	5.9	11:22	0.9	0.9	12:47	0.3	0.3
10:13	1.5	4.6	11:23	0.8	0.9	12:48	0.4	0.3
10:14	1.1	3.9	11:24	0.9	0.9	12:49	0.3	0.4
10:15	1.1	3.5	11:25	0.9	0.9	12:50	0.3	0.3
10:16	0.9	3.0	11:26	0.9	0.9	12:51	0.4	0.3
10:17	0.8	2.4	11:27	0.9	0.9	12:52	0.4	0.3
10:18	0.7	1.8	11:28	1.1	0.9	12:53	0.4	0.3
10:19	0.7	1.3	11:29	1.1	0.9	12:54	0.4	0.3
10:20	0.6	1.1	11:30	1.1	0.9	12:55	0.4	0.4
10:21	0.6	1.0	11:31	1.1	1.0	12:56	0.4	0.4
10:22	0.6	0.9	11:32	1.1	1.0	12:57	0.4	0.4
10:23	0.5	0.8	11:33	1.1	1.0	12:58	0.4	0.4
10:24	0.5	0.7	11:34	1.3	1.0	12:59	0.5	0.4
10:25	0.5	0.6	11:35	1.3	1.1	13:00	0.5	0.4
10:26	0.7	0.6	11:36	1.3	1.1	13:01	0.4	0.4
10:27	0.8	0.6	11:37	1.2	1.2	13:02	0.4	0.4
10:28	0.9	0.6	11:38	1.4	1.2	13:03	0.4	0.4
10:29	0.8	0.7	11:39	1.3	1.2	13:04	0.4	0.4
10:30	0.8	0.7	11:40	1.3	1.2	13:05	0.3	0.4
10:31	0.8	0.7	11:41	1.4	1.3	13:06	0.4	0.4
10:32	0.9	0.7	11:42	1.3	1.3	13:07	0.4	0.4
10:33	0.8	0.8	11:43	1.3	1.3	13:08	0.4	0.4
10:34	0.8	0.8	11:44	1.3	1.3	13:09	0.4	0.4
10:35	0.8	0.8	11:45	1.2	1.3	13:10	0.4	0.4
10:36	0.8	0.8	11:46	1.2	1.3	13:11	0.4	0.4
10:37	0.8	0.8	11:47	1.2	1.3	13:12	0.4	0.4
10:38	0.7	0.8	11:48	1.1	1.3	13:13	0.5	0.4
10:39	0.8	0.8	11:49	1.1	1.3	13:14	0.5	0.4
10:40	0.7	0.8	11:50	1.2	1.2	13:15	0.5	0.4
10:41	0.7	0.8	11:51	1.1	1.2	13:16	0.5	0.4
10:42	0.7	0.7	11:52	1.1	1.2	13:17	0.5	0.4
10:43	0.7	0.7	11:53	1.2	1.2	13:18	0.5	0.5
10:44	0.7	0.7	11:54	1.2	1.2	13:19	0.5	0.5
10:45	0.7	0.7	11:55	1.3	1.2	13:20	0.4	0.5
10:46	0.7	0.7	11:56	1.3	1.2	13:21	0.4	0.5
10:47	0.7	0.7	11:57	1.4	1.2	13:22	0.5	0.5
10:48	0.7	0.7	11:58	1.5	1.2	13:23	0.5	0.5
10:49	0.7	0.7	11:59	1.4	1.3	13:24	0.4	0.5
10:50	0.7	0.7	12:00	1.4	1.3	13:25	0.4	0.5
Min	0.0	0.0	Min	0.8	0.9	Min	0.0	0.3
Max	14.6	6.1	Max	1.5	1.3	Max	4.1	1.0
Avg	1.5	1.7	Avg	1.1	1.1	Avg	0.5	0.5

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 1 APC Outlet

Test No. 1 June 16, 2021			Test No. 2 June 16, 2021			Test No. 3 June 16, 2021		
	THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
07:25	0.4		08:45	0.0		10:00	0.1	
07:26	0.3		08:46	0.0		10:01	0.1	
07:27	0.3		08:47	0.1		10:02	0.1	
07:28	0.3		08:48	0.1		10:03	0.0	
07:29	0.4		08:49	0.1		10:04	0.1	
07:30	0.4		08:50	0.1		10:05	0.1	
07:31	0.4		08:51	0.1		10:06	0.1	
07:32	0.4		08:52	0.1		10:07	0.1	
07:33	0.4		08:53	0.1		10:08	0.1	
07:34	0.4	0.4	08:54	0.0	0.1	10:09	0.1	0.1
07:35	0.5	0.4	08:55	0.0	0.1	10:10	0.2	0.1
07:36	0.4	0.4	08:56	0.0	0.1	10:11	0.1	0.1
07:37	0.5	0.4	08:57	0.0	0.1	10:12	0.1	0.1
07:38	0.4	0.4	08:58	0.0	0.1	10:13	0.2	0.1
07:39	0.4	0.4	08:59	0.0	0.0	10:14	0.2	0.1
07:40	0.4	0.4	09:00	0.0	0.0	10:15	0.2	0.1
07:41	0.4	0.4	09:01	0.0	0.0	10:16	0.2	0.1
07:42	0.4	0.4	09:02	0.1	0.0	10:17	0.2	0.2
07:43	0.4	0.4	09:03	0.0	0.0	10:18	0.2	0.2
07:44	0.4	0.4	09:04	0.1	0.0	10:19	0.3	0.2
07:45	0.4	0.4	09:05	0.1	0.0	10:20	0.5	0.2
07:46	0.4	0.4	09:06	0.1	0.0	10:21	2.1	0.4
07:47	0.4	0.4	09:07	0.1	0.1	10:22	1.8	0.6
07:48	0.4	0.4	09:08	0.1	0.1	10:23	4.2	1.0
07:49	0.5	0.4	09:09	0.0	0.1	10:24	2.7	1.2
07:50	0.5	0.4	09:10	0.0	0.1	10:25	1.1	1.3
07:51	0.4	0.4	09:11	0.1	0.1	10:26	0.8	1.4
07:52	0.4	0.4	09:12	0.0	0.1	10:27	0.5	1.4
07:53	0.3	0.4	09:13	0.0	0.0	10:28	0.4	1.4
07:54	0.3	0.4	09:14	0.0	0.0	10:29	0.3	1.4
07:55	0.3	0.4	09:15	0.0	0.0	10:30	0.2	1.4
07:56	0.3	0.4	09:16	0.0	0.0	10:31	0.2	1.2
07:57	0.4	0.4	09:17	0.0	0.0	10:32	0.1	1.1
07:58	0.4	0.4	09:18	3.1	0.3	10:33	0.2	0.7
07:59	0.4	0.4	09:19	5.1	0.8	10:34	0.1	0.4
08:00	0.4	0.4	09:20	7.8	1.6	10:35	0.0	0.3
08:01	0.4	0.4	09:21	5.1	2.1	10:36	0.0	0.2
08:02	0.4	0.4	09:22	8.6	3.0	10:37	0.0	0.1
08:03	0.4	0.4	09:23	7.6	3.7	10:38	0.0	0.1
08:04	0.4	0.4	09:24	10.3	4.8	10:39	0.0	0.1
08:05	0.4	0.4	09:25	3.6	5.1	10:40	0.0	0.1
08:06	0.4	0.4	09:26	1.9	5.3	10:41	0.0	0.0
08:07	0.3	0.4	09:27	1.1	5.4	10:42	0.0	0.0
08:08	0.4	0.4	09:28	0.8	5.2	10:43	0.0	0.0
08:09	0.3	0.4	09:29	0.4	4.7	10:44	0.0	0.0
08:10	0.4	0.4	09:30	0.3	4.0	10:45	0.0	0.0
08:11	0.4	0.4	09:31	0.2	3.5	10:46	0.0	0.0
08:12	0.3	0.4	09:32	0.1	2.6	10:47	0.0	0.0
08:13	0.3	0.3	09:33	0.1	1.9	10:48	0.0	0.0
08:14	0.3	0.3	09:34	0.0	0.9	10:49	0.0	0.0
08:15	0.3	0.3	09:35	0.0	0.5	10:50	0.0	0.0
08:16	0.3	0.3	09:36	0.0	0.3	10:51	0.0	0.0
08:17	0.4	0.3	09:37	0.0	0.2	10:52	0.0	0.0
08:18	0.4	0.3	09:38	0.0	0.1	10:53	0.0	0.0
08:19	0.3	0.3	09:39	0.0	0.1	10:54	0.2	0.0
08:20	0.4	0.3	09:40	0.0	0.0	10:55	0.2	0.0
08:21	0.4	0.3	09:41	0.0	0.0	10:56	0.0	0.0
08:22	0.4	0.3	09:42	0.0	0.0	10:57	0.0	0.0
08:23	0.4	0.3	09:43	0.0	0.0	10:58	0.0	0.0
08:24	0.4	0.4	09:44	0.0	0.0	10:59	0.0	0.0
08:25	2.9	0.6	09:45	0.0	0.0	11:00	0.0	0.0
Min	0.3	0.3	Min	0.0	0.0	Min	0.0	0.0
Max	2.9	0.6	Max	10.3	5.4	Max	4.2	1.4
Avg	0.4	0.4	Avg	0.9	1.1	Avg	0.3	0.3

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet

Test No. 1 June 15, 2021			Test No. 2 June 15, 2021			Test No. 3 June 15, 2021		
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
09:50	0.0		11:00	0.0		12:25	1.7	
09:51	0.0		11:01	0.0		12:26	1.7	
09:52	0.0		11:02	0.0		12:27	1.5	
09:53	0.0		11:03	0.2		12:28	1.4	
09:54	0.0		11:04	0.0		12:29	1.0	
09:55	0.0		11:05	0.0		12:30	0.8	
09:56	0.0		11:06	0.1		12:31	0.8	
09:57	0.9		11:07	0.0		12:32	0.8	
09:58	2.3		11:08	0.0		12:33	0.7	
09:59	1.1	0.4	11:09	0.1	0.0	12:34	0.8	1.1
10:00	0.0	0.4	11:10	0.1	0.1	12:35	2.3	1.2
10:01	0.0	0.4	11:11	0.1	0.1	12:36	0.6	1.1
10:02	0.0	0.4	11:12	0.1	0.1	12:37	0.1	0.9
10:03	0.0	0.4	11:13	0.0	0.1	12:38	0.0	0.8
10:04	0.0	0.4	11:14	0.0	0.1	12:39	0.0	0.7
10:05	0.0	0.4	11:15	0.0	0.1	12:40	0.5	0.7
10:06	0.0	0.4	11:16	0.1	0.1	12:41	0.5	0.6
10:07	0.0	0.3	11:17	0.0	0.0	12:42	0.5	0.6
10:08	0.0	0.1	11:18	0.0	0.0	12:43	0.6	0.6
10:09	0.0	0.0	11:19	0.0	0.0	12:44	0.5	0.6
10:10	0.0	0.0	11:20	0.0	0.0	12:45	0.8	0.4
10:11	0.0	0.0	11:21	0.0	0.0	12:46	0.7	0.4
10:12	0.0	0.0	11:22	0.0	0.0	12:47	0.6	0.5
10:13	0.0	0.0	11:23	0.0	0.0	12:48	0.7	0.5
10:14	0.0	0.0	11:24	0.0	0.0	12:49	0.6	0.6
10:15	0.0	0.0	11:25	0.0	0.0	12:50	0.7	0.6
10:16	0.0	0.0	11:26	0.0	0.0	12:51	0.7	0.6
10:17	0.0	0.0	11:27	0.0	0.0	12:52	0.7	0.6
10:18	0.0	0.0	11:28	0.0	0.0	12:53	0.7	0.7
10:19	0.0	0.0	11:29	0.0	0.0	12:54	0.8	0.7
10:20	0.0	0.0	11:30	0.0	0.0	12:55	0.8	0.7
10:21	0.2	0.0	11:31	0.0	0.0	12:56	0.8	0.7
10:22	0.3	0.0	11:32	0.1	0.0	12:57	3.1	1.0
10:23	0.2	0.1	11:33	0.1	0.0	12:58	2.2	1.1
10:24	0.4	0.1	11:34	0.1	0.0	12:59	2.0	1.2
10:25	0.2	0.1	11:35	0.2	0.1	13:00	1.8	1.4
10:26	0.1	0.1	11:36	0.2	0.1	13:01	1.8	1.5
10:27	0.1	0.1	11:37	0.2	0.1	13:02	1.3	1.5
10:28	0.0	0.1	11:38	0.2	0.1	13:03	0.6	1.5
10:29	0.0	0.1	11:39	0.2	0.1	13:04	0.5	1.5
10:30	0.0	0.1	11:40	0.2	0.2	13:05	0.6	1.5
10:31	0.0	0.1	11:41	0.2	0.2	13:06	0.5	1.4
10:32	0.0	0.1	11:42	0.2	0.2	13:07	0.5	1.2
10:33	0.0	0.1	11:43	0.3	0.2	13:08	0.6	1.0
10:34	0.0	0.0	11:44	0.3	0.2	13:09	0.6	0.9
10:35	0.0	0.0	11:45	0.3	0.2	13:10	0.7	0.8
10:36	0.0	0.0	11:46	0.3	0.2	13:11	0.7	0.7
10:37	0.0	0.0	11:47	0.3	0.2	13:12	0.7	0.6
10:38	0.0	0.0	11:48	0.3	0.2	13:13	0.7	0.6
10:39	0.0	0.0	11:49	0.3	0.3	13:14	0.9	0.6
10:40	0.0	0.0	11:50	0.3	0.3	13:15	0.9	0.7
10:41	0.0	0.0	11:51	0.3	0.3	13:16	0.9	0.7
10:42	0.0	0.0	11:52	0.3	0.3	13:17	0.8	0.7
10:43	0.0	0.0	11:53	0.2	0.3	13:18	0.8	0.8
10:44	0.0	0.0	11:54	0.2	0.3	13:19	0.8	0.8
10:45	0.0	0.0	11:55	0.2	0.3	13:20	0.9	0.8
10:46	0.0	0.0	11:56	0.3	0.3	13:21	0.9	0.8
10:47	0.0	0.0	11:57	0.3	0.3	13:22	0.9	0.8
10:48	0.0	0.0	11:58	0.3	0.3	13:23	0.9	0.9
10:49	0.0	0.0	11:59	0.4	0.3	13:24	0.8	0.8
10:50	0.0	0.0	12:00	0.4	0.3	13:25	0.9	0.9
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.4
Max	2.3	0.4	Max	0.4	0.3	Max	3.1	1.5
Avg	0.1	0.1	Avg	0.1	0.1	Avg	0.9	0.9

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 2 APC Outlet

Test No. 1 June 16, 2021			Test No. 2 June 16, 2021			Test No. 3 June 16, 2021		
	THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
07:25	2.8		08:45	0.6		10:00	0.6	
07:26	2.6		08:46	0.6		10:01	0.6	
07:27	2.5		08:47	0.6		10:02	0.6	
07:28	2.3		08:48	0.6		10:03	0.6	
07:29	2.2		08:49	0.6		10:04	0.6	
07:30	1.8		08:50	0.5		10:05	0.7	
07:31	1.4		08:51	0.8		10:06	0.6	
07:32	1.3		08:52	0.9		10:07	0.7	
07:33	1.3		08:53	0.8		10:08	0.8	
07:34	1.3	1.9	08:54	0.8	0.7	10:09	0.8	0.7
07:35	1.2	1.8	08:55	0.8	0.7	10:10	0.7	0.7
07:36	1.1	1.6	08:56	0.7	0.7	10:11	0.7	0.7
07:37	1.2	1.5	08:57	0.7	0.7	10:12	0.6	0.7
07:38	1.1	1.4	08:58	0.7	0.7	10:13	0.6	0.7
07:39	1.1	1.3	08:59	0.7	0.7	10:14	0.6	0.7
07:40	1.1	1.2	09:00	0.7	0.7	10:15	0.6	0.7
07:41	1.2	1.2	09:01	0.7	0.7	10:16	0.6	0.7
07:42	1.2	1.2	09:02	0.7	0.7	10:17	0.6	0.7
07:43	1.1	1.1	09:03	0.7	0.7	10:18	0.6	0.6
07:44	1.1	1.1	09:04	0.7	0.7	10:19	0.6	0.6
07:45	1.0	1.1	09:05	0.7	0.7	10:20	0.6	0.6
07:46	1.0	1.1	09:06	0.7	0.7	10:21	0.7	0.6
07:47	1.0	1.1	09:07	0.7	0.7	10:22	0.7	0.6
07:48	1.0	1.1	09:08	0.7	0.7	10:23	0.7	0.6
07:49	1.0	1.1	09:09	0.7	0.7	10:24	0.7	0.6
07:50	0.9	1.0	09:10	0.7	0.7	10:25	0.7	0.6
07:51	0.9	1.0	09:11	0.7	0.7	10:26	0.7	0.7
07:52	0.9	1.0	09:12	0.7	0.7	10:27	0.7	0.7
07:53	0.9	1.0	09:13	0.7	0.7	10:28	0.7	0.7
07:54	0.9	1.0	09:14	0.7	0.7	10:29	0.7	0.7
07:55	1.0	1.0	09:15	0.8	0.7	10:30	0.6	0.7
07:56	1.0	1.0	09:16	0.8	0.7	10:31	0.6	0.7
07:57	1.0	1.0	09:17	0.8	0.7	10:32	0.6	0.7
07:58	1.0	0.9	09:18	0.8	0.7	10:33	0.6	0.6
07:59	1.0	1.0	09:19	0.8	0.7	10:34	0.6	0.6
08:00	1.0	1.0	09:20	0.8	0.8	10:35	0.6	0.6
08:01	1.0	1.0	09:21	0.8	0.8	10:36	0.6	0.6
08:02	0.9	1.0	09:22	0.7	0.8	10:37	0.6	0.6
08:03	0.9	1.0	09:23	0.7	0.8	10:38	0.6	0.6
08:04	0.9	0.9	09:24	0.7	0.8	10:39	0.6	0.6
08:05	0.9	0.9	09:25	0.7	0.8	10:40	0.6	0.6
08:06	0.8	0.9	09:26	0.7	0.8	10:41	0.6	0.6
08:07	0.8	0.9	09:27	0.7	0.7	10:42	0.6	0.6
08:08	0.9	0.9	09:28	0.7	0.7	10:43	0.6	0.6
08:09	0.8	0.9	09:29	0.7	0.7	10:44	0.6	0.6
08:10	0.8	0.9	09:30	0.7	0.7	10:45	0.6	0.6
08:11	0.8	0.9	09:31	0.7	0.7	10:46	0.6	0.6
08:12	0.8	0.8	09:32	0.7	0.7	10:47	0.6	0.6
08:13	0.8	0.8	09:33	0.7	0.7	10:48	0.6	0.6
08:14	0.8	0.8	09:34	0.6	0.7	10:49	0.6	0.6
08:15	0.8	0.8	09:35	0.7	0.7	10:50	0.6	0.6
08:16	0.8	0.8	09:36	0.7	0.7	10:51	0.6	0.6
08:17	0.7	0.8	09:37	0.7	0.7	10:52	0.6	0.6
08:18	0.7	0.8	09:38	0.7	0.7	10:53	0.6	0.6
08:19	0.7	0.8	09:39	0.7	0.7	10:54	0.6	0.6
08:20	0.7	0.8	09:40	0.6	0.7	10:55	0.6	0.6
08:21	0.7	0.7	09:41	0.6	0.7	10:56	0.6	0.6
08:22	0.7	0.7	09:42	0.7	0.7	10:57	0.7	0.6
08:23	0.7	0.7	09:43	0.6	0.7	10:58	0.6	0.6
08:24	0.7	0.7	09:44	0.6	0.7	10:59	0.6	0.6
08:25	0.7	0.7	09:45	0.6	0.7	11:00	0.6	0.6
Min	0.7	0.7	Min	0.5	0.7	Min	0.6	0.6
Max	2.8	1.9	Max	0.9	0.8	Max	0.8	0.7
Avg	1.1	1.0	Avg	0.7	0.7	Avg	0.6	0.6

APPENDIX 27

Dispersion Modelling Results
for the June 2021 Testing Program
(18 pages)

GOLDER
MEMBER OF WSP

TECHNICAL MEMORANDUM

DATE February 28, 2022 **Project No.** 21452106

TO Lydia Kwan
Covanta Durham York Renewable Energy LP

CC Anthony Ciccone

FROM Katherine Armstrong **EMAIL Katherine_Armstrong@golder.com**

CALPUFF MODELLING FOR JUNE 2021 VOLUNTARY SOURCE TESTING AT DURHAM YORK ENERGY CENTRE

1.0 INTRODUCTION

Covanta Durham York Renewable Energy LP (Covanta) operates the Durham York Energy Centre (DYEC) under the multi-media Environmental Compliance Approval (ECA) 7306-8FDKNX, as amended. The 2011 ECA application was supported with an Emission Summary and Dispersion Modelling (ESDM) Report prepared by Golder Associates Ltd (Golder) using the CALPUFF dispersion model version 6.263, with results compared to Ministry of Environment, Conservation and Parks (MECP) Point of Impingement (POI) standards listed in Schedule 3 of Ontario Regulation (O.Reg.) 419/05 as of 2011.

In 2020, MECP requested that the CALPUFF modelling for DYEC be updated to use more recent meteorological data and an updated version of the CALPUFF dispersion model. Following consultation with MECP, including their provisional review and approval of the new meteorological files and updated CALPUFF modelling input files, formal approval was requested in August 2021 under Sections 7 (1) and 13 (1) of O.Reg. 419/05 for use of a specified dispersion model (CALPUFF version 7.2.1) and site-specific meteorological data for the 2014-2018 data period. Formal approval is pending but anticipated to be received soon.

Condition 7, Testing, Monitoring and Auditing, of the ECA requires annual source testing to be completed at the DYEC for over 100 contaminants as well as assessing the impact of the contaminants. According to the ECA Schedule "E" Source Testing Procedures, a source testing report is required that includes the following:

> *8. (7) the results of dispersion calculations in accordance with the O.Reg. 419/05, indicating the maximum concentration of the test contaminants, at the point of impingement.*
>
> *8. (8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the test contaminants.*

This memorandum summarizes the dispersion calculations/modelling results for the Voluntary June 2021 source testing program with the aid of the updated CALPUFF model and other input data sets as used in the 2011 ESDM Report and 2007 Environmental Assessment (EA) and compares the results to O.Reg. 419/05 Schedule 3 limits as last updated April 2018. Please note that this memorandum has been updated from the version issued in September 2021, to update the emission rates for Aldehydes, based on a unit correction made by the laboratory.

Golder Associates Ltd.
6925 Century Avenue, Suite #100, Mississauga, Ontario, L5N 7K2, Canada T: +1 905 567 4444 F: +1 905 567 6561

Golder and the G logo are trademarks of Golder Associates Corporation golder.com

2.0 EMISSION RATES

Voluntary source testing was completed by Ortech Environmental in June 2021 for each of the two combustion train units and results were provided to Golder on a mass per time basis. Three tests were completed for each unit and averaged. The average emission rates for each unit were then summed together to provide the total stack emission rate of each contaminant to be modelled. Where source testing results indicated that the measured concentration is below the detection limit, the full detection limit was used as the emission rate for conservatism.

Emission rates for which source testing data was available were converted to grams per second (g/s) and are provided in an updated Site-wide Emission Inventory included in Appendix A. This emission inventory includes emissions from silo filling and diesel generator testing taken from the ESDM report, in addition to source test emissions from the main stack.

In response to clarifications provided by the MECP of December 9, 2016, two different emission rates were calculated for Total Particulate Matter:

1. Filterable fraction emission rate only; and
2. Total Particulate Matter (Sum of condensable and filterable fractions).

As source testing for the condensable fraction of total particulate matter is not required pursuant to Schedule "D": of the ECA, the condensable content of PM_{10} was used.

3.0 MODELLING

In response to an MECP request in 2020, the CALPUFF modelling software and CALMET meteorological data have been updated. The MECP reviewed and approved the meteorological data and modelling input files in May 2021, prior to model execution. The following models and pre- and post-processors were used in the assessment:

- CALMET diagnostic meteorological model (v. 6.5.0, level 150223);
- CALPUFF dispersion model (v. 7.2.1, level 150618);
- CALPOST post processor (v. 7.1.0, Level 141010);
- BPIP building downwash pre-processor (v. 04274);
- POSTUTIL post processor (v.7.0.0, Level 150207).

These model versions are updates from those used in the original 2011 ESDM report. Formal approval for their use has been requested under s7(1) and s13(1) of O.Reg. 419/05 and is waiting approval. Dispersion Modelling inputs are described in the following subsections.

3.1 Model Domain

The Model domain used in this assessment was modified slightly from the 2007 Environmental Assessment (EA) and ESDM Report. It extends 40 km by 40 km and is centred approximately 5 km north of the Site. This domain covers more than the air quality study area but will ensure that plumes are tracked beyond the furthest receptor locations to ensure the worst-case ground level concentrations are considered at all receptors.

3.2 Meteorology, Land Use and Terrain Data

The meteorology and terrain data used in this assessment were updated from those used in the 2007 Environmental Assessment (EA) and 2011 ESDM Report.

Meteorological data was updated using observation data from surface stations and large-scale mesoscale meteorological data from the Weather Research and Forecasting (WRF) model between 2014 – 2018, inclusive. The CALMET output files were submitted to MECP for review and approval prior to use in the modelling.

Terrain data was downloaded from the MECP's database of regional terrain data for modelling (MECP, 2017b) and processed using the CALPUFF pre-processor, TERREL.

3.3 Receptors

The receptors used in this assessment are similar to the receptors used in the 2011 ESDM Report but receptors at the edge of the domain were modified slightly to reflect the change in domain size. They include gridded ground level receptors to meet the requirements of O.Reg. 419/05 in addition to 400 discrete receptors to represent locations of interest, which were reviewed and updated in 2021. They include hospitals, nursing homes, schools, daycares, Senior citizen centres, the nearest residential receptors, specific watersheds and water bodies and parks.

3.4 Building Downwash

The buildings used in this assessment to represent building downwash are the same as the buildings used in the ESDM Report. Building wake effects were considered in this assessment using the U.S. EPA's Building Profile Input Program (BPIP-ISC). The inputs into this pre-processor include the coordinates and heights of the buildings and stacks. The output data from BPIP is used in the building wake effect calculations. No changes were made to the BPIP input or output file for this assessment.

3.5 Deposition

CALPUFF has the capability to account for wet and dry deposition of substances that would reduce ground level concentrations at POIs. However, the deposition algorithm has not been implemented for conservatism and to maintain consistency with the ESDM report and the previous EA for maximum POI predictions.

3.6 Thermal Internal Boundary Layer

CALPUFF contains an option to account for sub-grid coastal influences on plume dispersion such as the development of a thermal internal boundary layer (TIBL). Given the proximity of the proposed Facility to Lake Ontario (approximately 500 m) and the grid size (250 m), variations in coastline location within the grid cells near the proposed facility were accounted for in the dispersion modelling. To achieve this, a digitized sub-grid coastline, extending to the boundaries of the air quality study area was included as an additional input. This is consistent with the approach used in the ESDM report.

3.7 Averaging Times and Conversions

CALPUFF can predict 1-hour average values. Many of the relevant Schedule 3 standards are based on a 24-hour averaging time, which is also provided by CALPUFF. Several of the modelled contaminants have averaging periods less than 1 hour. For these contaminants, the 1-hour average concentration was converted using the conversion factors listed in Table 4-1 of Air Dispersion Modelling Guidance for Ontario (ADMGO). For example, the hourly concentrations can be converted to a 10-min average by multiplying the hour value by 1.65. This is consistent with the approach used in the ESDM report.

In 2016, a number of O.Reg 419/05 standards were updated or modified to include annual average Point of Impingement (POI) limits. CALPUFF can predict annual average values, therefore the CALPOST input file was modified to provide this output in addition to outputs for the 1 hour, 24 hour and 30-day averaging periods already provided.

3.8 Chemical Transformation

For the purposes of assessing project contributions to Secondary Particulate Matter (SPM) formation, chemical transformation was considered in the CALPUFF modelling of particulate matter. To model the chemical transformation of emitted NO, NO_2 and SO_2 into HNO_3, NO_3 and SO_4, CALPUFFs RIVAD/ARM3 mechanism was used. Monthly background ozone concentrations are required to generate SPM as well as setting the MCHEM Flag to 3 for particulate matter model runs. The monthly background ozone data used are consistent with the 2007 EA, as requested by MECP, and is summarised below in Table 1.

Table 1: Background Ozone Concentrations used for Chemical Transformation Modelling[1]

Month	Ozone Concentrations (ppb)
January	13.70
February	18.50
March	24.22
April	11.09
May	32.29
June	33.63
July	16.32
August	21.33
September	12.63
October	15.39
November	17.10
December	20.91

1 – Ozone levels from Courtice Road Station (2007-2008)

Chemical transformations were only modelled to calculate additional concentrations of particulate matter that is created as part of secondary transformations. Reported concentrations of NO_2 and SO_2 do not include the effects of depletion due to chemical transformation. The flag MCHEM is set to 0 for model runs used to produce concentrations of all other contaminants. This is consistent with the approach used in the 2011ESDM report.

3.9 Dispersion Modelling Options

The options used in the CALPUFF dispersion model are summarized in the Table 2. The model options used were reviewed in consultation with MECP but are generally consistent with those used in the ESDM Report. In the ESDM report, Exhibit 9 indicated that Puff splitting was used, however this was a typographical error and this option was not actually used in the modelling. To maintain consistency with the ESDM report, puff splitting was not modelled for this assessment.

Table 2: CALPUFF Options and Flags

Flag	Value used in 2011 ESDM Report	Value Used in this Assessment	Comments
MGAUSS	1	1	Vertical distribution used in the near field
MCTADJ	3	3	Terrain adjustment method (3 used for partial plume path adjustment)
MCTSG	0	0	Subgrid-Scale complex terrain flag
MSLUG	0	0	Near-field puffs modelled as elongated
MTRANS	1	1	Transitional Plume Rise modelled
MTIP	1	1	Stack-tip downwash
MBDW	2	2	Method used to simulate building downwash 1 = ISC method; 2 = PRIME method
MSHEAR	0	0	Vertical wind shear modelled above stack top
MSPLIT	0*	0	Puff splitting allowed 0 = No; 1 = Yes ** NB: Value of "1" reported in ESDM Report but value of "0" actually used in ESDM Report modelling*
MCHEM	3 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	3 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	Chemical Transformation Scheme 0 = chemical transformation not modeled 3 = transformation rates computed internally (RIVAD/ARM3 Scheme)
MAQCHEM	0	0	Aqueous phase transformation flag (only used if MCHEM =1 or 3)
MWET	0	0	Wet removal modelled 0 = NO; 1 = Yes
MDRY	0	0	Dry deposition modelled 0 = NO; 1 = Yes

Flag	Value used in 2011 ESDM Report	Value Used in this Assessment	Comments
MTILT	0	0	Gravitational settling (plume tilt) modelled
MDISP	2	2	Methods used to compute dispersion coefficients 2 = (dispersion coefficients from internally calculated sigma v, sigma w using micrometeorological variables (u*, w*, L, etc.)
MTURBVW	3	3	Sigma measurements used (Used only if MDISP = 1or 5)
MDISP2	3	3	Back-up method used to compute dispersion when measured turbulence data are missing (Used only if MDISP=1 or 5)
MTAULY	0	0	Method used for Lagrangian timescale for Sigma-y (used only if MDISP=1,2 or MSIDP2=1,2)
MTAUADV	0	0	Method used for Advective-Decay timescale for Turbulence (used only if MDISP=2 or MDISP2=2)
MCTURB	1	1	Method used to compute turbulence sigma-v & sigma-w using micrometeorological variables (Used only if MDISP = 2 or MDISP2 = 2)
MROUGH	0	0	PG sigma y,z adjusted for roughness
MPARTL	1	1	Partial plume penetration of elevated inversion
MTINV	0	0	Strength of temp inversion provided in PROFILE.DAT extended records
MPDF	1	1	Probability Distribution Function used for dispersion under convective conditions 0 = NO; 1 = Yes
MSGTIBL	1	1	Sub-grid TIBL module used for shore line
MBCON	0	0	Boundary conditions (concentration) modeled
MFOG	0	0	Configure for FOG Model output
MREG	0	0	Test options specified to see if they conform to regulatory values

3.10 Source Parameters

Stack exhaust temperature and flow rate were updated to match the stack characteristics at the time of source testing. All other source parameters are consistent with those used in the ESDM Report. The source parameters modelled are provided in Table 3, below:

Table 3: Modelled Source Parameters

Source ID	Stack Height [m]	Stack Diameter [m]	Flow Rate [m³/s]	Exit Velocity [m/s]	Exhaust Temperature [K]
STCK1	87.6 (No Change)	1.7 (No Change)	53.30 (UPDATED)	23.48 (UPDATED)	414.5 (UPDATED)

The ESDM Report includes an additional modelling scenario which include emissions from silo loading and the standby generator (Scenario H). The predominant contaminants from these sources are particulate from the silo loading and nitrogen oxides from the generator. These two contaminants were assessed and it was determined that, since the Main Stack emissions presented in this report are less than those in the ESDM Report, dispersion modelling would show a decrease in the point of impingement concentration for these two contaminants. As a result, additional dispersion modelling for Scenario H was not conducted.

4.0 MODELLING RESULTS

Modelling was completed for emissions from the main stack only, using a unit emission rate to generate dispersion factors in µg/m³ per g/s for 10-minute, ½ - hour, 1-hour, 24-hour, 30-day and annual averaging periods. In Ontario, MECP guidance allows for the removal of meteorological anomalies to account for extreme, rare and transient conditions that may be present in the datasets and considered outliers. As such, for air quality assessments that require 24-hour average concentrations, the highest predicted 24-hr concentration in each year of meteorological data may be removed. Similarly, for assessments that use shorter 1-hour average concentrations, the eight highest predicted concentrations in each year may be removed, as per the MECP guidance listed in ADMGO. No predicted results are removed for assessment against annual averaging periods. Elimination of these anomalies is optional but both methodologies are considered acceptable for the demonstration of compliance with Ontario Regulation 419/05 standards. Previously, maximums with anomalies were presented.

The resulting dispersion factors are presented in Table 4, below for both the with and without meteorological anomaly removal:

Table 4: Modelling Dispersion Factors

Averaging Period	10-min	½- hr	1-hr	24-hr	30-day	Annual
Dispersion Factor without meteorological anomaly removal [µg/m³ per g/s]	46.78	34.02	28.35	1.23	0.17	0.06
Dispersion Factor with meteorological anomaly removal [µg/m³ per g/s]	17.31	12.59	10.49	1.17	0.17	0.06

The average emission rate for each contaminant presented in Appendix A was multiplied by the applicable dispersion factor above to calculate the maximum point of impingement concentration for emissions from the main stack. The modelled POI concentrations were compared to the 2018 Schedule 3 standards listed in O.Reg. 419/05 and in the case of $PM_{2.5}$ and PM_{10}, the Ontario Ambient Air Quality Criteria (AAQC).

The MECP updated the list of standards and guidelines for facilities to assess their emissions against, namely the Air Contaminants Benchmark (ACB) List, dated April 2018, which includes standards and guidelines (Benchmark 1) and screening levels (Benchmark 2). The ACB List is required to be used to assess point of impingement (POI) concentrations of contaminants released into the air.

Contaminants released by the Facility that do not have Benchmark 1 standards or guidelines in the ACB List are considered to be 'Contaminants with No MECP POI Limits'. Where applicable, predicted POI concentrations of Contaminants with No MECP POI Limits were screened against the Benchmark 2 screening levels in the ACB List or the de minimus limit.

The modelled concentrations of all compounds assessed were below their relevant MECP standards. The Emission Summary Table has been updated and is included in Appendix B. It has been modified to include reference to the new ACB List and to meet the requirements of the updated MECP guidance document "Procedure for preparing an Emission Summary and Dispersion Modelling Report" (PIBs 3614e04.1, March 2018). Results are presented both with and without meteorological anomaly removal but only the results with meteorological anomaly removal are presented as a percentage of the relevant limit.

The contaminant with the highest predicted concentration relative to O.Reg. 419/05 standard is Nitrogen Oxides at 11% of the relevant limit.

5.0 SUMMARY OF MODELLING UPDATES

The dispersion modelling for the DYEC was updated to reflect data obtained from Voluntary June 2021 source testing. A summary of the changes made to the modelling are provided in Table 5, below.

Table 5: ECA Concordance Table

Modelling Inputs	Changes from 2011 ESDM Report
Emission Rates	Updated to use June 2021 Source Testing Data. List of contaminants assessed expanded to include all contaminants for which source testing data was performed.
Model and Model Version	Updated model versions in consultation with MECP (See section 3.0)
Meteorology and Terrain data	Updated meteorological and terrain data prepared in consultation with MECP (See Section 3.2)
Receptors	Minor modifications made to receptors located on outskirts of modelling grid to reflect updated domain (See Section 3.3)
Building Downwash	No Change

Modelling Inputs	Changes from 2011 ESDM Report
Deposition	No Change
Chemical Transformations	No Change
Thermal Internal Boundary Layer	No Change
Averaging Times and Conversions	CALPOST input file was modified to generate annual averaging to account for new O.Reg. 419/05 standards introduced in 2016 that include annual averaging periods.
Dispersion Modelling Options	No Change
Background Air Quality Concentrations	Ozone background data used in secondary particulate modelling consistent with the EA.
Emission Summary Table	Updated to include new O.Reg. 419/05 standards introduced after the ECA was approved and contaminants that were not included in the ESDM report but for which source testing data was available.

6.0 CONCLUSIONS

This assessment was completed to document compliance with Condition 8(7) and 8(8) of Schedule E of the ECA for the DYEC. The results of this assessment demonstrate that the Facility is operating in compliance with the POI limits listed in s.20 of O. Reg. 419/05.

7.0 CLOSURE

We trust this memorandum meets your needs at this time. Should you have any questions please contact the undersigned.

Golder Associates Ltd.

Katherine Armstrong, M.Sc.
Air Quality Specialist

Anthony Ciccone, Ph.D., P.Eng.
Principal

EC/KSA/AC/ng

https://golderassociates.sharepoint.com/sites/140514/project files/6 deliverables/spring 2021/feb 2022 update/21452106-tm-rev1 covanta updated modelling memo spring 2021 28feb2022.docx

APPENDIX A

Site-Wide Emission Inventory

Appendix A
Site-Wide Emission Inventory

Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
1A	Main Stack - Spring 2021 Source Testing Conditions	53.30	141.4	1.7	87.6	(680538, 4860346)	1 – methylnaphthalene	90-12-0	2.50E-07	1,24, annual	ST	Above-Average	100%
							1,1,2-Trichloroethane	79-00-5	7.21E-05	1,24, annual	ST	Above-Average	100%
							1,2,3,4-tetrachlorobenzene	634-66-2	7.63E-08	1,24, annual	ST	Above-Average	100%
							1,2,3-trichlorobenzene	87-61-6	1.44E-07	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	120-82-1	2.51E-07	1,24, annual	ST	Above-Average	100%
							1,2,4,5-Tetrachlorobenzene	95-94-3	7.63E-08	1,24, annual	ST	Above-Average	100%
							1,2-Dichlorobenzene	95-50-1	6.60E-07	1,24, annual	ST	Above-Average	100%
							1,2-Dichloroethane	107-06-2	7.21E-05	1,24, annual	ST	Above-Average	100%
							1,2-Dichloropropane	78-87-5	7.21E-05	1,24, annual	ST	Above-Average	100%
							1,3,5-trichlorobenzene	108-70-3	8.62E-08	1,24, annual	ST	Above-Average	100%
							1,3-Butadiene	106-99-0	7.21E-05	1,24, annual	ST	Above-Average	100%
							1,3-Dichlorobenzene	541-73-1	1.19E-06	1,24, annual	ST	Above-Average	100%
							1,4-Dichlorobenzene	106-46-7	8.11E-07	1,24, annual	ST	Above-Average	100%
							1-Methylphenanthrene	832-69-9	7.63E-08	1,24, annual	ST	Above-Average	100%
							2 – methylnaphthalene	91-57-6	4.82E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,5-tetrachlorophenol	4901-51-3	3.82E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,6-Tetrachlorophenol	58-90-2	3.82E-07	1,24, annual	ST	Above-Average	100%
							2,3,4-trichlorophenol	15950-66-0	3.82E-07	1,24, annual	ST	Above-Average	100%
							2,3,5,6-tetrachlorophenol	935-95-5	3.82E-07	1,24, annual	ST	Above-Average	100%
							2,3,5-trichlorophenol	933-78-8	3.82E-07	1,24, annual	ST	Above-Average	100%
							2,3,6-trichlorophenol	933-75-5	3.82E-07	1,24, annual	ST	Above-Average	100%
							2,3-dichlorophenol	576-24-9	3.82E-07	1,24, annual	ST	Above-Average	100%
							2,4,5-trichlorophenol	95-95-4	3.82E-07	1,24, annual	ST	Above-Average	100%
							2,4,6-Trichlorophenol	88-06-2	3.82E-07	1,24, annual	ST	Above-Average	100%
							2,4-Dichlorophenol	120-83-2	3.82E-07	1,24, annual	ST	Above-Average	100%
							2,6-dichlorophenol	87-65-0	3.82E-07	1,24, annual	ST	Above-Average	100%
							2-Butanone	78-93-3	8.28E-05	1,24, annual	ST	Above-Average	100%
							2-Chloronaphthalene	91-58-7	7.63E-08	1,24, annual	ST	Above-Average	100%
							2-Methylanthracene	613-12-7	4.74E-07	1,24, annual	ST	Above-Average	100%
							2-monochlorophenol	95-57-8	3.82E-07	1,24, annual	ST	Above-Average	100%
							3,4,5-trichlorophenol	609-19-8	3.82E-07	1,24, annual	ST	Above-Average	100%
							3,4-dichlorophenol	95-77-2	3.82E-07	1,24, annual	ST	Above-Average	100%
							3,5-dichlorophenol	591-35-5	3.82E-07	1,24, annual	ST	Above-Average	100%
							3-Methylcholanthrene	56-49-5	3.82E-07	1,24, annual	ST	Above-Average	100%
							3-monochlorophenol	108-43-0	3.82E-07	1,24, annual	ST	Above-Average	100%
							4-monochlorophenol	106-48-9	3.82E-07	1,24, annual	ST	Above-Average	100%
							7,12-Dimethylbenzo(a)anthracene	57-97-6	7.63E-08	1,24, annual	ST	Above-Average	100%
							9,10-Dimethylanthracene	781-43-1	7.63E-08	1,24, annual	ST	Above-Average	100%
							9-Methylphenanthrene	883-20-5	2.33E-07	1,24, annual	ST	Above-Average	100%
							Acenaphthene	83-32-9	7.63E-08	1,24, annual	ST	Above-Average	5%
							Acenaphthylene	208-96-8	1.39E-07	1,24, annual	ST	Above-Average	4%
							Acetaldehyde	75-07-0	1.18E-02	1,24, annual	ST	Above-Average	100%

Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Acetone	67-64-1	1.99E-04	1,24, annual	ST	Above-Average	100%
							Acrolein	107-02-8	9.50E-05	1,24, annual	ST	Above-Average	97%
							Ammonia	7664-41-7	4.89E-02	1,24, annual	ST	Above-Average	100%
							Anthracene	120-12-7	8.39E-08	1,24, annual	ST	Above-Average	17%
							Antimony	7440-36-0	1.68E-06	1,24, annual	ST	Above-Average	100%
							Arsenic	7440-38-2	1.67E-06	1,24, annual	ST	Above-Average	100%
							Barium	7440-39-3	6.66E-05	1,24, annual	ST	Above-Average	100%
							Benzene	71-43-2	1.40E-04	1,24, annual	ST	Above-Average	36%
							Benzo(a)anthracene	56-55-3	7.63E-08	1,24, annual	ST	Above-Average	27%
							Benzo(a)fluorene	238-84-6	7.63E-08	1,24, annual	ST	Above-Average	100%
							Benzo(a)pyrene	50-32-8	7.63E-08	1,24, annual	ST	Above-Average	48%
							Benzo(b)fluoranthene	205-99-2	7.63E-08	1,24, annual	ST	Above-Average	17%
							Benzo(b)fluorene	243-17-4	7.63E-08	1,24, annual	ST	Above-Average	100%
							Benzo(e)pyrene	192-97-2	8.90E-08	1,24, annual	ST	Above-Average	100%
							Benzo(g,h,i)perylene	191-24-2	2.03E-07	1,24, annual	ST	Above-Average	53%
							Benzo(k)fluoranthene	207-08-9	7.63E-08	1,24, annual	ST	Above-Average	52%
							Beryllium	7440-41-7	1.67E-06	1,24, annual	ST	Above-Average	100%
							Biphenyl	92-51-3	6.55E-07	1,24, annual	ST	Above-Average	100%
							Bromodichloromethane	75-27-4	9.03E-05	1,24, annual	ST	Above-Average	100%
							Bromoform	75-25-2	7.21E-05	1,24, annual	ST	Above-Average	100%
							Bromomethane	74-83-9	7.21E-05	1,24, annual	ST	Above-Average	100%
							Cadmium	7440-43-9	2.19E-06	1,24, annual	ST	Above-Average	100%
							Carbon Monoxide	630-08-0	5.13E-01	1,24, annual	ST	Above-Average	67%
							Carbon tetrachloride	56-23-5	7.26E-05	1,24, annual	ST	Above-Average	100%
							Chlorobenzene	108-90-7	1.40E-05	1,24, annual	ST	Above-Average	100%
							Chloroform	67-66-3	1.01E-04	1,24, annual	ST	Above-Average	100%
							Chromium (hexavalent)	18540-29-9	3.06E-05	1,24, annual	ST	Above-Average	100%
							Chrysene	218-01-9	8.58E-08	1,24, annual	ST	Above-Average	15%
							Cobalt	7440-48-4	2.44E-06	1,24, annual	ST	Above-Average	100%
							Copper	7440-50-8	1.58E-04	1,24, annual	ST	Above-Average	100%
							Coronene	191-07-1	4.18E-07	1,24, annual	ST	Above-Average	100%
							Cumene (Isopropylbenzene)	98-82-8	7.21E-05	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,c)anthracene	215-58-7	7.63E-08	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,e)pyrene	192-65-4	3.82E-07	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,h)anthracene	53-70-3	7.63E-08	1,24, annual	ST	Above-Average	40%
							Dibromochloromethane	124-48-1	7.21E-05	1,24, annual	ST	Above-Average	100%
							Dichlorodifluoromethane	75-71-8	7.69E-05	1,24, annual	ST	Above-Average	100%
							Dichloroethene, 1,1 -	75-34-3	7.21E-05	1,24, annual	ST	Above-Average	100%
							Dichloromethane	75-09-2	3.56E-04	1,24, annual	ST	Above-Average	100%
							Dioxins, Furans and Dioxin- like PCBs	N/A	0.00023 µg TEQ/s	1,24, annual	ST	Above-Average	100%
							Ethylbenzene	100-41-4	7.24E-05	1,24, annual	ST	Above-Average	100%
							Ethylene Dibromide	106-93-4	7.21E-05	1,24, annual	ST	Above-Average	100%
							Fluoranthene	206-44-0	3.64E-07	1,24, annual	ST	Above-Average	22%
							Fluorides	7664-39-3	4.12E-03	1,24, annual	ST	Above-Average	100%
							Fluorene	86-73-7	1.30E-07	1,24, annual	ST	Above-Average	3%

Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Formaldehyde	50-00-0	1.35E-02	1,24, annual	ST	Above-Average	100%
							Hexachlorobenzene	118-74-1	7.63E-08	1,24, annual	ST	Above-Average	100%
							Hydrogen Chloride	7647-01-0	1.30E-01	1,24, annual	ST	Above-Average	100%
							Indeno(1,2,3 – cd)pyrene	193-39-5	7.63E-08	1,24, annual	ST	Above-Average	36%
							Lead	7439-92-1	1.48E-05	1,24, annual	ST	Above-Average	100%
							M&P-Xylene	179601-23-1	1.84E-04	1,24, annual	ST	Above-Average	100%
							Mercury	7439-97-6	3.25E-06	1,24, annual	ST	Above-Average	100%
							Mesitylene (1,3,5-Trimethylbenzene)	108-67-8	7.21E-05	1,24, annual	ST	Above-Average	100%
							Molybdenum	7439-98-7	1.92E-04	1,24, annual	ST	Above-Average	100%
							m-Terphenyl	92-06-8	9.24E-08	1,24, annual	ST	Above-Average	100%
							Naphthalene	91-20-3	1.41E-06	1,24, annual	ST	Above-Average	3%
							Nickel	7440-02-0	4.29E-05	1,24, annual	ST	Above-Average	100%
							Nitrogen Oxides	10102-44-0	4.32E+00	1,24, annual	ST	Above-Average	44%
							Nitrogen Oxides	10102-44-0	4.32E+00	1,24, annual	ST	Above-Average	44%
							O-terphenyl	84-15-1	9.84E-08	1,24, annual	ST	Above-Average	100%
							O-Xylene	95-47-6	8.27E-05	1,24, annual	ST	Above-Average	100%
							Pentachlorobenzene	608-93-5	7.63E-08	1,24, annual	ST	Above-Average	100%
							Pentachlorophenol	87-86-5	3.82E-07	1,24, annual	ST	Above-Average	100%
							Perylene	198-55-0	7.63E-08	1,24, annual	ST	Above-Average	100%
							Phenanthrene	85-01-8	1.92E-06	1,24, annual	ST	Above-Average	13%
							Picene	213-46-7	3.82E-07	1,24, annual	ST	Above-Average	100%
							PM10 (Condensable and Filterable)	N/A	1.94E-01	1,24, annual	ST	Above-Average	100%
							PM10 (Filterable Only)	N/A	1.65E-02	1,24, annual	ST	Above-Average	100%
							PM2.5 (Condensable and Filterable)	N/A	1.89E-01	1,24, annual	ST	Above-Average	100%
							PM2.5 (Filterable Only)	N/A	1.07E-02	1,24, annual	ST	Above-Average	100%
							Polychlorinated Biphenyls (PCB)	N/A	2.29E-04	1,24, annual	ST	Above-Average	100%
							p-Terphenyl	92-94-4	7.76E-08	1,24, annual	ST	Above-Average	100%
							Pyrene	129-00-0	3.25E-07	1,24, annual	ST	Above-Average	21%
							Selenium	7782-49-2	8.44E-06	1,24, annual	ST	Above-Average	100%
							Silver	7440-22-4	1.67E-06	1,24, annual	ST	Above-Average	100%
							Styrene	100-42-5	7.21E-05	1,24, annual	ST	Above-Average	100%
							Sulphur Dioxide	7446-09-5	1.79E-02	1,24, annual	ST	Above-Average	49%
							Tetrachloroethene	127-18-4	7.21E-05	1,24, annual	ST	Above-Average	100%
							Tetralin	119-64-2	7.00E-07	1,24, annual	ST	Above-Average	100%
							Thallium	7440-28-0	1.67E-06	1,24, annual	ST	Above-Average	100%
							Toluene	108-88-3	6.13E-04	1,24, annual	ST	Above-Average	87%
							Total Chromium (and compounds)	7440-47-3	3.06E-05	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Condensable and Filterable)	N/A	1.98E-01	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Filterable Only)	N/A	1.99E-02	1,24, annual	ST	Above-Average	100%
							trans,1,2-Dichloroethene	156-60-5	7.21E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethane, 1,1,1 -	71-55-6	7.21E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethene	79-01-6	7.21E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethylene, 1,1,2 -	79-01-6	7.21E-05	1,24, annual	ST	Above-Average	100%
							Trichlorofluoromethane	75-69-4	7.29E-05	1,24, annual	ST	Above-Average	100%

Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Trichlorotrifluoroethane	76-13-1	7.21E-05	1,24, annual	ST	Above-Average	100%
							Vanadium	7440-62-2	9.30E-07	1,24, annual	ST	Above-Average	100%
							Vinyl chloride	75-01-4	7.21E-05	1,24, annual	ST	Above-Average	100%
							Xylenes, m-, p- and o-	1330-20-7	2.67E-04	1,24, annual	ST	Above-Average	81%
							Zinc	7440-66-6	2.61E-04	1,24, annual	ST	Above-Average	100%
2	Silo Filling	0.31	Ambient	0.10	5.4864	(680551,4860359)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	4.8768	(680513,4860332)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	3.9624	(680517,4860333)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	12.4	(680537,4860391)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
3	Stand-by generator	1.16	265.85	0.2	3	(680475,4860419)	Carbon Monoxide	630-08-0	2.56E-01	½	EF	Marginal	33%
							Nitrogen Oxides	10102-44-0	1.12E+00	½	EF	Marginal	11%
							Sulphur Dioxide	7446-09-5	1.88E-02	½	EF	Above-Average	51%
							Total Particulate Matter	N/A	3.25E-02	½	EF	Above-Average	43%
							Filterable TSP	N/A	2.03E-02	½	EF	Above-Average	100%
							PM_{10}	N/A	1.88E-02	½	EF	Above-Average	30%
							$PM_{2.5}$	N/A	1.88E-02	½	EF	Above-Average	30%
							Sulphuric Acid	7664-93-9	2.88E-04	½	EC	Above-Average	100%
							Benzene	71-43-2	2.54E-04	½	EF	Marginal	64%
							Toluene	108-88-3	9.21E-05	½	EF	Marginal	13%
							Xylenes, m-, p- and o-	1330-20-7	6.32E-05	½	EF	Marginal	19%
							Propylene	115-07-1	9.14E-04	½	EF	Marginal	100%
							Formaldehyde	50-00-0	2.58E-05	½	EF	Marginal	<1%
							Acetaldehyde	75-07-0	8.26E-06	½	EF	Marginal	<1%
							Acrolein	107-02-8	2.58E-06	½	EF	Marginal	3%
							Naphthalene	91-20-3	4.26E-05	½	EF	Marginal	97%
							Acenaphthylene	208-96-8	3.02E-06	½	EF	Marginal	96%
							Acenaphthene	83-32-9	1.53E-06	½	EF	Marginal	95%
							Fluorene	86-73-7	4.19E-06	½	EF	Marginal	97%
							Phenanthrene	85-01-8	1.34E-05	½	EF	Marginal	87%
							Anthracene	120-12-7	4.03E-07	½	EF	Marginal	83%
							Fluoranthene	206-44-0	1.32E-06	½	EF	Marginal	78%
							Pyrene	129-00-0	1.22E-06	½	EF	Marginal	79%
							Benzo(a)anthracene	56-55-3	2.04E-07	½	EF	Marginal	73%
							Chrysene	218-01-9	5.01E-07	½	EF	Marginal	85%
							Benzo(b)fluoranthene	205-99-2	3.64E-07	½	EF	Marginal	83%
							Benzo(k)fluoranthene	207-08-9	7.14E-08	½	EF	Marginal	48%
							Benzo(a)pyrene	50-32-8	8.42E-08	½	EF	Marginal	52%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.36E-07	½	EF	Marginal	64%

Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Dibenzo(a,h)anthracene	53-70-3	1.13E-07	½	EF	Marginal	60%
							Benzo(g,h,i)perylene	191-24-2	1.82E-07	½	EF	Marginal	47%

APPENDIX B

Emission Summary Table

Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration Before Meteorological Anomaly Removal [µg/m³]	Maximum POI Concentration After Meteorological Anomaly Removal [µg/m³]	Averaging Period	MECP POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MECP Limit [%]	Notes	Version of Date of ACB List
1 – methylnaphthalene	90-12-0	2.50E-07	Calpuff	3.08E-07	2.92E-07	24-hour	35.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
1,2,4 – Trichlorobenzene	120-82-1	2.51E-07	Calpuff	3.09E-07	2.93E-07	24-hour	400	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
1,2,4,5-Tetrachlorobenzene	95-94-3	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	1	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
1,2-Dichlorobenzene	95-50-1	6.60E-07	Calpuff	1.87E-05	6.93E-06	1-hour	30500	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
2 – methylnaphthalene	91-57-6	4.82E-07	Calpuff	5.93E-07	5.63E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
2,3,4,6-Tetrachlorophenol	58-90-2	3.82E-07	Calpuff	4.69E-07	4.45E-07	24-hour	0.75	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
2,4,6-Trichlorophenol	88-06-2	3.82E-07	Calpuff	4.69E-07	4.45E-07	24-hour	1.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
2,4-Dichlorophenol	120-83-2	3.82E-07	Calpuff	4.69E-07	4.45E-07	24-hour	33.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
3-Methylcholanthrene	56-49-5	3.82E-07	Calpuff	4.69E-07	4.45E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
7,12-Dimethylbenzo(a)anthracene	57-97-6	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acenaphthene	83-32-9	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acenaphthylene	208-96-8	1.39E-07	Calpuff	1.71E-07	1.62E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acetaldehyde	75-07-0	1.18E-02	Calpuff	1.45E-02	1.37E-02	24-hour	500	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acetaldehyde	75-07-0	1.18E-02	Calpuff	1.45E-02	1.37E-02	24-hour	5000	Health	Sch. 6	URT	—	<1%	—	—
Acrolein	107-02-8	9.50E-05	Calpuff	1.17E-04	1.11E-04	24-hour	0.4	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acrolein	107-02-8	9.50E-05	Calpuff	2.69E-03	9.96E-04	1-hour	4.5	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acrolein	107-02-8	9.50E-05	Calpuff	1.17E-04	1.11E-04	24-hour	4	Health	Sch. 6	URT	—	<1%	—	Apr-18
Ammonia	7664-41-7	4.89E-02	Calpuff	6.02E-02	5.71E-02	24-hour	100	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Ammonia	7664-41-7	4.89E-02	Calpuff	6.02E-02	5.71E-02	24-hour	1000	Health	Sch. 6	URT	—	<1%	—	Apr-18
Anthracene	120-12-7	8.39E-08	Calpuff	1.03E-07	9.79E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Antimony	7440-36-0	1.68E-06	Calpuff	2.06E-06	1.96E-06	24-hour	25	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Arsenic	7440-38-2	1.67E-06	Calpuff	2.05E-06	1.95E-06	24-hour	0.3	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Barium	7440-39-3	6.66E-05	Calpuff	8.20E-05	7.78E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Benzene	71-43-2	1.40E-04	Calpuff	7.96E-06	7.96E-06	Annual	0.45	Health	Sch. 3	Standard	B1	<1%	Note 19, Table 2, 3 URT - Note 4, Table 4	Apr-18
Benzene	71-43-2	1.40E-04	Calpuff	1.72E-04	1.64E-04	24-hour	100	Health	Sch. 6	URT/DAV	B1	<1%	—	—
Benzene	71-43-2	1.40E-04	Calpuff	7.96E-06	7.96E-06	Annual	4.5	Health	—	AAV	—	<1%	—	Apr-18
Benzo(a)anthracene	56-55-3	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(a)fluorene	238-84-6	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(a)pyrene	50-32-8	7.63E-08	Calpuff	4.34E-09	4.34E-09	Annual	0.00001	Health	Sch. 3	Standard	B1	<1%	Note 7, 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Benzo(a)pyrene	50-32-8	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.005	Health	Sch. 6	URT	—	<1%	—	Apr-18
Benzo(a)pyrene	50-32-8	7.63E-08	Calpuff	4.34E-09	4.34E-09	Annual	0.0001	Health	—	AAV	—	<1%	—	Apr-18
Benzo(b)fluoranthene	205-99-2	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(b)fluorene	243-17-4	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(e)pyrene	192-97-2	8.90E-08	Calpuff	1.09E-07	1.04E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(g,h,i)perylene	191-24-2	2.03E-07	Calpuff	2.50E-07	2.37E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(k)fluoranthene	207-08-9	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Beryllium	7440-41-7	1.67E-06	Calpuff	2.05E-06	1.95E-06	24-hour	0.01	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Biphenyl	92-51-3	6.55E-07	Calpuff	8.06E-07	7.64E-07	24-hour	175	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
Bromodichloromethane	75-27-4	9.03E-05	Calpuff	1.11E-04	1.05E-04	24-hour	350	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
Bromoform	75-25-2	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	55	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Bromomethane	74-83-9	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	1350	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Cadmium	7440-43-9	2.19E-06	Calpuff	2.70E-06	2.56E-06	24-hour	0.025	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Cadmium	7440-43-9	2.19E-06	Calpuff	2.70E-06	2.56E-06	24-hour	0.25	Health	Sch. 6	URT	—	<1%	—	Apr-18
Carbon Monoxide	630-08-0	5.13E-01	Calpuff	1.74E+01	6.45E+00	1/2-hour	6000	Health	Sch. 3	Standard	B1	<1%	Note 9	Apr-18
Carbon tetrachloride	56-23-5	7.26E-05	Calpuff	8.94E-05	8.48E-05	24-hour	2.4	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Carbon tetrachloride	56-23-5	7.26E-05	Calpuff	8.94E-05	8.48E-05	24-hour	24	Health	Sch. 6	URT	—	<1%	—	Apr-18
Chlorobenzene	108-90-7	1.40E-05	Calpuff	3.97E-04	1.47E-04	1-hour	3500	HealthOdour	Sch. 3	Guideline	B1	<1%	Note 2, 3	—
Chlorobenzene	108-90-7	1.40E-05	Calpuff	6.55E-04	2.42E-04	10-minute	4500	HealthOdour	Sch. 3	Guideline	B1	<1%	Note 2, 3	—
Chloroform	67-66-3	1.01E-04	Calpuff	1.24E-04	1.18E-04	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Chloroform	67-66-3	1.01E-04	Calpuff	1.24E-04	1.18E-04	24-hour	100	Health	Sch. 6	URT	—	<1%	—	Apr-18
Chromium (hexavalent)	18540-29-9	3.06E-05	Calpuff	1.74E-06	1.74E-06	Annual	0.00014	Health	Sch. 3	Standard	B1	1%	Notes 11, 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Chromium (hexavalent)	18540-29-9	3.06E-05	Calpuff	3.76E-05	3.57E-05	24-hour	0.07	Health	Sch. 6	URT	—	<1%	—	—
Chrysene	218-01-9	8.58E-08	Calpuff	1.06E-07	1.00E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Cobalt	7440-48-4	2.44E-06	Calpuff	3.00E-06	2.85E-06	24-hour	0.1	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Copper	7440-50-8	1.58E-04	Calpuff	1.95E-04	1.85E-04	24-hour	50	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Dibenzo(a,c)anthracene	215-58-7	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Dibenzo(a,h)anthracene	53-70-3	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Dichlorodifluoromethane	75-71-8	7.69E-05	Calpuff	9.46E-05	8.98E-05	24-hour	500000	Health	Sch. 3	Guideline	B1	<1%	Note 10	Apr-18
Dichloroethene, 1,1 -	75-34-3	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	165	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Dichloroethene, 1,1 -	75-34-3	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	1650	Health	Sch. 6	URT	—	<1%	—	Apr-18
Dichloromethane	75-09-2	3.56E-04	Calpuff	4.38E-04	4.16E-04	24-hour	220	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Dichloromethane	75-09-2	3.56E-04	Calpuff	4.38E-04	4.16E-04	24-hour	22000	Health	Sch. 6	URT	—	<1%	—	Apr-18
Dioxins, Furans and Dioxin- like PCBs	N/A	0.00023 µg TEQ/s	Calpuff	0.00028 pg TEQ/m³	0.00027 pg TEQ/m³	24-hour	0.1 pg TEQ/m³	Health	Sch. 3	Standard	B1	<1%	Note 8, 8a, Table 1URT - Note 4, Table 4	Apr-18
Ethylbenzene	100-41-4	7.24E-05	Calpuff	8.91E-05	8.45E-05	24-hour	1000	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Ethylbenzene	100-41-4	7.24E-05	Calpuff	3.39E-03	1.25E-03	10-minute	1900	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Ethylbenzene	100-41-4	7.24E-05	Calpuff	8.91E-05	8.45E-05	24-hour	14000	Odour	Sch. 6	URT	—	<1%	—	Apr-18
Ethylene Dibromide	106-93-4	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	3	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Fluoranthene	206-44-0	3.64E-07	Calpuff	4.48E-07	4.25E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Fluorides	7664-39-3	4.12E-03	Calpuff	5.07E-03	4.81E-03	24-hour	0.86	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.12E-03	Calpuff	7.05E-04	7.05E-04	30-day	0.34	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.12E-03	Calpuff	5.07E-03	4.81E-03	24-hour	1.74	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.12E-03	Calpuff	7.05E-04	7.05E-04	30-day	0.69	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.12E-03	Calpuff	5.07E-03	4.81E-03	24-hour	3.44	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.12E-03	Calpuff	7.05E-04	7.05E-04	30-day	1.38	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18

Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration Before Meteorological Anomaly Removal [ug/m³]	Maximum POI Concentration After Meteorological Anomaly Removal [ug/m³]	Averaging Period	MECP POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MECP Limit [%]	Notes	Version of Date of ACB List
Fluorene	86-73-7	1.30E-07	Calpuff	1.60E-07	1.51E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Formaldehyde	50-00-0	1.35E-02	Calpuff	1.66E-02	1.57E-02	24-hour	65	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Hexachlorobenzene	118-74-1	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.011	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Hydrogen Chloride	7647-01-0	1.30E-01	Calpuff	1.60E-01	1.52E-01	24-hour	20	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Hydrogen Chloride	7647-01-0	1.30E-01	Calpuff	1.60E-01	1.52E-01	24-hour	200	Health	Sch. 6	URT	—	<1%	—	Apr-18
Indeno(1,2,3 – cd)pyrene	193-39-5	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Lead	7439-92-1	1.48E-05	Calpuff	1.82E-05	1.73E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	1.48E-05	Calpuff	2.53E-06	2.53E-06	30-day	0.2	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	1.48E-05	Calpuff	1.82E-05	1.73E-05	24-hour	2	Health	Sch. 6	URT	—	<1%	Note 2URT - Note 4, Table 4	Apr-18
Mercury	7439-97-6	3.25E-06	Calpuff	4.00E-06	3.80E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Molybdenum	7439-98-7	1.92E-04	Calpuff	2.36E-04	2.24E-04	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Naphthalene	91-20-3	1.41E-06	Calpuff	1.74E-06	1.65E-06	24-hour	22.5	HealthOdour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Naphthalene	91-20-3	1.41E-06	Calpuff	6.61E-05	2.45E-05	10-minute	50	HealthOdour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Nickel	7440-02-0	4.29E-05	Calpuff	2.44E-06	2.44E-06	Annual	0.04	Health	Sch. 3	Standard	B1	<1%	Note 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Nickel	7440-02-0	4.29E-05	Calpuff	5.28E-05	5.01E-05	24-hour	2	Health	Sch. 6	URT	—	<1%	—	Apr-18
Nickel	7440-02-0	4.29E-05	Calpuff	2.44E-06	2.44E-06	Annual	0.4	Health	—	AAV	—	<1%	—	Apr-18
Nitrogen Oxides	10102-44-0	4.32E+00	Calpuff	5.31E+00	5.04E+00	24-hour	200	Health	Sch. 3	Standard	B1	3%	Notes 2, 17	Apr-18
Nitrogen Oxides	10102-44-0	4.32E+00	Calpuff	1.22E+02	4.53E+01	1-hour	400	Health	Sch. 3	Standard	B1	11%	Notes 2, 17	Apr-18
Nitrogen Dioxides[1]	10102-44-0	4.32E+00	Calpuff	1.22E+02	2.32E+01	1-hour	113	Health	—	CAAQS	—	21%	—	—
Nitrogen Dioxides[1]	10102-44-0	4.32E+00	Calpuff	2.45E-01	2.45E-01	Annual	32	Health	—	CAAQS	—	<1%	—	—
O-terphenyl	84-15-1	9.84E-08	Calpuff	1.21E-07	1.15E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	—
PM_{10} (Condensable and Filterable)	N/A	1.94E-01	Calpuff	3.17E-01	2.68E-01	24-hour	50	—	—	AAQC	—	<1%	—	—
PM_{10} (Filterable Only)	N/A	1.65E-02	Calpuff	2.33E-01	1.65E-01	24-hour	50	—	—	AAQC	—	<1%	—	—
$PM_{2.5}$ (Condensable and Filterable)	N/A	1.89E-01	Calpuff	3.14E-01	2.62E-01	24-hour	30	—	—	AAQC	—	<1%	—	—
$PM_{2.5}$ (Filterable Only)	N/A	1.07E-02	Calpuff	2.31E-01	1.65E-01	24-hour	30	—	—	AAQC	—	<1%	—	—
Pentachlorobenzene	608-93-5	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	80	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Pentachlorophenol	87-86-5	3.82E-07	Calpuff	4.69E-07	4.45E-07	24-hour	20	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Perylene	198-55-0	7.63E-08	Calpuff	9.39E-08	8.91E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Phenanthrene	85-01-8	1.92E-06	Calpuff	2.36E-06	2.24E-06	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Pyrene	129-00-0	3.25E-07	Calpuff	4.00E-07	3.80E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Selenium	7782-49-2	8.44E-06	Calpuff	1.04E-05	9.86E-06	24-hour	10	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Silver	7440-22-4	1.67E-06	Calpuff	2.05E-06	1.95E-06	24-hour	1	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Sulphur Dioxide	7446-09-5	1.79E-02	Calpuff	2.20E-02	2.09E-02	24-hour	275	Health & Vegetation	Sch. 3	Standard	B1	<1%	Effective until July 1, 2023Note 2URT - Note 4, Table 4	Apr-18
Sulphur Dioxide	7446-09-5	1.79E-02	Calpuff	5.07E-01	1.87E-01	1-hour	690	Health & Vegetation	Sch. 3	Standard	B1	<1%	Effective until July 1, 2023Note 2URT - Note 4, Table 4	Apr-18
Tetrachloroethene	127-18-4	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	360	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Tetrachloroethene	127-18-4	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	3600	Health	Sch. 6	URT	—	<1%	—	—
Tetralin	119-64-2	7.00E-07	Calpuff	8.61E-07	8.17E-07	24-hour	151.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Thallium	7440-28-0	1.67E-06	Calpuff	2.05E-06	1.95E-06	24-hour	0.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Toluene	108-88-3	6.13E-04	Calpuff	7.55E-04	7.16E-04	24-hour	2000	Odour	Sch. 3	Guideline	B1	<1%	To be updated - Note 5	Apr-18
Total Chromium (and compounds)	7440-47-3	3.06E-05	Calpuff	3.76E-05	3.57E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 11aURT - Note 4, Table 4	Apr-18
Total Chromium (and compounds)	7440-47-3	3.06E-05	Calpuff	3.76E-05	3.57E-05	24-hour	5	Health	Sch. 6	URT	—	<1%	—	Apr-18
Total Particulate Matter (Condensable and Filterable)	N/A	1.98E-01	Calpuff	3.19E-01	2.77E-01	24-hour	120	Visibility	Sch. 3	Standard	B1	<1%	—	Apr-18
Total Particulate Matter (Filterable only)	N/A	1.99E-02	Calpuff	2.34E-01	1.66E-01	24-hour	120	Visibility	Sch. 3	Standard	B1	<1%	—	Apr-18
Trichloroethane, 1,1,1 -	71-55-6	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	115000	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Trichloroethene	86-42-0	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	12	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	1200	Health	Sch. 6	URT	—	<1%	—	Apr-18
Trichlorofluoromethane	75-69-4	7.29E-05	Calpuff	8.97E-05	8.51E-05	24-hour	6000	Health	Sch. 3	Guideline	B1	<1%	Note 10	Apr-18
Vanadium	7440-62-2	9.30E-07	Calpuff	1.14E-06	1.09E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Vinyl chloride	75-01-4	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Vinyl chloride	75-01-4	7.21E-05	Calpuff	8.87E-05	8.42E-05	24-hour	100	Health	Sch. 6	URT	—	<1%	—	Apr-18
Xylenes, m-, p- and o-	1330-20-7	2.67E-04	Calpuff	3.28E-04	3.11E-04	24-hour	730	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3, 22	Apr-18
Xylenes, m-, p- and o-	1330-20-7	2.67E-04	Calpuff	1.25E-02	4.62E-03	10-minute	3000	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3, 22	Apr-18
Xylenes, m-, p- and o-	1330-20-7	2.67E-04	Calpuff	3.28E-04	3.11E-04	24-hour	7300	Odour	Sch. 6	URT	—	<1%	—	Apr-18
Zinc	7440-66-6	2.61E-04	Calpuff	3.21E-04	3.05E-04	24-hour	120	Particulate	Sch. 3	Standard	B1	<1%	—	Apr-18

APPENDIX 28

DYEC CEMS 1-Hour Average Data
(4 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

		BH Outlet									Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
15-Jun-21	0:00	8.40	18		0		113		5		0	8
15-Jun-21	1:00	8.11	13		0		106		5		0	8
15-Jun-21	2:00	8.60	14		0		107		4		0	9
15-Jun-21	3:00	8.66	19	16.0	0		97		4		0	9
15-Jun-21	4:00	8.82	19	16.3	0		106		4		0	9
15-Jun-21	5:00											8
15-Jun-21	6:00											9
15-Jun-21	7:00	7.99	17		0		95		3		0	8
15-Jun-21	8:00	8.61	18		0		115		2		0	8
15-Jun-21	9:00	8.48	15		0		108		2		0	9
15-Jun-21	10:00	8.45	11	15.3	0		111		2		0	8
15-Jun-21	11:00	8.44	11	13.8	0		112		3		0	8
15-Jun-21	12:00	7.93	13	12.5	0		108		3		0	8
15-Jun-21	13:00	8.04	14	12.3	0		113		3		0	8
15-Jun-21	14:00	8.27	13	12.8	0		112		4		0	8
15-Jun-21	15:00	8.35	14	13.5	0		110		4		0	8
15-Jun-21	16:00	8.83	13	13.5	0		106		4		0	9
15-Jun-21	17:00	9.00	19	14.8	0		104		2		0	9
15-Jun-21	18:00	8.31	12	14.5	0		103		2		0	8
15-Jun-21	19:00	8.65	16	15.0	0		106		2		0	9
15-Jun-21	20:00	8.54	11	14.5	0		110		2		0	8
15-Jun-21	21:00	8.45	11	12.5	0		104		3		0	8
15-Jun-21	22:00	8.40	18	14.0	0		110		3		0	8
15-Jun-21	23:00	8.50	13	13.3	0		113		3		0	8
16-Jun-21	0:00	8.52	13	13.8	0		112		3		0	8
16-Jun-21	1:00	8.16	9	13.3	0		112		3		0	8
16-Jun-21	2:00	8.40	7	10.5	0		110		3		0	8
16-Jun-21	3:00	8.52	11	10.0	0		101		4		0	8
16-Jun-21	4:00	8.63	19	11.5	0		107		4		0	9
16-Jun-21	5:00	8.37	11	12.0	0		105		4		0	8
16-Jun-21	6:00	8.50	15	14.0	0	0.0	104	108	3	3.0	0	8
16-Jun-21	7:00	8.46	9	13.5	0	0.0	112	109	3	3.0	0	9
16-Jun-21	8:00	8.60	11	11.5	0	0.0	108	108	2	3.0	0	9
16-Jun-21	9:00	8.39	11	11.5	0	0.0	112	109	2	3.0	0	8
16-Jun-21	10:00	8.47	12	10.8	0	0.0	105	108	2	3.0	0	8
16-Jun-21	11:00	8.91	12	11.5	0	0.0	114	108	2	2.9	0	9
16-Jun-21	12:00	8.35	19	13.5	0	0.0	113	109	2	2.9	0	8
16-Jun-21	13:00	7.84	22	16.3	0	0.0	104	108	2	2.8	0	8
16-Jun-21	14:00	7.97	16	17.3	0	0.0	111	108	2	2.8	0	8
16-Jun-21	15:00	7.95	12	17.3	0	0.0	104	108	3	2.7	0	8
16-Jun-21	16:00	8.15	9	14.8	0	0.0	110	108	3	2.7	0	8
16-Jun-21	17:00	8.28	8	11.3	0	0.0	114	109	3	2.7	0	8
16-Jun-21	18:00	8.53	7	9.0	0	0.0	109	109	3	2.8	0	9
16-Jun-21	19:00	8.49	8	8.0	0	0.0	111	109	3	2.8	0	8
16-Jun-21	20:00	8.38	8	7.8	0	0.0	103	109	2	2.8	0	8
16-Jun-21	21:00	8.40	9	8.0	0	0.0	109	109	2	2.8	0	8
16-Jun-21	22:00	8.45	11	9.0	0	0.0	113	109	2	2.7	0	8
16-Jun-21	23:00	8.49	7	8.8	0	0.0	114	109	2	2.7	0	8
17-Jun-21	0:00	8.36	9	9.0	0	0.0	107	109	2	2.6	0	8
17-Jun-21	1:00	8.45	10	9.3	0	0.0	112	109	3	2.6	0	9
17-Jun-21	2:00	8.31	8	8.5	0	0.0	108	109	2	2.6	0	8
17-Jun-21	3:00	8.38	10	9.3	0	0.0	95	109	2	2.5	0	9
17-Jun-21	4:00	8.33	8	9.0	0	0.0	102	108	3	2.5	0	8
17-Jun-21	5:00	8.38	14	10.0	0	0.0	105	108	3	2.4	0	8
17-Jun-21	6:00	8.17	10	10.5	0	0.0	94	108	3	2.4	0	8
17-Jun-21	7:00	8.39	12	11.0	0	0.0	106	108	3	2.4	0	8
17-Jun-21	8:00	8.30	9	11.3	0	0.0	110	108	3	2.5	0	8
17-Jun-21	9:00	8.34	9	10.0	0	0.0	118	108	3	2.5	0	8
17-Jun-21	10:00	8.53	13	10.8	0	0.0	105	108	4	2.6	0	9
17-Jun-21	11:00	8.54	14	11.3	1	0.0	114	108	4	2.7	0	9
17-Jun-21	12:00	8.52	18	13.5	2	0.1	114	108	4	2.8	0	9
17-Jun-21	13:00	8.24	15	15.0	0	0.1	108	108	4	2.8	0	8
17-Jun-21	14:00	8.57	18	16.3	0	0.1	113	108	4	2.9	0	9
17-Jun-21	15:00	8.09	17	17.0	0	0.1	114	109	4	3.0	0	8
17-Jun-21	16:00	8.28	13	15.8	0	0.1	110	109	5	3.0	0	8
17-Jun-21	17:00	8.48	15	15.8	0	0.1	104	108	4	3.1	0	8
17-Jun-21	18:00	8.70	18	15.8	0	0.1	114	108	5	3.2	0	9
17-Jun-21	19:00	8.64	15	15.3	2	0.2	111	108	4	3.2	0	9
17-Jun-21	20:00	8.75	21	17.3	6	0.5	109	109	4	3.3	0	9
17-Jun-21	21:00	9.23	28	20.5	5	0.7	109	109	4	3.4	0	9
17-Jun-21	22:00	8.78	14	19.5	1	0.7	114	109	4	3.5	0	9
17-Jun-21	23:00	8.77	14	19.3	1	0.8	111	109	3	3.5	0	9

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

						BH Outlet						Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
18-Jun-21	0:00	8.47	15	17.8	2	0.8	109	109	4	3.6	0	9
18-Jun-21	1:00	8.79	18	15.3	0	0.8	112	109	4	3.6	0	9
18-Jun-21	2:00	8.74	19	16.5	0	0.8	108	109	2	3.6	0	9
18-Jun-21	3:00	8.46	13	16.3	0	0.8	95	109	3	3.7	0	9
18-Jun-21	4:00	8.62	16	16.5	0	0.8	108	109	3	3.7	0	9
18-Jun-21	5:00	8.35	13	15.3	0	0.8	115	109	4	3.7	0	8
18-Jun-21	6:00	8.50	11	13.3	0	0.8	111	110	4	3.8	0	8
18-Jun-21	7:00	8.16	14	13.5	0	0.8	110	110	3	3.8	0	8
18-Jun-21	8:00	8.43	12	12.5	0	0.8	106	110	3	3.8	0	8
18-Jun-21	9:00	8.30	11	12.0	0	0.8	111	110	3	3.8	0	8
18-Jun-21	10:00	8.21	10	11.8	1	0.9	111	110	4	3.8	0	8
18-Jun-21	11:00	8.11	9	10.5	3	1.0	113	110	4	3.8	0	8
18-Jun-21	12:00	7.65	6	9.0	0	0.9	108	110	3	3.7	0	8
18-Jun-21	13:00	8.09	12	9.3	0	0.9	105	110	3	3.7	0	8
18-Jun-21	14:00	7.74	7	8.5	0	0.9	115	110	3	3.6	0	8
18-Jun-21	15:00	7.44	10	8.8	0	0.9	111	110	4	3.6	0	7
18-Jun-21	16:00	7.25	10	9.8	0	0.9	103	109	4	3.6	0	7
18-Jun-21	17:00	7.92	11	9.5	0	0.9	107	109	4	3.6	0	8
18-Jun-21	18:00	8.21	8	9.8	0	0.9	116	110	4	3.5	0	8
18-Jun-21	19:00	7.98	11	10.0	0	0.8	108	109	4	3.5	0	8
18-Jun-21	20:00	8.15	8	9.5	0	0.5	110	109	3	3.5	0	8
18-Jun-21	21:00	7.95	8	8.8	0	0.3	114	110	3	3.5	0	8
18-Jun-21	22:00	8.04	9	9.0	0	0.3	109	109	3	3.4	0	8
18-Jun-21	23:00	8.15	8	8.3	0	0.3	110	109	3	3.4	0	8
	Min	7.25	6	7.8	0	0.0	94	108	2	2.4	0	7
	Max	9.23	28	20.5	6	1.0	118	110	5	3.8	0	9
	Avg	8.36	13	12.6	0.3	0.3	109	109	3	3.1	0	8
	Std Dev	0.31	4.0	3.1	0.9	0.4	4.83	0.7	0.8	0.5	-	0.5

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

		BH Outlet										Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m³ @ 11% O_2		mg/m³ @ 11% O_2		mg/m³ @ 11% O_2		mg/m³ @ 11% O_2		mg/m³ @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
15-Jun-21	0:00	8.60	9		0		113		3		0	8
15-Jun-21	1:00	8.47	11		0		109		4		0	8
15-Jun-21	2:00	8.84	19		0		115		3		0	8
15-Jun-21	3:00	8.98	10	12.3	0		97		2		0	9
15-Jun-21	4:00	8.77	11	12.8	0		123		3		0	8
15-Jun-21	5:00	8.99	15	13.8	0		95		4		0	9
15-Jun-21	6:00	8.72	12	12.0	0		122		3		0	8
15-Jun-21	7:00	8.90	11	12.3	0		110		2		0	9
15-Jun-21	8:00	9.07	11	12.3	1		105		3		0	9
15-Jun-21	9:00	8.71	10	11.0	0		114		3		0	8
15-Jun-21	10:00	8.39	9	10.3	0		110		2		0	8
15-Jun-21	11:00	8.39	10	10.0	0		107		2		0	8
15-Jun-21	12:00	8.44	11	10.0	0		107		3		0	8
15-Jun-21	13:00	8.51	7	9.3	0		112		4		0	8
15-Jun-21	14:00	8.44	9	9.3	0		109		4		0	8
15-Jun-21	15:00	8.52	10	9.3	0		115		3		0	8
15-Jun-21	16:00	8.55	16	10.5	0		107		3		0	8
15-Jun-21	17:00	8.65	12	11.8	0		109		3		0	8
15-Jun-21	18:00	8.62	17	13.8	0		113		3		0	8
15-Jun-21	19:00	8.55	11	14.0	0		110		3		0	8
15-Jun-21	20:00	8.64	11	12.8	0		114		3		0	8
15-Jun-21	21:00	8.39	9	12.0	0		113		3		0	8
15-Jun-21	22:00	8.64	13	11.0	0		110		3		0	8
15-Jun-21	23:00	8.57	9	10.5	0	0.0	107	110	2	3.0	0	8
16-Jun-21	0:00	8.83	9	10.0	0	0.0	111	110	3	3.0	0	8
16-Jun-21	1:00	8.49	8	9.8	0	0.0	111	110	4	3.0	0	8
16-Jun-21	2:00	8.70	10	9.0	0	0.0	107	110	3	3.0	0	8
16-Jun-21	3:00	8.80	16	10.8	0	0.0	93	110	2	3.0	0	8
16-Jun-21	4:00	9.71	23	14.3	0	0.0	117	110	2	2.9	0	9
16-Jun-21	5:00	8.88	10	14.8	0	0.0	87	109	2	2.8	0	8
16-Jun-21	6:00	8.62	9	14.5	0	0.0	118	109	2	2.8	0	8
16-Jun-21	7:00	8.78	13	13.8	0	0.0	113	109	3	2.8	0	8
16-Jun-21	8:00	8.63	13	11.3	0	0.0	113	109	3	2.8	0	8
16-Jun-21	9:00	8.55	17	13.0	0	0.0	106	109	2	2.8	0	8
16-Jun-21	10:00	8.40	9	13.0	0	0.0	109	109	2	2.8	0	8
16-Jun-21	11:00	8.75	15	13.5	0	0.0	112	109	2	2.8	0	8
16-Jun-21	12:00	8.53	18	14.8	0	0.0	109	109	2	2.8	0	8
16-Jun-21	13:00	8.01	13	13.8	0	0.0	112	109	3	2.7	0	8
16-Jun-21	14:00	8.34	10	14.0	0	0.0	111	109	3	2.7	0	8
16-Jun-21	15:00	8.40	11	13.0	0	0.0	110	109	3	2.7	0	8
16-Jun-21	16:00	8.13	15	12.3	0	0.0	109	109	3	2.7	0	8
16-Jun-21	17:00	8.62	9	11.3	0	0.0	107	109	3	2.7	0	8
16-Jun-21	18:00	8.46	8	10.8	0	0.0	116	109	3	2.7	0	8
16-Jun-21	19:00	8.34	8	10.0	0	0.0	107	109	3	2.7	0	8
16-Jun-21	20:00	8.61	12	9.3	0	0.0	113	109	2	2.6	0	8
16-Jun-21	21:00	8.46	13	10.3	0	0.0	110	109	3	2.6	0	8
16-Jun-21	22:00	8.39	9	10.5	0	0.0	114	109	3	2.6	0	8
16-Jun-21	23:00	8.53	11	11.3	0	0.0	105	109	2	2.6	0	8
17-Jun-21	0:00	8.42	10	10.8	0	0.0	114	109	3	2.6	0	8
17-Jun-21	1:00	8.39	12	10.5	0	0.0	108	109	2	2.5	0	8
17-Jun-21	2:00	8.72	13	11.5	0	0.0	110	109	2	2.5	0	8
17-Jun-21	3:00	8.44	8	10.8	0	0.0	107	110	2	2.5	0	8
17-Jun-21	4:00	8.55	15	12.0	0	0.0	119	110	2	2.5	0	8
17-Jun-21	5:00	8.19	13	12.3	0	0.0	102	111	3	2.5	0	8
17-Jun-21	6:00	8.23	10	11.5	0	0.0	122	111	2	2.5	0	8
17-Jun-21	7:00	8.19	14	13.0	0	0.0	107	111	2	2.5	0	8
17-Jun-21	8:00	8.44	13	12.5	0	0.0	110	110	2	2.5	0	8
17-Jun-21	9:00	8.33	11	12.0	0	0.0	112	111	3	2.5	0	8
17-Jun-21	10:00	8.64	19	14.3	0	0.0	112	111	3	2.5	0	8
17-Jun-21	11:00	8.53	19	15.5	0	0.0	100	110	3	2.6	0	8
17-Jun-21	12:00	8.20	14	15.8	0	0.0	116	111	3	2.6	0	8
17-Jun-21	13:00	8.25	17	17.3	0	0.0	111	111	3	2.6	0	8
17-Jun-21	14:00	8.35	16	16.5	1	0.0	107	110	3	2.6	0	8
17-Jun-21	15:00	8.31	12	14.8	0	0.0	112	110	3	2.6	0	8
17-Jun-21	16:00	8.55	27	18.0	0	0.0	112	111	3	2.6	0	8
17-Jun-21	17:00	8.57	20	18.8	4	0.2	107	111	4	2.7	0	8
17-Jun-21	18:00	8.64	23	20.5	4	0.4	110	110	4	2.7	0	8
17-Jun-21	19:00	8.89	29	24.8	25	1.4	113	111	5	2.8	0	9
17-Jun-21	20:00	8.73	26	24.5	6	1.7	107	110	4	2.9	0	8
17-Jun-21	21:00	8.86	21	24.8	7	2.0	111	110	3	2.9	0	8
17-Jun-21	22:00	8.62	21	24.3	1	2.0	117	110	3	2.9	0	8
17-Jun-21	23:00	9.35	16	21.0	0	2.0	110	111	3	2.9	0	9

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

							BH Outlet					Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
18-Jun-21	0:00	8.61	10	17.0	0	2.0	108	110	4	3.0	0	8
18-Jun-21	1:00	8.62	12	14.8	0	2.0	110	111	3	3.0	0	8
18-Jun-21	2:00	8.61	10	12.0	0	2.0	112	111	3	3.0	0	8
18-Jun-21	3:00	8.43	7	9.8	0	2.0	100	110	2	3.0	0	8
18-Jun-21	4:00	8.46	8	9.3	0	2.0	120	110	2	3.0	0	8
18-Jun-21	5:00	8.43	11	9.0	0	2.0	103	110	4	3.1	0	8
18-Jun-21	6:00	8.12	7	8.3	0	2.0	123	110	3	3.1	0	8
18-Jun-21	7:00	8.17	9	8.8	0	2.0	111	111	3	3.2	0	8
18-Jun-21	8:00	8.43	10	9.3	3	2.1	107	110	4	3.3	0	8
18-Jun-21	9:00	8.63	13	9.8	4	2.3	112	110	4	3.3	0	8
18-Jun-21	10:00	8.58	12	11.0	1	2.3	106	110	4	3.3	0	8
18-Jun-21	11:00	8.26	12	11.8	0	2.3	110	111	3	3.3	0	8
18-Jun-21	12:00	7.81	12	12.3	0	2.3	108	110	3	3.3	0	7
18-Jun-21	13:00	7.86	12	12.0	0	2.3	107	110	3	3.3	0	7
18-Jun-21	14:00	7.79	14	12.5	0	2.3	112	110	3	3.3	0	7
18-Jun-21	15:00	7.56	16	13.5	0	2.3	114	110	3	3.3	0	7
18-Jun-21	16:00	7.94	13	13.8	0	2.3	108	110	5	3.4	0	8
18-Jun-21	17:00	8.33	13	14.0	0	2.1	113	111	4	3.4	0	8
18-Jun-21	18:00	8.69	8	12.5	0	2.0	116	111	4	3.4	0	8
18-Jun-21	19:00	8.58	8	10.5	0	0.9	108	111	5	3.4	0	8
18-Jun-21	20:00	8.48	8	9.3	0	0.7	112	111	4	3.4	0	8
18-Jun-21	21:00	8.63	10	8.5	0	0.4	115	111	3	3.4	0	8
18-Jun-21	22:00	8.46	9	8.8	0	0.3	110	111	4	3.5	0	8
18-Jun-21	23:00	8.31	8	8.8	0	0.3	107	111	3	3.5	0	8
	Min	7.56	7	8.3	0	0	87	109	2	2.5	0	7
	Max	9.71	29	24.8	25	2.3	123	111	5	3.5	0	9
	Avg	8.52	13	12.7	0.6	0.7	110	110	3	2.9	0	8
	Std Dev	0.30	4.5	3.6	2.8	1.0	5.73	0.6	0.7	0.3	0	0.3

Note: All times are Eastern Standard Time