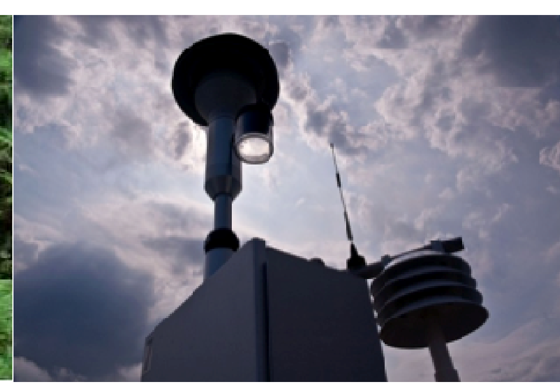
Report No. 22001

Report:

Covanta Durham York Renewable Energy Limited Partnership
Durham York Energy Centre
2020 Voluntary Compliance Emission Testing Program

Date: August 18, 2020





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Covanta Durham York Renewable Energy Limited Partnership
Durham York Energy Centre
2020 Voluntary Compliance Emission Testing Program

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Revision History

Version	Date	Summary Changes/Purpose of Revision
1	August 18, 2020	None

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EXECUTIVE SUMMARY

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, 2020. The voluntary emission testing program was performed at the request of the Regions of Durham and York. The current test program is the fifth 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

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 2019, 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, 2020) 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, 2020 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)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1212	-
Steam (tonnes/day)*	-	-	-	807	-
MSW Combusted (tonnes/day)*	-	-	-	190	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	488	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	4264	-
Filterable Particulate (mg/Rm^3) (1)	1.22	1.49	0.72	1.14	9
PM_{10} with Condensable (mg/Rm^3) (1)	<4.35	<11.4	<3.98	<6.56	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.93	<10.9	<3.49	<6.11	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.10	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	0.62	0.64	0.53	0.60	-
Cadmium (µg/Rm^3) (1)	0.029	0.12	<0.022	<0.056	7
Lead (µg/Rm^3) (1)	0.43	0.76	0.47	0.55	50
Mercury (µg/Rm^3) (1)	0.19	0.090	0.11	0.13	15
Antimony (µg/Rm^3) (1)	<0.044	0.050	<0.045	<0.046	-
Arsenic (µg/Rm^3) (1)	<0.044	<0.045	<0.045	<0.045	-
Barium (µg/Rm^3) (1)	2.25	2.76	2.53	2.51	-
Beryllium (µg/Rm^3) (1)	<0.044	<0.045	<0.045	<0.045	-
Chromium (µg/Rm^3) (1)	0.86	0.89	0.81	0.85	-
Cobalt (µg/Rm^3) (1)	<0.044	<0.045	<0.045	<0.045	-
Copper (µg/Rm^3) (1)	2.41	0.69	0.47	1.19	-
Molybdenum (µg/Rm^3) (1)	4.94	5.07	5.04	5.02	-
Nickel (µg/Rm^3) (1)	1.73	1.45	1.41	1.53	-
Selenium (µg/Rm^3) (1)	0.68	<0.23	<0.22	<0.38	-
Silver (µg/Rm^3) (1)	<0.044	<0.045	<0.045	<0.045	-
Thallium (µg/Rm^3) (1)	<0.044	<0.045	<0.045	<0.045	-
Vanadium (µg/Rm^3) (1)	<0.022	<0.023	<0.022	<0.022	-
Zinc (µg/Rm^3) (1)	3.79	4.53	3.49	3.93	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<1.77	<1.70	<1.99	<1.82	60
Total Chlorobenzenes (ng/Rm^3) (1)	<636	<464	<582	<560	-
Total Chlorophenols (ng/Rm^3) (1)	<163	<164	<159	<162	-
Total PAHs (ng/Rm^3) (1)	<1102	<504	<731	<779	-
VOCs (µg/Rm^3) (1)	<117	<149	<98.2	<121	-
Aldehydes (µg/Rm^3) (1)	<227	<317	<209	<251	-
Total VOCs (µg/Rm^3) (1) (4)	<344	<466	<307	<372	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.1	0.3	0.2	0.2	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)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1300	-
Steam (tonnes/day)*	-	-	-	807	-
MSW Combusted (tonnes/day)*	-	-	-	194	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	631	-
Carbon Injection (kg/day)*	-	-	-	127	-
Lime Injection (kg/day)*	-	-	-	4185	-
Filterable Particulate (mg/Rm^3) (1)	0.99	0.73	1.41	1.04	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.61	<3.33	2.66	<3.20	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.35	<3.19	2.46	<3.00	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	0.46	0.46	0.50	0.47	-
Cadmium (µg/Rm^3) (1)	0.084	0.055	0.19	0.11	7
Lead (µg/Rm^3) (1)	0.66	0.65	0.53	0.61	50
Mercury (µg/Rm^3) (1)	0.033	0.13	0.14	0.10	15
Antimony (µg/Rm^3) (1)	<0.044	0.021	0.062	<0.042	-
Arsenic (µg/Rm^3) (1)	<0.044	<0.043	<0.045	<0.044	-
Barium (µg/Rm^3) (1)	3.04	2.40	3.03	2.82	-
Beryllium (µg/Rm^3) (1)	<0.044	<0.043	<0.045	<0.044	-
Chromium (µg/Rm^3) (1)	0.95	0.91	1.04	0.97	-
Cobalt (µg/Rm^3) (1)	0.63	0.025	<0.045	<0.23	-
Copper (µg/Rm^3) (1)	2.03	1.01	0.60	1.21	-
Molybdenum (µg/Rm^3) (1)	5.07	4.58	5.11	4.92	-
Nickel (µg/Rm^3) (1)	1.73	1.59	1.40	1.57	-
Selenium (µg/Rm^3) (1)	<0.22	<0.21	<0.23	<0.22	-
Silver (µg/Rm^3) (1)	<0.044	<0.043	<0.045	<0.044	-
Thallium (µg/Rm^3) (1)	<0.044	<0.043	0.11	<0.065	-
Vanadium (µg/Rm^3) (1)	0.039	<0.021	<0.023	<0.028	-
Zinc (µg/Rm^3) (1)	5.64	4.90	7.91	6.15	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<2.14	<3.26	<2.19	<2.53	60
Total Chlorobenzenes (ng/Rm^3) (1)	<450	<443	<427	<440	-
Total Chlorophenols (ng/Rm^3) (1)	<190	<185	<247	<207	-
Total PAHs (ng/Rm^3) (1)	<810	<1090	<826	<909	-
VOCs (µg/Rm^3) (1)	<150	<164	<137	<150	-
Aldehydes (µg/Rm^3) (1)	<305	<291	<245	<281	-
Total VOCs (µg/Rm^3) (1) (4)	<455	<455	<382	<431	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	3.1	1.4	0.7	1.7	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)	7.5	15.2	29.5	40
	Hydrogen Chloride (mg/Rm^3) (2)	4.2	4.5	4.9	9
	Nitrogen Oxides (mg/Rm^3) (2)	107	109	110	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0	0	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	7.5	11.4	19.3	40
	Hydrogen Chloride (mg/Rm^3) (2)	4.8	5.1	5.5	9
	Nitrogen Oxides (mg/Rm^3) (2)	108	109	110	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0	0	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 2020 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 805 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, 2020. The voluntary emission testing program was performed at the request of the Regions of Durham and York. The current test program is the fifth 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
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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

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 Spring voluntary sampling program would follow the procedures detailed in ORTECH Pre-Test Plan No. 21800, “Covanta Durham York Renewable Energy Limited Partnership Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (Air) No. 7306-8FDKNX”, dated July 27, 2017, with the exceptions noted in the letter. Provided in Appendix 3 is a copy of the Pre-Test Plan letters sent by the Regions, dated March 5 and May 7, 2020. 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, 2020.

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
					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
					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 2019, 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, 2020) 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, 2020 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 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.

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 2019, 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, 2020 at 00:00 to June 18, 2020 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, 2020. 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. 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 ALS 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 ALS 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 ± 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.

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 6.8% 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 89-102%. 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 82-100%. 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, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel and zinc were detected in the blank train at levels greater than the limit of reporting. Chromium, cobalt, lead, molybdenum and nickel were observed by the analytical laboratory in the method blank at levels greater than the limit of reporting. Lead was observed by the analytical laboratory in the reagent 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 8.7% 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 92-97% 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 89-98%, except the 3B fraction (80%), 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 1%, 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 103% for hydrogen chloride, 109% for hydrogen fluoride and 103% 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 110% for hydrogen chloride, 105% for hydrogen fluoride and 104% for ammonia, within the acceptable range of 80-120%.

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. A trip spike sample was prepared by the analytical laboratory, taken to the site and submitted for analysis with the test samples. Acrolein and formaldehyde were not detected in the trip spike. The recovery for acetaldehyde was 75%.

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 and in the method blank in quantities similar to those found in the test samples. The test sample data may be biased high for these compounds as a result of this potential background.

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 95-120% 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 reported results for chlorobenzene should be considered estimates as the 13C6-chlorobenzene standard was very poorly recovered for the samples and QC.

Per the analytical report for chlorophenols, the labelled extraction standard recoveries are below the method control limits. Native target results, calculated via isotope dilution, are not expected to be biased.

Per the analytical report for PAHs, there is a co-eluting interference that may be elevating the reported values of fluorene as well as the field standard fluorene-d10.

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 68.3-112.9%.

Per the VOC analytical report, Cumene (isopropyl benzene) and mesitylene (1,3,5-trimethylbenzene) are outside the normal volatility range of VOST therefore results may be biased low. Also, the ion abundance ratios for detected levels of styrene are not within the method control limits due to an interference affecting the secondary ion. The primary ion, used for quantification, is free from interference.

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, 2020) 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, 2020.

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	140
Moisture by Volume (%)	15.3	15.7
Velocity (m/s)	17.5	17.2
Static Pressure (kPa)	-2.05	-2.01
Absolute Pressure (kPa)	99.6	99.7
Carbon Dioxide by Volume (%)**	10.6	10.9
Oxygen by Volume (%)**	8.73	8.50

* 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)	25.8	25.4
Dry Reference Flowrate (Rm^3/s)**	15.5	15.2
Dry Adjusted Flowrate (Rm^3/s)***	19.0	19.0
Wet Reference Flowrate (Rm^3/s)**	18.3	18.0

* 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)	0.85	0.78
Dry Reference Conc. (mg/Rm^3)*	1.41	1.31
Dry Adjusted Conc. (mg/Rm^3)**	1.14	1.04
Wet Reference Conc. (mg/Rm^3)*	1.19	1.10
Emission Rate (mg/s)	21.9	19.8

* 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 particulate dry adjusted concentration at the Boiler No. 1 BH Outlet (1.14 mg/Rm^3, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (1.04 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 5.5 mg and 1.3 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 5.4 mg and 0.5 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)	<0.47	<0.30	<0.15	<0.15
Dry Reference Conc. (mg/Rm^3)*	<0.79	<0.50	<0.25	<0.25
Dry Adjusted Conc. (mg/Rm^3)**	<0.66	<0.40	<0.21	<0.20
Wet Reference Conc. (mg/Rm^3)*	<0.67	<0.42	<0.21	<0.21
Emission Rate (mg/s)	<12.0	<7.53	<3.85	<3.77

* 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)	2.59	1.36	1.63	0.75
Dry Reference Conc. (mg/Rm^3)*	4.32	2.27	2.72	1.25
Dry Adjusted Conc. (mg/Rm^3)**	3.62	1.81	2.28	0.99
Wet Reference Conc. (mg/Rm^3)*	3.65	1.91	2.30	1.05
Emission Rate (mg/s)	66.6	34.4	42.0	18.9

* 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 3.2 mg for the inorganic fraction and 1.7 mg for the organic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 0.8 mg for the inorganic fraction and 0.2 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)	<4.69	<2.41	<4.37	<2.26
Dry Reference Conc. (mg/Rm^3)*	<7.82	<4.01	<7.29	<3.76
Dry Adjusted Conc. (mg/Rm^3)**	<6.56	<3.20	<6.11	<3.00
Wet Reference Conc. (mg/Rm^3)*	<6.61	<3.38	<6.16	<3.17
Emission Rate (mg/s)	<121	<60.8	<113	<57.0

* 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)	3.39	3.91	<0.080	<0.082	0.45	0.36
Dry Reference Conc. (mg/Rm^3)*	5.60	6.43	<0.13	<0.14	0.74	0.59
Dry Adjusted Conc. (mg/Rm^3)**	4.53	5.13	<0.11	<0.11	0.60	0.47
Wet Reference Conc. (mg/Rm^3)*	4.74	5.47	<0.11	<0.12	0.63	0.50
Emission Rate (mg/s)	85.7	98.4	<2.01	<2.07	11.3	9.06
Dry Adjusted Conc. (ppm)**	3.04	3.44	<0.13	<0.13	0.86	0.68

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

Hydrogen fluoride, hydrogen chloride 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, 2020 at 00:00 to June 18, 2020 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)	-	10.31	9.32
	Carbon Monoxide (mg/Rm^3, 4-hr)*	≤ 40	29.5	19.3
	Sulphur Dioxide (mg/Rm^3, 24-hr)*	≤ 35	0	0
	Nitrogen Oxides (mg/Rm^3, 24-hr)*	≤ 121	110	110
	Hydrogen Chloride (mg/Rm^3, 24-hr)*	≤ 9	4.9	5.5
	Total Hydrocarbons (mg/Rm^3, 1-hr)*	-	0	0
Quench Inlet	Oxygen (%, 1-hr)	≥ 6	10	9

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

Total hydrocarbon concentration data was measured by ORTECH on June 15 and June 16, 2020 at the Quench Inlet and 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)*	-	0.9	1.3
	Total Hydrocarbons (10-minute)**	-	0.9	1.3
Quench Inlet	Total Hydrocarbons (1-minute)*	-	0.2	1.7
	Total Hydrocarbons (10-minute)**	50	0.1	1.8

* 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)	<0.041	0.081
Dry Reference Conc. (µg/Rm^3)*	<0.069	0.14
Dry Adjusted Conc. (µg/Rm^3)**	<0.056	0.11
Wet Reference Conc. (µg/Rm^3)*	<0.058	0.11
Emission Rate (mg/s)	<0.0011	0.0020

* 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)	0.41	0.46
Dry Reference Conc. (µg/Rm^3)*	0.68	0.77
Dry Adjusted Conc. (µg/Rm^3)**	0.55	0.61
Wet Reference Conc. (µg/Rm^3)*	0.58	0.65
Emission Rate (mg/s)	0.011	0.012

* 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 each test, 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)	0.097	0.076
Dry Reference Conc. (µg/Rm^3)*	0.16	0.13
Dry Adjusted Conc. (µg/Rm^3)**	0.13	0.10
Wet Reference Conc. (µg/Rm^3)*	0.14	0.11
Emission Rate (mg/s)	0.0025	0.0019

* 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)	0.074	0.12
Dry Reference Conc. (ng/Rm^3)*	0.12	0.20
Dry Adjusted Conc. (ng/Rm^3)**	0.099	0.16
Wet Reference Conc. (ng/Rm^3)*	0.10	0.17
Emission Rate (ng/s)	1.94	3.06

* 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	0.034
Dry Reference Conc. (ng/Rm^3)*	0.042	0.057
Dry Adjusted Conc. (ng/Rm^3)**	0.033	0.045
Wet Reference Conc. (ng/Rm^3)*	0.035	0.048
Emission Rate (ng/s)	0.65	0.85

* 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)	1.23	1.72
Dry Reference Conc. (pg TEQ/Rm^3)*	2.06	2.89
Dry Adjusted Conc. (pg TEQ/Rm^3)**	1.64	2.30
Wet Reference Conc. (pg TEQ/Rm^3)*	1.74	2.43
Emission Rate (ng TEQ/s)	0.032	0.043

* 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)*	<1.82	<2.53

* 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)	<417	<328
Dry Reference Conc. (ng/Rm^3)*	<701	<552
Dry Adjusted Conc. (ng/Rm^3)**	<560	<440
Wet Reference Conc. (ng/Rm^3)*	<591	<464
Emission Rate (µg/s)	<11.0	<8.32

* 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)	<121	<155
Dry Reference Conc. (ng/Rm^3)*	<203	<260
Dry Adjusted Conc. (ng/Rm^3)**	<162	<207
Wet Reference Conc. (ng/Rm^3)*	<171	<218
Emission Rate (µg/s)	<3.16	<3.91

* 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)	<578	<678
Dry Reference Conc. (ng/Rm^3)*	<969	<1140
Dry Adjusted Conc. (ng/Rm^3)**	<779	<909
Wet Reference Conc. (ng/Rm^3)*	<818	<958
Emission Rate (µg/s)	<15.2	<17.2

* 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)	123	142	56.9	65.7	<1.83	<1.85
Dry Reference Conc. (µg/Rm^3)*	206	238	95.1	110	<3.06	<3.10
Dry Adjusted Conc. (µg/Rm^3)**	170	190	78.5	88.0	<2.52	<2.47
Wet Reference Conc. (µg/Rm^3)*	175	201	80.6	92.9	<2.59	<2.61
Emission Rate (mg/s)	3.32	3.59	1.53	1.66	<0.049	<0.047

* 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. 3, respectively. 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)	<88.1	<111
Dry Reference Conc. (µg/Rm^3)*	<147	<188
Dry Adjusted Conc. (µg/Rm^3)**	<121	<150
Wet Reference Conc. (µg/Rm^3)*	<125	<157
Emission Rate (mg/s)	<2.37	<2.89

* 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)*	<451	<539
Dry Adjusted Conc. (µg/Rm^3)**	<372	<431
Emission Rate (mg/s)	<7.27	<8.19

* 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 2020 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 (6% of the 1-hour standard with meteorological anomaly removal), all other contaminants were less than 2% of 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, 2020 at 00:00 to June 18, 2020 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.

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
15 June 20	395	1277	0	1212	1298	806	808	184	192	421	575	126	127	4116	4090
16 June 20	392	589	0	1226	1302	805	807	190	198	489	629	126	127	4178	4196
17 June 20	391	0	0	1211	1300	809	805	190	189	508	642	126	127	4221	4197
18 June 20	388	0	0	1199	1301	809	808	195	196	533	679	126	127	4542	4258
Average	391	466	0	1212	1300	807	807	190	194	488	631	126	127	4264	4185

* 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 805 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 2019 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 and June 16, 2020 at the Quench Inlet and 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)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1212	-
Steam (tonnes/day)*	-	-	-	807	-
MSW Combusted (tonnes/day)*	-	-	-	190	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	488	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	4264	-
Filterable Particulate (mg/Rm^3) (1)	1.22	1.49	0.72	1.14	9
PM_{10} with Condensable (mg/Rm^3) (1)	<4.35	<11.4	<3.98	<6.56	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.93	<10.9	<3.49	<6.11	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.10	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	0.62	0.64	0.53	0.60	-
Cadmium (µg/Rm^3) (1)	0.029	0.12	<0.022	<0.056	7
Lead (µg/Rm^3) (1)	0.43	0.76	0.47	0.55	50
Mercury (µg/Rm^3) (1)	0.19	0.090	0.11	0.13	15
Antimony (µg/Rm^3) (1)	<0.044	0.050	<0.045	<0.046	-
Arsenic (µg/Rm^3) (1)	<0.044	<0.045	<0.045	<0.045	-
Barium (µg/Rm^3) (1)	2.25	2.76	2.53	2.51	-
Beryllium (µg/Rm^3) (1)	<0.044	<0.045	<0.045	<0.045	-
Chromium (µg/Rm^3) (1)	0.86	0.89	0.81	0.85	-
Cobalt (µg/Rm^3) (1)	<0.044	<0.045	<0.045	<0.045	-
Copper (µg/Rm^3) (1)	2.41	0.69	0.47	1.19	-
Molybdenum (µg/Rm^3) (1)	4.94	5.07	5.04	5.02	-
Nickel (µg/Rm^3) (1)	1.73	1.45	1.41	1.53	-
Selenium (µg/Rm^3) (1)	0.68	<0.23	<0.22	<0.38	-
Silver (µg/Rm^3) (1)	<0.044	<0.045	<0.045	<0.045	-
Thallium (µg/Rm^3) (1)	<0.044	<0.045	<0.045	<0.045	-
Vanadium (µg/Rm^3) (1)	<0.022	<0.023	<0.022	<0.022	-
Zinc (µg/Rm^3) (1)	3.79	4.53	3.49	3.93	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<1.77	<1.70	<1.99	<1.82	60
Total Chlorobenzenes (ng/Rm^3) (1)	<636	<464	<582	<560	-
Total Chlorophenols (ng/Rm^3) (1)	<163	<164	<159	<162	-
Total PAHs (ng/Rm^3) (1)	<1102	<504	<731	<779	-
VOCs (µg/Rm^3) (1)	<117	<149	<98.2	<121	-
Aldehydes (µg/Rm^3) (1)	<227	<317	<209	<251	-
Total VOCs (µg/Rm^3) (1) (4)	<344	<466	<307	<372	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.1	0.3	0.2	0.2	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)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1300	-
Steam (tonnes/day)*	-	-	-	807	-
MSW Combusted (tonnes/day)*	-	-	-	194	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	631	-
Carbon Injection (kg/day)*	-	-	-	127	-
Lime Injection (kg/day)*	-	-	-	4185	-
Filterable Particulate (mg/Rm^3) (1)	0.99	0.73	1.41	1.04	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.61	<3.33	2.66	<3.20	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.35	<3.19	2.46	<3.00	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	0.46	0.46	0.50	0.47	-
Cadmium (µg/Rm^3) (1)	0.084	0.055	0.19	0.11	7
Lead (µg/Rm^3) (1)	0.66	0.65	0.53	0.61	50
Mercury (µg/Rm^3) (1)	0.033	0.13	0.14	0.10	15
Antimony (µg/Rm^3) (1)	<0.044	0.021	0.062	<0.042	-
Arsenic (µg/Rm^3) (1)	<0.044	<0.043	<0.045	<0.044	-
Barium (µg/Rm^3) (1)	3.04	2.40	3.03	2.82	-
Beryllium (µg/Rm^3) (1)	<0.044	<0.043	<0.045	<0.044	-
Chromium (µg/Rm^3) (1)	0.95	0.91	1.04	0.97	-
Cobalt (µg/Rm^3) (1)	0.63	0.025	<0.045	<0.23	-
Copper (µg/Rm^3) (1)	2.03	1.01	0.60	1.21	-
Molybdenum (µg/Rm^3) (1)	5.07	4.58	5.11	4.92	-
Nickel (µg/Rm^3) (1)	1.73	1.59	1.40	1.57	-
Selenium (µg/Rm^3) (1)	<0.22	<0.21	<0.23	<0.22	-
Silver (µg/Rm^3) (1)	<0.044	<0.043	<0.045	<0.044	-
Thallium (µg/Rm^3) (1)	<0.044	<0.043	0.11	<0.065	-
Vanadium (µg/Rm^3) (1)	0.039	<0.021	<0.023	<0.028	-
Zinc (µg/Rm^3) (1)	5.64	4.90	7.91	6.15	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<2.14	<3.26	<2.19	<2.53	60
Total Chlorobenzenes (ng/Rm^3) (1)	<450	<443	<427	<440	-
Total Chlorophenols (ng/Rm^3) (1)	<190	<185	<247	<207	-
Total PAHs (ng/Rm^3) (1)	<810	<1090	<826	<909	-
VOCs (µg/Rm^3) (1)	<150	<164	<137	<150	-
Aldehydes (µg/Rm^3) (1)	<305	<291	<245	<281	-
Total VOCs (µg/Rm^3) (1) (4)	<455	<455	<382	<431	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	3.1	1.4	0.7	1.7	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)	7.5	15.2	29.5	40
	Hydrogen Chloride (mg/Rm^3) (2)	4.2	4.5	4.9	9
	Nitrogen Oxides (mg/Rm^3) (2)	107	109	110	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0	0	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	7.5	11.4	19.3	40
	Hydrogen Chloride (mg/Rm^3) (2)	4.8	5.1	5.5	9
	Nitrogen Oxides (mg/Rm^3) (2)	108	109	110	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0	0	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 Start	Finish	Sampling Time* min
1	June 15, 2020	10:02	18:21	180
2	June 17, 2020	9:31	13:26	180
3	June 17, 2020	16:51	20:00	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period Start	Finish	Sampling Time* min
1	June 16, 2020	11:03	13:08	120
2	June 16, 2020	14:08	16:14	120
3	June 16, 2020	16:50	18:54	120

Acid Gases Trains

Test Number	Test Date	Sampling Period Start	Finish	Sampling Time* min
1	June 15, 2020	10:03	11:58	60
2	June 15, 2020	16:49	17:49	60
3	June 15, 2020	17:57	18:57	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Finish	Sampling Time* min
1	June 17, 2020	8:56	13:18	240
2	June 18, 2020	8:11	12:22	240
3	June 18, 2020	12:42	16:49	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, 2020	12:24	13:24	60
2	June 17, 2020	13:28	14:43	60
3	June 17, 2020	14:47	15:47	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	June 17, 2020	8:51	9:31	40
2	June 17, 2020	9:37	10:17	40
3	June 17, 2020	10:23	11:03	40
4	June 17, 2020	11:07	11:47	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period		Sampling Time
			Start	Finish	min
BH Outlet	1	June 15, 2020	15:10	16:10	60
BH Outlet	2	June 16, 2020	10:00	11:00	60
BH Outlet	3	June 16, 2020	11:05	12:05	60
Quench Inlet	1	June 15, 2020	10:00	11:00	60
Quench Inlet	2	June 15, 2020	11:08	12:22	60
Quench Inlet	3	June 15, 2020	12:23	13:23	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	0.850	1.001	6.46	3.639	99.1
2	0.850	1.008	6.35	3.656	99.0
3	0.850	1.008	6.35	3.533	100.3

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	0.848	1.008	4.51	1.200	99.5
2	0.848	1.008	4.51	1.189	97.5
3	0.848	1.008	4.51	1.180	100.3

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	1.007	6.47	1.191	98.5
2	0.848	1.007	6.47	1.225	99.7
3	0.848	1.007	6.47	1.238	98.8

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	0.848	1.007	6.47	5.174	100.1
2	0.848	1.007	6.47	4.904	100.6
3	0.848	1.007	6.47	5.010	100.8

* 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. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	139	15.1	17.1	-2.12	100.0	10.5	8.66
2	141	15.2	18.0	-1.94	99.5	10.6	8.93
3	140	15.6	17.3	-1.94	99.2	10.8	8.37
Average	140	15.3	17.5	-2.00	99.6	10.6	8.65

Particle Size Distribution Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	142	15.2	17.4	-2.08	99.9	10.4	9.12
2	142	15.7	17.7	-2.08	99.7	10.3	9.13
3	140	14.5	16.8	-2.08	99.6	10.4	8.86
Average	141	15.1	17.3	-2.08	99.7	10.3	9.04

Acid Gases Trains **

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	14.5	16.8	-2.12	100.1	10.2	8.80
2	141	15.4	17.3	-2.12	99.9	10.8	8.51
3	140	14.7	17.5	-2.12	99.9	10.6	8.74
Average	140	14.9	17.2	-2.12	100.0	10.5	8.68

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	15.0	18.2	-2.08	99.4	10.6	8.91
2	141	15.5	17.3	-2.07	99.0	11.0	8.33
3	142	16.3	17.7	-2.07	99.9	11.0	8.22
Average	141	15.6	17.7	-2.07	99.4	10.9	8.49

* 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	25.3	15.3	18.9	18.1
2	26.6	15.9	19.3	18.8
3	25.5	15.2	19.3	18.0
Average	25.8	15.5	19.2	18.3

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	25.7	15.4	18.3	18.2
2	26.1	15.6	18.5	18.5
3	24.8	15.0	18.2	17.6
Average	25.5	15.3	18.4	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	24.8	15.1	18.5	17.7
2	25.5	15.3	19.2	18.2
3	25.8	15.7	19.2	18.4
Average	25.4	15.4	19.0	18.1

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	26.9	16.1	19.5	19.0
2	25.6	15.2	19.3	18.0
3	26.1	15.5	19.8	18.5
Average	26.2	15.6	19.6	18.5

* 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 Probe Rinse	Main Filter	Total	Dry Gas Volume Sampled	Particulate Concentration Actual	Dry Reference	Dry Adjusted	Wet Reference	Particulate Emission Rate
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	0.7	4.8	5.5	3.639	0.92	1.51	1.22	1.28	23.1
2	2.2	4.4	6.6	3.656	1.08	1.81	1.49	1.53	28.8
3	0.9	2.3	3.2	3.533	0.54	0.91	0.72	0.76	13.8
Average					0.85	1.41	1.14	1.19	21.9
Blank	1.3	5.5							

* 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	<0.3	1.200	<0.15	<0.25	<0.21	<0.21	<3.85
2	<0.2	1.189	<0.10	<0.17	<0.14	<0.14	<2.62
3	<0.4	1.180	<0.21	<0.34	<0.28	<0.29	<5.08
Average			<0.15	<0.25	<0.21	<0.21	<3.85
Blank	0.6						

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	<0.9	1.200	<0.45	<0.75	<0.63	<0.63	<11.6
2	<0.8	1.189	<0.40	<0.67	<0.57	<0.57	<10.5
3	<1.1	1.180	<0.56	<0.93	<0.77	<0.79	<14.0
Average			<0.47	<0.79	<0.66	<0.67	<12.0
Blank	<0.7						

* 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 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	3.3	1.200	1.65	2.75	2.31	2.33	42.4
2	9.0	1.189	4.52	7.57	6.38	6.38	118
3	3.1	1.180	1.59	2.63	2.17	2.24	39.4
Average			2.59	4.32	3.62	3.65	66.6
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	2.0	1.200	1.00	1.67	1.40	1.41	25.7
2	6.2	1.189	3.12	5.21	4.40	4.40	81.3
3	1.5	1.180	0.77	1.27	1.05	1.08	19.1
Average			1.63	2.72	2.28	2.30	42.0
Blank	0.8						

* 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*	Actual mg/m^3	Hydrogen Chloride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	6.88	1.191	3.49	5.78	4.68	4.88	88.4
2	6.99	1.225	3.45	5.71	4.62	4.82	87.3
3	6.59	1.238	3.22	5.32	4.31	4.50	81.4
Average			3.39	5.60	4.53	4.74	85.7
Blank	<0.177						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Fluoride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.160	1.191	<0.081	<0.13	<0.11	<0.11	<2.06
2	<0.158	1.225	<0.078	<0.13	<0.10	<0.11	<1.97
3	<0.163	1.238	<0.080	<0.13	<0.11	<0.11	<2.01
Average			<0.080	<0.13	<0.11	<0.11	<2.01
Blank	<0.121						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Ammonia Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	0.914	1.191	0.46	0.77	0.62	0.65	11.7
2	0.971	1.225	0.48	0.79	0.64	0.67	12.1
3	0.817	1.238	0.40	0.66	0.53	0.56	10.1
Average			0.45	0.74	0.60	0.63	11.3
Blank	<0.307						

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, 2020

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	8.18	8.81	10.31
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	5	15	46
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	7.5	15.2	29.5
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0	0
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0	0
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	91	109	117
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	107	109	110
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	2	5	6
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	4.2	4.5	4.9
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	0
Quench Inlet	Oxygen (%, 1 hr Avg)	8	8	10

Data measured by the ORTECH CEMS on June 15 and June 16, 2020

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0.9	1.7	6.4
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0.3	0.6	1.1
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0.2	0.5	0.7
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.9	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	0.8
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	1.4
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	1.0
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.2	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.1	0.5
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0.1	0.2	0.5
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.1	0.5
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		0.1	

* 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 µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	8.87	1.26	10.1
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.13	<0.05	0.13
Chromium	3.30	0.56	3.86
Cobalt	<0.2	<0.1	<0.20
Copper	1.10	9.75	10.9
Lead	1.29	0.64	1.93
Mercury *	<0.015	0.84	0.84
Molybdenum	22.0	0.19	22.2
Nickel	5.41	2.36	7.77
Selenium	<2	3.05	3.05
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	11.4	5.63	17.0
Total			<79.1

* 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. 1 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	0.22	<0.1	0.22
Arsenic	<1	<0.2	<0.20
Barium	10.7	1.56	12.3
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.34	0.18	0.53
Chromium	3.28	0.68	3.96
Cobalt	<0.2	<0.1	<0.20
Copper	1.30	1.76	3.06
Lead	1.66	1.71	3.37
Mercury *	<0.015	0.40	0.40
Molybdenum	22.5	<0.1	22.5
Nickel	5.60	0.83	6.43
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	14.3	5.80	20.1
Total			<74.9

* 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. 1 BH Outlet
Metals Analyses Test No. 3

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	9.95	1.39	11.3
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.98	0.66	3.64
Cobalt	<0.2	<0.1	<0.20
Copper	<1	2.10	2.10
Lead	1.19	0.90	2.09
Mercury *	<0.015	0.51	0.51
Molybdenum	22.6	<0.1	22.6
Nickel	5.13	1.20	6.33
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	9.70	5.94	15.6
Total			<66.6

* 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 µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.20	<0.033	<0.055	<0.044	<0.046	<0.00084
Arsenic	<0.20	<0.033	<0.055	<0.044	<0.046	<0.00084
Barium	10.1	1.68	2.78	2.25	2.35	0.043
Beryllium	<0.20	<0.033	<0.055	<0.044	<0.046	<0.00084
Cadmium	0.13	0.021	0.035	0.029	0.030	0.00054
Chromium	3.86	0.64	1.06	0.86	0.90	0.016
Cobalt	<0.20	<0.033	<0.055	<0.044	<0.046	<0.00084
Copper	10.9	1.80	2.98	2.41	2.52	0.046
Lead	1.93	0.32	0.53	0.43	0.45	0.0081
Mercury	0.84	0.14	0.23	0.19	0.19	0.0035
Molybdenum	22.2	3.69	6.10	4.94	5.16	0.093
Nickel	7.77	1.29	2.14	1.73	1.80	0.033
Selenium	3.05	0.51	0.84	0.68	0.71	0.013
Silver	<0.20	<0.033	<0.055	<0.044	<0.046	<0.00084
Thallium	<0.20	<0.033	<0.055	<0.044	<0.046	<0.00084
Vanadium	<0.10	<0.017	<0.027	<0.022	<0.023	<0.00042
Zinc	17.0	2.83	4.68	3.79	3.96	0.072
Total	<79.1	<13.1	<21.7	<17.6	<18.4	<0.33

Dry Gas Volume Sampled (Rm^3*) :	3.639
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	18.9
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. 1 BH Outlet
Metals Emission Data Test No. 2

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	0.22	0.036	0.060	0.050	0.051	0.00096
Arsenic	<0.20	<0.033	<0.055	<0.045	<0.046	<0.00087
Barium	12.3	2.00	3.35	2.76	2.84	0.053
Beryllium	<0.20	<0.033	<0.055	<0.045	<0.046	<0.00087
Cadmium	0.53	0.086	0.14	0.12	0.12	0.0023
Chromium	3.96	0.65	1.08	0.89	0.92	0.017
Cobalt	<0.20	<0.033	<0.055	<0.045	<0.046	<0.00087
Copper	3.06	0.50	0.84	0.69	0.71	0.013
Lead	3.37	0.55	0.92	0.76	0.78	0.015
Mercury	0.40	0.065	0.11	0.090	0.092	0.0017
Molybdenum	22.5	3.68	6.15	5.07	5.20	0.098
Nickel	6.43	1.05	1.76	1.45	1.49	0.028
Selenium	<1.00	<0.16	<0.27	<0.23	<0.23	<0.0043
Silver	<0.20	<0.033	<0.055	<0.045	<0.046	<0.00087
Thallium	<0.20	<0.033	<0.055	<0.045	<0.046	<0.00087
Vanadium	<0.10	<0.016	<0.027	<0.023	<0.023	<0.00043
Zinc	20.1	3.29	5.50	4.53	4.65	0.087
Total	<74.9	<12.2	<20.5	<16.9	<17.3	<0.33

Dry Gas Volume Sampled (Rm^3*) :	3.656
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	18.8

* 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 µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.20	<0.034	<0.057	<0.045	<0.048	<0.00086
Arsenic	<0.20	<0.034	<0.057	<0.045	<0.048	<0.00086
Barium	11.3	1.91	3.21	2.53	2.71	0.049
Beryllium	<0.20	<0.034	<0.057	<0.045	<0.048	<0.00086
Cadmium	<0.10	<0.017	<0.028	<0.022	<0.024	<0.00043
Chromium	3.64	0.61	1.03	0.81	0.87	0.016
Cobalt	<0.20	<0.034	<0.057	<0.045	<0.048	<0.00086
Copper	2.10	0.35	0.59	0.47	0.50	0.0090
Lead	2.09	0.35	0.59	0.47	0.50	0.0090
Mercury	0.51	0.086	0.14	0.11	0.12	0.0022
Molybdenum	22.6	3.81	6.40	5.04	5.40	0.097
Nickel	6.33	1.07	1.79	1.41	1.51	0.027
Selenium	<1.00	<0.17	<0.28	<0.22	<0.24	<0.0043
Silver	<0.20	<0.034	<0.057	<0.045	<0.048	<0.00086
Thallium	<0.20	<0.034	<0.057	<0.045	<0.048	<0.00086
Vanadium	<0.10	<0.017	<0.028	<0.022	<0.024	<0.00043
Zinc	15.6	2.64	4.43	3.49	3.74	0.067
Total	<66.6	<11.2	<18.9	<14.9	<15.9	<0.29

Dry Gas Volume Sampled (Rm³*) :	3.533
Actual Flowrate (m³/s) :	25.5
Dry Reference Flowrate (Rm³/s*) :	15.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.0

* 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. 1 BH Outlet
Summary of Metal Actual Concentrations

Metal	Actual Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	<0.033	0.036	<0.034	<0.034	4.2
Arsenic	<0.033	<0.033	<0.034	<0.033	1.6
Barium	1.68	2.00	1.91	1.87	8.9
Beryllium	<0.033	<0.033	<0.034	<0.033	1.6
Cadmium	0.021	0.086	<0.017	<0.041	93.2
Chromium	0.64	0.65	0.61	0.63	2.8
Cobalt	<0.033	<0.033	<0.034	<0.033	1.6
Copper	1.80	0.50	0.35	0.89	90.0
Lead	0.32	0.55	0.35	0.41	30.6
Mercury	0.14	0.065	0.086	0.097	39.5
Molybdenum	3.69	3.68	3.81	3.73	2.0
Nickel	1.29	1.05	1.07	1.14	11.8
Selenium	0.51	<0.16	<0.17	<0.28	70.3
Silver	<0.033	<0.033	<0.034	<0.033	1.6
Thallium	<0.033	<0.033	<0.034	<0.033	1.6
Vanadium	<0.017	<0.016	<0.017	<0.017	1.6
Zinc	2.83	3.29	2.64	2.92	11.4
Total	<13.1	<12.2	<11.2	<12.2	7.8

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

Metal	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%
Antimony	<0.055	0.060	<0.057	<0.057	4.7
Arsenic	<0.055	<0.055	<0.057	<0.055	1.9
Barium	2.78	3.35	3.21	3.12	9.5
Beryllium	<0.055	<0.055	<0.057	<0.055	1.9
Cadmium	0.035	0.14	<0.028	<0.069	93.5
Chromium	1.06	1.08	1.03	1.06	2.5
Cobalt	<0.055	<0.055	<0.057	<0.055	1.9
Copper	2.98	0.84	0.59	1.47	89.3
Lead	0.53	0.92	0.59	0.68	30.9
Mercury	0.23	0.11	0.14	0.16	38.8
Molybdenum	6.10	6.15	6.40	6.22	2.5
Nickel	2.14	1.76	1.79	1.90	11.0
Selenium	0.84	<0.27	<0.28	<0.46	69.5
Silver	<0.055	<0.055	<0.057	<0.055	1.9
Thallium	<0.055	<0.055	<0.057	<0.055	1.9
Vanadium	<0.027	<0.027	<0.028	<0.028	1.9
Zinc	4.68	5.50	4.43	4.87	11.5
Total	<21.7	<20.5	<18.9	<20.4	7.1

* 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	<0.044	0.050	<0.045	<0.046	6.3
Arsenic	<0.044	<0.045	<0.045	<0.045	0.7
Barium	2.25	2.76	2.53	2.51	10.1
Beryllium	<0.044	<0.045	<0.045	<0.045	0.7
Cadmium	0.029	0.12	<0.022	<0.056	95.1
Chromium	0.86	0.89	0.81	0.85	4.7
Cobalt	<0.044	<0.045	<0.045	<0.045	0.7
Copper	2.41	0.69	0.47	1.19	89.5
Lead	0.43	0.76	0.47	0.55	32.8
Mercury	0.19	0.090	0.11	0.13	38.8
Molybdenum	4.94	5.07	5.04	5.02	1.4
Nickel	1.73	1.45	1.41	1.53	11.3
Selenium	0.68	<0.23	<0.22	<0.38	69.8
Silver	<0.044	<0.045	<0.045	<0.045	0.7
Thallium	<0.044	<0.045	<0.045	<0.045	0.7
Vanadium	<0.022	<0.023	<0.022	<0.022	0.7
Zinc	3.79	4.53	3.49	3.93	13.6
Total	<17.6	<16.9	<14.9	<16.4	8.6

** 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
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	0.046	0.051	<0.048	<0.048	4.7
Arsenic	<0.046	<0.046	<0.048	<0.047	1.8
Barium	2.35	2.84	2.71	2.63	9.5
Beryllium	<0.046	<0.046	<0.048	<0.047	1.8
Cadmium	0.030	0.12	<0.024	<0.058	93.5
Chromium	0.90	0.92	0.87	0.89	2.6
Cobalt	<0.046	<0.046	<0.048	<0.047	1.8
Copper	2.52	0.71	0.50	1.24	89.3
Lead	0.45	0.78	0.50	0.58	31.0
Mercury	0.19	0.092	0.12	0.14	38.8
Molybdenum	5.16	5.20	5.40	5.25	2.5
Nickel	1.80	1.49	1.51	1.60	11.0
Selenium	<0.71	<0.23	<0.24	<0.39	69.6
Silver	<0.046	<0.046	<0.048	<0.047	1.8
Thallium	<0.046	<0.046	<0.048	<0.047	1.8
Vanadium	<0.023	<0.023	<0.024	<0.023	1.8
Zinc	3.96	4.65	3.74	4.11	11.6
Total	<18.4	<17.3	<15.9	<17.2	7.1

* 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	<0.00084	0.00096	<0.00086	<0.00089	7.0
Arsenic	<0.00084	<0.00087	<0.00086	<0.00086	1.7
Barium	0.043	0.053	0.049	0.048	11.2
Beryllium	<0.00084	<0.00087	<0.00086	<0.00086	1.7
Cadmium	0.00054	0.0023	<0.00043	<0.0011	95.7
Chromium	0.016	0.017	0.016	0.016	4.8
Cobalt	<0.00084	<0.00087	<0.00086	<0.00086	1.7
Copper	0.046	0.013	0.0090	0.023	88.3
Lead	0.0081	0.015	0.0090	0.011	33.5
Mercury	0.0035	0.0017	0.0022	0.0025	37.5
Molybdenum	0.093	0.098	0.097	0.096	2.6
Nickel	0.033	0.028	0.027	0.029	10.1
Selenium	0.013	<0.0043	<0.0043	<0.0072	68.5
Silver	<0.00084	<0.00087	<0.00086	<0.00086	1.7
Thallium	<0.00084	<0.00087	<0.00086	<0.00086	1.7
Vanadium	<0.00042	<0.00043	<0.00043	<0.00043	1.7
Zinc	0.072	0.087	0.067	0.075	14.0
Total	<0.33	<0.33	<0.29	<0.32	7.8

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

Metal	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.034	<0.057	<0.046	<0.048	<0.00089
Arsenic	<0.033	<0.055	<0.045	<0.047	<0.00086
Barium	1.87	3.12	2.51	2.63	0.048
Beryllium	<0.033	<0.055	<0.045	<0.047	<0.00086
Cadmium	<0.041	<0.069	<0.056	<0.058	<0.0011
Chromium	0.63	1.06	0.85	0.89	0.016
Cobalt	<0.033	<0.055	<0.045	<0.047	<0.00086
Copper	0.89	1.47	1.19	1.24	0.023
Lead	0.41	0.68	0.55	0.58	0.011
Mercury	0.097	0.16	0.13	0.14	0.0025
Molybdenum	3.73	6.22	5.02	5.25	0.096
Nickel	1.14	1.90	1.53	1.60	0.029
Selenium	<0.28	<0.46	<0.38	<0.39	<0.0072
Silver	<0.033	<0.055	<0.045	<0.047	<0.00086
Thallium	<0.033	<0.055	<0.045	<0.047	<0.00086
Vanadium	<0.017	<0.028	<0.022	<0.023	<0.00043
Zinc	2.92	4.87	3.93	4.11	0.075
Total	<12.2	<20.4	<16.4	<17.2	<0.32

* 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	8.92	2.08	11.0
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.12	<0.05	0.12
Chromium	3.13	0.72	3.85
Cobalt	<0.2	0.16	0.16
Copper	1.16	6.58	7.74
Lead	1.16	1.32	2.48
Mercury *	<0.015	<0.15	<0.15
Molybdenum	22.3	<0.1	22.3
Nickel	5.87	5.92	11.8
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	8.94	10.2	19.1
Total			<80.8

* 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. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	96.1	0.011	0.019	0.015	0.016	0.30
Pentachlorodibenzo-p-dioxins	125	0.014	0.024	0.020	0.020	0.39
Hexachlorodibenzo-p-dioxins	195	0.023	0.038	0.031	0.032	0.61
Heptachlorodibenzo-p-dioxins	125	0.014	0.024	0.020	0.020	0.39
Octachlorodibenzo-p-dioxin	90.2	0.010	0.017	0.014	0.015	0.28
Total	631	0.073	0.12	0.10	0.10	1.96

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	64.8	0.0075	0.013	0.010	0.011	0.20
Pentachlorodibenzofurans	38.1	0.0044	0.0074	0.0061	0.0062	0.12
Hexachlorodibenzofurans	41.9	0.0048	0.0081	0.0067	0.0069	0.13
Heptachlorodibenzofurans	33.1	0.0038	0.0064	0.0053	0.0054	0.10
Octachlorodibenzofuran	10.0	0.0012	0.0019	0.0016	0.0016	0.031
Total	188	0.022	0.036	0.030	0.031	0.58

Dry Gas Volume Sampled (Rm^3*) :	5.174
Actual Flowrate (m^3/s) :	26.9
Dry Reference Flowrate (Rm^3/s*) :	16.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
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

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 pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	89.4	0.011	0.018	0.014	0.015	0.28
Pentachlorodibenzo-p-dioxins	105	0.013	0.021	0.017	0.018	0.33
Hexachlorodibenzo-p-dioxins	219	0.027	0.045	0.035	0.038	0.68
Heptachlorodibenzo-p-dioxins	115	0.014	0.023	0.018	0.020	0.36
Octachlorodibenzo-p-dioxin	84.0	0.010	0.017	0.013	0.014	0.26
Total	612	0.074	0.12	0.098	0.11	1.90

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	39.9	0.0048	0.0081	0.0064	0.0069	0.12
Pentachlorodibenzofurans	45.5	0.0055	0.0093	0.0073	0.0078	0.14
Hexachlorodibenzofurans	37.1	0.0045	0.0076	0.0060	0.0064	0.11
Heptachlorodibenzofurans	39.6	0.0048	0.0081	0.0064	0.0068	0.12
Octachlorodibenzofuran	18.7	0.0023	0.0038	0.0030	0.0032	0.058
Total	181	0.022	0.037	0.029	0.031	0.56

Dry Gas Volume Sampled (Rm³*) :	4.904
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	15.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.0

* 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 pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	104	0.012	0.021	0.016	0.017	0.32
Pentachlorodibenzo-p-dioxins	77.4	0.0092	0.015	0.012	0.013	0.24
Hexachlorodibenzo-p-dioxins	217	0.026	0.043	0.034	0.036	0.67
Heptachlorodibenzo-p-dioxins	129	0.015	0.026	0.020	0.022	0.40
Octachlorodibenzo-p-dioxin	107	0.013	0.021	0.017	0.018	0.33
Total	634	0.075	0.13	0.099	0.11	1.96

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	71.8	0.0085	0.014	0.011	0.012	0.22
Pentachlorodibenzofurans	63.4	0.0075	0.013	0.0099	0.011	0.20
Hexachlorodibenzofurans	55.7	0.0066	0.011	0.0087	0.0093	0.17
Heptachlorodibenzofurans	42.4	0.0050	0.0085	0.0066	0.0071	0.13
Octachlorodibenzofuran	27.6	0.0033	0.0055	0.0043	0.0046	0.085
Total	261	0.031	0.052	0.041	0.044	0.81

Dry Gas Volume Sampled (Rm^3*) :	5.010
Actual Flowrate (m^3/s) :	26.1
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
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. 1 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzo-p-dioxins	0.011	0.011	0.012	0.011	7.0
Pentachlorodibenzo-p-dioxins	0.014	0.013	0.0092	0.012	22.2
Hexachlorodibenzo-p-dioxins	0.023	0.027	0.026	0.025	8.4
Heptachlorodibenzo-p-dioxins	0.014	0.014	0.015	0.015	4.7
Octachlorodibenzo-p-dioxin	0.010	0.010	0.013	0.011	12.4
Total	0.073	0.074	0.075	0.074	1.5

Furans

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzofurans	0.0075	0.0048	0.0085	0.0069	27.4
Pentachlorodibenzofurans	0.0044	0.0055	0.0075	0.0058	27.1
Hexachlorodibenzofurans	0.0048	0.0045	0.0066	0.0053	21.3
Heptachlorodibenzofurans	0.0038	0.0048	0.0050	0.0045	14.0
Octachlorodibenzofuran	0.0012	0.0023	0.0033	0.0022	47.4
Total	0.022	0.022	0.031	0.025	21.2

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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.019	0.018	0.021	0.019	7.1
Pentachlorodibenzo-p-dioxins	0.024	0.021	0.015	0.020	21.9
Hexachlorodibenzo-p-dioxins	0.038	0.045	0.043	0.042	8.8
Heptachlorodibenzo-p-dioxins	0.024	0.023	0.026	0.024	4.8
Octachlorodibenzo-p-dioxin	0.017	0.017	0.021	0.019	12.7
Total	0.12	0.12	0.13	0.12	1.9

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.013	0.0081	0.014	0.012	27.3
Pentachlorodibenzofurans	0.0074	0.0093	0.013	0.0098	27.4
Hexachlorodibenzofurans	0.0081	0.0076	0.011	0.0089	21.5
Heptachlorodibenzofurans	0.0064	0.0081	0.0085	0.0076	14.4
Octachlorodibenzofuran	0.0019	0.0038	0.0055	0.0038	47.7
Total	0.036	0.037	0.052	0.042	21.4

* 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	0.015	0.014	0.016	0.015	6.2
Pentachlorodibenzo-p-dioxins	0.020	0.017	0.012	0.016	24.3
Hexachlorodibenzo-p-dioxins	0.031	0.035	0.034	0.033	6.2
Heptachlorodibenzo-p-dioxins	0.020	0.018	0.020	0.020	4.7
Octachlorodibenzo-p-dioxin	0.014	0.013	0.017	0.015	11.2
Total	0.10	0.098	0.099	0.099	1.2

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	0.010	0.0064	0.011	0.0093	27.5
Pentachlorodibenzofurans	0.0061	0.0073	0.0099	0.0078	25.2
Hexachlorodibenzofurans	0.0067	0.0060	0.0087	0.0071	20.0
Heptachlorodibenzofurans	0.0053	0.0064	0.0066	0.0061	11.7
Octachlorodibenzofuran	0.0016	0.0030	0.0043	0.0030	45.7
Total	0.030	0.029	0.041	0.033	19.6

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.016	0.015	0.017	0.016	6.6
Pentachlorodibenzo-p-dioxins	0.020	0.018	0.013	0.017	22.4
Hexachlorodibenzo-p-dioxins	0.032	0.038	0.036	0.035	8.5
Heptachlorodibenzo-p-dioxins	0.020	0.020	0.022	0.021	4.3
Octachlorodibenzo-p-dioxin	0.015	0.014	0.018	0.016	12.1
Total	0.10	0.11	0.11	0.10	1.3

Furans

Congener Group	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.011	0.0069	0.012	0.0098	27.0
Pentachlorodibenzofurans	0.0062	0.0078	0.011	0.0082	26.8
Hexachlorodibenzofurans	0.0069	0.0064	0.0093	0.0075	20.9
Heptachlorodibenzofurans	0.0054	0.0068	0.0071	0.0064	13.9
Octachlorodibenzofuran	0.0016	0.0032	0.0046	0.0032	47.2
Total	0.031	0.031	0.044	0.035	20.8

* 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	0.30	0.28	0.32	0.30	7.5
Pentachlorodibenzo-p-dioxins	0.39	0.33	0.24	0.32	23.6
Hexachlorodibenzo-p-dioxins	0.61	0.68	0.67	0.65	6.1
Heptachlorodibenzo-p-dioxins	0.39	0.36	0.40	0.38	5.8
Octachlorodibenzo-p-dioxin	0.28	0.26	0.33	0.29	12.5
Total	1.96	1.90	1.96	1.94	1.9

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	0.20	0.12	0.22	0.18	28.5
Pentachlorodibenzofurans	0.12	0.14	0.20	0.15	26.3
Hexachlorodibenzofurans	0.13	0.11	0.17	0.14	21.3
Heptachlorodibenzofurans	0.10	0.12	0.13	0.12	12.2
Octachlorodibenzofuran	0.031	0.058	0.085	0.058	46.7
Total	0.58	0.56	0.81	0.65	20.9

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 ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.011	0.019	0.015	0.016	0.30
Pentachlorodibenzo-p-dioxins	0.012	0.020	0.016	0.017	0.32
Hexachlorodibenzo-p-dioxins	0.025	0.042	0.033	0.035	0.65
Heptachlorodibenzo-p-dioxins	0.015	0.024	0.020	0.021	0.38
Octachlorodibenzo-p-dioxin	0.011	0.019	0.015	0.016	0.29
Total	0.074	0.12	0.099	0.10	1.94

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.0069	0.012	0.0093	0.0098	0.18
Pentachlorodibenzofurans	0.0058	0.0098	0.0078	0.0082	0.15
Hexachlorodibenzofurans	0.0053	0.0089	0.0071	0.0075	0.14
Heptachlorodibenzofurans	0.0045	0.0076	0.0061	0.0064	0.12
Octachlorodibenzofuran	0.0022	0.0038	0.0030	0.0032	0.058
Total	0.025	0.042	0.033	0.035	0.65

* 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	<0.54	<0.92
Pentachlorodibenzo-p-dioxins	<0.49	<0.46
Hexachlorodibenzo-p-dioxins	<0.46	1.76
Heptachlorodibenzo-p-dioxins	<0.79	1.82
Octachlorodibenzo-p-dioxin	3.03	<3.3
Total	<5.31	<8.26

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<0.56	<0.68
Pentachlorodibenzofurans	<0.37	<0.49
Hexachlorodibenzofurans	2.58	4.52
Heptachlorodibenzofurans	<0.60	<0.65
Octachlorodibenzofuran	1.20	<1.5
Total	<5.31	<7.84

"<" 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 pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.84	<0.097	<0.16	<0.13	<0.14	<0.0026
12378-pentachlorodibenzo-p-dioxin	3.22	0.37	0.62	0.51	0.53	0.010
123478-hexachlorodibenzo-p-dioxin	<4.5	<0.52	<0.87	<0.72	<0.74	<0.014
123678-hexachlorodibenzo-p-dioxin	10.5	1.21	2.03	1.68	1.72	0.033
123789-hexachlorodibenzo-p-dioxin	5.22	0.60	1.01	0.83	0.85	0.016
1234678-heptachlorodibenzo-p-dioxin	62.7	7.25	12.1	10.0	10.3	0.20
Octachlorodibenzo-p-dioxin	90.2	10.4	17.4	14.4	14.8	0.28
2378-tetrachlorodibenzofuran	<2.1	<0.24	<0.41	<0.34	<0.34	<0.0065
12378-pentachlorodibenzofuran	4.20	0.49	0.81	0.67	0.69	0.013
23478-pentachlorodibenzofuran	5.75	0.67	1.11	0.92	0.94	0.018
123478-hexachlorodibenzofuran	<4.9	<0.57	<0.95	<0.78	<0.80	<0.015
123678-hexachlorodibenzofuran	<4.4	<0.51	<0.85	<0.70	<0.72	<0.014
234678-hexachlorodibenzofuran	9.82	1.14	1.90	1.57	1.61	0.031
123789-hexachlorodibenzofuran	<4.9	<0.57	<0.95	<0.78	<0.80	<0.015
1234678-heptachlorodibenzofuran	18.9	2.19	3.65	3.02	3.10	0.059
1234789-heptachlorodibenzofuran	2.93	0.34	0.57	0.47	0.48	0.0091
Octachlorodibenzofuran	10.0	1.16	1.93	1.60	1.64	0.031
PCB 81	15.5	1.79	3.00	2.47	2.54	0.048
PCB 77	170	19.7	32.9	27.1	27.8	0.53
PCB 123	72.4	8.38	14.0	11.6	11.9	0.23
PCB 118	5160	597	997	823	845	16.1
PCB 114	126	14.6	24.4	20.1	20.6	0.39
PCB 105	1930	223	373	308	316	6.01
PCB 126	<3.7	<0.43	<0.72	<0.59	<0.61	<0.012
PCB 167	65.5	7.58	12.7	10.5	10.7	0.20
PCB 156/157	183	21.2	35.4	29.2	30.0	0.57
PCB 169	<4.9	<0.57	<0.95	<0.78	<0.80	<0.015
PCB 189	5.73	0.66	1.11	0.91	0.94	0.018
Total Dioxins & Furans Only	<245	<28.4	<47.4	<39.1	<40.1	<0.76
Total PCBs Only	<7737	<895	<1495	<1235	<1267	<24.1
Total Dioxins & Furans and PCBs	<7982	<923	<1543	<1274	<1307	<24.8

Dry Gas Volume Sampled (Rm³*) :	5.174
Actual Flowrate (m³/s) :	26.9
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	19.0

* 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 pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.70	<0.085	<0.14	<0.11	<0.12	<0.0022
12378-pentachlorodibenzo-p-dioxin	<2.4	<0.29	<0.49	<0.39	<0.41	<0.0074
123478-hexachlorodibenzo-p-dioxin	4.33	0.52	0.88	0.70	0.75	0.013
123678-hexachlorodibenzo-p-dioxin	10.8	1.31	2.20	1.73	1.86	0.033
123789-hexachlorodibenzo-p-dioxin	<4.5	<0.54	<0.92	<0.72	<0.77	<0.014
1234678-heptachlorodibenzo-p-dioxin	59.2	7.17	12.1	9.51	10.2	0.18
Octachlorodibenzo-p-dioxin	84.0	10.2	17.1	13.5	14.5	0.26
2378-tetrachlorodibenzofuran	1.86	0.23	0.38	0.30	0.32	0.0058
12378-pentachlorodibenzofuran	4.05	0.49	0.83	0.65	0.70	0.013
23478-pentachlorodibenzofuran	6.02	0.73	1.23	0.97	1.04	0.019
123478-hexachlorodibenzofuran	5.08	0.62	1.04	0.82	0.87	0.016
123678-hexachlorodibenzofuran	<5.3	<0.64	<1.08	<0.85	<0.91	<0.016
234678-hexachlorodibenzofuran	<8.1	<0.98	<1.65	<1.3	<1.39	<0.025
123789-hexachlorodibenzofuran	<5.0	<0.61	<1.02	<0.80	<0.86	<0.015
1234678-heptachlorodibenzofuran	23.6	2.86	4.81	3.79	4.06	0.073
1234789-heptachlorodibenzofuran	3.46	0.42	0.71	0.56	0.60	0.011
Octachlorodibenzofuran	18.7	2.26	3.81	3.00	3.22	0.058
PCB 81	<5.5	<0.67	<1.12	<0.88	<0.95	<0.017
PCB 77	63.3	7.66	12.9	10.2	10.9	0.20
PCB 123	16.1	1.95	3.28	2.59	2.77	0.050
PCB 118	961	116	196	154	165	2.98
PCB 114	<23	<2.78	<4.7	<3.69	<3.96	<0.071
PCB 105	340	41.2	69.3	54.6	58.5	1.05
PCB 126	<3.5	<0.42	<0.71	<0.56	<0.60	<0.011
PCB 167	9.66	1.17	1.97	1.55	1.66	0.030
PCB 156/157	27.9	3.38	5.69	4.48	4.80	0.086
PCB 169	<3.6	<0.44	<0.73	<0.58	<0.62	<0.011
PCB 189	<3.5	<0.42	<0.71	<0.56	<0.60	<0.011
Total Dioxins & Furans Only	<247	<29.9	<50.4	<39.7	<42.5	<0.77
Total PCBs Only	<1457	<176	<297	<234	<251	<4.52
Total Dioxins & Furans and PCBs	<1704	<206	<348	<274	<293	<5.28

Dry Gas Volume Sampled (Rm³*) :	4.904
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	15.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.0

* 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 pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.81	<0.096	<0.16	<0.13	<0.14	<0.0025
12378-pentachlorodibenzo-p-dioxin	3.80	0.45	0.76	0.59	0.64	0.012
123478-hexachlorodibenzo-p-dioxin	5.42	0.64	1.08	0.85	0.91	0.017
123678-hexachlorodibenzo-p-dioxin	<11	<1.30	<2.20	<1.72	<1.84	<0.034
123789-hexachlorodibenzo-p-dioxin	5.37	0.64	1.07	0.84	0.90	0.017
1234678-heptachlorodibenzo-p-dioxin	66.1	7.84	13.2	10.3	11.1	0.20
Octachlorodibenzo-p-dioxin	107	12.7	21.4	16.7	17.9	0.33
2378-tetrachlorodibenzofuran	2.94	0.35	0.59	0.46	0.49	0.0091
12378-pentachlorodibenzofuran	5.19	0.62	1.04	0.81	0.87	0.016
23478-pentachlorodibenzofuran	7.07	0.84	1.41	1.10	1.18	0.022
123478-hexachlorodibenzofuran	6.04	0.72	1.21	0.94	1.01	0.019
123678-hexachlorodibenzofuran	5.89	0.70	1.18	0.92	0.99	0.018
234678-hexachlorodibenzofuran	9.40	1.11	1.88	1.47	1.57	0.029
123789-hexachlorodibenzofuran	<5.5	<0.65	<1.10	<0.86	<0.92	<0.017
1234678-heptachlorodibenzofuran	24.3	2.88	4.85	3.80	4.06	0.075
1234789-heptachlorodibenzofuran	5.39	0.64	1.08	0.84	0.90	0.017
Octachlorodibenzofuran	27.6	3.27	5.51	4.31	4.62	0.085
PCB 81	<11	<1.30	<2.20	<1.72	<1.84	<0.034
PCB 77	327	38.8	65.3	51.1	54.7	1.01
PCB 123	149	17.7	29.7	23.3	24.9	0.46
PCB 118	8070	957	1611	1261	1350	25.0
PCB 114	235	27.9	46.9	36.7	39.3	0.73
PCB 105	2740	325	547	428	458	8.48
PCB 126	<6.2	<0.73	<1.24	<0.97	<1.04	<0.019
PCB 167	95.5	11.3	19.1	14.9	16.0	0.30
PCB 156/157	252	29.9	50.3	39.4	42.1	0.78
PCB 169	<9.1	<1.08	<1.82	<1.42	<1.52	<0.028
PCB 189	9.24	1.10	1.84	1.44	1.55	0.029
Total Dioxins & Furans Only	<299	<35.4	<59.6	<46.7	<50.0	<0.92
Total PCBs Only	<11904	<1411	<2376	<1860	<1991	<36.8
Total Dioxins & Furans and PCBs	<12203	<1446	<2436	<1907	<2041	<37.8

Dry Gas Volume Sampled (Rm³*) :	5.010
Actual Flowrate (m³/s) :	26.1
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	19.8
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 37
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1 pg/m³	Test No. 2 pg/m³	Test No. 3 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.097	<0.085	<0.096	<0.093	7.4
12378-pentachlorodibenzo-p-dioxin	0.37	<0.29	0.45	<0.37	21.5
123478-hexachlorodibenzo-p-dioxin	<0.52	0.52	0.64	<0.56	12.3
123678-hexachlorodibenzo-p-dioxin	1.21	1.31	<1.30	<1.28	4.1
123789-hexachlorodibenzo-p-dioxin	0.60	<0.54	0.64	<0.60	7.8
1234678-heptachlorodibenzo-p-dioxin	7.25	7.17	7.84	7.42	4.9
Octachlorodibenzo-p-dioxin	10.4	10.2	12.7	11.1	12.4
2378-tetrachlorodibenzofuran	<0.24	0.23	0.35	<0.27	24.5
12378-pentachlorodibenzofuran	0.49	0.49	0.62	0.53	13.8
23478-pentachlorodibenzofuran	0.67	0.73	0.84	0.74	11.8
123478-hexachlorodibenzofuran	<0.57	0.62	0.72	<0.63	12.0
123678-hexachlorodibenzofuran	<0.51	<0.64	0.70	<0.62	15.8
234678-hexachlorodibenzofuran	1.14	<0.98	1.11	<1.08	7.8
123789-hexachlorodibenzofuran	<0.57	<0.61	<0.65	<0.61	7.0
1234678-heptachlorodibenzofuran	2.19	2.86	2.88	2.64	14.9
1234789-heptachlorodibenzofuran	0.34	0.42	0.64	0.47	33.4
Octachlorodibenzofuran	1.16	2.26	3.27	2.23	47.4
PCB 81	1.79	<0.67	<1.30	<1.25	45.1
PCB 77	19.7	7.66	38.8	22.0	71.2
PCB 123	8.38	1.95	17.7	9.33	84.7
PCB 118	597	116	957	557	75.7
PCB 114	14.6	<2.78	27.9	<15.1	83.2
PCB 105	223	41.2	325	196	73.2
PCB 126	<0.43	<0.42	<0.73	<0.53	33.7
PCB 167	7.58	1.17	11.3	6.69	76.7
PCB 156/157	21.2	3.38	29.9	18.1	74.4
PCB 169	<0.57	<0.44	<1.08	<0.69	49.0
PCB 189	0.66	<0.42	1.10	<0.73	46.8
Total Dioxins & Furans Only	<28.4	<29.9	<35.4	<31.2	11.9
Total PCBs Only	<895	<176	<1411	<827	74.9
Total Dioxins & Furans and PCBs	<923	<206	<1446	<859	72.5

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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.16	<0.14	<0.16	<0.16	7.2
12378-pentachlorodibenzo-p-dioxin	0.62	<0.49	0.76	<0.62	21.6
123478-hexachlorodibenzo-p-dioxin	<0.87	0.88	1.08	<0.94	12.6
123678-hexachlorodibenzo-p-dioxin	2.03	2.20	<2.20	<2.14	4.6
123789-hexachlorodibenzo-p-dioxin	1.01	<0.92	1.07	<1.00	7.8
1234678-heptachlorodibenzo-p-dioxin	12.1	12.1	13.2	12.5	5.1
Octachlorodibenzo-p-dioxin	17.4	17.1	21.4	18.6	12.7
2378-tetrachlorodibenzofuran	<0.41	0.38	0.59	<0.46	24.7
12378-pentachlorodibenzofuran	0.81	0.83	1.04	0.89	14.1
23478-pentachlorodibenzofuran	1.11	1.23	1.41	1.25	12.1
123478-hexachlorodibenzofuran	<0.95	1.04	1.21	<1.06	12.4
123678-hexachlorodibenzofuran	<0.85	<1.08	1.18	<1.04	16.2
234678-hexachlorodibenzofuran	1.90	<1.65	1.88	<1.81	7.5
123789-hexachlorodibenzofuran	<0.95	<1.02	<1.10	<1.02	7.4
1234678-heptachlorodibenzofuran	3.65	4.81	4.85	4.44	15.3
1234789-heptachlorodibenzofuran	0.57	0.71	1.08	0.78	33.7
Octachlorodibenzofuran	1.93	3.81	5.51	3.75	47.7
PCB 81	3.00	<1.12	<2.20	<2.10	44.7
PCB 77	32.9	12.9	65.3	37.0	71.4
PCB 123	14.0	3.28	29.7	15.7	84.9
PCB 118	997	196	1611	935	75.9
PCB 114	24.4	<4.7	46.9	<25.3	83.4
PCB 105	373	69.3	547	330	73.3
PCB 126	<0.72	<0.71	<1.24	<0.89	34.0
PCB 167	12.7	1.97	19.1	11.2	76.9
PCB 156/157	35.4	5.69	50.3	30.5	74.6
PCB 169	<0.95	<0.73	<1.82	<1.17	49.2
PCB 189	1.11	<0.71	1.84	<1.22	47.0
Total Dioxins & Furans Only	<47.4	<50.4	<59.6	<52.5	12.2
Total PCBs Only	<1495	<297	<2376	<1389	75.1
Total Dioxins & Furans and PCBs	<1543	<348	<2436	<1442	72.7

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

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.13	<0.11	<0.13	<0.12	8.8
12378-pentachlorodibenzo-p-dioxin	0.51	<0.39	0.59	<0.50	21.1
123478-hexachlorodibenzo-p-dioxin	<0.72	0.70	0.85	<0.75	10.8
123678-hexachlorodibenzo-p-dioxin	1.68	1.73	<1.72	<1.71	1.8
123789-hexachlorodibenzo-p-dioxin	0.83	<0.72	0.84	<0.80	8.2
1234678-heptachlorodibenzo-p-dioxin	10.0	9.51	10.3	9.95	4.2
Octachlorodibenzo-p-dioxin	14.4	13.5	16.7	14.9	11.2
2378-tetrachlorodibenzofuran	<0.34	0.30	0.46	<0.36	23.1
12378-pentachlorodibenzofuran	0.67	0.65	0.81	0.71	12.3
23478-pentachlorodibenzofuran	0.92	0.97	1.10	1.00	9.7
123478-hexachlorodibenzofuran	<0.78	0.82	0.94	<0.85	10.1
123678-hexachlorodibenzofuran	<0.70	<0.85	0.92	<0.82	13.5
234678-hexachlorodibenzofuran	1.57	<1.3	1.47	<1.45	9.3
123789-hexachlorodibenzofuran	<0.78	<0.80	<0.86	<0.81	4.9
1234678-heptachlorodibenzofuran	3.02	3.79	3.80	3.53	12.7
1234789-heptachlorodibenzofuran	0.47	0.56	0.84	0.62	31.5
Octachlorodibenzofuran	1.60	3.00	4.31	2.97	45.7
PCB 81	2.47	<0.88	<1.72	<1.69	47.0
PCB 77	27.1	10.2	51.1	29.5	69.8
PCB 123	11.6	2.59	23.3	12.5	83.2
PCB 118	823	154	1261	746	74.7
PCB 114	20.1	<3.69	36.7	<20.2	81.9
PCB 105	308	54.6	428	264	72.3
PCB 126	<0.59	<0.56	<0.97	<0.71	32.1
PCB 167	10.5	1.55	14.9	8.98	75.8
PCB 156/157	29.2	4.48	39.4	24.4	73.7
PCB 169	<0.78	<0.58	<1.42	<0.93	47.5
PCB 189	0.91	<0.56	1.44	<0.97	45.6
Total Dioxins & Furans Only	<39.1	<39.7	<46.7	<41.8	10.1
Total PCBs Only	<1235	<234	<1860	<1110	73.9
Total Dioxins & Furans and PCBs	<1274	<274	<1907	<1151	71.5

* 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	<0.14	<0.12	<0.14	<0.13	7.1
12378-pentachlorodibenzo-p-dioxin	0.53	<0.41	0.64	<0.53	21.2
123478-hexachlorodibenzo-p-dioxin	<0.74	0.75	0.91	<0.80	12.0
123678-hexachlorodibenzo-p-dioxin	1.72	1.86	<1.84	<1.81	4.2
123789-hexachlorodibenzo-p-dioxin	0.85	<0.77	0.90	<0.84	7.4
1234678-heptachlorodibenzo-p-dioxin	10.3	10.2	11.1	10.5	4.5
Octachlorodibenzo-p-dioxin	14.8	14.5	17.9	15.7	12.1
2378-tetrachlorodibenzofuran	<0.34	0.32	0.49	<0.39	24.1
12378-pentachlorodibenzofuran	0.69	0.70	0.87	0.75	13.5
23478-pentachlorodibenzofuran	0.94	1.04	1.18	1.05	11.5
123478-hexachlorodibenzofuran	<0.80	0.87	1.01	<0.90	11.8
123678-hexachlorodibenzofuran	<0.72	<0.91	0.99	<0.87	15.7
234678-hexachlorodibenzofuran	1.61	<1.39	1.57	<1.53	7.5
123789-hexachlorodibenzofuran	<0.80	<0.86	<0.92	<0.86	6.8
1234678-heptachlorodibenzofuran	3.10	4.06	4.06	3.74	14.9
1234789-heptachlorodibenzofuran	0.48	0.60	0.90	0.66	33.0
Octachlorodibenzofuran	1.64	3.22	4.62	3.16	47.2
PCB 81	2.54	<0.95	<1.84	<1.78	44.9
PCB 77	27.8	10.9	54.7	31.1	70.9
PCB 123	11.9	2.77	24.9	13.2	84.4
PCB 118	845	165	1350	787	75.5
PCB 114	20.6	<3.96	39.3	<21.3	83.0
PCB 105	316	58.5	458	278	73.0
PCB 126	<0.61	<0.60	<1.04	<0.75	33.4
PCB 167	10.7	1.66	16.0	9.45	76.6
PCB 156/157	30.0	4.80	42.1	25.6	74.3
PCB 169	<0.80	<0.62	<1.52	<0.98	48.6
PCB 189	0.94	<0.60	1.55	<1.03	46.4
Total Dioxins & Furans Only	<40.1	<42.5	<50.0	<44.2	11.6
Total PCBs Only	<1267	<251	<1991	<1170	74.7
Total Dioxins & Furans and PCBs	<1307	<293	<2041	<1214	72.3

* 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 Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.0026	<0.0022	<0.0025	<0.0024	9.5
12378-pentachlorodibenzo-p-dioxin	0.010	<0.0074	0.012	<0.0097	22.3
123478-hexachlorodibenzo-p-dioxin	<0.014	0.013	0.017	<0.015	12.1
123678-hexachlorodibenzo-p-dioxin	0.033	0.033	<0.034	<0.033	2.0
123789-hexachlorodibenzo-p-dioxin	0.016	<0.014	0.017	<0.016	9.3
1234678-heptachlorodibenzo-p-dioxin	0.20	0.18	0.20	0.19	5.4
Octachlorodibenzo-p-dioxin	0.28	0.26	0.33	0.29	12.5
2378-tetrachlorodibenzofuran	<0.0065	0.0058	0.0091	<0.0071	24.5
12378-pentachlorodibenzofuran	0.013	0.013	0.016	0.014	13.6
23478-pentachlorodibenzofuran	0.018	0.019	0.022	0.019	10.8
123478-hexachlorodibenzofuran	<0.015	0.016	0.019	<0.017	11.2
123678-hexachlorodibenzofuran	<0.014	<0.016	0.018	<0.016	14.2
234678-hexachlorodibenzofuran	0.031	<0.025	0.029	<0.028	10.0
123789-hexachlorodibenzofuran	<0.015	<0.015	<0.017	<0.016	6.0
1234678-heptachlorodibenzofuran	0.059	0.073	0.075	0.069	12.9
1234789-heptachlorodibenzofuran	0.0091	0.011	0.017	0.012	32.7
Octachlorodibenzofuran	0.031	0.058	0.085	0.058	46.7
PCB 81	0.048	<0.017	<0.034	<0.033	47.2
PCB 77	0.53	0.20	1.01	0.58	70.8
PCB 123	0.23	0.050	0.46	0.25	84.1
PCB 118	16.1	2.98	25.0	14.7	75.4
PCB 114	0.39	<0.071	0.73	<0.40	82.6
PCB 105	6.01	1.05	8.48	5.18	73.0
PCB 126	<0.012	<0.011	<0.019	<0.014	33.4
PCB 167	0.20	0.030	0.30	0.18	76.5
PCB 156/157	0.57	0.086	0.78	0.48	74.3
PCB 169	<0.015	<0.011	<0.028	<0.018	48.8
PCB 189	0.018	<0.011	0.029	<0.019	46.8
Total Dioxins & Furans Only	<0.76	<0.77	<0.92	<0.82	11.3
Total PCBs Only	<24.1	<4.52	<36.8	<21.8	74.6
Total Dioxins & Furans and PCBs	<24.8	<5.28	<37.8	<22.6	72.3

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 pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.093	<0.16	<0.12	<0.13	<0.0024
12378-pentachlorodibenzo-p-dioxin	<0.37	<0.62	<0.50	<0.53	<0.0097
123478-hexachlorodibenzo-p-dioxin	<0.56	<0.94	<0.75	<0.80	<0.015
123678-hexachlorodibenzo-p-dioxin	<1.28	<2.14	<1.71	<1.81	<0.033
123789-hexachlorodibenzo-p-dioxin	<0.60	<1.00	<0.80	<0.84	<0.016
1234678-heptachlorodibenzo-p-dioxin	7.42	12.5	9.95	10.5	0.19
Octachlorodibenzo-p-dioxin	11.1	18.6	14.9	15.7	0.29
2378-tetrachlorodibenzofuran	<0.27	<0.46	<0.36	<0.39	<0.0071
12378-pentachlorodibenzofuran	0.53	0.89	0.71	0.75	0.014
23478-pentachlorodibenzofuran	0.74	1.25	1.00	1.05	0.019
123478-hexachlorodibenzofuran	<0.63	<1.06	<0.85	<0.90	<0.017
123678-hexachlorodibenzofuran	<0.62	<1.04	<0.82	<0.87	<0.016
234678-hexachlorodibenzofuran	<1.08	<1.81	<1.45	<1.53	<0.028
123789-hexachlorodibenzofuran	<0.61	<1.02	<0.81	<0.86	<0.016
1234678-heptachlorodibenzofuran	2.64	4.44	3.53	3.74	0.069
1234789-heptachlorodibenzofuran	0.47	0.78	0.62	0.66	0.012
Octachlorodibenzofuran	2.23	3.75	2.97	3.16	0.058
PCB 81	<1.25	<2.10	<1.69	<1.78	<0.033
PCB 77	22.0	37.0	29.5	31.1	0.58
PCB 123	9.33	15.7	12.5	13.2	0.25
PCB 118	557	935	746	787	14.7
PCB 114	<15.1	<25.3	<20.2	<21.3	<0.40
PCB 105	196	330	264	278	5.18
PCB 126	<0.53	<0.89	<0.71	<0.75	<0.014
PCB 167	6.69	11.2	8.98	9.45	0.18
PCB 156/157	18.1	30.5	24.4	25.6	0.48
PCB 169	<0.69	<1.17	<0.93	<0.98	<0.018
PCB 189	<0.73	<1.22	<0.97	<1.03	<0.019
Total Dioxins & Furans Only	<31.2	<52.5	<41.8	<44.2	<0.82
Total PCBs Only	<827	<1389	<1110	<1170	<21.8
Total Dioxins & Furans and PCBs	<859	<1442	<1151	<1214	<22.6

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

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<0.54	<0.92
12378-pentachlorodibenzo-p-dioxin	<0.49	<0.46
123478-hexachlorodibenzo-p-dioxin	<0.46	0.63
123678-hexachlorodibenzo-p-dioxin	<0.39	<0.52
123789-hexachlorodibenzo-p-dioxin	<0.43	1.13
1234678-heptachlorodibenzo-p-dioxin	<1.3	1.82
Octachlorodibenzo-p-dioxin	3.03	<3.3
2378-tetrachlorodibenzofuran	<0.56	<0.68
12378-pentachlorodibenzofuran	<0.37	<1.9
23478-pentachlorodibenzofuran	<0.34	<0.45
123478-hexachlorodibenzofuran	<0.33	0.72
123678-hexachlorodibenzofuran	<0.33	<0.41
234678-hexachlorodibenzofuran	<0.34	<0.59
123789-hexachlorodibenzofuran	2.58	3.80
1234678-heptachlorodibenzofuran	<0.49	<0.53
1234789-heptachlorodibenzofuran	<0.60	<0.65
Octachlorodibenzofuran	1.20	<1.5
PCB 81	<2.1	<3.1
PCB 77	<2.3	<3.4
PCB 123	<1.9	<1.7
PCB 118	29.0	12.7
PCB 114	<1.9	<1.7
PCB 105	11.8	<8.6
PCB 126	<2.1	<1.9
PCB 167	<0.88	<0.99
PCB 156/157	<1.2	<1.4
PCB 169	<0.93	<1.2
PCB 189	<0.75	<1.3
Total Dioxins & Furans Only	<13.8	<20.0
Total PCBs Only	<54.9	<38.0
Total Dioxins & Furans and PCBs	<68.6	<58.0

"<" 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	<0.097	<0.085	<0.096	<0.093
12378-pentachlorodibenzo-p-dioxin	1.00000	0.37	<0.29	0.45	<0.37
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.052	0.052	0.064	<0.056
123678-hexachlorodibenzo-p-dioxin	0.10000	0.12	0.13	<0.13	<0.13
123789-hexachlorodibenzo-p-dioxin	0.10000	0.060	<0.054	0.064	<0.060
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.073	0.072	0.078	0.074
Octachlorodibenzo-p-dioxin	0.00030	0.0031	0.0031	0.0038	0.0033
2378-tetrachlorodibenzofuran	0.10000	<0.024	0.023	0.035	<0.027
12378-pentachlorodibenzofuran	0.03000	0.015	0.015	0.018	0.016
23478-pentachlorodibenzofuran	0.30000	0.20	0.22	0.25	0.22
123478-hexachlorodibenzofuran	0.10000	<0.057	0.062	0.072	<0.063
123678-hexachlorodibenzofuran	0.10000	<0.051	<0.064	0.070	<0.062
234678-hexachlorodibenzofuran	0.10000	0.11	<0.098	0.11	<0.11
123789-hexachlorodibenzofuran	0.10000	<0.057	<0.061	<0.065	<0.061
1234678-heptachlorodibenzofuran	0.01000	0.022	0.029	0.029	0.026
1234789-heptachlorodibenzofuran	0.01000	0.0034	0.0042	0.0064	0.0047
Octachlorodibenzofuran	0.00030	0.00035	0.00068	0.00098	0.00067
PCB 81	0.00030	0.00054	<0.00020	<0.00039	<0.00038
PCB 77	0.00010	0.0020	0.00077	0.0039	0.0022
PCB 123	0.00003	0.00025	0.000058	0.00053	0.00028
PCB 118	0.00003	0.018	0.0035	0.029	0.017
PCB 114	0.00003	0.00044	<0.000084	0.00084	<0.00045
PCB 105	0.00003	0.0067	0.0012	0.0097	0.0059
PCB 126	0.10000	<0.043	<0.042	<0.073	<0.053
PCB 167	0.00003	0.00023	0.000035	0.00034	0.00020
PCB 156/157	0.00003	0.00064	0.00010	0.00090	0.00054
PCB 169	0.03000	<0.017	<0.013	<0.032	<0.021
PCB 189	0.00003	0.000020	<0.000013	0.000033	<0.000022
Total Dioxins & Furans Only		<1.32	<1.26	<1.55	<1.38
Total PCBs Only		<0.088	<0.061	<0.15	<0.10
Total Dioxins & Furans and PCBs		<1.41	<1.32	<1.70	<1.48

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	<0.16	<0.14	<0.16	<0.16
12378-pentachlorodibenzo-p-dioxin	1.00000	0.62	<0.49	0.76	<0.62
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.087	0.088	0.11	<0.094
123678-hexachlorodibenzo-p-dioxin	0.10000	0.20	0.22	<0.22	<0.21
123789-hexachlorodibenzo-p-dioxin	0.10000	0.10	<0.092	0.11	<0.10
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.12	0.12	0.13	0.12
Octachlorodibenzo-p-dioxin	0.00030	0.0052	0.0051	0.0064	0.0056
2378-tetrachlorodibenzofuran	0.10000	<0.041	0.038	0.059	<0.046
12378-pentachlorodibenzofuran	0.03000	0.024	0.025	0.031	0.027
23478-pentachlorodibenzofuran	0.30000	0.33	0.37	0.42	0.38
123478-hexachlorodibenzofuran	0.10000	<0.095	0.10	0.12	<0.11
123678-hexachlorodibenzofuran	0.10000	<0.085	<0.11	0.12	<0.10
234678-hexachlorodibenzofuran	0.10000	0.19	<0.17	0.19	<0.18
123789-hexachlorodibenzofuran	0.10000	<0.095	<0.10	<0.11	<0.10
1234678-heptachlorodibenzofuran	0.01000	0.037	0.048	0.049	0.044
1234789-heptachlorodibenzofuran	0.01000	0.0057	0.0071	0.011	0.0078
Octachlorodibenzofuran	0.00030	0.00058	0.0011	0.0017	0.0011
PCB 81	0.00030	0.00090	<0.00034	<0.00066	<0.00063
PCB 77	0.00010	0.0033	0.0013	0.0065	0.0037
PCB 123	0.00003	0.00042	0.000098	0.00089	0.00047
PCB 118	0.00003	0.030	0.0059	0.048	0.028
PCB 114	0.00003	0.00073	<0.00014	0.0014	<0.00076
PCB 105	0.00003	0.011	0.0021	0.016	0.0099
PCB 126	0.10000	<0.072	<0.071	<0.12	<0.089
PCB 167	0.00003	0.00038	0.000059	0.00057	0.00034
PCB 156/157	0.00003	0.0011	0.00017	0.0015	0.00091
PCB 169	0.03000	<0.028	<0.022	<0.054	<0.035
PCB 189	0.00003	0.000033	<0.000021	0.000055	<0.000037
Total Dioxins & Furans Only		<2.21	<2.12	<2.60	<2.31
Total PCBs Only		<0.15	<0.10	<0.25	<0.17
Total Dioxins & Furans and PCBs		<2.36	<2.23	<2.86	<2.48

* 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	<0.13	<0.11	<0.13	<0.12
12378-pentachlorodibenzo-p-dioxin	1.00000	0.51	<0.39	0.59	<0.50
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.072	0.070	0.085	<0.075
123678-hexachlorodibenzo-p-dioxin	0.10000	0.17	0.17	<0.17	<0.17
123789-hexachlorodibenzo-p-dioxin	0.10000	0.083	<0.072	0.084	<0.080
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.10	0.095	0.10	0.099
Octachlorodibenzo-p-dioxin	0.00030	0.0043	0.0040	0.0050	0.0045
2378-tetrachlorodibenzofuran	0.10000	<0.034	0.030	0.046	<0.036
12378-pentachlorodibenzofuran	0.03000	0.020	0.020	0.024	0.021
23478-pentachlorodibenzofuran	0.30000	0.28	0.29	0.33	0.30
123478-hexachlorodibenzofuran	0.10000	<0.078	0.082	0.094	<0.085
123678-hexachlorodibenzofuran	0.10000	<0.070	<0.085	0.092	<0.082
234678-hexachlorodibenzofuran	0.10000	0.16	<0.13	0.15	<0.14
123789-hexachlorodibenzofuran	0.10000	<0.078	<0.080	<0.086	<0.081
1234678-heptachlorodibenzofuran	0.01000	0.030	0.038	0.038	0.035
1234789-heptachlorodibenzofuran	0.01000	0.0047	0.0056	0.0084	0.0062
Octachlorodibenzofuran	0.00030	0.00048	0.00090	0.0013	0.00089
PCB 81	0.00030	0.00074	<0.00026	<0.00052	<0.00051
PCB 77	0.00010	0.0027	0.0010	0.0051	0.0029
PCB 123	0.00003	0.00035	0.000078	0.00070	0.00037
PCB 118	0.00003	0.025	0.0046	0.038	0.022
PCB 114	0.00003	0.00060	<0.00011	0.0011	<0.00061
PCB 105	0.00003	0.0092	0.0016	0.013	0.0079
PCB 126	0.10000	<0.059	<0.056	<0.097	<0.071
PCB 167	0.00003	0.00031	0.000047	0.00045	0.00027
PCB 156/157	0.00003	0.00088	0.00013	0.0012	0.00073
PCB 169	0.03000	<0.023	<0.017	<0.043	<0.028
PCB 189	0.00003	0.000027	<0.000017	0.000043	<0.000029
Total Dioxins & Furans Only		<1.82	<1.67	<2.04	<1.84
Total PCBs Only		<0.12	<0.081	<0.20	<0.13
Total Dioxins & Furans and PCBs		<1.94	<1.75	<2.24	<1.98

* 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	0.067	0.056	0.063	0.062
12378-pentachlorodibenzo-p-dioxin	1.00000	0.51	0.19	0.59	0.43
123478-hexachlorodibenzo-p-dioxin	0.10000	0.036	0.070	0.085	0.063
123678-hexachlorodibenzo-p-dioxin	0.10000	0.17	0.17	0.086	0.14
123789-hexachlorodibenzo-p-dioxin	0.10000	0.083	0.036	0.084	0.068
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.10	0.095	0.10	0.099
Octachlorodibenzo-p-dioxin	0.00030	0.0043	0.0040	0.0050	0.0045
2378-tetrachlorodibenzofuran	0.10000	0.017	0.030	0.046	0.031
12378-pentachlorodibenzofuran	0.03000	0.020	0.020	0.024	0.021
23478-pentachlorodibenzofuran	0.30000	0.28	0.29	0.33	0.30
123478-hexachlorodibenzofuran	0.10000	0.039	0.082	0.094	0.072
123678-hexachlorodibenzofuran	0.10000	0.035	0.043	0.092	0.057
234678-hexachlorodibenzofuran	0.10000	0.16	0.065	0.15	0.12
123789-hexachlorodibenzofuran	0.10000	0.039	0.040	0.043	0.041
1234678-heptachlorodibenzofuran	0.01000	0.030	0.038	0.038	0.035
1234789-heptachlorodibenzofuran	0.01000	0.0047	0.0056	0.0084	0.0062
Octachlorodibenzofuran	0.00030	0.00048	0.00090	0.0013	0.00089
PCB 81	0.00030	0.00074	0.00013	0.00026	0.00038
PCB 77	0.00010	0.0027	0.0010	0.0051	0.0029
PCB 123	0.00003	0.00035	0.000078	0.00070	0.00037
PCB 118	0.00003	0.025	0.0046	0.038	0.022
PCB 114	0.00003	0.00060	0.000055	0.0011	0.00059
PCB 105	0.00003	0.0092	0.0016	0.013	0.0079
PCB 126	0.10000	0.030	0.028	0.048	0.035
PCB 167	0.00003	0.00031	0.000047	0.00045	0.00027
PCB 156/157	0.00003	0.00088	0.00013	0.0012	0.00073
PCB 169	0.03000	0.012	0.0087	0.021	0.014
PCB 189	0.00003	0.000027	0.0000084	0.000043	0.000026
Total Dioxins & Furans Only		1.59	1.24	1.85	1.56
Total PCBs Only		0.081	0.045	0.13	0.085
Total Dioxins & Furans and PCBs		1.67	1.28	1.97	1.64

* 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	<0.13	<0.11	<0.13	<0.12
12378-pentachlorodibenzo-p-dioxin	0.500	0.26	<0.19	0.30	<0.25
123478-hexachlorodibenzo-p-dioxin	0.100	<0.072	0.070	0.085	<0.075
123678-hexachlorodibenzo-p-dioxin	0.100	0.17	0.17	<0.17	<0.17
123789-hexachlorodibenzo-p-dioxin	0.100	0.083	<0.072	0.084	<0.080
1234678-heptachlorodibenzo-p-dioxin	0.010	0.10	0.095	0.10	0.099
Octachlorodibenzo-p-dioxin	0.001	0.014	0.013	0.017	0.015
2378-tetrachlorodibenzofuran	0.100	<0.034	0.030	0.046	<0.036
12378-pentachlorodibenzofuran	0.050	0.034	0.033	0.041	0.036
23478-pentachlorodibenzofuran	0.500	0.46	0.48	0.55	0.50
123478-hexachlorodibenzofuran	0.100	<0.078	0.082	0.094	<0.085
123678-hexachlorodibenzofuran	0.100	<0.070	<0.085	0.092	<0.082
234678-hexachlorodibenzofuran	0.100	0.16	<0.13	0.15	<0.14
123789-hexachlorodibenzofuran	0.100	<0.078	<0.080	<0.086	<0.081
1234678-heptachlorodibenzofuran	0.010	0.030	0.038	0.038	0.035
1234789-heptachlorodibenzofuran	0.010	0.0047	0.0056	0.0084	0.0062
Octachlorodibenzofuran	0.001	0.0016	0.0030	0.0043	0.0030
Total Dioxins & Furans		<1.77	<1.70	<1.99	<1.82
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	<0.14	<0.12	<0.14	<0.13
12378-pentachlorodibenzo-p-dioxin	1.00000	0.53	<0.41	0.64	<0.53
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.074	0.075	0.091	<0.080
123678-hexachlorodibenzo-p-dioxin	0.10000	0.17	0.19	<0.18	<0.18
123789-hexachlorodibenzo-p-dioxin	0.10000	0.085	<0.077	0.090	<0.084
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.10	0.10	0.11	0.11
Octachlorodibenzo-p-dioxin	0.00030	0.0044	0.0043	0.0054	0.0047
2378-tetrachlorodibenzofuran	0.10000	<0.034	0.032	0.049	<0.039
12378-pentachlorodibenzofuran	0.03000	0.021	0.021	0.026	0.023
23478-pentachlorodibenzofuran	0.30000	0.28	0.31	0.35	0.32
123478-hexachlorodibenzofuran	0.10000	<0.080	0.087	0.10	<0.090
123678-hexachlorodibenzofuran	0.10000	<0.072	<0.091	0.099	<0.087
234678-hexachlorodibenzofuran	0.10000	0.16	<0.14	0.16	<0.15
123789-hexachlorodibenzofuran	0.10000	<0.080	<0.086	<0.092	<0.086
1234678-heptachlorodibenzofuran	0.01000	0.031	0.041	0.041	0.037
1234789-heptachlorodibenzofuran	0.01000	0.0048	0.0060	0.0090	0.0066
Octachlorodibenzofuran	0.00030	0.00049	0.00097	0.0014	0.00095
PCB 81	0.00030	0.00076	<0.00028	<0.00055	<0.00053
PCB 77	0.00010	0.0028	0.0011	0.0055	0.0031
PCB 123	0.00003	0.00036	0.000083	0.00075	0.00040
PCB 118	0.00003	0.025	0.0050	0.040	0.024
PCB 114	0.00003	0.00062	<0.00012	0.0012	<0.00064
PCB 105	0.00003	0.0095	0.0018	0.014	0.0083
PCB 126	0.10000	<0.061	<0.060	<0.10	<0.075
PCB 167	0.00003	0.00032	0.000050	0.00048	0.00028
PCB 156/157	0.00003	0.00090	0.00014	0.0013	0.00077
PCB 169	0.03000	<0.024	<0.019	<0.046	<0.029
PCB 189	0.00003	0.000028	<0.000018	0.000046	<0.000031
Total Dioxins & Furans Only		<1.87	<1.79	<2.18	<1.95
Total PCBs Only		<0.13	<0.087	<0.21	<0.14
Total Dioxins & Furans and PCBs		<2.00	<1.88	<2.39	<2.09

* 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	<0.0026	<0.0022	<0.0025	<0.0024
12378-pentachlorodibenzo-p-dioxin	1.00000	0.010	<0.0074	0.012	<0.0097
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.0014	0.0013	0.0017	<0.0015
123678-hexachlorodibenzo-p-dioxin	0.10000	0.0033	0.0033	<0.0034	<0.0033
123789-hexachlorodibenzo-p-dioxin	0.10000	0.0016	<0.0014	0.0017	<0.0016
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.0020	0.0018	0.0020	0.0019
Octachlorodibenzo-p-dioxin	0.00030	0.000084	0.000078	0.000099	0.000087
2378-tetrachlorodibenzofuran	0.10000	<0.00065	0.00058	0.00091	<0.00071
12378-pentachlorodibenzofuran	0.03000	0.00039	0.00038	0.00048	0.00042
23478-pentachlorodibenzofuran	0.30000	0.0054	0.0056	0.0066	0.0058
123478-hexachlorodibenzofuran	0.10000	<0.0015	0.0016	0.0019	<0.0017
123678-hexachlorodibenzofuran	0.10000	<0.0014	<0.0016	0.0018	<0.0016
234678-hexachlorodibenzofuran	0.10000	0.0031	<0.0025	0.0029	<0.0028
123789-hexachlorodibenzofuran	0.10000	<0.0015	<0.0015	<0.0017	<0.0016
1234678-heptachlorodibenzofuran	0.01000	0.00059	0.00073	0.00075	0.00069
1234789-heptachlorodibenzofuran	0.01000	0.000091	0.00011	0.00017	0.00012
Octachlorodibenzofuran	0.00030	0.0000093	0.000017	0.000026	0.000017
PCB 81	0.00030	0.000014	<0.0000051	<0.000010	<0.0000099
PCB 77	0.00010	0.000053	0.000020	0.00010	0.000058
PCB 123	0.00003	0.0000068	0.0000015	0.000014	0.0000074
PCB 118	0.00003	0.00048	0.000089	0.00075	0.00044
PCB 114	0.00003	0.000012	<0.0000021	0.000022	<0.000012
PCB 105	0.00003	0.00018	0.000032	0.00025	0.00016
PCB 126	0.10000	<0.0012	<0.0011	<0.0019	<0.0014
PCB 167	0.00003	0.0000061	0.00000090	0.0000089	0.0000053
PCB 156/157	0.00003	0.000017	0.0000026	0.000023	0.000014
PCB 169	0.03000	<0.00046	<0.00033	<0.00084	<0.00055
PCB 189	0.00003	0.00000053	<0.00000033	0.00000086	<0.00000057
Total Dioxins & Furans Only		<0.036	<0.032	<0.040	<0.036
Total PCBs Only		<0.0024	<0.0016	<0.0039	<0.0026
Total Dioxins & Furans and PCBs		<0.038	<0.034	<0.044	<0.039

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 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	<0.093	<0.16	<0.12	<0.13	<0.0024
12378-pentachlorodibenzo-p-dioxin	<0.37	<0.62	<0.50	<0.53	<0.0097
123478-hexachlorodibenzo-p-dioxin	<0.056	<0.094	<0.075	<0.080	<0.0015
123678-hexachlorodibenzo-p-dioxin	<0.13	<0.21	<0.17	<0.18	<0.0033
123789-hexachlorodibenzo-p-dioxin	<0.060	<0.10	<0.080	<0.084	<0.0016
1234678-heptachlorodibenzo-p-dioxin	0.074	0.12	0.099	0.11	0.0019
Octachlorodibenzo-p-dioxin	0.0033	0.0056	0.0045	0.0047	0.000087
2378-tetrachlorodibenzofuran	<0.027	<0.046	<0.036	<0.039	<0.00071
12378-pentachlorodibenzofuran	0.016	0.027	0.021	0.023	0.00042
23478-pentachlorodibenzofuran	0.22	0.38	0.30	0.32	0.0058
123478-hexachlorodibenzofuran	<0.063	<0.11	<0.085	<0.090	<0.0017
123678-hexachlorodibenzofuran	<0.062	<0.10	<0.082	<0.087	<0.0016
234678-hexachlorodibenzofuran	<0.11	<0.18	<0.14	<0.15	<0.0028
123789-hexachlorodibenzofuran	<0.061	<0.10	<0.081	<0.086	<0.0016
1234678-heptachlorodibenzofuran	0.026	0.044	0.035	0.037	0.00069
1234789-heptachlorodibenzofuran	0.0047	0.0078	0.0062	0.0066	0.00012
Octachlorodibenzofuran	0.00067	0.0011	0.00089	0.00095	0.000017
PCB 81	<0.00038	<0.00063	<0.00051	<0.00053	<0.0000099
PCB 77	0.0022	0.0037	0.0029	0.0031	0.000058
PCB 123	0.00028	0.00047	0.00037	0.00040	0.0000074
PCB 118	0.017	0.028	0.022	0.024	0.00044
PCB 114	<0.00045	<0.00076	<0.00061	<0.00064	<0.000012
PCB 105	0.0059	0.0099	0.0079	0.0083	0.00016
PCB 126	<0.053	<0.089	<0.071	<0.075	<0.0014
PCB 167	0.00020	0.00034	0.00027	0.00028	0.0000053
PCB 156/157	0.00054	0.00091	0.00073	0.00077	0.000014
PCB 169	<0.021	<0.035	<0.028	<0.029	<0.00055
PCB 189	<0.000022	<0.000037	<0.000029	<0.000031	<0.00000057
Total Dioxins & Furans Only	<1.38	<2.31	<1.84	<1.95	<0.036
Total PCBs Only	<0.10	<0.17	<0.13	<0.14	<0.0026
Total Dioxins & Furans and PCBs	<1.48	<2.48	<1.98	<2.09	<0.039

* 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/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	0.046	0.078	0.062	0.066	0.0012
12378-pentachlorodibenzo-p-dioxin	0.32	0.54	0.43	0.46	0.0085
123478-hexachlorodibenzo-p-dioxin	0.048	0.080	0.063	0.067	0.0012
123678-hexachlorodibenzo-p-dioxin	0.11	0.18	0.14	0.15	0.0028
123789-hexachlorodibenzo-p-dioxin	0.050	0.085	0.068	0.071	0.0013
1234678-heptachlorodibenzo-p-dioxin	0.074	0.12	0.099	0.11	0.0019
Octachlorodibenzo-p-dioxin	0.0033	0.0056	0.0045	0.0047	0.000087
2378-tetrachlorodibenzofuran	0.023	0.039	0.031	0.033	0.00060
12378-pentachlorodibenzofuran	0.016	0.027	0.021	0.023	0.00042
23478-pentachlorodibenzofuran	0.22	0.38	0.30	0.32	0.0058
123478-hexachlorodibenzofuran	0.054	0.090	0.072	0.076	0.0014
123678-hexachlorodibenzofuran	0.042	0.071	0.057	0.060	0.0011
234678-hexachlorodibenzofuran	0.091	0.15	0.12	0.13	0.0024
123789-hexachlorodibenzofuran	0.030	0.051	0.041	0.043	0.00080
1234678-heptachlorodibenzofuran	0.026	0.044	0.035	0.037	0.00069
1234789-heptachlorodibenzofuran	0.0047	0.0078	0.0062	0.0066	0.00012
Octachlorodibenzofuran	0.00067	0.0011	0.00089	0.00095	0.000017
PCB 81	0.00028	0.00047	0.00038	0.00039	0.0000074
PCB 77	0.0022	0.0037	0.0029	0.0031	0.000058
PCB 123	0.00028	0.00047	0.00037	0.00040	0.0000074
PCB 118	0.017	0.028	0.022	0.024	0.00044
PCB 114	0.00044	0.00074	0.00059	0.00062	0.000012
PCB 105	0.0059	0.0099	0.0079	0.0083	0.00016
PCB 126	0.026	0.044	0.035	0.037	0.00069
PCB 167	0.00020	0.00034	0.00027	0.00028	0.0000053
PCB 156/157	0.00054	0.00091	0.00073	0.00077	0.000014
PCB 169	0.010	0.017	0.014	0.015	0.00027
PCB 189	0.000020	0.000033	0.000026	0.000028	0.00000052
Total Dioxins & Furans Only	1.16	1.95	1.56	1.65	0.030
Total PCBs Only	0.063	0.11	0.085	0.090	0.0017
Total Dioxins & Furans and PCBs	1.23	2.06	1.64	1.74	0.032

* 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	2700	312	522	431	442	8.40
1,3-Dichlorobenzene	393	45.5	76.0	62.7	64.4	1.22
1,4-Dichlorobenzene	362	41.9	70.0	57.8	59.3	1.13
1,2-Dichlorobenzene	306	35.4	59.1	48.8	50.1	0.95
Total Dichlorobenzene	1061	123	205	169	174	3.30
1,3,5-trichlorobenzene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
1,2,4-trichlorobenzene	117	13.5	22.6	18.7	19.2	0.36
1,2,3-trichlorobenzene	30.8	3.56	5.95	4.91	5.04	0.096
Total Trichlorobenzene	<160	<18.5	<30.9	<25.5	<26.2	<0.50
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	27.2	3.15	5.26	4.34	4.45	0.085
1,2,3,4-tetrachlorobenzene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Total Tetrachlorobenzene	<39.2	<4.53	<7.58	<6.26	<6.42	<0.12
Pentachlorobenzene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Hexachlorobenzene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Total Chlorobenzenes	<3984	<461	<770	<636	<652	<12.40

Dry Gas Volume Sampled (Rm³*) :	5.174
Actual Flowrate (m³/s) :	26.9
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	19.0

* 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 ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
Monochlorobenzene	1980	240	404	318	341	6.14
1,3-Dichlorobenzene	275	33.3	56.1	44.2	47.4	0.85
1,4-Dichlorobenzene	257	31.1	52.4	41.3	44.3	0.80
1,2-Dichlorobenzene	218	26.4	44.5	35.0	37.5	0.68
Total Dichlorobenzene	750	90.8	153	120	129	2.32
1,3,5-trichlorobenzene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
1,2,4-trichlorobenzene	74.3	9.00	15.2	11.9	12.8	0.23
1,2,3-trichlorobenzene	18.5	2.24	3.77	2.97	3.19	0.057
Total Trichlorobenzene	<105	<12.7	<21.4	<16.8	<18.0	<0.32
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	16.4	1.99	3.34	2.63	2.82	0.051
1,2,3,4-tetrachlorobenzene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Total Tetrachlorobenzene	<28.4	<3.44	<5.79	<4.56	<4.89	<0.088
Pentachlorobenzene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Hexachlorobenzene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Total Chlorobenzenes	<2887	<350	<589	<464	<497	<8.95

Dry Gas Volume Sampled (Rm^3*) :	4.904
Actual Flowrate (m^3/s) :	25.6
Dry Reference Flowrate (Rm^3/s*) :	15.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	18.0

* 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 ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	2760	327	551	431	462	8.54
1,3-Dichlorobenzene	279	33.1	55.7	43.6	46.7	0.86
1,4-Dichlorobenzene	281	33.3	56.1	43.9	47.0	0.87
1,2-Dichlorobenzene	217	25.7	43.3	33.9	36.3	0.67
Total Dichlorobenzene	777	92.1	155	121	130	2.40
1,3,5-trichlorobenzene	25.3	3.00	5.05	3.95	4.23	0.078
1,2,4-trichlorobenzene	85.1	10.1	17.0	13.3	14.2	0.26
1,2,3-trichlorobenzene	20.8	2.47	4.15	3.25	3.48	0.064
Total Trichlorobenzene	131	15.6	26.2	20.5	21.9	0.41
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	19.6	2.32	3.91	3.06	3.28	0.061
1,2,3,4-tetrachlorobenzene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Total Tetrachlorobenzene	<31.6	<3.75	<6.31	<4.94	<5.28	<0.098
Pentachlorobenzene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Hexachlorobenzene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Total Chlorobenzenes	<3724	<441	<743	<582	<623	<11.52

Dry Gas Volume Sampled (Rm³*) :	5.010
Actual Flowrate (m³/s) :	26.1
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	19.8
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 54
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Monochlorobenzene	312	240	327	293	16.0
1,3-Dichlorobenzene	45.5	33.3	33.1	37.3	19.0
1,4-Dichlorobenzene	41.9	31.1	33.3	35.4	16.0
1,2-Dichlorobenzene	35.4	26.4	25.7	29.2	18.5
Total Dichlorobenzene	123	90.8	92.1	102	17.7
1,3,5-trichlorobenzene	<1.39	<1.45	3.00	<1.95	46.8
1,2,4-trichlorobenzene	13.5	9.00	10.1	10.9	21.8
1,2,3-trichlorobenzene	3.56	2.24	2.47	2.76	25.7
Total Trichlorobenzene	<18.5	<12.7	15.6	<15.6	18.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.15	1.99	2.32	2.49	24.0
1,2,3,4-tetrachlorobenzene	<1.39	<1.45	<1.42	<1.42	2.3
Total Tetrachlorobenzene	<4.53	<3.44	<3.75	<3.91	14.5
Pentachlorobenzene	<1.39	<1.45	<1.42	<1.42	2.3
Hexachlorobenzene	<1.39	<1.45	<1.42	<1.42	2.3
Total Chlorobenzenes	<461	<350	<441	<417	14.2

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

Specific Isomer	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Monochlorobenzene	522	404	551	492	15.8
1,3-Dichlorobenzene	76.0	56.1	55.7	62.6	18.5
1,4-Dichlorobenzene	70.0	52.4	56.1	59.5	15.6
1,2-Dichlorobenzene	59.1	44.5	43.3	49.0	18.0
Total Dichlorobenzene	205	153	155	171	17.2
1,3,5-trichlorobenzene	<2.32	<2.45	5.05	<3.27	47.1
1,2,4-trichlorobenzene	22.6	15.2	17.0	18.2	21.3
1,2,3-trichlorobenzene	5.95	3.77	4.15	4.63	25.2
Total Trichlorobenzene	<30.9	<21.4	26.2	<26.1	18.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	5.26	3.34	3.91	4.17	23.6
1,2,3,4-tetrachlorobenzene	<2.32	<2.45	<2.40	<2.39	2.7
Total Tetrachlorobenzene	<7.58	<5.79	<6.31	<6.56	14.0
Pentachlorobenzene	<2.32	<2.45	<2.40	<2.39	2.7
Hexachlorobenzene	<2.32	<2.45	<2.40	<2.39	2.7
Total Chlorobenzenes	<770	<589	<743	<701	14.0

* 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
	Test No. 1 ng/Rm^3*	Test No. 2 ng/Rm^3*	Test No. 3 ng/Rm^3*	Average ng/Rm^3*	of Variation %
Monochlorobenzene	431	318	431	393	16.6
1,3-Dichlorobenzene	62.7	44.2	43.6	50.2	21.7
1,4-Dichlorobenzene	57.8	41.3	43.9	47.6	18.6
1,2-Dichlorobenzene	48.8	35.0	33.9	39.2	21.2
Total Dichlorobenzene	169	120	121	137	20.4
1,3,5-trichlorobenzene	<1.91	<1.93	3.95	<2.60	45.2
1,2,4-trichlorobenzene	18.7	11.9	13.3	14.6	24.3
1,2,3-trichlorobenzene	4.91	2.97	3.25	3.71	28.3
Total Trichlorobenzene	<25.5	<16.8	20.5	<20.9	20.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	4.34	2.63	3.06	3.35	26.5
1,2,3,4-tetrachlorobenzene	<1.91	<1.93	<1.88	<1.91	1.4
Total Tetrachlorobenzene	<6.26	<4.56	<4.94	<5.25	16.9
Pentachlorobenzene	<1.91	<1.93	<1.88	<1.91	1.4
Hexachlorobenzene	<1.91	<1.93	<1.88	<1.91	1.4
Total Chlorobenzenes	<636	<464	<582	<560	15.7

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Monochlorobenzene	442	341	462	415	15.6
1,3-Dichlorobenzene	64.4	47.4	46.7	52.8	19.0
1,4-Dichlorobenzene	59.3	44.3	47.0	50.2	16.0
1,2-Dichlorobenzene	50.1	37.5	36.3	41.3	18.5
Total Dichlorobenzene	174	129	130	144	17.7
1,3,5-trichlorobenzene	<1.97	<2.07	4.23	<2.75	46.5
1,2,4-trichlorobenzene	19.2	12.8	14.2	15.4	21.7
1,2,3-trichlorobenzene	5.04	3.19	3.48	3.90	25.6
Total Trichlorobenzene	<26.2	<18.0	21.9	<22.1	18.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	4.45	2.82	3.28	3.52	23.9
1,2,3,4-tetrachlorobenzene	<1.97	<2.07	<2.01	<2.01	2.5
Total Tetrachlorobenzene	<6.42	<4.89	<5.28	<5.53	14.4
Pentachlorobenzene	<1.97	<2.07	<2.01	<2.01	2.5
Hexachlorobenzene	<1.97	<2.07	<2.01	<2.01	2.5
Total Chlorobenzenes	<652	<497	<623	<591	14.0

* 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	8.40	6.14	8.54	7.69	17.5
1,3-Dichlorobenzene	1.22	0.85	0.86	0.98	21.5
1,4-Dichlorobenzene	1.13	0.80	0.87	0.93	18.6
1,2-Dichlorobenzene	0.95	0.68	0.67	0.77	21.0
Total Dichlorobenzene	3.30	2.32	2.40	2.68	20.3
1,3,5-trichlorobenzene	<0.037	<0.037	0.078	<0.051	46.5
1,2,4-trichlorobenzene	0.36	0.23	0.26	0.29	24.4
1,2,3-trichlorobenzene	0.096	0.057	0.064	0.073	28.3
Total Trichlorobenzene	<0.50	<0.32	0.41	<0.41	21.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.085	0.051	0.061	0.065	26.6
1,2,3,4-tetrachlorobenzene	<0.037	<0.037	<0.037	<0.037	0.3
Total Tetrachlorobenzene	<0.12	<0.088	<0.098	<0.10	17.0
Pentachlorobenzene	<0.037	<0.037	<0.037	<0.037	0.3
Hexachlorobenzene	<0.037	<0.037	<0.037	<0.037	0.3
Total Chlorobenzenes	<12.4	<8.95	<11.5	<11.0	16.4

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

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
Monochlorobenzene	293	492	393	415	7.69
1,3-Dichlorobenzene	37.3	62.6	50.2	52.8	0.98
1,4-Dichlorobenzene	35.4	59.5	47.6	50.2	0.93
1,2-Dichlorobenzene	29.2	49.0	39.2	41.3	0.77
Total Dichlorobenzene	102	171	137	144	2.68
1,3,5-trichlorobenzene	<1.95	<3.27	<2.60	<2.75	<0.051
1,2,4-trichlorobenzene	10.9	18.2	14.6	15.4	0.29
1,2,3-trichlorobenzene	2.76	4.63	3.71	3.90	0.073
Total Trichlorobenzene	<15.6	<26.1	<20.9	<22.1	<0.41
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.49	4.17	3.35	3.52	0.065
1,2,3,4-tetrachlorobenzene	<1.42	<2.39	<1.91	<2.01	<0.037
Total Tetrachlorobenzene	<3.91	<6.56	<5.25	<5.53	<0.10
Pentachlorobenzene	<1.42	<2.39	<1.91	<2.01	<0.037
Hexachlorobenzene	<1.42	<2.39	<1.91	<2.01	<0.037
Total Chlorobenzenes	<417	<701	<560	<591	<11.0

* 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	<12	<12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	34.6	<12
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<58.6	<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	<155	<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 ng	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	<60	<6.94	<11.6	<9.57	<9.83	<0.19
3-monochlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
4-monochlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
Total Monochlorophenols	<180	<20.8	<34.8	<28.7	<29.5	<0.56
2,6-dichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
2,4 & 2,5-dichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
3,5-dichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
2,3-dichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
3,4-dichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
Total Dichlorophenols	<300	<34.7	<58.0	<47.9	<49.1	<0.93
2,4,6-trichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
2,3,6-trichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
2,3,5-trichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
2,4,5-trichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
2,3,4-trichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
3,4,5-trichlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
Total Trichlorophenols	<360	<41.6	<69.6	<57.4	<59.0	<1.12
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
2,3,4,5-tetrachlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
Total Tetrachlorophenols	<120	<13.9	<23.2	<19.1	<19.7	<0.37
Pentachlorophenol	<60	<6.94	<11.6	<9.57	<9.83	<0.19
Total Chlorophenols	<1020	<118	<197	<163	<167	<3.17

Dry Gas Volume Sampled (Rm³*) :	5.174
Actual Flowrate (m³/s) :	26.9
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	19.0

* 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	<7.26	<12.2	<9.64	<10.3	<0.19
3-monochlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
4-monochlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
Total Monochlorophenols	<180	<21.8	<36.7	<28.9	<31.0	<0.56
2,6-dichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
3,5-dichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
2,3-dichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
3,4-dichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
Total Dichlorophenols	<300	<36.3	<61.2	<48.2	<51.7	<0.93
2,4,6-trichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
2,3,6-trichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
2,3,5-trichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
2,4,5-trichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
2,3,4-trichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
3,4,5-trichlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
Total Trichlorophenols	<360	<43.6	<73.4	<57.8	<62.0	<1.12
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
Total Tetrachlorophenols	<120	<14.5	<24.5	<19.3	<20.7	<0.37
Pentachlorophenol	<60	<7.26	<12.2	<9.64	<10.3	<0.19
Total Chlorophenols	<1020	<123	<208	<164	<176	<3.16

Dry Gas Volume Sampled (Rm³*) :	4.904
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	15.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.0

* 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	<7.11	<12.0	<9.38	<10.0	<0.19
3-monochlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
4-monochlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
Total Monochlorophenols	<180	<21.3	<35.9	<28.1	<30.1	<0.56
2,6-dichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
3,5-dichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
2,3-dichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
3,4-dichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
Total Dichlorophenols	<300	<35.6	<59.9	<46.9	<50.2	<0.93
2,4,6-trichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
2,3,6-trichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
2,3,5-trichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
2,4,5-trichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
2,3,4-trichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
3,4,5-trichlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
Total Trichlorophenols	<360	<42.7	<71.9	<56.3	<60.2	<1.11
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
Total Tetrachlorophenols	<120	<14.2	<24.0	<18.8	<20.1	<0.37
Pentachlorophenol	<60	<7.11	<12.0	<9.38	<10.0	<0.19
Total Chlorophenols	<1020	<121	<204	<159	<171	<3.16

Dry Gas Volume Sampled (Rm³*) :	5.010
Actual Flowrate (m³/s) :	26.1
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	19.8
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 64
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
2-monochlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
3-monochlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
4-monochlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
Total Monochlorophenols	<20.8	<21.8	<21.3	<21.3	2.3
2,6-dichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
2,4 & 2,5-dichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
3,5-dichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
2,3-dichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
3,4-dichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
Total Dichlorophenols	<34.7	<36.3	<35.6	<35.5	2.3
2,4,6-trichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
2,3,6-trichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
2,3,5-trichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
2,4,5-trichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
2,3,4-trichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
3,4,5-trichlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
Total Trichlorophenols	<41.6	<43.6	<42.7	<42.6	2.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
2,3,4,5-tetrachlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
Total Tetrachlorophenols	<13.9	<14.5	<14.2	<14.2	2.3
Pentachlorophenol	<6.94	<7.26	<7.11	<7.11	2.3
Total Chlorophenols	<118	<123	<121	<121	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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
3-monochlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
4-monochlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
Total Monochlorophenols	<34.8	<36.7	<35.9	<35.8	2.7
2,6-dichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
2,4 & 2,5-dichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
3,5-dichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
2,3-dichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
3,4-dichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
Total Dichlorophenols	<58.0	<61.2	<59.9	<59.7	2.7
2,4,6-trichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
2,3,6-trichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
2,3,5-trichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
2,4,5-trichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
2,3,4-trichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
3,4,5-trichlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
Total Trichlorophenols	<69.6	<73.4	<71.9	<71.6	2.7
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
2,3,4,5-tetrachlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
Total Tetrachlorophenols	<23.2	<24.5	<24.0	<23.9	2.7
Pentachlorophenol	<11.6	<12.2	<12.0	<11.9	2.7
Total Chlorophenols	<197	<208	<204	<203	2.7

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
3-monochlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
4-monochlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
Total Monochlorophenols	<28.7	<28.9	<28.1	<28.6	1.4
2,6-dichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
2,4 & 2,5-dichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
3,5-dichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
2,3-dichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
3,4-dichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
Total Dichlorophenols	<47.9	<48.2	<46.9	<47.6	1.4
2,4,6-trichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
2,3,6-trichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
2,3,5-trichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
2,4,5-trichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
2,3,4-trichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
3,4,5-trichlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
Total Trichlorophenols	<57.4	<57.8	<56.3	<57.2	1.4
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
2,3,4,5-tetrachlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
Total Tetrachlorophenols	<19.1	<19.3	<18.8	<19.1	1.4
Pentachlorophenol	<9.57	<9.64	<9.38	<9.53	1.4
Total Chlorophenols	<163	<164	<159	<162	1.4

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
3-monochlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
4-monochlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
Total Monochlorophenols	<29.5	<31.0	<30.1	<30.2	2.5
2,6-dichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
2,4 & 2,5-dichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
3,5-dichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
2,3-dichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
3,4-dichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
Total Dichlorophenols	<49.1	<51.7	<50.2	<50.3	2.5
2,4,6-trichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
2,3,6-trichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
2,3,5-trichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
2,4,5-trichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
2,3,4-trichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
3,4,5-trichlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
Total Trichlorophenols	<59.0	<62.0	<60.2	<60.4	2.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
2,3,4,5-tetrachlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
Total Tetrachlorophenols	<19.7	<20.7	<20.1	<20.1	2.5
Pentachlorophenol	<9.83	<10.3	<10.0	<10.1	2.5
Total Chlorophenols	<167	<176	<171	<171	2.5

* 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 Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
3-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
4-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
Total Monochlorophenols	<0.56	<0.56	<0.56	<0.56	0.3
2,6-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,4 & 2,5-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
3,5-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,3-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
3,4-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
Total Dichlorophenols	<0.93	<0.93	<0.93	<0.93	0.3
2,4,6-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,3,6-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,3,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,4,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,3,4-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
3,4,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
Total Trichlorophenols	<1.12	<1.12	<1.11	<1.12	0.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,3,4,5-tetrachlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
Total Tetrachlorophenols	<0.37	<0.37	<0.37	<0.37	0.3
Pentachlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
Total Chlorophenols	<3.17	<3.16	<3.16	<3.16	0.3

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	<7.11	<11.9	<9.53	<10.1	<0.19
3-monochlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
4-monochlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
Total Monochlorophenols	<21.3	<35.8	<28.6	<30.2	<0.56
2,6-dichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
2,4 & 2,5-dichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
3,5-dichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
2,3-dichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
3,4-dichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
Total Dichlorophenols	<35.5	<59.7	<47.6	<50.3	<0.93
2,4,6-trichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
2,3,6-trichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
2,3,5-trichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
2,4,5-trichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
2,3,4-trichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
3,4,5-trichlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
Total Trichlorophenols	<42.6	<71.6	<57.2	<60.4	<1.12
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
2,3,4,5-tetrachlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
Total Tetrachlorophenols	<14.2	<23.9	<19.1	<20.1	<0.37
Pentachlorophenol	<7.11	<11.9	<9.53	<10.1	<0.19
Total Chlorophenols	<121	<203	<162	<171	<3.16

* 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 ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	264	30.5	51.0	42.1	43.2	0.82
Acenaphthylene	140	16.2	27.1	22.3	22.9	0.44
Anthracene	17.5	2.02	3.38	2.79	2.87	0.054
Benzo(a)Anthracene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Benzo(b)Fluoranthene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Benzo(k)Fluoranthene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Benzo(a)fluorene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Benzo(b)fluorene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Benzo(g,h,i)Perylene	28.4	3.29	5.49	4.53	4.65	0.088
Benzo(a)Pyrene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Benzo(e)Pyrene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Biphenyl	548	63.4	106	87.4	89.7	1.71
2-Chloronaphthalene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Chrysene/Triphenylene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Coronene	60.7	7.02	11.7	9.69	9.94	0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Dibenzo(a,e)pyrene	<60	<6.94	<11.6	<9.57	<9.83	<0.19
9,10-dimethylanthracene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
7,12-Dimethylbenzo(a)anthracene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Fluoranthene	23.6	2.73	4.56	3.77	3.87	0.073
Fluorene	3080	356	595	491	504	9.58
Indeno(1,2,3-cd)Pyrene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
2-methylanthracene	17.0	1.97	3.29	2.71	2.78	0.053
3-Methylcholanthrene	<60	<6.94	<11.6	<9.57	<9.83	<0.19
1-Methylnaphthalene	180	20.8	34.8	28.7	29.5	0.56
2-Methylnaphthalene	287	33.2	55.5	45.8	47.0	0.89
1-Methylphenanthrene	101	11.7	19.5	16.1	16.5	0.31
9-Methylphenanthrene	12.7	1.47	2.45	2.03	2.08	0.040
Naphthalene	1360	157	263	217	223	4.23
Perylene	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Phenanthrene	94.9	11.0	18.3	15.1	15.5	0.30
Picene	<60	<6.94	<11.6	<9.57	<9.83	<0.19
Pyrene	26.6	3.08	5.14	4.24	4.36	0.083
Tetralin	279	32.3	53.9	44.5	45.7	0.87
m-terphenyl	<12	<1.39	<2.32	<1.91	<1.97	<0.037
o-Terphenyl	12.4	1.43	2.40	1.98	2.03	0.039
p-terphenyl	<12	<1.39	<2.32	<1.91	<1.97	<0.037
Total	<6905	<799	<1335	<1102	<1131	<21.5

Dry Gas Volume Sampled (Rm³*) :	5.174
Actual Flowrate (m³/s) :	26.9
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	19.0

* 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 ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	84.1	10.2	17.1	13.5	14.5	0.26
Acenaphthylene	27.8	3.37	5.67	4.46	4.79	0.086
Anthracene	14.1	1.71	2.88	2.26	2.43	0.044
Benzo(a)Anthracene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Benzo(b)Fluoranthene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Benzo(k)Fluoranthene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Benzo(a)fluorene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Benzo(b)fluorene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Benzo(g,h,i)Perylene	147	17.8	30.0	23.6	25.3	0.46
Benzo(a)Pyrene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Benzo(e)Pyrene	28.0	3.39	5.71	4.50	4.82	0.087
Biphenyl	120	14.5	24.5	19.3	20.7	0.37
2-Chloronaphthalene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Chrysene/Triphenylene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Coronene	172	20.8	35.1	27.6	29.6	0.53
Dibenzo(a,c/a,h)Anthracene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Dibenzo(a,e)pyrene	<60	<7.26	<12.2	<9.64	<10.3	<0.19
9,10-dimethylanthracene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
7,12-Dimethylbenzo(a)anthracene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Fluoranthene	25.0	3.03	5.10	4.01	4.30	0.077
Fluorene	1010	122	206	162	174	3.13
Indeno(1,2,3-cd)Pyrene	23.6	2.86	4.81	3.79	4.06	0.073
2-methylanthracene	16.7	2.02	3.41	2.68	2.88	0.052
3-Methylcholanthrene	<60	<7.26	<12.2	<9.64	<10.3	<0.19
1-Methylnaphthalene	53.5	6.48	10.9	8.59	9.21	0.17
2-Methylnaphthalene	95.7	11.6	19.5	15.4	16.5	0.30
1-Methylphenanthrene	113	13.7	23.0	18.1	19.5	0.35
9-Methylphenanthrene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Naphthalene	622	75.3	127	99.9	107	1.93
Perylene	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Phenanthrene	80.3	9.72	16.4	12.9	13.8	0.25
Picene	<60	<7.3	<12.2	<9.64	<10.3	<0.19
Pyrene	35.4	4.29	7.22	5.69	6.10	0.11
Tetralin	96.2	11.6	19.6	15.4	16.6	0.30
m-terphenyl	<12	<1.45	<2.45	<1.93	<2.07	<0.037
o-Terphenyl	<12	<1.45	<2.45	<1.93	<2.07	<0.037
p-terphenyl	<12	<1.45	<2.45	<1.93	<2.07	<0.037
Total	<3136	<380	<640	<504	<540	<9.72

Dry Gas Volume Sampled (Rm³*) :	4.904
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	15.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.0

* 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	110	13.0	22.0	17.2	18.4	0.34
Acenaphthylene	33.1	3.92	6.61	5.17	5.54	0.10
Anthracene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Benzo(a)Anthracene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Benzo(b)Fluoranthene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Benzo(k)Fluoranthene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Benzo(a)fluorene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Benzo(b)fluorene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Benzo(g,h,i)Perylene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Benzo(a)Pyrene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Benzo(e)Pyrene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Biphenyl	222	26.3	44.3	34.7	37.1	0.69
2-Chloronaphthalene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Chrysene/Triphenylene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Coronene	<60	<7.11	<12.0	<9.38	<10.0	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Dibenzo(a,e)pyrene	<60	<7.11	<12.0	<9.38	<10.0	<0.19
9,10-dimethylanthracene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
7,12-Dimethylbenzo(a)anthracene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Fluoranthene	111	13.2	22.2	17.3	18.6	0.34
Fluorene	1060	126	212	166	177	3.28
Indeno(1,2,3-cd)Pyrene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
2-methylanthracene	173	20.5	34.5	27.0	28.9	0.54
3-Methylcholanthrene	<60	<7.11	<12.0	<9.38	<10.0	<0.19
1-Methylnaphthalene	92.5	11.0	18.5	14.5	15.5	0.29
2-Methylnaphthalene	181	21.5	36.1	28.3	30.3	0.56
1-Methylphenanthrene	127	15.1	25.3	19.8	21.2	0.39
9-Methylphenanthrene	92.3	10.9	18.4	14.4	15.4	0.29
Naphthalene	1040	123	208	163	174	3.22
Perylene	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Phenanthrene	761	90.2	152	119	127	2.35
Picene	<60	<7.11	<12.0	<9.38	<10.0	<0.19
Pyrene	85.4	10.12	17.0	13.3	14.3	0.26
Tetralin	112	13.3	22.4	17.5	18.7	0.35
m-terphenyl	14.1	1.67	2.81	2.20	2.36	0.044
o-Terphenyl	18.0	2.13	3.59	2.81	3.01	0.056
p-terphenyl	<12	<1.42	<2.40	<1.88	<2.01	<0.037
Total	<4676	<554	<933	<731	<782	<14.5

Dry Gas Volume Sampled (Rm³*) :	5.010
Actual Flowrate (m³/s) :	26.1
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	19.8
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. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	30.5	10.2	13.0	17.9	61.5
Acenaphthylene	16.2	3.37	3.92	7.83	92.6
Anthracene	2.02	1.71	<1.42	<1.72	17.5
Benzo(a)Anthracene	<1.39	<1.45	<1.42	<1.42	2.3
Benzo(b)Fluoranthene	<1.39	<1.45	<1.42	<1.42	2.3
Benzo(k)Fluoranthene	<1.39	<1.45	<1.42	<1.42	2.3
Benzo(a)fluorene	<1.39	<1.45	<1.42	<1.42	2.3
Benzo(b)fluorene	<1.39	<1.45	<1.42	<1.42	2.3
Benzo(g,h,i)Perylene	3.29	17.8	<1.42	<7.50	120
Benzo(a)Pyrene	<1.39	<1.45	<1.42	<1.42	2.3
Benzo(e)Pyrene	<1.39	3.39	<1.42	<2.07	55.4
Biphenyl	63.4	14.5	26.3	34.7	73.4
2-Chloronaphthalene	<1.39	<1.45	<1.42	<1.42	2.3
Chrysene/Triphenylene	<1.39	<1.45	<1.42	<1.42	2.3
Coronene	7.02	20.8	<7.11	<11.7	68.2
Dibenzo(a,c/a,h)Anthracene	<1.39	<1.45	<1.42	<1.42	2.3
Dibenzo(a,e)pyrene	<6.94	<7.26	<7.11	<7.11	2.3
9,10-dimethylanthracene	<1.39	<1.45	<1.42	<1.42	2.3
7,12-Dimethylbenzo(a)anthracene	<1.39	<1.45	<1.42	<1.42	2.3
Fluoranthene	2.73	3.03	13.2	6.30	94.2
Fluorene	356	122	126	201	66.6
Indeno(1,2,3-cd)Pyrene	<1.39	2.86	<1.42	<1.89	44.4
2-methylanthracene	1.97	2.02	20.5	8.17	131
3-Methylcholanthrene	<6.94	<7.26	<7.11	<7.11	2.3
1-Methylnaphthalene	20.8	6.48	11.0	12.8	57.5
2-Methylnaphthalene	33.2	11.6	21.5	22.1	49.0
1-Methylphenanthrene	11.7	13.7	15.1	13.5	12.6
9-Methylphenanthrene	1.47	<1.45	10.9	<4.62	118
Naphthalene	157	75.3	123	119	34.7
Perylene	<1.39	<1.45	<1.42	<1.42	2.3
Phenanthrene	11.0	9.72	90.2	37.0	125
Picene	<6.94	<7.3	<7.11	<7.11	2.3
Pyrene	3.08	4.29	10.12	5.83	64.6
Tetralin	32.3	11.6	13.3	19.1	60.1
m-terphenyl	<1.39	<1.45	1.67	<1.50	9.9
o-Terphenyl	1.43	<1.45	2.13	<1.67	23.8
p-terphenyl	<1.39	<1.45	<1.42	<1.42	2.3
Total	<799	<380	<554	<578	36.4

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

Compound	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	51.0	17.1	22.0	30.0	61.0
Acenaphthylene	27.1	5.67	6.61	13.1	92.2
Anthracene	3.38	2.88	<2.40	<2.88	17.1
Benzo(a)Anthracene	<2.32	<2.45	<2.40	<2.39	2.7
Benzo(b)Fluoranthene	<2.32	<2.45	<2.40	<2.39	2.7
Benzo(k)Fluoranthene	<2.32	<2.45	<2.40	<2.39	2.7
Benzo(a)fluorene	<2.32	<2.45	<2.40	<2.39	2.7
Benzo(b)fluorene	<2.32	<2.45	<2.40	<2.39	2.7
Benzo(g,h,i)Perylene	5.49	30.0	<2.40	<12.6	120
Benzo(a)Pyrene	<2.32	<2.45	<2.40	<2.39	2.7
Benzo(e)Pyrene	<2.32	5.71	<2.40	<3.47	55.7
Biphenyl	106	24.5	44.3	58.2	72.9
2-Chloronaphthalene	<2.32	<2.45	<2.40	<2.39	2.7
Chrysene/Triphenylene	<2.32	<2.45	<2.40	<2.39	2.7
Coronene	11.7	35.1	<12.0	<19.6	68.4
Dibenzo(a,c/a,h)Anthracene	<2.32	<2.45	<2.40	<2.39	2.7
Dibenzo(a,e)pyrene	<11.6	<12.2	<12.0	<11.9	2.7
9,10-dimethylanthracene	<2.32	<2.45	<2.40	<2.39	2.7
7,12-Dimethylbenzo(a)anthracene	<2.32	<2.45	<2.40	<2.39	2.7
Fluoranthene	4.56	5.10	22.2	10.6	94.4
Fluorene	595	206	212	338	66.1
Indeno(1,2,3-cd)Pyrene	<2.32	4.81	<2.40	<3.18	44.7
2-methylanthracene	3.29	3.41	34.5	13.7	131
3-Methylcholanthrene	<11.6	<12.2	<12.0	<11.9	2.7
1-Methylnaphthalene	34.8	10.9	18.5	21.4	57.1
2-Methylnaphthalene	55.5	19.5	36.1	37.0	48.6
1-Methylphenanthrene	19.5	23.0	25.3	22.6	13.0
9-Methylphenanthrene	2.45	<2.45	18.4	<7.77	119
Naphthalene	263	127	208	199	34.4
Perylene	<2.32	<2.45	<2.40	<2.39	2.7
Phenanthrene	18.3	16.4	152	62.2	125
Picene	<11.6	<12.2	<12.0	<11.9	2.7
Pyrene	5.14	7.22	17.0	9.80	64.9
Tetralin	53.9	19.6	22.4	32.0	59.6
m-terphenyl	<2.32	<2.45	2.81	<2.53	10.2
o-Terphenyl	2.40	<2.45	3.59	<2.81	24.1
p-terphenyl	<2.32	<2.45	<2.40	<2.39	2.7
Total	<1335	<640	<933	<969	36.0

* 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
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	42.1	13.5	17.2	24.3	64.1
Acenaphthylene	22.3	4.46	5.17	10.7	95.0
Anthracene	2.79	2.26	<1.88	<2.31	19.9
Benzo(a)Anthracene	<1.91	<1.93	<1.88	<1.91	1.4
Benzo(b)Fluoranthene	<1.91	<1.93	<1.88	<1.91	1.4
Benzo(k)Fluoranthene	<1.91	<1.93	<1.88	<1.91	1.4
Benzo(a)fluorene	<1.91	<1.93	<1.88	<1.91	1.4
Benzo(b)fluorene	<1.91	<1.93	<1.88	<1.91	1.4
Benzo(g,h,i)Perylene	4.53	23.6	<1.88	<10.00	118
Benzo(a)Pyrene	<1.91	<1.93	<1.88	<1.91	1.4
Benzo(e)Pyrene	<1.91	4.50	<1.88	<2.76	54.4
Biphenyl	87.4	19.3	34.7	47.1	75.8
2-Chloronaphthalene	<1.91	<1.93	<1.88	<1.91	1.4
Chrysene/Triphenylene	<1.91	<1.93	<1.88	<1.91	1.4
Coronene	9.69	27.6	<9.38	<15.6	67.1
Dibenzo(a,c/a,h)Anthracene	<1.91	<1.93	<1.88	<1.91	1.4
Dibenzo(a,e)pyrene	<9.57	<9.64	<9.38	<9.53	1.4
9,10-dimethylanthracene	<1.91	<1.93	<1.88	<1.91	1.4
7,12-Dimethylbenzo(a)anthracene	<1.91	<1.93	<1.88	<1.91	1.4
Fluoranthene	3.77	4.01	17.3	8.37	92.8
Fluorene	491	162	166	273	69.3
Indeno(1,2,3-cd)Pyrene	<1.91	3.79	<1.88	<2.53	43.3
2-methylanthracene	2.71	2.68	27.0	10.8	130
3-Methylcholanthrene	<9.57	<9.64	<9.38	<9.53	1.4
1-Methylnaphthalene	28.7	8.59	14.5	17.3	60.0
2-Methylnaphthalene	45.8	15.4	28.3	29.8	51.2
1-Methylphenanthrene	16.1	18.1	19.8	18.0	10.3
9-Methylphenanthrene	2.03	<1.93	14.4	<6.13	117
Naphthalene	217	99.9	163	160	36.7
Perylene	<1.91	<1.93	<1.88	<1.91	1.4
Phenanthrene	15.1	12.9	119	49.0	124
Picene	<9.57	<9.64	<9.38	<9.53	1.4
Pyrene	4.24	5.69	13.3	7.76	63.0
Tetralin	44.5	15.4	17.5	25.8	62.8
m-terphenyl	<1.91	<1.93	2.20	<2.02	8.1
o-Terphenyl	1.98	<1.93	2.81	<2.24	22.2
p-terphenyl	<1.91	<1.93	<1.88	<1.91	1.4
Total	<1102	<504	<731	<779	38.8

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Acenaphthene	43.2	14.5	18.4	25.4	61.5
Acenaphthylene	22.9	4.79	5.54	11.1	92.6
Anthracene	2.87	2.43	<2.01	<2.43	17.7
Benzo(a)Anthracene	<1.97	<2.07	<2.01	<2.01	2.5
Benzo(b)Fluoranthene	<1.97	<2.07	<2.01	<2.01	2.5
Benzo(k)Fluoranthene	<1.97	<2.07	<2.01	<2.01	2.5
Benzo(a)fluorene	<1.97	<2.07	<2.01	<2.01	2.5
Benzo(b)fluorene	<1.97	<2.07	<2.01	<2.01	2.5
Benzo(g,h,i)Perylene	4.65	25.3	<2.01	<10.7	120
Benzo(a)Pyrene	<1.97	<2.07	<2.01	<2.01	2.5
Benzo(e)Pyrene	<1.97	4.82	<2.01	<2.93	55.9
Biphenyl	89.7	20.7	37.1	49.2	73.4
2-Chloronaphthalene	<1.97	<2.07	<2.01	<2.01	2.5
Chrysene/Triphenylene	<1.97	<2.07	<2.01	<2.01	2.5
Coronene	9.94	29.6	<10.0	<16.5	68.6
Dibenzo(a,c/a,h)Anthracene	<1.97	<2.07	<2.01	<2.01	2.5
Dibenzo(a,e)pyrene	<9.83	<10.3	<10.0	<10.1	2.5
9,10-dimethylanthracene	<1.97	<2.07	<2.01	<2.01	2.5
7,12-Dimethylbenzo(a)anthracene	<1.97	<2.07	<2.01	<2.01	2.5
Fluoranthene	3.87	4.30	18.6	8.91	93.8
Fluorene	504	174	177	285	66.6
Indeno(1,2,3-cd)Pyrene	<1.97	4.06	<2.01	<2.68	44.8
2-methylanthracene	2.78	2.88	28.9	11.5	131
3-Methylcholanthrene	<9.83	<10.3	<10.0	<10.1	2.5
1-Methylnaphthalene	29.5	9.21	15.5	18.1	57.5
2-Methylnaphthalene	47.0	16.5	30.3	31.3	48.9
1-Methylphenanthrene	16.5	19.5	21.2	19.1	12.4
9-Methylphenanthrene	2.08	<2.07	15.4	<6.53	118
Naphthalene	223	107	174	168	34.6
Perylene	<1.97	<2.07	<2.01	<2.01	2.5
Phenanthrene	15.5	13.8	127	52.2	125
Picene	<9.83	<10.3	<10.0	<10.1	2.5
Pyrene	4.36	6.10	14.3	8.24	64.3
Tetralin	45.7	16.6	18.7	27.0	60.1
m-terphenyl	<1.97	<2.07	2.36	<2.13	9.6
o-Terphenyl	2.03	<2.07	3.01	<2.37	23.4
p-terphenyl	<1.97	<2.07	<2.01	<2.01	2.5
Total	<1131	<540	<782	<818	36.3

* 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
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	of Variation %
Acenaphthene	0.82	0.26	0.34	0.47	64.0
Acenaphthylene	0.44	0.086	0.10	0.21	94.8
Anthracene	0.054	0.044	<0.037	<0.045	19.4
Benzo(a)Anthracene	<0.037	<0.037	<0.037	<0.037	0.3
Benzo(b)Fluoranthene	<0.037	<0.037	<0.037	<0.037	0.3
Benzo(k)Fluoranthene	<0.037	<0.037	<0.037	<0.037	0.3
Benzo(a)fluorene	<0.037	<0.037	<0.037	<0.037	0.3
Benzo(b)fluorene	<0.037	<0.037	<0.037	<0.037	0.3
Benzo(g,h,i)Perylene	0.088	0.46	<0.037	<0.19	118
Benzo(a)Pyrene	<0.037	<0.037	<0.037	<0.037	0.3
Benzo(e)Pyrene	<0.037	0.087	<0.037	<0.054	53.2
Biphenyl	1.71	0.37	0.69	0.92	75.6
2-Chloronaphthalene	<0.037	<0.037	<0.037	<0.037	0.3
Chrysene/Triphenylene	<0.037	<0.037	<0.037	<0.037	0.3
Coronene	0.19	0.53	<0.19	<0.30	66.0
Dibenzo(a,c/a,h)Anthracene	<0.037	<0.037	<0.037	<0.037	0.3
Dibenzo(a,e)pyrene	<0.19	<0.19	<0.19	<0.19	0.3
9,10-dimethylanthracene	<0.037	<0.037	<0.037	<0.037	0.3
7,12-Dimethylbenzo(a)anthracene	<0.037	<0.037	<0.037	<0.037	0.3
Fluoranthene	0.073	0.077	0.34	0.16	93.9
Fluorene	9.58	3.13	3.28	5.33	69.1
Indeno(1,2,3-cd)Pyrene	<0.037	0.073	<0.037	<0.049	42.1
2-methylanthracene	0.053	0.052	0.54	0.21	131
3-Methylcholanthrene	<0.19	<0.19	<0.19	<0.19	0.3
1-Methylnaphthalene	0.56	0.17	0.29	0.34	59.9
2-Methylnaphthalene	0.89	0.30	0.56	0.58	51.2
1-Methylphenanthrene	0.31	0.35	0.39	0.35	11.2
9-Methylphenanthrene	0.040	<0.037	0.29	<0.12	118
Naphthalene	4.23	1.93	3.22	3.13	36.9
Perylene	<0.037	<0.037	<0.037	<0.037	0.3
Phenanthrene	0.30	0.25	2.35	0.97	124
Picene	<0.19	<0.19	<0.19	<0.19	0.3
Pyrene	0.083	0.11	0.26	0.15	64.3
Tetralin	0.87	0.30	0.35	0.50	62.7
m-terphenyl	<0.037	<0.037	0.044	<0.039	9.3
o-Terphenyl	0.039	<0.037	0.056	<0.044	23.5
p-terphenyl	<0.037	<0.037	<0.037	<0.037	0.3
Total	<21.5	<9.72	<14.5	<15.2	38.9

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	17.9	30.0	24.3	25.4	0.47
Acenaphthylene	7.83	13.1	10.7	11.1	0.21
Anthracene	<1.72	<2.88	<2.31	<2.43	<0.045
Benzo(a)Anthracene	<1.42	<2.39	<1.91	<2.01	<0.037
Benzo(b)Fluoranthene	<1.42	<2.39	<1.91	<2.01	<0.037
Benzo(k)Fluoranthene	<1.42	<2.39	<1.91	<2.01	<0.037
Benzo(a)fluorene	<1.42	<2.39	<1.91	<2.01	<0.037
Benzo(b)fluorene	<1.42	<2.39	<1.91	<2.01	<0.037
Benzo(g,h,i)Perylene	<7.50	<12.6	<10.00	<10.7	<0.19
Benzo(a)Pyrene	<1.42	<2.39	<1.91	<2.01	<0.037
Benzo(e)Pyrene	<2.07	<3.47	<2.76	<2.93	<0.054
Biphenyl	34.7	58.2	47.1	49.2	0.92
2-Chloronaphthalene	<1.42	<2.39	<1.91	<2.01	<0.037
Chrysene/Triphenylene	<1.42	<2.39	<1.91	<2.01	<0.037
Coronene	<11.7	<19.6	<15.6	<16.5	<0.30
Dibenzo(a,c/a,h)Anthracene	<1.42	<2.39	<1.91	<2.01	<0.037
Dibenzo(a,e)pyrene	<7.11	<11.9	<9.53	<10.1	<0.19
9,10-dimethylanthracene	<1.42	<2.39	<1.91	<2.01	<0.037
7,12-Dimethylbenzo(a)anthracene	<1.42	<2.39	<1.91	<2.01	<0.037
Fluoranthene	6.30	10.6	8.37	8.91	0.16
Fluorene	201	338	273	285	5.33
Indeno(1,2,3-cd)Pyrene	<1.89	<3.18	<2.53	<2.68	<0.049
2-methylanthracene	8.17	13.7	10.8	11.5	0.21
3-Methylcholanthrene	<7.11	<11.9	<9.53	<10.1	<0.19
1-Methylnaphthalene	12.8	21.4	17.3	18.1	0.34
2-Methylnaphthalene	22.1	37.0	29.8	31.3	0.58
1-Methylphenanthrene	13.5	22.6	18.0	19.1	0.35
9-Methylphenanthrene	<4.62	<7.77	<6.13	<6.53	<0.12
Naphthalene	119	199	160	168	3.13
Perylene	<1.42	<2.39	<1.91	<2.01	<0.037
Phenanthrene	37.0	62.2	49.0	52.2	0.97
Picene	<7.11	<11.9	<9.53	<10.1	<0.19
Pyrene	5.83	9.80	7.76	8.24	0.15
Tetralin	19.1	32.0	25.8	27.0	0.50
m-terphenyl	<1.50	<2.53	<2.02	<2.13	<0.039
o-Terphenyl	<1.67	<2.81	<2.24	<2.37	<0.044
p-terphenyl	<1.42	<2.39	<1.91	<2.01	<0.037
Total	<578	<969	<779	<818	<15.2

* 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	100	<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	1240	72.8
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	23	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	320	136
Perylene	<12	<12
Phenanthrene	12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	102	139
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<2361	<948

"<" 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 Rm³*	Acetaldehyde Concentration Actual µg/m³	Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Acetaldehyde Emission Rate mg/s
1	6.02	0.0333	108	181	149	153	2.91
2	8.42	0.0334	151	252	208	214	4.06
3	5.84	0.0315	111	185	153	157	2.99
Average			123	206	170	175	3.32
Blank	7.20						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm³*	Formaldehyde Concentration Actual µg/m³	Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Formaldehyde Emission Rate mg/s
1	3.06	0.0333	54.9	91.8	75.8	77.8	1.48
2	4.31	0.0334	77.3	129	107	109	2.08
3	2.03	0.0315	38.6	64.4	53.2	54.6	1.04
Average			56.9	95.1	78.5	80.6	1.53
Blank	2.17						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm³*	Acrolein Concentration Actual µg/m³	Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Acrolein Emission Rate mg/s
1	<0.1	0.0333	<1.80	<3.00	<2.48	<2.54	<0.048
2	<0.1	0.0334	<1.79	<3.00	<2.47	<2.54	<0.048
3	<0.1	0.0315	<1.90	<3.17	<2.62	<2.69	<0.051
Average			<1.83	<3.06	<2.52	<2.59	<0.049
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 μg	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	<0.1	<2.95	<4.93	<4.07	<4.18	<0.079
Benzene	<0.05	<1.47	<2.46	<2.03	<2.09	<0.040
Bromodichloromethane	<0.01	<0.29	<0.49	<0.41	<0.42	<0.0079
Bromoform	<0.01	<0.29	<0.49	<0.41	<0.42	<0.0079
Bromomethane	<0.09	<2.65	<4.44	<3.66	<3.76	<0.071
1,3-Butadiene	<0.02	<0.59	<0.99	<0.81	<0.84	<0.016
2-Butanone	0.016	0.47	0.79	0.65	0.67	0.013
Carbon Tetrachloride	<0.01	<0.29	<0.49	<0.41	<0.42	<0.0079
Chloroform	0.011	0.32	0.54	0.45	0.46	0.0087
Cumene (Isopropylbenzene)	<0.02	<0.59	<0.99	<0.81	<0.84	<0.016
Dibromochloromethane	<0.01	<0.29	<0.49	<0.41	<0.42	<0.0079
Dichlorodifluoromethane	<0.02	<0.59	<0.99	<0.81	<0.84	<0.016
1,2-Dichloroethane	<0.01	<0.29	<0.49	<0.41	<0.42	<0.0079
trans,1,2-Dichloroethene	0.011	0.32	0.54	0.45	0.46	0.0087
1,1-Dichloroethene	<0.01	<0.29	<0.49	<0.41	<0.42	<0.0079
1,2-Dichloropropane	<0.01	<0.29	<0.49	<0.41	<0.42	<0.0079
Ethylbenzene	0.080	2.36	3.94	3.26	3.34	0.063
Ethylene Dibromide	<0.02	<0.59	<0.99	<0.81	<0.84	<0.016
Mesitylene (1,3,5-Trimethylbenzene)	0.052	1.53	2.56	2.12	2.17	0.041
Methylene Chloride	0.84	24.8	41.4	34.2	35.1	0.67
Styrene	0.035	1.03	1.72	1.42	1.46	0.028
Tetrachloroethene	<0.01	<0.29	<0.49	<0.41	<0.42	<0.0079
Toluene	0.45	13.3	22.2	18.4	18.8	0.36
1,1,1-Trichloroethane	<0.01	<0.29	<0.49	<0.41	<0.42	<0.0079
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.59	<0.99	<0.81	<0.84	<0.016
Trichlorotrifluoroethane	<0.02	<0.59	<0.99	<0.81	<0.84	<0.016
Trichlorofluoromethane	<0.02	<0.59	<0.99	<0.81	<0.84	<0.016
M&P-Xylene	0.68	20.0	33.5	27.6	28.4	0.54
O-Xylene	0.21	6.25	10.4	8.63	8.85	0.17
Vinyl Chloride	<0.02	<0.59	<0.99	<0.81	<0.84	<0.016
Total	<2.88	<84.9	<142	<117	<120	<2.28

Dry Gas Volume Sampled (Rm^3*) :	0.0203
Actual Flowrate (m^3/s) :	26.9
Dry Reference Flowrate (Rm^3/s*) :	16.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
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

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 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	0.22	6.08	10.2	8.39	8.61	0.16
Benzene	<0.05	<1.40	<2.33	<1.93	<1.98	<0.038
Bromodichloromethane	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Bromoform	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Bromomethane	<0.09	<2.51	<4.20	<3.47	<3.56	<0.068
1,3-Butadiene	<0.02	<0.56	<0.93	<0.77	<0.79	<0.015
2-Butanone	0.040	1.12	1.87	1.54	1.58	0.030
Carbon Tetrachloride	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Chloroform	0.022	0.61	1.03	0.85	0.87	0.017
Cumene (Isopropylbenzene)	<0.02	<0.56	<0.93	<0.77	<0.79	<0.015
Dibromochloromethane	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Dichlorodifluoromethane	<0.02	<0.56	<0.93	<0.77	<0.79	<0.015
1,2-Dichloroethane	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
trans,1,2-Dichloroethene	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
1,1-Dichloroethene	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
1,2-Dichloropropane	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Ethylbenzene	0.15	4.07	6.81	5.62	5.77	0.11
Ethylene Dibromide	<0.02	<0.56	<0.93	<0.77	<0.79	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	0.060	1.67	2.80	2.31	2.37	0.045
Methylene Chloride	1.28	35.7	59.7	49.3	50.6	0.96
Styrene	0.042	1.17	1.96	1.62	1.66	0.032
Tetrachloroethene	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Toluene	0.49	13.8	23.0	19.0	19.5	0.37
1,1,1-Trichloroethane	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.56	<0.93	<0.77	<0.79	<0.015
Trichlorotrifluoroethane	<0.02	<0.56	<0.93	<0.77	<0.79	<0.015
Trichlorofluoromethane	<0.02	<0.56	<0.93	<0.77	<0.79	<0.015
M&P-Xylene	0.90	25.0	41.7	34.5	35.4	0.67
O-Xylene	0.28	7.79	13.0	10.7	11.0	0.21
Vinyl Chloride	<0.02	<0.56	<0.93	<0.77	<0.79	<0.015
Total	<3.88	<108	<181	<149	<153	<2.91

Dry Gas Volume Sampled (Rm^3*) :	0.0214
Actual Flowrate (m^3/s) :	26.9
Dry Reference Flowrate (Rm^3/s*) :	16.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
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

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. 3

Compound	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	0.50	13.9	23.3	19.2	19.7	0.37
Benzene	<0.05	<1.40	<2.34	<1.93	<1.98	<0.038
Bromodichloromethane	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Bromoform	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Bromomethane	<0.09	<2.52	<4.21	<3.48	<3.57	<0.068
1,3-Butadiene	<0.02	<0.56	<0.94	<0.77	<0.79	<0.015
2-Butanone	0.039	1.09	1.82	1.51	1.55	0.029
Carbon Tetrachloride	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Chloroform	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Cumene (Isopropylbenzene)	<0.02	<0.56	<0.94	<0.77	<0.79	<0.015
Dibromochloromethane	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Dichlorodifluoromethane	<0.02	<0.56	<0.94	<0.77	<0.79	<0.015
1,2-Dichloroethane	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
trans,1,2-Dichloroethene	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
1,1-Dichloroethene	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
1,2-Dichloropropane	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Ethylbenzene	0.059	1.65	2.76	2.28	2.34	0.044
Ethylene Dibromide	<0.02	<0.56	<0.94	<0.77	<0.79	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.56	<0.94	<0.77	<0.79	<0.015
Methylene Chloride	0.71	19.9	33.3	27.5	28.2	0.54
Styrene	<0.02	<0.56	<0.94	<0.77	<0.79	<0.015
Tetrachloroethene	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Toluene	0.34	9.40	15.7	13.0	13.3	0.25
1,1,1-Trichloroethane	<0.01	<0.28	<0.47	<0.39	<0.40	<0.0075
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.56	<0.94	<0.77	<0.79	<0.015
Trichlorotrifluoroethane	<0.02	<0.56	<0.94	<0.77	<0.79	<0.015
Trichlorofluoromethane	<0.02	<0.56	<0.94	<0.77	<0.79	<0.015
M&P-Xylene	0.44	12.2	20.4	16.9	17.3	0.33
O-Xylene	0.011	0.31	0.51	0.42	0.44	0.0083
Vinyl Chloride	<0.02	<0.56	<0.94	<0.77	<0.79	<0.015
Total	<2.54	<71.2	<119	<98.2	<101	<1.91

Dry Gas Volume Sampled (Rm³*) :	0.0214
Actual Flowrate (m³/s) :	26.9
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	19.0

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	μg/m³	μg/m³	μg/m³	μg/m³	%
Acetone	<2.95	6.08	13.9	<7.66	73.9
Benzene	<1.47	<1.40	<1.40	<1.42	3.1
Bromodichloromethane	<0.29	<0.28	<0.28	<0.28	3.1
Bromoform	<0.29	<0.28	<0.28	<0.28	3.1
Bromomethane	<2.65	<2.51	<2.52	<2.56	3.1
1,3-Butadiene	<0.59	<0.56	<0.56	<0.57	3.1
2-Butanone	0.47	1.12	1.09	0.89	40.9
Carbon Tetrachloride	<0.29	<0.28	<0.28	<0.28	3.1
Chloroform	0.32	0.61	<0.28	<0.41	44.7
Cumene (Isopropylbenzene)	<0.59	<0.56	<0.56	<0.57	3.1
Dibromochloromethane	<0.29	<0.28	<0.28	<0.28	3.1
Dichlorodifluoromethane	<0.59	<0.56	<0.56	<0.57	3.1
1,2-Dichloroethane	<0.29	<0.28	<0.28	<0.28	3.1
trans,1,2-Dichloroethene	0.32	<0.28	<0.28	<0.29	8.8
1,1-Dichloroethene	<0.29	<0.28	<0.28	<0.28	3.1
1,2-Dichloropropane	<0.29	<0.28	<0.28	<0.28	3.1
Ethylbenzene	2.36	4.07	1.65	2.70	46.2
Ethylene Dibromide	<0.59	<0.56	<0.56	<0.57	3.1
Mesitylene (1,3,5-Trimethylbenzene)	1.53	1.67	<0.56	<1.26	48.3
Methylene Chloride	24.8	35.7	19.9	26.8	30.2
Styrene	1.03	1.17	<0.56	<0.92	34.8
Tetrachloroethene	<0.29	<0.28	<0.28	<0.28	3.1
Toluene	13.3	13.8	9.40	12.2	19.7
1,1,1-Trichloroethane	<0.29	<0.28	<0.28	<0.28	3.1
Trichloroethene/1,1,2-Trichloroethene	<0.59	<0.56	<0.56	<0.57	3.1
Trichlorotrifluoroethane	<0.59	<0.56	<0.56	<0.57	3.1
Trichlorofluoromethane	<0.59	<0.56	<0.56	<0.57	3.1
M&P-Xylene	20.0	25.0	12.2	19.1	33.7
O-Xylene	6.25	7.79	0.31	4.78	82.6
Vinyl Chloride	<0.59	<0.56	<0.56	<0.57	3.1
Total	<84.9	<108	<71.2	<88.1	21.2

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

Compound	Dry Reference Concentration Test No. 1 µg/Rm³*	Test No. 2 µg/Rm³*	Test No. 3 µg/Rm³*	Average µg/Rm³*	Coefficient of Variation %
Acetone	<4.93	10.2	23.3	<12.8	73.9
Benzene	<2.46	<2.33	<2.34	<2.38	3.1
Bromodichloromethane	<0.49	<0.47	<0.47	<0.48	3.1
Bromoform	<0.49	<0.47	<0.47	<0.48	3.1
Bromomethane	<4.44	<4.20	<4.21	<4.28	3.1
1,3-Butadiene	<0.99	<0.93	<0.94	<0.95	3.1
2-Butanone	0.79	1.87	1.82	1.49	40.9
Carbon Tetrachloride	<0.49	<0.47	<0.47	<0.48	3.1
Chloroform	0.54	1.03	<0.47	<0.68	44.7
Cumene (Isopropylbenzene)	<0.99	<0.93	<0.94	<0.95	3.1
Dibromochloromethane	<0.49	<0.47	<0.47	<0.48	3.1
Dichlorodifluoromethane	<0.99	<0.93	<0.94	<0.95	3.1
1,2-Dichloroethane	<0.49	<0.47	<0.47	<0.48	3.1
trans,1,2-Dichloroethene	0.54	<0.47	<0.47	<0.49	8.8
1,1-Dichloroethene	<0.49	<0.47	<0.47	<0.48	3.1
1,2-Dichloropropane	<0.49	<0.47	<0.47	<0.48	3.1
Ethylbenzene	3.94	6.81	2.76	4.50	46.2
Ethylene Dibromide	<0.99	<0.93	<0.94	<0.95	3.1
Mesitylene (1,3,5-Trimethylbenzene)	2.56	2.80	<0.94	<2.10	48.3
Methylene Chloride	41.4	59.7	33.3	44.8	30.2
Styrene	1.72	1.96	<0.94	<1.54	34.8
Tetrachloroethene	<0.49	<0.47	<0.47	<0.48	3.1
Toluene	22.2	23.0	15.7	20.3	19.7
1,1,1-Trichloroethane	<0.49	<0.47	<0.47	<0.48	3.1
Trichloroethene/1,1,2-Trichloroethene	<0.99	<0.93	<0.94	<0.95	3.1
Trichlorotrifluoroethane	<0.99	<0.93	<0.94	<0.95	3.1
Trichlorofluoromethane	<0.99	<0.93	<0.94	<0.95	3.1
M&P-Xylene	33.5	41.7	20.4	31.9	33.7
O-Xylene	10.4	13.0	0.51	7.99	82.6
Vinyl Chloride	<0.99	<0.93	<0.94	<0.95	3.1
Total	<142	<181	<119	<147	21.2

* 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. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Acetone	<4.07	8.39	19.2	<10.6	73.9
Benzene	<2.03	<1.93	<1.93	<1.96	3.1
Bromodichloromethane	<0.41	<0.39	<0.39	<0.39	3.1
Bromoform	<0.41	<0.39	<0.39	<0.39	3.1
Bromomethane	<3.66	<3.47	<3.48	<3.53	3.1
1,3-Butadiene	<0.81	<0.77	<0.77	<0.79	3.1
2-Butanone	0.65	1.54	1.51	1.23	40.9
Carbon Tetrachloride	<0.41	<0.39	<0.39	<0.39	3.1
Chloroform	0.45	0.85	<0.39	<0.56	44.7
Cumene (Isopropylbenzene)	<0.81	<0.77	<0.77	<0.79	3.1
Dibromochloromethane	<0.41	<0.39	<0.39	<0.39	3.1
Dichlorodifluoromethane	<0.81	<0.77	<0.77	<0.79	3.1
1,2-Dichloroethane	<0.41	<0.39	<0.39	<0.39	3.1
trans,1,2-Dichloroethene	0.45	<0.39	<0.39	<0.41	8.8
1,1-Dichloroethene	<0.41	<0.39	<0.39	<0.39	3.1
1,2-Dichloropropane	<0.41	<0.39	<0.39	<0.39	3.1
Ethylbenzene	3.26	5.62	2.28	3.72	46.2
Ethylene Dibromide	<0.81	<0.77	<0.77	<0.79	3.1
Mesitylene (1,3,5-Trimethylbenzene)	2.12	2.31	<0.77	<1.73	48.3
Methylene Chloride	34.2	49.3	27.5	37.0	30.2
Styrene	1.42	1.62	<0.77	<1.27	34.8
Tetrachloroethene	<0.41	<0.39	<0.39	<0.39	3.1
Toluene	18.4	19.0	13.0	16.8	19.7
1,1,1-Trichloroethane	<0.41	<0.39	<0.39	<0.39	3.1
Trichloroethene/1,1,2-Trichloroethene	<0.81	<0.77	<0.77	<0.79	3.1
Trichlorotrifluoroethane	<0.81	<0.77	<0.77	<0.79	3.1
Trichlorofluoromethane	<0.81	<0.77	<0.77	<0.79	3.1
M&P-Xylene	27.6	34.5	16.9	26.3	33.7
O-Xylene	8.63	10.7	0.42	6.60	82.6
Vinyl Chloride	<0.81	<0.77	<0.77	<0.79	3.1
Total	<117	<149	<98.2	<121	21.2

* 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
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Acetone	<4.18	8.61	19.7	<10.8	73.9
Benzene	<2.09	<1.98	<1.98	<2.02	3.1
Bromodichloromethane	<0.42	<0.40	<0.40	<0.40	3.1
Bromoform	<0.42	<0.40	<0.40	<0.40	3.1
Bromomethane	<3.76	<3.56	<3.57	<3.63	3.1
1,3-Butadiene	<0.84	<0.79	<0.79	<0.81	3.1
2-Butanone	0.67	1.58	1.55	1.26	40.9
Carbon Tetrachloride	<0.42	<0.40	<0.40	<0.40	3.1
Chloroform	0.46	0.87	<0.40	<0.57	44.7
Cumene (Isopropylbenzene)	<0.84	<0.79	<0.79	<0.81	3.1
Dibromochloromethane	<0.42	<0.40	<0.40	<0.40	3.1
Dichlorodifluoromethane	<0.84	<0.79	<0.79	<0.81	3.1
1,2-Dichloroethane	<0.42	<0.40	<0.40	<0.40	3.1
trans,1,2-Dichloroethene	0.46	<0.40	<0.40	<0.42	8.8
1,1-Dichloroethene	<0.42	<0.40	<0.40	<0.40	3.1
1,2-Dichloropropane	<0.42	<0.40	<0.40	<0.40	3.1
Ethylbenzene	3.34	5.77	2.34	3.82	46.2
Ethylene Dibromide	<0.84	<0.79	<0.79	<0.81	3.1
Mesitylene (1,3,5-Trimethylbenzene)	2.17	2.37	<0.79	<1.78	48.3
Methylene Chloride	35.1	50.6	28.2	38.0	30.2
Styrene	1.46	1.66	<0.79	<1.30	34.8
Tetrachloroethene	<0.42	<0.40	<0.40	<0.40	3.1
Toluene	18.8	19.5	13.3	17.2	19.7
1,1,1-Trichloroethane	<0.42	<0.40	<0.40	<0.40	3.1
Trichloroethene/1,1,2-Trichloroethene	<0.84	<0.79	<0.79	<0.81	3.1
Trichlorotrifluoroethane	<0.84	<0.79	<0.79	<0.81	3.1
Trichlorofluoromethane	<0.84	<0.79	<0.79	<0.81	3.1
M&P-Xylene	28.4	35.4	17.3	27.0	33.7
O-Xylene	8.85	11.0	0.44	6.77	82.6
Vinyl Chloride	<0.84	<0.79	<0.79	<0.81	3.1
Total	<120	<153	<101	<125	21.2

* 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
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Acetone	<0.079	0.16	0.37	<0.21	73.9
Benzene	<0.040	<0.038	<0.038	<0.038	3.1
Bromodichloromethane	<0.0079	<0.0075	<0.0075	<0.0077	3.1
Bromoform	<0.0079	<0.0075	<0.0075	<0.0077	3.1
Bromomethane	<0.071	<0.068	<0.068	<0.069	3.1
1,3-Butadiene	<0.016	<0.015	<0.015	<0.015	3.1
2-Butanone	0.013	0.030	0.029	0.024	40.9
Carbon Tetrachloride	<0.0079	<0.0075	<0.0075	<0.0077	3.1
Chloroform	0.0087	0.017	<0.0075	<0.011	44.7
Cumene (Isopropylbenzene)	<0.016	<0.015	<0.015	<0.015	3.1
Dibromochloromethane	<0.0079	<0.0075	<0.0075	<0.0077	3.1
Dichlorodifluoromethane	<0.016	<0.015	<0.015	<0.015	3.1
1,2-Dichloroethane	<0.0079	<0.0075	<0.0075	<0.0077	3.1
trans,1,2-Dichloroethene	0.0087	<0.0075	<0.0075	<0.0079	8.8
1,1-Dichloroethene	<0.0079	<0.0075	<0.0075	<0.0077	3.1
1,2-Dichloropropane	<0.0079	<0.0075	<0.0075	<0.0077	3.1
Ethylbenzene	0.063	0.11	0.044	0.073	46.2
Ethylene Dibromide	<0.016	<0.015	<0.015	<0.015	3.1
Mesitylene (1,3,5-Trimethylbenzene)	0.041	0.045	<0.015	<0.034	48.3
Methylene Chloride	0.67	0.96	0.54	0.72	30.2
Styrene	0.028	0.032	<0.015	<0.025	34.8
Tetrachloroethene	<0.0079	<0.0075	<0.0075	<0.0077	3.1
Toluene	0.36	0.37	0.25	0.33	19.7
1,1,1-Trichloroethane	<0.0079	<0.0075	<0.0075	<0.0077	3.1
Trichloroethene/1,1,2-Trichloroethene	<0.016	<0.015	<0.015	<0.015	3.1
Trichlorotrifluoroethane	<0.016	<0.015	<0.015	<0.015	3.1
Trichlorofluoromethane	<0.016	<0.015	<0.015	<0.015	3.1
M&P-Xylene	0.54	0.67	0.33	0.51	33.7
O-Xylene	0.17	0.21	0.0083	0.13	82.6
Vinyl Chloride	<0.016	<0.015	<0.015	<0.015	3.1
Total	<2.28	<2.91	<1.91	<2.37	21.2

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

Compound	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	<7.66	<12.8	<10.6	<10.8	<0.21
Benzene	<1.42	<2.38	<1.96	<2.02	<0.038
Bromodichloromethane	<0.28	<0.48	<0.39	<0.40	<0.0077
Bromoform	<0.28	<0.48	<0.39	<0.40	<0.0077
Bromomethane	<2.56	<4.28	<3.53	<3.63	<0.069
1,3-Butadiene	<0.57	<0.95	<0.79	<0.81	<0.015
2-Butanone	0.89	1.49	1.23	1.26	0.024
Carbon Tetrachloride	<0.28	<0.48	<0.39	<0.40	<0.0077
Chloroform	<0.41	<0.68	<0.56	<0.57	<0.011
Cumene (Isopropylbenzene)	<0.57	<0.95	<0.79	<0.81	<0.015
Dibromochloromethane	<0.28	<0.48	<0.39	<0.40	<0.0077
Dichlorodifluoromethane	<0.57	<0.95	<0.79	<0.81	<0.015
1,2-Dichloroethane	<0.28	<0.48	<0.39	<0.40	<0.0077
trans,1,2-Dichloroethene	<0.29	<0.49	<0.41	<0.42	<0.0079
1,1-Dichloroethene	<0.28	<0.48	<0.39	<0.40	<0.0077
1,2-Dichloropropane	<0.28	<0.48	<0.39	<0.40	<0.0077
Ethylbenzene	2.70	4.50	3.72	3.82	0.073
Ethylene Dibromide	<0.57	<0.95	<0.79	<0.81	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<1.26	<2.10	<1.73	<1.78	<0.034
Methylene Chloride	26.8	44.8	37.0	38.0	0.72
Styrene	<0.92	<1.54	<1.27	<1.30	<0.025
Tetrachloroethene	<0.28	<0.48	<0.39	<0.40	<0.0077
Toluene	12.2	20.3	16.8	17.2	0.33
1,1,1-Trichloroethane	<0.28	<0.48	<0.39	<0.40	<0.0077
Trichloroethene/1,1,2-Trichloroethene	<0.57	<0.95	<0.79	<0.81	<0.015
Trichlorotrifluoroethane	<0.57	<0.95	<0.79	<0.81	<0.015
Trichlorofluoromethane	<0.57	<0.95	<0.79	<0.81	<0.015
M&P-Xylene	19.1	31.9	26.3	27.0	0.51
O-Xylene	4.78	7.99	6.60	6.77	0.13
Vinyl Chloride	<0.57	<0.95	<0.79	<0.81	<0.015
Total	<88.1	<147	<121	<125	<2.37

* 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 11A/11B µg	Field Blank 2 Tube 2A/2B µg	Trip Blank Tube 1A/1B µg	Method Blank µg
Acetone	<0.1	0.11	<0.1	<0.1
Benzene	<0.05	<0.05	<0.05	<0.05
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01
Bromoform	<0.01	<0.01	<0.01	<0.01
Bromomethane	<0.09	<0.09	<0.09	<0.09
1,3-Butadiene	<0.02	<0.02	<0.02	<0.02
2-Butanone	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.02
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.01
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.01
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.01
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	<0.01	<0.01	<0.01	<0.01
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.02
Methylene Chloride	0.12	0.11	<0.1	<0.1
Styrene	<0.02	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01	<0.01
Toluene	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.02	<0.02	<0.02
Trichlorotrifluoroethane	<0.02	<0.02	<0.02	<0.02
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.02
M&P-Xylene	<0.03	<0.03	<0.03	<0.03
O-Xylene	<0.01	<0.01	<0.01	<0.01
Vinyl Chloride	<0.02	<0.02	<0.02	<0.02
Total	<0.78	<0.79	<0.76	<0.76

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.

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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 Start	Sampling Period Finish	Sampling Time* min
1	June 16, 2020	8:47	12:02	180
2	June 16, 2020	15:06	18:16	180
3	June 18, 2020	9:00	12:12	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	June 15, 2020	10:01	12:06	120
2	June 15, 2020	13:01	15:04	120
3	June 15, 2020	16:05	18:07	120

Acid Gases Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	June 16, 2020	8:29	9:29	60
2	June 16, 2020	10:26	11:26	60
3	June 16, 2020	11:43	12:43	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	June 17, 2020	9:26	13:40	240
2	June 17, 2020	14:46	18:58	240
3	June 18, 2020	8:15	12:45	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, 2020	13:07	14:07	60
2	June 17, 2020	14:35	15:35	60
3	June 17, 2020	15:40	16:40	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	June 17, 2020	9:26	10:06	40
2	June 17, 2020	10:10	10:50	40
3	June 17, 2020	10:54	11:34	40
4	June 17, 2020	11:44	12:24	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period		Sampling Time
			Start	Finish	min
BH Outlet	1	June 15, 2020	15:10	16:10	60
BH Outlet	2	June 15, 2020	16:18	17:18	60
BH Outlet	3	June 15, 2020	17:25	18:25	60
Quench Inlet	1	June 15, 2020	10:00	11:00	60
Quench Inlet	2	June 15, 2020	11:08	12:22	60
Quench Inlet	3	June 15, 2020	12:23	13:23	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	0.850	1.001	6.46	3.630	99.2
2	0.850	1.001	6.46	3.736	99.7
3	0.850	1.008	6.35	3.506	101.3

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	0.848	1.008	4.51	1.206	103.6
2	0.848	1.008	4.51	1.199	99.6
3	0.848	1.008	4.51	1.210	102.1

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	1.007	6.47	1.180	97.1
2	0.848	1.007	6.47	1.237	99.6
3	0.848	1.007	6.47	1.258	101.2

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	0.850	1.001	6.46	4.913	99.6
2	0.850	1.001	6.46	4.687	98.7
3	0.850	1.001	6.46	4.721	99.0

* 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. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	140	14.9	17.1	-2.05	100.0	10.9	8.47
2	140	15.6	17.6	-2.05	99.6	10.8	8.57
3	140	16.1	17.1	-1.94	99.1	10.9	8.48
Average	140	15.5	17.3	-2.02	99.6	10.8	8.51

Particle Size Distribution Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	15.0	16.6	-2.05	100.1	10.9	8.41
2	141	15.6	17.4	-2.06	100.1	10.8	8.51
3	141	16.4	17.3	-2.07	99.9	10.8	8.61
Average	141	15.7	17.1	-2.06	100.1	10.8	8.51

Acid Gases Trains **

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	14.0	16.8	-2.05	100.0	11.0	8.33
2	141	15.0	17.4	-2.05	100.0	10.7	8.56
3	141	15.1	17.4	-2.05	99.9	11.1	8.39
Average	141	14.7	17.2	-2.05	100.0	10.9	8.43

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	140	16.3	17.6	-1.94	99.5	10.9	8.60
2	140	15.7	16.9	-1.94	99.3	10.9	8.43
3	139	16.1	17.0	-1.94	99.1	11.0	8.39
Average	140	16.0	17.1	-1.94	99.3	10.9	8.47

* 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	25.2	15.3	19.2	18.0
2	26.1	15.6	19.5	18.5
3	25.2	14.9	18.7	17.8
Average	25.5	15.3	19.1	18.1

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	24.6	14.9	18.8	17.5
2	25.7	15.4	19.3	18.3
3	25.6	15.2	18.9	18.2
Average	25.3	15.2	19.0	18.0

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	24.9	15.2	19.3	17.7
2	25.7	15.5	19.3	18.3
3	25.8	15.5	19.6	18.3
Average	25.4	15.4	19.4	18.1

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	26.0	15.4	19.2	18.4
2	24.9	14.9	18.7	17.6
3	25.1	14.9	18.8	17.8
Average	25.3	15.1	18.9	17.9

* 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 Probe Rinse mg	Main Filter mg	Total mg	Dry Gas Volume Sampled Rm^3*	Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Particulate Emission Rate mg/s
1	1.0	3.5	4.5	3.630	0.75	1.24	0.99	1.06	18.9
2	1.1	2.3	3.4	3.736	0.55	0.91	0.73	0.77	14.2
3	2.9	3.3	6.2	3.506	1.05	1.77	1.41	1.48	26.4
Average					0.78	1.31	1.04	1.10	19.8
Blank	0.5	5.4							

* 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. 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	<0.2	1.206	<0.10	<0.17	<0.13	<0.14	<2.47
2	<0.2	1.199	<0.10	<0.17	<0.13	<0.14	<2.57
3	0.5	1.210	0.25	0.41	0.33	0.35	6.28
Average			<0.15	<0.25	<0.20	<0.21	<3.77
Blank	<0.2						

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	<0.6	1.206	<0.30	<0.50	<0.39	<0.42	<7.41
2	<0.4	1.199	<0.20	<0.33	<0.27	<0.28	<5.14
3	0.8	1.210	0.39	0.66	0.53	0.55	10.0
Average			<0.30	<0.50	<0.40	<0.42	<7.53
Blank	<0.5						

* 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 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	3.2	1.206	1.61	2.65	2.10	2.26	39.5
2	2.8	1.199	1.40	2.34	1.86	1.97	36.0
3	2.2	1.210	1.08	1.82	1.46	1.52	27.6
Average			1.36	2.27	1.81	1.91	34.4
Blank	0.8						

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	1.7	1.206	0.85	1.41	1.12	1.20	21.0
2	1.8	1.199	0.90	1.50	1.20	1.26	23.1
3	1.0	1.210	0.49	0.83	0.66	0.69	12.6
Average			0.75	1.25	0.99	1.05	18.9
Blank	0.2						

* 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	7.88	1.180	4.05	6.68	5.32	5.68	102
2	7.90	1.237	3.88	6.39	5.09	5.43	97.7
3	7.84	1.258	3.78	6.23	4.97	5.30	95.4
Average			3.91	6.43	5.13	5.47	98.4
Blank	<0.154						

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	<0.158	1.180	<0.081	<0.13	<0.11	<0.11	<2.05
2	<0.170	1.237	<0.083	<0.14	<0.11	<0.12	<2.10
3	<0.170	1.258	<0.082	<0.14	<0.11	<0.11	<2.07
Average			<0.082	<0.14	<0.11	<0.12	<2.07
Blank	<0.105						

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	0.678	1.180	0.35	0.57	0.46	0.49	8.79
2	0.710	1.237	0.35	0.57	0.46	0.49	8.78
3	0.790	1.258	0.38	0.63	0.50	0.53	9.61
Average			0.36	0.59	0.47	0.50	9.06
Blank	<0.264						

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, 2020

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.96	8.58	9.32
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	6	11	23
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	7.5	11.4	19.3
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0	0
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0	0
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	96	109	120
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	108	109	110
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	4	5	7
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	4.8	5.1	5.5
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, 2020

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	1.3	1.4
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	1.2	1.3	1.5
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	1.1	1.2	1.4
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		1.3	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	1.6	3.1	14.8
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0.5	1.4	2.2
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0.4	0.7	1.1
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		1.7	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	1.8	3.2	7.1
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	1.1	1.4	1.8
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0.6	0.8	0.9
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		1.8	

* 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 µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	10.5	3.33	13.8
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.14	0.24	0.38
Chromium	3.59	0.75	4.34
Cobalt	2.85	<0.1	2.85
Copper	3.49	5.77	9.26
Lead	1.54	1.45	2.99
Mercury *	<0.015	0.15	0.15
Molybdenum	23.1	<0.1	23.1
Nickel	5.84	2.04	7.88
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.18	0.18
Zinc	12.7	13.0	25.7
Total			<92.7

* 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. 2 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	0.10	0.10
Arsenic	<1	<0.2	<0.20
Barium	9.53	1.70	11.2
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.13	0.12	0.26
Chromium	3.23	1.02	4.25
Cobalt	<0.2	0.12	0.12
Copper	1.28	3.42	4.70
Lead	1.32	1.72	3.04
Mercury *	<0.015	0.62	0.62
Molybdenum	21.4	<0.1	21.4
Nickel	5.13	2.28	7.41
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	10.1	12.8	22.9
Total			<77.9

* 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 µg	Impingers & Rinses µg	Total Collected µg
Antimony	0.27	<0.1	0.27
Arsenic	<1	<0.2	<0.20
Barium	10.9	2.44	13.3
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.82	<0.05	0.82
Chromium	3.88	0.69	4.57
Cobalt	<0.2	<0.1	<0.20
Copper	1.47	1.16	2.63
Lead	1.96	0.37	2.33
Mercury *	<0.015	0.62	0.62
Molybdenum	22.5	<0.1	22.5
Nickel	5.84	0.33	6.17
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	0.48	<0.05	0.48
Vanadium	<1	<0.1	<0.10
Zinc	34.8	<3	34.8
Total			<90.4

* 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 µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.20	<0.033	<0.055	<0.044	<0.047	<0.00084
Arsenic	<0.20	<0.033	<0.055	<0.044	<0.047	<0.00084
Barium	13.8	2.31	3.81	3.04	3.24	0.058
Beryllium	<0.20	<0.033	<0.055	<0.044	<0.047	<0.00084
Cadmium	0.38	0.064	0.11	0.084	0.089	0.0016
Chromium	4.34	0.73	1.20	0.95	1.02	0.018
Cobalt	2.85	0.48	0.79	0.63	0.67	0.012
Copper	9.26	1.55	2.55	2.03	2.17	0.039
Lead	2.99	0.50	0.82	0.66	0.70	0.013
Mercury	0.15	0.025	0.041	0.033	0.035	0.00063
Molybdenum	23.1	3.86	6.36	5.07	5.41	0.097
Nickel	7.88	1.32	2.17	1.73	1.85	0.033
Selenium	<1.00	<0.17	<0.28	<0.22	<0.23	<0.0042
Silver	<0.20	<0.033	<0.055	<0.044	<0.047	<0.00084
Thallium	<0.20	<0.033	<0.055	<0.044	<0.047	<0.00084
Vanadium	0.18	0.030	0.049	0.039	0.042	0.00075
Zinc	25.7	4.30	7.08	5.64	6.02	0.11
Total	<92.7	<15.5	<25.5	<20.3	<21.7	<0.39

Dry Gas Volume Sampled (Rm³*) :	3.630
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	19.2
Wet Reference Flowrate (Rm³/s*) :	18.0

* 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 µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	0.10	0.016	0.027	0.021	0.023	0.00042
Arsenic	<0.20	<0.032	<0.054	<0.043	<0.045	<0.00084
Barium	11.2	1.80	3.01	2.40	2.53	0.047
Beryllium	<0.20	<0.032	<0.054	<0.043	<0.045	<0.00084
Cadmium	0.26	0.041	0.068	0.055	0.058	0.0011
Chromium	4.25	0.68	1.14	0.91	0.96	0.018
Cobalt	0.12	0.019	0.031	0.025	0.026	0.00048
Copper	4.70	0.75	1.26	1.01	1.06	0.020
Lead	3.04	0.49	0.81	0.65	0.69	0.013
Mercury	0.62	0.099	0.17	0.13	0.14	0.0026
Molybdenum	21.4	3.42	5.73	4.58	4.83	0.089
Nickel	7.41	1.19	1.98	1.59	1.67	0.031
Selenium	<1.00	<0.16	<0.27	<0.21	<0.23	<0.0042
Silver	<0.20	<0.032	<0.054	<0.043	<0.045	<0.00084
Thallium	<0.20	<0.032	<0.054	<0.043	<0.045	<0.00084
Vanadium	<0.10	<0.016	<0.027	<0.021	<0.023	<0.00042
Zinc	22.9	3.66	6.13	4.90	5.17	0.096
Total	<77.9	<12.5	<20.9	<16.7	<17.6	<0.33

Dry Gas Volume Sampled (Rm³*) :	3.736
Actual Flowrate (m³/s) :	26.1
Dry Reference Flowrate (Rm³/s*) :	15.6
Dry Adjusted Flowrate (Rm³/s**) :	19.5
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

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

Metal	Total Collected μg	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
Antimony	0.27	0.046	0.078	0.062	0.065	0.0012
Arsenic	<0.20	<0.034	<0.057	<0.045	<0.048	<0.00085
Barium	13.3	2.25	3.80	3.03	3.19	0.057
Beryllium	<0.20	<0.034	<0.057	<0.045	<0.048	<0.00085
Cadmium	0.82	0.14	0.23	0.19	0.19	0.0035
Chromium	4.57	0.77	1.30	1.04	1.09	0.019
Cobalt	<0.20	<0.034	<0.057	<0.045	<0.048	<0.00085
Copper	2.63	0.44	0.75	0.60	0.63	0.011
Lead	2.33	0.39	0.66	0.53	0.56	0.0099
Mercury	0.62	0.10	0.18	0.14	0.15	0.0026
Molybdenum	22.5	3.79	6.42	5.11	5.37	0.096
Nickel	6.17	1.04	1.76	1.40	1.47	0.026
Selenium	<1.00	<0.17	<0.29	<0.23	<0.24	<0.0042
Silver	<0.20	<0.034	<0.057	<0.045	<0.048	<0.00085
Thallium	0.48	0.081	0.14	0.11	0.11	0.0020
Vanadium	<0.10	<0.017	<0.029	<0.023	<0.024	<0.00042
Zinc	34.8	5.87	9.93	7.91	8.31	0.15
Total	<90.4	<15.2	<25.8	<20.5	<21.6	<0.38

Dry Gas Volume Sampled (Rm^3*) :	3.506
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.9
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
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 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	<0.033	0.016	0.046	<0.032	47.4
Arsenic	<0.033	<0.032	<0.034	<0.033	2.8
Barium	2.31	1.80	2.25	2.12	13.3
Beryllium	<0.033	<0.032	<0.034	<0.033	2.8
Cadmium	0.064	0.041	0.14	0.081	62.5
Chromium	0.73	0.68	0.77	0.73	6.3
Cobalt	0.48	0.019	<0.034	<0.18	148
Copper	1.55	0.75	0.44	0.91	62.3
Lead	0.50	0.49	0.39	0.46	12.8
Mercury	0.025	0.099	0.10	0.076	58.1
Molybdenum	3.86	3.42	3.79	3.69	6.4
Nickel	1.32	1.19	1.04	1.18	11.8
Selenium	<0.17	<0.16	<0.17	<0.17	2.8
Silver	<0.033	<0.032	<0.034	<0.033	2.8
Thallium	<0.033	<0.032	0.081	<0.049	56.9
Vanadium	0.030	<0.016	<0.017	<0.021	36.9
Zinc	4.30	3.66	5.87	4.61	24.6
Total	<15.5	<12.5	<15.2	<14.4	11.7

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

Metal	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.055	0.027	0.078	<0.053	48.1
Arsenic	<0.055	<0.054	<0.057	<0.055	3.2
Barium	3.81	3.01	3.80	3.54	13.1
Beryllium	<0.055	<0.054	<0.057	<0.055	3.2
Cadmium	0.11	0.068	0.23	0.14	63.7
Chromium	1.20	1.14	1.30	1.21	7.0
Cobalt	0.79	0.031	<0.057	<0.29	147
Copper	2.55	1.26	0.75	1.52	61.1
Lead	0.82	0.81	0.66	0.77	11.7
Mercury	0.041	0.17	0.18	0.13	58.7
Molybdenum	6.36	5.73	6.42	6.17	6.2
Nickel	2.17	1.98	1.76	1.97	10.5
Selenium	<0.28	<0.27	<0.29	<0.28	3.2
Silver	<0.055	<0.054	<0.057	<0.055	3.2
Thallium	<0.055	<0.054	0.14	<0.082	58.1
Vanadium	0.049	<0.027	<0.029	<0.035	35.6
Zinc	7.08	6.13	9.93	7.71	25.6
Total	<25.5	<20.9	<25.8	<24.1	11.5

* 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	<0.044	0.021	0.062	<0.042	47.9
Arsenic	<0.044	<0.043	<0.045	<0.044	3.0
Barium	3.04	2.40	3.03	2.82	12.9
Beryllium	<0.044	<0.043	<0.045	<0.044	3.0
Cadmium	0.084	0.055	0.19	0.11	63.5
Chromium	0.95	0.91	1.04	0.97	6.8
Cobalt	0.63	0.025	<0.045	<0.23	147
Copper	2.03	1.01	0.60	1.21	61.0
Lead	0.66	0.65	0.53	0.61	11.8
Mercury	0.033	0.13	0.14	0.10	58.7
Molybdenum	5.07	4.58	5.11	4.92	6.0
Nickel	1.73	1.59	1.40	1.57	10.5
Selenium	<0.22	<0.21	<0.23	<0.22	3.0
Silver	<0.044	<0.043	<0.045	<0.044	3.0
Thallium	<0.044	<0.043	0.11	<0.065	58.0
Vanadium	0.039	<0.021	<0.023	<0.028	35.5
Zinc	5.64	4.90	7.91	6.15	25.5
Total	<20.3	<16.7	<20.5	<19.2	11.3

** 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
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.047	0.023	0.065	<0.045	47.6
Arsenic	<0.047	<0.045	<0.048	<0.047	2.8
Barium	3.24	2.53	3.19	2.99	13.1
Beryllium	<0.047	<0.045	<0.048	<0.047	2.8
Cadmium	0.089	0.058	0.19	0.11	63.0
Chromium	1.02	0.96	1.09	1.02	6.5
Cobalt	0.67	0.026	<0.048	<0.25	147
Copper	2.17	1.06	0.63	1.29	61.8
Lead	0.70	0.69	0.56	0.65	12.4
Mercury	0.035	0.14	0.15	0.11	58.3
Molybdenum	5.41	4.83	5.37	5.20	6.2
Nickel	1.85	1.67	1.47	1.66	11.2
Selenium	<0.23	<0.23	<0.24	<0.23	2.8
Silver	<0.047	<0.045	<0.048	<0.047	2.8
Thallium	<0.047	<0.045	0.11	<0.069	57.4
Vanadium	0.042	<0.023	<0.024	<0.029	36.3
Zinc	6.02	5.17	8.31	6.50	25.0
Total	<21.7	<17.6	<21.6	<20.3	11.5

* 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	<0.00084	0.00042	0.0012	<0.00081	46.2
Arsenic	<0.00084	<0.00084	<0.00085	<0.00084	0.9
Barium	0.058	0.047	0.057	0.054	11.4
Beryllium	<0.00084	<0.00084	<0.00085	<0.00084	0.9
Cadmium	0.0016	0.0011	0.0035	0.0020	61.5
Chromium	0.018	0.018	0.019	0.018	4.6
Cobalt	0.012	0.00048	<0.00085	<0.0044	147
Copper	0.039	0.020	0.011	0.023	61.4
Lead	0.013	0.013	0.0099	0.012	13.6
Mercury	0.00063	0.0026	0.0026	0.0019	58.4
Molybdenum	0.097	0.089	0.096	0.094	4.5
Nickel	0.033	0.031	0.026	0.030	11.9
Selenium	<0.0042	<0.0042	<0.0042	<0.0042	0.9
Silver	<0.00084	<0.00084	<0.00085	<0.00084	0.9
Thallium	<0.00084	<0.00084	0.0020	<0.0012	55.8
Vanadium	0.00075	<0.00042	<0.00042	<0.00053	35.8
Zinc	0.11	0.096	0.15	0.12	23.2
Total	<0.39	<0.33	<0.38	<0.37	9.8

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

Metal	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.032	<0.053	<0.042	<0.045	<0.00081
Arsenic	<0.033	<0.055	<0.044	<0.047	<0.00084
Barium	2.12	3.54	2.82	2.99	0.054
Beryllium	<0.033	<0.055	<0.044	<0.047	<0.00084
Cadmium	0.081	0.14	0.11	0.11	0.0020
Chromium	0.73	1.21	0.97	1.02	0.018
Cobalt	<0.18	<0.29	<0.23	<0.25	<0.0044
Copper	0.91	1.52	1.21	1.29	0.023
Lead	0.46	0.77	0.61	0.65	0.012
Mercury	0.076	0.13	0.10	0.11	0.0019
Molybdenum	3.69	6.17	4.92	5.20	0.094
Nickel	1.18	1.97	1.57	1.66	0.030
Selenium	<0.17	<0.28	<0.22	<0.23	<0.0042
Silver	<0.033	<0.055	<0.044	<0.047	<0.00084
Thallium	<0.049	<0.082	<0.065	<0.069	<0.0012
Vanadium	<0.021	<0.035	<0.028	<0.029	<0.00053
Zinc	4.61	7.71	6.15	6.50	0.12
Total	<14.4	<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	10.5	1.56	12.1
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.14	<0.05	0.14
Chromium	2.77	0.45	3.22
Cobalt	<0.2	<0.1	<0.20
Copper	<1	1.52	1.52
Lead	0.99	0.51	1.50
Mercury *	<0.015	<0.15	<0.15
Molybdenum	21.9	<0.1	21.9
Nickel	4.98	1.49	6.47
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	6.70	4.40	11.1
Total			<60.4

* 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 pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	162	0.020	0.033	0.026	0.028	0.51
Pentachlorodibenzo-p-dioxins	120	0.014	0.024	0.020	0.020	0.38
Hexachlorodibenzo-p-dioxins	291	0.035	0.059	0.048	0.050	0.91
Heptachlorodibenzo-p-dioxins	184	0.022	0.037	0.030	0.031	0.58
Octachlorodibenzo-p-dioxin	167	0.020	0.034	0.027	0.028	0.52
Total	924	0.11	0.19	0.15	0.16	2.90

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	17.5	0.0021	0.0036	0.0029	0.0030	0.055
Pentachlorodibenzofurans	56.4	0.0068	0.011	0.0092	0.0096	0.18
Hexachlorodibenzofurans	55.5	0.0067	0.011	0.0091	0.0095	0.17
Heptachlorodibenzofurans	20.0	0.0024	0.0041	0.0033	0.0034	0.063
Octachlorodibenzofuran	26.4	0.0032	0.0054	0.0043	0.0045	0.083
Total	176	0.021	0.036	0.029	0.030	0.55

Dry Gas Volume Sampled (Rm³*) :	4.913
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.2
Wet Reference Flowrate (Rm³/s*) :	18.4

* 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 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 pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	159	0.020	0.034	0.027	0.029	0.51
Pentachlorodibenzo-p-dioxins	166	0.021	0.035	0.028	0.030	0.53
Hexachlorodibenzo-p-dioxins	277	0.035	0.059	0.047	0.050	0.88
Heptachlorodibenzo-p-dioxins	204	0.026	0.044	0.035	0.037	0.65
Octachlorodibenzo-p-dioxin	234	0.030	0.050	0.040	0.042	0.74
Total	1040	0.13	0.22	0.18	0.19	3.31

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	142	0.018	0.030	0.024	0.026	0.45
Pentachlorodibenzofurans	88.9	0.011	0.019	0.015	0.016	0.28
Hexachlorodibenzofurans	106	0.014	0.023	0.018	0.019	0.34
Heptachlorodibenzofurans	20.3	0.0026	0.0043	0.0035	0.0037	0.065
Octachlorodibenzofuran	35.5	0.0045	0.0076	0.0060	0.0064	0.11
Total	393	0.050	0.084	0.067	0.071	1.25

Dry Gas Volume Sampled (Rm^3*) :	4.687
Actual Flowrate (m^3/s) :	24.9
Dry Reference Flowrate (Rm^3/s*) :	14.9
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
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 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 pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	165	0.021	0.035	0.028	0.029	0.52
Pentachlorodibenzo-p-dioxins	141	0.018	0.030	0.024	0.025	0.45
Hexachlorodibenzo-p-dioxins	291	0.037	0.062	0.049	0.052	0.92
Heptachlorodibenzo-p-dioxins	185	0.023	0.039	0.031	0.033	0.58
Octachlorodibenzo-p-dioxin	166	0.021	0.035	0.028	0.029	0.52
Total	948	0.12	0.20	0.16	0.17	2.99

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	32.6	0.0041	0.0069	0.0055	0.0058	0.10
Pentachlorodibenzofurans	54.2	0.0068	0.011	0.0091	0.0096	0.17
Hexachlorodibenzofurans	71.3	0.0090	0.015	0.012	0.013	0.23
Heptachlorodibenzofurans	50.0	0.0063	0.011	0.0084	0.0089	0.16
Octachlorodibenzofuran	33.1	0.0042	0.0070	0.0056	0.0059	0.10
Total	241.2	0.030	0.051	0.040	0.043	0.76

Dry Gas Volume Sampled (Rm^3*) :	4.721
Actual Flowrate (m^3/s) :	25.1
Dry Reference Flowrate (Rm^3/s*) :	14.9
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
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

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 Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.020	0.020	0.021	0.020	3.0
Pentachlorodibenzo-p-dioxins	0.014	0.021	0.018	0.018	18.9
Hexachlorodibenzo-p-dioxins	0.035	0.035	0.037	0.036	2.2
Heptachlorodibenzo-p-dioxins	0.022	0.026	0.023	0.024	8.4
Octachlorodibenzo-p-dioxin	0.020	0.030	0.021	0.024	23.0
Total	0.11	0.13	0.12	0.12	8.9

Furans

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0021	0.018	0.0041	0.0081	108
Pentachlorodibenzofurans	0.0068	0.011	0.0068	0.0083	31.5
Hexachlorodibenzofurans	0.0067	0.014	0.0090	0.0097	35.8
Heptachlorodibenzofurans	0.0024	0.0026	0.0063	0.0038	58.1
Octachlorodibenzofuran	0.0032	0.0045	0.0042	0.0040	17.6
Total	0.021	0.050	0.030	0.034	43.7

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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.033	0.034	0.035	0.034	2.9
Pentachlorodibenzo-p-dioxins	0.024	0.035	0.030	0.030	18.4
Hexachlorodibenzo-p-dioxins	0.059	0.059	0.062	0.060	2.4
Heptachlorodibenzo-p-dioxins	0.037	0.044	0.039	0.040	7.8
Octachlorodibenzo-p-dioxin	0.034	0.050	0.035	0.040	22.4
Total	0.19	0.22	0.20	0.20	8.4

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0036	0.030	0.0069	0.014	107
Pentachlorodibenzofurans	0.011	0.019	0.011	0.014	30.9
Hexachlorodibenzofurans	0.011	0.023	0.015	0.016	35.3
Heptachlorodibenzofurans	0.0041	0.0043	0.011	0.0063	58.3
Octachlorodibenzofuran	0.0054	0.0076	0.0070	0.0067	17.2
Total	0.036	0.084	0.051	0.057	43.1

* 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	0.026	0.027	0.028	0.027	2.3
Pentachlorodibenzo-p-dioxins	0.020	0.028	0.024	0.024	18.1
Hexachlorodibenzo-p-dioxins	0.048	0.047	0.049	0.048	1.9
Heptachlorodibenzo-p-dioxins	0.030	0.035	0.031	0.032	7.6
Octachlorodibenzo-p-dioxin	0.027	0.040	0.028	0.032	22.3
Total	0.15	0.18	0.16	0.16	8.2

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	0.0029	0.024	0.0055	0.011	107
Pentachlorodibenzofurans	0.0092	0.015	0.0091	0.011	30.9
Hexachlorodibenzofurans	0.0091	0.018	0.012	0.013	35.1
Heptachlorodibenzofurans	0.0033	0.0035	0.0084	0.0050	57.8
Octachlorodibenzofuran	0.0043	0.0060	0.0056	0.0053	16.8
Total	0.029	0.067	0.040	0.045	43.0

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	%
Tetrachlorodibenzo-p-dioxins	0.028	0.029	0.029	0.029	3.0
Pentachlorodibenzo-p-dioxins	0.020	0.030	0.025	0.025	19.0
Hexachlorodibenzo-p-dioxins	0.050	0.050	0.052	0.050	2.1
Heptachlorodibenzo-p-dioxins	0.031	0.037	0.033	0.034	8.5
Octachlorodibenzo-p-dioxin	0.028	0.042	0.029	0.033	23.1
Total	0.16	0.19	0.17	0.17	9.0

Furans

Congener Group	Wet Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	%
Tetrachlorodibenzofurans	0.0030	0.026	0.0058	0.011	108
Pentachlorodibenzofurans	0.0096	0.016	0.0096	0.012	31.7
Hexachlorodibenzofurans	0.0095	0.019	0.013	0.014	35.9
Heptachlorodibenzofurans	0.0034	0.0037	0.0089	0.0053	58.0
Octachlorodibenzofuran	0.0045	0.0064	0.0059	0.0056	17.6
Total	0.030	0.071	0.043	0.048	43.8

* 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	0.51	0.51	0.52	0.51	1.6
Pentachlorodibenzo-p-dioxins	0.38	0.53	0.45	0.45	16.9
Hexachlorodibenzo-p-dioxins	0.91	0.88	0.92	0.90	2.2
Heptachlorodibenzo-p-dioxins	0.58	0.65	0.58	0.60	6.6
Octachlorodibenzo-p-dioxin	0.52	0.74	0.52	0.60	21.3
Total	2.90	3.31	2.99	3.06	7.0

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	0.055	0.45	0.10	0.20	107
Pentachlorodibenzofurans	0.18	0.28	0.17	0.21	29.9
Hexachlorodibenzofurans	0.17	0.34	0.23	0.25	34.0
Heptachlorodibenzofurans	0.063	0.065	0.16	0.095	57.2
Octachlorodibenzofuran	0.083	0.11	0.10	0.10	15.5
Total	0.55	1.25	0.76	0.85	41.9

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 ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.020	0.034	0.027	0.029	0.51
Pentachlorodibenzo-p-dioxins	0.018	0.030	0.024	0.025	0.45
Hexachlorodibenzo-p-dioxins	0.036	0.060	0.048	0.050	0.90
Heptachlorodibenzo-p-dioxins	0.024	0.040	0.032	0.034	0.60
Octachlorodibenzo-p-dioxin	0.024	0.040	0.032	0.033	0.60
Total	0.12	0.20	0.16	0.17	3.06

Furans

Congener Group	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.0081	0.014	0.011	0.011	0.20
Pentachlorodibenzofurans	0.0083	0.014	0.011	0.012	0.21
Hexachlorodibenzofurans	0.0097	0.016	0.013	0.014	0.25
Heptachlorodibenzofurans	0.0038	0.0063	0.0050	0.0053	0.095
Octachlorodibenzofuran	0.0040	0.0067	0.0053	0.0056	0.10
Total	0.034	0.057	0.045	0.048	0.85

* 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 pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<0.65	<0.92
Pentachlorodibenzo-p-dioxins	<0.47	<0.46
Hexachlorodibenzo-p-dioxins	<0.36	1.76
Heptachlorodibenzo-p-dioxins	1.05	1.82
Octachlorodibenzo-p-dioxin	<6.1	<3.3
Total	<8.63	<8.26

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<0.83	<0.68
Pentachlorodibenzofurans	<0.43	<0.49
Hexachlorodibenzofurans	3.62	4.52
Heptachlorodibenzofurans	<0.37	<0.65
Octachlorodibenzofuran	<6.5	<1.5
Total	<11.8	<7.84

"<" 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 pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.91	<0.11	<0.19	<0.15	<0.16	<0.0029
12378-pentachlorodibenzo-p-dioxin	3.89	0.47	0.79	0.64	0.66	0.012
123478-hexachlorodibenzo-p-dioxin	<5.1	<0.61	<1.04	<0.83	<0.87	<0.016
123678-hexachlorodibenzo-p-dioxin	13.8	1.66	2.81	2.25	2.35	0.043
123789-hexachlorodibenzo-p-dioxin	<7.2	<0.87	<1.47	<1.18	<1.23	<0.023
1234678-heptachlorodibenzo-p-dioxin	97.0	11.7	19.7	15.8	16.5	0.30
Octachlorodibenzo-p-dioxin	167	20.1	34.0	27.3	28.4	0.52
2378-tetrachlorodibenzofuran	<1.3	<0.16	<0.26	<0.21	<0.22	<0.0041
12378-pentachlorodibenzofuran	<3.4	<0.41	<0.69	<0.56	<0.58	<0.011
23478-pentachlorodibenzofuran	6.11	0.74	1.24	1.00	1.04	0.019
123478-hexachlorodibenzofuran	<4.3	<0.52	<0.88	<0.70	<0.73	<0.013
123678-hexachlorodibenzofuran	6.11	0.74	1.24	1.00	1.04	0.019
234678-hexachlorodibenzofuran	11.4	1.37	2.32	1.86	1.94	0.036
123789-hexachlorodibenzofuran	6.50	0.78	1.32	1.06	1.11	0.020
1234678-heptachlorodibenzofuran	<27	<3.26	<5.50	<4.41	<4.60	<0.085
1234789-heptachlorodibenzofuran	<4.9	<0.59	<1.00	<0.80	<0.83	<0.015
Octachlorodibenzofuran	26.4	3.18	5.37	4.31	4.50	0.083
PCB 81	<5.8	<0.70	<1.18	<0.95	<0.99	<0.018
PCB 77	128	15.4	26.1	20.9	21.8	0.40
PCB 123	25.9	3.12	5.27	4.23	4.41	0.081
PCB 118	1630	197	332	266	278	5.11
PCB 114	<40	<4.82	<8.14	<6.53	<6.81	<0.13
PCB 105	509	61.4	104	83.1	86.7	1.60
PCB 126	<4.0	<0.48	<0.81	<0.65	<0.68	<0.013
PCB 167	14.4	1.74	2.93	2.35	2.45	0.045
PCB 156/157	36.9	4.45	7.51	6.02	6.29	0.12
PCB 169	<2.5	<0.30	<0.51	<0.41	<0.43	<0.0078
PCB 189	<3.0	<0.36	<0.61	<0.49	<0.51	<0.0094
Total Dioxins & Furans Only	<392	<47.3	<79.9	<64.0	<66.8	<1.23
Total PCBs Only	<2400	<289	<488	<392	<409	<7.52
Total Dioxins & Furans and PCBs	<2792	<337	<568	<456	<476	<8.75

Dry Gas Volume Sampled (Rm³*) :	4.913
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.2
Wet Reference Flowrate (Rm³/s*) :	18.4

* 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 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 pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.1	<0.14	<0.23	<0.19	<0.20	<0.0035
12378-pentachlorodibenzo-p-dioxin	<3.5	<0.45	<0.75	<0.60	<0.63	<0.011
123478-hexachlorodibenzo-p-dioxin	6.50	0.83	1.39	1.11	1.17	0.021
123678-hexachlorodibenzo-p-dioxin	13.7	1.75	2.92	2.33	2.47	0.044
123789-hexachlorodibenzo-p-dioxin	9.36	1.19	2.00	1.59	1.69	0.030
1234678-heptachlorodibenzo-p-dioxin	111	14.2	23.7	18.9	20.0	0.35
Octachlorodibenzo-p-dioxin	234	29.9	49.9	39.8	42.3	0.74
2378-tetrachlorodibenzofuran	7.22	0.92	1.54	1.23	1.30	0.023
12378-pentachlorodibenzofuran	8.13	1.04	1.73	1.38	1.47	0.026
23478-pentachlorodibenzofuran	11.7	1.49	2.50	1.99	2.11	0.037
123478-hexachlorodibenzofuran	12.0	1.53	2.56	2.04	2.17	0.038
123678-hexachlorodibenzofuran	10.4	1.33	2.22	1.77	1.88	0.033
234678-hexachlorodibenzofuran	16.1	2.06	3.44	2.74	2.91	0.051
123789-hexachlorodibenzofuran	7.75	0.99	1.65	1.32	1.40	0.025
1234678-heptachlorodibenzofuran	<33	<4.21	<7.04	<5.61	<5.96	<0.10
1234789-heptachlorodibenzofuran	<7.8	<1.00	<1.66	<1.33	<1.41	<0.025
Octachlorodibenzofuran	35.5	4.53	7.57	6.04	6.41	0.11
PCB 81	29.1	3.72	6.21	4.95	5.26	0.093
PCB 77	652	83.2	139	111	118	2.07
PCB 123	275	35.1	58.7	46.8	49.7	0.87
PCB 118	19600	2502	4182	3332	3540	62.3
PCB 114	551	70.3	118	93.7	99.5	1.75
PCB 105	6530	834	1393	1110	1179	20.8
PCB 126	<20	<2.55	<4.27	<3.40	<3.61	<0.064
PCB 167	164	20.9	35.0	27.9	29.6	0.52
PCB 156/157	472	60.3	101	80.2	85.3	1.50
PCB 169	<29	<3.70	<6.19	<4.93	<5.24	<0.092
PCB 189	<11	<1.40	<2.35	<1.87	<1.99	<0.035
Total Dioxins & Furans Only	<529	<67.5	<113	<89.9	<95.5	<1.68
Total PCBs Only	<28333	<3617	<6045	<4817	<5118	<90.1
Total Dioxins & Furans and PCBs	<28862	<3685	<6158	<4907	<5213	<91.8

Dry Gas Volume Sampled (Rm³*) :	4.687
Actual Flowrate (m³/s) :	24.9
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.7
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 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 pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.79	<0.099	<0.17	<0.13	<0.14	<0.0025
12378-pentachlorodibenzo-p-dioxin	<3.0	<0.38	<0.64	<0.50	<0.53	<0.0095
123478-hexachlorodibenzo-p-dioxin	5.56	0.70	1.18	0.93	0.99	0.018
123678-hexachlorodibenzo-p-dioxin	12.7	1.60	2.69	2.13	2.25	0.040
123789-hexachlorodibenzo-p-dioxin	<7.2	<0.91	<1.53	<1.21	<1.28	<0.023
1234678-heptachlorodibenzo-p-dioxin	98.8	12.4	20.9	16.6	17.5	0.31
Octachlorodibenzo-p-dioxin	166	20.9	35.2	27.9	29.4	0.52
2378-tetrachlorodibenzofuran	<1.9	<0.24	<0.40	<0.32	<0.34	<0.0060
12378-pentachlorodibenzofuran	5.45	0.69	1.15	0.91	0.97	0.017
23478-pentachlorodibenzofuran	6.14	0.77	1.30	1.03	1.09	0.019
123478-hexachlorodibenzofuran	6.88	0.87	1.46	1.16	1.22	0.022
123678-hexachlorodibenzofuran	6.47	0.81	1.37	1.09	1.15	0.020
234678-hexachlorodibenzofuran	11.8	1.48	2.50	1.98	2.09	0.037
123789-hexachlorodibenzofuran	<6.0	<0.75	<1.27	<1.01	<1.06	<0.019
1234678-heptachlorodibenzofuran	30.6	3.85	6.48	5.14	5.43	0.097
1234789-heptachlorodibenzofuran	<6.6	<0.83	<1.40	<1.11	<1.17	<0.021
Octachlorodibenzofuran	33.1	4.16	7.01	5.56	5.87	0.10
PCB 81	<5.9	<0.74	<1.25	<0.99	<1.05	<0.019
PCB 77	121	15.2	25.6	20.3	21.5	0.38
PCB 123	55.3	6.95	11.7	9.28	9.81	0.17
PCB 118	3360	422	712	564	596	10.6
PCB 114	87.6	11.0	18.6	14.7	15.5	0.28
PCB 105	1210	152	256	203	215	3.82
PCB 126	<4.2	<0.53	<0.89	<0.71	<0.74	<0.013
PCB 167	34.6	4.35	7.33	5.81	6.13	0.11
PCB 156/157	102	12.8	21.6	17.1	18.1	0.32
PCB 169	<3.2	<0.40	<0.68	<0.54	<0.57	<0.010
PCB 189	4.37	0.55	0.93	0.73	0.77	0.014
Total Dioxins & Furans Only	<409	<51.4	<86.6	<68.7	<72.5	<1.29
Total PCBs Only	<4988	<627	<1057	<837	<884	<15.7
Total Dioxins & Furans and PCBs	<5397	<679	<1143	<906	<957	<17.0

Dry Gas Volume Sampled (Rm³*) :	4.721
Actual Flowrate (m³/s) :	25.1
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.11	<0.14	<0.099	<0.12	18.3
12378-pentachlorodibenzo-p-dioxin	0.47	<0.45	<0.38	<0.43	11.1
123478-hexachlorodibenzo-p-dioxin	<0.61	0.83	0.70	<0.71	15.2
123678-hexachlorodibenzo-p-dioxin	1.66	1.75	1.60	1.67	4.6
123789-hexachlorodibenzo-p-dioxin	<0.87	1.19	<0.91	<0.99	18.1
1234678-heptachlorodibenzo-p-dioxin	11.7	14.2	12.4	12.8	10.0
Octachlorodibenzo-p-dioxin	20.1	29.9	20.9	23.6	23.0
2378-tetrachlorodibenzofuran	<0.16	0.92	<0.24	<0.44	95.6
12378-pentachlorodibenzofuran	<0.41	1.04	0.69	<0.71	44.3
23478-pentachlorodibenzofuran	0.74	1.49	0.77	1.00	42.7
123478-hexachlorodibenzofuran	<0.52	1.53	0.87	<0.97	53.0
123678-hexachlorodibenzofuran	0.74	1.33	0.81	0.96	33.5
234678-hexachlorodibenzofuran	1.37	2.06	1.48	1.64	22.3
123789-hexachlorodibenzofuran	0.78	0.99	<0.75	<0.84	15.2
1234678-heptachlorodibenzofuran	<3.26	<4.21	3.85	<3.77	12.8
1234789-heptachlorodibenzofuran	<0.59	<1.00	<0.83	<0.81	25.3
Octachlorodibenzofuran	3.18	4.53	4.16	3.96	17.6
PCB 81	<0.70	3.72	<0.74	<1.72	101
PCB 77	15.4	83.2	15.2	38.0	103
PCB 123	3.12	35.1	6.95	15.1	116
PCB 118	197	2502	422	1040	122
PCB 114	<4.82	70.3	11.0	<28.7	126
PCB 105	61.4	834	152	349	121
PCB 126	<0.48	<2.55	<0.53	<1.19	99.6
PCB 167	1.74	20.9	4.35	9.01	116
PCB 156/157	4.45	60.3	12.8	25.8	116
PCB 169	<0.30	<3.70	<0.40	<1.47	132
PCB 189	<0.36	<1.40	0.55	<0.77	72.0
Total Dioxins & Furans Only	<47.3	<67.5	<51.4	<55.4	19.3
Total PCBs Only	<289	<3617	<627	<1511	121
Total Dioxins & Furans and PCBs	<337	<3685	<679	<1567	118

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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.19	<0.23	<0.17	<0.20	17.8
12378-pentachlorodibenzo-p-dioxin	0.79	<0.75	<0.64	<0.72	11.1
123478-hexachlorodibenzo-p-dioxin	<1.04	1.39	1.18	<1.20	14.6
123678-hexachlorodibenzo-p-dioxin	2.81	2.92	2.69	2.81	4.1
123789-hexachlorodibenzo-p-dioxin	<1.47	2.00	<1.53	<1.66	17.5
1234678-heptachlorodibenzo-p-dioxin	19.7	23.7	20.9	21.5	9.4
Octachlorodibenzo-p-dioxin	34.0	49.9	35.2	39.7	22.4
2378-tetrachlorodibenzofuran	<0.26	1.54	<0.40	<0.74	95.2
12378-pentachlorodibenzofuran	<0.69	1.73	1.15	<1.19	43.8
23478-pentachlorodibenzofuran	1.24	2.50	1.30	1.68	42.1
123478-hexachlorodibenzofuran	<0.88	2.56	1.46	<1.63	52.5
123678-hexachlorodibenzofuran	1.24	2.22	1.37	1.61	32.9
234678-hexachlorodibenzofuran	2.32	3.44	2.50	2.75	21.8
123789-hexachlorodibenzofuran	1.32	1.65	<1.27	<1.42	14.7
1234678-heptachlorodibenzofuran	<5.50	<7.04	6.48	<6.34	12.3
1234789-heptachlorodibenzofuran	<1.00	<1.66	<1.40	<1.35	24.8
Octachlorodibenzofuran	5.37	7.57	7.01	6.65	17.2
PCB 81	<1.18	6.21	<1.25	<2.88	100
PCB 77	26.1	139	25.6	63.6	103
PCB 123	5.27	58.7	11.7	25.2	116
PCB 118	332	4182	712	1742	122
PCB 114	<8.14	118	18.6	<48.1	126
PCB 105	104	1393	256	584	121
PCB 126	<0.81	<4.27	<0.89	<1.99	99.1
PCB 167	2.93	35.0	7.33	15.1	115
PCB 156/157	7.51	101	21.6	43.3	116
PCB 169	<0.51	<6.19	<0.68	<2.46	131
PCB 189	<0.61	<2.35	0.93	<1.29	71.5
Total Dioxins & Furans Only	<79.9	<113	<86.6	<93.1	18.7
Total PCBs Only	<488	<6045	<1057	<2530	121
Total Dioxins & Furans and PCBs	<568	<6158	<1143	<2623	117

* 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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.15	<0.19	<0.13	<0.16	17.9
12378-pentachlorodibenzo-p-dioxin	0.64	<0.60	<0.50	<0.58	11.7
123478-hexachlorodibenzo-p-dioxin	<0.83	1.11	0.93	<0.96	14.4
123678-hexachlorodibenzo-p-dioxin	2.25	2.33	2.13	2.24	4.4
123789-hexachlorodibenzo-p-dioxin	<1.18	1.59	<1.21	<1.33	17.4
1234678-heptachlorodibenzo-p-dioxin	15.8	18.9	16.6	17.1	9.2
Octachlorodibenzo-p-dioxin	27.3	39.8	27.9	31.6	22.3
2378-tetrachlorodibenzofuran	<0.21	1.23	<0.32	<0.59	95.2
12378-pentachlorodibenzofuran	<0.56	1.38	0.91	<0.95	43.6
23478-pentachlorodibenzofuran	1.00	1.99	1.03	1.34	42.0
123478-hexachlorodibenzofuran	<0.70	2.04	1.16	<1.30	52.4
123678-hexachlorodibenzofuran	1.00	1.77	1.09	1.28	32.8
234678-hexachlorodibenzofuran	1.86	2.74	1.98	2.19	21.7
123789-hexachlorodibenzofuran	1.06	1.32	<1.01	<1.13	14.7
1234678-heptachlorodibenzofuran	<4.41	<5.61	5.14	<5.05	12.0
1234789-heptachlorodibenzofuran	<0.80	<1.33	<1.11	<1.08	24.5
Octachlorodibenzofuran	4.31	6.04	5.56	5.30	16.8
PCB 81	<0.95	4.95	<0.99	<2.29	100
PCB 77	20.9	111	20.3	50.7	103
PCB 123	4.23	46.8	9.28	20.1	116
PCB 118	266	3332	564	1387	122
PCB 114	<6.53	93.7	14.7	<38.3	126
PCB 105	83.1	1110	203	465	121
PCB 126	<0.65	<3.40	<0.71	<1.59	99.1
PCB 167	2.35	27.9	5.81	12.0	115
PCB 156/157	6.02	80.2	17.1	34.5	116
PCB 169	<0.41	<4.93	<0.54	<1.96	131
PCB 189	<0.49	<1.87	0.73	<1.03	71.4
Total Dioxins & Furans Only	<64.0	<89.9	<68.7	<74.2	18.6
Total PCBs Only	<392	<4817	<837	<2015	121
Total Dioxins & Furans and PCBs	<456	<4907	<906	<2089	117

* 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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.16	<0.20	<0.14	<0.16	18.5
12378-pentachlorodibenzo-p-dioxin	0.66	<0.63	<0.53	<0.61	11.2
123478-hexachlorodibenzo-p-dioxin	<0.87	1.17	0.99	<1.01	15.3
123678-hexachlorodibenzo-p-dioxin	2.35	2.47	2.25	2.36	4.7
123789-hexachlorodibenzo-p-dioxin	<1.23	1.69	<1.28	<1.40	18.2
1234678-heptachlorodibenzo-p-dioxin	16.5	20.0	17.5	18.0	10.1
Octachlorodibenzo-p-dioxin	28.4	42.3	29.4	33.4	23.1
2378-tetrachlorodibenzofuran	<0.22	1.30	<0.34	<0.62	95.8
12378-pentachlorodibenzofuran	<0.58	1.47	0.97	<1.00	44.4
23478-pentachlorodibenzofuran	1.04	2.11	1.09	1.41	42.8
123478-hexachlorodibenzofuran	<0.73	2.17	1.22	<1.37	53.1
123678-hexachlorodibenzofuran	1.04	1.88	1.15	1.36	33.6
234678-hexachlorodibenzofuran	1.94	2.91	2.09	2.31	22.5
123789-hexachlorodibenzofuran	1.11	1.40	<1.06	<1.19	15.4
1234678-heptachlorodibenzofuran	<4.60	<5.96	5.43	<5.33	12.9
1234789-heptachlorodibenzofuran	<0.83	<1.41	<1.17	<1.14	25.3
Octachlorodibenzofuran	4.50	6.41	5.87	5.59	17.6
PCB 81	<0.99	5.26	<1.05	<2.43	101
PCB 77	21.8	118	21.5	53.7	103
PCB 123	4.41	49.7	9.81	21.3	116
PCB 118	278	3540	596	1471	122
PCB 114	<6.81	99.5	15.5	<40.6	126
PCB 105	86.7	1179	215	494	121
PCB 126	<0.68	<3.61	<0.74	<1.68	99.7
PCB 167	2.45	29.6	6.13	12.7	116
PCB 156/157	6.29	85.3	18.1	36.5	117
PCB 169	<0.43	<5.24	<0.57	<2.08	132
PCB 189	<0.51	<1.99	0.77	<1.09	72.1
Total Dioxins & Furans Only	<66.8	<95.5	<72.5	<78.3	19.4
Total PCBs Only	<409	<5118	<884	<2137	121
Total Dioxins & Furans and PCBs	<476	<5213	<957	<2215	118

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.0029	<0.0035	<0.0025	<0.0029	17.3
12378-pentachlorodibenzo-p-dioxin	0.012	<0.011	<0.0095	<0.011	12.6
123478-hexachlorodibenzo-p-dioxin	<0.016	0.021	0.018	<0.018	13.2
123678-hexachlorodibenzo-p-dioxin	0.043	0.044	0.040	0.042	4.5
123789-hexachlorodibenzo-p-dioxin	<0.023	0.030	<0.023	<0.025	16.4
1234678-heptachlorodibenzo-p-dioxin	0.30	0.35	0.31	0.32	8.1
Octachlorodibenzo-p-dioxin	0.52	0.74	0.52	0.60	21.3
2378-tetrachlorodibenzofuran	<0.0041	0.023	<0.0060	<0.011	94.4
12378-pentachlorodibenzofuran	<0.011	0.026	0.017	<0.018	42.6
23478-pentachlorodibenzofuran	0.019	0.037	0.019	0.025	41.0
123478-hexachlorodibenzofuran	<0.013	0.038	0.022	<0.024	51.4
123678-hexachlorodibenzofuran	0.019	0.033	0.020	0.024	31.8
234678-hexachlorodibenzofuran	0.036	0.051	0.037	0.041	20.6
123789-hexachlorodibenzofuran	0.020	0.025	<0.019	<0.021	13.9
1234678-heptachlorodibenzofuran	<0.085	<0.10	0.097	<0.095	10.7
1234789-heptachlorodibenzofuran	<0.015	<0.025	<0.021	<0.020	23.3
Octachlorodibenzofuran	0.083	0.11	0.10	0.10	15.5
PCB 81	<0.018	0.093	<0.019	<0.043	99
PCB 77	0.40	2.07	0.38	0.95	102
PCB 123	0.081	0.87	0.17	0.38	115
PCB 118	5.11	62.3	10.6	26.0	121
PCB 114	<0.13	1.75	0.28	<0.72	125
PCB 105	1.60	20.8	3.82	8.72	120
PCB 126	<0.013	<0.064	<0.013	<0.030	98.2
PCB 167	0.045	0.52	0.11	0.23	115
PCB 156/157	0.12	1.50	0.32	0.65	116
PCB 169	<0.0078	<0.092	<0.010	<0.037	131
PCB 189	<0.0094	<0.035	0.014	<0.019	70.5
Total Dioxins & Furans Only	<1.23	<1.68	<1.29	<1.40	17.5
Total PCBs Only	<7.52	<90.1	<15.7	<37.8	120
Total Dioxins & Furans and PCBs	<8.75	<91.8	<17.0	<39.2	117

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 pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.12	<0.20	<0.16	<0.16	<0.0029
12378-pentachlorodibenzo-p-dioxin	<0.43	<0.72	<0.58	<0.61	<0.011
123478-hexachlorodibenzo-p-dioxin	<0.71	<1.20	<0.96	<1.01	<0.018
123678-hexachlorodibenzo-p-dioxin	1.67	2.81	2.24	2.36	0.042
123789-hexachlorodibenzo-p-dioxin	<0.99	<1.66	<1.33	<1.40	<0.025
1234678-heptachlorodibenzo-p-dioxin	12.8	21.5	17.1	18.0	0.32
Octachlorodibenzo-p-dioxin	23.6	39.7	31.6	33.4	0.60
2378-tetrachlorodibenzofuran	<0.44	<0.74	<0.59	<0.62	<0.011
12378-pentachlorodibenzofuran	<0.71	<1.19	<0.95	<1.00	<0.018
23478-pentachlorodibenzofuran	1.00	1.68	1.34	1.41	0.025
123478-hexachlorodibenzofuran	<0.97	<1.63	<1.30	<1.37	<0.024
123678-hexachlorodibenzofuran	0.96	1.61	1.28	1.36	0.024
234678-hexachlorodibenzofuran	1.64	2.75	2.19	2.31	0.041
123789-hexachlorodibenzofuran	<0.84	<1.42	<1.13	<1.19	<0.021
1234678-heptachlorodibenzofuran	<3.77	<6.34	<5.05	<5.33	<0.095
1234789-heptachlorodibenzofuran	<0.81	<1.35	<1.08	<1.14	<0.020
Octachlorodibenzofuran	3.96	6.65	5.30	5.59	0.10
PCB 81	<1.72	<2.88	<2.29	<2.43	<0.043
PCB 77	38.0	63.6	50.7	53.7	0.95
PCB 123	15.1	25.2	20.1	21.3	0.38
PCB 118	1040	1742	1387	1471	26.0
PCB 114	<28.7	<48.1	<38.3	<40.6	<0.72
PCB 105	349	584	465	494	8.72
PCB 126	<1.19	<1.99	<1.59	<1.68	<0.030
PCB 167	9.01	15.1	12.0	12.7	0.23
PCB 156/157	25.8	43.3	34.5	36.5	0.65
PCB 169	<1.47	<2.46	<1.96	<2.08	<0.037
PCB 189	<0.77	<1.29	<1.03	<1.09	<0.019
Total Dioxins & Furans Only	<55.4	<93.1	<74.2	<78.3	<1.40
Total PCBs Only	<1511	<2530	<2015	<2137	<37.8
Total Dioxins & Furans and PCBs	<1567	<2623	<2089	<2215	<39.2

* 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 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<0.65	<0.92
12378-pentachlorodibenzo-p-dioxin	<0.47	<0.46
123478-hexachlorodibenzo-p-dioxin	<0.36	0.63
123678-hexachlorodibenzo-p-dioxin	<0.30	<0.52
123789-hexachlorodibenzo-p-dioxin	<0.33	1.13
1234678-heptachlorodibenzo-p-dioxin	1.05	1.82
Octachlorodibenzo-p-dioxin	<6.1	<3.3
2378-tetrachlorodibenzofuran	<0.83	<0.68
12378-pentachlorodibenzofuran	<1.4	<1.9
23478-pentachlorodibenzofuran	<0.40	<0.45
123478-hexachlorodibenzofuran	<0.31	0.72
123678-hexachlorodibenzofuran	<0.29	<0.41
234678-hexachlorodibenzofuran	<0.32	<0.59
123789-hexachlorodibenzofuran	3.62	3.80
1234678-heptachlorodibenzofuran	<0.30	<0.53
1234789-heptachlorodibenzofuran	<0.37	<0.65
Octachlorodibenzofuran	<6.5	<1.5
PCB 81	<2.5	<3.1
PCB 77	<2.8	<3.4
PCB 123	<2.4	<1.7
PCB 118	29.8	12.7
PCB 114	<2.4	<1.7
PCB 105	11.5	<8.6
PCB 126	<2.6	<1.9
PCB 167	<1.5	<0.99
PCB 156/157	<2.1	<1.4
PCB 169	<1.6	<1.2
PCB 189	<0.82	<1.3
Total Dioxins & Furans Only	<23.6	<20.0
Total PCBs Only	<60.0	<38.0
Total Dioxins & Furans and PCBs	<83.6	<58.0

"<" 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	<0.11	<0.14	<0.099	<0.12
12378-pentachlorodibenzo-p-dioxin	1.00000	0.47	<0.45	<0.38	<0.43
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.061	0.083	0.070	<0.071
123678-hexachlorodibenzo-p-dioxin	0.10000	0.17	0.17	0.16	0.17
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.087	0.12	<0.091	<0.099
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.12	0.14	0.12	0.13
Octachlorodibenzo-p-dioxin	0.00030	0.0060	0.0090	0.0063	0.0071
2378-tetrachlorodibenzofuran	0.10000	<0.016	0.092	<0.024	<0.044
12378-pentachlorodibenzofuran	0.03000	<0.012	0.031	0.021	<0.021
23478-pentachlorodibenzofuran	0.30000	0.22	0.45	0.23	0.30
123478-hexachlorodibenzofuran	0.10000	<0.052	0.15	0.087	<0.097
123678-hexachlorodibenzofuran	0.10000	0.074	0.13	0.081	0.096
234678-hexachlorodibenzofuran	0.10000	0.14	0.21	0.15	0.16
123789-hexachlorodibenzofuran	0.10000	0.078	0.099	<0.075	<0.084
1234678-heptachlorodibenzofuran	0.01000	<0.033	<0.042	0.038	<0.038
1234789-heptachlorodibenzofuran	0.01000	<0.0059	<0.010	<0.0083	<0.0081
Octachlorodibenzofuran	0.00030	0.00095	0.0014	0.0012	0.0012
PCB 81	0.00030	<0.00021	0.0011	<0.00022	<0.00052
PCB 77	0.00010	0.0015	0.0083	0.0015	0.0038
PCB 123	0.00003	0.000094	0.0011	0.00021	0.00045
PCB 118	0.00003	0.0059	0.075	0.013	0.031
PCB 114	0.00003	<0.00014	0.0021	0.00033	<0.00086
PCB 105	0.00003	0.0018	0.025	0.0046	0.010
PCB 126	0.10000	<0.048	<0.26	<0.053	<0.12
PCB 167	0.00003	0.000052	0.00063	0.00013	0.00027
PCB 156/157	0.00003	0.00013	0.0018	0.00038	0.00078
PCB 169	0.03000	<0.0090	<0.11	<0.012	<0.044
PCB 189	0.00003	<0.000011	<0.000042	0.000016	<0.000023
Total Dioxins & Furans Only		<1.65	<2.33	<1.64	<1.87
Total PCBs Only		<0.067	<0.48	<0.085	<0.21
Total Dioxins & Furans and PCBs		<1.71	<2.81	<1.73	<2.08

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	<0.19	<0.23	<0.17	<0.20
12378-pentachlorodibenzo-p-dioxin	1.00000	0.79	<0.75	<0.64	<0.72
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.10	0.14	0.12	<0.12
123678-hexachlorodibenzo-p-dioxin	0.10000	0.28	0.29	0.27	0.28
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.15	0.20	<0.15	<0.17
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.20	0.24	0.21	0.21
Octachlorodibenzo-p-dioxin	0.00030	0.010	0.015	0.011	0.012
2378-tetrachlorodibenzofuran	0.10000	<0.026	0.15	<0.040	<0.074
12378-pentachlorodibenzofuran	0.03000	<0.021	0.052	0.035	<0.036
23478-pentachlorodibenzofuran	0.30000	0.37	0.75	0.39	0.50
123478-hexachlorodibenzofuran	0.10000	<0.088	0.26	0.15	<0.16
123678-hexachlorodibenzofuran	0.10000	0.12	0.22	0.14	0.16
234678-hexachlorodibenzofuran	0.10000	0.23	0.34	0.25	0.28
123789-hexachlorodibenzofuran	0.10000	0.13	0.17	<0.13	<0.14
1234678-heptachlorodibenzofuran	0.01000	<0.055	<0.070	0.065	<0.063
1234789-heptachlorodibenzofuran	0.01000	<0.010	<0.017	<0.014	<0.014
Octachlorodibenzofuran	0.00030	0.0016	0.0023	0.0021	0.0020
PCB 81	0.00030	<0.00035	0.0019	<0.00037	<0.00086
PCB 77	0.00010	0.0026	0.014	0.0026	0.0064
PCB 123	0.00003	0.00016	0.0018	0.00035	0.00076
PCB 118	0.00003	0.010	0.13	0.021	0.052
PCB 114	0.00003	<0.00024	0.0035	0.00056	<0.0014
PCB 105	0.00003	0.0031	0.042	0.0077	0.018
PCB 126	0.10000	<0.081	<0.43	<0.089	<0.20
PCB 167	0.00003	0.000088	0.0010	0.00022	0.00045
PCB 156/157	0.00003	0.00023	0.0030	0.00065	0.0013
PCB 169	0.03000	<0.015	<0.19	<0.020	<0.074
PCB 189	0.00003	<0.000018	<0.000070	0.000028	<0.000039
Total Dioxins & Furans Only		<2.78	<3.89	<2.77	<3.15
Total PCBs Only		<0.11	<0.80	<0.14	<0.35
Total Dioxins & Furans and PCBs		<2.89	<4.70	<2.91	<3.50

* 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	<0.15	<0.19	<0.13	<0.16
12378-pentachlorodibenzo-p-dioxin	1.00000	0.64	<0.60	<0.50	<0.58
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.083	0.11	0.093	<0.096
123678-hexachlorodibenzo-p-dioxin	0.10000	0.23	0.23	0.21	0.22
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.12	0.16	<0.12	<0.13
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.16	0.19	0.17	0.17
Octachlorodibenzo-p-dioxin	0.00030	0.0082	0.012	0.0084	0.0095
2378-tetrachlorodibenzofuran	0.10000	<0.021	0.12	<0.032	<0.059
12378-pentachlorodibenzofuran	0.03000	<0.017	0.041	0.027	<0.029
23478-pentachlorodibenzofuran	0.30000	0.30	0.60	0.31	0.40
123478-hexachlorodibenzofuran	0.10000	<0.070	0.20	0.12	<0.13
123678-hexachlorodibenzofuran	0.10000	0.10	0.18	0.11	0.13
234678-hexachlorodibenzofuran	0.10000	0.19	0.27	0.20	0.22
123789-hexachlorodibenzofuran	0.10000	0.11	0.13	<0.10	<0.11
1234678-heptachlorodibenzofuran	0.01000	<0.044	<0.056	0.051	<0.051
1234789-heptachlorodibenzofuran	0.01000	<0.0080	<0.013	<0.011	<0.011
Octachlorodibenzofuran	0.00030	0.0013	0.0018	0.0017	0.0016
PCB 81	0.00030	<0.00028	0.0015	<0.00030	<0.00069
PCB 77	0.00010	0.0021	0.011	0.0020	0.0051
PCB 123	0.00003	0.00013	0.0014	0.00028	0.00060
PCB 118	0.00003	0.0080	0.10	0.017	0.042
PCB 114	0.00003	<0.00020	0.0028	0.00044	<0.0011
PCB 105	0.00003	0.0025	0.033	0.0061	0.014
PCB 126	0.10000	<0.065	<0.34	<0.071	<0.16
PCB 167	0.00003	0.000071	0.00084	0.00017	0.00036
PCB 156/157	0.00003	0.00018	0.0024	0.00051	0.0010
PCB 169	0.03000	<0.012	<0.15	<0.016	<0.059
PCB 189	0.00003	<0.000015	<0.000056	0.000022	<0.000031
Total Dioxins & Furans Only		<2.23	<3.10	<2.19	<2.51
Total PCBs Only		<0.091	<0.64	<0.11	<0.28
Total Dioxins & Furans and PCBs		<2.32	<3.74	<2.31	<2.79

* 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	0.074	0.094	0.066	0.078
12378-pentachlorodibenzo-p-dioxin	1.00000	0.64	0.30	0.25	0.39
123478-hexachlorodibenzo-p-dioxin	0.10000	0.042	0.11	0.093	0.082
123678-hexachlorodibenzo-p-dioxin	0.10000	0.23	0.23	0.21	0.22
123789-hexachlorodibenzo-p-dioxin	0.10000	0.059	0.16	0.060	0.093
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.16	0.19	0.17	0.17
Octachlorodibenzo-p-dioxin	0.00030	0.0082	0.012	0.0084	0.0095
2378-tetrachlorodibenzofuran	0.10000	0.011	0.12	0.016	0.050
12378-pentachlorodibenzofuran	0.03000	0.0083	0.041	0.027	0.026
23478-pentachlorodibenzofuran	0.30000	0.30	0.60	0.31	0.40
123478-hexachlorodibenzofuran	0.10000	0.035	0.20	0.12	0.12
123678-hexachlorodibenzofuran	0.10000	0.10	0.18	0.11	0.13
234678-hexachlorodibenzofuran	0.10000	0.19	0.27	0.20	0.22
123789-hexachlorodibenzofuran	0.10000	0.11	0.13	0.050	0.096
1234678-heptachlorodibenzofuran	0.01000	0.022	0.028	0.051	0.034
1234789-heptachlorodibenzofuran	0.01000	0.0040	0.0066	0.0055	0.0054
Octachlorodibenzofuran	0.00030	0.0013	0.0018	0.0017	0.0016
PCB 81	0.00030	0.00014	0.0015	0.00015	0.00059
PCB 77	0.00010	0.0021	0.011	0.0020	0.0051
PCB 123	0.00003	0.00013	0.0014	0.00028	0.00060
PCB 118	0.00003	0.0080	0.10	0.017	0.042
PCB 114	0.00003	0.000098	0.0028	0.00044	0.0011
PCB 105	0.00003	0.0025	0.033	0.0061	0.014
PCB 126	0.10000	0.033	0.17	0.035	0.079
PCB 167	0.00003	0.000071	0.00084	0.00017	0.00036
PCB 156/157	0.00003	0.00018	0.0024	0.00051	0.0010
PCB 169	0.03000	0.0061	0.074	0.0081	0.029
PCB 189	0.00003	0.0000073	0.000028	0.000022	0.000019
Total Dioxins & Furans Only		1.97	2.68	1.74	2.13
Total PCBs Only		0.052	0.40	0.070	0.17
Total Dioxins & Furans and PCBs		2.03	3.08	1.81	2.30

* 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	<0.15	<0.19	<0.13	<0.16
12378-pentachlorodibenzo-p-dioxin	0.500	0.32	<0.30	<0.25	<0.29
123478-hexachlorodibenzo-p-dioxin	0.100	<0.083	0.11	0.093	<0.096
123678-hexachlorodibenzo-p-dioxin	0.100	0.23	0.23	0.21	0.22
123789-hexachlorodibenzo-p-dioxin	0.100	<0.12	0.16	<0.12	<0.13
1234678-heptachlorodibenzo-p-dioxin	0.010	0.16	0.19	0.17	0.17
Octachlorodibenzo-p-dioxin	0.001	0.027	0.040	0.028	0.032
2378-tetrachlorodibenzofuran	0.100	<0.021	0.12	<0.032	<0.059
12378-pentachlorodibenzofuran	0.050	<0.028	0.069	0.046	<0.048
23478-pentachlorodibenzofuran	0.500	0.50	0.99	0.52	0.67
123478-hexachlorodibenzofuran	0.100	<0.070	0.20	0.12	<0.13
123678-hexachlorodibenzofuran	0.100	0.10	0.18	0.11	0.13
234678-hexachlorodibenzofuran	0.100	0.19	0.27	0.20	0.22
123789-hexachlorodibenzofuran	0.100	0.11	0.13	<0.10	<0.11
1234678-heptachlorodibenzofuran	0.010	<0.044	<0.056	0.051	<0.051
1234789-heptachlorodibenzofuran	0.010	<0.0080	<0.013	<0.011	<0.011
Octachlorodibenzofuran	0.001	0.0043	0.0060	0.0056	0.0053
Total Dioxins & Furans		<2.14	<3.26	<2.19	<2.53
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	<0.16	<0.20	<0.14	<0.16
12378-pentachlorodibenzo-p-dioxin	1.00000	0.66	<0.63	<0.53	<0.61
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.087	0.12	0.099	<0.10
123678-hexachlorodibenzo-p-dioxin	0.10000	0.24	0.25	0.23	0.24
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.12	0.17	<0.13	<0.14
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.17	0.20	0.18	0.18
Octachlorodibenzo-p-dioxin	0.00030	0.0085	0.013	0.0088	0.010
2378-tetrachlorodibenzofuran	0.10000	<0.022	0.13	<0.034	<0.062
12378-pentachlorodibenzofuran	0.03000	<0.017	0.044	0.029	<0.030
23478-pentachlorodibenzofuran	0.30000	0.31	0.63	0.33	0.42
123478-hexachlorodibenzofuran	0.10000	<0.073	0.22	0.12	<0.14
123678-hexachlorodibenzofuran	0.10000	0.10	0.19	0.11	0.14
234678-hexachlorodibenzofuran	0.10000	0.19	0.29	0.21	0.23
123789-hexachlorodibenzofuran	0.10000	0.11	0.14	<0.11	<0.12
1234678-heptachlorodibenzofuran	0.01000	<0.046	<0.060	0.054	<0.053
1234789-heptachlorodibenzofuran	0.01000	<0.0083	<0.014	<0.012	<0.011
Octachlorodibenzofuran	0.00030	0.0013	0.0019	0.0018	0.0017
PCB 81	0.00030	<0.00030	0.0016	<0.00031	<0.00073
PCB 77	0.00010	0.0022	0.012	0.0021	0.0054
PCB 123	0.00003	0.00013	0.0015	0.00029	0.00064
PCB 118	0.00003	0.0083	0.11	0.018	0.044
PCB 114	0.00003	<0.00020	0.0030	0.00047	<0.0012
PCB 105	0.00003	0.0026	0.035	0.0064	0.015
PCB 126	0.10000	<0.068	<0.36	<0.074	<0.17
PCB 167	0.00003	0.000074	0.00089	0.00018	0.00038
PCB 156/157	0.00003	0.00019	0.0026	0.00054	0.0011
PCB 169	0.03000	<0.013	<0.16	<0.017	<0.062
PCB 189	0.00003	<0.000015	<0.000060	0.000023	<0.000033
Total Dioxins & Furans Only		<2.33	<3.30	<2.32	<2.65
Total PCBs Only		<0.095	<0.68	<0.12	<0.30
Total Dioxins & Furans and PCBs		<2.42	<3.98	<2.44	<2.95

* 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	<0.0029	<0.0035	<0.0025	<0.0029
12378-pentachlorodibenzo-p-dioxin	1.00000	0.012	<0.011	<0.0095	<0.011
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.0016	0.0021	0.0018	<0.0018
123678-hexachlorodibenzo-p-dioxin	0.10000	0.0043	0.0044	0.0040	0.0042
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.0023	0.0030	<0.0023	<0.0025
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.0030	0.0035	0.0031	0.0032
Octachlorodibenzo-p-dioxin	0.00030	0.00016	0.00022	0.00016	0.00018
2378-tetrachlorodibenzofuran	0.10000	<0.00041	0.0023	<0.00060	<0.0011
12378-pentachlorodibenzofuran	0.03000	<0.00032	0.00078	0.00052	<0.00054
23478-pentachlorodibenzofuran	0.30000	0.0057	0.011	0.0058	0.0076
123478-hexachlorodibenzofuran	0.10000	<0.0013	0.0038	0.0022	<0.0024
123678-hexachlorodibenzofuran	0.10000	0.0019	0.0033	0.0020	0.0024
234678-hexachlorodibenzofuran	0.10000	0.0036	0.0051	0.0037	0.0041
123789-hexachlorodibenzofuran	0.10000	0.0020	0.0025	<0.0019	<0.0021
1234678-heptachlorodibenzofuran	0.01000	<0.00085	<0.0010	0.00097	<0.00095
1234789-heptachlorodibenzofuran	0.01000	<0.00015	<0.00025	<0.00021	<0.00020
Octachlorodibenzofuran	0.00030	0.000025	0.000034	0.000031	0.000030
PCB 81	0.00030	<0.0000055	0.000028	<0.0000056	<0.000013
PCB 77	0.00010	0.000040	0.00021	0.000038	0.000095
PCB 123	0.00003	0.0000024	0.000026	0.0000052	0.000011
PCB 118	0.00003	0.00015	0.0019	0.00032	0.00078
PCB 114	0.00003	<0.0000038	0.000053	0.0000083	<0.000022
PCB 105	0.00003	0.000048	0.00062	0.00011	0.00026
PCB 126	0.10000	<0.0013	<0.0064	<0.0013	<0.0030
PCB 167	0.00003	0.0000014	0.000016	0.0000033	0.0000068
PCB 156/157	0.00003	0.0000035	0.000045	0.0000097	0.000019
PCB 169	0.03000	<0.00024	<0.0028	<0.00030	<0.0011
PCB 189	0.00003	<0.00000028	<0.0000010	0.00000041	<0.00000058
Total Dioxins & Furans Only		<0.043	<0.058	<0.041	<0.047
Total PCBs Only		<0.0017	<0.012	<0.0021	<0.0053
Total Dioxins & Furans and PCBs		<0.045	<0.070	<0.043	<0.053

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 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	<0.12	<0.20	<0.16	<0.16	<0.0029
12378-pentachlorodibenzo-p-dioxin	<0.43	<0.72	<0.58	<0.61	<0.011
123478-hexachlorodibenzo-p-dioxin	<0.071	<0.12	<0.096	<0.10	<0.0018
123678-hexachlorodibenzo-p-dioxin	0.17	0.28	0.22	0.24	0.0042
123789-hexachlorodibenzo-p-dioxin	<0.099	<0.17	<0.13	<0.14	<0.0025
1234678-heptachlorodibenzo-p-dioxin	0.13	0.21	0.17	0.18	0.0032
Octachlorodibenzo-p-dioxin	0.0071	0.012	0.0095	0.010	0.00018
2378-tetrachlorodibenzofuran	<0.044	<0.074	<0.059	<0.062	<0.0011
12378-pentachlorodibenzofuran	<0.021	<0.036	<0.029	<0.030	<0.00054
23478-pentachlorodibenzofuran	0.30	0.50	0.40	0.42	0.0076
123478-hexachlorodibenzofuran	<0.097	<0.16	<0.13	<0.14	<0.0024
123678-hexachlorodibenzofuran	0.096	0.16	0.13	0.14	0.0024
234678-hexachlorodibenzofuran	0.16	0.28	0.22	0.23	0.0041
123789-hexachlorodibenzofuran	<0.084	<0.14	<0.11	<0.12	<0.0021
1234678-heptachlorodibenzofuran	<0.038	<0.063	<0.051	<0.053	<0.00095
1234789-heptachlorodibenzofuran	<0.0081	<0.014	<0.011	<0.011	<0.00020
Octachlorodibenzofuran	0.0012	0.0020	0.0016	0.0017	0.000030
PCB 81	<0.00052	<0.00086	<0.00069	<0.00073	<0.000013
PCB 77	0.0038	0.0064	0.0051	0.0054	0.000095
PCB 123	0.00045	0.00076	0.00060	0.00064	0.000011
PCB 118	0.031	0.052	0.042	0.044	0.00078
PCB 114	<0.00086	<0.0014	<0.0011	<0.0012	<0.000022
PCB 105	0.010	0.018	0.014	0.015	0.00026
PCB 126	<0.12	<0.20	<0.16	<0.17	<0.0030
PCB 167	0.00027	0.00045	0.00036	0.00038	0.0000068
PCB 156/157	0.00078	0.0013	0.0010	0.0011	0.000019
PCB 169	<0.044	<0.074	<0.059	<0.062	<0.0011
PCB 189	<0.000023	<0.000039	<0.000031	<0.000033	<0.00000058
Total Dioxins & Furans Only	<1.87	<3.15	<2.51	<2.65	<0.047
Total PCBs Only	<0.21	<0.35	<0.28	<0.30	<0.0053
Total Dioxins & Furans and PCBs	<2.08	<3.50	<2.79	<2.95	<0.053

* 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	0.058	0.098	0.078	0.082	0.0015
12378-pentachlorodibenzo-p-dioxin	0.29	0.49	0.39	0.41	0.0075
123478-hexachlorodibenzo-p-dioxin	0.061	0.10	0.082	0.086	0.0015
123678-hexachlorodibenzo-p-dioxin	0.17	0.28	0.22	0.236	0.0042
123789-hexachlorodibenzo-p-dioxin	0.069	0.12	0.093	0.098	0.0017
1234678-heptachlorodibenzo-p-dioxin	0.13	0.21	0.17	0.18	0.0032
Octachlorodibenzo-p-dioxin	0.0071	0.012	0.0095	0.010	0.00018
2378-tetrachlorodibenzofuran	0.037	0.062	0.050	0.053	0.00093
12378-pentachlorodibenzofuran	0.019	0.032	0.026	0.027	0.00048
23478-pentachlorodibenzofuran	0.30	0.50	0.40	0.42	0.0076
123478-hexachlorodibenzofuran	0.089	0.15	0.12	0.13	0.0022
123678-hexachlorodibenzofuran	0.096	0.16	0.13	0.14	0.0024
234678-hexachlorodibenzofuran	0.16	0.28	0.22	0.23	0.0041
123789-hexachlorodibenzofuran	0.072	0.12	0.096	0.10	0.0018
1234678-heptachlorodibenzofuran	0.025	0.042	0.034	0.036	0.00064
1234789-heptachlorodibenzofuran	0.0040	0.0068	0.0054	0.0057	0.00010
Octachlorodibenzofuran	0.0012	0.0020	0.0016	0.0017	0.000030
PCB 81	0.00044	0.00074	0.00059	0.00063	0.000011
PCB 77	0.0038	0.0064	0.0051	0.0054	0.000095
PCB 123	0.00045	0.00076	0.00060	0.00064	0.000011
PCB 118	0.031	0.052	0.042	0.044	0.00078
PCB 114	0.00084	0.0014	0.0011	0.0012	0.000021
PCB 105	0.010	0.018	0.014	0.015	0.00026
PCB 126	0.059	0.10	0.079	0.084	0.0015
PCB 167	0.00027	0.00045	0.00036	0.00038	0.0000068
PCB 156/157	0.00078	0.0013	0.0010	0.0011	0.000019
PCB 169	0.022	0.037	0.029	0.031	0.00055
PCB 189	0.000014	0.000024	0.000019	0.000020	0.00000036
Total Dioxins & Furans Only	1.59	2.67	2.13	2.25	0.040
Total PCBs Only	0.13	0.22	0.17	0.18	0.0032
Total Dioxins & Furans and PCBs	1.72	2.89	2.30	2.43	0.043

* 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 ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	2030	245	413	331	346	6.36
1,3-Dichlorobenzene	254	30.6	51.7	41.5	43.3	0.80
1,4-Dichlorobenzene	193	23.3	39.3	31.5	32.9	0.60
1,2-Dichlorobenzene	144	17.4	29.3	23.5	24.5	0.45
Total Dichlorobenzene	591	71.3	120	96.5	101	1.85
1,3,5-trichlorobenzene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
1,2,4-trichlorobenzene	59.8	7.21	12.2	9.76	10.2	0.19
1,2,3-trichlorobenzene	15.1	1.82	3.07	2.47	2.57	0.047
Total Trichlorobenzene	<86.9	<10.5	<17.7	<14.2	<14.8	<0.27
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.45	<2.44	<1.96	<2.04	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Total Tetrachlorobenzene	<24.0	<2.89	<4.88	<3.92	<4.09	<0.075
Pentachlorobenzene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Hexachlorobenzene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Total Chlorobenzenes	<2756	<332	<561	<450	<469	<8.64

Dry Gas Volume Sampled (Rm³*) :	4.913
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.2
Wet Reference Flowrate (Rm³/s*) :	18.4

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

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	1940	248	414	330	350	6.17
1,3-Dichlorobenzene	231	29.5	49.3	39.3	41.7	0.73
1,4-Dichlorobenzene	175	22.3	37.3	29.8	31.6	0.56
1,2-Dichlorobenzene	131	16.7	27.9	22.3	23.7	0.42
Total Dichlorobenzene	537	68.6	115	91.3	97.0	1.71
1,3,5-trichlorobenzene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
1,2,4-trichlorobenzene	54.4	6.95	11.6	9.25	9.83	0.17
1,2,3-trichlorobenzene	13.7	1.75	2.92	2.33	2.47	0.044
Total Trichlorobenzene	<80	<10.2	<17.1	<13.6	<14.5	<0.25
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	15.4	1.97	3.29	2.62	2.78	0.049
1,2,3,4-tetrachlorobenzene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Total Tetrachlorobenzene	<27.4	<3.50	<5.85	<4.66	<4.95	<0.087
Pentachlorobenzene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Hexachlorobenzene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Total Chlorobenzenes	<2609	<333	<557	<443	<471	<8.29

Dry Gas Volume Sampled (Rm³*) :	4.687
Actual Flowrate (m³/s) :	24.9
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.7
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 53
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	1890	238	400	317	335	5.97
1,3-Dichlorobenzene	193	24.3	40.9	32.4	34.2	0.61
1,4-Dichlorobenzene	186	23.4	39.4	31.2	33.0	0.59
1,2-Dichlorobenzene	145	18.2	30.7	24.3	25.7	0.46
Total Dichlorobenzene	524	65.9	111	88.0	92.9	1.65
1,3,5-trichlorobenzene	15.6	1.96	3.30	2.62	2.77	0.049
1,2,4-trichlorobenzene	49.4	6.21	10.5	8.29	8.76	0.16
1,2,3-trichlorobenzene	13.1	1.65	2.77	2.20	2.32	0.041
Total Trichlorobenzene	78.1	9.82	16.5	13.1	13.8	0.25
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	12.7	1.60	2.69	2.13	2.25	0.040
1,2,3,4-tetrachlorobenzene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Total Tetrachlorobenzene	<24.7	<3.11	<5.23	<4.15	<4.38	<0.078
Pentachlorobenzene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Hexachlorobenzene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Total Chlorobenzenes	<2541	<319	<538	<427	<451	<8.02

Dry Gas Volume Sampled (Rm³*) :	4.721
Actual Flowrate (m³/s) :	25.1
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	245	248	238	243	2.1
1,3-Dichlorobenzene	30.6	29.5	24.3	28.1	12.1
1,4-Dichlorobenzene	23.3	22.3	23.4	23.0	2.5
1,2-Dichlorobenzene	17.4	16.7	18.2	17.4	4.3
Total Dichlorobenzene	71.3	68.6	65.9	68.6	3.9
1,3,5-trichlorobenzene	<1.45	<1.53	1.96	<1.65	16.8
1,2,4-trichlorobenzene	7.21	6.95	6.21	6.79	7.6
1,2,3-trichlorobenzene	1.82	1.75	1.65	1.74	5.0
Total Trichlorobenzene	<10.5	<10.2	9.82	<10.2	3.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.45	1.97	1.60	<1.67	16.0
1,2,3,4-tetrachlorobenzene	<1.45	<1.53	<1.51	<1.50	3.0
Total Tetrachlorobenzene	<2.89	<3.50	<3.11	<3.17	9.7
Pentachlorobenzene	<1.45	<1.53	<1.51	<1.50	3.0
Hexachlorobenzene	<1.45	<1.53	<1.51	<1.50	3.0
Total Chlorobenzenes	<332	<333	<319	<328	2.3

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	413	414	400	409	1.9
1,3-Dichlorobenzene	51.7	49.3	40.9	47.3	12.0
1,4-Dichlorobenzene	39.3	37.3	39.4	38.7	3.0
1,2-Dichlorobenzene	29.3	27.9	30.7	29.3	4.7
Total Dichlorobenzene	120	115	111	115	4.1
1,3,5-trichlorobenzene	<2.44	<2.56	3.30	<2.77	16.9
1,2,4-trichlorobenzene	12.2	11.6	10.5	11.4	7.6
1,2,3-trichlorobenzene	3.07	2.92	2.77	2.92	5.1
Total Trichlorobenzene	<17.7	<17.1	16.5	<17.1	3.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.44	3.29	2.69	<2.81	15.4
1,2,3,4-tetrachlorobenzene	<2.44	<2.56	<2.54	<2.51	2.5
Total Tetrachlorobenzene	<4.88	<5.85	<5.23	<5.32	9.1
Pentachlorobenzene	<2.44	<2.56	<2.54	<2.51	2.5
Hexachlorobenzene	<2.44	<2.56	<2.54	<2.51	2.5
Total Chlorobenzenes	<561	<557	<538	<552	2.2

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Monochlorobenzene	331	330	317	326	2.4
1,3-Dichlorobenzene	41.5	39.3	32.4	37.7	12.5
1,4-Dichlorobenzene	31.5	29.8	31.2	30.8	3.1
1,2-Dichlorobenzene	23.5	22.3	24.3	23.4	4.5
Total Dichlorobenzene	96.5	91.3	88.0	91.9	4.7
1,3,5-trichlorobenzene	<1.96	<2.04	2.62	<2.21	16.3
1,2,4-trichlorobenzene	9.76	9.25	8.29	9.10	8.2
1,2,3-trichlorobenzene	2.47	2.33	2.20	2.33	5.7
Total Trichlorobenzene	<14.2	<13.6	13.1	<13.6	3.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.96	2.62	2.13	<2.24	15.3
1,2,3,4-tetrachlorobenzene	<1.96	<2.04	<2.01	<2.00	2.1
Total Tetrachlorobenzene	<3.92	<4.66	<4.15	<4.24	8.9
Pentachlorobenzene	<1.96	<2.04	<2.01	<2.00	2.1
Hexachlorobenzene	<1.96	<2.04	<2.01	<2.00	2.1
Total Chlorobenzenes	<450	<443	<427	<440	2.7

* 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	346	350	335	344	2.3
1,3-Dichlorobenzene	43.3	41.7	34.2	39.7	12.2
1,4-Dichlorobenzene	32.9	31.6	33.0	32.5	2.4
1,2-Dichlorobenzene	24.5	23.7	25.7	24.6	4.2
Total Dichlorobenzene	101	97.0	92.9	96.9	4.0
1,3,5-trichlorobenzene	<2.04	<2.17	2.77	<2.33	16.6
1,2,4-trichlorobenzene	10.2	9.83	8.76	9.59	7.7
1,2,3-trichlorobenzene	2.57	2.47	2.32	2.46	5.1
Total Trichlorobenzene	<14.8	<14.5	13.8	<14.4	3.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.04	2.78	2.25	<2.36	16.1
1,2,3,4-tetrachlorobenzene	<2.04	<2.17	<2.13	<2.11	3.0
Total Tetrachlorobenzene	<4.09	<4.95	<4.38	<4.47	9.8
Pentachlorobenzene	<2.04	<2.17	<2.13	<2.11	3.0
Hexachlorobenzene	<2.04	<2.17	<2.13	<2.11	3.0
Total Chlorobenzenes	<469	<471	<451	<464	2.5

* 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 Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Monochlorobenzene	6.36	6.17	5.97	6.17	3.2
1,3-Dichlorobenzene	0.80	0.73	0.61	0.71	13.4
1,4-Dichlorobenzene	0.60	0.56	0.59	0.58	4.2
1,2-Dichlorobenzene	0.45	0.42	0.46	0.44	5.0
Total Dichlorobenzene	1.85	1.71	1.65	1.74	5.9
1,3,5-trichlorobenzene	<0.038	<0.038	0.049	<0.042	15.7
1,2,4-trichlorobenzene	0.19	0.17	0.16	0.17	9.2
1,2,3-trichlorobenzene	0.047	0.044	0.041	0.044	6.9
Total Trichlorobenzene	<0.27	<0.25	0.25	<0.26	5.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.038	0.049	0.040	<0.042	14.1
1,2,3,4-tetrachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.7
Total Tetrachlorobenzene	<0.075	<0.087	<0.078	<0.080	7.8
Pentachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.7
Hexachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.7
Total Chlorobenzenes	<8.64	<8.29	<8.02	<8.32	3.7

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorobenzenes

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
Monochlorobenzene	243	409	326	344	6.17
1,3-Dichlorobenzene	28.1	47.3	37.7	39.7	0.71
1,4-Dichlorobenzene	23.0	38.7	30.8	32.5	0.58
1,2-Dichlorobenzene	17.4	29.3	23.4	24.6	0.44
Total Dichlorobenzene	68.6	115	91.9	96.9	1.74
1,3,5-trichlorobenzene	<1.65	<2.77	<2.21	<2.33	<0.042
1,2,4-trichlorobenzene	6.79	11.4	9.10	9.59	0.17
1,2,3-trichlorobenzene	1.74	2.92	2.33	2.46	0.044
Total Trichlorobenzene	<10.2	<17.1	<13.6	<14.4	<0.26
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.67	<2.81	<2.24	<2.36	<0.042
1,2,3,4-tetrachlorobenzene	<1.50	<2.51	<2.00	<2.11	<0.038
Total Tetrachlorobenzene	<3.17	<5.32	<4.24	<4.47	<0.080
Pentachlorobenzene	<1.50	<2.51	<2.00	<2.11	<0.038
Hexachlorobenzene	<1.50	<2.51	<2.00	<2.11	<0.038
Total Chlorobenzenes	<328	<552	<440	<464	<8.32

* 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	23.7	<12
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<47.7	<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	<144	<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	<7.23	<12.2	<9.80	<10.2	<0.19
3-monochlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
4-monochlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
Total Monochlorophenols	<180	<21.7	<36.6	<29.4	<30.7	<0.56
2,6-dichlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
2,4 & 2,5-dichlorophenol	129	15.6	26.3	21.1	22.0	0.40
3,5-dichlorophenol	130	15.7	26.5	21.2	22.1	0.41
2,3-dichlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
3,4-dichlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
Total Dichlorophenols	<439	<52.9	<89.4	<71.7	<74.8	<1.38
2,4,6-trichlorophenol	64.9	7.82	13.2	10.6	11.1	0.20
2,3,6-trichlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
2,3,5-trichlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
2,4,5-trichlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
2,3,4-trichlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
3,4,5-trichlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
Total Trichlorophenols	<365	<44.0	<74.3	<59.6	<62.2	<1.14
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
Total Tetrachlorophenols	<120	<14.5	<24.4	<19.6	<20.4	<0.38
Pentachlorophenol	<60	<7.23	<12.2	<9.80	<10.2	<0.19
Total Chlorophenols	<1164	<140	<237	<190	<198	<3.65

Dry Gas Volume Sampled (Rm³*) :	4.913
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.2
Wet Reference Flowrate (Rm³/s*) :	18.4

* 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 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 ng	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	<60	<7.66	<12.8	<10.2	<10.8	<0.19
3-monochlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
4-monochlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
Total Monochlorophenols	<180	<23.0	<38.4	<30.6	<32.5	<0.57
2,6-dichlorophenol	74	9.45	15.8	12.6	13.4	0.24
2,4 & 2,5-dichlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
3,5-dichlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
2,3-dichlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
3,4-dichlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
Total Dichlorophenols	<314	<40.1	<67.0	<53.4	<56.7	<1.00
2,4,6-trichlorophenol	112	14.3	23.9	19.0	20.2	0.36
2,3,6-trichlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
2,3,5-trichlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
2,4,5-trichlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
2,3,4-trichlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
3,4,5-trichlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
Total Trichlorophenols	<412	<52.6	<87.9	<70.0	<74.4	<1.31
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
Total Tetrachlorophenols	<120	<15.3	<25.6	<20.4	<21.7	<0.38
Pentachlorophenol	<60	<7.66	<12.8	<10.2	<10.8	<0.19
Total Chlorophenols	<1086	<139	<232	<185	<196	<3.45

Dry Gas Volume Sampled (Rm³*) :	4.687
Actual Flowrate (m³/s) :	24.9
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.7
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 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 ng	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	<60	<7.54	<12.7	<10.1	<10.6	<0.19
3-monochlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
4-monochlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
Total Monochlorophenols	<180	<22.6	<38.1	<30.2	<31.9	<0.57
2,6-dichlorophenol	313	39.4	66.3	52.5	55.5	0.99
2,4 & 2,5-dichlorophenol	212	26.7	44.9	35.6	37.6	0.67
3,5-dichlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
2,3-dichlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
3,4-dichlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
Total Dichlorophenols	<705	<88.6	<149	<118	<125	<2.23
2,4,6-trichlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
2,3,6-trichlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
2,3,5-trichlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
2,4,5-trichlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
2,3,4-trichlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
3,4,5-trichlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
Total Trichlorophenols	<360	<45.3	<76.3	<60.4	<63.8	<1.14
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.54	<12.7	<10.1	<10.6	<0.19
Total Tetrachlorophenols	<120	<15.1	<25.4	<20.1	<21.3	<0.38
Pentachlorophenol	105	13.2	22.2	17.6	18.6	0.33
Total Chlorophenols	<1470	<185	<311	<247	<261	<4.64

Dry Gas Volume Sampled (Rm³*) :	4.721
Actual Flowrate (m³/s) :	25.1
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

* 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 Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
2-monochlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
3-monochlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
4-monochlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
Total Monochlorophenols	<21.7	<23.0	<22.6	<22.4	3.0
2,6-dichlorophenol	<7.23	9.45	39.4	<18.7	96.0
2,4 & 2,5-dichlorophenol	15.6	<7.66	26.7	<16.6	57.4
3,5-dichlorophenol	15.7	<7.66	<7.54	<10.3	45.3
2,3-dichlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
3,4-dichlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
Total Dichlorophenols	<52.9	<40.1	<88.6	<60.6	41.6
2,4,6-trichlorophenol	7.82	14.3	<7.54	<9.89	38.6
2,3,6-trichlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
2,3,5-trichlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
2,4,5-trichlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
2,3,4-trichlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
3,4,5-trichlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
Total Trichlorophenols	<44.0	<52.6	<45.3	<47.3	9.8
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
2,3,4,5-tetrachlorophenol	<7.23	<7.66	<7.54	<7.48	3.0
Total Tetrachlorophenols	<14.5	<15.3	<15.1	<15.0	3.0
Pentachlorophenol	<7.23	<7.66	13.2	<9.37	35.6
Total Chlorophenols	<140	<139	<185	<155	16.9

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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
3-monochlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
4-monochlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
Total Monochlorophenols	<36.6	<38.4	<38.1	<37.7	2.5
2,6-dichlorophenol	<12.2	15.8	66.3	<31.4	96.2
2,4 & 2,5-dichlorophenol	26.3	<12.8	44.9	<28.0	57.6
3,5-dichlorophenol	26.5	<12.8	<12.7	<17.3	45.7
2,3-dichlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
3,4-dichlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
Total Dichlorophenols	<89.4	<67.0	<149	<102	41.8
2,4,6-trichlorophenol	13.2	23.9	<12.7	<16.6	38.1
2,3,6-trichlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
2,3,5-trichlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
2,4,5-trichlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
2,3,4-trichlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
3,4,5-trichlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
Total Trichlorophenols	<74.3	<87.9	<76.3	<79.5	9.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
2,3,4,5-tetrachlorophenol	<12.2	<12.8	<12.7	<12.6	2.5
Total Tetrachlorophenols	<24.4	<25.6	<25.4	<25.1	2.5
Pentachlorophenol	<12.2	<12.8	22.2	<15.8	35.7
Total Chlorophenols	<237	<232	<311	<260	17.1

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
3-monochlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
4-monochlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
Total Monochlorophenols	<29.4	<30.6	<30.2	<30.1	2.1
2,6-dichlorophenol	<9.80	12.6	52.5	<25.0	95.8
2,4 & 2,5-dichlorophenol	21.1	<10.2	35.6	<22.3	57.2
3,5-dichlorophenol	21.2	<10.2	<10.1	<13.8	46.3
2,3-dichlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
3,4-dichlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
Total Dichlorophenols	<71.7	<53.4	<118	<81.1	41.3
2,4,6-trichlorophenol	10.6	19.0	<10.1	<13.2	38.0
2,3,6-trichlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
2,3,5-trichlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
2,4,5-trichlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
2,3,4-trichlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
3,4,5-trichlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
Total Trichlorophenols	<59.6	<70.0	<60.4	<63.3	9.2
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
2,3,4,5-tetrachlorophenol	<9.80	<10.2	<10.1	<10.0	2.1
Total Tetrachlorophenols	<19.6	<20.4	<20.1	<20.0	2.1
Pentachlorophenol	<9.80	<10.2	17.6	<12.5	35.2
Total Chlorophenols	<190	<185	<247	<207	16.6

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
3-monochlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
4-monochlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
Total Monochlorophenols	<30.7	<32.5	<31.9	<31.7	3.0
2,6-dichlorophenol	<10.2	13.4	55.5	<26.4	95.9
2,4 & 2,5-dichlorophenol	22.0	<10.8	37.6	<23.5	57.3
3,5-dichlorophenol	22.1	<10.8	<10.6	<14.5	45.3
2,3-dichlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
3,4-dichlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
Total Dichlorophenols	<74.8	<56.7	<125	<85.5	41.4
2,4,6-trichlorophenol	11.1	20.2	<10.6	<14.0	38.8
2,3,6-trichlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
2,3,5-trichlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
2,4,5-trichlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
2,3,4-trichlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
3,4,5-trichlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
Total Trichlorophenols	<62.2	<74.4	<63.8	<66.8	9.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
2,3,4,5-tetrachlorophenol	<10.2	<10.8	<10.6	<10.6	3.0
Total Tetrachlorophenols	<20.4	<21.7	<21.3	<21.1	3.0
Pentachlorophenol	<10.2	<10.8	18.6	<13.2	35.4
Total Chlorophenols	<198	<196	<261	<218	16.8

* 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 Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
3-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
4-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
Total Monochlorophenols	<0.56	<0.57	<0.57	<0.57	0.7
2,6-dichlorophenol	<0.19	0.24	0.99	<0.47	95.4
2,4 & 2,5-dichlorophenol	0.40	<0.19	0.67	<0.42	56.9
3,5-dichlorophenol	0.41	<0.19	<0.19	<0.26	47.8
2,3-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
3,4-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
Total Dichlorophenols	<1.38	<1.00	<2.23	<1.53	41.0
2,4,6-trichlorophenol	0.20	0.36	<0.19	<0.25	37.0
2,3,6-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
2,3,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
2,4,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
2,3,4-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
3,4,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
Total Trichlorophenols	<1.14	<1.31	<1.14	<1.20	8.2
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
2,3,4,5-tetrachlorophenol	<0.19	<0.19	<0.19	<0.19	0.7
Total Tetrachlorophenols	<0.38	<0.38	<0.38	<0.38	0.7
Pentachlorophenol	<0.19	<0.19	0.33	<0.24	34.6
Total Chlorophenols	<3.65	<3.45	<4.64	<3.91	16.3

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 ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
3-monochlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
4-monochlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
Total Monochlorophenols	<22.4	<37.7	<30.1	<31.7	<0.57
2,6-dichlorophenol	<18.7	<31.4	<25.0	<26.4	<0.47
2,4 & 2,5-dichlorophenol	<16.6	<28.0	<22.3	<23.5	<0.42
3,5-dichlorophenol	<10.3	<17.3	<13.8	<14.5	<0.26
2,3-dichlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
3,4-dichlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
Total Dichlorophenols	<60.6	<102	<81.1	<85.5	<1.53
2,4,6-trichlorophenol	<9.89	<16.6	<13.2	<14.0	<0.25
2,3,6-trichlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
2,3,5-trichlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
2,4,5-trichlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
2,3,4-trichlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
3,4,5-trichlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
Total Trichlorophenols	<47.3	<79.5	<63.3	<66.8	<1.20
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
2,3,4,5-tetrachlorophenol	<7.48	<12.6	<10.0	<10.6	<0.19
Total Tetrachlorophenols	<15.0	<25.1	<20.0	<21.1	<0.38
Pentachlorophenol	<9.37	<15.8	<12.5	<13.2	<0.24
Total Chlorophenols	<155	<260	<207	<218	<3.91

* 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 ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
Acenaphthene	221	26.6	45.0	36.1	37.6	0.69
Acenaphthylene	69.5	8.38	14.1	11.3	11.8	0.22
Anthracene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Benzo(a)Anthracene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Benzo(b)Fluoranthene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Benzo(k)Fluoranthene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Benzo(a)fluorene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Benzo(b)fluorene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Benzo(g,h,i)Perylene	49.8	6.00	10.1	8.13	8.48	0.16
Benzo(a)Pyrene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Benzo(e)Pyrene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Biphenyl	275	33.2	56.0	44.9	46.8	0.86
2-Chloronaphthalene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Chrysene/Triphenylene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Coronene	70.8	8.54	14.4	11.6	12.1	0.22
Dibenzo(a,c/a,h)Anthracene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Dibenzo(a,e)pyrene	<60	<7.23	<12.2	<9.80	<10.2	<0.19
9,10-dimethylanthracene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Fluoranthene	34.3	4.14	6.98	5.60	5.84	0.11
Fluorene	2260	272	460	369	385	7.08
Indeno(1,2,3-cd)Pyrene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
2-methylanthracene	17.2	2.07	3.50	2.81	2.93	0.054
3-Methylcholanthrene	<60	<7.23	<12.2	<9.80	<10.2	<0.19
1-Methylnaphthalene	83.9	10.1	17.1	13.7	14.3	0.26
2-Methylnaphthalene	154	18.6	31.3	25.1	26.2	0.48
1-Methylphenanthrene	111	13.4	22.6	18.1	18.9	0.35
9-Methylphenanthrene	13.3	1.60	2.71	2.17	2.27	0.042
Naphthalene	863	104	176	141	147	2.71
Perylene	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Phenanthrene	118	14.2	24.0	19.3	20.1	0.37
Picene	<60	<7.23	<12.2	<9.80	<10.2	<0.19
Pyrene	47.1	5.68	9.59	7.69	8.02	0.15
Tetralin	176	21.2	35.8	28.7	30.0	0.55
m-terphenyl	<12	<1.45	<2.44	<1.96	<2.04	<0.038
o-Terphenyl	<12	<1.45	<2.44	<1.96	<2.04	<0.038
p-terphenyl	<12	<1.45	<2.44	<1.96	<2.04	<0.038
Total	<4960	<598	<1010	<810	<845	<15.5

Dry Gas Volume Sampled (Rm^3*) :	4.913
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*) :	18.4

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

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	150	19.2	32.0	25.5	27.1	0.48
Acenaphthylene	126	16.1	26.9	21.4	22.8	0.40
Anthracene	14.0	1.79	2.99	2.38	2.53	0.045
Benzo(a)Anthracene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Benzo(b)Fluoranthene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Benzo(k)Fluoranthene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Benzo(a)fluorene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Benzo(b)fluorene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Benzo(g,h,i)Perylene	29.8	3.80	6.36	5.07	5.38	0.095
Benzo(a)Pyrene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Benzo(e)Pyrene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Biphenyl	269	34.3	57.4	45.7	48.6	0.86
2-Chloronaphthalene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Chrysene/Triphenylene	19.5	2.49	4.16	3.32	3.52	0.062
Coronene	<60	<7.66	<12.8	<10.2	<10.8	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Dibenzo(a,e)pyrene	<60	<7.66	<12.8	<10.2	<10.8	<0.19
9,10-dimethylanthracene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Fluoranthene	130	16.6	27.7	22.1	23.5	0.41
Fluorene	1310	167	279	223	237	4.16
Indeno(1,2,3-cd)Pyrene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
2-methylanthracene	149	19.0	31.8	25.3	26.9	0.47
3-Methylcholanthrene	<60	<7.66	<12.8	<10.2	<10.8	<0.19
1-Methylnaphthalene	225	28.7	48.0	38.3	40.6	0.72
2-Methylnaphthalene	451	57.6	96.2	76.7	81.5	1.43
1-Methylphenanthrene	113	14.4	24.1	19.2	20.4	0.36
9-Methylphenanthrene	68.0	8.68	14.5	11.6	12.3	0.22
Naphthalene	1920	245	410	326	347	6.10
Perylene	<12	<1.53	<2.56	<2.04	<2.17	<0.038
Phenanthrene	608	77.6	130	103	110	1.93
Picene	<60	<7.66	<12.8	<10.2	<10.8	<0.19
Pyrene	106	13.5	22.6	18.0	19.1	0.34
Tetralin	225	28.7	48.0	38.3	40.6	0.72
m-terphenyl	63.7	8.13	13.6	10.8	11.5	0.20
o-Terphenyl	22.6	2.89	4.82	3.84	4.08	0.072
p-terphenyl	16.7	2.13	3.56	2.84	3.02	0.053
Total	<6412	<819	<1368	<1090	<1158	<20.4

Dry Gas Volume Sampled (Rm³*) :	4.687
Actual Flowrate (m³/s) :	24.9
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.7
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 73
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	204	25.7	43.2	34.2	36.2	0.64
Acenaphthylene	26.6	3.34	5.63	4.47	4.72	0.084
Anthracene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Benzo(a)Anthracene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Benzo(b)Fluoranthene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Benzo(k)Fluoranthene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Benzo(a)fluorene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Benzo(b)fluorene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Benzo(g,h,i)Perylene	134	16.8	28.4	22.5	23.8	0.42
Benzo(a)Pyrene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Benzo(e)Pyrene	45.3	5.70	9.60	7.60	8.03	0.14
Biphenyl	250	31.4	53.0	42.0	44.3	0.79
2-Chloronaphthalene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Chrysene/Triphenylene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Coronene	125	15.7	26.5	21.0	22.2	0.39
Dibenzo(a,c/a,h)Anthracene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Dibenzo(a,e)pyrene	<60	<7.54	<12.7	<10.1	<10.6	<0.19
9,10-dimethylanthracene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Fluoranthene	92.2	11.6	19.5	15.5	16.3	0.29
Fluorene	2050	258	434	344	363	6.47
Indeno(1,2,3-cd)Pyrene	19.9	2.50	4.22	3.34	3.53	0.063
2-methylanthracene	32.0	4.02	6.78	5.37	5.67	0.10
3-Methylcholanthrene	<60	<7.54	<12.7	<10.1	<10.6	<0.19
1-Methylnaphthalene	70.9	8.92	15.0	11.9	12.6	0.22
2-Methylnaphthalene	107	13.5	22.7	18.0	19.0	0.34
1-Methylphenanthrene	109	13.7	23.1	18.3	19.3	0.34
9-Methylphenanthrene	20.5	2.58	4.34	3.44	3.63	0.065
Naphthalene	813	102	172	136	144	2.57
Perylene	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Phenanthrene	174	21.9	36.9	29.2	30.9	0.55
Picene	<60	<7.54	<12.7	<10.1	<10.6	<0.19
Pyrene	119	15.0	25.2	20.0	21.1	0.38
Tetralin	154	19.4	32.6	25.9	27.3	0.49
m-terphenyl	<12	<1.51	<2.54	<2.01	<2.13	<0.038
o-Terphenyl	<12	<1.51	<2.54	<2.01	<2.13	<0.038
p-terphenyl	<12	<1.51	<2.54	<2.01	<2.13	<0.038
Total	<4918	<618	<1042	<826	<872	<15.5

Dry Gas Volume Sampled (Rm³*) :	4.721
Actual Flowrate (m³/s) :	25.1
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

* 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 Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Acenaphthene	26.6	19.2	25.7	23.8	17.1
Acenaphthylene	8.38	16.1	3.34	9.27	69.2
Anthracene	<1.45	1.79	<1.51	<1.58	11.5
Benzo(a)Anthracene	<1.45	<1.53	<1.51	<1.50	3.0
Benzo(b)Fluoranthene	<1.45	<1.53	<1.51	<1.50	3.0
Benzo(k)Fluoranthene	<1.45	<1.53	<1.51	<1.50	3.0
Benzo(a)fluorene	<1.45	<1.53	<1.51	<1.50	3.0
Benzo(b)fluorene	<1.45	<1.53	<1.51	<1.50	3.0
Benzo(g,h,i)Perylene	6.00	3.80	16.8	8.89	78.6
Benzo(a)Pyrene	<1.45	<1.53	<1.51	<1.50	3.0
Benzo(e)Pyrene	<1.45	<1.53	5.70	<2.89	84.0
Biphenyl	33.2	34.3	31.4	33.0	4.4
2-Chloronaphthalene	<1.45	<1.53	<1.51	<1.50	3.0
Chrysene/Triphenylene	<1.45	2.49	<1.51	<1.82	32.2
Coronene	8.54	<7.66	15.7	<10.6	41.6
Dibenzo(a,c/a,h)Anthracene	<1.45	<1.53	<1.51	<1.50	3.0
Dibenzo(a,e)pyrene	<7.23	<7.66	<7.54	<7.48	3.0
9,10-dimethylanthracene	<1.45	<1.53	<1.51	<1.50	3.0
7,12-Dimethylbenzo(a)anthracene	<1.45	<1.53	<1.51	<1.50	3.0
Fluoranthene	4.14	16.6	11.6	10.8	58.2
Fluorene	272	167	258	232	24.5
Indeno(1,2,3-cd)Pyrene	<1.45	<1.53	2.50	<1.83	32.1
2-methylanthracene	2.07	19.0	4.02	8.37	111
3-Methylcholanthrene	<7.23	<7.66	<7.54	<7.48	3.0
1-Methylnaphthalene	10.1	28.7	8.92	15.9	69.8
2-Methylnaphthalene	18.6	57.6	13.5	29.9	80.8
1-Methylphenanthrene	13.4	14.4	13.7	13.8	3.9
9-Methylphenanthrene	1.60	8.68	2.58	4.29	89.5
Naphthalene	104	245	102	150	54.5
Perylene	<1.45	<1.53	<1.51	<1.50	3.0
Phenanthrene	14.2	77.6	21.9	37.9	91.3
Picene	<7.23	<7.66	<7.54	<7.48	3.0
Pyrene	5.68	13.5	15.0	11.4	43.9
Tetralin	21.2	28.7	19.4	23.1	21.5
m-terphenyl	<1.45	8.13	<1.51	<3.70	104
o-Terphenyl	<1.45	2.89	<1.51	<1.95	41.8
p-terphenyl	<1.45	2.13	<1.51	<1.70	22.4
Total	<598	<819	<618	<678	18.0

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	45.0	32.0	43.2	40.1	17.6
Acenaphthylene	14.1	26.9	5.63	15.6	68.8
Anthracene	<2.44	2.99	<2.54	<2.66	10.9
Benzo(a)Anthracene	<2.44	<2.56	<2.54	<2.51	2.5
Benzo(b)Fluoranthene	<2.44	<2.56	<2.54	<2.51	2.5
Benzo(k)Fluoranthene	<2.44	<2.56	<2.54	<2.51	2.5
Benzo(a)fluorene	<2.44	<2.56	<2.54	<2.51	2.5
Benzo(b)fluorene	<2.44	<2.56	<2.54	<2.51	2.5
Benzo(g,h,i)Perylene	10.1	6.36	28.4	15.0	78.7
Benzo(a)Pyrene	<2.44	<2.56	<2.54	<2.51	2.5
Benzo(e)Pyrene	<2.44	<2.56	9.60	<4.87	84.2
Biphenyl	56.0	57.4	53.0	55.4	4.1
2-Chloronaphthalene	<2.44	<2.56	<2.54	<2.51	2.5
Chrysene/Triphenylene	<2.44	4.16	<2.54	<3.05	31.6
Coronene	14.4	<12.8	26.5	<17.9	41.8
Dibenzo(a,c/a,h)Anthracene	<2.44	<2.56	<2.54	<2.51	2.5
Dibenzo(a,e)pyrene	<12.2	<12.8	<12.7	<12.6	2.5
9,10-dimethylanthracene	<2.44	<2.56	<2.54	<2.51	2.5
7,12-Dimethylbenzo(a)anthracene	<2.44	<2.56	<2.54	<2.51	2.5
Fluoranthene	6.98	27.7	19.5	18.1	57.8
Fluorene	460	279	434	391	25.0
Indeno(1,2,3-cd)Pyrene	<2.44	<2.56	4.22	<3.07	32.3
2-methylanthracene	3.50	31.8	6.78	14.0	110
3-Methylcholanthrene	<12.2	<12.8	<12.7	<12.6	2.5
1-Methylnaphthalene	17.1	48.0	15.0	26.7	69.2
2-Methylnaphthalene	31.3	96.2	22.7	50.1	80.3
1-Methylphenanthrene	22.6	24.1	23.1	23.3	3.3
9-Methylphenanthrene	2.71	14.5	4.34	7.19	89.0
Naphthalene	176	410	172	253	53.9
Perylene	<2.44	<2.56	<2.54	<2.51	2.5
Phenanthrene	24.0	130	36.9	63.5	90.8
Picene	<12.2	<12.8	<12.7	<12.6	2.5
Pyrene	9.59	22.6	25.2	19.1	43.7
Tetralin	35.8	48.0	32.6	38.8	20.9
m-terphenyl	<2.44	13.6	<2.54	<6.19	103
o-Terphenyl	<2.44	4.82	<2.54	<3.27	41.2
p-terphenyl	<2.44	3.56	<2.54	<2.85	21.8
Total	<1010	<1368	<1042	<1140	17.4

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	36.1	25.5	34.2	31.9	17.7
Acenaphthylene	11.3	21.4	4.47	12.4	68.7
Anthracene	<1.96	2.38	<2.01	<2.12	10.8
Benzo(a)Anthracene	<1.96	<2.04	<2.01	<2.00	2.1
Benzo(b)Fluoranthene	<1.96	<2.04	<2.01	<2.00	2.1
Benzo(k)Fluoranthene	<1.96	<2.04	<2.01	<2.00	2.1
Benzo(a)fluorene	<1.96	<2.04	<2.01	<2.00	2.1
Benzo(b)fluorene	<1.96	<2.04	<2.01	<2.00	2.1
Benzo(g,h,i)Perylene	8.13	5.07	22.5	11.9	78.2
Benzo(a)Pyrene	<1.96	<2.04	<2.01	<2.00	2.1
Benzo(e)Pyrene	<1.96	<2.04	7.60	<3.87	83.7
Biphenyl	44.9	45.7	42.0	44.2	4.5
2-Chloronaphthalene	<1.96	<2.04	<2.01	<2.00	2.1
Chrysene/Triphenylene	<1.96	3.32	<2.01	<2.43	31.6
Coronene	11.6	<10.2	21.0	<14.2	41.2
Dibenzo(a,c/a,h)Anthracene	<1.96	<2.04	<2.01	<2.00	2.1
Dibenzo(a,e)pyrene	<9.80	<10.2	<10.1	<10.0	2.1
9,10-dimethylanthracene	<1.96	<2.04	<2.01	<2.00	2.1
7,12-Dimethylbenzo(a)anthracene	<1.96	<2.04	<2.01	<2.00	2.1
Fluoranthene	5.60	22.1	15.5	14.4	57.7
Fluorene	369	223	344	312	25.1
Indeno(1,2,3-cd)Pyrene	<1.96	<2.04	3.34	<2.45	31.7
2-methylanthracene	2.81	25.3	5.37	11.2	110
3-Methylcholanthrene	<9.80	<10.2	<10.1	<10.0	2.1
1-Methylnaphthalene	13.7	38.3	11.9	21.3	69.2
2-Methylnaphthalene	25.1	76.7	18.0	39.9	80.2
1-Methylphenanthrene	18.1	19.2	18.3	18.5	3.1
9-Methylphenanthrene	2.17	11.6	3.44	5.72	89.0
Naphthalene	141	326	136	201	53.9
Perylene	<1.96	<2.04	<2.01	<2.00	2.1
Phenanthrene	19.3	103	29.2	50.6	90.8
Picene	<9.80	<10.2	<10.1	<10.0	2.1
Pyrene	7.69	18.0	20.0	15.2	43.4
Tetralin	28.7	38.3	25.9	30.9	21.0
m-terphenyl	<1.96	10.8	<2.01	<4.93	103
o-Terphenyl	<1.96	3.84	<2.01	<2.61	41.1
p-terphenyl	<1.96	2.84	<2.01	<2.27	21.7
Total	<810	<1090	<826	<909	17.3

* 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	37.6	27.1	36.2	33.6	17.0
Acenaphthylene	11.8	22.8	4.72	13.1	69.3
Anthracene	<2.04	2.53	<2.13	<2.23	11.6
Benzo(a)Anthracene	<2.04	<2.17	<2.13	<2.11	3.0
Benzo(b)Fluoranthene	<2.04	<2.17	<2.13	<2.11	3.0
Benzo(k)Fluoranthene	<2.04	<2.17	<2.13	<2.11	3.0
Benzo(a)fluorene	<2.04	<2.17	<2.13	<2.11	3.0
Benzo(b)fluorene	<2.04	<2.17	<2.13	<2.11	3.0
Benzo(g,h,i)Perylene	8.48	5.38	23.8	12.5	78.4
Benzo(a)Pyrene	<2.04	<2.17	<2.13	<2.11	3.0
Benzo(e)Pyrene	<2.04	<2.17	8.03	<4.08	83.8
Biphenyl	46.8	48.6	44.3	46.6	4.6
2-Chloronaphthalene	<2.04	<2.17	<2.13	<2.11	3.0
Chrysene/Triphenylene	<2.04	3.52	<2.13	<2.56	32.4
Coronene	12.1	<10.8	22.2	<15.0	41.4
Dibenzo(a,c/a,h)Anthracene	<2.04	<2.17	<2.13	<2.11	3.0
Dibenzo(a,e)pyrene	<10.2	<10.8	<10.6	<10.6	3.0
9,10-dimethylanthracene	<2.04	<2.17	<2.13	<2.11	3.0
7,12-Dimethylbenzo(a)anthracene	<2.04	<2.17	<2.13	<2.11	3.0
Fluoranthene	5.84	23.5	16.3	15.2	58.3
Fluorene	385	237	363	328	24.4
Indeno(1,2,3-cd)Pyrene	<2.04	<2.17	3.53	<2.58	31.9
2-methylanthracene	2.93	26.9	5.67	11.8	111
3-Methylcholanthrene	<10.2	<10.8	<10.6	<10.6	3.0
1-Methylnaphthalene	14.3	40.6	12.6	22.5	69.9
2-Methylnaphthalene	26.2	81.5	19.0	42.2	80.9
1-Methylphenanthrene	18.9	20.4	19.3	19.5	4.0
9-Methylphenanthrene	2.27	12.3	3.63	6.06	89.6
Naphthalene	147	347	144	213	54.6
Perylene	<2.04	<2.17	<2.13	<2.11	3.0
Phenanthrene	20.1	110	30.9	53.6	91.4
Picene	<10.2	<10.8	<10.6	<10.6	3.0
Pyrene	8.02	19.1	21.1	16.1	43.8
Tetralin	30.0	40.6	27.3	32.6	21.6
m-terphenyl	<2.04	11.5	<2.13	<5.23	104
o-Terphenyl	<2.04	4.08	<2.13	<2.75	41.9
p-terphenyl	<2.04	3.02	<2.13	<2.40	22.5
Total	<845	<1158	<872	<958	18.1

* 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	0.69	0.48	0.64	0.60	18.7
Acenaphthylene	0.22	0.40	0.084	0.23	67.9
Anthracene	<0.038	0.045	<0.038	<0.040	9.8
Benzo(a)Anthracene	<0.038	<0.038	<0.038	<0.038	0.7
Benzo(b)Fluoranthene	<0.038	<0.038	<0.038	<0.038	0.7
Benzo(k)Fluoranthene	<0.038	<0.038	<0.038	<0.038	0.7
Benzo(a)fluorene	<0.038	<0.038	<0.038	<0.038	0.7
Benzo(b)fluorene	<0.038	<0.038	<0.038	<0.038	0.7
Benzo(g,h,i)Perylene	0.16	0.095	0.42	0.22	77.7
Benzo(a)Pyrene	<0.038	<0.038	<0.038	<0.038	0.7
Benzo(e)Pyrene	<0.038	<0.038	0.14	<0.073	83.2
Biphenyl	0.86	0.86	0.79	0.84	4.8
2-Chloronaphthalene	<0.038	<0.038	<0.038	<0.038	0.7
Chrysene/Triphenylene	<0.038	0.062	<0.038	<0.046	30.5
Coronene	0.22	<0.19	0.39	<0.27	40.8
Dibenzo(a,c/a,h)Anthracene	<0.038	<0.038	<0.038	<0.038	0.7
Dibenzo(a,e)pyrene	<0.19	<0.19	<0.19	<0.19	0.7
9,10-dimethylanthracene	<0.038	<0.038	<0.038	<0.038	0.7
7,12-Dimethylbenzo(a)anthracene	<0.038	<0.038	<0.038	<0.038	0.7
Fluoranthene	0.11	0.41	0.29	0.27	56.9
Fluorene	7.08	4.16	6.47	5.91	26.1
Indeno(1,2,3-cd)Pyrene	<0.038	<0.038	0.063	<0.046	31.2
2-methylanthracene	0.054	0.47	0.10	0.21	110
3-Methylcholanthrene	<0.19	<0.19	<0.19	<0.19	0.7
1-Methylnaphthalene	0.26	0.72	0.22	0.40	68.2
2-Methylnaphthalene	0.48	1.43	0.34	0.75	79.2
1-Methylphenanthrene	0.35	0.36	0.34	0.35	2.3
9-Methylphenanthrene	0.042	0.22	0.065	0.11	88.2
Naphthalene	2.71	6.10	2.57	3.79	52.8
Perylene	<0.038	<0.038	<0.038	<0.038	0.7
Phenanthrene	0.37	1.93	0.55	0.95	90.0
Picene	<0.19	<0.19	<0.19	<0.19	0.7
Pyrene	0.15	0.34	0.38	0.29	42.5
Tetralin	0.55	0.72	0.49	0.58	20.2
m-terphenyl	<0.038	0.20	<0.038	<0.093	103
o-Terphenyl	<0.038	0.072	<0.038	<0.049	40.1
p-terphenyl	<0.038	0.053	<0.038	<0.043	20.7
Total	<15.5	<20.4	<15.5	<17.2	16.3

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 2 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	23.8	40.1	31.9	33.6	0.60
Acenaphthylene	9.27	15.6	12.4	13.1	0.23
Anthracene	<1.58	<2.66	<2.12	<2.23	<0.040
Benzo(a)Anthracene	<1.50	<2.51	<2.00	<2.11	<0.038
Benzo(b)Fluoranthene	<1.50	<2.51	<2.00	<2.11	<0.038
Benzo(k)Fluoranthene	<1.50	<2.51	<2.00	<2.11	<0.038
Benzo(a)fluorene	<1.50	<2.51	<2.00	<2.11	<0.038
Benzo(b)fluorene	<1.50	<2.51	<2.00	<2.11	<0.038
Benzo(g,h,i)Perylene	8.89	15.0	11.9	12.5	0.22
Benzo(a)Pyrene	<1.50	<2.51	<2.00	<2.11	<0.038
Benzo(e)Pyrene	<2.89	<4.87	<3.87	<4.08	<0.073
Biphenyl	33.0	55.4	44.2	46.6	0.84
2-Chloronaphthalene	<1.50	<2.51	<2.00	<2.11	<0.038
Chrysene/Triphenylene	<1.82	<3.05	<2.43	<2.56	<0.046
Coronene	<10.6	<17.9	<14.2	<15.0	<0.27
Dibenzo(a,c/a,h)Anthracene	<1.50	<2.51	<2.00	<2.11	<0.038
Dibenzo(a,e)pyrene	<7.48	<12.6	<10.0	<10.6	<0.19
9,10-dimethylanthracene	<1.50	<2.51	<2.00	<2.11	<0.038
7,12-Dimethylbenzo(a)anthracene	<1.50	<2.51	<2.00	<2.11	<0.038
Fluoranthene	10.8	18.1	14.4	15.2	0.27
Fluorene	232	391	312	328	5.91
Indeno(1,2,3-cd)Pyrene	<1.83	<3.07	<2.45	<2.58	<0.046
2-methylanthracene	8.37	14.0	11.2	11.8	0.21
3-Methylcholanthrene	<7.48	<12.6	<10.0	<10.6	<0.19
1-Methylnaphthalene	15.9	26.7	21.3	22.5	0.40
2-Methylnaphthalene	29.9	50.1	39.9	42.2	0.75
1-Methylphenanthrene	13.8	23.3	18.5	19.5	0.35
9-Methylphenanthrene	4.29	7.19	5.72	6.06	0.11
Naphthalene	150	253	201	213	3.79
Perylene	<1.50	<2.51	<2.00	<2.11	<0.038
Phenanthrene	37.9	63.5	50.6	53.6	0.95
Picene	<7.48	<12.6	<10.0	<10.6	<0.19
Pyrene	11.4	19.1	15.2	16.1	0.29
Tetralin	23.1	38.8	30.9	32.6	0.58
m-terphenyl	<3.70	<6.19	<4.93	<5.23	<0.093
o-Terphenyl	<1.95	<3.27	<2.61	<2.75	<0.049
p-terphenyl	<1.70	<2.85	<2.27	<2.40	<0.043
Total	<678	<1140	<909	<958	<17.2

* 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	<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	84.8	<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	14.6	<12
Fluorene	1030	72.8
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	19.9	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	166	<12
Naphthalene	260	136
Perylene	<12	<12
Phenanthrene	26.9	<12
Picene	<60	<60
Pyrene	14.3	<12
Tetralin	71.8	139
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<2216	<948

"<" 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*	Actual µg/m^3	Acetaldehyde Concentration Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acetaldehyde Emission Rate mg/s
1	8.37	0.0335	148	250	201	209	3.85
2	7.93	0.0311	153	255	203	216	3.80
3	6.77	0.0325	125	209	166	177	3.11
Average			142	238	190	201	3.59
Blank	6.56						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Actual µg/m^3	Formaldehyde Concentration Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Formaldehyde Emission Rate mg/s
1	4.27	0.0335	75.6	128	102	107	1.96
2	3.33	0.0311	64.2	107	85.4	90.8	1.60
3	3.11	0.0325	57.3	95.8	76.3	81.1	1.43
Average			65.7	110	88.0	92.9	1.66
Blank	2.11						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Actual µg/m^3	Acrolein Concentration Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acrolein Emission Rate mg/s
1	<0.1	0.0335	<1.77	<2.99	<2.40	<2.50	<0.046
2	<0.1	0.0311	<1.93	<3.22	<2.57	<2.73	<0.048
3	<0.1	0.0325	<1.84	<3.08	<2.45	<2.61	<0.046
Average			<1.85	<3.10	<2.47	<2.61	<0.047
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 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	0.18	5.28	8.92	7.15	7.46	0.14
Benzene	0.053	1.52	2.57	2.06	2.15	0.040
Bromodichloromethane	<0.01	<0.29	<0.48	<0.39	<0.41	<0.0075
Bromoform	<0.01	<0.29	<0.48	<0.39	<0.41	<0.0075
Bromomethane	<0.09	<2.58	<4.36	<3.50	<3.65	<0.067
1,3-Butadiene	<0.02	<0.57	<0.97	<0.78	<0.81	<0.015
2-Butanone	0.022	0.63	1.07	0.86	0.89	0.016
Carbon Tetrachloride	<0.01	<0.29	<0.48	<0.39	<0.41	<0.0075
Chloroform	0.013	0.37	0.63	0.51	0.53	0.0097
Cumene (Isopropylbenzene)	<0.02	<0.57	<0.97	<0.78	<0.81	<0.015
Dibromochloromethane	<0.01	<0.29	<0.48	<0.39	<0.41	<0.0075
Dichlorodifluoromethane	<0.02	<0.57	<0.97	<0.78	<0.81	<0.015
1,2-Dichloroethane	<0.01	<0.29	<0.48	<0.39	<0.41	<0.0075
trans,1,2-Dichloroethene	<0.01	<0.29	<0.48	<0.39	<0.41	<0.0075
1,1-Dichloroethene	<0.01	<0.29	<0.48	<0.39	<0.41	<0.0075
1,2-Dichloropropane	<0.01	<0.29	<0.48	<0.39	<0.41	<0.0075
Ethylbenzene	0.11	3.10	5.23	4.20	4.38	0.081
Ethylene Dibromide	<0.02	<0.57	<0.97	<0.78	<0.81	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	0.10	2.90	4.89	3.93	4.10	0.075
Methylene Chloride	1.03	29.6	50.0	40.1	41.8	0.77
Styrene	0.055	1.58	2.67	2.14	2.23	0.041
Tetrachloroethene	0.010	0.29	0.48	0.39	0.41	0.0075
Toluene	0.36	10.4	17.5	14.1	14.7	0.27
1,1,1-Trichloroethane	<0.01	<0.29	<0.48	<0.39	<0.41	<0.0075
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.57	<0.97	<0.78	<0.81	<0.015
Trichlorotrifluoroethane	<0.02	<0.57	<0.97	<0.78	<0.81	<0.015
Trichlorofluoromethane	<0.02	<0.57	<0.97	<0.78	<0.81	<0.015
M&P-Xylene	1.19	34.2	57.8	46.4	48.4	0.89
O-Xylene	0.38	10.9	18.4	14.7	15.4	0.28
Vinyl Chloride	<0.02	<0.57	<0.97	<0.78	<0.81	<0.015
Total	<3.85	<111	<187	<150	<156	<2.87

Dry Gas Volume Sampled (Rm^3*) :	0.0206
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*) :	18.4

* 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. 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 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	0.61	17.9	30.2	24.3	25.3	0.47
Benzene	0.087	2.56	4.31	3.46	3.61	0.066
Bromodichloromethane	0.018	0.53	0.89	0.72	0.75	0.014
Bromoform	<0.01	<0.29	<0.50	<0.40	<0.42	<0.0076
Bromomethane	<0.09	<2.64	<4.46	<3.58	<3.74	<0.069
1,3-Butadiene	<0.02	<0.59	<0.99	<0.80	<0.83	<0.015
2-Butanone	0.26	7.61	12.8	10.3	10.7	0.20
Carbon Tetrachloride	0.014	0.41	0.69	0.56	0.58	0.011
Chloroform	0.025	0.73	1.24	0.99	1.04	0.019
Cumene (Isopropylbenzene)	0.025	0.73	1.24	0.99	1.04	0.019
Dibromochloromethane	<0.01	<0.29	<0.50	<0.40	<0.42	<0.0076
Dichlorodifluoromethane	<0.02	<0.59	<0.99	<0.80	<0.83	<0.015
1,2-Dichloroethane	0.011	0.32	0.55	0.44	0.46	0.0084
trans,1,2-Dichloroethene	0.017	0.50	0.84	0.68	0.71	0.013
1,1-Dichloroethene	<0.01	<0.29	<0.50	<0.40	<0.42	<0.0076
1,2-Dichloropropane	<0.01	<0.29	<0.50	<0.40	<0.42	<0.0076
Ethylbenzene	0.18	5.32	8.98	7.20	7.51	0.14
Ethylene Dibromide	<0.02	<0.59	<0.99	<0.80	<0.83	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	0.055	1.62	2.73	2.19	2.28	0.042
Methylene Chloride	0.72	21.1	35.6	28.6	29.8	0.55
Styrene	0.042	1.23	2.08	1.67	1.74	0.032
Tetrachloroethene	0.015	0.44	0.74	0.60	0.62	0.011
Toluene	0.67	19.5	33.0	26.5	27.6	0.51
1,1,1-Trichloroethane	<0.01	<0.29	<0.50	<0.40	<0.42	<0.0076
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.59	<0.99	<0.80	<0.83	<0.015
Trichlorotrifluoroethane	<0.02	<0.59	<0.99	<0.80	<0.83	<0.015
Trichlorofluoromethane	<0.02	<0.59	<0.99	<0.80	<0.83	<0.015
M&P-Xylene	0.84	24.8	41.8	33.5	35.0	0.64
O-Xylene	0.27	7.84	13.2	10.6	11.1	0.20
Vinyl Chloride	<0.02	<0.59	<0.99	<0.80	<0.83	<0.015
Total	<4.13	<121	<205	<164	<171	<3.16

Dry Gas Volume Sampled (Rm^3*) :	0.0202
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*) :	18.4

* 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. 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. 3

Compound	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	0.49	14.8	25.0	20.1	20.9	0.39
Benzene	0.051	1.53	2.59	2.08	2.17	0.040
Bromodichloromethane	0.012	0.36	0.61	0.49	0.51	0.0094
Bromoform	<0.01	<0.30	<0.51	<0.41	<0.42	<0.0078
Bromomethane	<0.09	<2.70	<4.57	<3.66	<3.82	<0.070
1,3-Butadiene	<0.02	<0.60	<1.01	<0.81	<0.85	<0.016
2-Butanone	0.18	5.29	8.93	7.16	7.47	0.14
Carbon Tetrachloride	<0.01	<0.30	<0.51	<0.41	<0.42	<0.0078
Chloroform	0.017	0.51	0.86	0.69	0.72	0.013
Cumene (Isopropylbenzene)	<0.02	<0.60	<1.01	<0.81	<0.85	<0.016
Dibromochloromethane	<0.01	<0.30	<0.51	<0.41	<0.42	<0.0078
Dichlorodifluoromethane	<0.02	<0.60	<1.01	<0.81	<0.85	<0.016
1,2-Dichloroethane	<0.01	<0.30	<0.51	<0.41	<0.42	<0.0078
trans,1,2-Dichloroethene	0.012	0.36	0.61	0.49	0.51	0.0094
1,1-Dichloroethene	<0.01	<0.30	<0.51	<0.41	<0.42	<0.0078
1,2-Dichloropropane	<0.01	<0.30	<0.51	<0.41	<0.42	<0.0078
Ethylbenzene	0.13	3.79	6.39	5.13	5.35	0.098
Ethylene Dibromide	<0.02	<0.60	<1.01	<0.81	<0.85	<0.016
Mesitylene (1,3,5-Trimethylbenzene)	0.040	1.20	2.03	1.63	1.70	0.031
Methylene Chloride	0.81	24.3	41.0	32.9	34.4	0.63
Styrene	0.031	0.93	1.57	1.26	1.32	0.024
Tetrachloroethene	0.014	0.42	0.71	0.57	0.59	0.011
Toluene	0.48	14.3	24.1	19.4	20.2	0.37
1,1,1-Trichloroethane	<0.01	<0.30	<0.51	<0.41	<0.42	<0.0078
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.60	<1.01	<0.81	<0.85	<0.016
Trichlorotrifluoroethane	<0.02	<0.60	<1.01	<0.81	<0.85	<0.016
Trichlorofluoromethane	<0.02	<0.60	<1.01	<0.81	<0.85	<0.016
M&P-Xylene	0.61	18.3	30.9	24.8	25.9	0.48
O-Xylene	0.19	5.74	9.69	7.77	8.11	0.15
Vinyl Chloride	<0.02	<0.60	<1.01	<0.81	<0.85	<0.016
Total	<3.38	<101	<171	<137	<143	<2.64

Dry Gas Volume Sampled (Rm³*) :	0.0197
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.2
Wet Reference Flowrate (Rm³/s*) :	18.4

* 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. 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. 3	Average	
	µg/m^3	µg/m^3	µg/m^3	µg/m^3	%
Acetone	5.28	17.9	14.8	12.7	52.0
Benzene	1.52	2.56	1.53	1.87	31.8
Bromodichloromethane	<0.29	0.53	0.36	<0.39	31.6
Bromoform	<0.29	<0.29	<0.30	<0.29	2.3
Bromomethane	<2.58	<2.64	<2.70	<2.64	2.3
1,3-Butadiene	<0.57	<0.59	<0.60	<0.59	2.3
2-Butanone	0.63	7.61	5.29	4.51	78.8
Carbon Tetrachloride	<0.29	0.41	<0.30	<0.33	20.5
Chloroform	0.37	0.73	0.51	0.54	33.8
Cumene (Isopropylbenzene)	<0.57	0.73	<0.60	<0.64	13.5
Dibromochloromethane	<0.29	<0.29	<0.30	<0.29	2.3
Dichlorodifluoromethane	<0.57	<0.59	<0.60	<0.59	2.3
1,2-Dichloroethane	<0.29	0.32	<0.30	<0.30	6.0
trans,1,2-Dichloroethene	<0.29	0.50	0.36	<0.38	28.2
1,1-Dichloroethene	<0.29	<0.29	<0.30	<0.29	2.3
1,2-Dichloropropane	<0.29	<0.29	<0.30	<0.29	2.3
Ethylbenzene	3.10	5.32	3.79	4.07	27.9
Ethylene Dibromide	<0.57	<0.59	<0.60	<0.59	2.3
Mesitylene (1,3,5-Trimethylbenzene)	2.90	1.62	1.20	1.91	46.4
Methylene Chloride	29.6	21.1	24.3	25.0	17.2
Styrene	1.58	1.23	0.93	1.25	26.0
Tetrachloroethene	0.29	0.44	0.42	0.38	21.8
Toluene	10.4	19.5	14.3	14.7	31.1
1,1,1-Trichloroethane	<0.29	<0.29	<0.30	<0.29	2.3
Trichloroethene/1,1,2-Trichloroethene	<0.57	<0.59	<0.60	<0.59	2.3
Trichlorotrifluoroethane	<0.57	<0.59	<0.60	<0.59	2.3
Trichlorofluoromethane	<0.57	<0.59	<0.60	<0.59	2.3
M&P-Xylene	34.2	24.8	18.3	25.8	31.1
O-Xylene	10.9	7.84	5.74	8.15	31.7
Vinyl Chloride	<0.57	<0.59	<0.60	<0.59	2.3
Total	<111	<121	<101	<111	9.0

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. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	8.92	30.2	25.0	21.4	52.0
Benzene	2.57	4.31	2.59	3.16	31.8
Bromodichloromethane	<0.48	0.89	0.61	<0.66	31.6
Bromoform	<0.48	<0.50	<0.51	<0.50	2.3
Bromomethane	<4.36	<4.46	<4.57	<4.46	2.3
1,3-Butadiene	<0.97	<0.99	<1.01	<0.99	2.3
2-Butanone	1.07	12.8	8.93	7.61	78.8
Carbon Tetrachloride	<0.48	0.69	<0.51	<0.56	20.5
Chloroform	0.63	1.24	0.86	0.91	33.8
Cumene (Isopropylbenzene)	<0.97	1.24	<1.01	<1.07	13.5
Dibromochloromethane	<0.48	<0.50	<0.51	<0.50	2.3
Dichlorodifluoromethane	<0.97	<0.99	<1.01	<0.99	2.3
1,2-Dichloroethane	<0.48	0.55	<0.51	<0.51	6.0
trans,1,2-Dichloroethene	<0.48	0.84	0.61	<0.65	28.2
1,1-Dichloroethene	<0.48	<0.50	<0.51	<0.50	2.3
1,2-Dichloropropane	<0.48	<0.50	<0.51	<0.50	2.3
Ethylbenzene	5.23	8.98	6.39	6.87	27.9
Ethylene Dibromide	<0.97	<0.99	<1.01	<0.99	2.3
Mesitylene (1,3,5-Trimethylbenzene)	4.89	2.73	2.03	3.22	46.4
Methylene Chloride	50.0	35.6	41.0	42.2	17.2
Styrene	2.67	2.08	1.57	2.11	26.0
Tetrachloroethene	0.48	0.74	0.71	0.65	21.8
Toluene	17.5	33.0	24.1	24.9	31.1
1,1,1-Trichloroethane	<0.48	<0.50	<0.51	<0.50	2.3
Trichloroethene/1,1,2-Trichloroethene	<0.97	<0.99	<1.01	<0.99	2.3
Trichlorotrifluoroethane	<0.97	<0.99	<1.01	<0.99	2.3
Trichlorofluoromethane	<0.97	<0.99	<1.01	<0.99	2.3
M&P-Xylene	57.8	41.8	30.9	43.5	31.1
O-Xylene	18.4	13.2	9.69	13.8	31.7
Vinyl Chloride	<0.97	<0.99	<1.01	<0.99	2.3
Total	<187	<205	<171	<188	9.0

* 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. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Acetone	7.15	24.3	20.1	17.2	52.0
Benzene	2.06	3.46	2.08	2.53	31.8
Bromodichloromethane	<0.39	0.72	0.49	<0.53	31.6
Bromoform	<0.39	<0.40	<0.41	<0.40	2.3
Bromomethane	<3.50	<3.58	<3.66	<3.58	2.3
1,3-Butadiene	<0.78	<0.80	<0.81	<0.80	2.3
2-Butanone	0.86	10.3	7.16	6.11	78.8
Carbon Tetrachloride	<0.39	0.56	<0.41	<0.45	20.5
Chloroform	0.51	0.99	0.69	0.73	33.8
Cumene (Isopropylbenzene)	<0.78	0.99	<0.81	<0.86	13.5
Dibromochloromethane	<0.39	<0.40	<0.41	<0.40	2.3
Dichlorodifluoromethane	<0.78	<0.80	<0.81	<0.80	2.3
1,2-Dichloroethane	<0.39	0.44	<0.41	<0.41	6.0
trans,1,2-Dichloroethene	<0.39	0.68	0.49	<0.52	28.2
1,1-Dichloroethene	<0.39	<0.40	<0.41	<0.40	2.3
1,2-Dichloropropane	<0.39	<0.40	<0.41	<0.40	2.3
Ethylbenzene	4.20	7.20	5.13	5.51	27.9
Ethylene Dibromide	<0.78	<0.80	<0.81	<0.80	2.3
Mesitylene (1,3,5-Trimethylbenzene)	3.93	2.19	1.63	2.58	46.4
Methylene Chloride	40.1	28.6	32.9	33.9	17.2
Styrene	2.14	1.67	1.26	1.69	26.0
Tetrachloroethene	0.39	0.60	0.57	0.52	21.8
Toluene	14.1	26.5	19.4	20.0	31.1
1,1,1-Trichloroethane	<0.39	<0.40	<0.41	<0.40	2.3
Trichloroethene/1,1,2-Trichloroethene	<0.78	<0.80	<0.81	<0.80	2.3
Trichlorotrifluoroethane	<0.78	<0.80	<0.81	<0.80	2.3
Trichlorofluoromethane	<0.78	<0.80	<0.81	<0.80	2.3
M&P-Xylene	46.4	33.5	24.8	34.9	31.1
O-Xylene	14.7	10.6	7.77	11.0	31.7
Vinyl Chloride	<0.78	<0.80	<0.81	<0.80	2.3
Total	<150	<164	<137	<150	9.0

* 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 µg/Rm^3*	Test No. 2 µg/Rm^3*	Test No. 3 µg/Rm^3*	Average µg/Rm^3*	%
Acetone	7.46	25.3	20.9	17.9	52.0
Benzene	2.15	3.61	2.17	2.64	31.8
Bromodichloromethane	<0.41	0.75	0.51	<0.55	31.6
Bromoform	<0.41	<0.42	<0.42	<0.42	2.3
Bromomethane	<3.65	<3.74	<3.82	<3.74	2.3
1,3-Butadiene	<0.81	<0.83	<0.85	<0.83	2.3
2-Butanone	0.89	10.7	7.47	6.37	78.8
Carbon Tetrachloride	<0.41	0.58	<0.42	<0.47	20.5
Chloroform	0.53	1.04	0.72	0.76	33.8
Cumene (Isopropylbenzene)	<0.81	1.04	<0.85	<0.90	13.5
Dibromochloromethane	<0.41	<0.42	<0.42	<0.42	2.3
Dichlorodifluoromethane	<0.81	<0.83	<0.85	<0.83	2.3
1,2-Dichloroethane	<0.41	0.46	<0.42	<0.43	6.0
trans,1,2-Dichloroethene	<0.41	0.71	0.51	<0.54	28.2
1,1-Dichloroethene	<0.41	<0.42	<0.42	<0.42	2.3
1,2-Dichloropropane	<0.41	<0.42	<0.42	<0.42	2.3
Ethylbenzene	4.38	7.51	5.35	5.75	27.9
Ethylene Dibromide	<0.81	<0.83	<0.85	<0.83	2.3
Mesitylene (1,3,5-Trimethylbenzene)	4.10	2.28	1.70	2.69	46.4
Methylene Chloride	41.8	29.8	34.4	35.3	17.2
Styrene	2.23	1.74	1.32	1.76	26.0
Tetrachloroethene	0.41	0.62	0.59	0.54	21.8
Toluene	14.7	27.6	20.2	20.8	31.1
1,1,1-Trichloroethane	<0.41	<0.42	<0.42	<0.42	2.3
Trichloroethene/1,1,2-Trichloroethene	<0.81	<0.83	<0.85	<0.83	2.3
Trichlorotrifluoroethane	<0.81	<0.83	<0.85	<0.83	2.3
Trichlorofluoromethane	<0.81	<0.83	<0.85	<0.83	2.3
M&P-Xylene	48.4	35.0	25.9	36.4	31.1
O-Xylene	15.4	11.1	8.11	11.5	31.7
Vinyl Chloride	<0.81	<0.83	<0.85	<0.83	2.3
Total	<156	<171	<143	<157	9.0

* 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 Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	Coefficient of Variation %
Acetone	0.14	0.47	0.39	0.33	52.0
Benzene	0.040	0.066	0.040	0.049	31.8
Bromodichloromethane	<0.0075	0.014	0.0094	<0.010	31.6
Bromoform	<0.0075	<0.0076	<0.0078	<0.0076	2.3
Bromomethane	<0.067	<0.069	<0.070	<0.069	2.3
1,3-Butadiene	<0.015	<0.015	<0.016	<0.015	2.3
2-Butanone	0.016	0.20	0.14	0.12	78.8
Carbon Tetrachloride	<0.0075	0.011	<0.0078	<0.0087	20.5
Chloroform	0.0097	0.019	0.013	0.014	33.8
Cumene (Isopropylbenzene)	<0.015	0.019	<0.016	<0.017	13.5
Dibromochloromethane	<0.0075	<0.0076	<0.0078	<0.0076	2.3
Dichlorodifluoromethane	<0.015	<0.015	<0.016	<0.015	2.3
1,2-Dichloroethane	<0.0075	0.0084	<0.0078	<0.0079	6.0
trans,1,2-Dichloroethene	<0.0075	0.013	0.0094	<0.010	28.2
1,1-Dichloroethene	<0.0075	<0.0076	<0.0078	<0.0076	2.3
1,2-Dichloropropane	<0.0075	<0.0076	<0.0078	<0.0076	2.3
Ethylbenzene	0.081	0.14	0.098	0.11	27.9
Ethylene Dibromide	<0.015	<0.015	<0.016	<0.015	2.3
Mesitylene (1,3,5-Trimethylbenzene)	0.075	0.042	0.031	0.050	46.4
Methylene Chloride	0.77	0.55	0.63	0.65	17.2
Styrene	0.041	0.032	0.024	0.032	26.0
Tetrachloroethene	0.0075	0.011	0.011	0.010	21.8
Toluene	0.27	0.51	0.37	0.38	31.1
1,1,1-Trichloroethane	<0.0075	<0.0076	<0.0078	<0.0076	2.3
Trichloroethene/1,1,2-Trichloroethene	<0.015	<0.015	<0.016	<0.015	2.3
Trichlorotrifluoroethane	<0.015	<0.015	<0.016	<0.015	2.3
Trichlorofluoromethane	<0.015	<0.015	<0.016	<0.015	2.3
M&P-Xylene	0.89	0.64	0.48	0.67	31.1
O-Xylene	0.28	0.20	0.15	0.21	31.7
Vinyl Chloride	<0.015	<0.015	<0.016	<0.015	2.3
Total	<2.87	<3.16	<2.64	<2.89	9.0

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 2 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	12.7	21.4	17.2	17.9	0.33
Benzene	1.87	3.16	2.53	2.64	0.049
Bromodichloromethane	<0.39	<0.66	<0.53	<0.55	<0.010
Bromoform	<0.29	<0.50	<0.40	<0.42	<0.0076
Bromomethane	<2.64	<4.46	<3.58	<3.74	<0.069
1,3-Butadiene	<0.59	<0.99	<0.80	<0.83	<0.015
2-Butanone	4.51	7.61	6.11	6.37	0.12
Carbon Tetrachloride	<0.33	<0.56	<0.45	<0.47	<0.0087
Chloroform	0.54	0.91	0.73	0.76	0.014
Cumene (Isopropylbenzene)	<0.64	<1.07	<0.86	<0.90	<0.017
Dibromochloromethane	<0.29	<0.50	<0.40	<0.42	<0.0076
Dichlorodifluoromethane	<0.59	<0.99	<0.80	<0.83	<0.015
1,2-Dichloroethane	<0.30	<0.51	<0.41	<0.43	<0.0079
trans,1,2-Dichloroethene	<0.38	<0.65	<0.52	<0.54	<0.010
1,1-Dichloroethene	<0.29	<0.50	<0.40	<0.42	<0.0076
1,2-Dichloropropane	<0.29	<0.50	<0.40	<0.42	<0.0076
Ethylbenzene	4.07	6.87	5.51	5.75	0.11
Ethylene Dibromide	<0.59	<0.99	<0.80	<0.83	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	1.91	3.22	2.58	2.69	0.050
Methylene Chloride	25.0	42.2	33.9	35.3	0.65
Styrene	1.25	2.11	1.69	1.76	0.032
Tetrachloroethene	0.38	0.65	0.52	0.54	0.010
Toluene	14.7	24.9	20.0	20.8	0.38
1,1,1-Trichloroethane	<0.29	<0.50	<0.40	<0.42	<0.0076
Trichloroethene/1,1,2-Trichloroethene	<0.59	<0.99	<0.80	<0.83	<0.015
Trichlorotrifluoroethane	<0.59	<0.99	<0.80	<0.83	<0.015
Trichlorofluoromethane	<0.59	<0.99	<0.80	<0.83	<0.015
M&P-Xylene	25.8	43.5	34.9	36.4	0.67
O-Xylene	8.15	13.8	11.0	11.5	0.21
Vinyl Chloride	<0.59	<0.99	<0.80	<0.83	<0.015
Total	<111	<188	<150	<157	<2.89

* 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 11A/11B µg	Field Blank 2 Tube 2A/2B µg	Trip Blank Tube 1A/1B µg	Method Blank µg
Acetone	<0.1	0.11	<0.1	<0.1
Benzene	<0.05	<0.05	<0.05	<0.05
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01
Bromoform	<0.01	<0.01	<0.01	<0.01
Bromomethane	<0.09	<0.09	<0.09	<0.09
1,3-Butadiene	<0.02	<0.02	<0.02	<0.02
2-Butanone	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.02
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.01
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.01
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.01
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	<0.01	<0.01	<0.01	<0.01
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.02
Methylene Chloride	0.12	0.11	<0.1	<0.1
Styrene	<0.02	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01	<0.01
Toluene	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.02	<0.02	<0.02
Trichlorotrifluoroethane	<0.02	<0.02	<0.02	<0.02
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.02
M&P-Xylene	<0.03	<0.03	<0.03	<0.03
O-Xylene	<0.01	<0.01	<0.01	<0.01
Vinyl Chloride	<0.02	<0.02	<0.02	<0.02
Total	<0.78	<0.79	<0.76	<0.76

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
(88 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)

May 7, 2020

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 (Acting),
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 Dr. Schroeder:

RE: Durham York Energy Centre
Rescheduled Voluntary Spring 2020 Source Test
Environmental Compliance Approval #7306-8FDKNX

As indicated in the enclosed letter dated March 5, 2020, the Regional Municipalities of Durham and York (Regions) were planning to complete a voluntary Source Test at the Durham York Energy Centre (DYEC) commencing on May 11, 2020. The purpose of the voluntary 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.

Due to the ongoing COVID-19 pandemic the voluntary source test is not being conducted in May as planned. Key test personnel are not able to travel to the facility and only personnel essential to the safe operation of the DYEC are allowed on site to protect the health of the DYEC workforce.

At this time, rescheduling the voluntary stack test is pending the easing of restrictions related to the COVID-19 pandemic and the ability to protect the health of all personnel involved. Alternative dates in the late spring/ summer will be used when it is safe to undertake this work.

All other information regarding the stack test remain unchanged from the March 5 letter which is attached for your reference.

Please accept this courtesy notification of the rescheduled 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, P.Eng.
Director (Acting), 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
P. Dunn, Senior Environmental Officer, York Durham District Office, MECP
J. Butchart, Issues Project Coordinator (Acting), York Durham District Office, MECP
M. Neild, Facility Manager, Covanta
R. Kohler, Environmental Engineer, Covanta
A. Huxter, Environmental Specialist, Covanta
S. Dittman, Supervisor, Technical Services, Waste Management, York Region
A. Porteous, Supervisor, Waste Services, Durham Region
A. Evans, Project Manager, Waste Planning and Technical Services, Durham Region

Enclosure - March 5, 2020 Voluntary Stack Test Notification Letter

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 5, 2020

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 (Acting),
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 Dr. Schroeder:

RE: Durham York Energy Centre
Voluntary Spring 2020 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 11, 2020. 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 2017 Pre-Test Plan for Source Testing (Pre-Test Plan No. 21800) with the exception of the following three modifications. The 2017 test plan has been used for all subsequent Source Tests since development and approval.

The proposed changes reflect responses to MECP comments in relation to the fall 2019 source testing, as well as alternate methods for testing to allow the usage of local laboratory facilities and to improve data quality.

1. Following comments received from Guillermo Azocar on December 10, 2019 regarding the rinsing of glassware for sample recovery during Environment Canada Method EPS 1/RM/2testing: Per the 2017 pre-test plan ORTECH has rinsed the glassware in the same

manner as the other components of the SVOC test trains (note that the back half glassware and front half particulate fraction glassware are all rinsed 3x as per the method) but has incorporated additional rinses (>3) of these pieces of glassware. Going forward ORTECH will soak the 3 pieces of glassware in question (filter bottom, filter bottom U-tube, and trap inlet stem) so that there is no longer a perceived deviation from the test method.

2. ORTECH is requesting a change to SLO VOST: ORTECH currently perform 3 pairs of tubes for each test on each unit for VOST, but would like approval to switch to SLO VOST and use a single pair of tubes per test sampling at 0.5 LPM for 40 minutes (per the method) for 3 test runs. SLO VOST is the preferred approach to follow when low concentrations of the VOCs of interest is expected, as the lower concentrations require more residence time for optimal adsorption by the traps.
3. Per discussion with Dr. Ron McLeod at ALS the laboratory anticipates improvements to the detection limits using the NCASI Method ISS/FP-A105.01 in place of the Carb 430 Method (with the Ashland modification) that is currently used to sample for aldehydes at Covanta. Based on preliminary discussions, we understand that the NCASI Method ISS/FP-A105.01 is commonly used when acrolein is being tested, and provides better reliability on the results.

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, P.Eng.
Acting 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
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c. G. Azocar, Source Assessment Specialist, Technology Standards Section, MECP
P. Dunn, Senior Environmental Officer, York Durham District Office, MECP
J. Butchart, Issues Project Coordinator (Acting), York Durham District Office, MECP
M. Neild, Facility Manager, Covanta
R. Kohler, Environmental Engineer, Covanta
A. Huxter, Environmental Specialist, Covanta
S. Dittman, Supervisor, Technical Services, Waste Management, 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. **<u>EQUIPMENT and SITE INSPECTIONS and MAINTENANCE</u>**

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 (°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. <u>TESTING, MONITORING and AUDITING</u>

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. **<u>NUISANCE IMPACT CONTROL and HOUSEKEEPING</u>**

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. <u>SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER</u>

(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
	2-monochlorophenol (2-MCP)
Monochlorobenzene (MCB)	3-monochlorophenol (3-MCP)
1,2-Dichlorobenzene (1,2-DCB)	4-monochlorophenol (4-MCP)
1,3-Dichlorobenzene (1,3-DCB)	2,3-dichlorophenol (2,3-DCP)
1,4-Dichlorobenzene (1,4-DCB)	2,4-dichlorophenol (2,4-DCP)
1,2,3-Trichlorobenzene (1,2,3-TCB)	2,5-dichlorophenol (2,5-DCP)
1,2,4-Trichlorobenzene (1,2,4-TCB)	2,6-dichlorophenol (2,6-DCP)
1,3,5-Trichlorobenzene (1,3,5-TCB)	3,4-dichlorophenol (3,4-DCP)
1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB)	3,5-dichlorophenol (3,5-DCP)
1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB)	2,3,4-trichlorophenol (2,3,4-T3CP)
1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB)	2,3,5-trichlorophenol (2,3,5-T3CP)
Pentachlorobenzene (PeCB)	2,3,6-trichlorophenol (2,3,6-T3CP)
Hexachlorobenzene (HxCB)	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.

<u>**SCHEDULE "F"**</u>

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 °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

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 forWaste 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

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.

APPENDIX 4

Particulate and Metals Field Data Sheets
(30 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Metals
Test Date	15 June 20
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22001
Page	1 of 5
Probe No.:	6B
Meter Box No.:	Team 2
Impinger Box No.:	5

Pitot Factor	0.850	
DGMCF	1.001	
Barometric Pressure	30.15	"Hg
Static Pressure	-3.52	"H2O
Nozzle Size	0.2544	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

Probe Liner Glass / Metal /Teflon / Other________

Nozzle Glass / Metal / Other________

Union None /Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	456.1	g
WCBDA	20.3	g

Combustion Gas Concentration

Oxygen	8.66	%
Carbon Dioxide	10.46	%
Carbon Monoxide	10.3	ppm

Measuring Device	MII Numbers
Probe / Pitot	57
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements	
1	0.2550
2	0.2540
3	0.2545
4	0.2540
Average:	0.2544

Site Diagram

Notes:

Field Data Sheet

Date: June 15, 2020	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	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	313.96	0.63	0.68	279	257	250	55	150	72	72	1.50	3.0
	2.5	315.65	0.64	0.68	269	257	252	53	197	72	73	1.50	3.0
	5	317.33	0.65	0.69	269	256	250	52	223	72	73	1.55	3.0
2	7.5	319.02	0.64	0.68	273	254	248	50	220	72	73	1.55	3.0
	10	320.72	0.63	0.68	268	256	250	49	222	72	74	1.55	3.0
	12.5	322.40	0.61	0.66	273	254	248	49	214	72	74	1.55	3.0
3	15	324.08	0.67	0.69	275	256	252	49	213	72	74	1.65	3.0
	17.5	325.82	0.66	0.69	286	254	250	49	222	73	75	1.65	3.0
	20	327.56	0.68	0.70	286	257	244	49	230	73	76	1.70	3.0
4	22.5	329.34	0.69	0.70	286	257	256	49	250	73	77	1.70	3.0
	25	331.12	0.66	0.69	287	257	260	49	256	73	77	1.65	3.0
	27.5	332.87	0.67	0.69	286	260	262	50	244	73	76	1.65	3.0
5	30	334.63	0.65	0.68	286	256	263	49	255	76	78	1.60	3.0
	32.5	336.34	0.64	0.68	286	256	264	48	250	74	78	1.60	3.0
	35	337.04	0.64	0.68	285	256	254	48	246	74	78	1.60	3.0
6	37.5	339.76	0.60	0.66	285	256	251	47	241	74	79	1.50	3.0
	40	341.43	0.60	0.66	284	258	248	52	170	76	77	1.50	3.0
	42.5	343.11	0.61	0.66	285	256	244	47	169	76	77	1.50	3.0
7	45	344.76	0.55	0.63	285	258	245	44	193	76	77	1.40	3.0
	47.5	346.39	0.56	0.64	284	257	248	42	216	76	78	1.40	3.0
	50	348.01	0.56	0.64	284	257	244	42	231	77	78	1.40	3.0

Traverse: 2			
Start Time: 10:02	Initial Leak Check: .001	cfm@ 16	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22001
Operator : JB

Stopped 10:39

Re-start 11:34

Field Data Sheet

Date: June 15, 2020	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	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
	*	*	*		*			*		*	*	*	*
8	52.5	349.63	0.59	0.65	284	254	246	42	216	77	78	1.5	3.0
	55	351.27	0.62	0.67	285	258	254	42	248	77	79	1.6	3.0
	57.5	352.99	0.62	0.67	284	257	256	42	250	77	79	1.5	3.0
9	60	354.65	0.64	0.68	284	259	262	42	268	77	80	1.60	3.0
	62.5	356.39	0.63	0.68	284	257	264	42	262	77	80	1.55	3.0
	65	358.09	0.62	0.67	284	258	266	42	257	77	80	1.55	3.0
10	67.5	359.78	0.65	0.69	284	259	260	42	260	77	80	1.60	3.0
	70	361.52	0.68	0.70	284	257	262	42	258	77	81	1.70	3.0
	72.5	363.27	0.67	0.70	284	259	261	42	250	77	82	1.70	3.0
11	75	365.02	0.66	0.69	284	259	254	42	245	77	81	1.70	3.0
	77.5	366.72	0.68	0.70	283	259	253	43	244	77	82	1.75	3.0
	80	368.42	0.67	0.70	284	258	260	43	240	77	82	1.75	3.0
12	82.5	370.24	0.69	0.71	284	256	258	43	240	78	82	1.75	3.5
	85	371.97	0.72	0.73	283	260	259	43	248	79	83	1.80	4.5
	87.5	373.79	0.71	0.72	284	261	266	44	244	79	83	1.80	5.0
	90	375.65											

Traverse: 2

Start Time:	Initial Leak Check: 0.001	cfm@ 18	"Hg
Final Time: 12:27	Final Leak Check:	cfm@	"Hg

Stopped 12:27

Project No.: 22001

Operator: JK

Field Data Sheet

Date: June 15, 2020	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	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	377.21	0.65	0.69	283	259	257	58	196	77	78	1.60	3.0
	2.5	378.97	0.66	0.69	283	259	257	58	230	77	78	1.60	3.0
	5	380.73	0.66	0.69	283	260	257	55	244	77	78	1.60	3.0
2	7.5	382.49	0.66	0.69	283	259	257	57	246	77	78	1.60	3.0
	10	384.24	0.66	0.69	283	258	257	49	246	77	78	1.60	3.0
	12.5	386.00	0.66	0.69	283	257	256	48	245	77	78	1.60	3.0
3	15	387.78	0.71	0.72	283	258	256	48	245	77	78	1.70	3.0
	17.5	389.54	0.71	0.72	283	257	256	48	246	77	79	1.70	3.0
	20	391.35	0.72	0.72	283	256	255	48	244	78	79	1.70	3.0
4	22.5	393.13	0.73	0.73	283	258	256	48	246	77	80	1.80	3.0
	25	394.98	0.70	0.71	283	256	255	47	244	77	80	1.70	3.0
	27.5	396.77	0.69	0.71	284	258	256	48	246	78	81	1.70	3.0
5	30	398.54	0.70	0.71	284	258	255	48	246	78	81	1.70	3.0
	32.5	400.33	0.68	0.71	284	258	256	47	246	78	82	1.70	3.0
	35	402.12	0.66	0.69	284	258	254	47	244	78	83	1.60	3.0
6	37.5	403.87	0.65	0.69	284	256	256	47	246	78	83	1.60	3.0
	40	405.61	0.65	0.69	285	258	256	47	247	78	83	1.60	3.0
	42.5	407.34	0.64	0.69	285	259	256	47	247	79	84	1.60	3.0
7	45	409.07	0.59	0.66	284	259	256	46	247	79	84	1.50	3.0
	47.5	410.76	0.59	0.66	285	258	256	46	246	80	84	1.50	3.0
	50	412.43	0.58	0.65	284	259	256	47	246	79	85	1.45	3.0

Traverse: 1			
Start Time: 16:51	Initial Leak Check: 0.001	cfm@ 16	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22001

Operator : JB

Field Data Sheet

Date: June 15, 2020	Plant:	Covanta DYEC	Test No.: 1	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 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
8	52.5	414.09	0.66	0.70	284	259	256	48	246	79	84	1.65	3.0
	55	415.85	0.66	0.70	284	259	256	48	246	79	85	1.65	3.0
	57.5	417.61	0.65	0.69	284	258	254	48	244	79	85	1.65	3.0
9	60	419.37	0.75	0.74	284	259	257	49	246	80	86	1.85	3.3
	62.5	421.23	0.74	0.74	284	258	256	49	246	80	86	1.85	3.3
	65	423.10	0.74	0.74	284	260	257	49	248	80	87	1.85	3.3
10	67.5	424.97	0.84	0.79	284	260	257	49	248	81	87	2.05	3.5
	70	426.93	0.82	0.78	284	260	257	50	247	81	87	2.05	3.5
	72.5	428.88	0.81	0.78	284	260	257	52	247	81	87	2.00	3.5
11	75	430.83	0.84	0.79	284	260	258	52	247	81	87	2.10	3.5
	77.5	432.82	0.84	0.79	283	260	258	52	248	81	88	2.10	3.5
	80	434.81	0.84	0.79	283	260	257	53	250	82	87	2.10	3.5
12	82.5	436.80	0.84	0.79	284	260	257	54	250	82	88	2.10	3.5
	85	438.80	0.83	0.79	283	261	257	52	250	82	88	2.10	3.5
	87.5	440.78	0.83	0.79	284	261	258	52	250	82	88	2.10	3.5
	90	442.76											

Traverse: 1			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 18:21	Final Leak Check: .001	cfm@ 16	"Hg

Project No.: 22001

Operator : JB

ORTECH Consulting Inc.

Plant		Covanta DYEC
Plant Location		Courtice, Ontario
Test No.:	2	Particulate/Metals
Test Date		June 17/20
Test Location		APC Outlet No. 1
Operator Signature		[signature]

Project No.:	22001
Page	1 of 5
Probe No.:	6A
Meter Box No.:	COE 20094
Impinger Box No.:	14

Pitot Factor	0.850	
DGMCF	1.008	
Barometric Pressure	29.97 ~~30.03~~	"Hg
Static Pressure	-7.8	"H2O
Nozzle Size	0.2501	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	461.5	g
WCBDA	19.5	g

Combustion Gas Concentration

Oxygen	8.93	%
Carbon Dioxide	10.60	%
Carbon Monoxide	18.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	6A / 56
Trendicator	COE 20094
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can
Calipers	03922

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	0.2490
2	0.2510
3	0.2515
4	0.2490
Average:	0.2501

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: Jue 17	Plant: Covanta DYEC	Test No.: 2 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 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	329.82	0.76	0.71	~~256~~ 286	256	256	~~77~~ 74	171	74	74	~~2.2~~ 1.8	~~0.25~~ 2.5
	2.5	331.54	0.76	0.73	286	256	256	57	207	75	75	1.8	~~0.25~~ 2.5
	5	333.31	0.75	0.72	286	256	256	57	209	75	75	1.8	2.5
2	7.5	335.13	0.75	0.72	286	251	250	55	210	76	75	1.8	2.5
	10	336.93	0.76	0.73	286	251	247	55	211	76	75	1.8	2.5
	12.5	338.72	0.76	0.73	~~284~~ 286	247	247	55	211	76	75	1.8	2.5
3	15	340.51	0.76	0.71	286	250	247	55	215	76	75	1.8	2.5
	17.5	342.3	0.75	0.71	287	250	249	53	220	77	75	1.8	2.5
	20	344.06	0.75	0.71	286	250	249	50	221	77	75	1.8	2.5
4	22.5	345.83	0.79	0.73	286	249	247	50	223	78	75	1.8	2.5
	25	347.66	0.79	0.71	286	249	245	50	225	78	75	1.8	2.5
	27.5	349.40	0.77	0.72	288	250	247	50	226	80	76	1.8	2.5
5	30	351.19	0.76	0.71	288	250	247	50	226	80	76	1.8	2.5
	32.5	352.96	0.75	0.71	289	251	250	51	230	82	78	1.8	2.5
	35	354.74	0.75	0.71	289	251	250	51	233	82	78	1.8	2.5
6	37.5	356.56	0.76	0.72	287	250	252	49	240	81	77	1.8	2.5
	40	358.33	0.76	0.72	287	250	251	49	243	81	77	1.8	2.5
	42.5	360.13	0.72	0.70	287	249	255	49	245	80	77	1.8	2.5
7	45	361.93	0.73	0.70	287	249	256	49	243	80	77	1.8	2.5
	47.5	363.72	0.65	0.66	288	250	264	51	240	81	77	1.7	2.5
	50	365.48	0.65	0.66	288	249	262	51	240	81	77	1.6	2.5

Traverse:	1		
Start Time: 9:31	Initial Leak Check: .005	cfm@ 17	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22001

Operator : R

Field Data Sheet

Date: June 17/20	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	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
	*	*	*		*			*		*	*	*	*
8	52.5	367.18	0.69	0.66	287	250	265	52	218	82	78	1.6	2.5
	55	368.86	0.69	0.68	287	249	265	52	237	82	78	~~1.8~~ 1.7	2.5
	57.5	370.61	0.68	0.68	287	249	266	52	238	83	78	1.7	2.5
9	60	372.37	0.69	0.68	287	249	266	52	238	83	78	1.7	2.5
	62.5	374.15	0.75	0.71	286	250	266	51	239	82	79	1.8	2.5
	65	375.93	0.72	0.70	286	250	266	51	239	82	79	1.8	2.5
10	67.5	377.72	0.77	0.72	286	250	267	51	240	83	79	1.8	2.5
	70	379.58	0.80	0.74	286	250	267	51	240	83	79	1.9	2.5
	72.5	381.37	0.80	0.74	286	250	266	52	240	83	79	1.9	2.5
11	75	~~381.6~~ 383.23	0.77	0.72	286	250	266	52	240	83	79	1.8	2.5
	77.5	~~385.7~~ 385.06	0.80	~~0.75~~	286	250	267	52	240	83	79	1.9	2.5
	80	~~388.82~~ 386.94	0.80	0.75	286	250	267	52	242	83	79	1.9	2.5
12	82.5	388.82	0.82	0.75	286	250	267	51	242	83	79	1.9	2.5
	85	390.61	0.90	0.74	286	250	267	51	242	83	79	1.9	2.5
	87.5	392.46	0.83	0.75	286	250	267	52	241	83	79	1.9	2.5
	90	394.35											

Traverse: 1		
Start Time:	Initial Leak Check: cfm@	"Hg
Finish Time: 10:01	Final Leak Check: .013 cfm@ 20	"Hg

Project No.: 22001

Operator:

381
386

1551

Field Data Sheet

Date: June 17	Plant: Covanta DYEC	Test No.: 2 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 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	394.73	0.66	0.67	288	249	268	58	189	79	78	1.6	3
	2.5	396.34	0.66	0.67	287	249	268	49	230	79	78	1.6	3
	5	397.95	0.66	0.67	283	249	268	45	240	79	78	1.6	3
2	7.5	399.69	0.67	0.67	283	249	267	46	240	79	79	1.6	3
	10	401.44	0.66	0.67	283	249	269	46	240	79	79	1.6	3
	12.5	403.18	0.67	0.67	283	249	268	45	239	79	79	1.6	3
3	15	404.86	0.69	0.68	283	249	268	45	239	79	79	1.6	3
	17.5	406.62	0.70	0.70	281	248	267	45	239	80	79	1.6	3
	20	408.34	0.70	0.69	283	248	267	45	239	80	79	1.6	3
4	22.5	410.09	0.70	0.69	284	249	267	46	240	82	79	1.6	3
	25	411.82	0.70	0.69	285	249	267	46	240	82	79	1.6	3
	27.5	413.56	0.71	0.70	285	249	267	47	241	83	79	1.6	3
5	30	415.30	0.71	0.70	285	249	267	47	241	83	79	1.6	3
	32.5	417.03	0.70	0.70	285	249	268	47	240	83	80	1.6	3
	35	418.75	0.70	0.69	286	249	268	47	240	84	80	1.6	3
6	37.5	420.46	0.70	0.69	286	249	268	47	240	84	80	1.6	3
	40	422.19	0.66	0.67	286	249	267	48	241	84	80	1.6	3
	42.5	423.92	0.70	0.69	286	249	267	48	241	84	80	1.6	3
7	45	425.65	0.70	0.69	286	249	268	48	239	85	80	1.6	3
	47.5	427.36	0.60	0.64	286	249	268	48	239	85	80	1.6	3
	50	429.06	0.60	0.64	286	249	267	49	231	85	80	1.5	3

Traverse: 2				
Start Time: 11:50	Initial Leak Check: .004	cfm@ 13	"Hg	
Finish Time:	Final Leak Check:	cfm@	"Hg	

Project No.: 22001

Operator: R

Field Data Sheet

Date: June 17	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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 *
8	52.5	430.71	0.60	0.69	286	249	267	48	234	85	81	1.5	3
	55	432.37	0.65	0.67	286	249	267	48	234	85	81	1.5	3
	57.5	434.06	0.80	0.69	286	249	267	48	234	85	81	1.6	3
9	60	435.80	0.88	0.73	286	250	266	46	235	85	81	1.8	3
	62.5	437.64	0.80	0.74	286	250	266	46	235	85	81	1.8	3
	65	439.36	0.80	0.74	287	250	267	46	238	87	81	1.8	3
10	67.5	441.20	0.85	0.76	287	250	267	46	238	87	81	1.8	3
	70	443.07	0.80	0.74	286	249	267	47	235	87	81	1.9	3
	72.5	444.95	0.80	0.74	286	249	267	47	235	87	81	1.9	3
11	75	446.82	0.83	0.76	285	250	267	47	236	87	82	1.9	3
	77.5	448.69	0.85	0.77	285	250	266	48	234	87	82	1.9	3
	80	450.56	0.85	0.77	285	250	266	48	234	87	82	1.9	3
12	82.5	452.43	0.90	0.79	285	250	268	50	236	88	82	2.0	3
	85	454.33	0.88	0.78	285	250	268	50	236	88	82	2.0	3
	87.5	456.29	0.88	0.78	285	251	268	49	235	87	82	2.0	3
	90	458.22											

Traverse: 2

Start Time:	Initial Leak Check: cfm@ "Hg
Finish Time:	Final Leak Check: cfm@ "Hg

13:26 .006 13

Project No.: 22001

Operator : RJ

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 3	Particulate/Metals	
Test Date	June 17/20	
Test Location	APC Outlet No. #1	
Operator Signature	[signature]	

Project No.:	22001	
Page	1 of 5	
Probe No.:	64	
Meter Box No.:	COG 20094 Team 1	
Impinger Box No.:	7	

Pitot Factor	0.850	
DGMCF	1.008	
Barometric Pressure	29.87	"Hg
Static Pressure	-7.8	"H2O
Nozzle Size	0.2501	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

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	462.0	g
WCBDA	19.1	g

Combustion Gas Concentration

Oxygen	8.37	%
Carbon Dioxide	10.76	%
Carbon Monoxide	16.5	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	64/56
Trendicator	COG 20094
Control Box	COG 20094
Incline Manometer	COG 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can.
Calipers	03922

Nozzle Measurements	
1	0.2490
2	0.2510
3	0.2515
4	0.2490
Average:	0.2501

Notes:

Field Data Sheet

Date: June 17	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 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	459.02	0.6	0.64	283	250	268	89	91	82	82	1.6	2
	2.5	460.78	0.85	0.76	286	250	268	70	~~90~~ 223	82	81	2	2.5
	5	462.67	0.85	0.76	286	251	268	~~65~~ 55	223	82	81	2	2.5
2	7.5	464.55	0.85	0.76	286	250	268	57	248	83	81	2	2.5
	10	466.43	0.85	0.76	286	250	268	55	249	83	81	2	2.5
	12.5	468.31	0.85	0.76	286	250	268	55	248	83	81	2	2.5
3	15	470.19	0.80	0.74	286	250	267	54	250	84	82	2	2.5
	17.5	472.06	0.80	0.74	286	251	267	52	250	85	82	2	2.5
	20	473.67	0.80	0.74	285	251	267	50	250	85	82	2	2.5
4	22.5	475.78	0.75	0.72	285	251	267	50	250	85	82	1.9	2.5
	25	477.59	0.76	0.72	285	251	267	48	251	86	83	1.9	2.5
	27.5	479.44	0.74	0.71	285	251	267	48	251	86	83	1.8	2.5
5	30	481.27	0.65	0.67	284	251	267	46	250	87	83	1.6	2
	32.5	483.03	0.65	0.67	284	251	267	46	250	87	83	1.6	2
	35	484.72	0.65	0.67	284	251	267	45	249	88	83	1.6	2
6	37.5	486.49	0.55	0.62	284	251	267	45	249	88	83	1.5	2
	40	488.09	0.55	0.62	284	250	266	45	249	88	83	1.5	2
	42.5	489.75	0.55	0.62	284	250	266	46	249	88	83	1.5	2
7	45	491.40	0.60	0.64	284	250	266	46	249	88	83	~~1.6~~ 1.5	2
	47.5	493.05	0.62	0.66	284	250	266	46	249	88	83	1.5	2
	50	494.70	0.62	0.66	284	251	267	46	249	89	84	1.5	2

Traverse:	1			
Start Time: 16:51	Initial Leak Check:	.002	cfm@ 15	"Hg
Finish Time:	Final Leak Check:		cfm@	"Hg

Project No.: 22001

Operator : RV

Field Data Sheet

Date: June 17/	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

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
	*	*	*		*			*		*	*	*	*
8	52.5	496.37	0.62	0.66	284	251	267	46	249	89	84	1.5	2
	55	498.03	0.65	0.67	284	251	267	46	248	90	84	1.5	2
	57.5	499.77	0.63	0.66	284	251	267	46	248	90	84	1.5	2
9	60	501.37	0.65	0.67	283	251	268	45	249	89	84	1.5	2
	62.5	503.06	0.63	0.66	283	251	266	45	249	89	84	1.5	2
	65	504.72	0.63	0.66	283	251	267	46	248	90	85	1.5	2
10	67.5	506.44	0.65	0.67	283	251	267	46	248	90	85	1.5	2
	70	508.08	0.65	0.67	283	250	267	45	248	90	85	1.6	2
	72.5	509.86	0.63	0.67	283	250	267	45	248	90	85	1.6	2
11	75	511.54	0.60	0.65	283	250	267	45	248	90	85	1.5	2
	77.5	513.25	0.60	0.65	283	250	268	47	248	91	85	1.5	2
	80	514.95	0.60	0.65	283	250	268	47	248	91	85	1.5	2
12	82.5	516.65	0.63	0.66	283	250	268	47	248	91	85	1.5	2
	85	518.33	0.63	0.67	283	250	268	47	248	92	86	1.5	2
	87.5	520.02	0.63	0.67	283	250	268	47	248	92	86	1.5	2
	90	521.70											

Traverse: 1

Start Time: | Initial Leak Check: cfm@ "Hg

18:21 .002 14

Project No.: 22001

Operator: R

Field Data Sheet

Date: June 17	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 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	522.18	0.79	0.74	283	248	267	62	178	89	86	1.8	2.5
	2.5	524.00	0.75	0.72	284	250	267	49	223	89	86	1.8	2.5
	5	525.82	0.75	0.72	284	250	267	49	229	89	86	1.8	2.5
2	7.5	527.65	0.78	0.74	285	250	268	46	249	89	86	1.8	2.5
	10	529.45	0.75	0.72	285	250	268	46	249	89	86	1.8	2.5
	12.5	531.27	0.78	0.74	285	250	267	46	249	89	86	1.8	2.5
3	15	533.07	0.80	0.78	285	250	267	46	249	89	86	1.8	2.5
	17.5	534.93	0.79	0.74	285	250	267	46	249	89	86	1.8	2.5
	20	536.83	0.78	0.74	285	250	267	46	247	89	86	1.8	2.5
4	22.5	538.71	0.75	0.72	286	250	268	46	251	90	87	1.8	2.5
	25	540.59	0.74	0.72	286	250	268	46	251	91	87	1.8	2.5
	27.5	542.44	0.74	0.72	285	251	268	46	250	91	86	1.8	2.5
5	30	544.26	0.70	0.70	285	251	268	46	250	91	86	1.7	2.5
	32.5	546.05	0.65	0.67	285	251	268	47	249	91	87	1.6	2.5
	35	547.76	0.65	0.67	285	251	268	47	249	91	87	1.6	2.5
6	37.5	549.45	0.60	0.65	285	250	267	47	248	90	87	1.5	2.5
	40	551.15	0.60	0.65	285	250	267	47	248	90	87	1.5	2.5
	42.5	552.82	0.58	0.64	285	250	267	48	248	91	87	1.5	2.5
7	45	554.46	0.60	0.65	285	250	267	48	248	91	87	1.5	2.5
	47.5	556.10	0.60	0.65	285	250	267	48	248	91	87	1.5	2.5
	50	557.72	0.60	0.65	285	250	267	48	248	91	87	1.5	2.5

Traverse: 2		
Start Time: 18:30	Initial Leak Check: .002 cfm@ 13 "Hg	
Finish Time:	Final Leak Check: cfm@ "Hg	

Project No.: 22001

Operator : RV

Field Data Sheet

Date: June 17	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 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
*	*	*	*		*			*		*	*	*	*
8	52.5	559.40	0.63	0.67	284	250	268	48	248	90	87	1.6	2.5
	55	561.08	0.63	0.66	284	250	268	48	248	90	87	1.6	2.5
	57.5	562.80	0.65	0.67	284	250	268	48	248	90	87	1.6	2.5
9	60	564.54	0.65	0.68	283	250	268	47	248	90	87	1.6	2.5
	62.5	566.28	0.65	0.68	283	250	268	47	248	90	87	1.6	2.5
	65	568.00	0.64	0.67	284	250	268	48	248	91	87	1.6	2.5
10	67.5	569.71	0.64	0.67	284	250	268	48	248	91	87	1.6	2.5
	70	571.44	0.67	0.69	284	250	267	48	247	91	87	1.6	2.5
	72.5	573.23	0.66	0.68	284	250	267	48	247	91	87	1.6	2.5
11	75	574.89	0.66	0.68	284	250	268	47	246	92	87	1.6	2.5
	77.5	576.66	0.68	0.69	284	250	268	47	246	92	87	1.6	2.5
	80	578.30	0.68	0.69	284	250	268	48	247	92	88	1.6	2.5
12	82.5	580.05	0.68	0.69	284	250	268	48	247	92	88	1.6	2.5
	85	581.76	0.68	0.69	284	250	268	48	247	92	88	1.6	2.5
	87.5	583.48	0.68	0.69	284	250	268	48	247	92	88	1.6	2.5
	90	585.21											

Traverse: 2				
Start Time:	Initial Leak Check: .002	cfm@ 13	"Hg	
Finish Time: 20:00	Final Leak Check: .007	cfm@ 13	"Hg	

Project No.: 22001

Operator: RV

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Metals
Test Date June 16, 2020	
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22001	
Page	1 of 5	
Probe No.:	6C	
Meter Box No.:	Team 2	
Impinger Box No.:	7	

Pitot Factor	0.850	
DGMCF	1.001	
Barometric Pressure	30.13	"Hg
Static Pressure	-8.24	"H2O
Nozzle Size	0.2544	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	446.0	g
WCBDA	22.6	g

Combustion Gas Concentration

Oxygen	8.47	%
Carbon Dioxide	10.85	%
Carbon Monoxide	15.4	ppm

Measuring Device	MII Numbers
Probe / Pitot	57
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	0.2550
2	0.2540
3	0.2545
4	0.2540
Average:	0.2544

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, 2020	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	444.80	0.67	0.69	283	255	252	55	179	71	73	1.60	3.0
	2.5	446.55	0.66	0.68	283	256	250	55	194	71	73	1.60	3.0
	5	448.32	0.66	0.69	277	257	255	58	201	72	73	1.6	3.0
2	7.5	450.06	0.65	0.68	277	259	252	55	207	72	73	1.6	3.0
	10	451.82	0.64	0.69	277	257	253	53	209	72	74	1.6	3.0
	12.5	453.57	0.64	0.68	278	256	254	52	210	72	74	1.6	3.0
3	15	455.30	0.65	0.68	278	256	255	51	210	72	75	1.6	3.0
	17.5	457.05	0.65	0.68	277	256	255	50	210	72	75	1.6	3.0
	20	458.82	0.67	0.70	277	256	255	50	210	72	76	1.6	3.0
4	22.5	460.53	0.65	0.68	278	256	255	49	210	72	76	1.6	3.0
	25	462.27	0.66	0.69	283	256	256	49	209	72	77	1.6	3.0
	27.5	464.06	0.66	0.69	283	257	256	48	226	73	77	1.6	3.0
5	30	465.75	0.64	0.69	283	257	254	48	233	73	78	1.6	3.0
	32.5	467.48	0.60	0.66	284	257	255	48	234	73	77	1.4	3.0
	35	469.13	0.60	0.66	284	257	256	48	234	73	81	1.4	3.0
6	37.5	470.76	0.62	0.67	284	257	256	48	234	74	79	1.5	3.0
	40	472.40	0.61	0.66	284	257	256	48	234	74	80	1.5	3.0
	42.5	474.07	0.60	0.66	283	257	256	48	235	74	80	1.5	3.0
7	45	475.70	0.58	0.65	283	258	257	47	235	75	81	1.5	3.0
	47.5	477.18	0.58	0.65	284	259	257	47	235	75	82	1.5	3.0
	50	479.03	0.58	0.65	284	258	256	47	235	76	82	1.5	3.0

Traverse: 1

Start Time: 8:47	Initial Leak Check: .011	cfm@ 16	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22001

Operator : JB RW

Field Data Sheet

Date: June 16, 2020	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 ft³ *	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 *
8	52.5	480.70	0.68	0.70	284	259	257	46	236	76	82	1.65	3.0
	55	482.42	0.65	0.69	284	258	256	45	236	76	83	1.65	3.0
	57.5	484.14	0.64	0.68	284	259	258	45	235	76	83	1.65	3.0
9	60	485.88	0.71	0.72	284	259	258	44	237	77	84	1.75	3.3
	62.5	487.66	0.70	0.72	284	258	256	44	236	77	84	1.75	3.3
	65	489.46	0.69	0.71	284	260	258	44	239	77	84	1.75	3.3
10	67.5	491.25	0.75	0.74	284	258	258	45	236	77	84	1.85	3.3
	70	493.09	0.74	0.74	284	260	258	44	240	78	84	1.85	3.3
	72.5	494.93	0.73	0.73	284	260	256	44	240	78	84	1.85	3.3
11	75	496.77	0.77	0.75	284	260	258	44	240	78	85	1.90	3.5
	77.5	498.65	0.76	0.75	285	261	259	44	241	78	85	1.90	3.5
	80	500.53	0.76	0.75	285	261	260	44	241	78	85	1.90	3.5
12	82.5	502.41	0.76	0.75	285	261	259	44	241	79	85	1.90	3.5
	85	504.29	0.76	0.75	285	261	258	44	241	79	85	1.90	3.5
	87.5	506.16	0.77	0.75	284	260	259	44	241	78	85	1.95	3.5
	90	508.08											

Traverse: 1					
Start Time:	Initial Leak Check:		cfm@		"Hg
Finish Time: 10:17	Final Leak Check:	.008	cfm@	16	"Hg

Project No.: 22001

Operator : JB RW

Field Data Sheet

Date: June 16, 2020	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 ft³	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	509.00	0.57	0.65	284	260	258	46	205	79	81	1.45	3.0
	2.5	510.67	0.58	0.65	284	260	256	46	210	79	81	1.45	3.0
	5	512.33	0.58	0.65	284	259	259	43	211	79	81	1.45	3.0
2	7.5	513.98	0.63	0.68	284	260	258	42	212	79	81	1.60	3.3
	10	515.68	0.61	0.67	284	258	260	41	211	79	81	1.60	3.3
	12.5	517.41	0.61	0.67	284	260	258	42	211	79	82	1.55	3.3
3	15	519.11	0.65	0.69	284	259	256	41	211	80	82	1.65	3.3
	17.5	520.86	0.64	0.69	283	259	256	41	211	80	82	1.65	3.3
	20	522.61	0.65	0.69	284	259	258	41	210	79	82	1.65	3.3
4	22.5	524.35	0.68	0.71	284	259	257	41	210	79	83	1.70	3.5
	25	526.12	0.67	0.70	285	259	258	41	210	79	83	1.70	3.5
	27.5	527.88	0.66	0.70	285	259	258	41	218	79	84	1.70	3.5
5	30	529.65	0.62	0.68	285	260	258	42	237	80	84	1.55	3.3
	32.5	531.36	0.62	0.68	285	259	259	42	237	80	84	1.55	3.3
	35	533.05	0.61	0.67	285	260	259	42	237	80	84	1.55	3.3
6	37.5	534.75	0.59	0.66	285	260	259	42	237	79	84	1.50	3.3
	40	536.42	0.59	0.66	285	258	259	42	237	79	84	1.50	3.3
	42.5	538.11	0.59	0.66	285	258	258	42	237	79	84	1.50	3.3
7	45	539.77	0.60	0.66	285	256	258	42	235	80	84	1.50	3.3
	47.5	541.46	0.58	0.65	285	259	258	42	237	80	85	1.50	3.3
	50	543.13	0.57	0.65	285	259	258	42	237	80	85	1.50	3.5

Traverse: 2

Start Time: 10:32	Initial Leak Check: .008	cfm@ 15	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22001

Operator : JB

Field Data Sheet

Date: June 16, 2020	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	
	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	544.79	0.62	0.68	285	259	258	42	238	80	85	1.60	3.3
	55	546.50	0.61	0.67	285	258	258	42	238	80	85	1.60	3.3
	57.5	548.20	0.65	0.69	285	258	258	42	238	80	85	1.65	3.5
9	60	549.95	0.72	0.73	285	256	256	42	237	80	85	1.85	3.5
	62.5	551.77	0.72	0.73	285	258	256	42	237	80	85	1.85	3.5
	65	553.62	0.72	0.73	285	260	259	43	240	80	86	1.85	3.5
10	67.5	555.48	0.80	0.77	285	260	259	43	241	81	86	2.00	3.8
	70	557.37	0.80	0.77	285	260	258	43	240	80	86	2.00	3.8
	72.5	559.28	0.86	0.77	285	258	258	43	240	80	86	2.00	3.8
11	75	561.21	0.79	0.76	285	258	258	43	242	81	86	2.00	3.8
	77.5	563.16	0.81	0.77	285	259	258	43	240	81	86	2.00	3.8
	80	565.17	0.80	0.77	285	259	259	44	242	81	86	2.00	3.8
12	82.5	567.03	0.84	0.79	285	258	260	44	242	81	86	2.10	4.0
	85	568.98	0.82	0.78	285	258	260	44	240	81	86	2.10	4.0
	87.5	570.95	0.81	0.77	285	260	259	46	242	81	86	2.10	4.0
	90	572.91											

Traverse: 2				
Start Time:	Initial Leak Check:	cfm@		"Hg
Finish Time: 12:02	Final Leak Check: .010	cfm@	16	"Hg

Project No.: 22001

Operator : JB

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date	June 16/ 2020
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22001
Page	1 of 5
Probe No.:	6C
Meter Box No.:	Team 2
Impinger Box No.:	14

Pitot Factor	0.850	
DGMCF	1.001	
Barometric Pressure	30.03	"Hg
Static Pressure	~~-0.254~~ -8.24	"H2O
Nozzle Size	0.2544	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	482.9	g
WCBDA	26.6	g

Combustion Gas Concentration

Oxygen	8.57	%
Carbon Dioxide	10.76	%
Carbon Monoxide	9.9	ppm

Measuring Device	MII Numbers
Probe / Pitot	57
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can
Calipers	

Nozzle Measurements	
1	0.2550
2	0.2540
3	0.2545
4	0.2540
Average:	0.2544

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 16/20	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	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
	*	* 575.66	*		*			*		*	*	*	*
1	0	~~575.41~~	0.66	0.69	284	248	245	76	78	77	78	1.6	3.0
	2.5	577.30	0.67	0.70	284	258	245	59	206	77	78	1.6	3.0
	5	579.03	0.66	0.69	282	252	256	56	230	78	78	1.6	3.0
2	7.5	580.76	0.66	0.69	282	252	256	54	246	78	78	1.6	3.0
	10	582.51	0.67	0.70	282	249	257	54	247	78	78	1.6	3.0
	12.5	584.23	0.66	0.69	282	251	260	53	249	78	79	1.6	3.0
3	15	585.96	0.68	0.70	282	278	267	53	242	78	78	1.7	3.0
	17.5	587.71	0.69	0.71	284	276	261	54	245	78	80	1.7	3.0
	20	589.48	0.71	0.72	283	258	264	54	246	78	79	1.7	3.0
4	22.5	591.30	0.71	0.71	282	259	265	54	246	78	79	1.7	3.0
	25	593.12	0.70	0.72	282	257	267	55	246	79	80	1.7	3.0
	27.5	594.91	0.70	0.72	281	258	266	55	247	79	80	1.7	3.0
5	30	596.73	0.64	0.69	282	258	267	56	248	79	80	1.6	3.0
	32.5	598.50	0.64	0.68	281	258	267	57	248	79	81	1.6	3.0
	35	600.25	0.65	0.69	280	258	267	57	248	79	81	1.6	3.0
6	37.5	601.98	0.64	0.69	280	258	267	58	248	79	81	1.6	3.0
	40	603.72	0.63	0.68	281	258	267	58	248	79	81	1.6	3.0
	42.5	605.47	0.63	0.68	281	258	266	58	247	80	81	1.6	3.0
7	45	607.20	0.64	0.69	282	258	265	58	247	80	81	1.6	3.0
	47.5	608.94	0.64	0.69	282	258	266	59	247	80	81	1.6	3.0
	50	610.67	0.62	0.68	283	258	267	59	247	80	82	1.6	3.0

Traverse: 2

Start Time: 14:17	Initial Leak Check: .008	cfm@ 18	"Hg
Finish Time: 15:06	Final Leak Check:	cfm@	"Hg

Project No.: 22001

Operator : JB

Field Data Sheet

Date: June 16/20	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	
	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
	*	*	*		*			*		*	*	*	*
8	52.5	612.40	0.62	0.68	284	258	267	59	248	80	82	1.6	3.0
	55	614.14	0.72	0.73	284	258	267	59	248	80	82	1.7	3.5
	57.5	615.94	0.71	0.72	284	258	269	59	240	80	82	1.7	3.5
9	60	617.77	0.77	0.73	284	258	269	58	239	80	83	1.8	3.5
	62.5	619.64	0.78	0.76	284	258	268	58	230	80	83	1.8	3.5
	65	621.50	0.82	0.78	284	258	267	58	222	80	83	1.9	3.5
10	67.5	623.41	0.83	0.79	284	258	267	57	230	81	84	2.0	3.5
	70	625.38	0.84	0.79	284	258	267	57	247	81	84	2.0	3.5
	72.5	627.32	0.83	0.78	284	258	267	57	248	81	84	2.0	3.5
11	75	629.27	0.83	0.78	284	258	267	57	248	81	84	2.0	3.5
	77.5	631.23	0.83	0.78	284	258	267	57	248	81	84	2.0	3.5
	80	633.18	0.87	0.80	284	258	267	57	248	81	83	2.1	3.5
12	82.5	635.20	0.83	0.78	283	258	267	57	249	81	85	2.1	3.5
	85	637.25	0.83	0.78	283	258	267	57	249	81	85	2.1	3.5
	87.5	639.26	0.83	0.78	283	259	267	58	249	82	85	2.1	3.5
	90	641.32											

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 16:36	Final Leak Check: .014	cfm@ 19	"Hg

Project No.: 22001

Operator: NV JB

Field Data Sheet

Date: June 16/20	Plant: Covanta DYEC	Test No.: 2 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 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	641.97	0.72	0.73	284	259	267	58	269	82	84	1.7	3.5
	2.5	643.77	0.69	0.69	284	260	267	60	241	82	84	1.6	3.5
	5	645.51	0.66	0.70	284	259	267	59	247	82	84	1.6	3.5
2	7.5	647.25	0.65	0.69	284	260	268	59	248	82	84	1.6	3.5
	10	648.90	0.66	0.70	284	259	269	57	248	82	87	1.6	3.5
	12.5	650.76	0.67	0.70	284	259	269	57	248	82	84	1.7	3.5
3	15	652.52	0.73	0.73	284	259	268	57	248	82	84	1.8	3.5
	17.5	654.38	0.75	0.74	284	259	268	57	248	82	84	1.8	3.5
	20	656.21	0.74	0.74	284	259	268	57	249	82	85	1.8	3.5
4	22.5	658.08	0.72	0.73	284	259	268	57	249	82	85	1.8	3.5
	25	659.90	0.71	0.73	284	259	268	58	248	82	85	1.8	3.5
	27.5	661.76	0.70	0.72	284	259	268	58	248	82	85	1.8	3.5
5	30	663.61	0.67	0.71	283	259	268	56	248	83	85	1.7	3.5
	32.5	665.39	0.66	0.70	283	259	268	56	248	83	85	1.7	3.5
	35	667.21	0.68	0.71	283	259	268	55	248	83	85	1.7	3.5
6	37.5	669.00	0.67	0.71	284	259	268	55	248	83	85	1.7	3.5
	40	670.77	0.68	0.71	284	259	268	54	248	83	85	1.7	3.5
	42.5	672.56	0.66	0.69	284	259	268	54	248	83	85	1.7	3.5
7	45	674.35	0.65	0.70	283	259	268	54	248	83	85	1.7	3.5
	47.5	676.14	0.65	0.70	283	259	268	54	248	83	85	1.7	3.5
	50	677.93	0.65	0.70	283	259	268	54	248	83	87	1.7	3.5

Traverse: 1	
Start Time: 16:46	Initial Leak Check: .010 cfm@ 17 "Hg
Finish Time:	Final Leak Check: cfm@ "Hg

Project No.: 22001

Operator : RV JB

Field Data Sheet

Date: June 16/20	Plant: Covanta DYEC	Test No.: 2	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 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
		*	*		*			*		*	*	*	*
8	52.5	679.73	0.65	0.70	283	259	268	54	248	83	87	1.7	3.5
	55	681.51	0.74	0.74	283	259	268	55	248	83	87	1.8	3.5
	57.5	683.36	0.72	0.73	283	259	268	54	249	83	87	1.8	3.5
9	60	685.19	0.75	0.75	283	259	268	54	249	83	87	1.9	4.0
	62.5	687.10	0.75	0.75	283	259	268	54	249	84	87	1.9	4.0
	65	689.00	0.75	0.76	285	259	268	54	249	84	87	1.9	4.0
10	67.5	690.91	0.80	0.77	284	259	269	55	250	84	87	2.0	4.0
	70	692.88	0.82	0.78	284	259	269	55	250	84	87	2.0	4.0
	72.5	694.85	0.82	0.78	284	260	268	55	250	84	86	2.0	4.0
11	75	696.78	0.80	0.77	284	260	268	55	250	84	86	2.0	4.0
	77.5	698.75	0.75	0.75	283	260	268	56	251	84	87	1.9	4.0
	80	700.66	0.76	0.75	283	260	268	56	251	84	87	1.9	4.0
12	82.5	702.60	0.75	0.75	283	260	269	56	251	84	87	1.9	4.0
	85	704.51	0.70	0.75	283	260	269	57	251	84	87	1.8	4.0
	87.5	706.38	0.70	0.75	283	260	269	57	251	84	87	1.8	4.0
	90	708.27											

Traverse: 1

Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 18:16	Final Leak Check: .013	cfm@ 20	"Hg

Project No.: 22001

Operator : R JB

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date	June 18/20
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22001	
Page	1 of 5	
Probe No.:	6A	
Meter Box No.:	Team 1	
Impinger Box No.:	3	

Pitot Factor	0.850	
DGMCF	1.008	
Barometric Pressure	29.85	"Hg
Static Pressure	-7.8	"H2O
Nozzle Size	0.2501	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

Probe Liner Glass / Metal / Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None / Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	476.5	g
WCBDA	18.1	g

Combustion Gas Concentration

Oxygen	8.48	%
Carbon Dioxide	10.89	%
Carbon Monoxide	12.2	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	6A/S6
Trendicator	COE 20094
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env Can
Calipers	03922

Nozzle Measurements	
1	0.2490
2	0.2516
3	0.2515
4	0.2496
Average:	0.2501

Notes:

Field Data Sheet

Date: Jun 19	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	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	592.86	0.6	0.64	284	~~282~~	263	76	86	~~86~~ 78	79	1.6	2
	2.5	594.56	0.62	0.65	284	~~264~~ 250	264	~~62~~ 57	89	79	77	1.6	2
	5	596.27	0.62	0.65	284	250	263	57	237	79	77	1.6	2
2	7.5	597.94	0.63	0.65	284	250	265	57	246	79	77	1.6	2
	10	599.61	0.63	0.65	284	249	265	57	247	79	77	1.6	2
	12.5	601.30	0.63	0.65	284	249	264	58	246	80	77	1.6	2
3	15	602.97	0.64	0.66	283	250	264	58	246	81	78	1.6	2
	17.5	604.61	0.64	0.66	282	250	265	58	247	83	78	1.6	2
	20	606.29	0.64	0.66	282	250	265	58	247	83	78	1.6	2
4	22.5	607.94	0.64	0.66	282	250	265	57	247	82	78	1.6	2
	25	609.60	0.68	0.68	282	250	265	56	247	84	79	1.6	2
	27.5	611.33	0.66	0.67	282	250	265	56	247	84	79	1.6	2
5	30	613.06	0.63	0.66	283	250	264	54	247	86	79	1.6	2
	32.5	614.75	0.64	0.66	283	250	264	53	247	86	79	1.6	2
	35	616.43	0.64	0.66	282	250	265	52	248	87	80	1.6	2
6	37.5	618.14	0.62	0.66	282	251	264	52	248	88	81	1.6	2
	40	619.82	0.62	0.66	282	251	264	52	248	88	81	1.6	2
	42.5	621.48	0.62	0.66	281	251	264	50	248	88	81	1.6	2
7	45	623.18	0.55	0.62	281	251	264	50	248	88	81	1.5	2
	47.5	624.81	0.55	0.62	282	250	265	50	248	89	82	1.5	2
	50	626.43	0.55	0.62	284	251	265	49	248	89	82	1.5	2

Traverse: 2		
Start Time: 9:00	Initial Leak Check: .006 cfm@ 15 "Hg	
Finish Time:	Final Leak Check: cfm@ "Hg	

Project No.: 22001

Operator : BJ

Field Data Sheet

Date: Jue 17	Plant: Covanta DYEC	Test No.: 3 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 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
	*	*	*		*			*		*	*	*	*
8	52.5	628.05	0.6	0.64	284	250	264	49	248	89	82	1.6	2
	55	629.73	0.6	0.64	284	250	264	49	248	89	82	1.6	2
	57.5	631.41	0.6	0.65	284	251	265	48	249	90	83	1.6	2
9	60	633.08	0.7	0.70	284	251	265	48	249	90	83	1.7	2
	62.5	634.84	0.7	0.70	284	251	265	48	249	91	84	1.7	2
	65	636.58	0.7	0.70	284	251	265	48	249	91	84	1.7	2
10	67.5	638.33	0.82	0.76	285	251	264	47	248	91	84	1.8	2
	70	640.16	0.75	0.72	285	251	265	47	250	91	84	1.8	2
	72.5	641.97	0.75	0.72	284	251	265	47	248	91	84	1.8	2
11	75	643.80	0.75	0.72	284	252	265	47	249	91	84	1.8	2
	77.5	645.65	0.75	0.72	284	252	265	47	249	91	85	1.8	2
	80	647.43	0.73	0.72	283	251	265	47	249	92	83	1.8	2
12	82.5	649.26	0.72	0.71	283	251	265	47	249	92	85	1.8	2
	85	651.07	0.72	0.71	283	252	266	48	250	92	86	1.8	2
	87.5	652.90	0.72	0.71	283	252	266	48	250	92	86	1.8	2
	90	654.80											

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 10:30	Final Leak Check: .004	cfm@ 12	"Hg

Project No.: 22001

Operator :

Field Data Sheet

Date: June 18	Plant: Covanta DYEC	Test No.: 3 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 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	655.27	0.71	0.71	284	251	265	60	188	89	86	1.7	2.5
	2.5	657.01	0.70	0.70	282	252	266	51	211	89	86	1.7	2.5
	5	658.83	0.68	0.69	282	252	266	47	217	88	86	1.7	2.5
2	7.5	660.64	0.71	0.71	282	252	266	46	238	89	88	1.7	2.5
	10	662.44	0.70	0.70	282	251	266	45	247	89	~~89~~ 86	1.7	2.5
	12.5	664.23	0.73	0.71	282	251	266	45	251	89	86	1.7	2.5
3	15	666.03	0.73	0.71	283	251	266	45	251	89	86	1.7	2.5
	17.5	667.81	0.72	0.71	283	252	265	45	251	90	86	1.7	2.5
	20	669.61	0.73	0.71	283	252	265	45	251	90	86	1.7	2.5
4	22.5	671.42	0.70	0.70	284	252	266	44	250	90	86	1.7	2.5
	25	673.19	0.70	0.70	284	252	265	45	251	91	87	1.7	2.5
	27.5	674.99	0.70	0.70	284	252	265	45	251	91	87	1.7	2.5
5	30	676.79	0.65	0.67	284	253	266	45	251	91	86	1.6	2.5
	32.5	678.50	0.65	0.68	284	252	266	46	250	92	87	1.6	2.5
	35	680.20	0.65	0.68	284	252	266	46	250	92	87	1.6	2.5
6	37.5	681.92	0.60	0.65	284	252	265	46	249	91	87	1.6	2.5
	40	683.62	0.60	0.65	284	252	265	46	249	91	87	1.6	2.5
	42.5	685.31	0.60	0.65	285	252	266	47	249	91	87	1.6	2.5
7	45	687.02	0.63	0.67	285	252	265	46	250	92	87	1.6	2.5
	47.5	688.71	0.63	0.67	285	252	265	46	250	92	87	1.6	2.5
	50	690.42	0.65	0.68	285	252	265	46	250	92	87	1.6	2.5

Traverse:	1			
Start Time: 10.42	Initial Leak Check:	.007	cfm@ 15	"Hg
Finish Time:	Final Leak Check:		cfm@	"Hg

Project No.: 22001

Operator :

Field Data Sheet

Date: June 18	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	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
	*	*	*		*			*		*	*	*	*
8	52.5	692.10	0.65	0.68	286	251	265	47	250	92	87	1.6	2.5
	55	693.82	0.65	0.68	286	252	266	47	249	92	87	1.6	2.5
	57.5	695.56	0.65	0.68	286	252	266	47	249	92	87	1.6	2.5
9	60	697.29	0.65	0.68	285	252	266	47	249	92	87	1.6	2.5
	62.5	699.00	0.70	0.70	285	252	266	47	249	92	87	1.7	2.5
	65	700.77	0.70	0.70	286	251	265	47	249	92	87	1.7	2.5
10	67.5	702.54	0.70	0.70	286	251	266	47	249	92	87	1.7	2.5
	70	704.30	0.71	0.71	286	251	266	47	249	92	87	1.7	2.5
	72.5	706.00	0.70	0.70	286	251	266	47	249	92	87	1.7	2.5
11	75	707.83	0.65	0.68	286	251	266	47	248	92	87	1.6	2.5
	77.5	709.56	0.60	0.65	286	251	266	47	248	92	87	1.6	2.5
	80	711.27	0.62	0.66	286	251	265	47	248	92	87	1.6	2.5
12	82.5	712.96	0.62	0.66	286	251	265	47	248	92	87	1.6	2.5
	85	~~77~~ 714.64	0.62	0.66	286	251	265	48	248	92	88	1.6	2.5
	87.5	716.35	0.64	0.67	286	251	265	48	248	92	88	1.6	2.5
	90	718.04											

Traverse:	1		
Start Time:		Initial Leak Check:	cfm@ "Hg
Finish Time:	12:12	Final Leak Check: .005	cfm@ 11 "Hg

Project No.: 22001

Operator : R

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 2020
Test Location	APC Outlet No. 1
Operator Signature	[signature]

Project No.:	22001	
Page	1 of	
Probe No.:	PM10/2.5	
Meter Box No.:	T1	
Impinger Box No.:		

Pitot Factor	0.848	
DGMCF	1.008	
Barometric Pressure	30.11	"Hg
Static Pressure	-8.36	"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

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other________

Union None /Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	144.5	g
WCBDA	13.2	g

Combustion Gas Concentration

Oxygen	9.12	%
Carbon Dioxide	10.38	%
Carbon Monoxide	14.2	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	UNIT 1
Barometer	Env Canada
Calipers	

Nozzle Measurements

1 ________
2 ________
3 ________
4 ________
Average:

Notes:

Field Data Sheet

Date: June 16/20	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 ft³	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
*	*	*	*		*			*		*	*	*	*
		4.00											
1	0	~~[illegible]~~	.78	.35	282	250	255	72	54	75	73	.38	3
2	10.8	7.79	.79	↓	286	250	251	68	51	75	73	.38	3
3	21.6	11.45	.75		287	250	251	68	51	77	74	.38	3
4	32.0	15.05	.71		287	250	251	70	53	77	74	.38	3
5	41.6	18.32	.61		288	250	251	68	55	77	74	.38	3
6	50.4	21.37	.56		288	248	250	68	56	78	75	.38	3
	59.2	24.48											
1	0	24.48	.77		288	247	250	68	56	78	76	.38	3
2	10.6	28.08	.77		288	240	252	68	58	79	76	.38	3
3	20.9	31.68	.69		288	239	252	674	58	79	77	.38	3
4	31.3	35.37	.65		288	241	252	65	58	80	76	.38	3
5	41.6	38.94	.62		288	239	251	67	59	79	76	.38	3
6	51.4	42.41	.59		288	241	252	68	60	79	76	.38	3
	60.8	45.69											

Traverse: 1		Traverse:	
Start Time: 1103	Initial Leak Check: .003 cfm@ 15 "Hg	Start Time: 1207	Initial Leak Check: cfm @ "Hg
Finish Time: 1102	Final Leak Check: cfm@ "Hg	Finish Time: 1308	Final Leak Check: cfm @ "Hg

-8.36

Project No.: 22001

Operator: D [illegible]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	JUNE/16, 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22001	
Page	1 of 2	
Probe No.:	PH 10/25	
Meter Box No.:	T1	
Impinger Box No.:	8	

Measuring Device	MII Numbers
Probe / Pitot	PH 10/25
Trendicator	2
Control Box	3 COC 20094
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	—
Barometer	Env Canada
Calipers	503906

Pitot Factor	0.848	
DGMCF	1.008	
Barometric Pressure	30.06	"Hg
Static Pressure	-8.36	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	150.0	g
WCBDA	12.5	g

Combustion Gas Concentration

Oxygen	9.13	%
Carbon Dioxide	10.25	%
Carbon Monoxide	12.2	ppm

Nozzle Measurements	
1	0.1775
2	0.1775
3	0.1775
4	0.1780
Average:	0.1776

Reading Interval	DWELL	
Number of Ports	2	
Number of Points/Port	12	

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 16, 2020	Plant: Covanta DYEC	Test No.: 2	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 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	10:30	45.9	[illegible]	.35	286	238	251	83	~~77~~ 85	77	77	.38	3.0
2	10.8	49.57	.88	.35	288	239	251	76	84	77	76	.38	3.0
3	~~10:42~~ 21.3	53.23	.79	.35	288	240	251	72	65	78	77	.38	3.0
4	31.8	56.86	.72	.35	288	239	251	69	58	78	76	.38	3.0
5	41.9	60.32	.68	.35	288	240	251	67	56	80	77	.38	3.0
6	51.8	63.63	.58	.35	288	242	250	66	56	80	78	.38	3.0
	60.3	66.88								~~79~~	~~77~~		
1	0	66.88	.77	.35	285	241	250	65	53	79	77	.38	~~3.0~~ 3.5
2	10.6	70.42	.77	.35	288	242	250	64	53	79	77	.38	3.5
3	21.1	74.04	.72	.35	288	242	251	66	53	82	79	.38	3.5
4	31.1	77.50	.66	.35	288	242	251	62	53	83	80	.38	3.5
5	40.9	80.92	.60	.35	283	240	251	61	53	83	80	.38	3.5
6	50.4	84.23	.55	.35	282	239	251	61	53	82	80	.38	3.5
	59.7	87.42											

Traverse: 1		
Start Time: 14:08	Initial Leak Check: .005 cfm@ 16 "Hg	
Finish Time: 15:11	Final Leak Check: cfm@ "Hg	

Traverse: 15:14		
Start Time: 16:14	Initial Leak Check: cfm @ "Hg	
Finish Time:	Final Leak Check: cfm @ "Hg	

Project No.: 22001

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	3 Particle Size
Test Date	June 16, 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22001	
Page	1 of 2	
Probe No.:	PM 10/2.5	
Meter Box No.:	T1	
Impinger Box No.:	8	

Pitot Factor	0.848	
DGMCF	1.008	
Barometric Pressure	30.02	"Hg
Static Pressure -8.36		"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length	–	feet
Width	–	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	133.4	g
WCBDA	14.3	g

Combustion Gas Concentration

Oxygen	8.86	%
Carbon Dioxide	10.40	%
Carbon Monoxide	13.4	ppm

Measuring Device	MII Numbers
Probe / Pitot	PM 10/25
Trendicator	Box 2094
Control Box	Box 2094
Incline Manometer	Box 2094
Comb.Gas.Analyzer	
Micromanometer	–
Barometer	Env Canada
Calipers	B03906

Reading Interval	Dwell	
Number of Ports	2	
Number of Points/Port	12	

Nozzle Measurements	
1	0.1775
2	0.1775
3	0.1775
4	0.1780
Average:	0.1776

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 16 20	Plant: Covanta DYEC	Test No.: 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	87.66	.77	.35	284	243	253	77	42	83	81	.38	2.0
2	10.8	91.38	.75	.35	283	238	252	77	42	75	81	.38	3.0
3	22.0	95.19	.72	.35	286	241	252	68	43	81	80	.38	3.0
4	32.5	98.80	.61	.35	286	242	252	68	42	82	81	.38	3.0
5	42.6	102.28	.56	.35	286	240	252	68	43	83	81	.38	3.0
6	52.4	105.68	.50	.35	284	242	252	68	43	83	81	.38	3.0
	61.4	108.80									0		
1	0	108.80	.68	.35	282	241	251	68	37	83	81	.38	3.0
2	10.4	112.40	.66	.35	281	242	251	68	43	83	81	.38	3.0
3	20.8	116.04	.70	.35	282	242	251	68	45	84	82	.38	3.0
4	30.9	119.56	.62	.35	283	283	250	68	46	85	83	.38	3.0
5	40.6	122.94	.65	.35	284	243	253	68	46	84	82	.38	3.0
6	49.8	126.13	.52	.35	284	240	252	68	48	85	83	.38	3.0
	58.6	129.19											

Traverse: 1		
Start Time: 1650	Initial Leak Check: .005 cfm@ 15 "Hg	
Finish Time: 1751	Final Leak Check: cfm@ "Hg	

Traverse: 2		
Start Time: 1755	Initial Leak Check:	cfm @ "Hg
Finish Time: 1854	Final Leak Check:	cfm @ "Hg

Project No.: 22001

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 – Particle Size
Test Date	June 15, 2020
Test Location	APC Outlet No. 2
Operator Signature	[signature]

Project No.:	22001
Page	1 of
Probe No.:	PM10/2.5
Meter Box No.:	7
Impinger Box No.:	8

Pitot Factor	0.8496	
DGMCF	1.008	
Barometric Pressure	30.18	"Hg
Static Pressure	-9.35	"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

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other________

Union None /Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

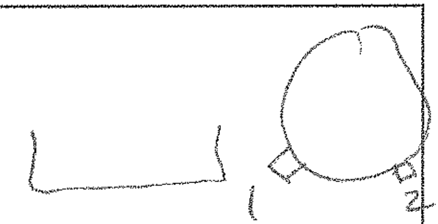
Moisture Gain

CWTR	146.6	g
WCBDA	10.2	g

Combustion Gas Concentration

Oxygen	8.41	%
Carbon Dioxide	10.90	%
Carbon Monoxide	23.3	ppm

Site Diagram



Measuring Device	MII Numbers
Probe / Pitot	PM10/2.5
Trendicator	
Control Box	ECOE2024
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	—
Barometer	Env Canada
Calipers	B03906

Nozzle Measurements	
1	0.1775
2	0.1775
3	0.1775
4	0.1780
Average:	0.1776

Notes:

Field Data Sheet

Date: Jun 15/2020	Plant:	Covanta DYEC	Test No.: 1	Particle Size	Page 2 of 8
	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	73.7	.71	.35	286	257	250	65	40	73	72	0.38	3
2	10.4	77.25	.72		286	261	251	56	42	75	73	0.38	3
3	20.8	81.05	.65		285	256	250	56	42	77	74	0.38	3
4	31.1	84.55	.63		285	259	251	57	42	78	75	0.38	3
5	41.1	88.05	.59		285	260	251	57	42	80	76	0.38	3
6	50.5	91.36	.54		285	256	251	58	42	81	77	0.38	3
	59.5	94.51											
1	0	94.51	.65		285	256	252	61	46	81	77	0.38	3
2	10.6	98.23	.67		284	259	250	59	46	81	78	0.38	3
3	21.3	102.03	.67		285	259	252	59	48	82	78	0.38	3
4	31.8	105.62	.63		285	259	250	60	52	83	79	0.38	3
5	41.8	109.08	.61		285	259	249	61	54	83	78	0.38	3
6	51.5	112.46	.53		286	259	249	61	56	83	80	0.38	3
	60.5	115.61											

Traverse: 2					
Start Time: 1001	Initial Leak Check:	.004	cfm@	16	"Hg
Finish Time: 1101	Final Leak Check:	—	cfm@	—	"Hg

-8.25

Traverse:					
Start Time: 1105	Initial Leak Check:	—	cfm @	—	"Hg
Finish Time: 1206	Final Leak Check:	—	cfm @	—	"Hg

Project No.: 22001

Operator : DA

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.:	2	Particle Size
Test Date	June 15, 2020	
Test Location	APC Outlet No. 2	
Operator Signature	[illegible]	

Project No.:	22001	
Page	1 of	
Probe No.:	PM10/25	
Meter Box No.:	T1	
Impinger Box No.:	9	

Pitot Factor	0.846	
DGMCF	1.008	
Barometric Pressure	30.16	"Hg
Static Pressure	-8.26	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	153.2	g
WCBDA	9.7	g

Combustion Gas Concentration

Oxygen	8.51	%
Carbon Dioxide	10.82	%
Carbon Monoxide	14.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	See
Trendicator	Test
Control Box	
Incline Manometer	1
Comb.Gas.Analyzer	Unit 1
Micromanometer	
Barometer	Env Canada
Calipers	

Reading Interval	Dwell	
Number of Ports	2	
Number of Points/Port	12	

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 15/20	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 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	15.72	.82	0.35	286	257	251	72	70	80	78	.38	3
2	10.6	19.42	.77		286	257	250	66	65	79	78	.38	3
3	21.2	23.15	.75		286	257	250	66	65	79	78	.38	3
4	31.6	26.66	.70		285	258	251	65	69	81	78	.38	3
5	41.6	30.15	.60		286	266	251	65	65	82	79	.38	3
6	51.2	33.52	.56		286	266	250	64	63	82	79	.38	3
	60.5	36.75			285	254	250	64	62	82	78	.38	3
1	0	36.75	.72		~~285~~	~~256~~	~~251~~	~~64~~	~~62~~	~~82~~	~~79~~	~~.38~~	~~3~~
2	10.1	40.29	.73		285	258	250	64	62	82	79	.38	3
3	20.4	43.89	.79		287	259	252	66	62	83	80	.38	3
4	30.7	47.44	.68		286	259	251	66	62	83	80	.38	3
5	40.6	50.94	.64		286	260	252	67	62	83	80	.38	3
6	50.4	54.36	.58		285	258	251	65	62	83	80	.38	3
	59.5	57.58											

Traverse:	2		
Start Time:	1301	Initial Leak Check:	0.003 cfm@ 17 "Hg
Finish Time:	1302	Final Leak Check:	— cfm@ — "Hg

Traverse:	1		
Start Time:	1404	Initial Leak Check:	— cfm @ — "Hg
Finish Time:	1504	Final Leak Check:	— cfm @ — "Hg

Project No.: 22001

Operator : [signature]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	3 Particle Size
Test Date	JUN 15/20
Test Location	APC Outlet No. 2
Operator Signature	[signature]

Project No.:	22001	
Page	1 of	
Probe No.:	PM10/2.5	
Meter Box No.:	71	
Impinger Box No.:	8	

Pitot Factor	.846	
DGMCF	1.008	
Barometric Pressure	30.12	"Hg
Static Pressure	-8.3	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	Dual
Number of Ports	2
Number of Points/Port	12

Probe Liner Glass / Metal / Teflon / Other DAPA

Nozzle Glass / Metal / Other______

Union None / Metal / Teflon / Other______

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	163.5	g
WCBDA	10.8	g

Combustion Gas Concentration

Oxygen	8.61	%
Carbon Dioxide	10.77	%
Carbon Monoxide	11.6	ppm

Measuring Device	MII Numbers
Probe / Pitot	566
Trendicator	
Control Box	7657
Incline Manometer	
Comb.Gas.Analyzer	|
Micromanometer	|
Barometer	Env Canada
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Site Diagram

Notes:

Field Data Sheet

Date: JUN 15/20	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 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	57.83	.80	.35	287	255	256	66	36	81	81	.38	3
2	10.9	61.79	.78		287	255	256	64	36	81	80	.38	3
3	21.4	65.48	.75		287	255	256	63	35	81	80	.38	3
4	31.8	69.12	.68		286	258	252	59	33	83	81	.38	3
5	41.9	72.88	.60		286	260	253	58	33	84	81	.38	3
6	51.2	76.4	.54		287	260	250	58	36	85	84	.38	3
	60.2	79.59	~~.76~~		~~258~~	~~250~~							
1	0	79.50	.76		285	250	252	59	39	85	84	.38	3
2	10.2	83.07	.73		286	260	252	58	40	84	82	.38	3
3	20.5	86.66	.65		286	260	251	59	42	85	82	.38	3
4	31.1	90.40	.67		284	259	251	58	40	85	82	.38	3
5	41.1	93.77	.65		284	260	252	57	42	85	82	.38	3
6	50.7	97.14	.57		284	260	252	57	42	85	82	.38	3
	59.8	~~97.15~~ 100.35											

Traverse: 2				
Start Time: 1605	Initial Leak Check:	.004	cfm@ 18	"Hg
Finish Time: 1705	Final Leak Check:	—	cfm@ —	"Hg

Traverse: 1				
Start Time: 1707	Initial Leak Check:	—	cfm @ —	"Hg
Finish Time: 1807	Final Leak Check:	—	cfm @ —	"Hg

Project No.: 22001

Operator : [illegible]

a Kontrol Energy Company

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 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22001	
Page	1 of 5	
Probe No.:	7 Series	
Meter Box No.:	Team 4	
Impinger Box No.:		

Pitot Factor	.848	
DGMCF	1.007	
Barometric Pressure	29.98	"Hg
Static Pressure	-3.30 ~~3.3~~	"H2O
Nozzle Size	.2546	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	657.0	g
WCBDA	12.9	g

Combustion Gas Concentration

Oxygen	8.91	%
Carbon Dioxide	10.61	%
Carbon Monoxide	18.9	ppm

Measuring Device	MII Numbers
Probe / Pitot .59	B03770
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env Canada
Calipers	

Reading Interval	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 17 2020	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 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	16.03	.89	.80	284	249	246	73	45	73	74	2.2	7
	5	20.15	.89	.80	288	255	260	59	47	76	74	2.2	7
2	10	24.16	.87	.79	287	255	254	57	47	78	74	2.15	7
	15	28.18	.88	.80	287	252	248	52	45	80	74	2.2	8
3	20	32.27	.87	.80	287	258	257	54	47	82	75	2.15	7.5
	25	36.44	.87	.80	287	264	254	55	48	83	76	2.15	8
4	30	40.38	.81	.77	287	253	250	55	46	84	76	2.05	8
	35	44.27	.81	.77	288	254	255	56	46	84	77	2.05	8
5	40	48.18	.72	.73	287	256	254	58	46	84	77	1.8	7
	45	51.85	.72	.73	287	255	248	58	45	85	77	1.8	7
6	50	55.52	.63	.68	287	257	256	59	43	86	77	1.6	7
	55	58.97	.64	.69	287	253	255	59	41	86	78	1.65	7
7	60	62.47	.74	.74	288	253	250	54	41	86	78	1.9	7.5
	65	66.22	.73	.74	287	255	256	52	42	87	78	1.9	7.5
8	70	70.0	.75	.75	287	252	256	52	41	86	78	1.9	7.5
	75	73.81	.77	.76	287	256	249	51	41	87	79	1.9	7.5
9	80	77.59	.80	.77	287	257	256	50	41	88	79	2.0	7.5
	85	81.46	.76	.75	287	252	256	50	42	87	79	1.9	7.5
10	90	85.24	.77	.76	285	251	249	50	41	87	79	1.95	7.5
	95	89.07	.75	.75	285	253	255	51	42	87	79	1.9	7
11	100	92.82	.69	.72	285	255	256	51	41	88	79	1.7	7

Traverse: 1			
Start Time: 8:56	Initial Leak Check: .006	cfm@ 18	"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.: 22001

Operator :

9:31

Field Data Sheet

Date: June 17 2020	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 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
	*	*	*		*			*		*	*	*	*
	105	96.42	.71	.73	285	256	252	51	41	89	79	1.75	7
12	110	100.04	.59	.66	285	253	255	51	41	89	79	1.5	6.5
	115	103.42	.59	.66	285	257	260	52	41	87	79	1.5	6.5
	120	106.75											

Traverse: 1		
Start Time: 10:56	Initial Leak Check: .01 cfm@ 15 "Hg	
Finish Time:	Final Leak Check: .01 cfm@ "Hg	

Traverse:		
Start Time:	Initial Leak Check: cfm @ "Hg	
Finish Time:	Final Leak Check: cfm @ "Hg	

Project No.: 22001
Operator :

Field Data Sheet

Date: June 17 2020	Plant: Covanta DYEC	Test No.: 1 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

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	107.21	.85	.79	287	250	256	70	44	79	78	2.1	8
	5	111.09	.95	.83	287	252	259	50	45	80	78	2.4	8.5
2	10	115.35	.86	.79	287	256	254	47	43	81	78	2.15	8
	15	119.39	.88	.80	287	254	265	47	40	82	78	2.2	8
3	20	123.50	.83	.78	287	257	257	47	40	83	78	2.1	8
	25	127.43	.81	.77	287	253	252	47	40	83	79	2.05	8
4	30	131.34	.76	.75	286	258	265	47	40	83	78	1.95	7.5
	35	135.17	.77	.75	286	260	257	48	39	83	78	1.9	7.5
5	40	138.97	.71	.72	286	258	255	48	40	83	78	1.75	7
	45	142.60	.70	.72	287	252	249	48	39	84	78	1.75	7
6	50	146.20	.65	.69	286	256	257	49	40	85	79	1.65	7
	55	149.72	.64	.69	286	253	250	48	39	85	79	1.65	7
7	60	153.25	.69	.72	286	252	252	49	40	85	79	1.7	7
	65	156.84	.71	.73	285	255	256	48	40	85	79	1.8	7
8	70	160.48	.77	.76	286	256	250	48	41	86	79	1.9	7.5
	75	164.27	.75	.75	286	259	251	48	42	86	79	1.85	7.5
9	80	168.04	.79	.77	285	256	261	49	42	85	79	1.95	8
	85	171.85	.79	.77	286	256	256	49	42	85	79	1.95	8
10	90	175.66	.78	.76	286	251	250	49	44	85	80	1.95	8
	95	179.49	.81	.78	284	252	258	49	42	84	80	2	8
11	100	183.46	.76	.75	284	256	252	49	42	85	80	1.9	7.5

Traverse: 2		Traverse:	
Start Time: 11:18	Initial Leak Check: .01 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.: 22001

Operator : [signature]

Field Data Sheet

Date: June 17 2020	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 ft³	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	187.24	.73	.74	284	254	250	52	42	84	80	1.9	7.5
12	110	191.05	.63	.68	284	251	258	50	42	84	79	1.6	7
	115	194.50	.64	.69	284	256	258	50	41	84	80	1.6	7
	120	197.99											

Traverse: 2		Traverse:	
Start Time: —	Initial Leak Check: — cfm@ — "Hg	Start Time: /	Initial Leak Check: / cfm @ / "Hg
Finish Time: 12:18	Final Leak Check: .012 cfm@ 16 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 22001

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	June 18 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22001
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	.848	
DGMCF	1.007	
Barometric Pressure	29.85	"Hg
Static Pressure	-8.30	"H2O
Nozzle Size	.2546	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	644.1	g
WCBDA	17.4	g

Combustion Gas Concentration

Oxygen	8.33	%
Carbon Dioxide	11.01	%
Carbon Monoxide	12.9	ppm

Measuring Device	MII Numbers
Probe / Pitot 59	603770
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env Canada
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 18 2020	Plant: Covanta DYEC	Test No.: 2 SVOC	
	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	92.56	.83	.78	286	248	250	74	42	72	72	2.1	6
	5	96.48	.85	.78	287	258	248	57	42	76	74	2.05	7
2	10	100.36	.85	.78	287	259	254	55	45	80	74	2.1	7
	15	104.29	.84	.78	287	258	249	56	45	82	74	2.1	7
3	20	108.23	.80	.76	287	253	251	53	46	84	75	2.0	7
	25	112.09	.82	.78	287	254	250	54	47	86	77	2.1	7
4	30	116.04	.75	.74	287	257	255	53	49	86	76	1.85	7
	35	119.76	.74	.74	287	257	252	54	50	87	77	1.85	7
5	40	123.46	.65	.69	287	256	251	54	53	88	77	1.6	6.5
	45	126.99	.66	.70	287	256	258	54	48	89	78	1.65	6.5
6	50	130.54	.55	.64	287	260	256	54	44	90	79	1.35	6
	55	133.77	.56	.65	286	253	251	55	42	90	79	1.4	6
7	60	137.05	.63	.69	286	258	251	55	42	90	79	1.6	6.5
	65	140.49	.63	.69	286	259	255	54	42	91	80	1.6	6.5
8	70	143.98	.68	.71	286	257	257	56	43	90	80	1.7	7
	75	147.61	.66	.70	286	256	257	55	45	90	80	1.65	7
9	80	151.18	.68	.71	287	256	257	55	46	92	81	1.7	7
	85	154.79	.68	.72	286	257	255	55	48	92	81	1.75	7
10	90	158.43	.65	.70	286	258	255	56	51	93	81	1.65	7
	95	161.97	.66	.71	285	258	250	57	54	92	81	1.7	7
11	100	165.55	.56	.65	286	254	250	58	56	92	82	1.45	6.5

Traverse: 1			
Start Time: 8:11	Initial Leak Check: .004	cfm@ 18	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse: 2			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22001

Operator :

Field Data Sheet

Date: June 18 2020	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 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
*	*	*	*		*			*		*	*	*	*
	105	168.89	.57	.66	285	277	255	58	58	93	82	1.45	6.5
12	110	172.20	.57	.66	285	259	253	57	54	93	83	1.45	6.5
	115	175.54	.54	.64	284	256	251	55	49	94	82	1.4	6
	120	178.77											

Traverse: 1			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 10:11	Final Leak Check: .002	cfm@ 15	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22001

Operator :

Field Data Sheet

Date: June 18 2020	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 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	179.04	.73	.74	286	254	256	64	49	86	82	1.9	8
	5	182.73	.76	.76	286	252	254	49	49	87	83	1.95	8
2	10	186.55	.75	.75	286	256	253	47	39	88	82	1.9	7
	15	190.37	.75	.75	286	254	257	48	39	86	83	1.95	7
3	20	194.18	.73	.74	286	258	250	50	39	87	83	1.9	7
	25	197.93	.73	.74	287	259	259	49	40	88	83	1.9	7
4	30	201.67	.69	.72	287	258	254	49	40	89	82	1.75	7
	35	205.32	.71	.73	287	259	259	49	40	89	82	1.8	7
5	40	208.03	.64	.69	287	255	255	49	40	89	82	1.6	6.5
	45	212.55	.66	.70	288	255	252	50	40	89	82	1.7	6.5
6	50	216.13	.61	.68	288	258	257	50	41	90	83	1.5	6.5
	55	219.59	.60	.67	288	256	256	50	41	90	82	1.5	6.5
7	60	222.96	.60	.67	287	256	249	51	41	91	82	1.5	6.1
	65	226.34	.68	.72	287	259	256	51	41	90	82	1.7	7
8	70	229.94	.70	.73	288	258	255	51	41	91	82	1.8	7
	75	233.60	.71	.73	288	255	256	51	41	90	82	1.8	7
9	80	237.27	.72	.74	288	256	259	52	41	90	83	1.9	7
	85	240.01	.74	.76	288	253	252	52	42	90	83	2.0	7
10	90	244.84	.72	.74	288	256	255	52	42	89	83	1.85	7
	95	248.59	.71	.73	288	256	253	52	42	89	83	1.8	7
11	100	252.29	.67	.71	288	253	249	53	43	89	82	1.7	7

Traverse: 2		Traverse:	
Start Time: 10:22	Initial Leak Check: .004 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.: 22001

Operator :

Field Data Sheet

Date: June 18 2020	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 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
*	*	*	*		*			*		*	*	*	*
	105	255.92	.65	.70	288	259	251	52	43	89	83	1.65	7
12	110	259.46	.67	.71	287	256	254	53	43	90	83	1.7	7
	115	263.06	.66	.71	282	253	254	52	44	90	83	1.7	7
	120	266.62											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 12:22	Final Leak Check: .003	cfm@ 22	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22001

Operator : [signature]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	June 18 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22001
Page	1 of 5
Probe No.:	7 series
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	.848	
DGMCF	1.007	
Barometric Pressure	30.10	"Hg
Static Pressure	-8.30	"H2O
Nozzle Size	.2548	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	705.5	g
WCBDA	14.1	g

Combustion Gas Concentration

Oxygen	8.22	%
Carbon Dioxide	10.96	%
Carbon Monoxide	14.6	ppm

Measuring Device	MII Numbers
Probe / Pitot S10	B03771
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env Canada
Calipers	

Nozzle Measurements	
1	.2560
2	.2555
3	.2540
4	.2535
Average:	.2548

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 2020	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 ft³	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	67.02	.97	.79	285	254	253	~~287~~ 67	82	50	83	2.1	7
	5	~~70~~ 70.93	.85	.80	288	251	256	64	56	87	82	2.1	7.5
2	10	74.88	.87	.81	289	251	255	60	58	89	82	2.2	8
	15	78.98	.88	.81	288	252	258	58	57	90	83	2.25	8
3	20	83.14	.83	.79	289	253	253	55	52	91	83	2.1	8
	25	87.12	.83	.79	289	252	256	58	56	91	83	2.1	8
4	30	91.23	.77	.76	289	253	257	56	55	92	84	2	7.5
	35	95.11	.76	.76	289	253	251	60	53	92	84	1.9	7.5
5	40	98.95	.68	.72	289	253	257	52	51	93	84	1.7	7
	45	102.57	.68	.72	289	252	257	50	51	94	85	1.7	7
6	50	106.18	.58	.67	288	251	251	49	51	95	85	1.5	7
	55	109.60	.59	.67	288	253	257	46	49	94	85	1.5	7
7	60	112.97	.67	.72	288	253	256	46	51	95	85	1.7	7
	65	116.57	.67	.71	289	252	252	46	54	94	85	1.7	7
8	70	120.17	.70	.73	288	253	256	46	57	94	85	1.8	7.5
	75	123.91	.69	.72	288	253	251	46	58	93	85	1.75	7
9	80	127.55	.74	.74	288	253	251	46	58	93	85	1.8	8
	85	131.25	.67	.72	288	253	255	48	56	93	86	1.7	7
10	90	134.88	.66	.71	285	252	254	48	48	94	85	1.7	7
	95	138.49	.66	.71	285	252	254	48	48	94	85	1.7	7
11	100	142.07	.61	.68	285	252	251	49	50	94	86	1.6	7

Traverse: 1			
Start Time: 12:42	Initial Leak Check: .002 cfm@ 15 "Hg		
Finish Time: —	Final Leak Check: — cfm@ — "Hg		

Traverse:	
Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time:	Final Leak Check: cfm @ "Hg

– 8.3

Project No.: 22001

Operator :

Field Data Sheet

Date: June 18 2010	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 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 *
	105	145.59	.61	.68	285	252	257	50	52	94	85	1.55	7
12	110	149.02	.61	.68	285	252	254	49	55	94	86	1.55	7
	115	152.42	.61	.68	285	251	257	50	60	94	85	1.55	7
	120	155.64											

Traverse:			
Start Time: 14:42	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check: .001	cfm@ 21	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22001

Operator :

Field Data Sheet

Date: June 18 2010	Plant: Covanta DYEC	Test No.: 3 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

*	*	*	*		*			*		*	*	*	*
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	154.99	.83	.79	288	253	256	62	52	87	85	2.1	8
	5	158.87	.83	.79	288	251	252	49	49	89	85	2.1	8
2	10	162.96	.87	.81	288	253	258	44	49	89	85	2.2	8
	15	167.08	.83	.79	289	252	255	44	49	90	85	2.1	8
3	20	~~170~~/171.12	.79	.77	288	253	255	46	48	90	85	2.0	8
	25	175.06	.79	.77	288	253	256	44	49	90	85	2.0	8
4	30	178.90	.73	.74	289	252	252	44	49	92	85	1.8	7.5
	35	182.60	.78	.74	289	253	256	44	48	92	85	1.8	7.5
5	40	186.29	.71	.73	288	253	258	44	48	93	85	1.8	7.5
	45	189.99	.62	.69	288	252	252	45	48	93	85	1.6	7.0
6	50	193.42	.65	.71	287	253	256	45	47	94	86	1.7	7.0
	55	196.99	.63	.69	287	253	254	47	48	94	86	1.6	7.0
7	60	200.50	.66	.71	287	254	256	47	48	94	86	1.75	7.0
	65	204.10	.66	.71	286	253	255	46	49	95	86	1.75	7.0
8	70	207.70	.74	.75	286	252	253	46	50	94	86	1.90	7.8
	75	211.45	.77	.74	287	252	254	47	53	95	87	1.90	7.8
9	80	215.21	.73	.75	287	253	252	47	54	94	87	1.90	7.8
	85	218.95	0.76	.76	287	253	258	47	56	95	87	2.00	8.0
10	90	222.80	0.75	.76	287	253	256	48	59	95	88	2.00	8.0
	95	226.65	0.76	.76	284	252	255	48	58	95	87	2.00	8.0
11	100	230.58	0.66	.71	282	253	258	49	56	94	87	1.70	7.5

Traverse: 2			Traverse:		
Start Time: 14:49	Initial Leak Check: .003	cfm@ 21 "Hg	Start Time:	Initial Leak Check:	cfm @ "Hg
Finish Time:	Final Leak Check:	cfm@ "Hg	Finish Time:	Final Leak Check:	cfm @ "Hg

Project No.: 22001

Operator : JB

Field Data Sheet

Date: June 18 2020	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 ft³	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	234.11	.66	.72	281	259	252	48	52	95	88	1.70	7.5
12	110	237.71	.66	.72	281	258	254	48	52	96	88	1.70	7.5
	115	241.32	.66	.72	281	252	258	49	53	95	88	1.70	7.5
	120	244.92											

Traverse: 2		Traverse:	
Start Time:	Initial Leak Check: cfm@ "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 16:49	Final Leak Check: .003 cfm@ 15 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 22001
Operator : JK

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date June 17, 2020	
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22001	
Page	1 of 5	
Probe No.:	6C	
Meter Box No.:	Team 2	
Impinger Box No.:	13	

Pitot Factor	0.850	
DGMCF	1.001	
Barometric Pressure	29.97	"Hg
Static Pressure	-7.8	"H2O
Nozzle Size	0.2544	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

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	685.4	g
WCBDA	16.5	g

Combustion Gas Concentration

Oxygen	8.60	%
Carbon Dioxide	10.88	%
Carbon Monoxide	12.6	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	S7
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env Canada
Calipers	

Nozzle Measurements	
1	.2550
2	.2540
3	.2545
4	.2540
Average:	.2544

Notes:

Field Data Sheet

Date: June 17, 2020	Plant: Covanta DYEC	Test No.: 1 SVOC	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	709.32	0.82	0.77	280	259	265	56	43	75	76	2.00	5.0
	5	713.15	0.83	0.77	280	259	265	53	44	75	76	2.00	5.0
2	10	717.61	0.82	0.77	280	258	266	52	44	76	76	2.00	5.0
	15	720.87	0.82	0.77	280	258	265	52	45	76	77	2.00	5.0
3	20	724.72	0.80	0.76	281	259	266	52	45	76	77	2.00	5.0
	25	728.53	0.82	0.77	283	259	264	52	47	77	78	2.00	5.0
4	30	732.38	0.81	0.76	284	258	266	52	47	77	78	2.00	6.0
	35	736.20	0.82	0.77	284	257	265	52	48	77	80	2.00	6.0
5	40	740.07	0.73	0.72	285	258	266	54	49	77	79	1.85	5.8
	45	743.75	0.75	0.73	285	258	265	54	49	78	80	1.85	5.8
6	50	747.47	0.65	0.68	285	259	264	53	46	78	80	1.60	5.3
	55	750.91	0.65	0.68	286	258	266	54	45	79	81	1.60	5.3
7	60	754.35	0.68	0.70	285	258	264	54	45	79	81	1.70	5.0
	65	757.88	0.68	0.70	285	258	266	54	45	80	82	1.70	5.0
8	70	761.46	0.69	0.71	285	258	266	54	46	79	82	1.75	5.3
	75	765.00	0.71	0.72	285	258	267	54	46	80	83	1.75	5.3
9	80	768.61	0.72	0.72	285	258	267	54	46	80	83	1.80	5.5
	85	772.26	0.71	0.72	285	257	266	55	47	80	83	1.80	5.5
10	90	775.92	0.75	0.74	285	257	267	55	47	80	83	1.85	5.5
	95	779.63	0.74	0.73	284	258	266	55	47	80	83	1.85	5.5
11	100	783.31	0.74	0.73	284	258	266	55	46	81	83	1.85	5.5

Traverse: 1			
Start Time: 9:26	Initial Leak Check: .005	cfm@ 17	"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.: 22001

Operator : RW JB

Field Data Sheet

Date: June 17, 2020	Plant:	Covanta DYEC	Test No.: 1	SVOC	Page 3 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	787.02	0.75	0.74	284	257	266	55	45	81	83	1.85	5.5
12	110	790.74	0.73	0.73	284	258	268	55	44	81	83	1.85	5.5
	115	794.44	0.73	0.73	284	257	266	55	44	81	83	1.85	5.5
	120	798.12											

Traverse: 1		Traverse:	
Start Time:	Initial Leak Check: cfm@ "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 11:20	Final Leak Check: .004 cfm@ 19 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 22001

Operator : JB

Field Data Sheet

Date: June 17, 2020	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 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	798.64	0.80	0.76	284	258	260	58	43	81	81	1.95	6.3
	5	802.44	0.79	0.76	283	257	264	58	46	81	81	1.95	6.3
2	10	806.26	0.80	0.76	282	253	252	51	48	81	81	1.95	6.3
	15	810.09	0.82	0.77	283	258	248	49	48	81	81	2.00	6.3
3	20	813.92	0.80	0.76	283	256	250	48	48	81	81	1.95	6.3
	25	817.76	0.77	0.75	283	262	260	47	47	80	81	1.90	6.3
4	30	821.53	0.74	0.72	283	248	266	48	48	81	81	1.85	6.3
	35	825.27	0.73	0.73	283	260	250	48	48	81	82	1.80	6.3
5	40	828.94	0.65	0.69	283	258	252	48	47	81	82	1.60	6.0
	45	832.41	0.66	0.69	283	266	262	48	48	80	82	1.60	6.0
6	50	835.88	0.60	0.66	284	266	265	48	47	81	82	1.60	6.0
	55	839.34	0.56	0.64	283	269	270	49	47	81	83	1.50	6.0
7	60	842.73	0.55	0.63	283	268	268	50	48	81	84	1.40	5.5
	65	845.97	0.55	0.63	283	269	270	50	47	81	84	1.40	5.3
8	70	849.17	0.55	0.63	282	270	269	50	48	81	84	1.40	5.3
	75	852.38	0.55	0.63	282	267	267	51	47	82	85	1.40	5.3
9	80	855.59	0.59	0.66	282	267	270	51	47	82	85	1.50	5.5
	85	858.90	0.59	0.66	281	267	269	51	47	82	85	1.50	5.5
10	90	862.24	0.65	0.69	281	267	269	51	47	82	85	1.65	5.8
	95	865.69	0.63	0.68	282	267	269	51	48	82	86	1.60	5.8
11	100	869.16	0.64	0.69	282	268	268	51	47	82	86	1.60	5.8

Traverse: 2			
Start Time: 11:40	Initial Leak Check: .008	cfm@ 18	"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.: 22001

Operator : JB CB

Field Data Sheet

Date: June 17, 2020	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 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		Meter Temp		Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
								Outlet °F	Inlet/Trap °F	Outlet °F	Inlet °F		
	105	872.65	0.64	0.69	281	267	269	57	49	83	86	1.60	5.8
12	110	~~877.03~~ 876.11	0.68	0.71	280	267	269	57	50	83	86	1.70	6.0
	115	879.68	6.68	0.71	281	267	269	57	50	83	86	1.70	6.0
	120	883.26											

Traverse: 2		
Start Time:	Initial Leak Check: cfm@	"Hg
Finish Time: 13:40	Final Leak Check: .005 cfm@ 20	"Hg

Traverse:		
Start Time:	Initial Leak Check: cfm @	"Hg
Finish Time:	Final Leak Check: cfm @	"Hg

Project No.: 22001

Operator : JB

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date June 17, 2020	
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22001	
Page	1 of 5	
Probe No.:	6C	
Meter Box No.:	Team 2	
Impinger Box No.:	6	

Pitot Factor	0.850	
DGMCF	1.001	
Barometric Pressure	29.90	"Hg
Static Pressure	-7.8	"H2O
Nozzle Size	0.2544	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	625.4	g
WCBDA	15.1	g

Combustion Gas Concentration

Oxygen	8.43	%
Carbon Dioxide	10.88	%
Carbon Monoxide	11.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	57
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env Canada
Calipers	

Nozzle Measurements	
1	.2550
2	.2540
3	.2545
4	.2540
Average:	.2544

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, 2020	Plant: Covanta DYEC	Test No.: 2 SVOC	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	883.73	0.73	0.72	284	261	259	52	46	81	81	1.80	5.5
	5	887.37	0.72	0.72	284	262	263	54	46	81	81	1.80	5.5
2	10	890.95	0.71	0.72	284	267	265	54	46	81	81	1.80	5.5
	15	894.51	0.71	0.72	284	267	266	54	45	81	82	1.80	5.5
3	20	898.13	0.71	0.72	284	266	266	52	45	81	82	1.80	5.5
	25	901.76	0.71	0.72	284	268	268	48	46	82	83	1.80	5.5
4	30	905.38	0.65	0.69	284	268	268	46	46	82	83	1.65	5.5
	35	908.90	0.66	0.69	284	268	266	46	46	82	84	1.65	5.5
5	40	912.43	0.61	0.67	285	266	264	46	45	83	84	1.55	5.5
	45	915.86	0.61	0.67	285	269	270	43	45	84	85	1.55	5.5
6	50	919.26	0.56	0.64	285	269	270	43	46	83	86	1.40	5.5
	55	922.51	0.58	0.65	285	268	269	43	45	83	85	1.40	5.5
7	60	925.76	0.65	0.69	285	268	268	43	45	83	86	1.65	5.5
	65	929.25	0.65	0.69	285	269	270	44	47	84	87	1.65	5.5
8	70	932.74	0.64	0.69	286	268	270	43	47	84	87	1.65	5.5
	75	936.23	0.64	0.69	286	269	270	44	48	84	87	1.65	5.5
9	80	939.72	0.62	0.68	285	269	270	44	48	84	87	1.60	5.5
	85	943.16	0.64	0.69	285	268	270	44	47	84	87	1.60	5.5
10	90	946.62	0.68	0.71	284	269	270	44	48	84	87	1.70	6.0
	95	950.17	0.69	0.71	283	268	270	44	48	85	87	1.70	6.0
11	100	953.75	0.63	0.68	283	268	270	46	48	85	88	1.60	6.0

Traverse: 1			
Start Time: 14:46	Initial Leak Check: .005	cfm@ 19	"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.: 22001

Operator : JB

Field Data Sheet

Date: June 17, 2020	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 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
	*	*	*		*			*		*	*	*	*
	105	957.23	6.68	0.71	283	268	270	46	48	85	87	1.70	6.0
12	110	960.79	6.67	0.70	282	269	270	46	48	85	87	1.70	6.0
	115	964.35	0.67	0.70	282	269	270	47	49	85	88	1.70	6.0
	120	967.89											

Traverse: 1				
Start Time: 16:46	Initial Leak Check:	cfm@		"Hg
Finish Time:	Final Leak Check: .003	cfm@	18	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22001

Operator : JB

Field Data Sheet

Date: June 17, 2020	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 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	968.27	0.78	0.76	282	269	268	52	46	85	86	1.90	7.0
	5	972.03	0.80	0.77	285	270	270	49	46	86	86	1.95	7.0
2	10	975.90	0.78	0.76	285	270	270	47	45	85	86	1.95	7.0
	15	979.73	0.75	0.74	284	270	270	48	45	85	86	1.85	7.0
3	20	983.48	0.75	0.74	284	270	270	48	46	85	87	1.85	7.0
	25	987.22	0.70	0.72	284	269	270	48	46	85	87	1.75	6.8
4	30	990.85	0.62	0.68	283	270	268	48	46	85	88	1.55	6.5
	35	994.27	0.65	0.69	283	270	270	48	46	86	88	1.60	6.5
5	40	997.75	.65	.69	283	271	270	48	47	86	89	1.6	6.5
	45	1001.20	0.61	0.67	283	271	270	49	47	86	89	1.55	6.5
6	50	1004.61	0.55	0.64	283	271	270	49	47	86	89	1.40	6.0
	55	1007.86	0.55	0.64	283	270	269	49	46	86	89	1.40	6.0
7	60	1011.07	0.56	0.65	284	271	270	50	46	86	89	1.40	6.0
	65	1014.30	0.60	0.67	284	271	270	50	46	86	90	1.50	6.3
8	70	1017.65	0.58	0.66	285	271	270	50	47	87	90	1.50	6.3
	75	1021.02	0.55	0.66	284	271	270	50	48	86	90	1.50	6.3
9	80	1024.36	0.60	0.67	285	271	270	51	48	87	90	1.50	6.5
	85	1027.71	0.60	0.67	285	270	268	51	47	87	90	1.50	6.5
10	90	1031.04	0.62	0.68	284	271	270	51	47	87	90	1.55	6.5
	95	1034.48	0.62	0.68	284	271	270	51	48	87	90	1.55	6.5
11	100	1037.90	0.60	0.67	284	270	270	51	47	87	90	1.55	6.5

Traverse: 2		Traverse:	
Start Time: 16:58	Initial Leak Check: .006 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.: 22001

Operator : JB

Field Data Sheet

Date: June 17, 2020	Plant:	Covanta DYEC	Test No.: 2	SVOC	Page 5 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	1041.30	0.60	0.67	283	270	270	52	47	87	90	1.55	6.5
12	110	1044.75	0.60	0.67	283	270	269	52	47	87	90	1.50	6.5
	115	1048.13	0.60	0.67	283	271	270	52	47	87	90	1.50	6.5
	120	1051.49											

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 18:58	Final Leak Check: .004	cfm@ 15	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22001

Operator : JB

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date June 18, 2020	
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22001
Page	1 of 5
Probe No.:	6C
Meter Box No.:	Team 2
Impinger Box No.:	615

Pitot Factor	0.850	
DGMCF	1.001	
Barometric Pressure	29.85	"Hg
Static Pressure	-7.8	"H2O
Nozzle Size	0.2544	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

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	655.2	g
WCBDA	12.0	g

Combustion Gas Concentration

Oxygen	8.39	%
Carbon Dioxide	10.97	%
Carbon Monoxide	12.0	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	57
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env Canada
Calipers	

Nozzle Measurements	
1	.2550
2	.2540
3	.2545
4	.2540
Average:	.2544

Notes:

Field Data Sheet

Date: June 18, 2020	Plant: Covanta DYEC	Test No.: 3 SVOC	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	51.87	0.73	0.72	283	268	262	52	58	74	74	1.70	4.0
	5	55.44	0.74	0.73	282	268	260	54	45	74	75	1.75	4.0
2	10	59.02	0.74	0.73	281	267	261	56	45	74	75	1.75	4.0
	15	62.62	0.74	0.73	280	268	264	54	45	74	76	1.80	4.0
3	20	66.24	0.74	0.73	280	268	265	53	46	75	77	1.86	4.0
	25	69.88	0.73	0.72	282	268	265	48	45	75	78	1.80	4.0
4	30	73.51	0.69	0.70	282	268	265	47	45	76	79	1.70	4.0
	35	77.05	0.69	0.70	283	268	265	45	45	76	81	1.70	4.0
5	40	80.61	0.67	0.70	282	268	266	45	46	77	82	1.70	4.0
	45	84.13	0.60	0.66	281	268	266	45	46	78	82	1.50	4.0
6	50	87.45	0.60	0.66	281	268	266	46	46	78	83	1.50	4.0
	55	90.77	0.61	0.67	281	268	266	45	46	79	83	1.50	4.0
7	60	94.13	0.63	0.68	281	267	266	45	46	79	84	1.60	4.0
	65	97.56	0.64	0.68	281	268	266	45	46	80	85	1.60	4.0
8	70	101.02	0.63	0.68	282	268	267	47	44	80	85	1.60	4.0
	75	104.47	0.64	0.69	282	268	267	48	44	81	86	1.60	4.0
9	80	107.92	0.65	0.69	281	268	267	49	43	81	86	1.65	4.0
	85	111.43	0.66	0.70	281	268	267	50	44	82	86	1.65	4.0
10	90	114.93	0.72	0.73	281	268	267	51	44	82	86	1.80	4.5
	95	118.60	0.70	0.72	281	268	268	51	44	83	87	1.80	4.5
11	100	122.27	0.70	0.72	281	268	266	51	44	83	87	1.80	4.5

Traverse: 1		Traverse:	
Start Time: 8:15	Initial Leak Check: .002 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.: 22001

Operator : JB

Field Data Sheet

Date: June 18, 2020	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	125.96	0.71	0.73	281	268	268	53	46	84	87	1.80	4.5
12	110	129.64	0.57	0.65	281	268	268	53	46	84	87	1.40	4.0
	115	132.97	0.57	0.65	281	268	268	54	44	84	87	1.40	4.0
	120	136.24											

Traverse: 1

Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 10:15	Final Leak Check: .007	cfm@ 15	"Hg

Traverse:

Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22001

Operator : JB

Field Data Sheet

Date: June 18, 2020	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³ *	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	136.58	0.55	0.64	282	268	268	52	41	84	84	1.40	4.0
	5	139.86	0.61	0.67	281	268	267	56	41	84	84	1.50	4.0
2	10	143.18	0.61	0.67	281	268	268	52	41	83	83	1.80	4.0
	15	146.51	0.61	0.67	281	269	268	54	42	83	84	1.60	4.0
3	20	149.83	0.64	0.69	280	269	268	52	42	83	84	1.60	4.3
	25	153.27	0.63	0.68	282	269	268	54	42	83	86	1.60	4.3
4	30	156.73	0.62	0.68	282	268	268	54	42	84	86	1.55	4.3
	35	160.14	0.61	0.67	283	269	266	55	42	84	87	1.55	4.3
5	40	163.54	0.61	0.67	283	269	268	55	42	84	87	1.55	4.3
	45	166.95	0.61	0.67	284	269	268	55	43	84	88	1.55	4.3
6	50	170.36	0.59	0.66	285	269	267	53	43	84	88	1.50	4.3
	55	173.72	0.60	0.67	286	269	268	52	43	85	88	1.50	4.3
7	60	177.08	0.60	0.67	286	269	267	52	43	85	88	1.50	4.3
	65	180.44	0.58	0.65	286	268	268	53	43	85	88	1.60	4.3
8	70	183.80	0.64	0.69	286	269	268	57	44	85	88	1.60	4.5
	75	187.38	0.64	0.69	285	269	269	57	44	85	89	1.60	4.5
9	80	190.81	0.69	0.72	285	268	268	57	44	85	89	1.70	4.5
	85	194.42	0.70	0.72	286	270	267	52	45	85	89	1.70	4.5
10	90	198.03	0.74	0.74	286	270	269	52	46	85	89	1.80	5.0
	95	201.72	0.72	0.73	285	271	269	53	47	86	90	1.80	5.0
11	100	205.60	0.75	0.75	284	270	269	53	47	86	90	1.85	5.0

Traverse: 2		Traverse:	
Start Time: 10:45	Initial Leak Check: .000 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.: 22001

Operator : JB JG

Field Data Sheet

Date: June 18, 2020	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 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
*	*	*	*		*			*		*	*	*	*
	105	209.2	.75	.75	284	270	269	54	55	87	93	1.85	5
12	110	212.85	.75	.75	284	270	268	55	50	87	90	1.85	5
	115	216.57	.75	.75	284	270	268	54	51	[illegible]	90	1.9	5
	120	220.34											

Traverse: 2			
Start Time: —	Initial Leak Check: — cfm@ — "Hg		
Finish Time: 1245	Final Leak Check: .007 cfm@ 15 "Hg		

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22001

Operator :

a Kontrol Energy Company

APPENDIX 7

Acid Gas Field Data Sheets
(12 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	M26A
Test Date	June 15, 2020
Test Location	APC Outlet No. 1
Operator Signature	TT

Project No.:	22001	
Page	1 of 2	
Probe No.:		
Meter Box No.:	Team 4	
Impinger Box No.:	3	

Pitot Factor	.848	
DGMCF	1.007	
Barometric Pressure	30.18	"Hg
Static Pressure	-8.58	"H2O
Nozzle Size	.2546	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	137.5	g
WCBDA	11.3	g

Combustion Gas Concentration

Oxygen	8.80	%
Carbon Dioxide	10.21	%
Carbon Monoxide	11.9	ppm

Measuring Device	MII Numbers
Probe / Pitot 59	B03770
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Reading Interval	5
Number of Ports	1
Number of Points/Port	12

Nozzle Measurements	
1	.2550
2	.2545
3	.2545
4	.2545
Average:	.2546

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, 2020	Plant: Covanta DYEC	Test No.: M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft³	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	58.02	.77	.74	274	244	252	74	27	73	73	1.9	5
2	5	61.80	.81	.75	287	248	256	51	243	73	73	2.0	5
3	10	65.62	.74	.72	287	254	260	55	243	78	74	1.8	5
4	15	69.25	.68	.69	287	250	255	58	245	79	74	1.65	5
5	20	72.74	.62	.66	287	249	260	61	246	82	73	1.5	5
6	25	76.08	.55	.63	288	246	257	62	243	83	73	1.3	5
7	30	79.23	.61	.66	287	250	261	58	245	84	75	1.5	5
8	35	82.55	.61	.66	287	248	254	53	246	85	76	1.5	5
9	40	85.90	.65	.68	286	245	256	49	243	75	73	1.55	5
10	45	89.24	.65	.68	282	255	256	46	242	78	74	1.6	5
11	50	92.68	.62	.67	285	246	264	48	243	81	75	1.5	5
12	55	96.05	.55	.63	286	249	252	48	242	82	77	1.3	4.8
11:34 11:35	60	99.20											

Traverse:				
Start Time: 10:03	Initial Leak Check:	.005	cfm@ 17	"Hg
Finish Time: 11:58	Final Leak Check:	.004	cfm@ 15	"Hg

Pump off at the 10:39 36 minute mark, process problems on unit 1 11:35 start up

Project No.: 22001
Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	June 15, 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22001
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 4
Impinger Box No.:	3

Measuring Device	MII Numbers
Probe / Pitot S9	803770
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Pitot Factor	.848	
DGMCF	1.002	
Barometric Pressure	30.13	"Hg
Static Pressure	-8.52	"H2O
Nozzle Size	.2546	inches
Stack Diameter	4.5	feet
Length	–	feet
Width	–	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	154.4	g
WCBDA	9.6	g

Combustion Gas Concentration

Oxygen	8.51	%
Carbon Dioxide	10.77	%
Carbon Monoxide	13.6	ppm

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	.2550
2	.2545
3	.2545
4	.2545
Average:	.2546

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 2020	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 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	99.57	.73	.72	284	248	250	75	42	75	75	1.8	4.5
2	5	103.15	.78	.74	284	248	257	51	240	77	74	1.9	5
3	10	106.87	.76	.73	284	245	257	49	242	80	77	1.9	5
4	15	110.60	.70	.71	284	246	251	49	248	82	77	1.75	5
5	20	114.18	.68	.70	284	250	249	49	243	84	75	1.7	5
6	25	117.70	.61	.66	285	251	256	50	249	85	75	1.5	4.5
7	30	121.05	.67	.69	286	249	252	49	242	86	77	1.65	5
8	35	124.55	.72	.72	286	245	255	46	249	87	77	1.8	5
9	40	128.25	.74	.73	286	247	248	46	244	88	77	1.9	5
10	45	131.99	.75	.74	286	251	254	46	249	89	77	1.85	5
11	50	135.73	.63	.68	286	245	256	48	242	89	78	1.55	5
12	55	139.12	.57	.61	286	245	254	48	247	89	79	1.25	4.5
	60	142.22	.										

1657

Traverse:		
Start Time: 16:49	Initial Leak Check: .003 cfm@ 14 "Hg	
Finish Time: 17:49	Final Leak Check: .002 cfm@ 13 "Hg	

Project No.: 22001
Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	June 15 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22001
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 4
Impinger Box No.:	3

Measuring Device	MII Numbers
Probe / Pitot 59	B 03770
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Pitot Factor	.848	
DGMCF	1.007	
Barometric Pressure	30.12	"Hg
Static Pressure	-8.52	"H2O
Nozzle Size	.2546	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	147.9	g
WCBDA	8.4	g

Combustion Gas Concentration

Oxygen	8.74	%
Carbon Dioxide	10.64	%
Carbon Monoxide	17.4	ppm

Reading Interval	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 15 2020	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 ft³ *	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	42.44	.65	.69	274	246	249	68	74	81	81	1.65	5
2	5	45.94	.68	.70	285	245	261	60	247	83	77	1.7	5
3	10	49.48	.76	.74	286	249	252	56	250	86	78	1.9	5
4	15	53.19	.76	.74	286	249	252	56	250	86	78	1.9	5
5	20	56.98	.74	.74	283	249	260	53	249	89	78	1.85	5.5
6	25	60.67	.66	.70	284	249	258	52	255	89	79	1.65	5
7	30	64.21	.61	.67	284	245	265	52	249	89	79	1.5	5
8	35	67.62	.66	.70	285	248	268	52	251	89	79	1.65	5
9	40	71.08	.69	.71	285	245	250	55	250	90	79	1.7	5.5
10	45	74.65	.73	.73	285	251	251	52	253	90	81	1.8	5.5
11	50	78.34	.76	.75	285	246	258	53	251	90	79	1.9	5.5
12	55	82.10	.77	.75	285	246	257	52	252	90	80	1.9	5.5
	60	85.87											

Traverse:						
Start Time: 17:57	Initial Leak Check:	.002	cfm@	15	"Hg
Finish Time: 18:57	Final Leak Check:	.002	cfm@	15	"Hg

Project No.: 22001

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	M26A
Test Date	June 16 2020
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22001
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	.848	
DGMCF	1.007	
Barometric Pressure	30.14	"Hg
Static Pressure	-8.24	"H2O
Nozzle Size	.2546	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

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	133.4	g
WCBDA	8.3	g

Combustion Gas Concentration

Oxygen	8.33	%
Carbon Dioxide	11.01	%
Carbon Monoxide	20.8	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot 59	803770
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements	
1	.2550
2	.2545
3	.2545
4	.2545
Average:	.2546

Notes:

Field Data Sheet

Date: Jun 16 2020	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 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	86.23	.81	.74	285	244	248	67	49	69	69	1.9	5
2	5	89.87	.82	.74	285	246	249	50	249	72	73	1.9	5
3	10	93.59	.77	.72	285	249	252	47	247	77	71	1.75	5
4	15	97.21	.73	.70	286	246	260	49	227	80	73	1.7	4.5
5	20	100.70	.63	.65	286	254	252	51	229	79	72	1.4	4.5
6	25	103.93	.55	.61	286	248	258	50	227	80	73	1.25	4
7	30	106.98	.60	.64	285	247	251	48	224	82	73	1.45	4.5
8	35	110.23	.61	.64	285	247	247	47	228	82	73	1.4	4.5
9	40	113.55	.62	.67	285	249	251	48	231	83	73	1.5	5
10	45	116.98	.67	.70	285	250	252	50	233	83	74	1.7	5
11	50	120.55	.56	.64	285	249	251	49	232	83	74	1.4	4.5
12	55	123.82	.56	.64	285	244	249	50	231	83	74	1.4	4.5
	60	127.07											

Traverse:				
Start Time: 8:29	Initial Leak Check:	.004	cfm@ 15	"Hg
Finish Time: 9:29	Final Leak Check:	.006	cfm@ 15	"Hg

Project No.: 22001

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 2	M26A	
Test Date	June 16 2020	
Test Location	APC Outlet No. 2	
Operator Signature	[signature]	

Project No.:	22001	
Page	1 of 2	
Probe No.:	7 Series	
Meter Box No.:	Team 4	
Impinger Box No.:	3	

Pitot Factor	.848	
DGMCF	1.007	
Barometric Pressure	30.13	"Hg
Static Pressure	-8.24	"H2O
Nozzle Size	.2546	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	148.6	g
WCBDA	12.5	g

Combustion Gas Concentration

Oxygen	8.56	%
Carbon Dioxide	10.67	%
Carbon Monoxide	14.4	ppm

Measuring Device	MII Numbers
Probe / Pitot 59	803770
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env Canada
Calipers	

Nozzle Measurements

1	.2550
2	.2545
3	.2545
4	.2545
Average:	.2546

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 2020	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 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
	*	*	*		*			*		*	*	*	*
		28.02											
1	0	~~27.82~~	.77	.74	285	245	251	73	90	75	75	1.9	5
2	5	31.77	.81	.76	285	244	251	52	225	75	75	2.0	5
3	10	35.58	.76	.74	286	244	252	52	210	78	75	1.9	5
4	15	39.32	.73	.73	286	245	251	53	231	80	75	1.8	5
5	20	42.96	.69	.71	286	248	249	53	228	82	75	1.7	5
6	25	46.60	.62	.67	286	245	251	53	230	83	75	1.5	4.5
7	30	49.98	.68	.70	287	247	252	54	231	84	76	1.7	5
8	35	53.44	.68	.70	287	244	249	56	229	85	76	1.7	5
9	40	56.98	.69	.71	286	247	250	57	232	86	76	1.75	5
10	45	60.62	.74	.74	285	244	253	59	234	86	76	1.9	5
11	50	64.32	.72	.73	285	247	257	59	232	86	76	1.8	5
12	55	67.98	.51	.61	283	247	247	60	233	86	76	1.2	4.5
	60	71.05											

Traverse:				
Start Time: 10:26	Initial Leak Check:	.004	cfm@ 15	"Hg
Finish Time: 11:26	Final Leak Check:	.005	cfm@ 15	"Hg

Project No.: 22001

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	June 16 2020
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22001
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 4
Impinger Box No.:	3

Pitot Factor	.848	
DGMCF	1.007	
Barometric Pressure	30.12	"Hg
Static Pressure	-8.24	"H2O
Nozzle Size	.2546	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	155.8	g
WCBDA	8.9	g

Combustion Gas Concentration

Oxygen	8.39	%
Carbon Dioxide	11.05	%
Carbon Monoxide	11.1	ppm

Measuring Device	MII Numbers
Probe / Pitot 59	
Trendicator	
Control Box	
Incline Manometer	
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 2020	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 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	71.42	.62	.68	285	242	252	65	95	76	75	1.6	4.5
2	5	74.87	.71	.72	285	246	255	48	227	79	76	1.8	4.5
3	10	78.49	.78	.76	285	247	250	47	229	82	76	2.0	5
4	15	82.34	.75	.75	285	245	248	49	231	83	76	1.9	5
5	20	86.11	.70	.72	286	244	248	48	233	84	76	1.8	5
6	25	89.77	.69	.72	286	247	251	49	233	85	76	1.75	5
7	30	93.40	.62	.68	286	245	257	48	232	86	76	1.6	5
8	35	96.83	.62	.68	286	245	257	48	232	86	76	1.6	5
9	40	100.29	.69	.72	285	245	260	49	231	86	76	1.75	5
10	45	103.87	.77	.76	285	244	252	51	231	87	77	2	5
11	50	107.73	.72	.74	286	248	251	49	231	86	78	1.85	5
12	55	111.46	.77	.76	285	248	248	50	230	86	78	2.0	5
	60	115.28											

Traverse:		
Start Time: 11:43	Initial Leak Check: .004 cfm@ 15	"Hg
Finish Time: 12:43	Final Leak Check: .004 cfm@ 18	"Hg

Project No.: 22001

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	0.982	9.70	30.30	20.60	29.98	1.20	25.6	20.29	0.0203
2	0.982	31.16	53.15	21.99	29.98	1.20	28.6	21.45	0.0214
3	0.982	53.60	75.55	21.95	29.98	1.20	28.9	21.38	0.0214
4	0.982	76.32	99.10	22.78	29.98	1.20	31.4	22.01	0.0220

* 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	1.016	82.90	103.40	20.50	29.98	0.50	28.8	20.63	0.0206
2	1.016	4.10	24.40	20.30	29.98	0.50	32.8	20.17	0.0202
3	1.016	24.90	44.80	19.90	29.98	0.50	33.7	19.71	0.0197
4	1.016	45.20	65.40	20.20	29.98	0.50	33.2	20.04	0.0200

* Dry at 25°C and 1 atmosphere

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC		
Plant Location: Courtice, ON	Test Condition:	Control Box ID: M05498
Test location: APC Outlet No. 1	DGMCF: 0.982	Operator: JG
Date: June 17, 2020	Barometric Pressure: 29.93 "Hg	Project No: 22001
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID:

Test 1 Start Time: 0851	Initial Leak Check NDL @ 14.5 "Hg	Sample ID: 7A, 7B
Test 1 End Time: 0931	Final Leak Check NDL @ 18 "Hg	Lab ID: L243378-72

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	9.70	137	142	17	22	1.2	~~15~~ 4.0
5	11.60	136	142	10	24	1.2	4.0
10	14.35	136	142	9	25	1.2	4.0
15	17.0	136	142	10	25	1.2	4.0
20	19.6	136	142	9	26	1.2	4.0
25	22.38	136	142	9	27	1.2	4.0
30	25.30	136	142	9	27	1.2	4.0
35	27.76	136	142	9	27	1.2	4.0
40	~~31.32~~ 30.30	136	142	9	27	1.2	4.0

Test 2 Start Time: 0937	Initial Leak Check NDL @ 19 "Hg	Sample ID: 8A, 8B
Test 2 End Time: 1017	Final Leak Check NDL @ 17 "Hg	Lab ID: L24337-73

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	31.16	136	141	11	27	1.2	4.0
5	33.7	136	141	9	28	1.2	4.0
10	36.58	136	141	9	28	1.2	4.0
15	39.45	136	141	9	28	1.2	4.0
20	41.90	136	142	9	29	1.2	4.0
25	44.65	137	143	11	30	1.2	4.0
30	47.10	136	142	9	29	1.2	4.0
35	50.30	136	142	9	29	1.2	4.0
40	53.15	136	142	9	29	1.2	4.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC		
Plant Location: Courtice, ON	Test Condition:	Control Box ID: MO5498
Test location: APC Outlet No. 1	DGMCF: 0.987	Operator: JG
Date: JUNE 17, 2020	Barometric Pressure: 29.98 "Hg	Project No: 22001
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID:

Test 3 Start Time: 1023		Initial Leak Check NDL @ 15 "Hg				Sample ID: 9A, 9B	
Test 3 End Time: 1103		Final Leak Check NDL @ 21 "Hg				Lab ID: L2433713-74	
Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	53.60	136	142	11	28	1.2	4.0
5	56.45	136	141	11	28	1.2	4.0
10	59.38	136	141	9	28	1.2	4.0
15	61.88	136	141	10	29	1.2	4.0
20	64.38	136	141	10	30	1.2	4.0
25	67.57	136	141	10	29	1.2	5.0
30	70.28	136	141	9	29	1.2	6.0
35		136	141	10	29	1.2	6.0
40	75.55	137	143	10	30	1.2	6.0

Test 4 Start Time: 1107		Initial Leak Check NDL @ 21 "Hg				Sample ID: 10A, 10B	
Test 4 End Time: 1147		Final Leak Check NDL @ 14 "Hg				Lab ID: L2433713-75	
Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	76.32	136	141	12	29	1.2	4.0
5	79.05	136	141	10	29	1.2	4.0
10	82.30	136	141	10	30	1.2	4.0
15	84.8	136	141	10	31	1.2	4.0
20	87.3	136	141	10	32	1.2	4.5
25	89.8	136	141	10	33	1.2	4.5
30	92.3	136	141	10	34	1.2	5.0
35	96.35	136	141	10	34	1.2	5.5
40	99.1	136	141	9	30	1.2	5.5

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: A12010
Test location: APC Outlet No. 2	DGMCF: 1.016		Operator: RW
Date: June 17 2020	Barometric Pressure: 29.98 "Hg		Project No: 22001
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 2A, 2B	

Trip 1A, 1B

Test 1 Start Time: 926		Initial Leak Check NDL @ 20 "Hg				Sample ID: 6A, 6B	
Test 1 End Time: 1006		Final Leak Check NDL @ 14 "Hg				Lab ID: L2433713-71	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	82.9	130	141	20	22	0.5	2
5	85.2	127	140	6	27	0.5	2
10	87.7	127	140	6	28	0.5	2
15	90.2	127	140	6	29	0.5	2
20	92.7	130	140	6	30	0.5	2.5
25	95.2	133	140	7	30	0.5	2.5
30	97.5	141	141	8	31	0.5	2.5
35	100.7	131	141	8	31	0.5	2.5
40	103.4	130	140	8	31	0.5	2.5

Test 2 Start Time: 1010		Initial Leak Check NDL @ 15 "Hg				Sample ID: 5A, 5B	
Test 2 End Time: 1050		Final Leak Check NDL @ 15 "Hg				Lab ID: L2433713-70	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	4.1	130	141	9	30	0.5	2
5	6.6	128	141	10	32	0.5	2
10	9.1	130	141	10	32	0.5	2
15	11.6	130	140	10	33	0.5	2.5
20	14.1	130	141	10	33	0.5	2.5
25	16.6	130	140	10	33	0.5	2.5
30	19.0	130	140	14	33	0.5	2.5
35	21.9	132	141	12	35	0.5	2.5
40	24.4	132	141	10	34	0.5	2.5

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: A12010
Test location: APC Outlet No. 2	DGMCF: 1.016		Operator: RW
Date: JUNE 17 2020	Barometric Pressure: 29.98 "Hg		Project No: 22001
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 2A, 2B	

TRIP 1A, 1B

Test 3 Start Time: 1054		Initial Leak Check NDL @ 15 "Hg				Sample ID: 4A, 4B	
Test 3 End Time: 1134		Final Leak Check NDL @ 14 "Hg				Lab ID: L2433713-68	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	24.9	131	140	6	33	0.5	2
5	27.4	135	140	5	33	0.5	2
10	29.9	134	140	5	33	0.5	2
15	31.6	132	140	5	34	0.5	2.5
20	34.9	132	140	5	34	0.5	2.5
25	37.4	132	140	5	34	0.5	2.5
30	39.9	131	140	5	34	0.5	2.5
35	42.5	130	141	4	34	0.5	2.5
40	44.8	130	140	4	34	0.5	2.5

Test 4 Start Time: 1144		Initial Leak Check NDL @ 14 "Hg				Sample ID: 3A 3B	
Test 4 End Time: 1224		Final Leak Check NDL @ 14 "Hg				Lab ID: L2433713-68	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	45.2	133	140	6	31	0.5	2
5	47.7	133	140	6	33	0.5	2
10	50.1	136	139	6	33	0.5	2.5
15	52.1	129	138	6	33	0.5	2.5
20	54.7	135	139	6	33	0.5	2.5
25	56.7	134	138	7	34	0.5	3
30	60.4	133	139	7	34	0.5	3.5
35	62.9	133	139	7	34	0.5	3.5
40	65.4	133	139	7	34	0.5	3.5

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	0.982	0.32	34.60	34.28	29.96	1.20	29.2	33.33	0.0333
2	0.982	35.76	70.20	34.44	29.95	1.20	30.1	33.38	0.0334
3	0.982	70.82	103.45	32.63	29.93	1.20	31.2	31.50	0.0315

* 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	1.016	65.20	99.00	33.80	29.95	0.50	33.4	33.48	0.0335
2	1.016	98.50	130.00	31.50	29.93	0.50	34.5	31.06	0.0311
3	1.016	30.00	63.20	33.20	29.91	0.50	36.9	32.46	0.0325

* 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 2020
Project No.:	22001

Measuring Device	MII Number
Control Module	MO5498
Barometer	Env Canada

Barometric Pressure: 29.96 "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	0.32	138	137	130	23	28	1.2	3
5	2.90	136	141	137	21	28	1.2	3
10	6.25	136	141	137	21	28	1.2	3
15	9.30	136	141	138	22	29	1.2	3
20	12.00	136	141	138	22	29	1.2	3
25	14.76	136	141	137	21	29	1.2	3
30	17.69	136	141	137	22	29	1.2	3
35	20.47	136	141	138	22	30	1.2	3
40	23.25	136	141	138	22	30	1.2	3
45	26.25	136	140	138	22	30	1.2	3
50	29.00	136	140	138	22	30	1.2	3
55	31.80	136	141	138	22	30	1.2	3
60	34.60	136	141	138	22	30	1.2	3

Start Time:	1224		
Finish Time:	1324		
Initial Leak Check:	<.01	Lpm @	24 " Hg
Final Leak Check:	<.01	Lpm @	14 " Hg

DGMCF:	0.982
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: [signature]

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 12, 2020
Project No.:	22001

Measuring Device	MII Number
Control Module	M05498
Barometer	Env Canada

Barometric Pressure: 29.95 "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	35.76	134	141	128	23	30	1.2	3.0
5	39.03	136	140	138	23	30	1.2	3.0
10	41.63	136	140	129	23	30	1.2	3.0
15	44.03	136	140	129	23	30	1.2	3.0
* 20	47.10	136	140	129	23	30	1.2	3.0
25	49.78	137	141	137	22	29	1.2	3.0
30	52.86	136	141	138	22	30	1.2	3.0
35								
40	58.53	136	141	139	22	30	1.2	3.0
45								
50	63.30	136	140	140	22	30	1.2	3.0
55	67.25	136	140	140	22	31	1.2	3.0
60	70.20	136	140	140	22	31	1.2	3.0

Start Time:	1328	
Finish Time:	1443	
Initial Leak Check:	<.01	Lpm @ 14 " Hg
Final Leak Check:	<.01	Lpm @ 14 " Hg

DGMCF:	0.982
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments: * OFF @ UNIT # 1 DUE TO PROCESS @ 20 MIN MARK.
START @ ~~[illegible]~~ 1402.

: sample @ ~0.5 lpm for 60 minutes.

Operator: [signature]

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 12 2020
Project No.:	22001

Measuring Device	MII Number
Control Module	M 05498
Barometer	Env Canada

Barometric Pressure: 29.93 "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	70.82	124	141	139	24	30	1.2	3
5	73.58	136	141	139	24	31	1.2	3
10	76.26	136	141	140	24	31	1.2	3
79.10 15	~~79.1~~	136	141	140	24	31	1.2	3
20	81.77	136	141	140	24	31	1.2	3
25	84.44	166	140	140	24	31	1.2	3
30	87.11	136	140	140	24	31	1.2	3
35	90.0	136	140	140	24	31	1.2	3
40	92.60	139	140	142	24	31	1.2	3
45	95.42	136	140	142	24	31	1.2	3
50	98.04	136	141	142	24	32	1.2	3
55	100.85	136	141	142	24	32	1.2	3
60	103.45	136	141	142	24	32	1.2	3

Start Time:	1447		
Finish Time:	1547		
Initial Leak Check:	<.01	Lpm @	14 " Hg
Final Leak Check:	<.01	Lpm @	14 " Hg

DGMCF:	0.982
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: [signature]

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 2020
Project No.:	22001

Measuring Device	MII Number
Control Module	A12010
Barometer	Env Canada

Barometric Pressure: 29.95 "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	657	131	140	141	~~34~~ 20	31	0.5	1
5	680	134	144	141	15	31	0.5	1
10	70.8	131	144	141	15	31	0.5	1
15	72.2	131	144	141	15	35	0.5	1
20	76.9	133	143	141	15	35	0.5	1
25	82.0	133	143	140	15	34	0.5	1
30	84.5	133	143	141	15	34	0.5	1
35	87.0	134	141	140	15	34	0.5	1
40	88.9	130	141	140	15	34	0.5	1
45	91.3	128	141	135	14	35	0.5	1
50	94.0	129	140	130	14	34	0.5	1
55	96.5	130	140	130	14	34	0.5	1
60	99.0	132	140	130	14	34	0.5	1

Start Time:	1307	
Finish Time:	1407	
Initial Leak Check:	<.01	Lpm @ 10 " Hg
Final Leak Check:	<0.01	Lpm @ 5 " Hg

DGMCF:	1.016
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: DW

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 2022
Project No.:	22001

Measuring Device	MII Number
Control Module	A12010
Barometer	Env Canada

Barometric Pressure: 29.93 "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	98.5	133	140	126	15	33	0.5	1
5	101.4	134	140	126	15	33	0.5	1
10	103.0	130	140	126	15	34	0.5	1
15	106.0	132	141	126	15	34	0.5	1
20	108.5	134	140	126	15	34	0.5	1
25	111.1	130	140	126	15	34	0.5	1
30	113.6	130	140	126	15	34	0.5	1
35	116.4	131	140	126	15	35	0.5	1
40	119.4	130	140	127	14	35	0.5	1
45	121.2	131	140	128	14	35	0.5	1
50	124.0	130	140	127	14	36	0.5	1
55	126.5	131	140	128	14	36	0.5	1
60	130.0	131	140	128	14	36	0.5	1

Start Time:	1435			
Finish Time:	1535			
Initial Leak Check:	0.01	Lpm @	9	" Hg
Final Leak Check:	0.01	Lpm @	5	" Hg

DGMCF:	1.016
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: Du

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 2020
Project No.:	22001

Measuring Device	MII Number
Control Module	A 12010
Barometer	Env Canada

Barometric Pressure: 29.91 "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	30.0	132	140	128	15	34	0.5	1
5	32.2	131	141	128	15	36	0.5	1
10	34.8	130	142	128	15	38	0.5	1
15	37.9	130	141	129	15	38	0.5	1
20	40.0	130	141	128	14	38	0.5	1
25	43.1	131	141	129	14	37	0.5	1
30	46.2	130	141	129	14	37	0.5	1
35	50.4	132	141	129	14	37	0.5	1
40	53.0	131	141	129	14	37	0.5	1
45	55.5	132	141	128	14	37	0.5	1
50	58.2	132	140	128	14	37	0.5	1
55	60.6	132	140	128	14	37	0.5	1
60	63.2	132	140	128	14	37	0.5	

Start Time:	1540
Finish Time:	1640
Initial Leak Check:	.201 Lpm @ 6 " Hg
Final Leak Check:	Lpm @ " Hg

DGMCF:	1.016
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: BW

APPENDIX 10

ORTECH Sample Log/Chain of Custody Forms
(10 pages)

ORTECH Consulting Inc. - Sample Log
Particulate and Metals Samples
Covanta

L2462151

Client: Covanta
Project Number: 22001
Received By:
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22001-J2687

	ORTECH Sample ID 20-22001-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
1	1	June 15, 20	#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 1-5 Solution	Nitric/Peroxide	Metals
	5				Impinger 6-7 Solution	Acid. KMnO4	Mercury
	6				Impinger 6-7 Rinse	8N HCl	Mercury
2	19	June 17, 20	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 1-5 Solution	Nitric/Peroxide	Metals
	23				Impinger 6-7 Solution	Acid. KMnO4	Mercury
	24				Impinger 6-7 Rinse	8N HCl	Mercury

ORTECH Consulting Inc. - Sample Log
Particulate and Metals Samples
Covanta

Client: Covanta
Project Number: 22001
Received By:
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22001-J2687

	ORTECH Sample ID 20-22001-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
3	25	June 16, 20	#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 1-5 Solution	Nitric/Peroxide	Metals
	29				Impinger 6-7 Solution	Acid. KMnO4	Mercury
	30				Impinger 6-7 Rinse	8N HCl	Mercury
4	31	June 16, 20	#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 1-5 Solution	Nitric/Peroxide	Metals
	35				Impinger 6-7 Solution	Acid. KMnO4	Mercury
	36				Impinger 6-7 Rinse	8N HCl	Mercury
5	43	June 17, 20	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 1-5 Solution	Nitric/Peroxide	Metals
	47				Impinger 6-7 Solution	Acid. KMnO4	Mercury
	48				Impinger 6-7 Rinse	8N HCl	Mercury

Relinquished By: [signature] Date: June 17, 20

Relinquished To: AARON BURTON Date: 17-JUNE-2020 14:30

9.6°C

ORTECH Consulting Inc. - Sample Log
Particulate and Metals Samples
Covanta

Client: Covanta
Project Number: 22001
Received By:
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22001-J2687

ORTECH Sample ID 20-22001-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
7		#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 1-5 Solution	Nitric/Peroxide	Metals
11				Impinger 6-7 Solution	Acid. KMnO4	Mercury
12				Impinger 6-7 Rinse	8N HCl	Mercury
13		#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 1-5 Solution	Nitric/Peroxide	Metals
17				Impinger 6-7 Solution	Acid. KMnO4	Mercury
18				Impinger 6-7 Rinse	8N HCl	Mercury
37		#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 1-5 Solution	Nitric/Peroxide	Metals
41				Impinger 6-7 Solution	Acid. KMnO4	Mercury
42				Impinger 6-7 Rinse	8N HCl	Mercury

Relinquished By: Date:

Relinquished To: Date:

ORTECH Consulting Inc. - Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 22001
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22001-J2687

L2462068

ORTECH Sample ID 20-22001-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis	
1	June 16, 20	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(5				Impinger Soln & rinse	Water	Particulate	
6				Secondary Filter	Filter	Particulate*	
7				Impinger Rinse	Acetone & Hexane	Particulate	
8	June 16, 20	2	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	6
9				PM 2.5 cyclone Rinse	Acetone	Particulate	7
10				PM 2.5 exit & connectors	Acetone	Particulate	8
11				Back up filter	filter	Particulate	9
12				Impinger Soln & rinse	Water	Particulate	
13				Secondary Filter	Filter	Particulate*	10
14				Impinger Rinse	Acetone & Hexane	Particulate	
15	June 16, 20	3	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	11
16				PM 2.5 cyclone Rinse	Acetone	Particulate	12
17				PM 2.5 exit & connectors	Acetone	Particulate	13
18				Back up filter	filter	Particulate	14
19				Impinger Soln & rinse	Water	Particulate	
20				Secondary Filter	Filter	Particulate*	15
21				Impinger Rinse	Acetone & Hexane	Particulate	
22	June 15, 20	1	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	16
23				PM 2.5 cyclone Rinse	Acetone	Particulate	17
24				PM 2.5 exit & connectors	Acetone	Particulate	18
25				Back up filter	filter	Particulate	19
26				Impinger Soln & rinse	Water	Particulate	
27				Secondary Filter	Filter	Particulate*	20
28				Impinger Rinse	Acetone & Hexane	Particulate	
29	June 15, 20	2	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	21
30				PM 2.5 cyclone Rinse	Acetone	Particulate	22
31				PM 2.5 exit & connectors	Acetone	Particulate	23
32				Back up filter	Filter	Particulate	24
33				Impinger Soln & rinse	Water	Particulate	
34				Secondary Filter	Filter	Particulate*	25
35				Impinger Rinse	Acetone & Hexane	Particulate	

ORTECH Consulting Inc. - Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 22001
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22001-J2687

ORTECH Sample ID 20-22001-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis	
36	June 15, 20	3	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	26
37				PM 2.5 cyclone Rinse	Acetone	Particulate	27
38				PM 2.5 exit & connectors	Acetone	Particulate	28
39				Back up filter	Filter	Particulate	29
40				Impinger Soln & rinse	Water	Particulate	30
41				Secondary Filter	Filter	Particulate*	
42				Impinger Rinse	Acetone & Hexane	Particulate	
43	June 15, 20	Blank	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	31
44				PM 2.5 cyclone Rinse	Acetone	Particulate	32
45				PM 2.5 exit & connectors	Acetone	Particulate	33
46				Back up filter	filter	Particulate	34
47				Impinger Soln & rinse	Water	Particulate	35
48				Secondary Filter	Filter	Particulate*	
49				Impinger Rinse	Acetone & Hexane	Particulate	
50	June 15, 20	Blank	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	36
51				PM 2.5 cyclone Rinse	Acetone	Particulate	37
52				PM 2.5 exit & connectors	Acetone	Particulate	38
53				Back up filter	Filter	Particulate	39
54				Impinger Soln & rinse	Water	Particulate	40
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.

14:30 9.6°C

Relinquished To: AARON BURTON Date: 17-JUNE-2020

Relinquished By: [signature] Date: June 17, 20

ORTECH Consulting Inc. - Sample Log
Acid Gases
Covanta

Client: Covanta
Job/Report Number: 22001
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22001-J2687

L2462061

ORTECH Sample ID 20-22001-M26A-	Sample Date	Location	Sample Description	Media	Initial Volume(ml)	Final Volume(ml)	Sample Analysis
1	June 15, 20	APC Outlet # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	432.9	HCl, HF & Ammonia
2	"	APC Outlet # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	435.6	HCl, HF & Ammonia
3	"	APC Outlet # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	440.1	HCl, HF & Ammonia
4	June 16, 20	APC Outlet # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	422.9	HCl, HF & Ammonia
5	"	APC Outlet # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	463.2	HCl, HF & Ammonia
6	"	APC Outlet # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	463.4	HCl, HF & Ammonia
Blank 1	June 15, 2020	APC # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	317.0	HCl, HF & Ammonia
Blank 2	June 16, 2020	APC # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	278.7	HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By: [signature] Date: June 17, 20

Relinquished To: Aaron Burton Date: 17-JUNE-2020 14.30 9.6°C

ORTECH Consulting Inc. - Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 22001
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: 22001-J2687

L2463211

	ORTECH Sample ID 20-22001 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
1	1	June 17, 20	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
2	6	June 18, 20	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
3	11	June 18, 20	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
4	16	June 18, 20	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

11:25 7.8°C

Refer to letter dated ~~August 20, 2018~~ for lists of analytes.

Relinquished To: Aaron Barton Date: 19-June-2020

Relinquished By: [signature] Date: June 19, 20

ORTECH Consulting Inc. - Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 22001
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: 22001-J2687

	ORTECH Sample ID 20-22001 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
5	21	June 17, 20	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
6	26	June 17, 20	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
7	31	June 18, 20	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
8	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.

11:25

Relinquished To: Aaron Burton Date: 19-June-2020

Relinquished By: [signature] Date: June 19, 20

L2463749

ORTECH Consulting Inc. - Recovery & Sample Log
NCASI Method ISS/FP-A105.01

Client: Covanata DYEC
~~Job/Report Number: 22001~~
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22001 - J2687

Test Number	Test Location	ORTECH Sample ID	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle	Initial Weight Sample Bottle + BHA	Final Weight of BHA Sample Bottle	Weight of Sample Bottle BHA & H2O	Weight of Sample Bottle BHA & H2O & Hexane
		20-22001-			(g)	(g)	(g)	(g)	(g)
1	APC Outlet #1	ALD-1	June 17/2020	ALD-1	112.4	162.8	165.5	178.0	189.6
2	APC Outlet #1	ALD-2	"	ALD-2	112.5	160.5	161.5	178.3	189.8
3	APC Outlet #1	ALD-3	"	ALD-3	111.9	160.5	163.8	179.1	190.8
Blank 1	APC Outlet #1	Blank 1	"	ALD-4	112.3	161.3	—	193.2	~~199~~ 200.5
1	APC Outlet #2	ALD-5	"	ALD-5	112.3	159.4	162.8	181.7	193.0
2	APC Outlet #2	ALD-6	"	ALD-6	111.7	162.0	169.4	180.2	192.4
3	APC Outlet #2	ALD-7	"	ALD-7	112.0	161.8	165.7	179.8	193.4
Blank 2	APC Outlet #2	~~Blank 2~~	"	ALD-8	112.1	162.0	162.0	179.9	191.7
		~~BLANK~~		~~ALD-9~~	~~112.3~~	~~163.1~~	~~—~~	~~[illegible]~~	~~[illegible]~~
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				ALD-10	111.9	161.4			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: [signature] Date: June 19, 20

Relinquished to: Aaron Porton Date: 19-June-2020 11:25

23.6°C

ORTECH Consulting Inc. - Sample Log
VOCs

Client: Covanta
Project Number: 22001
Received By:
Job Assigned To: ALS
Quote / PO : 22001-J2687

L2462316

Test Location	Test Number	ORTECH Sample ID 20-22001-VOST-	Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	June 17, 20	7AB	Tenax and Tenax/Charcoal	VOCs 1
	2		8AB	Tenax and Tenax/Charcoal	VOCs 2
	3		9AB	Tenax and Tenax/Charcoal	VOCs 3
	4		10AB	Tenax and Tenax/Charcoal	VOCs 4
	Field Blank		11AB	Tenax and Tenax/Charcoal	VOCs 5
	Combined Condesate			Archived @ ORTECH	6
# 2 APC Outlet	1	June 17, 20	6AB	Tenax and Tenax/Charcoal	VOCs 7
	2		5AB	Tenax and Tenax/Charcoal	VOCs 8
	3		4AB	Tenax and Tenax/Charcoal	VOCs 9
	4		3AB	Tenax and Tenax/Charcoal	VOCs 10
	Field Blank		2AB	Tenax and Tenax/Charcoal	VOCs 11
	Trip Blank		12AB	Tenax and Tenax/Charcoal	VOCs 12
	Combined Condesate			Archived @ ORTECH	13

Refer to letter dated March 31, 2020 for lists of analytes.

Custody Relinquished by: [signature] Date: June 17, 20

Received by
Aaron Burton
17-JUNE-2020
14:30
5.8°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.: 22001
Date: June 15, 20
Test No.: 1
Test Location: UNIT 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.5
After Act. Rinse:	350.7
Total TS1:	68.2

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.5
After 0.1N HNO_3 Rinse:	415.9
Total TS2:	133.4

MARK FLUID LEVEL

SEAL AND LABEL TS2

SAMPLE IDENTIFICATION	20-22001-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: DT
Train Recovered By: DT
Recovery Witnessed By:

Filter

Filter ID: 027456

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:	623.4
Final Wt:	839.1
1 Gain:	215.7
Colour:	Clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	674.0
Initial Wt:	783.7
Final Wt:	952.9
2 Gain:	~~169.2~~ 169.2
Colour:	Clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	607.6
Initial Wt:	766.2
Final Wt:	825.2
3 Gain:	59.0
Colour:	Clear

Impinger #4 Empty	
Empty Wt:	482.1
Final Wt:	486.9
4 Gain:	4.8
Colour:	Clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	427.7
w/ Imp. 1-4 Soln:	1090.3
After HNO_3 Rinse:	1197.9
Total TS4:	770.2

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	665.7
Initial Wt:	780.0
Final Wt:	784.1
5 Gain:	4.1
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	662.5
Initial Wt:	777.6
Final Wt:	780.9
6 Gain:	3.3
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	428.3
With Imp. 5&6 Soln:	661.1
After $KMnO_4$ Rinse:	779.9
After100g H_2O Rinse:	880.8
Total TS5-A:	452.5

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.2
With 150 mL DI H_2O:	433.2
After HCl Rinse:	476.2
After DI H_2O Rinse:	583.3
Total TS5-B:	300.1

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	456.1

WCBDA= 7:	20.3

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	933.6
Final Wt:	953.9
7 Gain:	20.3

Impinger Box ID: 5

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: June 17, 2020
Test No.: 2
Test Location: #1 APC OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	281.4
After Act. Rinse:	431.7
Total TS1:	150.3

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.1
After 0.1N HNO_3 Rinse:	505.9
Total TS2:	224.8

MARK FLUID LEVEL

SEAL AND LABEL TS2

SAMPLE IDENTIFICATION	20-22001-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

Train Loaded By: CB
Train Recovered By: CB
Recovery Witnessed By: —

Filter

Filter ID: QZ 7467

CONTAINER TS3

Initial Wt:	0.8094
Final Wt:	
Gain:	
Colour:	white

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	489.9
	Final Wt:	744.1
1	Gain:	254.2
	Colour:	clear

	Impinger #2 HNO_3/H_2O_2	
	Empty Wt:	569.9
	Initial Wt:	672.0
	Final Wt:	827.5
2	Gain:	155.3 ~~257.4~~
	Colour:	clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	692.3
	Initial Wt:	801.5
	Final Wt:	839.0
3	Gain:	~~146.7~~ 37.5
	Colour:	clear

	Impinger #4 Empty	
	Empty Wt:	696.3
	Final Wt:	698.7
4	Gain:	2.4
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	432.8
w/ Imp. 1-4 Soln:	1087.7
After HNO_3 Rinse:	1326.8
Total TS4:	894.2

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

	Impinger #5 $KMnO_4/H_2SO_4$	
	Empty Wt:	637.7
	Initial Wt:	751.7
	Final Wt:	754.9
5	Gain:	3.2
	Colour:	purple

	Impinger # 6 $KMnO_4/H_2SO_4$	
	Empty Wt:	659.8
	Initial Wt:	775.0
	Final Wt:	783.9
6	Gain:	8.9
	Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	428.2
With Imp. 5&6 Soln:	664.0
After $KMnO_4$ Rinse:	779.6
After100g H_2O Rinse:	879.1
Total TS5-A:	450.9

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	431.4
With 150 mL DI H_2O:	582.8
After HCl Rinse:	605.2
After DI H_2O Rinse:	732.3
Total TS5-B:	300.9

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: ~~672.8~~ 461.5

WCBDA= 7: 19.5

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	963.0
	Final Wt:	982.5
7	Gain:	19.5

Impinger Box ID: 16

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: June 17 2020
Test No.: 3
Test Location: UNIT 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	281.4
After Act. Rinse:	382.4
Total TS1:	100.0

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.1
After 0.1N HNO_3 Rinse:	391.1
Total TS2:	110.0

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: QZ 7465

CONTAINER TS3

Initial Wt:	0.8039
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	628.6
	Final Wt:	879.5
1	Gain:	250.9
	Colour:	—

	Impinger #2 HNO_3/H_2O_2	
	Empty Wt:	660.2
	Initial Wt:	765.8
	Final Wt:	932.9
2	Gain:	167.1
	Colour:	—

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	640.0
	Initial Wt:	745.9
	Final Wt:	782.3
3	Gain:	~~[illegible]~~ 36.4
	Colour:	

	Impinger #4 Empty	
	Empty Wt:	503.4
	Final Wt:	506.1
4	Gain:	2.7
	Colour:	—

CONTAINER TS4 WEIGHTS	
Empty Wt:	429.8
w/ Imp. 1-4 Soln:	1087.3
After HNO_3 Rinse:	1236.1
Total TS4:	806.3

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

	Impinger #5 $KMnO_4/H_2SO_4$	
	Empty Wt:	599.6
	Initial Wt:	689.6
	Final Wt:	691.2
5	Gain:	1.6
	Colour:	Purple

	Impinger # 6 $KMnO_4/H_2SO_4$	
	Empty Wt:	683.8
	Initial Wt:	767.6
	Final Wt:	770.9
6	Gain:	3.3
	Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	424.9
With Imp. 5&6 Soln:	648.1
After $KMnO_4$ Rinse:	780.6
After100g H_2O Rinse:	946.4
Total TS5-A:	521.5

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	427.2
With 150 mL DI H_2O:	577.1
After HCl Rinse:	647.6
After DI H_2O Rinse:	721.7
Total TS5-B:	294.5

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	1004.6
	Final Wt:	1023.7
7	Gain:	19.1

Impinger Box ID: 7

SAMPLE IDENTIFICATION	20-22001-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

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 462.0

WCBDA= 7: 19.1

Train Loaded By: CB
Train Recovered By: RW
Recovery Witnessed By: —

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: June 16, 20
Test No.: 1
Test Location: #2 outlet

QZ 7453

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	278.9
After Act. Rinse:	428.0
Total TS1:	149.1

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	279.5
After 0.1N HNO_3 Rinse:	422.0
Total TS2:	142.5

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: QZ7453

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	628.2
Final Wt:	822.9
1 Gain:	194.7
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	659.8
Initial Wt:	767.6
Final Wt:	936.6
2 Gain:	169.0
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	639.4
Initial Wt:	744.0
Final Wt:	805.0
3 Gain:	61.0
Colour:	clear

Impinger #4 Empty	
Empty Wt:	502.6
Final Wt:	511.4
4 Gain:	8.8
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	432.4
w/ Imp. 1-4 Soln:	1074.1
After HNO_3 Rinse:	1256.0
Total TS4:	822.6

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	578.1
Initial Wt:	687.2
Final Wt:	694.6
5 Gain:	7.4
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	652.8
Initial Wt:	771.1
Final Wt:	776.2
6 Gain:	5.1
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	426.8
With Imp. 5&6 Soln:	660.0
After $KMnO_4$ Rinse:	777.9
After100g H_2O Rinse:	875.7
Total TS5-A:	448.9

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	431.8
With 150 mL DI H_2O:	583.6
After HCl Rinse:	611.5
After DI H_2O Rinse:	698.8
Total TS5-B:	267.0

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	982.3
Final Wt:	1004.9
7 Gain:	22.6

Impinger Box ID: 7

SAMPLE IDENTIFICATION	20-22001-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

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	446.0
WCBDA= 7:	22.6

Train Loaded By: DT
Train Recovered By: CB
Recovery Witnessed By: ——

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: June 16, 2020
Test No.: 2
Test Location: # 2 APC Outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.7
After Act. Rinse:	351.4
Total TS1:	70.7

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	280.5
After 0.1N HNO_3 Rinse:	404.9
Total TS2:	124.4

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 027463

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	438.7
Final Wt:	536.5
1 Gain:	97.8
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	567.7
Initial Wt:	676.4
Final Wt:	854.2
2 Gain:	177.8
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	690.7
Initial Wt:	796.5
Final Wt:	940.7
3 Gain:	144.2
Colour:	clear

Impinger #4 Empty	
Empty Wt:	605.9
Final Wt:	665.9
4 Gain:	60.0
Colour:	light purple

CONTAINER TS4 WEIGHTS	
Empty Wt:	432.4
w/ Imp. 1-4 Soln:	1048.3
After HNO_3 Rinse:	1227.4
Total TS4:	795

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	639.0
Initial Wt:	758.1
Final Wt:	838.5
5 Gain:	80.4
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	659.3
Initial Wt:	765.8
Final Wt:	698.5
6 Gain:	-67.3
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	431.1
With Imp. 5&6 Soln:	724.0
After $KMnO_4$ Rinse:	839.1
After100g H_2O Rinse:	938.8
Total TS5-A:	507.7

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	431.1
With 150 mL DI H_2O:	581.6
After HCl Rinse:	629.2
After DI H_2O Rinse:	812.8
Total TS5-B:	

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	937.0
Final Wt:	963.6
7 Gain:	26.6

Impinger Box ID: 16

SAMPLE IDENTIFICATION	20-22001-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- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 492.9

WCBDA= 7: 26.6 ✓

Train Loaded By: DT
Train Recovered By: CS
Recovery Witnessed By: —

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: JUN 18/20
Test No.: 3
Test Location: UNIT 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	285.5
After Act. Rinse:	379.9
Total TS1:	94.4

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	284.0
After 0.1N HNO_3 Rinse:	450.8
Total TS2:	166.8

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: QZ 7466

CONTAINER TS3

Initial Wt:	.8225
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	624.7
Final Wt:	850.3
1 Gain:	225.6
Colour:	—

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	675.2
Initial Wt:	776.3
Final Wt:	968.4
2 Gain:	192.1
Colour:	—

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	665.8
Initial Wt:	774.0
Final Wt:	817.5
3 Gain:	43.5
Colour:	—

Impinger #4 Empty	
Empty Wt:	483.2
Final Wt:	489.9
4 Gain:	6.7
Colour:	—

CONTAINER TS4 WEIGHTS	
Empty Wt:	427.8
w/ Imp. 1-4 Soln:	1094.2
After HNO_3 Rinse:	1241.2
Total TS4:	813.4

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	667.0
Initial Wt:	792.8
Final Wt:	799.8
5 Gain:	7.0
Colour:	PURPLE

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	663.2
Initial Wt:	790.7
Final Wt:	792.3
6 Gain:	1.6
Colour:	PURPLE

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	421.5
With Imp. 5&6 Soln:	[illegible]
After $KMnO_4$ Rinse:	[illegible]
After100g H_2O Rinse:	871.0
Total TS5-A:	450.0

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	426.7
With 150 mL DI H_2O:	575.3
After HCl Rinse:	625.3
After DI H_2O Rinse:	726.3
Total TS5-B:	299.6

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	953.4
Final Wt:	971.5
7 Gain:	18.1

Impinger Box ID: 3

SAMPLE IDENTIFICATION	20-22001-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- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 476.5 ✓

WCBDA= 7: 18.1

Train Loaded By: CB
Train Recovered By: RW
Recovery Witnessed By:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: June 17, 2020
Test No.: Blank
Test Location: #1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.7
After Act. Rinse:	428.4
Total TS1:	147.7

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	279.5
After 0.1N HNO_3 Rinse:	455.2
Total TS2:	175.7

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: Q7.7461

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	623.4
Final Wt:	~~787.6~~ 605.4
1 Gain:	0
Colour:	empty

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	674.7
Initial Wt:	782.0
Final Wt:	782.0
2 Gain:	0
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	663.6
Initial Wt:	764.5
Final Wt:	764.5
3 Gain:	0
Colour:	clear

Impinger #4 Empty	
Empty Wt:	482.1
Final Wt:	481.1
4 Gain:	-1.0
Colour:	empty

CONTAINER TS4 WEIGHTS	
Empty Wt:	433.3
w/ Imp. 1-4 Soln:	645.9
After HNO_3 Rinse:	827.3
Total TS4:	394.0

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	665.7
Initial Wt:	783.2
Final Wt:	782.8
5 Gain:	-0.4
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	662.5
Initial Wt:	773.2
Final Wt:	772.9
6 Gain:	-0.3
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	430.8
With Imp. 5&6 Soln:	650.5
After $KMnO_4$ Rinse:	767.4
After100g H_2O Rinse:	869.2
Total TS5-A:	438.4

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	430.0
With 150 mL DI H_2O:	580.8
After HCl Rinse:	619.5
After DI H_2O Rinse:	733.4
Total TS5-B:	303.4

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	953.9
Final Wt:	953.4
7 Gain:	-0.5

Impinger Box ID: 3

SAMPLE IDENTIFICATION	20-22001-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

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	-1.7
WCBDA= 7:	-0.5

Train Loaded By: DT
Train Recovered By: CB
Recovery Witnessed By:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	22001
Date:	June 17, 2020
Test No.:	Blank
Test Location:	#2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.1
After Act. Rinse:	~~463.0~~ 444.3
Total TS1:	164.2

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	279.8
After 0.1N HNO_3 Rinse:	427.1
Total TS2:	147.3

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: QZ 3464

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	white

Seal and label container TS3

SAMPLE IDENTIFICATION	20-22001-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: CS.
Train Recovered By: CS.
Recovery Witnessed By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	630.0
Final Wt:	630.0
1 Gain:	0
Colour:	empty

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	662.0
Initial Wt:	764.5
Final Wt:	764.5
2 Gain:	0
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	642.0
Initial Wt:	750.6
Final Wt:	750.6
3 Gain:	0
Colour:	clear

Impinger #4 Empty	
Empty Wt:	503.5
Final Wt:	503.5
4 Gain:	0
Colour:	empty

CONTAINER TS4 WEIGHTS	
Empty Wt:	429.4
w/ Imp. 1-4 Soln:	642.7
After HNO_3 Rinse:	870.0
Total TS4:	440.6

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	581.4
Initial Wt:	689.8
Final Wt:	689.5
5 Gain:	-0.3
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	654.4
Initial Wt:	772.0
Final Wt:	771.8
6 Gain:	-0.2
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	429.3
With Imp. 5&6 Soln:	649.7
After $KMnO_4$ Rinse:	769.4
After100g H_2O Rinse:	868.1
Total TS5-A:	438.8

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	429.4
With 150 mL DI H_2O:	579.9
After HCl Rinse:	623.0
After DI H_2O Rinse:	736.7
Total TS5-B:	307.3

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: -0.5

WCBDA= 7: -0.2

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	1004.8
Final Wt:	1004.6
7 Gain:	-0.2

Impinger Box ID: 7

APPENDIX 12

Inorganics Analytical Reports
(28 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 Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2462151	Client Contact:	Chris Belore
Date of Report	8-Jul-20	Client Project ID:	22001 Covanta
Date of Sample Receipt	17-Jun-20		

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 5 (sA 29-Jun-2020)

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

ALS Environmental

Sample Analysis Summary Report

Sample Name		20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(19 THRU 24) BLANK 1	20-22001-PM-(25 THRU 30) TEST#1 APC OUTLET #2	20-22001-PM-(31 THRU 36) TEST#2 APC OUTLET #2	20-22001-PM-(43 THRU 48) BLANK 2	
ALS Sample ID		L2462151-1	L2462151-2	L2462151-3	L2462151-4	L2462151-5	
Matrix		Stack	Stack	Stack	Stack	Stack	
Analysis type		Sample	Sample	Sample	Sample	Sample	
Sampling Date/Time		15-Jun-20	17-Jun-20	16-Jun-20	16-Jun-20	17-Jun-20	
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	
PM via Gravimetric Analysis	LOR						
Method 5	mg	mg	mg	mg	mg	mg	
Filter Particulate Matter	0.8	4.8	5.5	3.5	2.3	5.4	
Acetone Particulate Matter	0.4	0.7	1.3	1.0	1.1	0.5	J
	g	g	g	g	g	g	
Acetone Mass	0.02	67.2	148	149	68.9	161	

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Sample Analysis Summary Report

Sample Name		20-22001-PM-(7 THRU 12) TEST#2 APC OUTLET #1	20-22001-PM-(13 THRU 18) TEST#3 APC OUTLET #1	20-22001-PM-(37 THRU 42) TEST#3 APC OUTLET #2
ALS Sample ID		L2462151-6	L2462151-7	L2462151-8
Matrix		Stack	Stack	Stack
Analysis type		Sample	Sample	Sample
Sampling Date/Time		17-Jun-20	17-Jun-20	18-Jun-20
Date of Receipt		19-Jun-20	19-Jun-20	19-Jun-20
PM via Gravimetric Analysis	**LOR**			
Method 5	**mg**	mg	mg	mg
Filter Particulate Matter	0.8	4.4	2.3	3.3
Acetone Particulate Matter	0.4	2.2	0.9	2.9
	g	g	g	g
Acetone Mass	0.02	150	116	94.2

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#:	L2462068		Mississauga, ON L5J 2Y4
Date of Report	9-Jul-20		Canada
Date of Sample Receipt	17-Jun-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 201A (TPH 09-Jul-2020)
Sample Particulate Analysis via Gravimetric USEPA Method 202 (TPH 09-Jul-2020)

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

ALS Environmental

Sample Analysis Summary Report

Sample Name		20-22001-M201A-1 TEST#1 APC OUTLET #1	20-22001-M201A-2 TEST#1 APC OUTLET #1	20-22001-M201A-3 TEST#1 APC OUTLET #1	20-22001-M201A-4 TEST#1 APC OUTLET #1	20-22001-M201A-(5-7) TEST#1 APC OUTLET #1
ALS Sample ID		L2462068-1	L2462068-2	L2462068-3	L2462068-4	L2462068-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		16-Jun-20	16-Jun-20	16-Jun-20	16-Jun-20	16-Jun-20
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
PM via Gravimetric Analysis	**LOR**					
Method 201A	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.6	0.6	0.2 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	29.3	19.8	10.7	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	2.0
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.3
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	243

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Sample Analysis Summary Report

Sample Name		20-22001-M201A-8 TEST#2 APC OUTLET #1	20-22001-M201A-9 TEST#2 APC OUTLET #1	20-22001-M201A-10 TEST#2 APC OUTLET #1	20-22001-M201A-11 TEST#2 APC OUTLET #1	20-22001-M201A-(12-14) TEST#2 APC OUTLET #1
ALS Sample ID		L2462068-6	L2462068-7	L2462068-8	L2462068-9	L2462068-10
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		16-Jun-20	16-Jun-20	16-Jun-20	16-Jun-20	16-Jun-20
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
PM via Gravimetric Analysis Method 201A	**LOR mg**	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.4	0.6	0.1 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	22.0	25.8	12.1	-	-
PM via Gravimetric Analysis Method 202	**LOR mg**	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	6.2
Non-Extractable Condensable Particulates	0.4	-	-	-	-	9.0
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	258

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Sample Analysis Summary Report

Sample Name		20-22001-M201A-15 TEST#3 APC OUTLET #1	20-22001-M201A-16 TEST#3 APC OUTLET #1	20-22001-M201A-17 TEST#3 APC OUTLET #1	20-22001-M201A-18 TEST#3 APC OUTLET #1	20-22001-M201A-(19-21) TEST#3 APC OUTLET #1
ALS Sample ID		L2462068-11	L2462068-12	L2462068-13	L2462068-14	L2462068-15
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		16-Jun-20	16-Jun-20	16-Jun-20	16-Jun-20	16-Jun-20
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
PM via Gravimetric Analysis	**LOR**					
Method 201A	**mg**	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.4	0.7	0.3 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	21.0	16.2	7.64	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	1.5
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.1
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	279

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Sample Analysis Summary Report

Sample Name		20-22001-M201A-22 TEST#1 APC OUTLET #2	20-22001-M201A-23 TEST#1 APC OUTLET #2	20-22001-M201A-24 TEST#1 APC OUTLET #2	20-22001-M201A-25 TEST#1 APC OUTLET #2	20-22001-M201A-(26-28) TEST#1 APC OUTLET #2
ALS Sample ID		L2462068-16	L2462068-17	L2462068-18	L2462068-19	L2462068-20
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
PM via Gravimetric Analysis	LOR					
Method 201A	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.9	0.4	<0.1	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	29.7	136	17.0	-	-
PM via Gravimetric Analysis	LOR					
Method 202	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	1.7
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.2
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	192

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Sample Analysis Summary Report

Sample Name		20-22001-M201A-29 TEST#2 APC OUTLET #2	20-22001-M201A-30 TEST#2 APC OUTLET #2	20-22001-M201A-31 TEST#2 APC OUTLET #2	20-22001-M201A-32 TEST#2 APC OUTLET #2	20-22001-M201A-(33-35) TEST#2 APC OUTLET #2
ALS Sample ID		L2462068-21	L2462068-22	L2462068-23	L2462068-24	L2462068-25
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
PM via Gravimetric Analysis	**LOR**					
Method 201A	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.4	0.2 J	0.1 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	49.9	43.3	109	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.8
Non-Extractable Condensable Particulates	0.4	-	-	-	-	2.8
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	286

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Sample Analysis Summary Report

Sample Name		20-22001-M201A-36 TEST#3 APC OUTLET #2		20-22001-M201A-37 TEST#3 APC OUTLET #2		20-22001-M201A-38 TEST#3 APC OUTLET #2		20-22001-M201A-39 TEST#3 APC OUTLET #2		20-22001-M201A-(40-42) TEST#3 APC OUTLET #2	
ALS Sample ID		L2462068-26		L2462068-27		L2462068-28		L2462068-29		L2462068-30	
Matrix		Stack		Stack		Stack		Stack		Stack	
Analysis type		Sample		Sample		Sample		Sample		Sample	
Sampling Date/Time		15-Jun-20		15-Jun-20		15-Jun-20		15-Jun-20		15-Jun-20	
Date of Receipt		17-Jun-20		17-Jun-20		17-Jun-20		17-Jun-20		17-Jun-20	
PM via Gravimetric Analysis	**LOR**										
Method 201A	mg	mg		mg		mg		mg		mg	
Filter Particulate Matter	0.8	-		-		-		0.2	J	-	
Acetone Particulate Matter	0.4	0.5		0.3	J	0.3	J	-		-	
	g	g		g		g		g		g	
Acetone Mass	0.02	46.5		41.9		13.2		-		-	
PM via Gravimetric Analysis	**LOR**										
Method 202	mg	mg		mg		mg		mg		mg	
Extractable Condensable Particulates	0.4	-		-		-		-		1.0	
Non-Extractable Condensable Particulates	0.4	-		-		-		-		2.2	
	g	g		g		g		g		g	
Water Mass	0.02	-		-		-		-		261	

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Sample Analysis Summary Report

Sample Name		20-22001-M201A-43 BLANK APC OUTLET #1	20-22001-M201A-44 BLANK APC OUTLET #1	20-22001-M201A-45 BLANK APC OUTLET #1	20-22001-M201A-46 BLANK APC OUTLET #1	20-22001-M201A-(47-49) BLANK APC OUTLET #1
ALS Sample ID		L2462068-31	L2462068-32	L2462068-33	L2462068-34	L2462068-35
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
PM via Gravimetric Analysis	LOR					
Method 201A	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	0.3 J	-
Acetone Particulate Matter	0.4	0.1 J	<0.1	0.3 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	57.3	24.2	18.5	-	-
PM via Gravimetric Analysis	LOR					
Method 202	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	0.8
Non-Extractable Condensable Particulates	0.4	-	-	-	-	0.5
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	161

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Sample Analysis Summary Report

Sample Name		20-22001-M201A-50 BLANK APC OUTLET #2		20-22001-M201A-51 BLANK APC OUTLET #2		20-22001-M201A-52 BLANK APC OUTLET #2		20-22001-M201A-53 BLANK APC OUTLET #2		20-22001-M201A-(54-56) BLANK APC OUTLET #2	
ALS Sample ID		L2462068-36		L2462068-37		L2462068-38		L2462068-39		L2462068-40	
Matrix		Stack		Stack		Stack		Stack		Stack	
Analysis type		Sample		Sample		Sample		Sample		Sample	
Sampling Date/Time		15-Jun-20		15-Jun-20		15-Jun-20		15-Jun-20		15-Jun-20	
Date of Receipt		17-Jun-20		17-Jun-20		17-Jun-20		17-Jun-20		17-Jun-20	
PM via Gravimetric Analysis	LOR										
Method 201A	mg	mg		mg		mg		mg		mg	
Filter Particulate Matter	0.6	-		-		-		0.1	J	-	
Acetone Particulate Matter	0.4	0.1	J	0.3	J	<0.1		-		-	
	g	g		g		g		g		g	
Acetone Mass	0.02	46.4		21.5		42.5		-		-	
PM via Gravimetric Analysis	LOR										
Method 202	mg	mg		mg		mg		mg		mg	
Extractable Condensable Particulates	0.4	-		-		-		-		0.2	J
Non-Extractable Condensable Particulates	0.4	-		-		-		-		0.8	
	g	g		g		g		g		g	
Water Mass	0.02	-		-		-		-		214	

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Sample Analysis Summary Report

Sample Name		MB		MB2
ALS Sample ID		L2462068-MB		L2462068-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	LOR			
Method 201A	mg	mg		mg
Filter Particulate Matter	0.8	<0.1		-
Acetone Particulate Matter	0.4	0.1	J	<0.1
	g	g		g
Acetone Mass	0.02	34.7		29.2
PM via Gravimetric Analysis	LOR			
Method 202	mg	mg		mg
Extractable Condensable Particulates	0.4	0.1	J	-
Non-Extractable Condensable Particulates	0.4	0.1	J	-
	g	g		g
Water Mass	0.02	242		-

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
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Certificate of Analysis

ALS Project Contact:	Lynne Wrona	Client Name:	ORTECH Environmental
ALS Project ID:	ORT100	Client Address:	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2462061		
Date of Report	30-Jun-20		
Date of Sample Receipt	17-Jun-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS:

Cl as HCl Anion Analysed via Ion Chromatography USEPA Method 26A (GN 25-Jun-20)
F as HF Anion Analysed via Ion Chromatography USEPA Method 26A (GN 25-Jun-20)
Ammonia, Total (as NH3) via Ion Chromatography USEPA Method CTM-027 (GN 24-Jun-20)

ANALYST COMMENTS:

Low levels of chloride and fluoride observed in the method blank, slightly above the LOR. Sample data far exceeds these potential contributions, so any impact to data quality is expected to be negligible. **PE 26-Jun-2020**

LOR = Limit of Reporting
LCB = 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)
CVS = Calibration Verification Standard (limits: 90-110%)

Certified by: L. Wrona

Lynne Wrona
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	20-22001-M26A-1 APC OUTLET #1	20-22001-M26A-2 APC OUTLET #1	20-22001-M26A-3 APC OUTLET #1	20-22001-M26A-4 APC OUTLET #2	20-22001-M26A-5 APC OUTLET #2
ALS Sample ID	L2462061-1	L2462061-2	L2462061-3	L2462061-4	L2462061-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	15-Jun-20	15-Jun-20	15-Jun-20	16-Jun-20	16-Jun-20
Date of Receipt	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
Ion Chromatography Analysis					
USEPA Method 26A	mg	mg	mg	mg	mg
Total F^- as HF (ave)	<0.160	<0.158	<0.163	<0.158	<0.170
Analysis 1	<0.160	<0.158	<0.163	<0.158	<0.170
Analysis 2	<0.160	<0.158	<0.163	<0.158	<0.170
Total Cl^- as HCl (ave)	6.88	6.99	6.59	7.88	7.90
Analysis 1	6.87	7.00	6.58	7.86	7.90
Analysis 2	6.89	6.99	6.60	7.90	7.90
Ion Chromatography Analysis					
USEPA Method CTM-027 Ammonia	mg	mg	mg	mg	mg
Total Ammonia as NH_3	0.914	0.971	0.817	0.678	0.710

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Sample Analysis Summary Report

Sample Name	20-22001-M26A-6 APC OUTLET #2	20-22001-M26A-BLANK 1 APC OUTLET #1	20-22001-M26A-BLANK 2 APC OUTLET #2
ALS Sample ID	L2462061-6	L2462061-7	L2462061-8
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	16-Jun-20	15-Jun-20	16-Jun-20
Date of Receipt	17-Jun-20	17-Jun-20	17-Jun-20
Ion Chromatography Analysis			
USEPA Method 26A	mg	mg	mg
Total F^- as HF (ave)	<0.170	<0.121	<0.105
Analysis 1	<0.170	<0.121	<0.105
Analysis 2	<0.170	<0.121	<0.105
Total Cl^- as HCl (ave)	7.84	<0.177	<0.154
Analysis 1	7.85	<0.177	<0.154
Analysis 2	7.84	<0.177	<0.154
Ion Chromatography Analysis			
USEPA Method CTM-027 Ammonia	mg	mg	mg
Total Ammonia as NH_3	0.790	<0.307	<0.264

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Sample QC Summary Report

Sample Name	LCB	LCS	LCS
ALS Sample ID	LCB	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 26A	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	0.0181	0.0753	109%
Analysis 1	0.0180	0.0752	
Analysis 2	0.0181	0.0753	
Total Cl^- as HCl (ave)	0.00265	0.0824	103%
Analysis 1	0.00266	0.0822	
Analysis 2	0.00265	0.0825	
Ion Chromatography Analysis			
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	<0.00472	0.0501	103%

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Sample QC Summary Report

Sample Name	20-22001-M26A-1 APC OUTLET #1	20-22001-M26A-1 APC OUTLET #1	20-22001-M26A-1 APC OUTLET #1	20-22001-M26A-1 APC OUTLET #1
ALS Sample ID	L2462061-1	L2462061-1DUP	L2462061-1MS	L2462061-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20
Date of Receipt	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
Ion Chromatography Analysis				
USEPA Method 26A	mg	mg	mg	% Rec
Total F^- as HF (ave)	<0.160	<0.160	5.07	105%
Analysis 1	<0.160	<0.160	5.05	
Analysis 2	<0.160	<0.160	5.09	
Total Cl^- as HCl (ave)	6.88	6.91	14.6	110%
Analysis 1	6.87	6.91	14.6	
Analysis 2	6.89	6.91	14.6	
Ion Chromatography Analysis				
USEPA Method CTM-027 Ammonia	mg	mg	mg	% Rec
Ammonia, Total (as NH_3)	0.914	0.912	5.20	104%

ALS Environmental
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Certificate of Analysis

ALS Project Contact:	Lynne Wrona	Client Name:	ORTECH Environmental
ALS Project ID:	ORT100	Client Address:	804 Southdown Road
ALS WO#:	L2462151		Mississauga, ON L5J 2Y4
Date of Report	8-Jul-20		Canada
Date of Sample Receipt	17-Jun-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS:

Sample Preparation via USEPA Method 29 (AB 26-JUNE-2020 & 02-JULY-2020)
Mercury Analysis via CVAA using Method USEPA 7470A (AB 29-JUNE-2020 & 03-JULY-2020)

ANALYST COMMENTS:

For all fractions, QC samples were double-spiked with mercury standard. Data is reported to account for this spiking level. This has no impact on data quality, and is for informational purposes only. **PE 7-Jul-2020**

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

ALS Environmental

Sample Analysis Summary Report

Sample Name		20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(19 THRU 24) BLANK 1	20-22001-PM-(25 THRU 30) TEST#1 APC OUTLET #2	20-22001-PM-(31 THRU 36) TEST#2 APC OUTLET #2	20-22001-PM-(43 THRU 48) BLANK 2
ALS Sample ID		L2462151-1	L2462151-2	L2462151-3	L2462151-4	L2462151-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		15-Jun-20	17-Jun-20	16-Jun-20	16-Jun-20	17-Jun-20
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
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	0.550	<0.445	<0.4	<0.403	<0.379
Analytical Fraction 3B	0.025	<0.025	<0.0225	<0.0225	0.617	<0.0225
Analytical Fraction 3C	0.25	0.288	<0.15	0.150	<0.225	<0.15

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Sample Analysis Summary Report

Sample Name		20-22001-PM-(7 THRU 12) TEST#2 APC OUTLET #1	20-22001-PM-(13 THRU 18) TEST#3 APC OUTLET #1	20-22001-PM-(37 THRU 42) TEST#3 APC OUTLET #2
ALS Sample ID		L2462151-6	L2462151-7	L2462151-8
Matrix		Stack	Stack	Stack
Analysis type		Sample	Sample	Sample
Sampling Date/Time		17-Jun-20	17-Jun-20	18-Jun-20
Date of Receipt		19-Jun-20	19-Jun-20	19-Jun-20
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	0.347	0.463	0.616
Analytical Fraction 3B	0.025	0.0513	0.0457	<0.0225
Analytical Fraction 3C	0.25	<0.15	<0.15	<0.15

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	0.585	97%	0.582	97%
Analytical Fraction 2B	0.050	<0.05	1.88	94%	1.89	94%
Analytical Fraction 3B	0.025	<0.025	0.920	92%	0.930	93%
Analytical Fraction 3C	0.25	<0.25	9.65	97%	9.65	97%

ALS Environmental

Sample QC Summary Report

Sample Name		20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1
ALS Sample ID		L2462151-1	L2462151-1DUP	L2462151-1MS	L2462151-1MS	L2462151-1MSD	L2462151-1MSD
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-20	15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
Mercury via CVAA	LOR						
Method 29	ug	ug	ug	ug	% Rec	ug	% Rec
Analytical Fraction 1B	0.015	<0.015	<0.015	0.591	98%	0.591	98%
Analytical Fraction 2B	0.050	0.550	0.506	8.23	87%	7.74	82%
Analytical Fraction 3B	0.025	<0.025	<0.025	0.805	80%	0.800	79%
Analytical Fraction 3C	0.250	0.288	0.294	5.64	89%	5.64	89%

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 Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2462151		
Date of Report	8-Jul-20		
Date of Sample Receipt	17-Jun-20	**Client Contact:**	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS:

Metals analysed via ICP-MS Method USEPA 6020B (SA 02-Jul-20)
Sample Preparation via USEPA Method 29 (AB/SA 02-Jul-20)

ANALYST COMMENTS:

Cr, Co, Ni observed in the fraction 1A method blank (MB) at levels significantly above their LORs. This sample differs from the reagent blank (RB) due to the inclusion of a representative unsampled filter in the MB. Data for these analytes may be biased high as a result of this background contribution. **PE 6-Jul-2020**

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

ALS Environmental

Sample Analysis Summary Report

Sample Name		20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(19 THRU 24) BLANK 1	20-22001-PM-(25 THRU 30) TEST#1 APC OUTLET #2	20-22001-PM-(31 THRU 36) TEST#2 APC OUTLET #2	20-22001-PM-(43 THRU 48) BLANK 2	20-22001-PM-(7 THRU 12) TEST#2 APC OUTLET #1
ALS Sample ID		L2462151-1	L2462151-2	L2462151-3	L2462151-4	L2462151-5	L2462151-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		15-Jun-20	17-Jun-20	16-Jun-20	16-Jun-20	17-Jun-20	17-Jun-20
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	19-Jun-20
Multi-Metals via ICP-MS	**LOR**						
	ug	ug	ug	ug	ug	ug	ug
Front Half HF Fraction 1A							
Antimony	0.2	<	<	<	<	<	0.220
Arsenic	1	<	<	<	<	<	<
Barium	5	8.87	8.92	10.5	9.53	10.5	10.7
Beryllium	0.2	<	<	<	<	<	<
Cadmium	0.1	0.129	0.118	0.139	0.131	0.135	0.343
Chromium	1	3.30	3.13	3.59	3.23	2.77	3.28
Cobalt	0.2	<	<	2.85	<	<	<
Copper	1	1.10	1.16	3.49	1.28	<	1.30
Lead	0.5	1.29	1.16	1.54	1.32	0.993	1.66
Molybdenum	0.2	22.0	22.3	23.1	21.4	21.9	22.5
Nickel	0.2	5.41	5.87	5.84	5.13	4.98	5.60
Selenium	2	<	<	<	<	<	<
Silver	0.2	<	<	<	<	<	<
Thallium	0.2	<	<	<	<	<	<
Vanadium	1	<	<	<	<	<	<
Zinc	6	11.4	8.94	12.7	10.1	6.70	14.3
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	<	0.100	<	<
Arsenic	0.2	<	<	<	<	<	<
Barium	0.5	1.26	2.08	3.33	1.70	1.56	1.56
Beryllium	0.1	<	<	<	<	<	<
Cadmium	0.05	<	<	0.243	0.124	<	0.182
Chromium	0.15	0.561	0.718	0.753	1.02	0.445	0.676
Cobalt	0.1	<	0.160	<	0.116	<	<
Copper	0.3	9.75	6.58	5.77	3.42	1.52	1.76
Lead	0.05	0.638	1.32	1.45	1.72	0.508	1.71
Molybdenum	0.1	0.194	<	<	<	<	<
Nickel	0.1	2.36	5.92	2.04	2.28	1.49	0.830
Selenium	1	3.05	<	<	<	<	<
Silver	0.1	<	<	<	<	<	<
Thallium	0.05	<	<	<	<	<	<
Vanadium	0.1	<	<	0.178	<	<	<
Zinc	3	5.63	10.2	13.0	12.8	4.40	5.80

ALS Environmental

Sample Analysis Summary Report

Sample Name		20-22001-PM-(13 THRU 18) TEST#3 APC OUTLET #1	20-22001-PM-(37 THRU 42) TEST#3 APC OUTLET #2	MB
ALS Sample ID		L2462151-7	L2462151-8	L2462151-MB
Matrix		Stack	Stack	n/a
Analysis Type		Sample	Sample	Sample
Sampling Date		17-Jun-20	18-Jun-20	n/a
Date of Receipt		19-Jun-20	19-Jun-20	n/a
Multi-Metals via ICP-MS	**LOR**			
	ug	**ug**	**ug**	**ug**
Front Half HF Fraction 1A				
Antimony	0.2	<	0.273	<
Arsenic	1	<	<	<
Barium	5	9.95	10.9	<
Beryllium	0.2	<	<	<
Cadmium	0.1	<	0.815	<
Chromium	1	2.98	3.88	2.29
Cobalt	0.2	<	<	0.628
Copper	1	<	1.47	<
Lead	0.5	1.19	1.96	0.901
Molybdenum	0.2	22.6	22.5	22.3
Nickel	0.2	5.13	5.84	4.14
Selenium	2	<	<	<
Silver	0.2	<	<	<
Thallium	0.2	<	0.479	<
Vanadium	1	<	<	<
Zinc	6	9.70	34.8	<
Back Half (HNO3 / H2O2) Fraction 2A				
Antimony	0.1	<	<	-
Arsenic	0.2	<	<	-
Barium	0.5	1.39	2.44	-
Beryllium	0.1	<	<	-
Cadmium	0.05	<	<	-
Chromium	0.15	0.658	0.692	-
Cobalt	0.1	<	<	-
Copper	0.3	2.10	1.16	-
Lead	0.05	0.903	0.365	-
Molybdenum	0.1	<	<	-
Nickel	0.1	1.20	0.326	-
Selenium	1	<	<	-
Silver	0.1	<	<	-
Thallium	0.05	<	<	-
Vanadium	0.1	<	<	-
Zinc	3	5.94	<	-

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 HF Fraction 1A						
Antimony	0.2	<	11.0	91	11.5	95
Arsenic	1	<	56.6	94	58.0	97
Barium	5	<	59.7	99	60.8	101
Beryllium	0.2	<	53.4	89	54.5	91
Cadmium	0.1	<	27.2	91	27.9	93
Chromium	1	<	57.4	96	58.7	98
Cobalt	0.2	<	57.2	95	58.1	97
Copper	1	<	58.0	96	58.9	98
Lead	0.5	<	56.3	94	57.8	96
Molybdenum	0.2	<	27.7	92	28.7	96
Nickel	0.2	<	57.4	96	58.8	98
Selenium	2	<	57.1	95	58.2	97
Silver	0.2	<	27.8	93	26.7	89
Thallium	0.2	<	55.3	92	57.3	96
Vanadium	1	<	57.8	96	58.6	97
Zinc	6	<	114	94	114	94
Back Half (HNO3 / H2O2) Fraction 2A						
Antimony	0.1	<	5.77	95	5.69	94
Arsenic	0.2	<	29.3	98	29.1	97
Barium	0.5	<	30.7	102	30.8	103
Beryllium	0.1	<	27.1	90	27.1	90
Cadmium	0.05	<	14.2	95	14.2	95
Chromium	0.15	<	29.2	97	29.1	97
Cobalt	0.1	<	29.6	99	29.4	98
Copper	0.3	<	29.8	99	29.6	98
Lead	0.05	0.0571	29.0	96	29.5	98
Molybdenum	0.1	<	14.4	96	14.2	95
Nickel	0.1	<	29.8	99	29.6	99
Selenium	1	<	30.1	100	29.8	99
Silver	0.1	<	14.5	97	14.3	95
Thallium	0.05	<	28.9	96	30.1	100
Vanadium	0.1	<	29.7	99	29.6	99
Zinc	3	<	58.1	96	57.2	95

ALS Environmental

Sample QC Summary Report

Sample Name		20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22001-PM-(1 THRU 6) TEST#1 APC OUTLET #1
ALS Sample ID		L2462151-1	L2462151-1	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-20	15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20	15-Jun-20
Date of Receipt		17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A							
Antimony	0.2	<	<	23.5	97	23.6	98
Arsenic	1	<	<	115	96	116	96
Barium	5	8.87	9.16	128	100	129	100
Beryllium	0.2	<	<	111	92	110	91
Cadmium	0.1	0.129	0.130	58.5	97	60.0	100
Chromium	1	3.30	3.23	118	96	120	97
Cobalt	0.2	<	<	116	97	116	97
Copper	1	1.10	1.19	118	97	118	97
Lead	0.5	1.29	1.33	119	98	119	98
Molybdenum	0.2	22.0	23.5	80.2	97	80.3	97
Nickel	0.2	5.41	5.67	122	97	122	97
Selenium	2	<	<	117	97	116	97
Silver	0.2	<	<	57.8	96	57.5	96
Thallium	0.2	<	<	119	99	121	101
Vanadium	1	<	<	117	98	117	97
Zinc	6	11.4	12.1	246	98	244	97
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	11.5	95	11.1	92
Arsenic	0.2	<	<	56.9	95	57.2	95
Barium	0.5	1.26	1.21	61.1	100	64.3	105
Beryllium	0.1	<	<	53.1	88	52.9	88
Cadmium	0.05	<	<	28.1	94	28.9	96
Chromium	0.15	0.561	0.569	58.3	96	58.8	97
Cobalt	0.1	<	<	58.1	97	58.8	98
Copper	0.3	9.75	9.64	68.3	98	68.8	98
Lead	0.05	0.638	0.653	59.1	97	59.1	97
Molybdenum	0.1	0.194	0.223	28.7	95	28.4	94
Nickel	0.1	2.36	2.35	61.1	98	61.4	98
Selenium	1	3.05	3.13	59.9	95	60.4	96
Silver	0.1	<	<	28.9	96	28.2	94
Thallium	0.05	<	<	58.9	98	59.0	98
Vanadium	0.1	<	<	58.7	98	59.2	99
Zinc	3	5.63	6.03	119	94	119	94

APPENDIX 13

Particle Size Distribution Train Recovery Data Sheets
(6 pages)

ORTECH Consulting Inc.

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: June 16/22

Test No.: 1
Test Location: UNIT 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem
CONTAINER TS1
Container TS1 Weights
Mark Fluid Level and
Seal and label container TS1

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
CONTAINER TS2
Container TS2 Weights
Mark Fluid Level and
Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top
CONTAINER TS3
Container TS3 Weights
Mark Fluid Level and
Seal and label container TS3

Back-Up Filter
Filter ID: QZ7209
CONTAINER TS4

Initial Wt:	0.1460
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	526.7
Final Wt:	669.9
1 Gain:	143.2
Colour:	—

Impinger #2 Empty	
Empty Wt:	669.6
Final Wt:	670.6
2 Gain:	1.0
Colour:	—

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	—
Initial Wt:	750.0
Final Wt:	750.3
3 Gain:	0.3
Colour:	—

Impinger #4 Silica Gel	
Initial Wt:	935.7
Final Wt:	948.9
4 Gain:	13.2
% 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:	1400
Purge Off:	1500

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: 144.5
WCBDA=4: 13.2

SAMPLE IDENTIFICATION	20-22001-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:
Train Recovered By: RM

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ORTECH Consulting Inc.

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: JUNE 16 2020

Test No.: 2
Test Location: UNIT 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

Container TS1 Weights

Mark Fluid Level and

Seal and label container TS1

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

CONTAINER TS2

Container TS2 Weights

Mark Fluid Level and

Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top

CONTAINER TS3

Container TS3 Weights

Mark Fluid Level and

Seal and label container TS3

Back-Up Filter

Filter ID: QZ-7210

CONTAINER TS4

Initial Wt:	0.1456
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	491.0
	Final Wt:	643.6
1	Gain:	152.6
	Colour:	—

	Impinger #2 Empty	
	Empty Wt:	661.3
	Final Wt:	662.9
2	Gain:	1.6
	Colour:	—

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	656.4
	Initial Wt:	755.8
	Final Wt:	751.6
3	Gain:	-4.2
	Colour:	

	Impinger #4 Silica Gel	
	Initial Wt:	963.8
	Final Wt:	976.3
4	Gain:	12.5
	% Spent:	25

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: ~~1725~~ 1710
Purge Off: 1810

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: 150.0

WCBDA=4: 12.5

SAMPLE IDENTIFICATION	20-22001-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_2O and rinse)	12
TS6 (Secondary Filter)	13
TS7 (Acetone / Hexane rinse)	14

Train Loaded By: DT
Train Recovered By: [signature]

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ORTECH Consulting Inc.

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: June 6 2020

Test No.: 3
Test Location: UNIT 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem
- CONTAINER TS1
- Container TS1 Weights
- Mark Fluid Level and
- Seal and label container TS1

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
- CONTAINER TS2
- Container TS2 Weights
- Mark Fluid Level and
- Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top
- CONTAINER TS3
- Container TS3 Weights
- Mark Fluid Level and
- Seal and label container TS3

Back-Up Filter

Filter ID: QZ7213

CONTAINER TS4

Initial Wt:	0.1457
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	527.6
Final Wt:	667.1
1 Gain:	139.5
Colour:	—

Impinger #2 Empty	
Empty Wt:	669.6
Final Wt:	669.6
2 Gain:	0.0
Colour:	—

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	—
Initial Wt:	750.3
Final Wt:	744.2
3 Gain:	− 6.1
Colour:	—

Impinger #4 Silica Gel	
Initial Wt:	948.9
Final Wt:	963.2
4 Gain:	14.3
% 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: 1910
Purge Off: 2010

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: 133.4 ✓
WCBDA=4: 14.3

SAMPLE IDENTIFICATION	20-22001-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: RA
Train Recovered By: RA

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ORTECH Consulting Inc.

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: JUNE 15, 20

Test No.: 1
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

Container TS1 Weights

Mark Fluid Level and

Seal and label container TS1

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

CONTAINER TS2

Container TS2 Weights

Mark Fluid Level and

Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top

CONTAINER TS3

Container TS3 Weights

Mark Fluid Level and

Seal and label container TS3

Back-Up Filter

Filter ID: QZ720F

CONTAINER TS4

Initial Wt:	0.1455
Final Wt:	
Gain:	
Colour:	

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	526.7
Final Wt:	675.4
1 Gain:	148.7
Colour:	clear

Impinger #2 Empty	
Empty Wt:	669.6
Final Wt:	669.6
2 Gain:	—
Colour:	—

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	656.9
Initial Wt:	759.6
Final Wt:	757.5
3 Gain:	-2.1
Colour:	clear

Impinger #4 Silica Gel	
Initial Wt:	914.7
Final Wt:	924.9
4 Gain:	10.2
% 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:	12:50
Purge Off:	13:50

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: 146.6

WCBDA=4: 10.2

SAMPLE IDENTIFICATION	20-22001-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_2O and rinse)	26
TS6 (Secondary Filter)	27
TS7 (Acetone / Hexane rinse)	28

Train Loaded By: DU
Train Recovered By: DU/DT

8

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: JUNE 15, 20

Test No.: 2
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem
- CONTAINER TS1
- Container TS1 Weights
- Mark Fluid Level and
- Seal and label container TS1

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
- CONTAINER TS2
- Container TS2 Weights
- Mark Fluid Level and
- Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top
- CONTAINER TS3
- Container TS3 Weights
- Mark Fluid Level and
- Seal and label container TS3

Back-Up Filter

Filter ID: QZ 72016

CONTAINER TS4

Initial Wt:	0.1466
Final Wt:	
Gain:	
Colour:	

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	491.0
Final Wt:	645.4
1 Gain:	154.4
Colour:	clear

Impinger #2 Empty	
Empty Wt:	661.3
Final Wt:	661.3
2 Gain:	—
Colour:	—

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	656.4
Initial Wt:	757.0
Final Wt:	755.8
3 Gain:	-1.2
Colour:	clear

Impinger #4 Silica Gel	
Initial Wt:	954.1
Final Wt:	963.8
4 Gain:	9.7
% 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:	15:20
Purge Off:	16:20

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: 153.2 ✓

WCBDA=4: 9.7

SAMPLE IDENTIFICATION	20-22001-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: DU
Train Recovered By: DU/DT

9

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22001
Date: JUNE 15, 20

Test No.: 3
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem
- CONTAINER TS1
- Container TS1 Weights
- Mark Fluid Level and
- Seal and label container TS1

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
- CONTAINER TS2
- Container TS2 Weights
- Mark Fluid Level and
- Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top
- CONTAINER TS3
- Container TS3 Weights
- Mark Fluid Level and
- Seal and label container TS3

Back-Up Filter

Filter ID: QZ 7207

CONTAINER TS4

Initial Wt:	0.1441
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	526.7
Final Wt:	691.2
1 Gain:	164.5
Colour:	clear

Impinger #2 Empty	
Empty Wt:	669.6
Final Wt:	669.6
2 Gain:	—
Colour:	—

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	656.9
Initial Wt:	757.5
Final Wt:	756.5
3 Gain:	-1.0
Colour:	clear

Impinger #4 Silica Gel	
Initial Wt:	924.9
Final Wt:	935.7
4 Gain:	10.8
% 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:	18:20
Purge Off:	19:20

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

8

CWTR=1+2+3: 163.5

WCBDA=4: 10.8

SAMPLE IDENTIFICATION	20-22001-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
Train Recovered By: DT

BLANK 1 FILTER QZ7212 0.14
" 2 " QZ7211 0.146

APPENDIX 14

SVOC Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22001
Sample Batch No.:	20-22001-SVOC-

Test No.:	1
Test Date:	June 17, 2020
Test Location:	APC #1

Sample ID 1

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	428.0
After Acetone/ Hexane Rinse:	734.3
Total TS1:	306.3

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 2

Filter

CONTAINER TS2

Colour:	WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 3

XAD-II Trap

TRAP 5

CONTAINER TS3

Initial Wt:	417.8
Final Wt:	424.1
1 Gain:	6.3
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 4

Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	~~520.2~~ 515.8
Final Wt:	1127.4
2 Gain:	611.6
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	663.6
Initial Wt:	788.9
Final Wt:	827.9
3 Gain:	39.0
Colour:	clear

Impinger #3 Empty	
Empty Wt:	610.7
Final Wt:	610.8
4 Gain:	0.1
Colour:	empty

Container TS4 Weights	
Empty Wt:	430.5
With Imp Soln:	1194.5
After ~100g H_2O Rinse:	1315.4
Total TS4:	884.9

CWTR = 1 + 2 + 3 + 4: 659.9

WCBDA=5: 12.9

Sample ID 5

Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	430.5
After Acetone/ Hexane Rinse:	688.2
Total TS5:	257.7

Impinger Box ID: 4

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	927.3
Final Wt:	940.2
5 Gain:	12.9
% Spent:	15 %

✓ TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	5
Trap ID:	5
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	193115
Hexane Batch No.:	lot 105143
Acetone Batch No.:	lot 105269

Train Loaded By: [signature]

Train Recovered By: CB

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22001
Sample Batch No.:	20-22001-SVOC-

Test No.:	2
Test Date:	JUNE 18, 2020
Test Location:	UNIT 1

Sample ID 6
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser
CONTAINER TS1

Empty Wt:	428.6
After Acetone/ Hexane Rinse:	624.7
Total TS1:	196.1

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 7
Filter
CONTAINER TS2
Colour:
FOLD IN FOIL
SEAL AND LABEL CONTAINER TS2

Sample ID 8
XAD-II Trap
CONTAINER TS3

Initial Wt:	376.7
Final Wt:	381.7
1 Gain:	5.0
Colour:	WHITE

SEAL TRAP
WRAP IN FOIL
LABEL AS CONTAINER TS3

Sample ID 9
Impingers 1, 2 & 3
CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	598.8
Final Wt:	1098.9
2 Gain:	500.1
Colour:	—

Impinger #2 Ethylene Glycol	
Empty Wt:	528.8
Initial Wt:	656.7
Final Wt:	795.5
3 Gain:	138.8
Colour:	

Impinger #3 Empty	
Empty Wt:	662.3
Final Wt:	662.5
4 Gain:	0.2
Colour:	—

Container TS4 Weights	
Empty Wt:	427.2
With Imp Soln:	1180.5
After ~100g H_2O Rinse:	1358.7
Total TS4:	931.5

CWTR = 1 + 2 + 3 + 4: ~~639.1~~ 644.1

WCBDA=5: 17.4

Sample ID 10
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS5

Empty Wt:	425.7
After Acetone/ Hexane Rinse:	616.3
Total TS5:	190.6

Impinger Box ID: 2

Impinger 4 Silica Gel
CONTAINER TS6 (Impinger)

Initial Wt:	896.3
Final Wt:	913.7
5 Gain:	17.4
% Spent:	25

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	R
Trap ID:	3
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	193115
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: [signature]
Train Recovered By: [signature]

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22001
Sample Batch No.: 20-22001-SVOC-

Test No.: 3
Test Date: JUN 18/20
Test Location: UNIT 1

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	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)

TS1

Empty Wt:	428.0
After Acetone/ Hexane Rinse:	643.7
Total TS1:	215.7

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

TS3

Initial Wt:	355.8
Final Wt:	362.3
1 Gain:	6.5
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

TS4

Impinger #1 Empty	
Empty Wt:	512.6
Final Wt:	1107.5
2 Gain:	594.9
Colour:	—

Impinger #2 Ethylene Glycol	
Empty Wt:	530.4
Initial Wt:	650.5
Final Wt:	754.2
3 Gain:	103.7
Colour:	

Impinger #3 Empty	
Empty Wt:	692.5
Final Wt:	692.9
4 Gain:	0.4
Colour:	—

Container TS4 Weights	
Empty Wt:	428.7
With Imp Soln:	1233.0
After ~100g H_2O Rinse:	1344.4
Total TS4:	915.7

TS5

Empty Wt:	424.0
After Acetone/ Hexane Rinse:	596.1
Total TS5:	172.1

TS6

Initial Wt:	886.2
Final Wt:	900.3
5 Gain:	14.1
% Spent:	20

Impinger Box ID: 10

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	9
Trap ID:	
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	193115
Hexane Batch No.:	
Acetone Batch No.:	

CWTR = 1 + 2 + 3 + 4: 705.5

WCBDA=5: 14.1

✓ TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: D.D. [signature]
Train Recovered By: [signature]

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22001
Sample Batch No.: 20-22001-SVOC-

Test No.: 1
Test Date: June 17, 2020
Test Location: #2 APC outlet

Sample ID 21	Sample ID 22	Sample ID 23	Sample ID 24	Sample ID 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)

TRAP 9

TS1

Empty Wt:	427.5
After Acetone/ Hexane Rinse:	802.6
Total TS1:	375.1

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

TS2

Colour:	white

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

TS3

Initial Wt:	391.8
Final Wt:	403.6
1 Gain:	11.8
Colour:	white

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

TS4

Impinger #1 Empty	
Empty Wt:	620.3
Final Wt:	943.6
2 Gain:	323.3
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	519.2
Initial Wt:	649.8
Final Wt:	868.4
3 Gain:	218.6
Colour:	clear

Impinger #3 Empty	
Empty Wt:	605.1
Final Wt:	736.8
4 Gain:	131.7
Colour:	clear

Container TS4 Weights	
Empty Wt:	426.4
With Imp Soln:	1216.0
After ~100g H_2O Rinse:	1337.4
Total TS4:	911.0

TS5

Empty Wt:	430.6
After Acetone/ Hexane Rinse:	633.3
Total TS5:	202.7

TS6 (Impinger)

Initial Wt:	903.0
Final Wt:	919.5
5 Gain:	16.5
% Spent:	15 %

Impinger Box ID: B

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	P
Trap ID:	9
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	193115
Hexane Batch No.:	193143
Acetone Batch No.:	192249

CWTR = 1 + 2 + 3 + 4:	685.4 ✓
WCBDA=5:	16.5

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: DY
Train Recovered By: CB

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22001
Sample Batch No.: 20-22001-SVOC-

Test No.: 2
Test Date: June 17, 2020
Test Location: ADC # 2 outlet

Sample ID 26 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	431.0
After Acetone/ Hexane Rinse:	716.6
Total TS1:	285.6

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 27 — Filter

CONTAINER TS2

Colour: white

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 28 — XAD-II Trap

CONTAINER TS3

Initial Wt:	375.4
Final Wt:	381.7
1 Gain:	6.3
Colour:	white

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 29 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	653.3
Final Wt:	980.1
2 Gain:	326.8
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	669.6
Initial Wt:	778.6
Final Wt:	1009.9
3 Gain:	~~[illegible]~~ 231.3
Colour:	clear

Impinger #3 Empty	
Empty Wt:	644.5
Final Wt:	705.5
4 Gain:	61.0
Colour:	clear

Container TS4 Weights	
Empty Wt:	421.8
With Imp Soln:	1124.3
After ~100g H_2O Rinse:	1270.9
Total TS4:	849.1

CWTR = 1 + 2 + 3 + 4: ~~[illegible]~~ 625.4

WCBDA=5: 15.1

Sample ID 30 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	425.8
After Acetone/ Hexane Rinse:	778.4
Total TS5:	352.6

Impinger Box ID: 6

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	790.2
Final Wt:	805.3
5 Gain:	15.1
% Spent:	15%

✓ TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	0
Trap ID:	2
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	193115
Hexane Batch No.:	105143
Acetone Batch No.:	105269

Train Loaded By: CB / DM
Train Recovered By: CB

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22001
Sample Batch No.: 20-22001-SVOC-

Test No.: 3
Test Date: JUNE 19 2020
Test Location: UNIT 2

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)

TS1

Empty Wt:	427.4
After Acetone/ Hexane Rinse:	630.8
Total TS1:	203.4

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

TS2

Colour:	

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

TS3

Initial Wt:	394.5
Final Wt:	401.4
1 Gain:	6.9
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

TS4

Impinger #1 Empty	
Empty Wt:	638.1
Final Wt:	1164.9
2 Gain:	526.8
Colour:	—

Impinger #2 Ethylene Glycol	
Empty Wt:	653.0
Initial Wt:	770.9
Final Wt:	891.7
3 Gain:	120.8
Colour:	—

Impinger #3 Empty	
Empty Wt:	656.3
Final Wt:	657.2
4 Gain:	0.9
Colour:	—

Container TS4 Weights	
Empty Wt:	420.0
With Imp Soln:	1175.0
After ~100g H_2O Rinse:	1275.5
Total TS4:	855.5

CWTR = 1 + 2 + 3 + 4: 655.7

WCBDA=5: 12.0

TS5

Empty Wt:	427.0
After Acetone/ Hexane Rinse:	631.9
Total TS5:	204.9

Impinger Box ID: 15

TS6

Initial Wt:	909.8
Final Wt:	921.8
5 Gain:	12.0
% Spent:	25

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	U
Trap ID:	-48
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	193115
Hexane Batch No.:	
Acetone Batch No.:	

✓ TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: CB
Train Recovered By: RW

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22001
Sample Batch No.: 20-22001-SVOC-

Test No.: Blank 1
Test Date: June 18, 2020
Test Location: Blank 1 APC 1

Sample ID | Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser | CONTAINER TS1

Empty Wt:	427.7
After Acetone/ Hexane Rinse:	622.3
Total TS1:	194.6

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID | Filter | CONTAINER TS2

Colour:	WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID | XAD-II Trap | CONTAINER TS3

Initial Wt:	~~358.~~ 353.0
Final Wt:	352.0
1 Gain:	-1.0
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID | Impingers 1, 2 & 3 | CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	~~58~~ 436.4
Final Wt:	456.6
2 Gain:	—
Colour:	—

Impinger #2 Ethylene Glycol	
Empty Wt:	555.1
Initial Wt:	~~675.4~~ 767.1
Final Wt:	767.1
3 Gain:	—
Colour:	—

Impinger #3 Empty	
Empty Wt:	~~647~~ 557.7
Final Wt:	557.3
4 Gain:	—
Colour:	—

Container TS4 Weights	
Empty Wt:	427.7
With Imp Soln:	534.4
After ~100g H_2O Rinse:	636.4
Total TS4:	

Sample ID | Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers | CONTAINER TS5

Empty Wt:	427.3
After Acetone/ Hexane Rinse:	615.6
Total TS5:	188.3

Impinger Box ID: ~~18~~ 13

Impinger 4 Silica Gel | CONTAINER TS6 (Impinger)

Initial Wt:	~~904.7~~ 919.1
Final Wt:	919.1
5 Gain:	—
% Spent:	20

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	~~X~~ V
Trap ID:	~~F2~~ 6
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	193115
Hexane Batch No.:	105143
Acetone Batch No.:	105269

Train Loaded By: [signature]
Train Recovered By: [signature]

CWTR = 1 + 2 + 3 + 4:	—

WCBDA=5:	—

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

87.94
91.51

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22001
Sample Batch No.:	20-22001-SVOC-

Test No.:	BLANK 2
Test Date:	JUNE 18 2020
Test Location:	UNIT 2

Sample ID 36

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	423.1
After Acetone/ Hexane Rinse:	609.0
Total TS1:	185.9

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 37

Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 38

XAD-II Trap

CONTAINER TS3

	Initial Wt:	392.5
	Final Wt:	392.0
1	Gain:	-0.5
	Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 39

Impingers 1, 2 & 3

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	602.3
	Final Wt:	—
2	Gain:	—
	Colour:	—

	Impinger #2 Ethylene Glycol	
	Empty Wt:	528.6
	Initial Wt:	662.0
	Final Wt:	—
3	Gain:	—
	Colour:	—

	Impinger #3 Empty	
	Empty Wt:	659.9
	Final Wt:	—
4	Gain:	—
	Colour:	—

Container TS4 Weights	
Empty Wt:	425.6
With Imp Soln:	552.4
After ~100g H_2O Rinse:	657.4
Total TS4:	231.8

Sample ID 40

Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	425.9
After Acetone/ Hexane Rinse:	603.2
Total TS5:	177.3

Impinger Box ID: 4

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

	Initial Wt:	939.8
	Final Wt:	—
5	Gain:	—
	% Spent:	—

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	K
Trap ID:	8
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	193115
Hexane Batch No.:	105143
Acetone Batch No.:	105269

Train Loaded By: CR

Train Recovered By: [signature]

CWTR = 1 + 2 + 3 + 4: —

WCBDA=5: —

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

cu.ft 85.78
87.65

a Kontrol Energy Company

APPENDIX 15

SVOC Analytical Report
(70 pages)

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 Mississauga, ON L5J 2Y4
ALS WO#:	L2463211	Client Contact:	Chris Belore
Date of Report	14-Jul-20	Client Project ID:	22001 Covanta
Date of Sample Receipt	19-Jun-20		

COMMENTS: **PCDD/F by EPA M23**

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis summary Report

Sample Name	20-22001-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1	20-22001-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1	20-22001-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1	20-22001-SVOC-(16 THRU 20) BLANK 1 APC OUTLET #1
ALS Sample ID	L2463211-1	L2463211-2	L2463211-3	L2463211-4
Sample Size	1	1	1	1
Sample size units	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	17-Jun-20	18-Jun-20	18-Jun-20	18-Jun-20
Extraction Date	30-Jun-20	30-Jun-20	30-Jun-20	30-Jun-20
Target Analytes	pg	pg	pg	pg
2,3,7,8-TCDD	<0.84	<0.70	<0.81	<0.54
1,2,3,7,8-PeCDD	3.22	<2.4	3.80	<0.49
1,2,3,4,7,8-HxCDD	<4.5	4.33	5.42	<0.46
1,2,3,6,7,8-HxCDD	10.5	10.8	<11	<0.39
1,2,3,7,8,9-HxCDD	5.22	<4.5	5.37	<0.43
1,2,3,4,6,7,8-HpCDD	62.7	59.2	66.1	<1.3
OCDD	90.2	84.0	107	3.03
2,3,7,8-TCDF	<2.1	1.86	2.94	<0.56
1,2,3,7,8-PeCDF	4.20	4.05	5.19	<0.37
2,3,4,7,8-PeCDF	5.75	6.02	7.07	<0.34
1,2,3,4,7,8-HxCDF	<4.9	5.08	6.04	<0.33
1,2,3,6,7,8-HxCDF	<4.4	<5.3	5.89	<0.33
2,3,4,6,7,8-HxCDF	9.82	<8.1	9.40	<0.34
1,2,3,7,8,9-HxCDF	<4.9	<5.0	<5.5	2.58
1,2,3,4,6,7,8-HpCDF	18.9	23.6	24.3	<0.49
1,2,3,4,7,8,9-HpCDF	2.93	3.46	5.39	<0.60
OCDF	10.0	18.7	27.6	1.20
Field Spike Standards	% Rec	% Rec	% Rec	% Rec
37Cl4-2,3,7,8-TCDD	100	96	97	95
13C12-1,2,3,4,7,8-HxCDD	109	117	119	106
13C12-2,3,4,7,8-PeCDF	104	101	101	100
13C12-1,2,3,4,7,8-HxCDF	109	110	112	105
13C12-1,2,3,4,7,8,9-HpCDF	101	101	98	95
Extraction Standards				
13C12-2,3,7,8-TCDD	84	69	59	80
13C12-1,2,3,7,8-PeCDD	83	68	61	79
13C12-1,2,3,6,7,8-HxCDD	86	65	60	76
13C12-1,2,3,4,6,7,8-HpCDD	86	75	68	84
13C12-OCDD	74	65	55	71
13C12-2,3,7,8-TCDF	74	59	54	70
13C12-1,2,3,7,8-PeCDF	76	62	57	72
13C12-1,2,3,6,7,8-HxCDF	71	62	58	70
13C12-1,2,3,4,6,7,8-HpCDF	76	65	61	77
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	80	71	63	75
Homologue Group Totals	pg	pg	pg	pg
Total-TCDD	96.1	89.4	104	<0.54
Total-PeCDD	125	105	77.4	<0.49
Total-HxCDD	195	219	217	<0.46
Total-HpCDD	125	115	129	<0.79
Total-TCDF	64.8	39.9	71.8	<0.56
Total-PeCDF	38.1	45.5	63.4	<0.37
Total-HxCDF	41.9	37.1	55.7	2.58
Total-HpCDF	33.1	39.6	42.4	<0.60
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	8.50	5.03	10.6	0.259
Mid Point PCDD/F TEQ (WHO 2005)	11.0	10.1	12.6	1.01
Upper Bound PCDD/F TEQ (WHO 2005)	11.4	10.4	13.0	1.71

ALS Life Sciences

Sample Analysis summary Report

Sample Name / ALS Sample ID	20-22001-SVOC- (21 THRU 25) TEST#1 APC OUTLET #2 L2463211-5	20-22001-SVOC- (26 THRU 30) TEST#2 APC OUTLET #2 L2463211-6	20-22001-SVOC- (31 THRU 35) TEST#3 APC OUTLET #2 L2463211-7	20-22001-SVOC- (36 THRU 40) BLANK 2 APC OUTLET #2 L2463211-8
Sample Size	1	1	1	1
Sample size units	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	17-Jun-20	17-Jun-20	18-Jun-20	18-Jun-20
Extraction Date	30-Jun-20	30-Jun-20	30-Jun-20	30-Jun-20
Target Analytes	pg	pg	pg	pg
2,3,7,8-TCDD	<0.91	<1.1	<0.79	<0.65
1,2,3,7,8-PeCDD	3.89	<3.5	<3.0	<0.47
1,2,3,4,7,8-HxCDD	<5.1	6.50	5.56	<0.36
1,2,3,6,7,8-HxCDD	13.8	13.7	12.7	<0.30
1,2,3,7,8,9-HxCDD	<7.2	9.36	<7.2	<0.33
1,2,3,4,6,7,8-HpCDD	97.0	111	98.8	1.05
OCDD	167	234	166	<6.1
2,3,7,8-TCDF	<1.3	7.22	<1.9	<0.83
1,2,3,7,8-PeCDF	<3.4	8.13	5.45	<1.4
2,3,4,7,8-PeCDF	6.11	11.7	6.14	<0.40
1,2,3,4,7,8-HxCDF	<4.3	12.0	6.88	<0.31
1,2,3,6,7,8-HxCDF	6.11	10.4	6.47	<0.29
2,3,4,6,7,8-HxCDF	11.4	16.1	11.8	<0.32
1,2,3,7,8,9-HxCDF	6.50	7.75	<6.0	3.62
1,2,3,4,6,7,8-HpCDF	<27	<33	30.6	<0.30
1,2,3,4,7,8,9-HpCDF	<4.9	<7.8	<6.6	<0.37
OCDF	26.4	35.5	33.1	<6.5
Field Spike Standards	% Rec	% Rec	% Rec	% Rec
37Cl4-2,3,7,8-TCDD	98	97	98	97
13C12-1,2,3,4,7,8-HxCDD	120	107	110	120
13C12-2,3,4,7,8-PeCDF	99	99	102	101
13C12-1,2,3,4,7,8-HxCDF	109	107	111	111
13C12-1,2,3,4,7,8,9-HpCDF	98	98	101	96
Extraction Standards				
13C12-2,3,7,8-TCDD	73	74	78	73
13C12-1,2,3,7,8-PeCDD	69	70	72	76
13C12-1,2,3,6,7,8-HxCDD	68	71	73	73
13C12-1,2,3,4,6,7,8-HpCDD	76	77	79	83
13C12-OCDD	66	68	68	70
13C12-2,3,7,8-TCDF	64	65	67	61
13C12-1,2,3,7,8-PeCDF	65	66	67	70
13C12-1,2,3,6,7,8-HxCDF	65	66	67	69
13C12-1,2,3,4,6,7,8-HpCDF	68	69	70	77
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	73	72	79	77
Homologue Group Totals	pg	pg	pg	pg
Total-TCDD	162	159	165	<0.65
Total-PeCDD	120	166	141	<0.47
Total-HxCDD	291	277	291	<0.36
Total-HpCDD	184	204	185	1.05
Total-TCDF	17.5	142	32.6	<0.83
Total-PeCDF	56.4	88.9	54.2	<0.43
Total-HxCDF	55.5	106	71.3	3.62
Total-HpCDF	20.0	20.3	50.0	<0.37
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	10.5	13.2	7.70	0.373
Mid Point PCDD/F TEQ (WHO 2005)	13.1	17.7	12.7	1.18
Upper Bound PCDD/F TEQ (WHO 2005)	13.7	18.3	13.1	1.94

ALS Life Sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG3347043-1	WG3347043-2
Sample Size	1	1
Sample size units	sample	sample
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	30-Jun-20	30-Jun-20
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<0.92	77
1,2,3,7,8-PeCDD	<0.46	107
1,2,3,4,7,8-HxCDD	0.628	104
1,2,3,6,7,8-HxCDD	<0.52	94
1,2,3,7,8,9-HxCDD	1.13	106
1,2,3,4,6,7,8-HpCDD	1.82	91
OCDD	<3.3	99
2,3,7,8-TCDF	<0.68	84
1,2,3,7,8-PeCDF	<1.9	91
2,3,4,7,8-PeCDF	<0.45	83
1,2,3,4,7,8-HxCDF	0.719	89
1,2,3,6,7,8-HxCDF	<0.41	93
2,3,4,6,7,8-HxCDF	<0.59	94
1,2,3,7,8,9-HxCDF	3.80	100
1,2,3,4,6,7,8-HpCDF	<0.53	93
1,2,3,4,7,8,9-HpCDF	<0.65	87
OCDF	<1.5	85
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	n/s	n/s
13C12-1,2,3,4,7,8-HxCDD	n/s	n/s
13C12-2,3,4,7,8-PeCDF	n/s	n/s
13C12-1,2,3,4,7,8-HxCDF	n/s	n/s
13C12-1,2,3,4,7,8,9-HpCDF	n/s	n/s
Extraction Standards		
13C12-2,3,7,8-TCDD	69	77
13C12-1,2,3,7,8-PeCDD	64	74
13C12-1,2,3,6,7,8-HxCDD	67	75
13C12-1,2,3,4,6,7,8-HpCDD	76	84
13C12-OCDD	65	75
13C12-2,3,7,8-TCDF	60	67
13C12-1,2,3,7,8-PeCDF	61	68
13C12-1,2,3,6,7,8-HxCDF	64	70
13C12-1,2,3,4,6,7,8-HpCDF	68	73
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	72	77
Homologue Group Totals	**pg**	
Total-TCDD	<0.92	
Total-PeCDD	<0.46	
Total-HxCDD	1.76	
Total-HpCDD	1.82	
Total-TCDF	<0.68	
Total-PeCDF	<0.49	
Total-HxCDF	4.52	
Total-HpCDF	<0.65	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.646	
Mid Point PCDD/F TEQ (WHO 2005)	1.65	
Upper Bound PCDD/F TEQ (WHO 2005)	2.45	

ALS Life Sciences

Sample Analysis Report

Sample Name	20-22001-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-1	Extraction Date	30-Jun-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
R. Saxon
--e-signature--
13-Jul-2020

Run Information	**Run 1**
Filename	10-200710A10
Run Date	10-Jul-20 13:33
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-10 DB5ms USP703636H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<0.84	0.84	U		60
1,2,3,7,8-PeCDD	1	31.69	3.22	0.62	M,J		300
1,2,3,4,7,8-HxCDD	0.1	33.79	<4.5	0.35	J,R	4.5	300
1,2,3,6,7,8-HxCDD	0.1	33.84	10.5	0.30	J		300
1,2,3,7,8,9-HxCDD	0.1	33.97	5.22	0.32	J,B		300
1,2,3,4,6,7,8-HpCDD	0.01	35.44	62.7	0.44	J		300
OCDD	0.0003	36.90	90.2	0.59	J		600
2,3,7,8-TCDF	0.1	26.29	<2.1	0.79	M,J,R	2.1	60
1,2,3,7,8-PeCDF	0.03	30.69	4.20	0.59	J		300
2,3,4,7,8-PeCDF	0.3	31.46	5.75	0.55	J		300
1,2,3,4,7,8-HxCDF	0.1	33.29	<4.9	0.98	J,R	4.9	300
1,2,3,6,7,8-HxCDF	0.1	33.35	<4.4	0.93	J,R	4.4	300
2,3,4,6,7,8-HxCDF	0.1	33.70	9.82	1.0	J		300
1,2,3,7,8,9-HxCDF	0.1	34.13	<4.9	1.2	J,R	4.9	300
1,2,3,4,6,7,8-HpCDF	0.01	34.88	18.9	0.41	J		300
1,2,3,4,7,8,9-HpCDF	0.01	35.68	2.93	0.51	M,J		300
OCDF	0.0003	36.99	10.0	0.52	J		600

Field Spike Standards	pg		% Rec	Limits
37Cl4-2,3,7,8-TCDD	1000	27.18	100	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.79	109	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.45	104	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.28	109	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.68	101	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.17	84	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.68	83	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.84	86	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.42	86	25-130
13C12-OCDD	24000	36.89	74	25-130
13C12-2,3,7,8-TCDF	12000	26.26	74	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.67	76	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.35	71	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	34.88	76	25-130
Cleanup Standard	pg			
13C12-1,2,3,7,8,9-HxCDF	12000	34.11	80	40-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	5	96.1	0.84	60
Total-PeCDD	6	125	0.62	300
Total-HxCDD	5	195	0.35	300
Total-HpCDD	2	125	0.44	300
Total-TCDF	10	64.8	0.79	60
Total-PeCDF	6	38.1	0.59	300
Total-HxCDF	5	41.9	1.2	300
Total-HpCDF	4	33.1	0.51	300

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	8.50
Mid Point PCDD/F TEQ (WHO 2005)	11.0
Upper Bound PCDD/F TEQ (WHO 2005)	11.4

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

ALS Life Sciences

Sample Analysis Report

Sample Name	20-22001-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-2	Extraction Date	30-Jun-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
R. Saxon
--e-signature--
13-Jul-2020

Run Information	**Run 1**
Filename	10-200710A11
Run Date	10-Jul-20 14:14
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-10 DB5ms USP703636H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<0.70	0.70	U		60
1,2,3,7,8-PeCDD	1	31.68	<2.4	0.55	M,J,R	2.4	300
1,2,3,4,7,8-HxCDD	0.1	33.79	4.33	1.4	J,B		300
1,2,3,6,7,8-HxCDD	0.1	33.85	10.8	1.2	J		300
1,2,3,7,8,9-HxCDD	0.1	33.97	<4.5	1.3	J,R	4.5	300
1,2,3,4,6,7,8-HpCDD	0.01	35.44	59.2	0.43	J		300
OCDD	0.0003	36.90	84.0	0.46	J		600
2,3,7,8-TCDF	0.1	26.26	1.86	1.0	J		60
1,2,3,7,8-PeCDF	0.03	30.69	4.05	0.94	J		300
2,3,4,7,8-PeCDF	0.3	31.46	6.02	0.86	J		300
1,2,3,4,7,8-HxCDF	0.1	33.29	5.08	0.28	J,B		300
1,2,3,6,7,8-HxCDF	0.1	33.36	<5.3	0.26	J,R	5.3	300
2,3,4,6,7,8-HxCDF	0.1	33.70	<8.1	0.29	J,R	8.1	300
1,2,3,7,8,9-HxCDF	0.1	34.12	<5.0	0.33	J,R	5.0	300
1,2,3,4,6,7,8-HpCDF	0.01	34.88	23.6	0.37	J		300
1,2,3,4,7,8,9-HpCDF	0.01	35.68	3.46	0.45	J		300
OCDF	0.0003	36.99	18.7	0.46	J		600
Field Spike Standards	pg		% Rec	Limits			
37Cl4-2,3,7,8-TCDD	1000	27.17	96	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	33.78	117	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.45	101	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.28	110	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.68	101	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.15	69	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.67	68	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.85	65	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.43	75	25-130			
13C12-OCDD	24000	36.89	65	25-130			
13C12-2,3,7,8-TCDF	12000	26.24	59	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.67	62	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.35	62	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	34.87	65	25-130			
Cleanup Standard	pg						
13C12-1,2,3,7,8,9-HxCDF	12000	34.11	71	40-130			

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	5	89.4	0.70	60
Total-PeCDD	5	105	0.55	300
Total-HxCDD	6	219	1.4	300
Total-HpCDD	2	115	0.43	300
Total-TCDF	5	39.9	1.0	60
Total-PeCDF	7	45.5	0.94	300
Total-HxCDF	7	37.1	0.33	300
Total-HpCDF	4	39.6	0.45	300

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	5.03
Mid Point PCDD/F TEQ (WHO 2005)	10.1
Upper Bound PCDD/F TEQ (WHO 2005)	10.4

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

ALS Life Sciences

Sample Analysis Report

Sample Name	20-22001-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-3	Extraction Date	30-Jun-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
R. Saxon
--e-signature--
13-Jul-2020

Run Information	**Run 1**
Filename	10-200710A12
Run Date	10-Jul-20 14:56
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-10 DB5ms USP703636H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<0.81	0.81	U		60
1,2,3,7,8-PeCDD	1	31.68	3.80	0.66	M,J		300
1,2,3,4,7,8-HxCDD	0.1	33.79	5.42	1.7	J,B		300
1,2,3,6,7,8-HxCDD	0.1	33.85	<11	1.5	J,R	11	300
1,2,3,7,8,9-HxCDD	0.1	33.97	5.37	1.6	J,B		300
1,2,3,4,6,7,8-HpCDD	0.01	35.44	66.1	0.48	J		300
OCDD	0.0003	36.90	107	0.70	J		600
2,3,7,8-TCDF	0.1	26.27	2.94	1.2	M,J		60
1,2,3,7,8-PeCDF	0.03	30.69	5.19	0.69	J		300
2,3,4,7,8-PeCDF	0.3	31.46	7.07	0.64	M,J		300
1,2,3,4,7,8-HxCDF	0.1	33.29	6.04	0.39	J,B		300
1,2,3,6,7,8-HxCDF	0.1	33.36	5.89	0.37	J		300
2,3,4,6,7,8-HxCDF	0.1	33.70	9.40	0.41	J		300
1,2,3,7,8,9-HxCDF	0.1	34.12	<5.5	0.47	J,R	5.5	300
1,2,3,4,6,7,8-HpCDF	0.01	34.88	24.3	0.56	J		300
1,2,3,4,7,8,9-HpCDF	0.01	35.68	5.39	0.68	M,J		300
OCDF	0.0003	36.99	27.6	0.84	J		600
Field Spike Standards	pg		% Rec	Limits			
37Cl4-2,3,7,8-TCDD	1000	27.17	97	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	33.78	119	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.45	101	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.28	112	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.67	98	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.14	59	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.67	61	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.85	60	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.43	68	25-130			
13C12-OCDD	24000	36.89	55	25-130			
13C12-2,3,7,8-TCDF	12000	26.24	54	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.67	57	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.35	58	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	34.87	61	25-130			
Cleanup Standard	pg						
13C12-1,2,3,7,8,9-HxCDF	12000	34.11	63	40-130			

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	3	104	0.81	60
Total-PeCDD	4	77.4	0.66	300
Total-HxCDD	5	217	1.7	300
Total-HpCDD	2	129	0.48	300
Total-TCDF	10	71.8	1.2	60
Total-PeCDF	8	63.4	0.69	300
Total-HxCDF	8	55.7	0.47	300
Total-HpCDF	4	42.4	0.68	300

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	10.6
Mid Point PCDD/F TEQ (WHO 2005)	12.6
Upper Bound PCDD/F TEQ (WHO 2005)	13.0

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	20-22001-SVOC-(16 THRU 20) BLANK 1 APC OUTLET #1	Sampling Date	18-Jun-20	
ALS Sample ID	L2463211-4	Extraction Date	30-Jun-20	Approved:
Analysis Method	EPA M23	Sample Size	1 sample	R. Saxon
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	13-Jul-2020

Run Information	Run 1
Filename	10-200710A08
Run Date	10-Jul-20 12:10
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-10 DB5ms USP703636H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<0.54	0.54	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<0.49	0.49	U		300
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<0.46	0.46	U		300
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<0.39	0.39	U		300
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<0.43	0.43	U		300
1,2,3,4,6,7,8-HpCDD	0.01	35.43	<1.3	0.79	M,J,R	1.3	300
OCDD	0.0003	36.90	3.03	0.50	J		600
2,3,7,8-TCDF	0.1	NotFnd	<0.56	0.56	U		60
1,2,3,7,8-PeCDF	0.03	NotFnd	<0.37	0.37	U		300
2,3,4,7,8-PeCDF	0.3	NotFnd	<0.34	0.34	U		300
1,2,3,4,7,8-HxCDF	0.1	33.28	<0.33	0.33	M,U	0.26	300
1,2,3,6,7,8-HxCDF	0.1	33.37	<0.33	0.31	M,J,R	0.33	300
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.34	0.34	U		300
1,2,3,7,8,9-HxCDF	0.1	34.12	2.58	0.39	J,B		300
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<0.49	0.49	U		300
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<0.60	0.60	U		300
OCDF	0.0003	36.98	1.20	0.44	M,J		600

Field Spike Standards	pg	Ret. Time	% Rec	Limits
37Cl4-2,3,7,8-TCDD	1000	27.16	95	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.78	106	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.44	100	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.27	105	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.67	95	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.15	80	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.67	79	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.83	76	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.43	84	25-130
13C12-OCDD	24000	36.89	71	25-130
13C12-2,3,7,8-TCDF	12000	26.24	70	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.66	72	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.35	70	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	34.87	77	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.11	75	40-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	Flags	LQL
Total-TCDD	0	<0.54	0.54	U	60
Total-PeCDD	0	<0.49	0.49	U	300
Total-HxCDD	0	<0.46	0.46	U	300
Total-HpCDD	0	<0.79	0.79	U	300
Total-TCDF	0	<0.56	0.56	U	60
Total-PeCDF	0	<0.37	0.37	U	300
Total-HxCDF	1	2.58	0.39		300
Total-HpCDF	0	<0.60	0.60	U	300

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	0.259
Mid Point PCDD/F TEQ (WHO 2005)	1.01
Upper Bound PCDD/F TEQ (WHO 2005)	1.71

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	20-22001-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-5	Extraction Date	30-Jun-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
R. Saxon
--e-signature--
13-Jul-2020

Run Information	Run 1
Filename	10-200710A13
Run Date	10-Jul-20 15:37
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-10 DB5ms USP703636H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<0.91	0.91	U		60
1,2,3,7,8-PeCDD	1	31.69	3.89	0.63	M,J		300
1,2,3,4,7,8-HxCDD	0.1	33.79	<5.1	0.45	J,R	5.1	300
1,2,3,6,7,8-HxCDD	0.1	33.85	13.8	0.38	J		300
1,2,3,7,8,9-HxCDD	0.1	33.97	<7.2	0.41	J,R	7.2	300
1,2,3,4,6,7,8-HpCDD	0.01	35.44	97.0	0.50	J		300
OCDD	0.0003	36.90	167	0.63	J		600
2,3,7,8-TCDF	0.1	26.27	<1.3	1.3	M,U	1.2	60
1,2,3,7,8-PeCDF	0.03	30.69	<3.4	0.90	J,R	3.4	300
2,3,4,7,8-PeCDF	0.3	31.46	6.11	0.82	J		300
1,2,3,4,7,8-HxCDF	0.1	33.29	<4.3	0.57	M,J,R	4.3	300
1,2,3,6,7,8-HxCDF	0.1	33.36	6.11	0.54	M,J		300
2,3,4,6,7,8-HxCDF	0.1	33.70	11.4	0.59	J		300
1,2,3,7,8,9-HxCDF	0.1	34.13	6.50	0.68	J,B		300
1,2,3,4,6,7,8-HpCDF	0.01	34.88	<27	0.52	J,R	27	300
1,2,3,4,7,8,9-HpCDF	0.01	35.68	<4.9	0.65	J,R	4.9	300
OCDF	0.0003	36.99	26.4	0.83	J		600

Field Spike Standards	pg	Ret. Time	% Rec	Limits
37Cl4-2,3,7,8-TCDD	1000	27.17	98	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.78	120	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.45	99	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.28	109	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.68	98	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.15	73	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.67	69	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.85	68	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.43	76	25-130
13C12-OCDD	24000	36.89	66	25-130
13C12-2,3,7,8-TCDF	12000	26.24	64	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.67	65	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.35	65	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	34.87	68	25-130
Cleanup Standard	pg			
13C12-1,2,3,7,8,9-HxCDF	12000	34.11	73	40-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	4	162	0.91	60
Total-PeCDD	6	120	0.63	300
Total-HxCDD	4	291	0.45	300
Total-HpCDD	2	184	0.50	300
Total-TCDF	5	17.5	1.3	60
Total-PeCDF	8	56.4	0.90	300
Total-HxCDF	8	55.5	0.68	300
Total-HpCDF	2	20.0	0.65	300

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	10.5
Mid Point PCDD/F TEQ (WHO 2005)	13.1
Upper Bound PCDD/F TEQ (WHO 2005)	13.7

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

ALS Life Sciences

Sample Analysis Report

Sample Name	20-22001-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2	Sampling Date	17-Jun-20	
ALS Sample ID	L2463211-6	Extraction Date	30-Jun-20	Approved:
Analysis Method	EPA M23	Sample Size	1 sample	*R. Saxon*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	13-Jul-2020

Run Information	Run 1
Filename	10-200710A14
Run Date	10-Jul-20 16:19
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-10 DB5ms USP703636H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<1.1	1.1	U		60
1,2,3,7,8-PeCDD	1	31.67	<3.5	0.37	J,R	3.5	300
1,2,3,4,7,8-HxCDD	0.1	33.79	6.50	0.42	J		300
1,2,3,6,7,8-HxCDD	0.1	33.85	13.7	0.36	J		300
1,2,3,7,8,9-HxCDD	0.1	33.96	9.36	0.39	J,B		300
1,2,3,4,6,7,8-HpCDD	0.01	35.43	111	0.48	J		300
OCDD	0.0003	36.89	234	0.59	J		600
2,3,7,8-TCDF	0.1	26.26	7.22	1.0	J		60
1,2,3,7,8-PeCDF	0.03	30.67	8.13	0.44	J		300
2,3,4,7,8-PeCDF	0.3	31.45	11.7	0.40	J		300
1,2,3,4,7,8-HxCDF	0.1	33.28	12.0	0.35	J		300
1,2,3,6,7,8-HxCDF	0.1	33.36	10.4	0.33	J		300
2,3,4,6,7,8-HxCDF	0.1	33.70	16.1	0.36	J		300
1,2,3,7,8,9-HxCDF	0.1	34.12	7.75	0.42	J,B		300
1,2,3,4,6,7,8-HpCDF	0.01	34.88	<33	0.96	J,R	33	300
1,2,3,4,7,8,9-HpCDF	0.01	35.68	<7.8	1.2	M,J,R	7.8	300
OCDF	0.0003	36.98	35.5	0.81	J		600

Field Spike Standards	pg	Ret. Time	% Rec	Limits
37Cl4-2,3,7,8-TCDD	1000	27.16	97	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.78	107	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.44	99	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.27	107	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.67	98	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.14	74	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.66	70	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.83	71	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.43	77	25-130
13C12-OCDD	24000	36.88	68	25-130
13C12-2,3,7,8-TCDF	12000	26.24	65	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.66	66	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.35	66	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	34.87	69	25-130
Cleanup Standard	pg			
13C12-1,2,3,7,8,9-HxCDF	12000	34.11	72	40-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	6	159	1.1	60
Total-PeCDD	5	166	0.37	300
Total-HxCDD	8	277	0.42	300
Total-HpCDD	2	204	0.48	300
Total-TCDF	15	142	1.0	60
Total-PeCDF	9	88.9	0.44	300
Total-HxCDF	11	106	0.42	300
Total-HpCDF	2	20.3	1.2	300

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	13.2
Mid Point PCDD/F TEQ (WHO 2005)	17.7
Upper Bound PCDD/F TEQ (WHO 2005)	18.3

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	20-22001-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-7	Extraction Date	30-Jun-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
R. Saxon
--e-signature--
13-Jul-2020

Run Information	Run 1
Filename	10-200710A15
Run Date	10-Jul-20 17:00
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-10 DB5ms USP703636H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<0.79	0.79	U		60
1,2,3,7,8-PeCDD	1	31.68	<3.0	0.54	M,J,R	3.0	300
1,2,3,4,7,8-HxCDD	0.1	33.78	5.56	0.71	J,B		300
1,2,3,6,7,8-HxCDD	0.1	33.85	12.7	0.61	J		300
1,2,3,7,8,9-HxCDD	0.1	33.96	<7.2	0.66	J,R	7.2	300
1,2,3,4,6,7,8-HpCDD	0.01	35.43	98.8	0.38	J		300
OCDD	0.0003	36.89	166	0.57	J		600
2,3,7,8-TCDF	0.1	26.26	<1.9	0.92	J,R	1.9	60
1,2,3,7,8-PeCDF	0.03	30.69	5.45	0.82	J		300
2,3,4,7,8-PeCDF	0.3	31.45	6.14	0.75	J		300
1,2,3,4,7,8-HxCDF	0.1	33.28	6.88	0.37	J,B		300
1,2,3,6,7,8-HxCDF	0.1	33.36	6.47	0.35	J		300
2,3,4,6,7,8-HxCDF	0.1	33.70	11.8	0.38	J		300
1,2,3,7,8,9-HxCDF	0.1	34.13	<6.0	0.44	J,R	6.0	300
1,2,3,4,6,7,8-HpCDF	0.01	34.88	30.6	0.51	J		300
1,2,3,4,7,8,9-HpCDF	0.01	35.67	<6.6	0.63	J,R	6.6	300
OCDF	0.0003	36.98	33.1	0.63	J		600

Field Spike Standards	pg	Ret. Time	% Rec	Limits
37Cl4-2,3,7,8-TCDD	1000	27.16	98	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.78	110	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.44	102	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.27	111	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.67	101	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.13	78	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.66	72	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.83	73	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.42	79	25-130
13C12-OCDD	24000	36.88	68	25-130
13C12-2,3,7,8-TCDF	12000	26.24	67	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.66	67	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.35	67	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	34.87	70	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.11	79	40-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	5	165	0.79	60
Total-PeCDD	5	141	0.54	300
Total-HxCDD	5	291	0.71	300
Total-HpCDD	2	185	0.38	300
Total-TCDF	8	32.6	0.92	60
Total-PeCDF	8	54.2	0.82	300
Total-HxCDF	11	71.3	0.44	300
Total-HpCDF	3	50.0	0.63	300

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	7.70
Mid Point PCDD/F TEQ (WHO 2005)	12.7
Upper Bound PCDD/F TEQ (WHO 2005)	13.1

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.
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	20-22001-SVOC-(36 THRU 40) BLANK 2 APC OUTLET #2	Sampling Date	18-Jun-20	
ALS Sample ID	L2463211-8	Extraction Date	30-Jun-20	Approved:
Analysis Method	EPA M23	Sample Size	1 sample	*R. Saxon*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	13-Jul-2020

Run Information	**Run 1**
Filename	10-200710A09
Run Date	10-Jul-20 12:51
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-10 DB5ms USP703636H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<0.65	0.65	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<0.47	0.47	U		300
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<0.36	0.36	U		300
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<0.30	0.30	U		300
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<0.33	0.33	U		300
1,2,3,4,6,7,8-HpCDD	0.01	35.42	1.05	0.36	M,J,B		300
OCDD	0.0003	36.89	<6.1	6.1	M,U	1.9	600
2,3,7,8-TCDF	0.1	NotFnd	<0.83	0.83	U		60
1,2,3,7,8-PeCDF	0.03	30.67	<1.4	0.43	J,R	1.4	300
2,3,4,7,8-PeCDF	0.3	NotFnd	<0.40	0.40	U		300
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<0.31	0.31	U		300
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<0.29	0.29	U		300
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.32	0.32	U		300
1,2,3,7,8,9-HxCDF	0.1	34.11	3.62	0.36	J,B		300
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<0.30	0.30	U		300
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<0.37	0.37	U		300
OCDF	0.0003	NotFnd	<6.5	6.5	U		600

Field Spike Standards	pg	Ret. Time	% Rec	Limits
37Cl4-2,3,7,8-TCDD	1000	27.16	97	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.77	120	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.44	101	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.27	111	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.67	96	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.13	73	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.66	76	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.83	73	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.42	83	25-130
13C12-OCDD	24000	36.88	70	25-130
13C12-2,3,7,8-TCDF	12000	26.23	61	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.66	70	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.34	69	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	34.86	77	25-130
Cleanup Standard	pg			
13C12-1,2,3,7,8,9-HxCDF	12000	34.10	77	40-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	Flags	LQL
Total-TCDD	0	<0.65	0.65	U	60
Total-PeCDD	0	<0.47	0.47	U	300
Total-HxCDD	0	<0.36	0.36	U	300
Total-HpCDD	1	1.05	0.36		300
Total-TCDF	0	<0.83	0.83	U	60
Total-PeCDF	0	<0.43	0.43	U	300
Total-HxCDF	1	3.62	0.36		300
Total-HpCDF	0	<0.37	0.37	U	300

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	0.373
Mid Point PCDD/F TEQ (WHO 2005)	1.18
Upper Bound PCDD/F TEQ (WHO 2005)	1.94

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

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	
ALS Sample ID	WG3347043-1	Extraction Date	30-Jun-20	
Analysis Method	EPA M23	Sample Size	1	sample
Analysis Type	Blank	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	6	

Approved:
R. Saxon
--e-signature--
13-Jul-2020

Run Information	Run 1
Filename	10-200710A05
Run Date	10-Jul-20 10:05
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-10 DB5ms USP703636H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<0.92	0.92	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<0.46	0.46	U		300
1,2,3,4,7,8-HxCDD	0.1	33.78	0.628	0.44	M,J		300
1,2,3,6,7,8-HxCDD	0.1	33.85	<0.52	0.37	M,J,R	0.52	300
1,2,3,7,8,9-HxCDD	0.1	33.96	1.13	0.40	M,J		300
1,2,3,4,6,7,8-HpCDD	0.01	35.43	1.82	0.37	M,J		300
OCDD	0.0003	36.89	<3.3	0.50	J,R	3.3	600
2,3,7,8-TCDF	0.1	NotFnd	<0.68	0.68	U		60
1,2,3,7,8-PeCDF	0.03	30.67	<1.9	0.49	J,R	1.9	300
2,3,4,7,8-PeCDF	0.3	NotFnd	<0.45	0.45	U		300
1,2,3,4,7,8-HxCDF	0.1	33.27	0.719	0.30	M,J		300
1,2,3,6,7,8-HxCDF	0.1	33.36	<0.41	0.28	M,J,R	0.41	300
2,3,4,6,7,8-HxCDF	0.1	33.70	<0.59	0.31	M,J,R	0.59	300
1,2,3,7,8,9-HxCDF	0.1	34.12	3.80	0.35	J		300
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<0.53	0.53	U		300
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<0.65	0.65	U		300
OCDF	0.0003	36.98	<1.5	0.50	M,J,R	1.5	600

Field Spike Standards	pg	% Rec	Limits
37Cl4-2,3,7,8-TCDD		n/s	
13C12-1,2,3,4,7,8-HxCDD		n/s	
13C12-2,3,4,7,8-PeCDF		n/s	
13C12-1,2,3,4,7,8-HxCDF		n/s	
13C12-1,2,3,4,7,8,9-HpCDF		n/s	

Extraction Standards	pg	Ret. Time	% Rec	Limits
13C12-2,3,7,8-TCDD	12000	27.13	69	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.67	64	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.83	67	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.43	76	25-130
13C12-OCDD	24000	36.89	65	25-130
13C12-2,3,7,8-TCDF	12000	26.24	60	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.66	61	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.35	64	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	34.87	68	25-130

Cleanup Standard	pg	Ret. Time	% Rec	Limits
13C12-1,2,3,7,8,9-HxCDF	12000	34.11	72	40-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	Flags	LQL
Total-TCDD	0	<0.92	0.92	U	60
Total-PeCDD	0	<0.46	0.46	U	300
Total-HxCDD	2	1.76	0.44		300
Total-HpCDD	1	1.82	0.37		300
Total-TCDF	0	<0.68	0.68	U	60
Total-PeCDF	0	<0.49	0.49	U	300
Total-HxCDF	2	4.52	0.35		300
Total-HpCDF	0	<0.65	0.65	U	300

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	0.646
Mid Point PCDD/F TEQ (WHO 2005)	1.65
Upper Bound PCDD/F TEQ (WHO 2005)	2.45

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.
n/s	Indicates that this compound 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	WG3347043-2	Extraction Date	30-Jun-20	
Analysis Method	EPA M23	Sample Size	1	sample
Analysis Type	LCS	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	6	

Approved:
R. Saxon
--e-signature--
13-Jul-2020

Run Information	**Run 1**
Filename	10-200710A02
Run Date	10-Jul-20 08:01
Final Volume	20 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-10 DB5ms USP703636H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1200	27.16	77	70-130	
1,2,3,7,8-PeCDD	6000	31.67	107	70-130	
1,2,3,4,7,8-HxCDD	6000	33.79	104	70-130	
1,2,3,6,7,8-HxCDD	6000	33.85	94	70-130	
1,2,3,7,8,9-HxCDD	6000	33.96	106	70-130	
1,2,3,4,6,7,8-HpCDD	6000	35.43	91	70-130	
OCDD	12000	36.89	99	70-130	
2,3,7,8-TCDF	1200	26.26	84	70-130	
1,2,3,7,8-PeCDF	6000	30.67	91	70-130	
2,3,4,7,8-PeCDF	6000	31.45	83	70-130	
1,2,3,4,7,8-HxCDF	6000	33.28	89	70-130	
1,2,3,6,7,8-HxCDF	6000	33.36	93	70-130	
2,3,4,6,7,8-HxCDF	6000	33.70	94	70-130	
1,2,3,7,8,9-HxCDF	6000	34.11	100	70-130	
1,2,3,4,6,7,8-HpCDF	6000	34.87	93	70-130	
1,2,3,4,7,8,9-HpCDF	6000	35.67	87	70-130	
OCDF	12000	36.98	85	70-130	
Field Spike Standards	**pg**		**% Rec**	**Limits**	
37Cl4-2,3,7,8-TCDD			n/s		
13C12-1,2,3,4,7,8-HxCDD			n/s		
13C12-2,3,4,7,8-PeCDF			n/s		
13C12-1,2,3,4,7,8-HxCDF			n/s		
13C12-1,2,3,4,7,8,9-HpCDF			n/s		
Extraction Standards					
13C12-2,3,7,8-TCDD	12000	27.13	77	40-130	
13C12-1,2,3,7,8-PeCDD	12000	31.66	74	40-130	
13C12-1,2,3,6,7,8-HxCDD	12000	33.83	75	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.42	84	25-130	
13C12-OCDD	24000	36.88	75	25-130	
13C12-2,3,7,8-TCDF	12000	26.23	67	40-130	
13C12-1,2,3,7,8-PeCDF	12000	30.66	68	40-130	
13C12-1,2,3,6,7,8-HxCDF	12000	33.35	70	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	12000	34.87	73	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	12000	34.11	77	40-130	

n/s Indicates that this compound was not spiked.

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#:	L2463211		Mississauga, ON
Date of Report	10-Jul-20		L5J 2Y4
Date of Sample Receipt	19-Jun-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: Toxic PCB Congeners by EPA 1668C

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	20-22001-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1	20-22001-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1	20-22001-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1	20-22001-SVOC-(16 THRU 20) BLANK 1 APC OUTLET #1
ALS Sample ID	L2463211-1	L2463211-2	L2463211-3	L2463211-4
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	17-Jun-20	18-Jun-20	18-Jun-20	18-Jun-20
Extraction Date	30-Jun-20	30-Jun-20	30-Jun-20	30-Jun-20
Target Analytes	pg	pg	pg	pg
PCB-081	15.5	<5.5	<11	<2.1
PCB-077	170	63.3	327	<2.3
PCB-123	72.4	16.1	149	<1.9
PCB-118	5160	961	8070	29.0
PCB-114	126	<23	235	<1.9
PCB-105	1930	340	2740	11.8
PCB-126	<3.7	<3.5	<6.2	<2.1
PCB-167	65.5	9.66	95.5	<0.88
PCB-156/157	183	27.9	252	<1.2
PCB-169	<4.9	<3.6	<9.1	<0.93
PCB-189	5.73	<3.5	9.24	<0.75
Extraction Standards	% Rec	% Rec	% Rec	% Rec
13C12-PCB-081	78	68	71	69
13C12-PCB-077	79	68	70	71
13C12-PCB-123	83	76	84	78
13C12-PCB-118	83	77	85	81
13C12-PCB-114	82	76	83	79
13C12-PCB-105	77	73	76	76
13C12-PCB-126	83	76	76	79
13C12-PCB-167	107	88	101	92
13C12-PCB-156/157	110	89	97	92
13C12-PCB-169	125	100	101	106
13C12-PCB-189	135	108	123	116
Field Spike Standards				
13C12-PCB-031	82	85	89	84
13C12-PCB-095	84	80	85	79
13C12-PCB-153	74	78	82	79
Cleanup Standards				
13C12-PCB-028	70	68	75	70
13C12-PCB-111	103	98	116	97
13C12-PCB-178	129	118	121	110
Toxic Equivalency - (WHO 2005)	pg	pg	pg	pg
Lower Bound PCB TEQ	0.248	0.0470	0.379	0.00122
Mid Point PCB TEQ	0.580	0.332	0.966	0.121
Upper Bound PCB TEQ	0.765	0.507	1.28	0.240

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	20-22001-SVOC- (21 THRU 25) TEST#1 APC OUTLET #2	20-22001-SVOC- (26 THRU 30) TEST#2 APC OUTLET #2	20-22001-SVOC- (31 THRU 35) TEST#3 APC OUTLET #2	20-22001-SVOC- (36 THRU 40) BLANK 2 APC OUTLET #2
ALS Sample ID	L2463211-5	L2463211-6	L2463211-7	L2463211-8
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	17-Jun-20	17-Jun-20	18-Jun-20	18-Jun-20
Extraction Date	30-Jun-20	30-Jun-20	30-Jun-20	30-Jun-20
Target Analytes	pg	pg	pg	pg
PCB-081	<5.8	29.1	<5.9	<2.5
PCB-077	128	652	121	<2.8
PCB-123	25.9	275	55.3	<2.4
PCB-118	1630	19600	3360	29.8
PCB-114	<40	551	87.6	<2.4
PCB-105	509	6530	1210	11.5
PCB-126	<4.0	<20	<4.2	<2.6
PCB-167	14.4	164	34.6	<1.5
PCB-156/157	36.9	472	102	<2.1
PCB-169	<2.5	<29	<3.2	<1.6
PCB-189	<3.0	<11	4.37	<0.82
Extraction Standards	% Rec	% Rec	% Rec	% Rec
13C12-PCB-081	66	66	65	61
13C12-PCB-077	66	65	64	63
13C12-PCB-123	72	70	71	69
13C12-PCB-118	73	71	73	71
13C12-PCB-114	72	68	71	69
13C12-PCB-105	69	67	69	69
13C12-PCB-126	71	70	73	72
13C12-PCB-167	84	85	82	84
13C12-PCB-156/157	86	87	85	84
13C12-PCB-169	93	97	95	97
13C12-PCB-189	103	107	103	106
Field Spike Standards				
13C12-PCB-031	82	82	84	83
13C12-PCB-095	83	87	83	82
13C12-PCB-153	78	78	79	79
Cleanup Standards				
13C12-PCB-028	65	72	67	61
13C12-PCB-111	91	89	95	84
13C12-PCB-178	107	104	109	97
Toxic Equivalency - (WHO 2005)	pg	pg	pg	pg
Lower Bound PCB TEQ	0.0793	0.902	0.158	0.00124
Mid Point PCB TEQ	0.357	3.77	0.465	0.156
Upper Bound PCB TEQ	0.557	3.77	0.675	0.311

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Quality Control Summary Report

Sample Name	**Method Blank**
ALS Sample ID	WG3347043-1
Sample Size	1
Sample size units	Blank
Percent Moisture	n/a
Sample Matrix	MEDIA
Sampling Date	n/a
Extraction Date	30-Jun-20

Target Analytes	**pg**
PCB-081	<3.1
PCB-077	<3.4
PCB-123	<1.7
PCB-118	12.7
PCB-114	<1.7
PCB-105	<8.6
PCB-126	<1.9
PCB-167	<0.99
PCB-156/157	<1.4
PCB-169	<1.2
PCB-189	<1.3
Extraction Standards	**% Rec**
13C12-PCB-081	64
13C12-PCB-077	67
13C12-PCB-123	75
13C12-PCB-118	79
13C12-PCB-114	75
13C12-PCB-105	74
13C12-PCB-126	77
13C12-PCB-167	91
13C12-PCB-156/157	91
13C12-PCB-169	102
13C12-PCB-189	112
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	64
13C12-PCB-111	93
13C12-PCB-178	106

Toxic Equivalency ~ (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.000381
Mid Point PCB TEQ	0.114
Upper Bound PCB TEQ	0.228

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Sample Analysis Summary Report

Sample Name	Laboratory Control Sample
ALS Sample ID	WG3347043-2
Sample Size	1
Sample size units	n/a
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	30-Jun-20

Target Analytes	**% Rec**
PCB-081	107
PCB-077	103
PCB-081	107
PCB-077	103
PCB-123	111
PCB-118	108
PCB-114	113
PCB-105	114
PCB-126	108
PCB-167	102
PCB-156/157	102
PCB-169	105
PCB-189	100
Extraction Standards	**% Rec**
13C12-PCB-081	64
13C12-PCB-077	66
13C12-PCB-123	74
13C12-PCB-118	77
13C12-PCB-114	73
13C12-PCB-105	73
13C12-PCB-126	77
13C12-PCB-167	90
13C12-PCB-156/157	92
13C12-PCB-169	103
13C12-PCB-189	115
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	66
13C12-PCB-111	87
13C12-PCB-178	100

ALS Life Sciences

Sample Analysis Report

Sample Name	20-22001-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1	Sampling Date	17-Jun-20	
ALS Sample ID	L2463211-1	Extraction Date	30-Jun-20	
Analysis Method	EPA 1668C	Sample Size	1	Sample
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Stack	Split Ratio	6	

Approved:
E. Sabljic
--e-signature--
08-Jul-2020

Run Information	Run 1
Filename	5-200707A33
Run Date	08-Jul-20 10:29
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL65972-03A

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	21.80	15.5	4.8	M,J		150
PCB-077	0.0001	22.10	170	5.2			150
PCB-123	0.00003	23.08	72.4	3.2	M,J		150
PCB-118	0.00003	23.26	5160	3.1	M		150
PCB-114	0.00003	23.56	126	3.2	J		150
PCB-105	0.00003	23.91	1930	3.5			150
PCB-126	0.1	NotFnd	<3.7	3.7	U		150
PCB-167	0.00003	26.41	65.5	2.3	J		150
PCB-156/157	0.00003	27.04	183	3.1	J		300
PCB-169	0.03	28.71	<4.9	2.4	M,J,R	4.9	150
PCB-189	0.00003	30.00	5.73	0.98	J		150

Extraction Standards	pg	Time	% Rec	Limits
13C12-PCB-081	12000	21.79	78	10-145
13C12-PCB-077	12000	22.09	79	10-145
13C12-PCB-123	12000	23.08	83	10-145
13C12-PCB-118	12000	23.25	83	10-145
13C12-PCB-114	12000	23.55	82	10-145
13C12-PCB-105	12000	23.90	77	10-145
13C12-PCB-126	12000	25.50	83	10-145
13C12-PCB-167	12000	26.40	107	10-145
13C12-PCB-156/157	24000	27.04	110	10-145
13C12-PCB-169	12000	28.71	125	10-145
13C12-PCB-189	12000	29.99	135	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.78	82	70-130
13C12-PCB-095	12000	19.10	84	70-130
13C12-PCB-153	12000	24.18	74	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.96	70	5-145
13C12-PCB-111	12000	22.02	103	10-145
13C12-PCB-178	12000	25.07	129	10-145

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.248
Mid Point PCB TEQ	0.580
Upper Bound PCB TEQ	0.765

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.
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	**20-22001-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	18-Jun-20	
ALS Sample ID	L2463211-2	Extraction Date	30-Jun-20	
Analysis Method	EPA 1668C	Sample Size	1	Sample
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Stack	Split Ratio	6	

Approved:
E. Sabljic
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	5-200707A09
Run Date	07-Jul-20 17:17
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL65972-03A

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	21.81	<5.5	5.5	M,U		150
PCB-077	0.0001	22.11	63.3	6.1	M,J		150
PCB-123	0.00003	23.10	16.1	3.1	J		150
PCB-118	0.00003	23.27	961	3.0	M		150
PCB-114	0.00003	23.57	<23	3.1	J,R	23	150
PCB-105	0.00003	23.92	340	3.3			150
PCB-126	0.1	NotFnd	<3.5	3.5	U		150
PCB-167	0.00003	26.43	9.66	1.6	J		150
PCB-156/157	0.00003	27.04	27.9	2.2	J		300
PCB-169	0.03	28.72	<3.6	1.8	J,R	3.6	150
PCB-189	0.00003	30.01	<3.5	0.97	M,J,R	3.5	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.81	68	10-145
13C12-PCB-077	12000	22.10	68	10-145
13C12-PCB-123	12000	23.09	76	10-145
13C12-PCB-118	12000	23.26	77	10-145
13C12-PCB-114	12000	23.56	76	10-145
13C12-PCB-105	12000	23.91	73	10-145
13C12-PCB-126	12000	25.51	76	10-145
13C12-PCB-167	12000	26.41	88	10-145
13C12-PCB-156/157	24000	27.04	89	10-145
13C12-PCB-169	12000	28.71	100	10-145
13C12-PCB-189	12000	30.00	108	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.80	85	70-130
13C12-PCB-095	12000	19.11	80	70-130
13C12-PCB-153	12000	24.20	78	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.97	68	5-145
13C12-PCB-111	12000	22.03	98	10-145
13C12-PCB-178	12000	25.08	118	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0470
Mid Point PCB TEQ	0.332
Upper Bound PCB TEQ	0.507

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.
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	**20-22001-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-3	Extraction Date	30-Jun-20
Analysis Method	EPA 1668C	Sample Size	1 Sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
E. Sabljic
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	5-200707A10
Run Date	07-Jul-20 17:59
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL65972-03A

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	21.79	<11	9.3	M,J,R	11	150
PCB-077	0.0001	22.10	327	10	M		150
PCB-123	0.00003	23.07	149	5.2	M,J		150
PCB-118	0.00003	23.26	8070	4.9	M		150
PCB-114	0.00003	23.56	235	5.2			150
PCB-105	0.00003	23.92	2740	5.8			150
PCB-126	0.1	25.51	<6.2	6.2	M,U	3.7	150
PCB-167	0.00003	26.40	95.5	2.7	J		150
PCB-156/157	0.00003	27.03	252	3.9	J		300
PCB-169	0.03	28.70	<9.1	3.3	M,J,R	9.1	150
PCB-189	0.00003	29.99	9.24	1.2	M,J		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.79	71	10-145
13C12-PCB-077	12000	22.09	70	10-145
13C12-PCB-123	12000	23.08	84	10-145
13C12-PCB-118	12000	23.25	85	10-145
13C12-PCB-114	12000	23.55	83	10-145
13C12-PCB-105	12000	23.90	76	10-145
13C12-PCB-126	12000	25.50	76	10-145
13C12-PCB-167	12000	26.39	101	10-145
13C12-PCB-156/157	24000	27.03	97	10-145
13C12-PCB-169	12000	28.70	101	10-145
13C12-PCB-189	12000	29.98	123	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.78	89	70-130
13C12-PCB-095	12000	19.10	85	70-130
13C12-PCB-153	12000	24.18	82	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.96	75	5-145
13C12-PCB-111	12000	22.02	116	10-145
13C12-PCB-178	12000	25.06	121	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.379
Mid Point PCB TEQ	0.966
Upper Bound PCB TEQ	1.28

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.
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

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Sample Analysis Report

Sample Name	**20-22001-SVOC-(16 THRU 20) BLANK 1 APC OUTLET #1**	Sampling Date	18-Jun-20	
ALS Sample ID	L2463211-4	Extraction Date	30-Jun-20	Approved:
Analysis Method	EPA 1668C	Sample Size	1 Sample	*E. Sabljic*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	08-Jul-2020

Run Information	**Run 1**
Filename	5-200707A11
Run Date	07-Jul-20 18:41
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL65972-03A

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	NotFnd	<2.1	2.1	U		150
PCB-077	0.0001	NotFnd	<2.3	2.3	U		150
PCB-123	0.00003	NotFnd	<1.9	1.9	U		150
PCB-118	0.00003	23.27	29.0	1.8	M,J,B		150
PCB-114	0.00003	NotFnd	<1.9	1.9	U		150
PCB-105	0.00003	23.92	11.8	2.0	J		150
PCB-126	0.1	NotFnd	<2.1	2.1	U		150
PCB-167	0.00003	26.43	<0.88	0.88	U		150
PCB-156/157	0.00003	NotFnd	<1.2	1.2	U		300
PCB-169	0.03	28.73	<0.93	0.93	M,U	0.53	150
PCB-189	0.00003	NotFnd	<0.75	0.75	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.80	69	10-145
13C12-PCB-077	12000	22.10	71	10-145
13C12-PCB-123	12000	23.09	78	10-145
13C12-PCB-118	12000	23.26	81	10-145
13C12-PCB-114	12000	23.56	79	10-145
13C12-PCB-105	12000	23.91	76	10-145
13C12-PCB-126	12000	25.51	79	10-145
13C12-PCB-167	12000	26.41	92	10-145
13C12-PCB-156/157	24000	27.04	92	10-145
13C12-PCB-169	12000	28.71	106	10-145
13C12-PCB-189	12000	30.00	116	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.79	84	70-130
13C12-PCB-095	12000	19.10	79	70-130
13C12-PCB-153	12000	24.19	79	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.97	70	5-145
13C12-PCB-111	12000	22.03	97	10-145
13C12-PCB-178	12000	25.07	110	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00122
Mid Point PCB TEQ	0.121
Upper Bound PCB TEQ	0.240

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.
B	Indicates that this target was detected in the blank at greater than 10% of the sample 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	**20-22001-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	17-Jun-20	
ALS Sample ID	L2463211-5	Extraction Date	30-Jun-20	
Analysis Method	EPA 1668C	Sample Size	1	Sample
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Stack	Split Ratio	6	

Approved:
E. Sabljic
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	5-200707A12
Run Date	07-Jul-20 19:24
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL65972-03A

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	21.81	<5.8	5.0	M,J,R	5.8	150
PCB-077	0.0001	22.11	128	5.4	J		150
PCB-123	0.00003	23.08	25.9	3.6	M,J		150
PCB-118	0.00003	23.27	1630	3.4	M		150
PCB-114	0.00003	23.56	<40	3.5	J,R	40	150
PCB-105	0.00003	23.92	509	3.7			150
PCB-126	0.1	NotFnd	<4.0	4.0	U		150
PCB-167	0.00003	26.41	14.4	1.2	J		150
PCB-156/157	0.00003	27.04	36.9	1.6	J		300
PCB-169	0.03	28.72	<2.5	1.3	M,J,R	2.5	150
PCB-189	0.00003	30.00	<3.0	1.2	M,J,R	3.0	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.79	66	10-145
13C12-PCB-077	12000	22.09	66	10-145
13C12-PCB-123	12000	23.08	72	10-145
13C12-PCB-118	12000	23.26	73	10-145
13C12-PCB-114	12000	23.56	72	10-145
13C12-PCB-105	12000	23.91	69	10-145
13C12-PCB-126	12000	25.51	71	10-145
13C12-PCB-167	12000	26.40	84	10-145
13C12-PCB-156/157	24000	27.04	86	10-145
13C12-PCB-169	12000	28.71	93	10-145
13C12-PCB-189	12000	29.99	103	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.79	82	70-130
13C12-PCB-095	12000	19.10	83	70-130
13C12-PCB-153	12000	24.19	78	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.97	65	5-145
13C12-PCB-111	12000	22.02	91	10-145
13C12-PCB-178	12000	25.07	107	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0793
Mid Point PCB TEQ	0.357
Upper Bound PCB TEQ	0.557

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.
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	20-22001-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-6	Extraction Date	30-Jun-20
Analysis Method	EPA 1668C	Sample Size	1 Sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
E. Sabljic
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	5-200707A13
Run Date	07-Jul-20 20:06
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL65972-03A

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	21.78	29.1	7.1	M,J		150
PCB-077	0.0001	22.10	652	7.7			150
PCB-123	0.00003	23.09	275	4.3			150
PCB-118	0.00003	23.26	19600	4.1	M		150
PCB-114	0.00003	23.56	551	4.4			150
PCB-105	0.00003	23.91	6530	4.5			150
PCB-126	0.1	25.52	<20	4.8	M,J,R	20	150
PCB-167	0.00003	26.41	164	2.2			150
PCB-156/157	0.00003	27.03	472	3.0			300
PCB-169	0.03	28.71	<29	2.4	M,J,R	29	150
PCB-189	0.00003	30.00	<11	1.3	M,J,R	11	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.79	66	10-145
13C12-PCB-077	12000	22.08	65	10-145
13C12-PCB-123	12000	23.08	70	10-145
13C12-PCB-118	12000	23.25	71	10-145
13C12-PCB-114	12000	23.55	68	10-145
13C12-PCB-105	12000	23.90	67	10-145
13C12-PCB-126	12000	25.50	70	10-145
13C12-PCB-167	12000	26.40	85	10-145
13C12-PCB-156/157	24000	27.03	87	10-145
13C12-PCB-169	12000	28.70	97	10-145
13C12-PCB-189	12000	29.99	107	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.78	82	70-130
13C12-PCB-095	12000	19.10	87	70-130
13C12-PCB-153	12000	24.18	78	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.95	72	5-145
13C12-PCB-111	12000	22.01	89	10-145
13C12-PCB-178	12000	25.06	104	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.902
Mid Point PCB TEQ	3.77
Upper Bound PCB TEQ	3.77

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	**20-22001-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	18-Jun-20		
ALS Sample ID	L2463211-7	Extraction Date	30-Jun-20		Approved:
Analysis Method	EPA 1668C	Sample Size	1	Sample	*E. Sabljic*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		08-Jul-2020

Run Information	**Run 1**
Filename	5-200707A14
Run Date	07-Jul-20 20:48
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL65972-03A

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	21.79	<5.9	3.7	M,J,R	5.9	150
PCB-077	0.0001	22.11	121	4.1	J		150
PCB-123	0.00003	23.08	55.3	3.9	M,J		150
PCB-118	0.00003	23.27	3360	3.6	M		150
PCB-114	0.00003	23.57	87.6	3.8	J		150
PCB-105	0.00003	23.92	1210	4.0			150
PCB-126	0.1	NotFnd	<4.2	4.2	U		150
PCB-167	0.00003	26.41	34.6	2.4	J		150
PCB-156/157	0.00003	27.04	102	3.2	J		300
PCB-169	0.03	28.72	<3.2	2.5	M,J,R	3.2	150
PCB-189	0.00003	30.01	4.37	1.4	M,J		150

Extraction Standards	pg	Time	% Rec	Limits
13C12-PCB-081	12000	21.80	65	10-145
13C12-PCB-077	12000	22.09	64	10-145
13C12-PCB-123	12000	23.09	71	10-145
13C12-PCB-118	12000	23.26	73	10-145
13C12-PCB-114	12000	23.56	71	10-145
13C12-PCB-105	12000	23.91	69	10-145
13C12-PCB-126	12000	25.51	73	10-145
13C12-PCB-167	12000	26.40	82	10-145
13C12-PCB-156/157	24000	27.04	85	10-145
13C12-PCB-169	12000	28.71	95	10-145
13C12-PCB-189	12000	30.00	103	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.79	84	70-130
13C12-PCB-095	12000	19.10	83	70-130
13C12-PCB-153	12000	24.19	79	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.97	67	5-145
13C12-PCB-111	12000	22.02	95	10-145
13C12-PCB-178	12000	25.07	109	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.158
Mid Point PCB TEQ	0.465
Upper Bound PCB TEQ	0.675

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.
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	**20-22001-SVOC-(36 THRU 40) BLANK 2 APC OUTLET #2**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-8	Extraction Date	30-Jun-20
Analysis Method	EPA 1668C	Sample Size	1 Sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
E. Sabljic
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	S-200707A15
Run Date	07-Jul-20 21:30
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL65972-03A

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	NotFnd	<2.5	2.5	U		150
PCB-077	0.0001	NotFnd	<2.8	2.8	U		150
PCB-123	0.00003	NotFnd	<2.4	2.4	U		150
PCB-118	0.00003	23.27	29.8	2.3	M,J,B		150
PCB-114	0.00003	NotFnd	<2.4	2.4	U		150
PCB-105	0.00003	23.92	11.5	2.5	J		150
PCB-126	0.1	NotFnd	<2.6	2.6	U		150
PCB-167	0.00003	NotFnd	<1.5	1.5	U		150
PCB-156/157	0.00003	27.03	<2.1	2.0	M,J,R	2.1	300
PCB-169	0.03	NotFnd	<1.6	1.6	U		150
PCB-189	0.00003	NotFnd	<0.82	0.82	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.80	61	10-145
13C12-PCB-077	12000	22.10	63	10-145
13C12-PCB-123	12000	23.08	69	10-145
13C12-PCB-118	12000	23.26	71	10-145
13C12-PCB-114	12000	23.55	69	10-145
13C12-PCB-105	12000	23.91	69	10-145
13C12-PCB-126	12000	25.51	72	10-145
13C12-PCB-167	12000	26.40	84	10-145
13C12-PCB-156/157	24000	27.04	84	10-145
13C12-PCB-169	12000	28.71	97	10-145
13C12-PCB-189	12000	29.99	106	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.79	83	70-130
13C12-PCB-095	12000	19.10	82	70-130
13C12-PCB-153	12000	24.19	79	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.96	61	5-145
13C12-PCB-111	12000	22.02	84	10-145
13C12-PCB-178	12000	25.07	97	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00124
Mid Point PCB TEQ	0.156
Upper Bound PCB TEQ	0.311

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.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
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	WG3347043-1	Extraction Date	30-Jun-20
Analysis Method	EPA 1668C	Sample Size	1 Blank
Analysis Type	Blank	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	6

Approved:
E. Sabljic
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	5-200707A06
Run Date	07-Jul-20 15:11
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL65972-03A

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	NotFnd	<3.1	3.1	U		150
PCB-077	0.0001	NotFnd	<3.4	3.4	U		150
PCB-123	0.00003	NotFnd	<1.7	1.7	U		150
PCB-118	0.00003	23.26	12.7	1.6	J		150
PCB-114	0.00003	NotFnd	<1.7	1.7	U		150
PCB-105	0.00003	23.91	<8.6	1.7	J,R	8.6	150
PCB-126	0.1	NotFnd	<1.9	1.9	U		150
PCB-167	0.00003	NotFnd	<0.99	0.99	U		150
PCB-156/157	0.00003	NotFnd	<1.4	1.4	U		300
PCB-169	0.03	NotFnd	<1.2	1.2	U		150
PCB-189	0.00003	NotFnd	<1.3	1.3	U		150

Extraction Standards	pg	Time	% Rec	Limits
13C12-PCB-081	12000	21.79	64	10-145
13C12-PCB-077	12000	22.09	67	10-145
13C12-PCB-123	12000	23.07	75	10-145
13C12-PCB-118	12000	23.25	79	10-145
13C12-PCB-114	12000	23.54	75	10-145
13C12-PCB-105	12000	23.90	74	10-145
13C12-PCB-126	12000	25.50	77	10-145
13C12-PCB-167	12000	26.39	91	10-145
13C12-PCB-156/157	24000	27.03	91	10-145
13C12-PCB-169	12000	28.70	102	10-145
13C12-PCB-189	12000	29.97	112	10-145
Field Spike Standards				
13C12-PCB-031			NS	
13C12-PCB-095			NS	
13C12-PCB-153			NS	
Cleanup Standards				
13C12-PCB-028	12000	15.95	64	5-145
13C12-PCB-111	12000	22.00	93	10-145
13C12-PCB-178	12000	25.06	106	10-145

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.000381
Mid Point PCB TEQ	0.114
Upper Bound PCB TEQ	0.228

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.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure
NS	Indicates that this standard has not been added.

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3347043-2	Extraction Date	30-Jun-20
Analysis Method	EPA 1668C	Sample Size	1 n/a
Analysis Type	LCS	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	1

Approved:
E. Sabljic
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	5-200707A04
Run Date	07-Jul-20 13:48
Final Volume	25 ul
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-5 SPBOCTYL65972-03A

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
PCB-081	6000	21.80	107	60-135	
PCB-077	6000	22.10	103	60-135	
PCB-123	6000	23.09	111	60-135	
PCB-118	6000	23.26	108	60-135	
PCB-114	6000	23.56	113	60-135	
PCB-105	6000	23.91	114	60-135	
PCB-126	6000	25.51	108	60-135	
PCB-167	6000	26.40	102	60-135	
PCB-156/157	12000	27.04	102	60-135	
PCB-169	6000	28.71	105	60-135	
PCB-189	6000	29.99	100	60-135	
Extraction Standards		**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.79	64	40-145	
13C12-PCB-077	12000	22.09	66	40-145	
13C12-PCB-123	12000	23.08	74	40-145	
13C12-PCB-118	12000	23.25	77	40-145	
13C12-PCB-114	12000	23.55	73	40-145	
13C12-PCB-105	12000	23.90	73	40-145	
13C12-PCB-126	12000	25.50	77	40-145	
13C12-PCB-167	12000	26.39	90	40-145	
13C12-PCB-156/157	24000	27.03	92	40-145	
13C12-PCB-169	12000	28.70	103	40-145	
13C12-PCB-189	12000	29.97	115	40-145	
Field Spike Standards					
13C12-PCB-031			NS		
13C12-PCB-095			NS		
13C12-PCB-153			NS		
Cleanup Standards					
13C12-PCB-028	12000	15.96	66	15-145	
13C12-PCB-111	12000	22.01	87	40-145	
13C12-PCB-178	12000	25.06	100	40-145	

NS Indicates that this standard has not been 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 Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2463211		Mississauga, ON
Date of Report Revision	16-Jul-20		L5J 2Y4
Date of Sample Receipt	19-Jun-20	**Client Contact:**	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: **Chlorobenzenes by GC/MS - Isotope dilution**

*** **Revised Report** ***

This report supersedes all prior reports for the above-noted workorder and test. The report has been revised as follows:

Data for Clorobenzene has been included.

13C6-chlorobenzene was very poorly recovered for the samples and QC. Reported results for chlorobenzene should be considered estimates.

*** **Original Report Comments** ***

The recoveries of the field standard are elevated due to a closely-eluting interference that is not chromatographically resolved.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		20-22001-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		20-22001-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		20-22001-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		20-22001-SVOC-(16 THRU 20) BLANK 1 APC OUTLET #1	
ALS Sample ID	WG3347043-1		L2463211-1		L2463211-2		L2463211-3		L2463211-4	
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-20		18-Jun-20		18-Jun-20		18-Jun-20	
Extraction Date	30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Chlorobenzene	<12	U	2700		1980		2760		<12	U
1,3-Dichlorobenzene	<12	U	393		275		279		<12	U
1,4-Dichlorobenzene	<12	U	362		257		281		34.6	
1,2-Dichlorobenzene	<12	U	306		218		217		<12	U
1,3,5-Trichlorobenzene	<12	U	<12	U	<12	U	25.3		<12	U
1,2,4-Trichlorobenzene	<12	U	117		74.3		85.1		<12	U
1,2,3-Trichlorobenzene	<12	U	30.8		18.5		20.8		<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12	U	27.2		16.4		19.6		<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
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	NS		137	R	133	R	135	R	149	R
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
13C6-Chlorobenzene	4		4		5		2		4	
13C6-1,4-Dichlorobenzene	34		29		33		25		29	
13C6-1,2,3-Trichlorobenzene	51		43		51		41		45	
13C6-1,2,3,4-Tetrachlorobenzene	77		34		38		39		34	
13C6-Pentachlorobenzene	79		40		44		42		38	
13C6-Hexachlorobenzene	86		43		45		48		43	

U	Indicates that this compound was not detected above the LOD.
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

Sample Analysis Summary Report

Sample Name	20-22001-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2		20-22001-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2		20-22001-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2		20-22001-SVOC-(36 THRU 40) BLANK 2 APC OUTLET #2		Laboratory Control Sample	Laboratory Control Sample (Low Level)
ALS Sample ID	L2463211-5		L2463211-6		L2463211-7		L2463211-8		WG3347043-2	WG3347043-5
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-20		17-Jun-20		18-Jun-20		18-Jun-20		n/a	n/a
Extraction Date	30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20	30-Jun-20
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**	**% Recovery**
Chlorobenzene	2030		1940		1890		<12	U	NS	NS
1,3-Dichlorobenzene	254		231		193		<12	U	102	102
1,4-Dichlorobenzene	193		175		186		23.7		118	109
1,2-Dichlorobenzene	144		131		145		<12	U	119	112
1,3,5-Trichlorobenzene	<12	U	<12	U	15.6	M	<12	U	115	93
1,2,4-Trichlorobenzene	59.8		54.4		49.4		<12	U	133	137
1,2,3-Trichlorobenzene	15.1		13.7		13.1		<12	U	113	111
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12	U	15.4		12.7		<12	U	90	115
1,2,3,4-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	119	97
Pentachlorobenzene	<12	U	<12	U	<12	U	<12	U	113	103
Hexachlorobenzene	<12	U	<12	U	<12	U	<12	U	107	85
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	**%Rec**
1-Bromo-2,3-Dichlorobenzene	133	R	132	R	124	R	108	R	NS	NS
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	**%Rec**
13C6-Chlorobenzene	5		4		5		5		2	3
13C6-1,4-Dichlorobenzene	42		35		31		36		28	24
13C6-1,2,3-Trichlorobenzene	62		52		50		58		52	37
13C6-1,2,3,4-Tetrachlorobenzene	45		37		37		45		85	61
13C6-Pentachlorobenzene	48		40		40		45		83	69
13C6-Hexachlorobenzene	56		47		44		47		91	85

U Indicates that this compound was not detected above the LOD.
M Indicates that a peak has been manually integrated.
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

Sample Analysis Report

Sample Name	**Method Blank**		Sampling Date	n/a
ALS Sample ID	WG3347043-1		Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20070709.D
Run Date	7/7/2020 9:29
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		NotFnd	<12	U
1,3-Dichlorobenzene		NotFnd	<12	U
1,4-Dichlorobenzene		6.63	<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	4.39	4	
13C6-1,4-Dichlorobenzene	300	6.63	34	
13C6-1,2,3-Trichlorobenzene	300	9.04	51	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.75	77	
13C6-Pentachlorobenzene	300	12.13	79	
13C6-Hexachlorobenzene	300	13.75	86	

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22001-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-1	Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20070713.D
Run Date	7/7/2020 13:55
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.41	2700	
1,3-Dichlorobenzene		6.56	393	
1,4-Dichlorobenzene		6.64	362	
1,2-Dichlorobenzene		6.93	306	
1,3,5-Trichlorobenzene		8.12	<12	U
1,2,4-Trichlorobenzene		8.64	117	
1,2,3-Trichlorobenzene		9.05	30.8	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.26	27.2	
1,2,3,4-Tetrachlorobenzene		10.76	<12	U
Pentachlorobenzene		12.11	<12	U
Hexachlorobenzene		13.74	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.76	137	R
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.41	4	R
13C6-1,4-Dichlorobenzene	300	6.64	29	
13C6-1,2,3-Trichlorobenzene	300	9.04	43	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.75	34	
13C6-Pentachlorobenzene	300	12.11	40	
13C6-Hexachlorobenzene	300	13.74	43	

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	**20-22001-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-2	Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20070714.D
Run Date	7/7/2020 14:16
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.41	1980	
1,3-Dichlorobenzene		6.56	275	
1,4-Dichlorobenzene		6.64	257	
1,2-Dichlorobenzene		6.93	218	
1,3,5-Trichlorobenzene		8.12	<12	U
1,2,4-Trichlorobenzene		8.64	74.3	
1,2,3-Trichlorobenzene		9.05	18.5	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.26	16.4	
1,2,3,4-Tetrachlorobenzene		10.76	<12	U
Pentachlorobenzene		12.11	<12	U
Hexachlorobenzene		13.74	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.76	133	R
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.41	5	
13C6-1,4-Dichlorobenzene	300	6.64	33	
13C6-1,2,3-Trichlorobenzene	300	9.04	51	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.76	38	
13C6-Pentachlorobenzene	300	12.11	44	
13C6-Hexachlorobenzene	300	13.74	45	

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	**20-22001-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**		Sampling Date	18-Jun-20
ALS Sample ID	L2463211-3		Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20070715.D
Run Date	7/7/2020 14:37
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.40	2760	
1,3-Dichlorobenzene		6.56	279	
1,4-Dichlorobenzene		6.63	281	
1,2-Dichlorobenzene		6.93	217	
1,3,5-Trichlorobenzene		8.12	25.3	
1,2,4-Trichlorobenzene		8.64	85.1	
1,2,3-Trichlorobenzene		9.05	20.8	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.26	19.6	
1,2,3,4-Tetrachlorobenzene		10.75	<12	U
Pentachlorobenzene		12.11	<12	U
Hexachlorobenzene		13.74	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.76	135	R
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.39	2	
13C6-1,4-Dichlorobenzene	300	6.63	25	
13C6-1,2,3-Trichlorobenzene	300	9.04	41	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.76	39	
13C6-Pentachlorobenzene	300	12.11	42	
13C6-Hexachlorobenzene	300	13.74	48	

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	**20-22001-SVOC-(16 THRU 20) BLANK 1 APC OUTLET #1**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-4	Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20070711.D
Run Date	7/7/2020 13:13
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		NotFnd	<12	U
1,3-Dichlorobenzene		NotFnd	<12	U
1,4-Dichlorobenzene		6.63	34.6	
1,2-Dichlorobenzene		NotFnd	<12	U
1,3,5-Trichlorobenzene		NotFnd	<12	U
1,2,4-Trichlorobenzene		8.64	<12	U
1,2,3-Trichlorobenzene		NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.49	<12	U
1,2,3,4-Tetrachlorobenzene		10.99	<12	U
Pentachlorobenzene		11.66	<12	U
Hexachlorobenzene		NotFnd	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.76	149	R
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.40	4	
13C6-1,4-Dichlorobenzene	300	6.63	29	
13C6-1,2,3-Trichlorobenzene	300	9.04	45	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.76	34	
13C6-Pentachlorobenzene	300	12.12	38	
13C6-Hexachlorobenzene	300	13.75	43	

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	**20-22001-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-5	Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20071342.D
Run Date	7/13/2020 17:58
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.40	2030	
1,3-Dichlorobenzene		6.56	254	
1,4-Dichlorobenzene		6.63	193	
1,2-Dichlorobenzene		6.93	144	
1,3,5-Trichlorobenzene		8.12	<12	U
1,2,4-Trichlorobenzene		8.64	59.8	
1,2,3-Trichlorobenzene		9.04	15.1	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.26	<12	U
1,2,3,4-Tetrachlorobenzene		10.76	<12	U
Pentachlorobenzene		11.66	<12	U
Hexachlorobenzene		13.73	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.76	133 M	R
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.40	5	
13C6-1,4-Dichlorobenzene	300	6.63	42	
13C6-1,2,3-Trichlorobenzene	300	9.04	62	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.75	45	
13C6-Pentachlorobenzene	300	12.11	48	
13C6-Hexachlorobenzene	300	13.74	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	**20-22001-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-6	Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20070717.D
Run Date	7/7/2020 15:19
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.40	1940	
1,3-Dichlorobenzene		6.56	231	
1,4-Dichlorobenzene		6.63	175	
1,2-Dichlorobenzene		6.93	131	
1,3,5-Trichlorobenzene		8.12	<12	U
1,2,4-Trichlorobenzene		8.64	54.4	
1,2,3-Trichlorobenzene		9.04	13.7	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.26	15.4	
1,2,3,4-Tetrachlorobenzene		10.76	<12	U
Pentachlorobenzene		11.66	<12	U
Hexachlorobenzene		13.73	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.76	132	R
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.40	4	
13C6-1,4-Dichlorobenzene	300	6.63	35	
13C6-1,2,3-Trichlorobenzene	300	9.04	52	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.75	37	
13C6-Pentachlorobenzene	300	12.11	40	
13C6-Hexachlorobenzene	300	13.74	47	

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	**20-22001-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-7	Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20070718.D
Run Date	7/7/2020 15:40
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.40	1890	
1,3-Dichlorobenzene		6.56	193	
1,4-Dichlorobenzene		6.64	186	
1,2-Dichlorobenzene		6.93	145	
1,3,5-Trichlorobenzene		8.12	15.6	M
1,2,4-Trichlorobenzene		8.64	49.4	
1,2,3-Trichlorobenzene		9.05	13.1	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.26	12.7	
1,2,3,4-Tetrachlorobenzene		10.76	<12	U
Pentachlorobenzene		NotFnd	<12	U
Hexachlorobenzene		NotFnd	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.76	124	R
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.40	5	
13C6-1,4-Dichlorobenzene	300	6.63	31	
13C6-1,2,3-Trichlorobenzene	300	9.04	50	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.76	37	
13C6-Pentachlorobenzene	300	12.11	40	
13C6-Hexachlorobenzene	300	13.74	44	

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	**20-22001-SVOC-(36 THRU 40) BLANK 2 APC OUTLET #2**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-8	Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20070712.D
Run Date	7/7/2020 13:34
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		NotFnd	<12	U
1,3-Dichlorobenzene		NotFnd	<12	U
1,4-Dichlorobenzene		6.63	23.7	
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
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.76	108	R
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.40	5	
13C6-1,4-Dichlorobenzene	300	6.63	36	
13C6-1,2,3-Trichlorobenzene	300	9.04	58	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.76	45	
13C6-Pentachlorobenzene	300	12.11	45	
13C6-Hexachlorobenzene	300	13.74	47	

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	WG3347043-2	Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20070707.D
Run Date	7/7/2020 8:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene				
1,3-Dichlorobenzene	300	6.56	102	
1,4-Dichlorobenzene	300	6.64	118	
1,2-Dichlorobenzene	300	6.93	119	
1,3,5-Trichlorobenzene	300	8.12	115	
1,2,4-Trichlorobenzene	300	8.64	133	
1,2,3-Trichlorobenzene	300	9.05	113	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	600	10.27	90	
1,2,3,4-Tetrachlorobenzene	300	10.76	119	
Pentachlorobenzene	300	12.11	113	
Hexachlorobenzene	300	13.74	107	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.41	2	
13C6-1,4-Dichlorobenzene	300	6.64	28	
13C6-1,2,3-Trichlorobenzene	300	9.04	52	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.76	85	
13C6-Pentachlorobenzene	300	12.11	83	
13C6-Hexachlorobenzene	300	13.74	91	

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (Low Level)**	Sampling Date	n/a
ALS Sample ID	WG3347043-5	Extraction Date	30-Jun-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20070706.D
Run Date	7/7/2020 8:26
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS US0109813H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene				
1,3-Dichlorobenzene	30	6.56	102	
1,4-Dichlorobenzene	30	6.63	109	
1,2-Dichlorobenzene	30	6.93	112	
1,3,5-Trichlorobenzene	30	8.12	93	
1,2,4-Trichlorobenzene	30	8.64	137	
1,2,3-Trichlorobenzene	30	9.05	111	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	60	10.27	115	
1,2,3,4-Tetrachlorobenzene	30	10.76	97	
Pentachlorobenzene	30	12.13	103	
Hexachlorobenzene	30	13.75	85	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.40	3	
13C6-1,4-Dichlorobenzene	300	6.63	24	
13C6-1,2,3-Trichlorobenzene	300	9.04	37	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.76	61	
13C6-Pentachlorobenzene	300	12.12	69	
13C6-Hexachlorobenzene	300	13.74	85	

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#:	L2463211		Mississauga, ON
Date of Report	10-Jul-20		L5J 2Y4
Date of Sample Receipt	19-Jun-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

The labelled extraction standard recoveries are below the method control limits. Narive target results, calculated via isotope dilution are not expected to be biased.

Certified by: Steve Kennedy

Steve Kennedy
Technical Supervisor

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank (Media)		20-22001-SVOC- (1 THRU 5) TEST#1 APC OUTLET #1		20-22001-SVOC- (6 THRU 10) TEST#2 APC OUTLET #1		20-22001-SVOC- (11 THRU 15) TEST#3 APC OUTLET #1		20-22001-SVOC- (16 THRU 20) BLANK 1 APC OUTLET #1	
ALS Sample ID	WG3347043-1		L2463211-1		L2463211-2		L2463211-3		L2463211-4	
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-20		18-Jun-20		18-Jun-20		18-Jun-20	
Extraction Date	30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20	
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)	64		30		35	M	62		49	
13C6-2,4-Dichlorophenol (ES)	67		36		25		65		47	
13C6-2,4,5-Trichlorophenol (ES)	59		31	R	36	R	52	R	39	R
13C6-2,3,4,5-Tetrachlorophenol (ES)	63		31		51	M	53		39	
13C6-Pentachlorophenol (ES)	52		24		40		36		30	

U Indicates that this compound was not detected above the LOR.
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 Environmental

Sample Analysis Summary Report

Sample Name	20-22001-SVOC- (21 THRU 25) TEST#1 APC OUTLET #2		20-22001-SVOC- (26 THRU 30) TEST#2 APC OUTLET #2		20-22001-SVOC- (31 THRU 35) TEST#3 APC OUTLET #2		20-22001-SVOC- (36 THRU 40) BLANK 2 APC OUTLET #2		Laboratory Control Sample		Laboratory Control Sample (Low Level)	
ALS Sample ID	L2463211-5		L2463211-6		L2463211-7		L2463211-8		WG3347043-2		WG3347043-5	
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-20		17-Jun-20		18-Jun-20		18-Jun-20		n/a		n/a	
Extraction Date	30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**		**% Recovery**	
2-Chlorophenol	<60	U	<60	U	<60	U	<60	U	140		80	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	74	M	313	M	<60	U	121		84	M
2,4/2,5-Dichlorophenol	129	M	<60	U	212	M	<60	U	137	M	104	M
3,5-Dichlorophenol	130	M	<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	64.9	M	112	M	<60	U	<60	U	106		109	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	141		94	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	108	M	113	M
2,3,4,5-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	128		113	M
Pentachlorophenol	<60	U	<60	U	105	M,R	<60	U	148		98	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	62		55		25	M	47		62		10	
13C6-2,4-Dichlorophenol (ES)	53		59		12		39		55		10	
13C6-2,4,5-Trichlorophenol (ES)	49	R	47	R	26	R	41	R	52	R	33	M,R
13C6-2,3,4,5-Tetrachlorophenol (ES)	55		49		40	M,R	48		62		46	M
13C6-Pentachlorophenol (ES)	35		33		31		30		44		16	M

U Indicates that this compound was not detected above the LOR.
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 Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank (Media)**	Sampling Date	n/a
ALS Sample ID	WG3347043-1	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070909.D
Run Date	7/9/2020 8:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0109813H

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	64		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.56	67		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.03	59	R	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	63		20-150
13C6-Pentachlorophenol (ES)	1200	13.61	52		20-150

U Indicates that this compound was not detected above the LOR.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22001-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-1	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070913.D
Run Date	7/9/2020 10:24
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0109813H

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	8.40	30		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.57	36		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.03	31	R	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	31		20-150
13C6-Pentachlorophenol (ES)	1200	13.61	24		20-150

U Indicates that this compound was not detected above the LOR.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22001-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-2	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070914.D
Run Date	7/9/2020 10:48
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0109813H

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		13.61	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.39	35 M		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.56	25		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.03	36	R	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	51 M		20-150
13C6-Pentachlorophenol (ES)	1200	13.61	40		20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22001-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-3	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070915.D
Run Date	7/9/2020 11:12
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0109813H

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		13.61	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.40	62		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.56	65		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.03	52	R	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	53		20-150
13C6-Pentachlorophenol (ES)	1200	13.61	36		20-150

U Indicates that this compound was not detected above the LOR.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22001-SVOC-(16 THRU 20) BLANK 1 APC OUTLET #1**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-4	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070911.D
Run Date	7/9/2020 9:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0109813H

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	8.40	49		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.57	47		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.03	39	R	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	39		20-150
13C6-Pentachlorophenol (ES)	1200	13.61	30		20-150

U Indicates that this compound was not detected above the LOR.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22001-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-5	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070916.D
Run Date	7/9/2020 11:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	n/a
Instrument	MSD-2
Column	HP5MS US0109813H

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		9.39	<60	U	
2,4/2,5-Dichlorophenol		9.57	129	M	
3,5-Dichlorophenol		9.69	130	M	
2,3-Dichlorophenol		NotFnd	<60	U	
3,4-Dichlorophenol		NotFnd	<60	U	
2,4,6-Trichlorophenol		10.49	64.9	M	
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		13.61	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.40	62		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.57	53		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.03	49	R	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	55		20-150
13C6-Pentachlorophenol (ES)	1200	13.61	35		20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22001-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-6	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070917.D
Run Date	7/9/2020 12:00
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0109813H

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		9.39	74	M	
2,4/2,5-Dichlorophenol		9.56	<60	U	
3,5-Dichlorophenol		NotFnd	<60	U	
2,3-Dichlorophenol		NotFnd	<60	U	
3,4-Dichlorophenol		NotFnd	<60	U	
2,4,6-Trichlorophenol		10.49	112	M	
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		13.61	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.40	55		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.57	59		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.03	47	R	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	49		20-150
13C6-Pentachlorophenol (ES)	1200	13.61	33		20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22001-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-7	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070918.D
Run Date	7/9/2020 12:24
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0109813H

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	9.39	313 M	
2,4/2,5-Dichlorophenol	9.69	212 M	
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	13.68	105 M	R

Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.40	25 M		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.56	12		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.03	26	R	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	40 M		20-150
13C6-Pentachlorophenol (ES)	1200	13.61	31		20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22001-SVOC-(36 THRU 40) BLANK 2 APC OUTLET #2**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-8	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070912.D
Run Date	7/9/2020 9:59
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0109813H

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		13.61	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.39	47		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.56	39		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.03	41	R	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	48		20-150
13C6-Pentachlorophenol (ES)	1200	13.61	30		20-150

U — Indicates that this compound was not detected above the LOR.

R — Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3347043-2	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070907.D
Run Date	7/9/2020 8:00
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP5MS US0109813H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	1200	8.05	140		50-150
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	1200	9.36	121		50-150
2,4/2,5-Dichlorophenol	1200	9.56	137 M		50-150
3,5-Dichlorophenol					
2,3-Dichlorophenol					
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	1200	10.49	106		50-150
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	1200	11.03	141		50-150
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	2400	12.14	108 M		50-150
2,3,4,5-Tetrachlorophenol	1200	12.64	128		50-150
Pentachlorophenol	1200	13.61	148		50-150
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.39	62		50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.56	55		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.03	52	R	50-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	62		50-150
13C6-Pentachlorophenol (ES)	1200	13.61	44		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.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (Low Level)**	Sampling Date	n/a
ALS Sample ID	WG3347043-5	Extraction Date	30-Jun-20
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--
10-Jul-2020

Run Information	**Run 1**
Filename	20070906.D
Run Date	7/9/2020 7:35
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP5MS US0109813H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	120	8.10	80 M		50-150
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	120	9.36	84 M		50-150
2,4/2,5-Dichlorophenol	120	9.56	104 M		50-150
3,5-Dichlorophenol					
2,3-Dichlorophenol					
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	120	10.49	109 M		50-150
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	120	11.04	94 M		50-150
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	240	12.11	113 M		50-150
2,3,4,5-Tetrachlorophenol	120	12.64	113 M		50-150
Pentachlorophenol	120	13.62	98		50-150
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.39	10		50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.56	10		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.04	33 M	R	50-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.64	46 M		50-150
13C6-Pentachlorophenol (ES)	1200	13.61	16 M		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.

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 Mississauga, ON L5J 2Y4
ALS WO#:	L2463211		
Date of Report	10-Jul-20		
Date of Sample Receipt	19-Jun-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

There is a coeluting interference that may be elevating the reported values of fluorene as well as the field standard fluorene-d10.

Certified by: ______________________

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		20-22001-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		20-22001-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		20-22001-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		20-22001-SVOC-(16 THRU 20) BLANK 1 APC OUTLET #1	
ALS Sample ID	WG3347043-1		L2463211-1		L2463211-2		L2463211-3		L2463211-4	
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	MEDIA		Stack		Stack		Stack		Stack	
Sampling Date	n/a		17-Jun-20		18-Jun-20		18-Jun-20		18-Jun-20	
Extraction Date	30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Naphthalene	136	R	1360	R,B	622	R,B	1040	R,B	320	R,B
2-Methylnaphthalene	<12	U	287		95.7	R	181		23.0	R
1-Methylnaphthalene	<12	U	180	R	53.5	R	92.5		<12	U
Acenaphthylene	<12	U	140	R	27.8	R	33.1	R	<12	U
Acenaphthene	<12	U	264	R	84.1	R	110	R	<12	U
Fluorene	72.8	R	3080	R	1010	R	1060	R	1240	R
Phenanthrene	<12	U	94.9		80.3		761		12.2	
Anthracene	<12	U	17.5	R	14.1	R	<12	U	<12	U
Fluoranthene	<12	U	23.6		25.0		111		<12	U
Pyrene	<12	U	26.6	R	35.4	R	85.4	R	<12	U
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Chrysene/Triphenylene/Benzo(b)a	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(k/j)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(e)Pyrene	<12	U	<12	U	28.0	M	<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	23.6		<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	28.4	M	147		<12	U	<12	U
Additional Analytes										
Tetralin	139	M	279	M,B	96.2	M,B	112	R,B	102	M,B
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U
Biphenyl	<12	U	548		120	M	222		100	M
o-Terphenyl	<12	U	12.4		<12	U	18.0		<12	U
1-Methylphenanthrene	<12	U	101	R	113	R	127	R	<12	U
9-Methylphenanthrene	<12	U	12.7		<12	U	92.3		<12	U
2-methylanthracene	<12	U	17.0	M	16.7	M	173		<12	U
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U	<12	U
m-terphenyl	<12	U	<12	U	<12	U	14.1	R	<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	60.7		172	M	<60	U	<60	U
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	NS		74.9		79.6		78.4		81.4	
Fluorene D10	NS		88.6		101.6		119.7		103.5	
Terphenyl D14(Surr.)	NS		103.6		101.0		99.7		97.0	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	70.2	R	47.3	R	60.3	R	61.8	R	61.7	R
2-Methylnaphthalene-D10	78.8		53.4		66.3		72.8		65.1	
Acenaphthylene D8	86.1		39.2		79.0		84.0		66.5	
Phenanthrene D10	71.4		62.6		65.7		72.4		69.2	
Anthracene-D10	74.6		49.8		68.2		84.2		67.9	
Fluoranthene D10	91.8		83.2		86.5		96.3		92.3	
Benz(a)Anthracene-D12	113.0		115.8		130.4		145.2		123.4	
Chrysene D12	87.3		86.6		92.0		101.6		93.6	R
Benzo(b)Fluoranthene-D12	78.2		75.1		78.1		91.9		76.4	
Benzo(k)Fluoranthene-D12	59.9		55.8		62.3		73.2		63.8	
Benzo(a)Pyrene D12	57.7		41.5		53.9		61.6		54.0	
Perylene D12	62.8		48.8		60.8		72.3		58.0	
Indeno(1,2,3,cd)Pyrene-D12	64.5		63.1		69.2		83.5		60.9	
Dibenz(a,h)Anthracene-D14	56.4		56.4		60.9		73.3		52.3	
Benzo(g,h,i)Perylene D12	63.8		63.0		67.9		78.8		60.0	

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 compound was not spiked in.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	20-22001-SVOC- (21 THRU 25) TEST#1 APC OUTLET #2		20-22001-SVOC- (26 THRU 30) TEST#2 APC OUTLET #2		20-22001-SVOC- (31 THRU 35) TEST#3 APC OUTLET #2		20-22001-SVOC- (36 THRU 40) BLANK 2 APC OUTLET #2		Laboratory Control Sample	
ALS Sample ID	L2463211-5		L2463211-6		L2463211-7		L2463211-8		WG3347043-2	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		n/a	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	Stack		Stack		Stack		Stack		QC	
Sampling Date	17-Jun-20		17-Jun-20		18-Jun-20		18-Jun-20		n/a	
Extraction Date	30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20		30-Jun-20	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**%**	
Naphthalene	863	R,B	1920	R	813	R,B	260	R,B	120.0	R
2-Methylnaphthalene	154		451		107	R	19.9		90.6	
1-Methylnaphthalene	83.9		225		70.9		<12	U	95.4	
Acenaphthylene	69.5	R	126	R	26.6	R	<12	U	101.1	
Acenaphthene	221	R	150	R	204	R	<12	U	90.0	
Fluorene	2260	R	1310	R	2050	R	1030	R	113.5	
Phenanthrene	118		608		174		26.9		97.3	
Anthracene	<12	U	14.0	M,R	<12	U	<12	U	90.9	
Fluoranthene	34.3	R	130		92.2		14.6		88.8	
Pyrene	47.1	R	106	R	119	R	14.3	R	87.3	
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	82.8	
Chrysene/Triphenylene/Benzo(b)a	<12	U	19.5	M	<12	U	<12	U	96.2	
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	86.0	R
Benzo(k/j)Fluoranthene	<12	U	<12	U	<12	U	<12	U	95.0	
Benzo(e)Pyrene	<12	U	<12	U	45.3	M	<12	U	85.9	
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	95.7	R
Perylene	<12	U	<12	U	<12	U	<12	U	96.6	
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	19.9	M	<12	U	96.6	
Dibenzo(a,h/a,c)Anthracene	<12	U	<12	U	<12	U	<12	U	84.8	
Benzo(g,h,i)Perylene	49.8	M	29.8	M	134		<12	U	90.5	
Additional Analytes										
Tetralin	176	M,B	225	B	154	M,B	71.8	M,B		
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U		
Biphenyl	275	M	269	M	250	M	84.8	M		
o-Terphenyl	<12	U	22.6	R	<12	U	<12	U		
1-Methylphenanthrene	111	R	113	R	109	R	<12	U		
9-Methylphenanthrene	13.3	R	68.0		20.5		166	R		
2-methylanthracene	17.2	M	149		32.0	M	<12	U		
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U		
m-terphenyl	<12	U	63.7		<12	U	<12	U		
p-terphenyl	<12	U	16.7	R	<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	70.8	M	<60	U	125	M	<60	U		
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	80.6		77.3		80.4		80.0		NS	
Fluorene D10	107.0	M	136.1	M	99.6	M	92.3		NS	
Terphenyl D14(Surr.)	97.2		103.9		100.1		97.2		NS	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	47.8	R	54.9	R	46.9	R	68.1	R	77.4	R
2-Methylnaphthalene-D10	52.3		62.4		53.9		69.8		84.0	
Acenaphthylene D8	69.4		68.7		68.2		70.6		97.7	
Phenanthrene D10	59.6		59.4		57.6		72.4		77.6	
Anthracene-D10	67.5		72.4		65.4		70.7		83.0	
Fluoranthene D10	81.7		83.5		80.0		90.7		98.5	
Benz(a)Anthracene-D12	127.4		130.1		123.6		127.8		144.1	
Chrysene D12	89.4		91.8		84.8		91.9	R	102.5	
Benzo(b)Fluoranthene-D12	78.8		85.4		74.9		76.0		85.1	
Benzo(k)Fluoranthene-D12	62.7		64.3		54.4		60.4		69.1	
Benzo(a)Pyrene D12	56.6		54.7		52.4		53.7		66.6	
Perylene D12	62.6		64.4		58.2		58.6		72.3	
Indeno(1,2,3,cd)Pyrene-D12	73.4		81.8		66.7		65.6		74.8	
Dibenz(a,h)Anthracene-D14	65.1		73.9		58.2		56.5		66.5	
Benzo(g,h,i)Perylene D12	70.0		77.8		64.1		63.6		72.5	

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 compound was not spiked in.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**		Sampling Date	n/a
ALS Sample ID	WG3347043-1		Extraction Date	30-Jun-20
Analysis Method	PAH by CARB 429			
Analysis Type	blank			
Sample Matrix	QC			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3347043

Approved:
Andrew Reid
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	20070612.D
Run Date	7/6/2020 13:11
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS UST530312H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.93	136	R
2-Methylnaphthalene	3.55	<12	U
1-Methylnaphthalene	3.67	<12	U
Acenaphthylene	NotFnd	<12	U
Acenaphthene	NotFnd	<12	U
Fluorene	5.95	72.8	R
Phenanthrene	8.17	<12	U
Anthracene	8.28	<12	U
Fluoranthene	11.57	<12	U
Pyrene	12.21	<12	U
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene/Benzo(b)a	NotFnd	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<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	2.80	139	M
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	4.10	<12	U
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	NotFnd	<12	U
2-methylanthracene	NotFnd	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	NotFnd	<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

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.92	70.2	R	50-150
2-Methylnaphthalene-D10	600	3.51	78.8		50-150
Acenaphthylene D8	600	4.70	86.1		50-150
Phenanthrene D10	600	8.10	71.4		50-150
Anthracene-D10	600	8.24	74.6		50-150
Fluoranthene D10	600	11.51	91.8		50-150
Benz(a)Anthracene-D12	600	16.05	113.0		50-150
Chrysene D12	600	16.16	87.3		50-150
Benzo(b)Fluoranthene-D12	600	19.39	78.2		50-150
Benzo(k)Fluoranthene-D12	600	19.47	59.9		50-150
Benzo(a)Pyrene D12	600	20.27	57.7		50-150
Perylene D12	600	20.50	62.8		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.90	64.5		50-150
Dibenz(a,h)Anthracene-D14	600	24.06	56.4		50-150
Benzo(g,h,i)Perylene D12	600	24.84	63.8		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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22001-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-1	Extraction Date	30-Jun-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3347043

Approved:
Andrew Reid
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	20070622.D
Run Date	7/7/2020 9:12
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS UST530312H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.93	1360	R ,B
2-Methylnaphthalene	3.55	287	
1-Methylnaphthalene	3.67	180	R
Acenaphthylene	4.72	140	R
Acenaphthene	5.02	264	R
Fluorene	5.95	3080	R
Phenanthrene	8.16	94.9	
Anthracene	8.28	17.5	R
Fluoranthene	11.57	23.6	
Pyrene	12.21	26.6	R
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene/Benzo(b)a	NotFnd	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	20.18	<12	U
Benzo(a)Pyrene	20.28	<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	24.96	28.4 M	
Additional Analytes			
Tetralin	2.80	279 M	,B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	4.10	548	
o-Terphenyl	9.43	12.4	
1-Methylphenanthrene	9.73	101	R
9-Methylphenanthrene	9.85	12.7	
2-methylanthracene	9.90	17.0 M	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.59	<12	U
p-terphenyl	13.08	<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	29.67	60.7	

Field Sampling Standards	**ng spiked**		**% Rec**		
1-Methylnaphthalene-D10	600	3.63	74.9		
Fluorene D10	600	5.90	88.6		
Terphenyl D14(Surr.)	600	13.01	103.6		
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.91	47.3	R	50-150
2-Methylnaphthalene-D10	600	3.51	53.4		50-150
Acenaphthylene D8	600	4.70	39.2		50-150
Phenanthrene D10	600	8.10	62.6		50-150
Anthracene-D10	600	8.23	49.8		50-150
Fluoranthene D10	600	11.51	83.2		50-150
Benz(a)Anthracene-D12	600	16.04	115.8		50-150
Chrysene D12	600	16.15	86.6		50-150
Benzo(b)Fluoranthene-D12	600	19.38	75.1		50-150
Benzo(k)Fluoranthene-D12	600	19.47	55.8		50-150
Benzo(a)Pyrene D12	600	20.27	41.5		50-150
Perylene D12	600	20.50	48.8		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.89	63.1		50-150
Dibenz(a,h)Anthracene-D14	600	24.06	56.4		50-150
Benzo(g,h,i)Perylene D12	600	24.84	63.0		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	**20-22001-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-2	Extraction Date	30-Jun-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3347043

Approved:
Andrew Reid
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	20070623.D
Run Date	7/7/2020 9:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS UST530312H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.93	622	R ,B
2-Methylnaphthalene	3.54	95.7	R
1-Methylnaphthalene	3.66	53.5	R
Acenaphthylene	4.72	27.8	R
Acenaphthene	5.02	84.1	R
Fluorene	5.95	1010	R
Phenanthrene	8.17	80.3	
Anthracene	8.28	14.1	R
Fluoranthene	11.57	25.0	
Pyrene	12.21	35.4	R
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene/Benzo(b)ar	16.22	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	20.19	28.0 M	
Benzo(a)Pyrene	20.31	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.99	23.6	
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.96	147	
Additional Analytes			
Tetralin	2.80	96.2 M	,B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	4.10	120 M	
o-Terphenyl	9.43	<12	U
1-Methylphenanthrene	9.73	113	R
9-Methylphenanthrene	9.85	<12	U
2-methylanthracene	9.90	16.7 M	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.60	<12	U
p-terphenyl	13.03	<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	29.66	172 M	

Field Sampling Standards	**ng spiked**		**% Rec**		
1-Methylnaphthalene-D10	600	3.63	79.6		
Fluorene D10	600	5.89	101.6		
Terphenyl D14(Surr.)	600	13.01	101		
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.91	60.3	R	50-150
2-Methylnaphthalene-D10	600	3.51	66.3		50-150
Acenaphthylene D8	600	4.70	79.0		50-150
Phenanthrene D10	600	8.10	65.7		50-150
Anthracene-D10	600	8.23	68.2		50-150
Fluoranthene D10	600	11.51	86.5		50-150
Benz(a)Anthracene-D12	600	16.04	130.4		50-150
Chrysene D12	600	16.15	92.0		50-150
Benzo(b)Fluoranthene-D12	600	19.36	78.1		50-150
Benzo(k)Fluoranthene-D12	600	19.47	62.3		50-150
Benzo(a)Pyrene D12	600	20.26	53.9		50-150
Perylene D12	600	20.50	60.8		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.89	69.2		50-150
Dibenz(a,h)Anthracene-D14	600	24.06	60.9		50-150
Benzo(g,h,i)Perylene D12	600	24.84	67.9		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	20-22001-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-3	Extraction Date	30-Jun-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3347043

Approved:
Andrew Reid
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	20070624.D
Run Date	7/7/2020 10:23
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS UST530312H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.93	1040	R ,B
2-Methylnaphthalene	3.54	181	
1-Methylnaphthalene	3.66	92.5	
Acenaphthylene	4.69	33.1	R
Acenaphthene	5.02	110	R
Fluorene	5.95	1060	R
Phenanthrene	8.16	761	
Anthracene	8.28	<12	U
Fluoranthene	11.57	111	
Pyrene	12.21	85.4	R
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene/Benzo(b)a	16.22	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	20.18	<12	U
Benzo(a)Pyrene	20.28	<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	2.80	112	R ,B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	4.10	222	
o-Terphenyl	9.44	18.0	
1-Methylphenanthrene	9.73	127	R
9-Methylphenanthrene	9.84	92.3	
2-methylanthracene	9.90	173	
9,10-dimethylanthracene	12.43	<12	U
m-terphenyl	12.59	14.1	R
p-terphenyl	13.08	<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	600	3.63	78.4		
Fluorene D10	600	5.90	119.7		
Terphenyl D14(Surr.)	600	13.01	99.7		
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.91	61.8	R	50-150
2-Methylnaphthalene-D10	600	3.51	72.8		50-150
Acenaphthylene D8	600	4.70	84.0		50-150
Phenanthrene D10	600	8.10	72.4		50-150
Anthracene-D10	600	8.23	84.2		50-150
Fluoranthene D10	600	11.51	96.3		50-150
Benz(a)Anthracene-D12	600	16.04	145.2		50-150
Chrysene D12	600	16.15	101.6		50-150
Benzo(b)Fluoranthene-D12	600	19.38	91.9		50-150
Benzo(k)Fluoranthene-D12	600	19.47	73.2		50-150
Benzo(a)Pyrene D12	600	20.26	61.6		50-150
Perylene D12	600	20.50	72.3		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.89	83.5		50-150
Dibenz(a,h)Anthracene-D14	600	24.06	73.3		50-150
Benzo(g,h,i)Perylene D12	600	24.84	78.8		50-150

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	20-22001-SVOC-(16 THRU 20) BLANK 1 APC OUTLET #1	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-4	Extraction Date	30-Jun-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3347043

Approved:
Andrew Reid
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	20070620.D
Run Date	7/7/2020 8:00
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS UST530312H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.93	320	R ,B
2-Methylnaphthalene	3.55	23.0	R
1-Methylnaphthalene	3.67	<12	U
Acenaphthylene	NotFnd	<12	U
Acenaphthene	NotFnd	<12	U
Fluorene	5.95	1240	R
Phenanthrene	8.17	12.2	
Anthracene	8.28	<12	U
Fluoranthene	11.57	<12	U
Pyrene	12.21	<12	U
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene/Benzo(b)ar	NotFnd	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<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	2.80	102 M	,B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	4.11	100 M	
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	NotFnd	<12	U
2-methylanthracene	NotFnd	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	NotFnd	<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	600	3.63	81.4
Fluorene D10	600	5.89	103.5
Terphenyl D14(Surr.)	600	13.01	97

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.91	61.7	R	50-150
2-Methylnaphthalene-D10	600	3.51	65.1		50-150
Acenaphthylene D8	600	4.70	66.5		50-150
Phenanthrene D10	600	8.10	69.2		50-150
Anthracene-D10	600	8.24	67.9		50-150
Fluoranthene D10	600	11.51	92.3		50-150
Benz(a)Anthracene-D12	600	16.05	123.4		50-150
Chrysene D12	600	16.16	93.6	R	50-150
Benzo(b)Fluoranthene-D12	600	19.39	76.4		50-150
Benzo(k)Fluoranthene-D12	600	19.47	63.8		50-150
Benzo(a)Pyrene D12	600	20.27	54.0		50-150
Perylene D12	600	20.50	58.0		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.90	60.9		50-150
Dibenz(a,h)Anthracene-D14	600	24.06	52.3		50-150
Benzo(g,h,i)Perylene D12	600	24.85	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

Laboratory Method Blank Analysis Report

Sample Name	20-22001-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-5	Extraction Date	30-Jun-20
Analysis Method	PAH by CARB 429		
Analysis Type	Blank		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3347043

Approved:
Andrew Reid
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	20070625.D
Run Date	7/7/2020 10:59
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS UST530312H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.93	863	R ,B
2-Methylnaphthalene	3.54	154	
1-Methylnaphthalene	3.66	83.9	
Acenaphthylene	4.72	69.5	R
Acenaphthene	5.02	221	R
Fluorene	5.95	2260	R
Phenanthrene	8.16	118	
Anthracene	8.27	<12	U
Fluoranthene	11.56	34.3	R
Pyrene	12.20	47.1	R
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene/Benzo(b)a	16.23	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	20.18	<12	U
Benzo(a)Pyrene	20.28	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.99	<12	U
Dibenzo(a,h/a,c)Anthracene	24.20	<12	U
Benzo(g,h,i)Perylene	24.96	49.8 M	
Additional Analytes			
Tetralin	2.80	176 M	,B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	4.10	275 M	
o-Terphenyl	9.43	<12	U
1-Methylphenanthrene	9.73	111	R
9-Methylphenanthrene	9.84	13.3	R
2-methylanthracene	9.90	17.2 M	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.59	<12	U
p-terphenyl	13.08	<12	U
Benzo(a)fluorene	13.36	<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	29.68	70.8 M	

Field Sampling Standards	**ng spiked**		**% Rec**		**Limits**
1-Methylnaphthalene-D10	600	3.63	80.6		
Fluorene D10	600	5.90	107 M		
Terphenyl D14(Surr.)	600	13.01	97.2		
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.91	47.8	R	50-150
2-Methylnaphthalene-D10	600	3.51	52.3		50-150
Acenaphthylene D8	600	4.70	69.4		50-150
Phenanthrene D10	600	8.10	59.6		50-150
Anthracene-D10	600	8.23	67.5		50-150
Fluoranthene D10	600	11.51	81.7		50-150
Benz(a)Anthracene-D12	600	16.04	127.4		50-150
Chrysene D12	600	16.15	89.4		50-150
Benzo(b)Fluoranthene-D12	600	19.38	78.8		50-150
Benzo(k)Fluoranthene-D12	600	19.47	62.7		50-150
Benzo(a)Pyrene D12	600	20.26	56.6		50-150
Perylene D12	600	20.49	62.6		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.89	73.4		50-150
Dibenz(a,h)Anthracene-D14	600	24.06	65.1		50-150
Benzo(g,h,i)Perylene D12	600	24.84	70.0		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	**20-22001-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	17-Jun-20
ALS Sample ID	L2463211-6	Extraction Date	30-Jun-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3347043

Approved:
Andrew Reid
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	20070626.D
Run Date	7/7/2020 11:35
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS UST530312H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.93	1920	R
2-Methylnaphthalene	3.54	451	
1-Methylnaphthalene	3.67	225	
Acenaphthylene	4.72	126	R
Acenaphthene	5.03	150	R
Fluorene	5.95	1310	R
Phenanthrene	8.16	608	
Anthracene	8.28	14.0 M	R
Fluoranthene	11.56	130	
Pyrene	12.20	106	R
Benzo(a)Anthracene	NotFnd	<12 U	
Chrysene/Triphenylene/Benzo(b)a	16.22	19.5 M	
Benzo(b)Fluoranthene	NotFnd	<12 U	
Benzo(k/j)Fluoranthene	NotFnd	<12 U	
Benzo(e)Pyrene	20.18	<12 U	
Benzo(a)Pyrene	20.28	<12 U	
Perylene	NotFnd	<12 U	
Indeno(1,2,3-cd)Pyrene	23.99	<12 U	
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12 U	
Benzo(g,h,i)Perylene	24.96	29.8 M	
Additional Analytes			
Tetralin	2.80	225	B
2-Chloronaphthalene	NotFnd	<12 U	
Biphenyl	4.10	269 M	
o-Terphenyl	9.44	22.6	R
1-Methylphenanthrene	9.73	113	R
9-Methylphenanthrene	9.84	68.0	
2-methylanthracene	9.90	149	
9,10-dimethylanthracene	NotFnd	<12 U	
m-terphenyl	12.59	63.7	
p-terphenyl	13.08	16.7	R
Benzo(a)fluorene	NotFnd	<12 U	
Benzo(b)fluorene	NotFnd	<12 U	
7,12-Dimethylbenzo(a)anthracene	19.58	<12 U	
3-Methylcholanthrene	NotFnd	<60 U	
Picene	NotFnd	<60 U	
Dibenzo(a,e)pyrene	NotFnd	<60 U	
Coronene	29.68	<60 U	

Field Sampling Standards	**ng spiked**		**% Rec**		
1-Methylnaphthalene-D10	600	3.63	77.3		
Fluorene D10	600	5.90	136.1 M		
Terphenyl D14(Surr.)	600	13.01	103.9		
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.91	54.9	R	50-150
2-Methylnaphthalene-D10	600	3.51	62.4		50-150
Acenaphthylene D8	600	4.70	68.7		50-150
Phenanthrene D10	600	8.10	59.4		50-150
Anthracene-D10	600	8.23	72.4		50-150
Fluoranthene D10	600	11.51	83.5		50-150
Benz(a)Anthracene-D12	600	16.04	130.1		50-150
Chrysene D12	600	16.15	91.8		50-150
Benzo(b)Fluoranthene-D12	600	19.38	85.4		50-150
Benzo(k)Fluoranthene-D12	600	19.47	64.3		50-150
Benzo(a)Pyrene D12	600	20.26	54.7		50-150
Perylene D12	600	20.49	64.4		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.89	81.8		50-150
Dibenz(a,h)Anthracene-D14	600	24.05	73.9		50-150
Benzo(g,h,i)Perylene D12	600	24.84	77.8		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	**20-22001-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-7	Extraction Date	30-Jun-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3347043

Approved:
Andrew Reid
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	20070627.D
Run Date	7/7/2020 12:10
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS UST530312H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene		2.92	813	R ,B	
2-Methylnaphthalene		3.54	107	R	
1-Methylnaphthalene		3.66	70.9		
Acenaphthylene		4.72	26.6	R	
Acenaphthene		5.02	204	R	
Fluorene		5.95	2050	R	
Phenanthrene		8.16	174		
Anthracene		8.28	<12	U	
Fluoranthene		11.56	92.2		
Pyrene		12.20	119	R	
Benzo(a)Anthracene		16.12	<12	U	
Chrysene/Triphenylene/Benzo(b)a		16.24	<12	U	
Benzo(b)Fluoranthene		NotFnd	<12	U	
Benzo(k/j)Fluoranthene		NotFnd	<12	U	
Benzo(e)Pyrene		20.18	45.3 M		
Benzo(a)Pyrene		20.30	<12	U	
Perylene		NotFnd	<12	U	
Indeno(1,2,3-cd)Pyrene		23.99	19.9 M		
Dibenzo(a,h/a,c)Anthracene		24.20	<12	U	
Benzo(g,h,i)Perylene		24.96	134		
Additional Analytes					
Tetralin		2.79	154 M	,B	
2-Chloronaphthalene		NotFnd	<12	U	
Biphenyl		4.11	250 M		
o-Terphenyl		9.44	<12	U	
1-Methylphenanthrene		9.73	109	R	
9-Methylphenanthrene		9.85	20.5		
2-methylanthracene		9.90	32.0 M		
9,10-dimethylanthracene		NotFnd	<12	U	
m-terphenyl		12.59	<12	U	
p-terphenyl		13.07	<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		29.67	125 M		
Field Sampling Standards	**ng spiked**		**% Rec**		
1-Methylnaphthalene-D10	600	3.63	80.4		
Fluorene D10	600	5.90	99.6 M		
Terphenyl D14(Surr.)	600	13.01	100.1		
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.91	46.9	R	50-150
2-Methylnaphthalene-D10	600	3.51	53.9		50-150
Acenaphthylene D8	600	4.70	68.2		50-150
Phenanthrene D10	600	8.10	57.6		50-150
Anthracene-D10	600	8.23	65.4		50-150
Fluoranthene D10	600	11.51	80.0		50-150
Benz(a)Anthracene-D12	600	16.04	123.6		50-150
Chrysene D12	600	16.15	84.8		50-150
Benzo(b)Fluoranthene-D12	600	19.38	74.9		50-150
Benzo(k)Fluoranthene-D12	600	19.47	54.4		50-150
Benzo(a)Pyrene D12	600	20.26	52.4		50-150
Perylene D12	600	20.50	58.2		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.90	66.7		50-150
Dibenz(a,h)Anthracene-D14	600	24.06	58.2		50-150
Benzo(g,h,i)Perylene D12	600	24.84	64.1		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	20-22001-SVOC-(36 THRU 40) BLANK 2 APC OUTLET #2	Sampling Date	18-Jun-20
ALS Sample ID	L2463211-8	Extraction Date	30-Jun-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3347043

Approved:
Andrew Reid
--e-signature--
08-Jul-2020

Run Information	Run 1
Filename	20070621.D
Run Date	7/7/2020 8:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS UST530312H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Naphthalene	2.93	260	R ,B
2-Methylnaphthalene	3.55	19.9	
1-Methylnaphthalene	3.67	<12	U
Acenaphthylene	NotFnd	<12	U
Acenaphthene	NotFnd	<12	U
Fluorene	5.94	1030	R
Phenanthrene	8.17	26.9	
Anthracene	8.28	<12	U
Fluoranthene	11.57	14.6	
Pyrene	12.21	14.3	R
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene/Benzo(b)a	16.24	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<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	2.80	71.8 M	,B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	4.11	84.8 M	
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.73	166	R
2-methylanthracene	NotFnd	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	NotFnd	<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		Limits
1-Methylnaphthalene-D10	600	3.63	80		
Fluorene D10	600	5.89	92.3		
Terphenyl D14(Surr.)	600	13.01	97.2		
Extraction Standards					
Naphthalene D8	600	2.92	68.1	R	50-150
2-Methylnaphthalene-D10	600	3.51	69.8		50-150
Acenaphthylene D8	600	4.69	70.6		50-150
Phenanthrene D10	600	8.10	72.4		50-150
Anthracene-D10	600	8.23	70.7		50-150
Fluoranthene D10	600	11.51	90.7		50-150
Benz(a)Anthracene-D12	600	16.04	127.8		50-150
Chrysene D12	600	16.15	91.9	R	50-150
Benzo(b)Fluoranthene-D12	600	19.38	76.0		50-150
Benzo(k)Fluoranthene-D12	600	19.47	60.4		50-150
Benzo(a)Pyrene D12	600	20.27	53.7		50-150
Perylene D12	600	20.50	58.6		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.90	65.6		50-150
Dibenz(a,h)Anthracene-D14	600	24.06	56.5		50-150
Benzo(g,h,i)Perylene D12	600	24.84	63.6		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

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3347043-2	Extraction Date	30-Jun-20
Analysis Method	PAH by CARB 429		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3347043

Approved:
Andrew Reid
--e-signature--
08-Jul-2020

Run Information	**Run 1**
Filename	20070610.D
Run Date	7/6/2020 12:00
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP5MS UST530312H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	2.93	120.0	R	50-150
2-Methylnaphthalene	600	3.54	90.6		50-150
1-Methylnaphthalene	600	3.66	95.4		50-150
Acenaphthylene	600	4.71	101.1		50-150
Acenaphthene	600	5.02	90.0		50-150
Fluorene	600	5.95	113.5		50-150
Phenanthrene	600	8.16	97.3		50-150
Anthracene	600	8.27	90.9		50-150
Fluoranthene	600	11.56	88.8		50-150
Pyrene	600	12.20	87.3		50-150
Benzo(a)Anthracene	600	16.11	82.8		50-150
Chrysene/Triphenylene/Benzo(b)ε	600	16.24	96.2		50-150
Benzo(b)Fluoranthene	600	19.44	86.0	R	50-150
Benzo(k/j)Fluoranthene	600	19.52	95.0		50-150
Benzo(e)Pyrene	600	20.18	85.9		50-150
Benzo(a)Pyrene	600	20.32	95.7	R	50-150
Perylene	600	20.55	96.6		50-150
Indeno(1,2,3-cd)Pyrene	600	23.97	96.6		50-150
Dibenzo(a,h/a,c)Anthracene	600	24.17	84.8		50-150
Benzo(g,h,i)Perylene	600	24.94	90.5		50-150
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.91	77.4	R	30-150
2-Methylnaphthalene-D10	600	3.51	84.0		30-150
Acenaphthylene D8	600	4.69	97.7		30-150
Phenanthrene D10	600	8.10	77.6		50-150
Anthracene-D10	600	8.24	83.0		50-150
Fluoranthene D10	600	11.51	98.5		50-150
Benz(a)Anthracene-D12	600	16.04	144.1		50-150
Chrysene D12	600	16.15	102.5		50-150
Benzo(b)Fluoranthene-D12	600	19.38	85.1		50-150
Benzo(k)Fluoranthene-D12	600	19.47	69.1		50-150
Benzo(a)Pyrene D12	600	20.26	66.6		30-150
Perylene D12	600	20.49	72.3		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.89	74.8		50-150
Dibenz(a,h)Anthracene-D14	600	24.05	66.5		50-150
Benzo(g,h,i)Perylene D12	600	24.84	72.5		50-150

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

APPENDIX 16

Acid Gas Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22001
Date:	JUNE 15, 2020
Test No.:	1
Test Location:	UNIT 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	668.3
Initial Wt:	765.1
Final Wt:	871.2
Gain:	106.1
Colour:	clear

2

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.7
Initial Wt:	778.6
Final Wt:	806.6
Gain:	28.0
Colour:	clear

3

Impinger #3 EMPTY	
Empty Wt:	581.1
Final Wt:	584.5
Gain:	3.4
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.7
With Imp. 1,2,3 Soln:	613.2
Imp. 1,2,3 Volume:	331.5
After Rinse:	714.6
Total TS3:	432.9

Impinger 4

4

Impinger #4 Silica Gel	
Initial Wt:	877.3
Final Wt:	888.6
Gain:	11.3

Box ID: 3

CWTR = 1+2+3: 137.5 ✓

WCBDA= 4: 11.3

SAMPLE ID: 20-22001-M26A- 1

Train Loaded By: DT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22001
Date:	JUNE 15, 20
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:	663.8
	Initial Wt:	765.3
	Final Wt:	890.6
1	Gain:	125.3
	Colour:	clear

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	673.3
	Initial Wt:	776.1
	Final Wt:	802.5
2	Gain:	26.4
	Colour:	clear

	Impinger #3 EMPTY	
	Empty Wt:	601.9
	Final Wt:	604.6
3	Gain:	2.7
	Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	280.0
With Imp. 1,2,3 Soln:	640.5
Imp. 1,2,3 Volume:	360.5
After Rinse:	703.6
Total TS3:	423.6

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	939.6
	Final Wt:	949.2
4	Gain:	~~8.6~~ 9.6

Box ID: ~~8~~ 12

CWTR = 1+2+3:	~~151.7~~ 154.4 ✓

WCBDA= 4:	~~8.6~~ 9.6

SAMPLE ID: 20-22001-M26A- 2

Train Loaded By: DT

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22001
Date:	JUNE 15, 20
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:	668.3
Initial Wt:	774.2
Final Wt:	897.8
1 Gain:	123.6
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.3
Initial Wt:	779.3
Final Wt:	798.5
2 Gain:	19.2 ~~21.2~~
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	581.1
Final Wt:	586.2
3 Gain:	5.1
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.1
With Imp. 1,2,3 Soln:	630.7
Imp. 1,2,3 Volume:	348.6
After Rinse:	722.2
Total TS3:	440.1

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	888.6
Final Wt:	897.0
4 Gain:	8.4

Box ID:

CWTR = 1+2+3: 147.9 ~~149.9~~ ~~49~~

WCBDA= 4: 8.4

SAMPLE ID: 20-22001-M26A- 3

Train Loaded By: DT

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22001
Date:	June 16 / 2020
Test No.:	1
Test Location:	#2 APC outlet

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	662.8
	Initial Wt:	762.8
	Final Wt:	~~292.8~~ 874.0
1	Gain:	111.2
	Colour:	clear

	Impinger #4 Silica Gel	
	Initial Wt:	949.2
	Final Wt:	957.5
4	Gain:	8.3

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	673.3
	Initial Wt:	773.8
	Final Wt:	792.8
2	Gain:	19.0
	Colour:	clear

Box ID: 1

	Impinger #3 EMPTY	
	Empty Wt:	601.9
	Final Wt:	605.1
3	Gain:	3.2
	Colour:	clear

CWTR = 1+2+3:	133.4
WCBDA= 4:	8.3

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.9
With Imp. 1,2,3 Soln:	616.1
Imp. 1,2,3 Volume:	333.2
After Rinse:	705.8
Total TS3:	422.9

SAMPLE ID: 20-22001-M26A-

Train Loaded By: DT

Train Recovered By: CB

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22001

Date: June 16, 2020

Test No.: 2

Test Location: # 2 APC outlet

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	668.3
Initial Wt:	768.4
Final Wt:	889.5
1 Gain:	121.1
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.3
Initial Wt:	777.2
Final Wt:	798.5
2 Gain:	21.3
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	581.1
Final Wt:	587.3
3 Gain:	6.2
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	278.5
With Imp. 1,2,3 Soln:	623.7
Imp. 1,2,3 Volume:	345.7
After Rinse:	741.7
Total TS3:	463.2

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	849.9
Final Wt:	862.4
4 Gain:	12.5

Box ID: 2

CWTR = 1+2+3: 148.6

WCBDA= 4: 12.5

SAMPLE ID: 20-22001-M26A-

Train Loaded By: DT

Train Recovered By: CB

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22001

Date: June 16 / 2020

Test No.: 3

Test Location: #2 APC outlet

Filter is used but not recovered as sample

Impingers 1, 2, 3

1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	662.9
Initial Wt:	766.2
Final Wt:	894.1
Gain:	127.9
Colour:	clear

2

Impinger #2 0.1 N H_2SO4	
Empty Wt:	673.7
Initial Wt:	770.7
Final Wt:	795.2
Gain:	24.5
Colour:	clear

3

Impinger #3 EMPTY	
Empty Wt:	602.1
Final Wt:	605.5
Gain:	3.4
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.1
With Imp. 1,2,3 Soln:	638.4
Imp. 1,2,3 Volume:	356.3
After Rinse:	745.5
Total TS3:	463.4

Impinger 4

4

Impinger #4 Silica Gel	
Initial Wt:	957.5
Final Wt:	966.4
Gain:	8.9

Box ID: 3

CWTR = 1+2+3: 155.8

WCBDA= 4: 8.9

SAMPLE ID: 20-22001-M26A-

Train Loaded By: CB.

Train Recovered By: CB.

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22001

Date: June 15 / 2020.

Test No.: Blank

Test Location: #1 APC outlet

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	668.0
Initial Wt:	771.4
Final Wt:	771.4
1 Gain:	0
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	679.0
Initial Wt:	766.5
Final Wt:	766.5
2 Gain:	0
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	581.5
Final Wt:	581.5
3 Gain:	
Colour:	—

CONTAINER TS3 WEIGHTS	
Empty Wt:	278.2
With Imp. 1,2,3 Soln:	468.8
Imp. 1,2,3 Volume:	190.6
After Rinse:	595.2
Total TS3:	317.0

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	862.4
Final Wt:	862.4
4 Gain:	0

Box ID: 1

CWTR = 1+2+3:

WCBDA= 4:

SAMPLE ID: 20-22001-M26A-

Train Loaded By: CB.

Train Recovered By: CB.

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22001

Date: June 16, 2020

Test No.: Blank

Test Location: #2 APC Outlet

Filter is used but not recovered as sample

Impingers 1, 2, 3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	670.0
	Initial Wt:	770.5
	Final Wt:	770.5
1	Gain:	0
	Colour:	clear

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	680.1
	Initial Wt:	780.8
	Final Wt:	780.8
2	Gain:	0
	Colour:	clear

	Impinger #3 EMPTY	
	Empty Wt:	583.2
	Final Wt:	583.2
3	Gain:	0
	Colour:	empty

CONTAINER TS3 WEIGHTS	
Empty Wt:	283.5
With Imp. 1,2,3 Soln:	486.6
Imp. 1,2,3 Volume:	203.1
After Rinse:	562.2
Total TS3:	278.7

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	862.4
	Final Wt:	862.4
4	Gain:	0

Box ID: 1

CWTR = 1+2+3:

WCBDA= 4:

SAMPLE ID: 20-22001-M26A-

Train Loaded By: CB

Train Recovered By: CB

APPENDIX 17

VOST Analytical Report
(4 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 Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2462316		
Date of Report	30-Jun-20		
Date of Sample Receipt	17-Jun-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260C**

Ketone data by VOST analyses are estimated values only

Cumene (isopropyl benzene) and mesitylene (1,3,5-trimethylbenzene) are outside the normal volatility range of VOST. Results may be biased low.

The ion abundance ratios for detected levels of styrene are not within the method control limits due to an interference affecting the secondary ion. The primary ion, used for quantification, is free from interference.

Certified by: [signature]
Steve Kennedy
Technical Supervisor

ALS Environmental

Sample Analysis Summary Report

Sample Name	20-22001-VOST-(7A,7B) TEST#1 APC OUTLET #1		20-22001-VOST-(8A,8B) TEST#2 APC OUTLET #1		20-22001-VOST-(9A,9B) TEST#3 APC OUTLET #1		20-22001-VOST-(11A,11B) FIELD BLANK APC OUTLET #1	
ALS Sample ID	L2462316-1		L2462316-2		L2462316-3		L2462316-5	
Sample units	sample		sample		sample		sample	
Matrix	VOST		VOST		VOST		VOST	
Sampling Date	17-Jun-20		17-Jun-20		17-Jun-20		17-Jun-20	
Extraction Date	24-Jun-20		24-Jun-20		24-Jun-20		24-Jun-20	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U	<0.09	U	<0.09	U
Trichlorofluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
1,1-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Acetone	<0.1	U	0.218		0.498		<0.1	U
Methylene Chloride	0.84		1.28		0.712		0.123	
trans,1,2-Dichloroethene	0.011		<0.01	U	<0.01	U	<0.01	U
2-Butanone	0.016		0.04		0.039	M	<0.01	U
Chloroform	0.011		0.022		<0.01	U	<0.01	U
1,1,1-Trichloroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Carbon Tetrachloride	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Benzene	<0.05	U	<0.05	U	<0.05	U	<0.05	U
1,2-Dichloroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Trichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Bromodichloromethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Toluene	0.451		0.493		0.336		<0.05	U
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Tetrachloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Ethylbenzene	0.08		0.146		0.059		<0.01	U
M&P-Xylene	0.679		0.895		0.437		<0.03	U
O-Xylene	0.212		0.279		0.011		<0.01	U
Styrene	0.035	R	0.042	R	<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Isopropylbenzene	<0.02	U	<0.02	U	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	0.052		0.06		<0.02	U	<0.02	U
1,3-Butadiene	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Field Standard	**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	91.1		70.8		104.4		101.1	
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	124.3		105.7		117.3		92.6	
d8-Toluene(SURR)	73.6		68.7		84.0		81.3	
4-Bromofluorobenzene(SURR)	94.9		91.3		64.5		97.7	
Internal Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Bromochloromethane	125.5		92.7		91.7		80.2	
1,4-Difluorobenzene	102.5		98.9		101.5		127.8	
d5-Chlorobenzene	122.5		129.5		71.8		126.4	

U Indicates that this compound was not detected above the RL.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Summary Report

Sample Name	20-22001-VOST (6A,6B) TEST#1 APC OUTLET #2		20-22001-VOST (5A,5B) TEST#2 APC OUTLET #2		20-22001-VOST (4A,4B) TEST#3 APC OUTLET #2		20-22001-VOST (2A,2B) FIELD BLANK APC OUTLET #2		20-22001-VOST (1A,1B) TRIP BLANK	
ALS Sample ID	L2462316-7		L2462316-8		L2462316-9		L2462316-11		L2462316-12	
Sample units	sample		sample		sample		sample		sample	
Matrix	VOST		VOST		VOST		VOST		VOST	
Sampling Date	17-Jun-20		17-Jun-20		17-Jun-20		17-Jun-20		17-Jun-20	
Extraction Date	29-Jun-20		29-Jun-20		29-Jun-20		24-Jun-20		24-Jun-20	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U	<0.09	U	<0.09	U	<0.09	U
Trichlorofluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
1,1-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Acetone	0.184		0.61		0.493		0.114		<0.1	U
Methylene Chloride	1.031		0.718		0.809		0.111		<0.1	U
trans,1,2-Dichloroethene	<0.01	U	0.017		0.012		<0.01	U	<0.01	U
2-Butanone	0.022		0.259		0.176		<0.01	U	<0.01	U
Chloroform	0.013		0.025		0.017		<0.01	U	<0.01	U
1,1,1-Trichloroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Carbon Tetrachloride	<0.01	U	0.014		<0.01	U	<0.01	U	<0.01	U
Benzene	0.053		0.087		0.051		<0.05	U	<0.05	U
1,2-Dichloroethane	<0.01	U	0.011		<0.01	U	<0.01	U	<0.01	U
Trichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Bromodichloromethane	<0.01	U	0.018		0.012		<0.01	U	<0.01	U
Toluene	0.362		0.665		0.476		<0.05	U	<0.05	U
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Tetrachloroethene	0.01		0.015		0.014		<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Ethylbenzene	0.108		0.181		0.126		<0.01	U	<0.01	U
M&P-Xylene	1.193		0.843		0.609		<0.03	U	<0.03	U
O-Xylene	0.379		0.267		0.191		<0.01	U	<0.01	U
Styrene	0.055	R	0.042	R	0.031	R	<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Isopropylbenzene	<0.02	U	0.025	R	<0.02	U	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	0.101		0.055		0.04		<0.02	U	<0.02	U
1,3-Butadiene	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Field Standard	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	71.9		128.4		102.6		100.7		79.6	
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	111.3	M	93.8		96.5		85.6		80.8	
d8-Toluene(SURR)	100.0		75.2		78.3		83.7		104.6	
4-Bromofluorobenzene(SURR)	105.9		91.4		88.5		106.6		91.4	
Internal Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Bromochloromethane	113.7		111.7	R	88.1		133.2		92.3	
1,4-Difluorobenzene	79.5		136.4		105.3		190.5		145.4	
d5-Chlorobenzene	67.2		116.0		133.2		156.8		82.5	

U Indicates that this compound was not detected above the RL.
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 Environmental

Sample Analysis Summary Report

Sample Name	Method Blank (June 24)		Method Blank (June 29)		Laboratory Control Sample (June 24)	Laboratory Control Sample (June 29)
ALS Sample ID	WG3348714-1		WG3348714-2		WG3348714-3	WG3348714-4
Sample units	sample		sample		n/a	n/a
Matrix	QC		QC		QC	QC
Sampling Date	n/a		n/a		n/a	n/a
Extraction Date	24-Jun-20		29-Jun-20		24-Jun-20	29-Jun-20
Target Analytes	**ug/sample**		**ug/sample**		**% Rec**	**% Rec**
Dichlorodifluoromethane	<0.02	U	<0.02	U	108.7	92.3
Vinyl Chloride	<0.02	U	<0.02	U	90.1	81.4
Bromomethane	<0.09	U	<0.09	U	93.7	101.6
Trichlorofluoromethane	<0.02	U	<0.02	U	109.9	109.3
1,1-Dichloroethene	<0.01	U	<0.01	U	91.6	86.7
Acetone	<0.1	U	<0.1	U	107.5	89.3
Methylene Chloride	<0.1	U	<0.1	U	89.9	102.9
trans,1,2-Dichloroethene	<0.01	U	<0.01	U	101.4	99.3
2-Butanone	<0.01	U	<0.01	U	95.6	63.3
Chloroform	<0.01	U	<0.01	U	96.5	107.0
1,1,1-Trichloroethane	<0.01	U	<0.01	U	119.4	101.7
Carbon Tetrachloride	<0.01	U	<0.01	U	100.4	83.2
Benzene	<0.05	U	<0.05	U	92.6	120.4
1,2-Dichloroethane	<0.01	U	<0.01	U	95.5	91.3
Trichloroethene	<0.01	U	<0.01	U	103.7	102.6
1,2-Dichloropropane	<0.01	U	<0.01	U	107.4	86.3
Bromodichloromethane	<0.01	U	<0.01	U	104.2	87.1
Toluene	<0.05	U	<0.05	U	82.5	91.4
1,1,2-Trichloroethane	<0.02	U	<0.02	U	107.7	92.4
Tetrachloroethene	<0.01	U	<0.01	U	88.1	95.0
Chlorodibromomethane	<0.01	U	<0.01	U	103.6	91.3
Ethylene Dibromide	<0.02	U	<0.02	U	108.2	87.0
Ethylbenzene	<0.01	U	<0.01	U	90.3	95.8
M&P-Xylene	<0.03	U	<0.03	U	88.6	108.5
O-Xylene	<0.01	U	<0.01	U	85.9	107.2
Styrene	<0.02	U	<0.02	U	87.0	110.7
Bromoform	<0.01	U	<0.01	U	111.1	93.4
Isopropylbenzene	<0.02	U	<0.02	U	88.1	101.1
1,3,5-Trimethylbenzene	<0.02	U	<0.02	U	84.5	118.7
1,3-Butadiene	<0.02	U	<0.02	U	NS	NS
Trichlorotrifluoroethane	<0.02	U	<0.02	U	NS	NS
Field Standard	**% Rec**		**% Rec**		**% Rec**	**% Rec**
d10-Ethylbenzene(SPK)	104.9		79.5		125.4	142.9
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**	**% Rec**
d4-1,2-Dichloroethane(SURR)	82.2		79.8		91.1	112.9
d8-Toluene(SURR)	68.3		74.0		93.1	109.4
4-Bromofluorobenzene(SURR)	90.5		108.1		104.7	82.8
Internal Standards	**% Rec**		**% Rec**		**% Rec**	**% Rec**
Bromochloromethane	131.4		78.6		124.0	101.0
1,4-Difluorobenzene	110.0		125.0		134.8	88.5
d5-Chlorobenzene	119.7		110.6		123.3	120.8

U Indicates that this compound was not detected above the RL.
NS Indicates that this compound was not spiked in.

APPENDIX 18

Aldehydes Recovery Data Sheet
(1 page)

L2463749

ORTECH Consulting Inc. - Recovery & Sample Log
NCASI Method ISS/FP-A105.01

Client: Covanata DYEC
~~Job/Report Number: 22001~~
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22001 - J2687

Test Number	Test Location	ORTECH Sample ID	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle	Initial Weight Sample Bottle + BHA	Final Weight of BHA Sample Bottle	Weight of Sample Bottle BHA & H2O	Weight of Sample Bottle BHA & H2O & Hexane
		20-22001-			(g)	(g)	(g)	(g)	(g)
1	APC Outlet #1	ALD-1	June 17/2020	ALD-1	112.4	162.8	165.5	178.0	189.6
2	APC Outlet #1	ALD-2	"	ALD-2	112.5	160.5	161.5	178.3	189.8
3	APC Outlet #1	ALD-3	"	ALD-3	111.9	160.5	163.8	179.1	190.8
Blank 1	APC Outlet #1	Blank 1	"	ALD-4	112.3	161.3	—	193.2	~~199.2~~ 200.5
1	APC Outlet #2	ALD-5	"	ALD-5	112.3	159.4	162.8	181.7	193.0
2	APC Outlet #2	ALD-6	"	ALD-6	111.7	162.0	164.4	180.2	192.4
3	APC Outlet #2	ALD-7	"	ALD-7	112.0	161.8	165.7	179.8	193.4
Blank 2	APC Outlet #2	~~Blank 2~~	"	ALD-8	112.1	162.0	162.0	179.9	191.7
		~~Blank 2~~		~~ALD-9~~	~~112.3~~	~~163.1~~	~~—~~	~~183.2~~	~~192.1~~
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				ALD-10	111.9	161.4			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: [signature] Date: June 19, 20

Relinquished to: Aaron Burton Date: 19-June-2020 11:25

23.6°C

APPENDIX 19

Aldehydes Analytical Report
(17 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#:	L2463749		Mississauga, ON
Date of Report	15-Jul-20		L5J 2Y4
Date of Sample Receipt	19-Jun-20	**Client Contact:**	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: **Aldehydes as benzyloxime derivatives by SIM GC/MS**

The observed levels of formaldehyde and acetaldehyde are similar to the levels observed in the laboratory and field blanks.
The levels of these targets in all samples are within a factor of 2 of the laboratory method blank indicating an absence of clear evidence for measurable levels of these aldehydes in the source emissions.

Due to the background of formaldehyde and acetaldehyde in the sample extracts, the LCS recoveries are estimated values.

Very low Trip Spike recoveries of acrolein indicates potential stability losses of this derivative during the transportation from the lab to the field and back.
Absence of measurable formaldehyde trip spike recoveries is likely due to obscured recoveries over and above the laboratory background.

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		20-22001-ALD-1 TEST#1 APC OUTLET #1		20-22001-ALD-2 TEST#2 APC OUTLET #1		20-22001-ALD-3 TEST#3 APC OUTLET #1		20-22001-ALD-BLANK 1 APC OUTLET #1		20-22001-ALD-5 TEST#1 APC OUTLET #2	
ALS Sample ID	WG3348149-1		L2463749-1		L2463749-2		L2463749-3		L2463749-4		L2463749-5	
Sample Size	1		1		1		1		1		1	
Sample units	n/a		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-20		17-Jun-20		17-Jun-20		17-Jun-20		17-Jun-20	
Extraction Date	6-Jul-20		6-Jul-20		6-Jul-20		6-Jul-20		6-Jul-20		6-Jul-20	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Formaldehyde	2.45		3.06	B	4.31	B	2.03	B	2.17	B	4.27	B
Acetaldehyde	5.56		6.02	B	8.42	B	5.84	B	7.2	B	8.37	B
Acrolein	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
Internal Standard Recovery												
d10-Anthracene	102.6		76.7		61.3		68.8		81.4		52.3	

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Summary Report

Sample Name	20-22001-ALD-6 TEST#2 APC OUTLET #2		20-22001-ALD-7 TEST#3 APC OUTLET #2		20-22001-ALD-BLANK 2 APC OUTLET #2		TRIP SPIKE SAMPLE (5 ug)		TRIP SPIKE BLANK SAMPLE		Laboratory Control Sample (5 ug)	
ALS Sample ID	L2463749-6		L2463749-7		L2463749-8		L2463749-9		L2463749-10		WG3348149-2	
Sample Size	1		1		1		1		1		1	
Sample units	Train		Train		Train		Train		Train		Train	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	Stack		Stack		Stack		Stack		Stack		QC	
Sampling Date	17-Jun-20		17-Jun-20		17-Jun-20		17-Jun-20		17-Jun-20		n/a	
Extraction Date	6-Jul-20		6-Jul-20		6-Jul-20		6-Jul-20		6-Jul-20		6-Jul-20	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**% Rec**		**ug/sample**		**% Rec**	
Formaldehyde	3.33	B	3.11	B	2.11	B	NA	B	2.46	B	140	B
Acetaldehyde	7.93	B	6.77	B	6.56	B	75	B	6.51	B	63	B
Acrolein	<0.1	U	<0.1	U	<0.1	U	2		<0.1	U	100	
Internal Standard Recovery												
d10-Anthracene	58.0		53.2		82.4		68.6		72.7		141.9	

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
U Indicates that this compound was not detected above the MDL.
NA Not observed over the laboratory background

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Sample Analysis Summary Report

Sample Name	**Laboratory Control Sample (2.5 ug)**	
ALS Sample ID	WG3348149-5	
Sample Size	1	
Sample units	Train	
Moisture Content	n/a	
Matrix	QC	
Sampling Date	n/a	
Extraction Date	6-Jul-20	
Target Analytes	**% Rec**	
Formaldehyde	159	B
Acetaldehyde	117	B
Acrolein	54	
Internal Standard Recovery		
d10-Anthracene	180.9	

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
U Indicates that this compound was not detected above the MDL.

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Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**		Sampling Date	n/a
ALS Sample ID	WG3348149-1		Extraction Date	6-Jul-20
Analysis Method	SIM GC/MS			
Analysis Type	blank			
Sample Matrix	QC			
Sample Size	1	n/a		
Percent Moisture	n/a			
Split Ratio	5			

Approved:
Andrew Reid
--e-signature--
15-Jul-2020

Run Information	**Run 1**	
Filename	20071409.D	
Run Date	7/14/2020 18:28	
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		9.53	2.45		
Acetaldehyde (B)		14.76	2.44		
Acetaldehyde (A)		15.10	3.12		
Acrolein (A)		NotFnd	<0.1	U	
Acrolein (B)		NotFnd	<0.1	U	
Total Aldehydes			**ug/sample**		
Formaldehyde			2.45		
Acetaldehyde			5.56		
Acrolein			<0.1		
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		102.6		50-200%

U Indicates that this compound was not detected above the MDL.

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Sample Analysis Report

Sample Name	**20-22001-ALD-1 TEST#1 APC OUTLET #1**	Sampling Date	17-Jun-20
ALS Sample ID	L2463749-1	Extraction Date	6-Jul-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20071417.D
Run Date	7/14/2020 23:49
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		9.56	3.06		
Acetaldehyde (B)		14.76	2.86		
Acetaldehyde (A)		15.10	3.16		
Acrolein (A)		19.32	<0.1	U	
Acrolein (B)		20.41	<0.1	U	
Total Aldehydes			**ug/sample**		
Formaldehyde			3.06	B	
Acetaldehyde			6.02	B	
Acrolein			<0.1		
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		76.7		50-200%

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.

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Sample Analysis Report

Sample Name	**20-22001-ALD-2 TEST#2 APC OUTLET #1**	Sampling Date	17-Jun-20
ALS Sample ID	L2463749-2	Extraction Date	6-Jul-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20071418.D
Run Date	7/15/2020 0:29
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		9.57	4.31		
Acetaldehyde (B)		14.73	3.59		
Acetaldehyde (A)		15.07	4.83		
Acrolein (A)		19.31	<0.1	U	
Acrolein (B)		20.41	<0.1	U	
Total Aldehydes			**ug/sample**		
Formaldehyde			4.31	B	
Acetaldehyde			8.42	B	
Acrolein			<0.1		
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		61.3		50-200%

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.

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Sample Analysis Report

Sample Name	**20-22001-ALD-3 TEST#3 APC OUTLET #1**	Sampling Date	17-Jun-20
ALS Sample ID	L2463749-3	Extraction Date	6-Jul-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20071419.D
Run Date	7/15/2020 1:10
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		9.53	2.03		
Acetaldehyde (B)		14.71	2.81		
Acetaldehyde (A)		15.06	3.03		
Acrolein (A)		19.29	<0.1	U	
Acrolein (B)		20.41	<0.1	U	
Total Aldehydes			**ug/sample**		
Formaldehyde			2.03	B	
Acetaldehyde			5.84	B	
Acrolein			<0.1		
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		68.8		50-200%

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.

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Sample Analysis Report

Sample Name	**20-22001-ALD-BLANK 1 APC OUTLET #1**	Sampling Date	17-Jun-20
ALS Sample ID	L2463749-4	Extraction Date	6-Jul-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20071410.D
Run Date	7/14/2020 19:08
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		9.53	2.17		
Acetaldehyde (B)		14.67	2.98		
Acetaldehyde (A)		15.03	4.22		
Acrolein (A)		19.28	<0.1	U	
Acrolein (B)		20.38	<0.1	U	
Total Aldehydes			**ug/sample**		
Formaldehyde			2.17	B	
Acetaldehyde			7.2	B	
Acrolein			<0.1		
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		81.4		50-200%

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.

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Sample Analysis Report

Sample Name	**20-22001-ALD-5 TEST#1 APC OUTLET #2**	Sampling Date	17-Jun-20
ALS Sample ID	L2463749-5	Extraction Date	6-Jul-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20071420.D
Run Date	7/15/2020 1:50
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		9.55	4.27		
Acetaldehyde (B)		14.71	4.01		
Acetaldehyde (A)		15.06	4.36		
Acrolein (A)		19.30	<0.1	U	
Acrolein (B)		20.40	<0.1	U	
Total Aldehydes			**ug/sample**		
Formaldehyde			4.27	B	
Acetaldehyde			8.37	B	
Acrolein			<0.1		
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		52.3		50-200%

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	**20-22001-ALD-6 TEST#2 APC OUTLET #2**	Sampling Date	17-Jun-20
ALS Sample ID	L2463749-6	Extraction Date	6-Jul-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20071421.D
Run Date	7/15/2020 2:30
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		9.55	3.33		
Acetaldehyde (B)		14.72	3.93		
Acetaldehyde (A)		15.07	4		
Acrolein (A)		19.31	<0.1	U	
Acrolein (B)		20.41	<0.1	U	
Total Aldehydes			**ug/sample**		
Formaldehyde			3.33	B	
Acetaldehyde			7.93	B	
Acrolein			<0.1		
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		58.0		50-200%

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	**20-22001-ALD-7 TEST#3 APC OUTLET #2**	Sampling Date	17-Jun-20
ALS Sample ID	L2463749-7	Extraction Date	6-Jul-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20071422.D
Run Date	7/15/2020 3:10
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		9.51	3.11		
Acetaldehyde (B)		14.68	2.85		
Acetaldehyde (A)		15.03	3.92		
Acrolein (A)		19.28	<0.1	U	
Acrolein (B)		20.38	<0.1	U	
Total Aldehydes			**ug/sample**		
Formaldehyde			3.11	B	
Acetaldehyde			6.77	B	
Acrolein			<0.1		
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		53.2		50-200%

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.

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Sample Analysis Report

Sample Name	**20-22001-ALD-BLANK 2 APC OUTLET #2**	Sampling Date	17-Jun-20
ALS Sample ID	L2463749-8	Extraction Date	6-Jul-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20071411.D
Run Date	7/14/2020 19:48
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		9.56	2.11		
Acetaldehyde (B)		14.73	2.8		
Acetaldehyde (A)		15.07	3.76		
Acrolein (A)		19.31	<0.1	U	
Acrolein (B)		20.41	<0.1	U	
Total Aldehydes			**ug/sample**		
Formaldehyde			2.11	B	
Acetaldehyde			6.56	B	
Acrolein			<0.1		
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		82.4		50-200%

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	**TRIP SPIKE SAMPLE**		Sampling Date	17-Jun-20
ALS Sample ID	L2463749-9		Extraction Date	6-Jul-20
Analysis Method	SIM GC/MS			
Analysis Type	LCS			
Sample Matrix	Stack			
Sample Size	1	Train		
Percent Moisture	n/a			
Split Ratio	5			

Approved:
Andrew Reid
--e-signature--
15-Jul-2020

Run Information	**Run 1**
Filename	20071414.D
Run Date	7/14/2020 21:49
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	5	9.55	46		
Acetaldehyde (B)	5	14.71	91		
Acetaldehyde (A)	5	15.06	95		
Acrolein (A)	5	19.30	1	M	
Acrolein (B)	5	20.40	1		
Total Aldehydes					
Formaldehyde			46	B	70-130
Acetaldehyde			186	B	70-130
Acrolein			2		70-130
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		68.6		50-200%

M Indicates that a peak has been manually integrated.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

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Sample Analysis Report

Sample Name	**TRIP SPIKE BLANK SAMPLE**	Sampling Date	17-Jun-20
ALS Sample ID	L2463749-10	Extraction Date	6-Jul-20
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--
15-Jul-2020

Run Information	**Run 1**
Filename	20071416.D
Run Date	7/14/2020 23:09
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		9.55	2.46		
Acetaldehyde (B)		14.73	3.12		
Acetaldehyde (A)		15.07	3.39		
Acrolein (A)		NotFnd	<0.1	U	
Acrolein (B)		NotFnd	<0.1	U	
Total Aldehydes			**ug/sample**		
Formaldehyde			2.46	B	
Acetaldehyde			6.51	B	
Acrolein			<0.1		
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		72.7		50-200%

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	WG3348149-2	Extraction Date	6-Jul-20
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
15-Jul-2020

Run Information	**Run 1**
Filename	20071406.D
Run Date	7/14/2020 16:27
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	RTX-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	5	9.54	140		
Acetaldehyde (B)	5	14.74	32		
Acetaldehyde (A)	5	15.09	31		
Acrolein (A)	5	19.28	51		
Acrolein (B)	5	20.38	49		
Total Aldehydes					
Formaldehyde			140	B	70-130
Acetaldehyde			63	B	70-130
Acrolein			100		70-130
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		141.9		50-200%

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	WG3348149-5		Extraction Date	6-Jul-20
Analysis Method	SIM GC/MS			
Analysis Type	LCS			
Sample Matrix	QC			
Sample Size	1	Train		
Percent Moisture	n/a			
Split Ratio	5			

Approved:
Andrew Reid
--e-signature--
15-Jul-2020

Run Information	**Run 1**
Filename	20071405.D
Run Date	7/14/2020 15:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	RTX-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	2.5	9.55	159		
Acetaldehyde (B)	2.5	14.79	50		
Acetaldehyde (A)	2.5	15.13	67		
Acrolein (A)	2.5	19.32	27		
Acrolein (B)	2.5	20.41	27		
Total Aldehydes					
Formaldehyde			159	B	70-130
Acetaldehyde			117	B	70-130
Acrolein			54		70-130
IS Recovery			**% Rec**		
d10-Anthracene	160143.1429		180.9		50-200%

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

APPENDIX 20

SVOC and VOST Proof Data
(12 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
ALS Project ID:	ORT100	Client Address:	804 Southdown Road
ALS WO#:	L2433713		Mississauga, ON
Date of Report	11-Jun-20		L5J 2Y4
Date of Sample Receipt	2-Apr-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: CB by LRGC/MS - Isotope dilution

Target analytes not detected.
Glassware is approved for the collection of samples for the analysis of chlorobenzenes.

Certified by: [signature]

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3332528-1		L2433713-57	
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	2-Jun-20		2-Jun-20	
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	103		82	
13C6-1,4-Dichlorobenzene	104		97	
13C6-1,2,3-Trichlorobenzene	109		99	
13C6-1,2,3,4-Tetrachlorobenzene	97		89	
13C6-Pentachlorobenzene	107		108	
13C6-Hexachlorobenzene	109		106	

U Indicates that this compound was not detected above the LOD.

ALS Environmental

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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#:	L2433713		Mississauga, ON
Date of Report	11-Jun-20		L5J 2Y4
Date of Sample Receipt	2-Apr-20	**Client Contact:**	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Target analytes not detected.
Glassware is approved for the collection of samples for the analysis of chlorophenols.

Certified by: Kennedy

Steve Kennedy
Technical Supervisor

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3332528-1		L2433713-57	
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	2-Jun-20		3-Jun-20	
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)	64		94	
13C6-2,4-Dichlorophenol (ES)	69		84	
13C6-2,4,5-Trichlorophenol (ES)	66		86	
13C6-2,3,4,5-Tetrachlorophenol (ES)	71		56	
13C6-Pentachlorophenol (ES)	46		14	

U Indicates that this compound was not detected above the LOR.

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Certificate of Analysis

ALS Project Contact:	Lynne Wrona	Client Name:	ORTECH
ALS Project ID:	ORT100	Client Address:	804 Southdown Road
ALS WO#:	L2433713		Mississauga, ON
Date of Report	4-Jun-20		L5J 2Y4
Date of Sample Receipt	2-Apr-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: **PCDD/F by EPA M23**

Proof consists of the pooled solvent rinses of 10 sets of sampling glassware.

Low target levels detected in the proof and blank.
Glassware is approved for the collection of sample for PCDD/F analysis.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis summary Report

Sample Name	Method Blank	GLASSWARE PROOF
ALS Sample ID	WG3332528-1	L2433713-57
Sample Size	1	1
Sample size units	sample	sample
Percent Moisture	n/a	n/a
Sample Matrix	QC	Media Prep
Sampling Date	n/a	n/a
Extraction Date	2-Jun-20	2-Jun-20
Target Analytes	pg	pg
2,3,7,8-TCDD	<1.3	<3.6
1,2,3,7,8-PeCDD	<1.6	<2.6
1,2,3,4,7,8-HxCDD	<1.8	<1.9
1,2,3,6,7,8-HxCDD	<2.5	<2.0
1,2,3,7,8,9-HxCDD	<2.9	<2.1
1,2,3,4,6,7,8-HpCDD	<4.7	5.72
OCDD	14.9	<10
2,3,7,8-TCDF	<1.1	<3.2
1,2,3,7,8-PeCDF	2.53	<2.4
2,3,4,7,8-PeCDF	<1.2	<2.2
1,2,3,4,7,8-HxCDF	<1.5	<1.9
1,2,3,6,7,8-HxCDF	2.87	<1.8
2,3,4,6,7,8-HxCDF	3.21	<2.2
1,2,3,7,8,9-HxCDF	3.31	<2.2
1,2,3,4,6,7,8-HpCDF	4.25	1.92
1,2,3,4,7,8,9-HpCDF	2.64	3.88
OCDF	8.07	9.82
Extraction Standards	% Rec	% Rec
13C12-2,3,7,8-TCDD	126	102
13C12-1,2,3,7,8-PeCDD	106	103
13C12-1,2,3,6,7,8-HxCDD	102	78
13C12-1,2,3,4,6,7,8-HpCDD	118	108
13C12-OCDD	92	103
13C12-2,3,7,8-TCDF	107	92
13C12-1,2,3,7,8-PeCDF	105	99
13C12-1,2,3,6,7,8-HxCDF	106	83
13C12-1,2,3,4,6,7,8-HpCDF	115	99
Homologue Group Totals	pg	pg
Total-TCDD	<1.3	<3.6
Total-PeCDD	<1.1	3.93
Total-HxCDD	<1.3	7.22
Total-HpCDD	<0.77	5.72
Total-TCDF	<1.1	<3.2
Total-PeCDF	2.53	<2.4
Total-HxCDF	9.38	<2.2
Total-HpCDF	6.88	5.80
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	1.09	0.118
Mid Point PCDD/F TEQ (WHO 2005)	4.67	4.77
Upper Bound PCDD/F TEQ (WHO 2005)	5.38	8.78

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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#:	L2433713		Mississauga, ON
Date of Report	8-Jun-20		L5J 2Y4
Date of Sample Receipt	2-Apr-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Certified by:

Ron McLeod, Ph.D.
Technical Director

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3332528-1		L2433713-57	
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	2-Jun-20		2-Jun-20	
Target Analytes	ng		ng	
Naphthalene	67.1	R	77.8	R,B
2-Methylnaphthalene	<10	U	<10	U
1-Methylnaphthalene	<10	U	<10	U
Acenaphthylene	<10	U	<10	U
Acenaphthene	<10	U	<10	U
Fluorene	42.4	R	67.5	R,B
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
Additional Analytes				
Tetralin	45.3	R	45.8	R,B
Quinoline	<10	U	<10	U
2-Chloronaphthalene	<10	U	<10	U
Biphenyl	<10	U	<10	U
o-Terphenyl	<10	U	<10	U
1-Methylphenanthrene	<10	U	<10	U
9-Methylphenanthrene	<10	U	<10	U
2-methylanthracene	<10	U	<10	U
9,10-dimethylanthracene	<10	U	<10	U
m-terphenyl	<10	U	<10	U
p-terphenyl	<10	U	<10	U
Benzo(a)fluorene	<10	U	<10	U
Benzo(b)fluorene	<10	U	<10	U
Benzo(b)anthracene	<10	U	<10	U
Benzo(j)fluoranthene	<10	U	<10	U
7,12-Dimethylbenzo(a)anthracene	<10	U	<10	U
3-Methylcholanthrene	<50	U	<50	U
Dibenz(a,j)acridine	<50	U	<50	U
7H-Dibenzo(c,g)carbazole	<50	U	<50	U
Picene	<50	U	<50	U
Dibenzo(a,e)pyrene	<50	U	<50	U
dibenzo(a,i)pyrene	<50	U	<50	U
Coronene	<50	U	<50	U
Extraction Standards	% Rec		% Rec	
Naphthalene D8	82.5	M	65.5	R
2-Methylnaphthalene-D10	94.1		76.9	
Acenaphthylene D8	89.2		71.8	
Phenanthrene D10	95.6		72.0	
Anthracene-D10	92.5		71.6	
Fluoranthene D10	92.3		84.2	
Benz(a)Anthracene-D12	58.7		70.0	
Chrysene D12	61.4		64.2	
Benzo(b)Fluoranthene-D12	72.4		58.0	
Benzo(k)Fluoranthene-D12	61.5		56.6	
Benzo(a)Pyrene D12	66.7		61.6	
Perylene D12	60.1		49.2	
Indeno(1,2,3,cd)Pyrene-D12	62.3		46.4	
Dibenz(a,h)Anthracene-D14	52.9		41.1	
Benzo(g,h,i)Perylene D12	61.8		47.1	

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.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

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Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2433713		Mississauga, ON
Date of Report	4-Jun-20		L5J 2Y4
Date of Sample Receipt	2-Apr-20	**Client Contact:**	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: **Toxic PCB Congeners by EPA 1668C**

Proof consists of the pooled solvent rinses of 10 sets of sampling glassware.
Low levels of selected targets were detected in the proof.
Glassware is approved for the collection of samples for Toxic PCB congener analysis.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank	GLASSWARE PROOF
ALS Sample ID	WG3332528-1	L2433713-57
Sample Size	1	1
Sample size units	Blank	Proof
Percent Moisture	n/a	n/a
Sample Matrix	QC	Media Prep
Sampling Date	n/a	n/a
Extraction Date	2-Jun-20	2-Jun-20
Target Analytes	pg	pg
PCB-081	<2.6	<2.6
PCB-077	<2.8	<4.1
PCB-123	<2.0	<2.5
PCB-118	<3.0	82.5
PCB-114	<2.1	<3.3
PCB-105	<2.1	33.4
PCB-126	<2.6	<2.9
PCB-167	<1.4	<1.6
PCB-156/157	<1.8	<3.2
PCB-169	<2.3	<2.0
PCB-189	<2.0	<1.7
Extraction Standards	% Rec	% Rec
13C12-PCB-081	105	81
13C12-PCB-077	105	87
13C12-PCB-123	100	83
13C12-PCB-118	102	84
13C12-PCB-114	97	62
13C12-PCB-105	94	75
13C12-PCB-126	88	78
13C12-PCB-167	111	97
13C12-PCB-156/157	101	88
13C12-PCB-169	87	91
13C12-PCB-189	82	90
Total PCB	3.00	3130
Toxic Equivalency - (WHO 2005)		
Lower Bound PCB TEQ	0.00	0.00348
Mid Point PCB TEQ	0.165	0.180
Upper Bound PCB TEQ	0.330	0.355

ALS Environmental

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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#:	L2433713		Mississauga, ON
Date of Report	5-Jun-20		L5J 2Y4
Date of Sample Receipt	2-Apr-20	Client Contact:	Chris Belore
		Client Project ID:	22001 Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260C**

Ketone data by VOST analyses are estimated values only

Target analytes were not detected in the proofs.
Media are approved for the collection of samples for the analysis of the reported targets via SW846 Method 5041A/8260C

Certified by: [signature]
Steve Kennedy
Technical Supervisor

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		VOST PROOF (1/2)		VOST PROOF (2/2)	
ALS Sample ID	WG3335883-1		L2433713-82		L2433713-83	
Sample units	sample		sample		sample	
Matrix	QC		Media Prep		Media Prep	
Sampling Date	n/a		n/a		n/a	
Extraction Date	5-Jun-20		5-Jun-20		5-Jun-20	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	<0.02	U	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U	<0.09	U
Trichlorofluoromethane	<0.02	U	<0.02	U	<0.02	U
1,1-Dichloroethene	<0.01	U	<0.01	U	<0.01	U
Acetone	<0.1	U	<0.1	U	<0.1	U
Methylene Chloride	<0.1	U	<0.1	U	<0.1	U
trans,1,2-Dichloroethene	<0.01	U	<0.01	U	<0.01	U
2-Butanone	<0.01	U	<0.01	U	<0.01	U
Chloroform	<0.01	U	<0.01	U	<0.01	U
1,1,1-Trichloroethane	<0.01	U	<0.01	U	<0.01	U
Carbon Tetrachloride	<0.01	U	<0.01	U	<0.01	U
Benzene	<0.05	U	<0.05	U	<0.05	U
1,2-Dichloroethane	<0.01	U	<0.01	U	<0.01	U
Trichloroethene	<0.01	U	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U	<0.01	U
Bromodichloromethane	<0.01	U	<0.01	U	<0.01	U
Toluene	<0.05	U	<0.05	U	<0.05	U
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<0.02	U
Tetrachloroethene	<0.01	U	<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U	<0.02	U
Ethylbenzene	<0.01	U	<0.01	U	<0.01	U
M&P-Xylene	<0.03	U	<0.03	U	<0.03	U
O-Xylene	<0.01	U	<0.01	U	<0.01	U
Styrene	<0.02	U	<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U	<0.01	U
Isopropylbenzene	<0.02	U	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	<0.02	U	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.02	U	<0.02	U	<0.02	U
Field Standard	**% Rec**		**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	101		96.6		80.1	
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	93.7		92.7		93.8	
d8-Toluene(SURR)	82.4		81		79.6	
4-Bromofluorobenzene(SURR)	128.7		121.4		101.5	
Internal Standards	**% Rec**		**% Rec**		**% Rec**	
Bromochloromethane	114.2		120.1		132.4	
1,4-Difluorobenzene	122.5		132.3		146.5	
d5-Chlorobenzene	113.9		131.7		144.5	

U Indicates that this compound was not detected above the RL.

APPENDIX 21

ORTECH Equipment Calibration Data
(29 pages)

ORTECH
Pitot Tube Calibration

Date	February 4, 2020
Probe/Pitot ID	S6
MII Number	B03767
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turjon
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	0.0030
(0.25")	9.75	0.230	0.315	0.854	0.0042
	11.59	0.325	0.450	0.849	0.0005
	14.16	0.485	0.670	0.850	0.0005
	16.01	0.620	0.860	0.849	0.0012
			Mean	0.850	0.0019
Without Nozzle	7.33	0.130	0.180	0.849	0.0004
	9.21	0.205	0.280	0.855	0.0062
	11.32	0.310	0.430	0.849	0.0003
	14.23	0.490	0.690	0.842	0.0067
	16.39	0.650	0.900	0.849	0.0004
			Mean	0.849	0.0028

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
Pitot Tube Calibration

Date	February 4, 2020
Probe/Pitot ID	S7
Mil Number	B03768
Calibrated Against	B02911
Cp standard	0.99948
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	7.33	0.130	0.180	0.849	0.0009
(0.25")	9.43	0.215	0.300	0.846	0.0042
	11.50	0.320	0.440	0.852	0.0020
	13.49	0.440	0.610	0.849	0.0015
	15.75	0.600	0.820	0.855	0.0046
			Mean	0.850	0.0027

Without Nozzle	7.47	0.135	0.190	0.842	0.0053
	9.32	0.210	0.295	0.843	0.0045
	11.32	0.310	0.430	0.849	0.0009
	14.09	0.480	0.660	0.852	0.0046
	16.08	0.625	0.860	0.852	0.0043
			Mean	0.848	0.0039

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
Pitot Tube Calibration

Date	February 4, 2020
Probe/Pitot ID	S9
MII Number	B03770
Calibrated Against	B02911
Cp standard	0.99948
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 (0.25")	7.33	0.130	0.180	0.849	0.0014
	9.09	0.200	0.280	0.845	0.0033
	11.32	0.310	0.430	0.849	0.0007
	13.79	0.460	0.640	0.847	0.0006
	15.75	0.600	0.830	0.850	0.0018
			Mean	0.848	0.0016

Without Nozzle	7.04	0.120	0.165	0.852	0.0013
	9.32	0.210	0.290	0.851	0.0005
	11.14	0.300	0.420	0.845	0.0063
	13.64	0.450	0.620	0.851	0.0005
	16.01	0.620	0.845	0.856	0.0051
			Mean	0.851	0.0027

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
Pitot Tube Calibration

Date	February 4, 2020
Probe/Pitot ID	S10
MII Number	B03771
Calibrated Against	B02911
Cp standard	0.99948
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	7.33	0.130	0.180	0.849	0.0011
(0.25")	9.32	0.210	0.290	0.851	0.0022
	11.41	0.315	0.440	0.846	0.0026
	14.16	0.485	0.680	0.844	0.0042
	15.88	0.610	0.840	0.852	0.0034
			Mean	0.848	0.0027

Without Nozzle	7.33	0.130	0.180	0.849	0.0023
	9.32	0.210	0.295	0.843	0.0038
	11.32	0.310	0.430	0.849	0.0016
	14.38	0.500	0.700	0.845	0.0024
	16.39	0.650	0.900	0.849	0.0023
			Mean	0.847	0.0025

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
Pitot Tube Calibration

Date	February 5, 2020
Probe/Pitot ID	PM 10 2.5
MII Number	COE 20132
Calibrated Against	B02911
Cp standard	0.99948
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	7.33	0.130	0.180	0.849	0.0014
	9.09	0.200	0.280	0.845	0.0033
	11.50	0.320	0.440	0.852	0.0044
	13.49	0.440	0.620	0.842	0.0060
	15.69	0.595	0.820	0.851	0.0034
			Mean	0.848	0.0037

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 Mil Number	COE 20094
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	28.55	in Hg
Theoretical Critical Vacuum	13.5	in Hg
System Leak Check	<0.001 cfm @ 26" Hg	
Calibration Date	April 7, 2020	
Calibration Technician	David Utley	
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	42.600	45.010	64.0	64.0	UR-40	0.2352	67.0	65.0	22.5
16.0	0.55	45.100	51.920	64.0	64.5	UR-48	0.3308	66.0	65.0	21.0
10.5	1.10	52.400	58.525	64.5	64.5	UR-55	0.4520	66.0	64.0	19.0
9.5	1.90	35.100	42.175	64.0	64.0	UR-63	0.5874	68.0	67.0	17.0
8.0	3.50	59.000	67.290	64.5	66.0	UR-73	0.8107	65.0	65.0	14.0

Results

Standardized Data				Dry Gas Meter				
Dry Gas Meter		Critical Orifice		Calibration Factor		Flowrate	DH @	
				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	
2.319	0.290	2.342	0.293	1.010	0.002	0.293	1.706	-0.165
6.564	0.410	6.592	0.412	1.004	-0.003	0.412	1.823	-0.048
5.900	0.562	5.914	0.563	1.002	-0.005	0.563	1.951	0.080
6.836	0.720	6.937	0.730	1.015	0.007	0.730	2.005	0.134
8.024	1.003	8.081	1.010	1.007	-0.001	1.010	1.929	0.058
			DGMCF	1.008			1.871	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 7, 2020
Calibrated By	David Utley
Reviewed and Accepted By	D. Utley

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	N/A	0.0
70	70		0.0
100	100		0.0
200	200		0.0
250	251		-0.4
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	700		0.0
800	800		0.0
900	900		0.0
1000	1001		-0.1
1100	1101		-0.1
1200	1200		0.0
1250	1251		-0.1

$$\% \text{ Difference} = \frac{\text{(calibrator - after adjustment reading)}}{\text{calibrator}} \times 100$$

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 7, 2020	Calibrated By	David Utley
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 Before Adjustment	After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.235	N/A	0.240	2.1
0-1.0	0.560		0.565	0.9
	0.925		0.930	0.5
	2.40		2.40	0.0
1.0-10.0	4.65		4.70	1.1
	7.30		7.32	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 Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 4
Date	January 23rd, 2020
Barometric Pressure	29.88
System Leak Check	NDL @ 22 "Hg

MII NUMBERS	
DGM	COE 20090
Gasometer	A01463
Barometer	COE20028

Calibrated By	Keagan Connell
signature	K. Connell
Reviewed and Accepted By	CHRIS BEL...

$ft^3 =$ cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Make sure to inspect pump before each calibration

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F	Factor	min.
71.40	6.50	64.90	3.053	18.0	603.192	606.236	3.044	68.5	0.82	68	1.009	6
71.80	6.80	65.00	3.058	18.0	606.236	609.265	3.029	69.5	0.82	68	1.017	6
71.60	6.50	65.10	3.062	18.0	609.265	612.298	3.033	69.5	0.82	68	1.017	6
71.90	8.60	63.30	2.978	18.0	583.926	586.897	2.971	67	1.8	67	1.003	4
72.50	8.30	64.20	3.020	18.0	586.897	589.913	3.016	67	1.8	67	1.002	4
71.80	7.20	64.60	3.039	18.0	589.913	592.941	3.028	67	1.8	67	1.004	4
72.00	5.30	66.70	3.138	18.0	574.450	577.562	3.112	65.5	3.4	65	1.002	3
72.10	7.00	65.10	3.062	18.0	577.562	580.601	3.039	66	3.4	66	1.002	3
72.00	6.70	65.30	3.072	18.0	580.601	583.646	3.045	66.5	3.4	66	1.004	3

DGMCF AVERAGE: 1.007

BEFORE: 1.006

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 Environmental
Manometer Calibration Data

Date	January 23rd, 2020	Calibrated By	Keagan Connell
Manometer Number	Team 4	Signature	K. Connell
Manometer MII Number	COE 20090	Reviewed/Accepted By	CHRIS BELORE
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_20	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.283	N/A	0.286	1.0
0-1.0	0.545		0.545	0.0
	0.929		0.926	-0.3
	2.53		2.500	-1.2
1.0-10.0	4.70		4.730	0.6
	7.60		7.650	0.7

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

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 Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP 116
MII	COE 20090
Date	January 23rd, 2020
Calibrated By	Keagan Connell
Signature	K. Connell
Reviewed and Accepted By	CHRIS BELORE

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	N/A	0.0
70	70		0.0
100	100		0.0
200	202		-1.0
250	252		-0.8
300	302		-0.7
400	400		0.0
500	499		0.2
600	600		0.0
700	702		-0.3
800	801		-0.1
900	901		-0.1
1000	1002		-0.2
1100	1102		-0.2
1200	1202		-0.2
1250	1251		-0.1

$$\% \text{ Difference} = \frac{\text{(micromite - after adjustment reading)}}{\text{micromite}} \times 100$$

Acceptance Criteria:
'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the micromite value at each output. Oth
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 Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 2
Meter Mll Number	COE 20092
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	28.55	in Hg
Theoretical Critical Vacuum	13.5	in Hg
System Leak Check	<0.001 cfm @ 25" Hg	
Calibration Date	April 7, 2020	
Calibration Technician	David Utley	
Reviewed and Accepted By		

Factors/Conversions		
Std Temp	528	^oR
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	^oF	^oF			^oF	^oF	in Hg
11.0	0.27	36.500	39.860	65.0	64.5	UR-40	0.2352	67.0	65.0	23.0
9.0	0.54	40.100	43.950	64.5	65.0	UR-48	0.3308	66.0	65.0	22.0
9.0	1.00	44.500	49.765	65.5	65.5	UR-55	0.4520	65.0	65.0	20.5
13.0	1.80	50.500	60.385	65.5	66.5	UR-63	0.5874	65.0	65.0	19.0
12.0	3.40	61.600	74.150	66.5	68.0	UR-73	0.8107	65.0	65.0	16.5

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	
3.228	0.293	3.221	0.293	0.998	-0.003	0.293	1.772	-0.034
3.702	0.411	3.708	0.412	1.002	0.001	0.412	1.790	-0.017
5.061	0.562	5.069	0.563	1.002	0.001	0.563	1.773	-0.033
9.512	0.732	9.515	0.732	1.000	0.000	0.732	1.890	0.084
12.097	1.008	12.122	1.010	1.002	0.001	1.010	1.874	0.068
			DGMCF	1.001			1.806	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 7, 2020
Calibrated By	David Utley
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	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	700		0.0
800	800		0.0
900	900		0.0
1000	1001		-0.1
1100	1101		-0.1
1200	1200		0.0
1250	1251		-0.1

$$\% \text{ Difference} = \frac{(\text{calibrator - after adjustment reading})}{\text{calibrator}} \times 100$$

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 7, 2020	Calibrated By	David Utley
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 Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.215		0.220	2.3
0-1.0	0.515		0.520	1.0
	0.895		0.900	0.6
	2.75		2.74	-0.4
1.0-10.0	5.23		5.24	0.2
	9.56		9.60	0.4

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

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 Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	M05498
Date	June 3, 2020
Barometric Pressure	29.29
System Leak Check	< 0.01 lpm @ 22' Hg

MII NUMBERS	
DGM	M05498
Gasometer	A01463
Barometer	COE 20028

Calibrated By	JB
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^{\circ}F+460}{Tstd\ ^{\circ}F+460} \quad \frac{Pbar\ (\text{"Hg})}{(Pbar\ \text{"Hg}+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C		min.	lpm
59.00	51.70	7.30	0.343	21.0	576.00	585.93	0.350	22.0	1.2	22.0	0.980	20	0.5
51.70	44.20	7.50	0.353	21.0	585.93	596.20	0.363	24.0	1.2	24.0	0.980	20	0.5
44.20	36.30	7.90	0.372	21.5	596.20	606.93	0.379	24.0	1.2	24.0	0.986	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
0.5Lpm 0.982

ORTECH Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 3
Date	June 8, 2020
Barometric Pressure	29.80
System Leak Check	< 0.01 LPM @ 20" Hg

MII NUMBERS	
DGM	A12010
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Utley
Signature	
Reviewed and Accepted By	

$ft^3 =$ cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^{o}F+460}{Tstd\ ^{o}F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg + DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C		min.	lpm
54.10	45.00	9.10	0.428	22.0	46.50	58.54	0.425	26.0	0.7	26.0	1.019	20	0.6
45.20	37.00	8.20	0.386	22.5	58.54	69.58	0.390	29.0	0.6	29.0	1.010	20	0.6
37.00	29.10	7.90	0.372	23.0	69.58	80.20	0.375	32.0	0.5	32.0	1.020	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 1.016

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03-J005
Trendicator Type	Nutech
MII	A12010
Date	June 8, 2020
Calibrated By	JB
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
10	10		0.0
20	20		0.0
50	50		0.0
75	75		0.0
100	100		0.0
125	125		0.0
150	150		0.0
200	200		0.0
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

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)

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22001	Date:	June 15, 2020
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	1.008 C		
High	90.09 A2	90.8 B2			
Mid	50.4 A4	50.1 B4		50.8 D4	-1.4 E4
Low	30.51 A3	30.08 B3		30.8 D3	-2.2 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	30.08	30.5	-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:	22001	Date:	June 15, 2020
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	1.008 C		
High	90.09 A2	90.8 B2			
Mid	50.4 A4	50.1 B4		50.8 D4	-1.4 E4
Low	30.51 A3	30.08 B3		30.8 D3	-2.2 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	0.75	-0.65
Mid	30.45	30.8	-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:	22001	Date:	June 15, 2020
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	1.008 C		
High	90.09 A2	90.8 B2			
Mid	50.4 A4	50.1 B4		50.8 D4	-1.4 E4
Low	30.51 A3	30.08 B3		30.8 D3	-2.2 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	0.75	0	0.75
Mid	30.83	29.8	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	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:	22001	Date:	June 15, 2020
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 C		
High	90.09 A2	90.3 B2			
Mid	50.4 A4	51.53 B4		50.5 D4	2.0 E4
Low	30.51 A3	30.55 B3		30.6 D3	-0.1 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	0.6	-0.6
Mid	30.55	30.7	-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:	22001	Date:	June 15, 2020
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 C		
High	90.09 A2	90.3 B2			
Mid	50.4 A4	51.53 B4		50.5 D4	2.0 E4
Low	30.51 A3	30.55 B3		30.6 D3	-0.1 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	0.6	0.7	-0.1
Mid	30.7	30.7	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	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:	22001	Date:	June 15, 2020
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 C		
High	90.09 A2	90.3 B2			
Mid	50.4 A4	51.53 B4		50.5 D4	2.0 E4
Low	30.51 A3	30.55 B3		30.6 D3	-0.1 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	0.7	0.43	0.27
Mid	30.73	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:	22001	Date:	June 15, 2020
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 C		
High	90.09 A2	90.4 B2			
Mid	50.4 A4	51 B4		50.5 D4	1.1 E4
Low	30.51 A3	30.5 B3		30.5 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	0.5	-0.3
Mid	30.5	30.1	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	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:	22001	Date:	June 16, 2020
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 C		
High	90.09 A2	90.4 B2			
Mid	50.4 A4	51 B4		50.5 D4	1.1 E4
Low	30.51 A3	30.5 B3		30.5 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	0.6	0.38	0.22
Mid	30.65	31.2	-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:	22001	Date:	June 16, 2020
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 C		
High	90.09 A2	90.4 B2			
Mid	50.4 A4	51 B4		50.5 D4	1.1 E4
Low	30.51 A3	30.5 B3		30.5 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	0.38	0.4	-0.02
Mid	31.2	30.6	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: 22001		Date:	June 15, 2020
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	0.1 B1	1.002 C		
High	90.09 A2	90.4 B2			
Mid	50.4 A4	50.5 B4		50.5 D4	0.0 E4
Low	30.51 A3	30.3 B3		30.6 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	0.1	0.25	-0.15
Mid	30.3	30.0	0.3

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:	22001	Date:	June 15, 2020
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	0.1 B1	1.002 C		
High	90.09 A2	90.4 B2			
Mid	50.4 A4	50.5 B4		50.5 D4	0.0 E4
Low	30.51 A3	30.3 B3		30.6 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	0.25	0.22	0.03
Mid	30	29.6	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:	22001	Date:	June 15, 2020
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	0.1 B1	1.002 C		
High	90.09 A2	90.4 B2			
Mid	50.4 A4	50.5 B4		50.5 D4	0.0 E4
Low	30.51 A3	30.3 B3		30.6 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	0.22	0.3	-0.08
Mid	29.55	30.3	-0.8

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**

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, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.85
DGM CORRECTION FACTOR	1.001
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	3.639 m^3
AVGERGE ISOKINETICITY	99.1 %
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	139.4 °C
AVERAGE GAS MOISTURE BY VOLUME	15.1 %
AVERAGE GAS VELOCITY	17.13 m/s
BAROMETRIC PRESSURE (Station)	102.100 Kpa
STATIC PRESSURE	-2.121 Kpa
ABSOLUTE GAS PRESSURE	99.978 Kpa
OXYGEN CONCENTRATION	8.66 %
CARBON DIOXIDE CONCENTRATION	10.46 %
CARBON MONOXIDE CONCENTRATION	10.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.31 m^3/s
DRY REF GAS FLOWRATE	15.32 Rm^3/s
DRY ADJ GAS FLOWRATE	18.94 Rm^3/s
WET REF GAS FLOWRATE	18.05 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.7 mg
	-FILTER	4.8 mg
	-TOTAL	5.5 mg
DRY REF GAS VOLUME SAMPLED		3.639 m^3
PARTICULATE CONC. - ACTUAL		0.915 mg/m^3
PARTICULATE CONC. - DRY REF		1.511 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.222 mg/m^3
PARTICULATE CONC. - WET REF		1.283 mg/m^3
PARTICULATE EMISSION RATE		0.023147 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, 2020	**Operator:**	JB

Pitot Factor	0.85	Filter (mg)	4.8
DGMCF	1.001	Probe (mg)	0.7
Barometric Pressure	30.15 "Hg	CWTR (g)	456.1
Static Pressure	-8.520 "H_2O	WCBDA (g)	20.3
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	1.56 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%	8.66
CO2%	10.46
COppm	10.8

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	313.96	0.63	279	55	72	72	1.5	3.0		16.50	
	2.5	315.65	0.64	269	53	72	73	1.5	3.0		16.52	99.0
	5	317.33	0.65	269	52	72	73	1.55	3.0		16.65	96.9
2	7.5	319.02	0.64	273	50	72	73	1.55	3.0		16.57	96.7
	10	320.72	0.63	268	49	72	74	1.55	3.0		16.38	98.3
	12.5	322.40	0.61	273	49	72	74	1.55	3.0		16.17	97.5
3	15	324.08	0.67	275	49	72	74	1.65	3.0		16.97	99.4
	17.5	325.82	0.66	286	49	73	75	1.65	3.0		16.97	98.4
	20	327.56	0.68	286	49	73	76	1.7	3.0		17.23	99.7
4	22.5	329.34	0.69	286	49	73	77	1.7	3.0		17.35	100.4
	25	331.12	0.66	287	49	73	77	1.65	3.0		16.98	99.6
	27.5	332.87	0.67	286	50	73	76	1.65	3.0		17.10	100.2
5	30	334.63	0.65	286	49	76	78	1.6	3.0		16.84	100.0
	32.5	336.34	0.64	286	48	74	78	1.6	3.0		16.71	98.2
	35	338.04	0.64	285	48	74	78	1.6	3.0		16.70	98.6
6	37.5	339.76	0.6	285	47	74	79	1.5	3.0		16.17	99.6
	40	341.43	0.6	284	52	76	77	1.5	3.0		16.16	99.8
	42.5	343.11	0.61	285	47	76	77	1.5	3.0		16.30	100.3
7	45	344.76	0.55	285	44	76	77	1.4	3.0		15.48	97.8
	47.5	346.39	0.56	284	42	76	78	1.4	3.0		15.61	101.7
	50	348.01	0.56	284	42	77	78	1.4	3.0		15.61	100.0
8	52.5	349.63	0.59	284	42	77	78	1.5	3.0		16.02	99.9
	55	351.27	0.62	285	42	77	79	1.6	3.0		16.44	98.6
	57.5	352.99	0.62	284	42	77	79	1.5	3.0		16.43	100.9
9	60	354.65	0.64	284	42	77	80	1.6	3.0		16.69	97.3
	62.5	356.39	0.63	284	42	77	80	1.55	3.0		16.56	100.3
	65	358.09	0.62	284	42	77	80	1.55	3.0		16.43	98.7
10	67.5	359.78	0.65	284	42	77	80	1.6	3.0		16.82	98.9
	70	361.52	0.68	284	42	77	81	1.7	3.0		17.20	99.5
	72.5	363.27	0.67	284	42	77	82	1.7	3.0		17.08	97.8
11	75	365.02	0.66	284	42	77	81	1.7	3.0		16.95	98.4

ORTECH Environmental

Plant:	Covanta DYEC	Plant Location:	Courtice, ON
Test No.:	1 Particulate & Metals	Test Location:	APC Outlet No. 1
Date:	June 15, 2020	Operator:	JB

Pitot Factor	0.85	Filter (mg)	4.8
DGMCF	1.001	Probe (mg)	0.7
Barometric Pressure	30.15 "Hg	CWTR (g)	456.1
Static Pressure	-8.520 "H_2O	WCBDA (g)	20.3
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	1.56 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%	8.66
CO2%	10.46
COppm	10.8

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 %
	77.5	366.72	0.68	283	43	77	82	1.75	3.0		17.19	96.4
	80	368.42	0.67	284	43	77	82	1.75	3.0		17.08	94.8
12	82.5	370.24	0.69	284	43	78	82	1.75	3.5		17.33	102.4
	85	371.97	0.72	283	43	79	83	1.8	4.5		17.69	95.8
	87.5	373.79	0.71	284	44	79	83	1.8	4.5		17.58	98.4
	90	375.65								1.56		101.3
1	0	377.21	0.65	283	58	77	78	1.6	3.0		16.81	
	2.5	378.97	0.66	283	58	77	78	1.6	3.0		16.94	100.8
	5	380.73	0.66	283	55	77	78	1.6	3.0		16.94	100.0
2	7.5	382.49	0.66	283	51	77	78	1.6	3.0		16.94	100.0
	10	384.24	0.66	283	49	77	78	1.6	3.0		16.94	99.4
	12.5	386.00	0.66	283	48	77	78	1.6	3.0		16.94	100.0
3	15	387.75	0.71	283	48	77	78	1.7	3.0		17.57	99.4
	17.5	389.54	0.71	283	48	77	79	1.7	3.0		17.57	98.1
	20	391.35	0.72	283	48	78	79	1.7	3.0		17.69	99.1
4	22.5	393.13	0.73	283	48	77	80	1.8	3.0		17.81	96.7
	25	394.98	0.7	283	47	77	80	1.7	3.0		17.44	99.8
	27.5	396.77	0.69	284	48	78	81	1.7	3.0		17.33	98.6
5	30	398.54	0.7	284	48	78	81	1.7	3.0		17.45	98.1
	32.5	400.33	0.68	284	47	78	82	1.7	3.0		17.20	98.5
	35	402.12	0.66	284	47	78	83	1.6	3.0		16.95	99.8
6	37.5	403.87	0.65	284	47	78	83	1.6	3.0		16.82	98.9
	40	405.61	0.65	285	47	78	83	1.6	3.0		16.83	99.1
	42.5	407.34	0.64	285	47	79	84	1.6	3.0		16.70	98.6
7	45	409.07	0.59	284	46	79	84	1.5	3.0		16.02	99.2
	47.5	410.76	0.59	285	46	80	84	1.5	3.0		16.04	100.8
	50	412.43	0.58	284	47	79	85	1.45	3.0		15.89	99.6
8	52.5	414.09	0.66	284	48	79	84	1.65	3.0		16.95	99.8
	55	415.85	0.66	284	48	79	85	1.65	3.0		16.95	99.3
	57.5	417.61	0.65	284	48	79	85	1.65	3.0		16.82	99.2
9	60	419.37	0.75	284	49	80	86	1.85	3.3		18.07	100.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2020	**Operator:**	JB

Pitot Factor	0.85	Filter (mg)	4.8
DGMCF	1.001	Probe (mg)	0.7
Barometric Pressure	30.15 "Hg	CWTR (g)	456.1
Static Pressure	-8.520 "H_2O	WCBDA (g)	20.3
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	1.56 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%	8.66
CO2%	10.46
COppm	10.8

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 %
	62.5	421.23	0.74	284	49	80	86	1.85	3.3		17.95	98.3
	65	423.10	0.74	284	49	80	87	1.85	3.3		17.95	99.4
10	67.5	424.97	0.84	284	49	81	87	2.05	3.5		19.12	99.4
	70	426.93	0.82	284	50	81	87	2.05	3.5		18.89	97.7
	72.5	428.88	0.81	284	52	81	87	2	3.5		18.78	98.4
11	75	430.83	0.84	284	52	81	87	2.1	3.5		19.12	99.0
	77.5	432.82	0.84	283	52	81	88	2.1	3.5		19.11	99.2
	80	434.81	0.84	283	53	82	87	2.1	3.5		19.11	99.1
12	82.5	436.80	0.84	284	54	82	88	2.1	3.5		19.12	99.1
	85	438.80	0.83	283	52	82	88	2.1	3.5		18.99	99.5
	87.5	440.78	0.83	284	52	82	88	2.1	3.5		19.01	99.1
	90	442.76										99.1

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - Particulate & Metals
Date:	June 17 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.85
DGM CORRECTION FACTOR	1.008
NOZZLE DIAMETER	6.35 mm
DRY REF GAS VOLUME SAMPLED	3.656 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 °C
AVERAGE GAS MOISTURE BY VOLUME	15.2 %
AVERAGE GAS VELOCITY	17.98 m/s
BAROMETRIC PRESSURE (Station)	101.490 Kpa
STATIC PRESSURE	-1.942 Kpa
ABSOLUTE GAS PRESSURE	99.548 Kpa
OXYGEN CONCENTRATION	8.93 %
CARBON DIOXIDE CONCENTRATION	10.60 %
CARBON MONOXIDE CONCENTRATION	18.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.56 m^3/s
DRY REF GAS FLOWRATE	15.93 Rm^3/s
DRY ADJ GAS FLOWRATE	19.26 Rm^3/s
WET REF GAS FLOWRATE	18.79 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.2 mg
	-FILTER	4.4 mg
	-TOTAL	6.6 mg
DRY REF GAS VOLUME SAMPLED		3.656 m^3
PARTICULATE CONC. - ACTUAL		1.083 mg/m^3
PARTICULATE CONC. - DRY REF		1.805 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.493 mg/m^3
PARTICULATE CONC. - WET REF		1.531 mg/m^3
PARTICULATE EMISSION RATE		0.028766 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 17 2020	**Operator:**	RW

Pitot Factor	0.85	Filter (mg)	4.4
DGMCF	1.008	Probe (mg)	2.2
Barometric Pressure	29.97 "Hg	CWTR (g)	461.5
Static Pressure	-7.800 "H_2O	WCBDA (g)	19.5
Nozzle	0.2501 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.38 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%	8.93
CO2%	10.60
COppm	18.2

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	329.82	0.76	286	74	74	74	1.8	2.5		18.24	
	2.5	331.54	0.76	286	57	75	75	1.8	2.5		18.24	95.5
	5	333.33	0.75	286	57	75	75	1.8	2.5		18.12	99.2
2	7.5	335.13	0.75	286	55	76	75	1.8	2.5		18.12	100.4
	10	336.93	0.76	286	55	76	75	1.8	2.5		18.24	100.3
	12.5	338.72	0.76	286	55	76	75	1.8	2.5		18.24	99.1
3	15	340.51	0.76	286	55	76	75	1.8	2.5		18.24	99.1
	17.5	342.30	0.75	287	53	77	75	1.8	2.5		18.14	99.1
	20	344.06	0.75	286	50	77	75	1.8	2.5		18.12	98.1
4	22.5	345.83	0.79	286	50	78	75	1.8	2.5		18.60	98.5
	25	347.60	0.79	286	50	78	75	1.8	2.5		18.60	95.9
	27.5	349.40	0.77	288	50	80	76	1.8	2.5		18.39	97.6
5	30	351.19	0.75	288	50	80	76	1.8	2.5		18.15	98.1
	32.5	352.96	0.75	289	51	82	78	1.8	2.5		18.16	98.3
	35	354.74	0.75	289	51	82	78	1.8	2.5		18.16	98.6
6	37.5	356.56	0.76	287	49	81	77	1.8	2.5		18.26	100.8
	40	358.33	0.76	287	49	81	77	1.8	2.5		18.26	97.4
	42.5	360.15	0.72	287	49	80	77	1.8	2.5		17.77	100.2
7	45	361.93	0.73	287	49	80	77	1.8	2.5		17.89	100.7
	47.5	363.72	0.65	288	51	81	77	1.7	2.5		16.90	100.6
	50	365.48	0.65	288	51	81	77	1.6	2.5		16.90	104.8
8	52.5	367.18	0.64	287	52	82	78	1.6	2.5		16.75	101.2
	55	368.86	0.69	287	52	82	78	1.7	2.5		17.40	100.5
	57.5	370.61	0.68	287	52	83	78	1.7	2.5		17.27	100.9
9	60	372.37	0.69	287	52	83	78	1.7	2.5		17.40	102.1
	62.5	374.15	0.75	286	51	82	79	1.8	2.5		18.12	102.5
	65	375.93	0.72	286	51	82	79	1.8	2.5		17.76	98.3
10	67.5	377.72	0.77	286	51	83	79	1.8	2.5		18.36	100.9
	70	379.58	0.8	286	51	83	79	1.9	2.5		18.72	101.3
	72.5	381.37	0.8	286	52	83	79	1.9	2.5		18.72	95.6
11	75	383.23	0.77	286	52	83	79	1.8	2.5		18.36	99.4

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 17 2020	**Operator:**	RW

Pitot Factor	0.85	Filter (mg)	4.4
DGMCF	1.008	Probe (mg)	2.2
Barometric Pressure	29.97 "Hg	CWTR (g)	461.5
Static Pressure	-7.800 "H_2O	WCBDA (g)	19.5
Nozzle	0.2501 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.38 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%	8.93
CO2%	10.60
COppm	18.2

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 %
	77.5	385.08	0.8	286	52	83	79	1.9	2.5		18.72	100.7
	80	386.94	0.8	286	52	83	79	1.9	2.5		18.72	99.4
12	82.5	388.82	0.82	286	51	83	79	1.9	2.5		18.95	100.4
	85	390.61	0.8	286	51	83	79	1.9	2.5		18.72	94.5
	87.5	392.46	0.83	286	52	83	79	1.9	2.5		19.07	98.8
	90	394.35								0.38		99.1
1	0	394.73	0.66	283	58	79	78	1.6	3.0		16.97	
	2.5	396.34	0.66	283	49	79	78	1.6	3.0		16.97	94.9
	5	397.95	0.66	283	45	79	78	1.6	3.0		16.97	94.9
2	7.5	399.69	0.67	283	46	79	79	1.6	3.0		17.10	102.5
	10	401.44	0.66	283	46	79	79	1.6	3.0		16.97	102.3
	12.5	403.18	0.67	283	45	79	79	1.6	3.0		17.10	102.4
3	15	404.86	0.69	283	45	79	79	1.6	3.0		17.35	98.2
	17.5	406.62	0.7	283	45	80	79	1.6	3.0		17.47	101.3
	20	408.34	0.7	283	45	80	79	1.6	3.0		17.47	98.2
4	22.5	410.09	0.7	284	46	82	79	1.6	3.0		17.49	100.0
	25	411.82	0.7	285	46	82	79	1.6	3.0		17.50	98.7
	27.5	413.56	0.71	285	47	83	79	1.6	3.0		17.62	99.3
5	30	415.30	0.71	285	47	83	79	1.6	3.0		17.62	98.5
	32.5	417.03	0.7	285	47	93	80	1.6	3.0		17.50	98.0
	35	418.75	0.7	286	47	84	80	1.6	3.0		17.51	97.1
6	37.5	420.46	0.7	286	47	84	80	1.6	3.0		17.51	97.4
	40	422.19	0.66	286	48	84	80	1.6	3.0		17.00	98.6
	42.5	423.92	0.7	286	48	84	80	1.6	3.0		17.51	101.5
7	45	425.65	0.7	286	48	85	80	1.6	3.0		17.51	98.6
	47.5	427.36	0.6	286	48	85	80	1.6	3.0		16.21	97.3
	50	429.06	0.6	286	49	85	80	1.5	3.0		16.21	104.5
8	52.5	430.71	0.6	286	48	85	81	1.5	3.0		16.21	101.4
	55	432.37	0.65	286	48	85	81	1.5	3.0		16.87	101.9
	57.5	434.06	0.7	286	48	85	81	1.6	3.0		17.51	99.7
9	60	435.80	0.78	286	46	85	81	1.8	3.0		18.48	98.9

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 17 2020	**Operator:**	RW

Pitot Factor	0.85	Filter (mg)	4.4
DGMCF	1.008	Probe (mg)	2.2
Barometric Pressure	29.97 "Hg	CWTR (g)	461.5
Static Pressure	-7.800 "H_2O	WCBDA (g)	19.5
Nozzle	0.2501 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.38 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%	8.93
CO2%	10.60
COppm	18.2

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Temperatures: Imp. Out °F	Temperatures: DGM Out °F	Temperatures: DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	437.64	0.8	286	46	85	81	1.8	3.0		18.72	99.2
	65	439.36	0.8	287	46	87	81	1.9	3.0		18.73	91.5
10	67.5	441.20	0.85	287	46	87	81	1.9	3.0		19.31	97.8
	70	443.07	0.8	286	47	87	81	1.9	3.0		18.72	96.5
	72.5	444.95	0.8	286	47	87	81	1.9	3.0		18.72	99.9
11	75	446.82	0.83	285	47	87	82	1.9	3.0		19.05	99.4
	77.5	448.69	0.85	285	48	87	82	1.9	3.0		19.28	97.4
	80	450.56	0.85	285	48	87	82	1.9	3.0		19.28	96.2
12	82.5	452.43	0.9	285	50	88	82	2	3.0		19.84	96.2
	85	454.33	0.88	285	50	88	82	2	3.0		19.62	95.0
	87.5	456.29	0.88	285	49	87	82	2	3.0		19.62	99.1
	90	458.22										97.6

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - Particulate & Metals
Date:	June 17 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.85
DGM CORRECTION FACTOR	1.008
NOZZLE DIAMETER	6.35 mm
DRY REF GAS VOLUME SAMPLED	3.533 m^3
AVGERGE ISOKINETICITY	100.3 %
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	140.2 °C
AVERAGE GAS MOISTURE BY VOLUME	15.6 %
AVERAGE GAS VELOCITY	17.28 m/s
BAROMETRIC PRESSURE (Station)	101.151 Kpa
STATIC PRESSURE	-1.942 Kpa
ABSOLUTE GAS PRESSURE	99.209 Kpa
OXYGEN CONCENTRATION	8.37 %
CARBON DIOXIDE CONCENTRATION	10.76 %
CARBON MONOXIDE CONCENTRATION	16.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.53 m^3/s
DRY REF GAS FLOWRATE	15.21 Rm^3/s
DRY ADJ GAS FLOWRATE	19.25 Rm^3/s
WET REF GAS FLOWRATE	18.03 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.9 mg
	-FILTER	2.3 mg
	-TOTAL	3.2 mg
DRY REF GAS VOLUME SAMPLED		3.533 m^3
PARTICULATE CONC. - ACTUAL		0.540 mg/m^3
PARTICULATE CONC. - DRY REF		0.906 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.716 mg/m^3
PARTICULATE CONC. - WET REF		0.764 mg/m^3
PARTICULATE EMISSION RATE		0.013774 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 17 2020	**Operator:**	RW

Pitot Factor	0.85	Filter (mg)	2.3
DGMCF	1.008	Probe (mg)	0.9
Barometric Pressure	29.87 "Hg	CWTR (g)	462
Static Pressure	-7.800 "H_2O	WCBDA (g)	19.1
Nozzle	0.2501 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.48 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%	8.37
CO2%	10.76
COppm	16.5

Measured H2O
15.6 %

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	459.02	0.6	289	72	82	82	1.6	2.0		16.29	
	2.5	460.78	0.85	286	70	82	81	2	2.5		19.35	108.8
	5	462.67	0.85	286	55	82	81	2	2.5		19.35	98.2
2	7.5	464.55	0.85	286	57	83	81	2	2.5		19.35	97.6
	10	466.43	0.85	286	55	83	81	2	2.5		19.35	97.6
	12.5	468.31	0.85	286	55	83	81	2	2.5		19.35	97.6
3	15	470.19	0.81	286	54	84	82	2	2.5		18.88	97.6
	17.5	472.06	0.8	286	52	85	82	2	2.5		18.77	99.2
	20	473.89	0.8	285	50	85	82	2	2.5		18.75	97.6
4	22.5	475.78	0.75	285	50	85	82	1.9	2.5		18.16	100.7
	25	477.59	0.76	285	48	86	83	1.9	2.5		18.28	99.6
	27.5	479.44	0.74	285	48	86	83	1.8	2.5		18.04	101.0
5	30	481.27	0.65	284	46	87	83	1.6	2.0		16.89	101.2
	32.5	483.03	0.65	284	46	87	83	1.6	2.0		16.89	103.6
	35	484.72	0.65	284	45	88	83	1.6	2.0		16.89	99.5
6	37.5	486.49	0.55	284	45	88	83	1.5	2.0		15.54	104.1
	40	488.09	0.55	284	45	88	83	1.5	2.0		15.54	102.3
	42.5	489.75	0.55	284	46	88	83	1.5	2.0		15.54	106.1
7	45	491.40	0.6	284	46	88	83	1.5	2.0		16.23	105.5
	47.5	493.05	0.62	284	46	88	83	1.5	2.0		16.50	101.0
	50	494.70	0.62	284	46	89	84	1.5	2.0		16.50	99.3
8	52.5	496.37	0.62	284	46	89	84	1.5	2.0		16.50	100.4
	55	498.03	0.65	284	46	90	84	1.5	2.0		16.89	99.8
	57.5	499.77	0.63	284	46	90	84	1.5	2.0		16.63	102.0
9	60	501.37	0.65	283	45	89	84	1.5	2.0		16.88	95.3
	62.5	503.06	0.63	283	45	89	84	1.5	2.0		16.62	99.1
	65	504.72	0.63	283	46	90	85	1.5	2.0		16.62	98.9
10	67.5	506.44	0.65	283	46	90	85	1.5	2.0		16.88	102.3
	70	508.08	0.65	283	45	90	85	1.6	2.0		16.88	96.0
	72.5	509.88	0.65	283	45	90	85	1.6	2.0		16.88	105.4
11	75	511.54	0.6	283	45	90	85	1.5	2.0		16.22	97.2

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	June 17 2020	**Operator:**	RW

Pitot Factor	0.85	Filter (mg)	2.3
DGMCF	1.008	Probe (mg)	0.9
Barometric Pressure	29.87 "Hg	CWTR (g)	462
Static Pressure	-7.800 "H_2O	WCBDA (g)	19.1
Nozzle	0.2501 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.48 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%	8.37
CO2%	10.76
COppm	16.5

Measured H2O
15.6 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	513.25	0.6	283	47	91	85	1.5	2.0		16.22	104.2
	80	514.95	0.6	283	47	91	85	1.5	2.0		16.22	103.5
12	82.5	516.65	0.63	283	47	91	85	1.5	2.0		16.62	103.5
	85	518.33	0.63	283	47	92	86	1.5	2.0		16.62	99.8
	87.5	520.02	0.63	283	47	92	86	1.5	2.0		16.62	100.2
	90	521.70								0.48		99.6
1	0	522.18	0.79	283	62	89	86	1.8	2.5		18.61	
	2.5	524.00	0.75	284	49	89	86	1.8	2.5		18.15	96.7
	5	525.82	0.75	284	49	89	86	1.8	2.5		18.15	99.3
2	7.5	527.65	0.78	285	46	89	86	1.8	2.5		18.52	99.9
	10	529.45	0.75	285	46	89	86	1.8	2.5		18.16	96.4
	12.5	531.27	0.78	285	46	89	86	1.8	2.5		18.52	99.4
3	15	533.07	0.8	285	46	89	86	1.8	2.5		18.75	96.4
	17.5	534.95	0.79	285	46	89	86	1.8	2.5		18.64	99.4
	20	536.83	0.78	285	46	89	86	1.8	2.5		18.52	100.1
4	22.5	538.71	0.75	286	46	90	87	1.8	2.5		18.17	100.7
	25	540.59	0.74	286	46	90	87	1.8	2.5		18.05	102.6
	27.5	542.44	0.74	285	46	91	86	1.8	2.5		18.04	101.6
5	30	544.26	0.7	285	46	91	86	1.7	2.5		17.54	99.9
	32.5	546.05	0.65	285	47	91	87	1.6	2.5		16.91	101.0
	35	547.76	0.65	285	47	91	87	1.6	2.5		16.91	100.0
6	37.5	549.45	0.6	285	47	90	87	1.5	2.5		16.24	98.8
	40	551.15	0.6	285	47	90	87	1.5	2.5		16.24	103.5
	42.5	552.82	0.58	285	48	91	87	1.5	2.5		15.97	101.7
7	45	554.46	0.6	285	48	91	87	1.5	2.5		16.24	101.5
	47.5	556.10	0.6	285	48	91	87	1.5	2.5		16.24	99.8
	50	557.72	0.6	285	48	91	87	1.5	2.5		16.24	98.6
8	52.5	559.40	0.65	284	48	90	87	1.6	2.5		16.89	102.2
	55	561.08	0.63	284	48	90	87	1.6	2.5		16.63	98.3
	57.5	562.80	0.65	284	48	90	87	1.6	2.5		16.89	102.2
9	60	564.54	0.65	283	47	90	87	1.6	2.5		16.88	101.8

ORTECH Environmental

Plant:	Covanta DYEC	Plant Location:	Courtice, ON
Test No.:	3 - Particulate & Metals	Test Location:	APC Outlet No. 1
Date:	June 17 2020	Operator:	RW

Pitot Factor	0.85	Filter (mg)	2.3
DGMCF	1.008	Probe (mg)	0.9
Barometric Pressure	29.87 "Hg	CWTR (g)	462
Static Pressure	-7.800 "H_2O	WCBDA (g)	19.1
Nozzle	0.2501 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.48 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%	8.37
CO2%	10.76
COppm	16.5

Measured H2O
15.6 %

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 %
	62.5	566.28	0.65	283	47	90	87	1.6	2.5		16.88	101.7
	65	568.00	0.64	284	48	91	87	1.6	2.5		16.76	100.5
10	67.5	569.71	0.64	284	48	91	87	1.6	2.5		16.76	100.7
	70	571.44	0.67	284	48	91	87	1.6	2.5		17.15	101.9
	72.5	573.23	0.66	284	48	91	87	1.6	2.5		17.02	103.0
11	75	574.89	0.66	284	47	92	87	1.6	2.5		17.02	96.3
	77.5	576.66	0.68	284	47	92	87	1.6	2.5		17.28	102.6
	80	578.30	0.68	284	48	92	88	1.6	2.5		17.28	93.6
12	82.5	580.05	0.68	284	48	92	88	1.6	2.5		17.28	99.8
	85	581.76	0.68	284	48	92	88	1.6	2.5		17.28	97.5
	87.5	583.48	0.68	284	84	92	88	1.6	2.5		17.28	98.1
	90	585.21										98.7

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 Particulate & Metals
Date:	June 16, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.85
DGM CORRECTION FACTOR	1.001
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	3.630 m^3
AVGERGE ISOKINETICITY	99.2 %
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	14.9 %
AVERAGE GAS VELOCITY	17.05 m/s
BAROMETRIC PRESSURE (Station)	102.032 Kpa
STATIC PRESSURE	-2.052 Kpa
ABSOLUTE GAS PRESSURE	99.980 Kpa
OXYGEN CONCENTRATION	8.47 %
CARBON DIOXIDE CONCENTRATION	10.85 %
CARBON MONOXIDE CONCENTRATION	15.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.19 m^3/s
DRY REF GAS FLOWRATE	15.27 Rm^3/s
DRY ADJ GAS FLOWRATE	19.17 Rm^3/s
WET REF GAS FLOWRATE	17.95 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1 mg
	-FILTER	3.5 mg
	-TOTAL	4.5 mg
DRY REF GAS VOLUME SAMPLED		3.630 m^3
PARTICULATE CONC. - ACTUAL		0.751 mg/m^3
PARTICULATE CONC. - DRY REF		1.240 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.987 mg/m^3
PARTICULATE CONC. - WET REF		1.055 mg/m^3
PARTICULATE EMISSION RATE		0.018924 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 16, 2020	**Operator:**	JB RW

Pitot Factor	0.85	Filter (mg)	3.5
DGMCF	1.001	Probe (mg)	1
Barometric Pressure	30.13 "Hg	CWTR (g)	446
Static Pressure	-8.240 "H_2O	WCBDA (g)	22.6
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.92 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%	8.47
CO2%	10.85
COppm	15.4

Measured H2O
14.9 %

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	444.80	0.67	283	55	71	73	1.6	3.0		17.04	
	2.5	446.55	0.66	283	55	71	73	1.6	3.0		16.92	99.5
	5	448.32	0.66	277	58	72	73	1.6	3.0		16.85	101.4
2	7.5	450.06	0.65	277	55	72	73	1.6	3.0		16.72	99.2
	10	451.82	0.64	277	53	72	74	1.6	3.0		16.59	101.1
	12.5	453.57	0.64	278	52	72	74	1.6	3.0		16.60	101.3
3	15	455.30	0.65	278	51	72	75	1.6	3.0		16.73	100.2
	17.5	457.05	0.65	277	50	72	75	1.6	3.0		16.72	100.4
	20	458.82	0.67	277	50	72	76	1.6	3.0		16.98	101.5
4	22.5	460.53	0.65	278	49	72	76	1.6	3.0		16.73	96.5
	25	462.27	0.66	283	49	72	77	1.6	3.0		16.92	99.8
	27.5	464.06	0.66	283	48	73	77	1.6	3.0		16.92	102.1
5	30	465.75	0.69	283	48	73	78	1.6	3.0		17.30	96.3
	32.5	467.48	0.6	284	48	73	77	1.4	3.0		16.14	96.3
	35	469.13	0.6	284	48	73	81	1.4	3.0		16.14	98.6
6	37.5	470.76	0.62	284	48	74	79	1.5	3.0		16.41	97.1
	40	472.40	0.61	284	48	74	80	1.5	3.0		16.27	96.2
	42.5	474.07	0.6	283	48	74	80	1.5	3.0		16.13	98.7
7	45	475.70	0.58	283	47	75	81	1.5	3.0		15.86	97.0
	47.5	477.38	0.58	284	47	75	82	1.5	3.0		15.87	101.5
	50	479.03	0.58	284	47	76	82	1.5	3.0		15.87	99.7
8	52.5	480.70	0.65	284	46	76	82	1.65	3.0		16.80	100.8
	55	482.42	0.65	284	45	76	83	1.65	3.0		16.80	98.1
	57.5	484.14	0.64	284	45	76	83	1.65	3.0		16.67	98.0
9	60	485.88	0.71	284	44	77	84	1.75	3.3		17.56	99.9
	62.5	487.66	0.7	284	44	77	84	1.75	3.3		17.43	96.9
	65	489.46	0.69	284	44	77	84	1.75	3.3		17.31	98.7
10	67.5	491.25	0.75	284	45	77	84	1.85	3.3		18.05	98.9
	70	493.09	0.74	284	44	78	84	1.85	3.3		17.92	97.5
	72.5	494.93	0.73	284	44	78	84	1.85	3.3		17.80	98.1
11	75	496.77	0.77	284	44	78	85	1.9	3.5		18.28	98.7

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2020	**Operator:**	JB RW

Pitot Factor	0.85	Filter (mg)	3.5
DGMCF	1.001	Probe (mg)	1
Barometric Pressure	30.13 "Hg	CWTR (g)	446
Static Pressure	-8.240 "H_2O	WCBDA (g)	22.6
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.92 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%	8.47
CO2%	10.85
COppm	15.4

Measured H2O
14.9 %

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 %
	77.5	498.65	0.76	285	44	78	85	1.9	3.5		18.18	98.1
	80	500.53	0.76	285	44	78	85	1.9	3.5		18.18	98.9
12	82.5	502.41	0.76	285	44	79	85	1.9	3.5		18.18	98.9
	85	504.29	0.76	285	44	79	85	1.9	3.5		18.18	98.8
	87.5	506.16	0.77	284	44	78	85	1.95	3.5		18.28	98.2
	90	508.08								0.92		100.2
1	0	509.00	0.57	284	46	79	81	1.45	3.0		15.73	
	2.5	510.67	0.58	284	46	79	81	1.45	3.0		15.87	101.5
	5	512.33	0.58	284	43	79	81	1.45	3.0		15.87	100.0
2	7.5	513.98	0.63	284	42	79	81	1.6	3.3		16.54	99.4
	10	515.68	0.61	284	41	79	81	1.6	3.3		16.27	98.3
	12.5	517.41	0.61	284	42	79	82	1.55	3.3		16.27	101.7
3	15	519.11	0.65	284	41	80	82	1.65	3.3		16.80	99.8
	17.5	520.86	0.64	284	41	80	82	1.65	3.3		16.67	99.5
	20	522.61	0.65	284	41	79	82	1.65	3.3		16.80	100.2
4	22.5	524.35	0.68	284	41	79	83	1.7	3.5		17.18	99.0
	25	526.12	0.67	285	41	79	83	1.7	3.5		17.07	98.4
	27.5	527.88	0.66	285	41	79	84	1.7	3.5		16.94	98.6
5	30	529.65	0.62	285	42	80	84	1.55	3.3		16.42	99.8
	32.5	531.36	0.62	285	42	80	84	1.55	3.3		16.42	99.4
	35	533.05	0.61	285	42	80	84	1.55	3.3		16.29	98.2
6	37.5	534.75	0.59	285	42	79	84	1.5	3.3		16.02	99.6
	40	536.42	0.59	285	42	79	84	1.5	3.3		16.02	99.6
	42.5	538.11	0.59	285	42	79	84	1.5	3.3		16.02	100.8
7	45	539.77	0.6	285	42	80	84	1.5	3.3		16.15	99.0
	47.5	541.46	0.58	285	42	80	85	1.5	3.3		15.88	99.8
	50	543.13	0.57	285	42	80	85	1.5	3.3		15.74	100.2
8	52.5	544.79	0.62	285	42	80	85	1.6	3.3		16.42	100.5
	55	546.50	0.61	285	42	80	85	1.6	3.3		16.29	99.3
	57.5	548.20	0.65	285	42	80	85	1.65	3.5		16.81	99.5
9	60	549.95	0.72	285	42	80	85	1.85	3.5		17.69	99.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	June 16, 2020	**Operator:**	JB RW

Pitot Factor	0.85	Filter (mg)	3.5
DGMCF	1.001	Probe (mg)	1
Barometric Pressure	30.13 "Hg	CWTR (g)	446
Static Pressure	-8.240 "H_2O	WCBDA (g)	22.6
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.92 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%	8.47
CO2%	10.85
COppm	15.4

Measured H2O
14.9 %

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 %
	62.5	551.77	0.72	285	42	80	85	1.85	3.5		17.69	98.1
	65	553.62	0.72	285	43	80	86	1.85	3.5		17.69	99.7
10	67.5	555.45	0.8	285	43	81	86	2	3.8		18.65	98.6
	70	557.37	0.8	285	43	80	86	2	3.8		18.65	98.1
	72.5	559.28	0.8	285	43	80	86	2	3.8		18.65	97.6
11	75	561.21	0.79	285	43	81	86	2	3.8		18.53	98.7
	77.5	563.16	0.81	285	43	81	86	2	3.8		18.77	100.2
	80	565.17	0.8	285	44	81	86	2	3.8		18.65	102.0
12	82.5	567.03	0.84	285	44	81	86	2.1	4.0		19.11	95.0
	85	568.98	0.82	285	44	81	86	2.1	4.0		18.88	97.2
	87.5	570.95	0.81	285	46	81	86	2.1	4.0		18.77	99.4
	90	572.91										99.5

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 Particulate & Metals
Date:	June 16, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.85
DGM CORRECTION FACTOR	1.001
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	3.736 m^3
AVGERGE ISOKINETICITY	99.7 %
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	139.5 °C
AVERAGE GAS MOISTURE BY VOLUME	15.6 %
AVERAGE GAS VELOCITY	17.64 m/s
BAROMETRIC PRESSURE (Station)	101.693 Kpa
STATIC PRESSURE	-2.052 Kpa
ABSOLUTE GAS PRESSURE	99.641 Kpa
OXYGEN CONCENTRATION	8.57 %
CARBON DIOXIDE CONCENTRATION	10.76 %
CARBON MONOXIDE CONCENTRATION	9.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.07 m^3/s
DRY REF GAS FLOWRATE	15.62 Rm^3/s
DRY ADJ GAS FLOWRATE	19.45 Rm^3/s
WET REF GAS FLOWRATE	18.52 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.1 mg
	-FILTER	2.3 mg
	-TOTAL	3.4 mg
DRY REF GAS VOLUME SAMPLED		3.736 m^3
PARTICULATE CONC. - ACTUAL		0.545 mg/m^3
PARTICULATE CONC. - DRY REF		0.910 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.731 mg/m^3
PARTICULATE CONC. - WET REF		0.768 mg/m^3
PARTICULATE EMISSION RATE		0.014215 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, 2020	**Operator:**	JB RW

Pitot Factor	0.85	Filter (mg)	2.3
DGMCF	1.001	Probe (mg)	1.1
Barometric Pressure	30.03 "Hg	CWTR (g)	482.9
Static Pressure	-8.240 "H_2O	WCBDA (g)	26.6
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.65 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%	8.57
CO2%	10.76
COppm	9.9

Measured H2O
15.6 %

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	575.66	0.66	284	76	77	78	1.6	3.0		16.99	
	2.5	577.30	0.67	284	59	77	78	1.6	3.0		17.11	93.6
	5	579.03	0.66	282	56	78	78	1.6	3.0		16.96	98.0
2	7.5	580.76	0.66	282	54	78	78	1.6	3.0		16.96	98.5
	10	582.51	0.67	282	54	78	78	1.6	3.0		17.09	99.6
	12.5	584.23	0.66	282	53	78	79	1.6	3.0		16.96	97.2
3	15	585.96	0.68	282	53	78	78	1.7	3.0		17.22	98.4
	17.5	587.71	0.69	284	54	78	80	1.7	3.0		17.37	98.2
	20	589.48	0.71	283	54	78	79	1.7	3.0		17.61	98.5
4	22.5	591.30	0.71	282	54	78	79	1.7	3.0		17.59	99.9
	25	593.12	0.7	282	55	79	80	1.7	3.0		17.47	99.8
	27.5	594.91	0.7	281	55	79	80	1.7	3.0		17.46	98.7
5	30	596.73	0.64	282	56	79	80	1.6	3.0		16.70	100.3
	32.5	598.50	0.64	280	57	79	81	1.6	3.0		16.68	102.0
	35	600.25	0.65	280	57	79	81	1.6	3.0		16.81	100.7
6	37.5	601.98	0.64	281	58	79	81	1.6	3.0		16.69	98.7
	40	603.72	0.63	281	58	79	81	1.6	3.0		16.56	100.1
	42.5	605.47	0.63	281	58	80	81	1.6	3.0		16.56	101.5
7	45	607.20	0.64	281	58	80	81	1.6	3.0		16.69	100.3
	47.5	608.94	0.64	282	59	80	81	1.6	3.0		16.70	100.1
	50	610.67	0.62	283	59	80	82	1.6	3.0		16.45	99.5
8	52.5	612.40	0.62	284	59	80	82	1.6	3.0		16.46	101.1
	55	614.14	0.72	284	59	80	82	1.7	3.5		17.74	101.8
	57.5	615.94	0.71	284	58	80	83	1.7	3.5		17.62	97.7
9	60	617.77	0.77	284	58	80	83	1.8	3.5		18.35	99.9
	62.5	619.64	0.78	284	58	80	83	1.8	3.5		18.47	98.1
	65	621.50	0.82	284	58	80	83	1.9	3.5		18.93	96.9
10	67.5	623.41	0.85	284	57	81	84	2	3.5		19.28	97.1
	70	625.38	0.84	284	57	81	84	2	3.5		19.16	98.2
	72.5	627.32	0.83	284	57	81	84	2	3.5		19.05	97.3
11	75	629.27	0.83	284	57	81	84	2	3.5		19.05	98.4

ORTECH Environmental

Plant: Covanta DYEC
Test No.: 2 Particulate & Metals
Date: June 16, 2020

Plant Location: Courtice, ON
Test Location: APC Outlet No. 2
Operator: JB RW

Pitot Factor	0.85	Filter (mg)	2.3
DGMCF	1.001	Probe (mg)	1.1
Barometric Pressure	30.03 "Hg	CWTR (g)	482.9
Static Pressure	-8.240 "H_2O	WCBDA (g)	26.6
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.65 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%	8.57
CO2%	10.76
COppm	9.9

Measured H2O
15.6 %

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 %
	77.5	631.23	0.83	284	57	81	84	2	3.5		19.05	98.9
	80	633.18	0.87	284	57	81	85	2.1	3.5		19.50	98.4
12	82.5	635.20	0.83	284	57	81	85	2.1	3.5		19.05	99.5
	85	637.25	0.83	284	57	81	85	2.1	3.5		19.05	103.4
	87.5	639.26	0.83	283	58	82	85	2.1	3.5		19.03	101.4
	90	641.32								0.65		103.7
1	0	641.97	0.72	284	58	82	84	1.7	3.5		17.74	
	2.5	643.77	0.64	284	60	82	84	1.6	3.5		16.73	97.4
	5	645.51	0.66	284	59	82	84	1.6	3.5		16.99	99.8
2	7.5	647.25	0.65	284	59	82	84	1.6	3.5		16.86	98.3
	10	648.90	0.66	284	57	82	84	1.6	3.5		16.99	93.9
	12.5	650.76	0.67	284	57	82	84	1.7	3.5		17.11	105.0
3	15	652.52	0.73	284	57	82	84	1.8	3.5		17.86	98.7
	17.5	654.38	0.75	284	57	82	84	1.8	3.5		18.11	99.9
	20	656.21	0.74	284	57	82	85	1.8	3.5		17.99	97.0
4	22.5	658.08	0.72	284	57	82	85	1.8	3.5		17.74	99.7
	25	659.90	0.71	284	58	82	85	1.8	3.5		17.62	98.4
	27.5	661.76	0.7	284	58	82	85	1.8	3.5		17.49	101.2
5	30	663.61	0.67	283	56	83	85	1.7	3.5		17.10	101.4
	32.5	665.39	0.66	283	56	83	85	1.7	3.5		16.97	99.5
	35	667.21	0.68	283	55	83	85	1.7	3.5		17.23	102.6
6	37.5	669.00	0.67	284	55	83	85	1.7	3.5		17.11	99.4
	40	670.77	0.68	284	54	83	85	1.7	3.5		17.24	99.1
	42.5	672.56	0.65	284	54	83	85	1.7	3.5		16.86	99.4
7	45	674.35	0.65	283	54	83	85	1.7	3.5		16.84	101.7
	47.5	676.14	0.65	283	54	83	85	1.7	3.5		16.84	101.6
	50	677.93	0.65	283	54	83	87	1.7	3.5		16.84	101.6
8	52.5	679.73	0.65	283	54	83	87	1.7	3.5		16.84	102.0
	55	681.51	0.74	283	55	83	87	1.8	3.5		17.97	100.9
	57.5	683.36	0.72	283	54	83	87	1.8	3.5		17.73	98.3
9	60	685.19	0.75	283	54	83	87	1.9	4.0		18.09	98.6

ORTECH Environmental

Plant:	Covanta DYEC	Plant Location:	Courtice, ON
Test No.:	2 Particulate & Metals	Test Location:	APC Outlet No. 2
Date:	June 16, 2020	Operator:	JB RW

Pitot Factor	0.85	Filter (mg)	2.3
DGMCF	1.001	Probe (mg)	1.1
Barometric Pressure	30.03 "Hg	CWTR (g)	482.9
Static Pressure	-8.240 "H_2O	WCBDA (g)	26.6
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.65 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%	8.57
CO2%	10.76
COppm	9.9

Measured H2O
15.6 %

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 %
	62.5	687.10	0.75	283	54	84	87	1.9	4.0		18.09	100.8
	65	689.00	0.75	285	54	84	87	1.9	4.0		18.12	100.2
10	67.5	690.91	0.8	284	55	84	87	2	4.0		18.70	100.9
	70	692.88	0.82	284	55	84	87	2	4.0		18.93	100.7
	72.5	694.85	0.82	284	55	84	86	2	4.0		18.93	99.5
11	75	696.78	0.8	284	55	84	86	2	4.0		18.70	97.5
	77.5	698.75	0.75	283	56	84	87	1.9	4.0		18.09	100.8
	80	700.66	0.76	283	56	84	87	1.9	4.0		18.21	100.7
12	82.5	702.60	0.75	283	56	84	87	1.9	4.0		18.09	101.6
	85	704.51	0.7	283	57	84	87	1.8	4.0		17.48	100.7
	87.5	706.38	0.7	283	57	84	87	1.8	4.0		17.48	102.1
	90	708.27										103.2

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 Particulate & Metals
Date:	June 18 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.85
DGM CORRECTION FACTOR	1.008
NOZZLE DIAMETER	6.35 mm
DRY REF GAS VOLUME SAMPLED	3.506 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	139.9 °C
AVERAGE GAS MOISTURE BY VOLUME	16.1 %
AVERAGE GAS VELOCITY	17.06 m/s
BAROMETRIC PRESSURE (Station)	101.084 Kpa
STATIC PRESSURE	-1.942 Kpa
ABSOLUTE GAS PRESSURE	99.141 Kpa
OXYGEN CONCENTRATION	8.48 %
CARBON DIOXIDE CONCENTRATION	10.89 %
CARBON MONOXIDE CONCENTRATION	12.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.21 m^3/s
DRY REF GAS FLOWRATE	14.93 Rm^3/s
DRY ADJ GAS FLOWRATE	18.73 Rm^3/s
WET REF GAS FLOWRATE	17.80 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.9 mg
	-FILTER	3.3 mg
	-TOTAL	6.2 mg
DRY REF GAS VOLUME SAMPLED		3.506 m^3
PARTICULATE CONC. - ACTUAL		1.048 mg/m^3
PARTICULATE CONC. - DRY REF		1.768 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.409 mg/m^3
PARTICULATE CONC. - WET REF		1.484 mg/m^3
PARTICULATE EMISSION RATE		0.026405 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 18 2020	**Operator:**	RW

Pitot Factor	0.85	Filter (mg)	3.3
DGMCF	1.008	Probe (mg)	2.9
Barometric Pressure	29.85 "Hg	CWTR (g)	476.5
Static Pressure	-7.800 "H_2O	WCBDA (g)	18.1
Nozzle	0.2501 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.47 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%	8.48
CO2%	10.89
COppm	12.2

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	592.86	0.6	284	76	78	79	1.6	2.0		16.25	
	2.5	594.56	0.62	284	57	79	77	1.6	2.0		16.52	105.9
	5	596.27	0.62	284	57	79	77	1.6	2.0		16.52	104.9
2	7.5	597.94	0.63	284	57	79	77	1.6	2.0		16.65	102.5
	10	599.61	0.63	284	57	79	77	1.6	2.0		16.65	101.6
	12.5	601.30	0.63	284	58	80	77	1.6	2.0		16.65	102.9
3	15	602.97	0.64	283	58	81	78	1.6	2.0		16.77	101.5
	17.5	604.61	0.64	282	58	83	78	1.6	2.0		16.76	98.7
	20	606.29	0.64	282	58	83	78	1.6	2.0		16.76	100.8
4	22.5	607.94	0.64	282	57	83	78	1.6	2.0		16.76	99.0
	25	609.60	0.68	282	56	84	79	1.6	2.0		17.27	99.6
	27.5	611.33	0.66	282	56	84	79	1.6	2.0		17.02	100.6
5	30	613.06	0.63	283	54	86	79	1.6	2.0		16.64	102.1
	32.5	614.75	0.64	283	53	86	79	1.6	2.0		16.77	101.9
	35	616.45	0.64	282	52	87	80	1.6	2.0		16.76	101.7
6	37.5	618.14	0.62	282	52	88	81	1.6	2.0		16.49	100.9
	40	619.82	0.62	282	52	88	81	1.6	2.0		16.49	101.7
	42.5	621.48	0.62	281	50	88	81	1.6	2.0		16.48	100.5
7	45	623.18	0.55	281	50	88	81	1.5	2.0		15.52	102.8
	47.5	624.81	0.55	282	50	89	81	1.5	2.0		15.53	104.7
	50	626.43	0.55	284	49	89	82	1.5	2.0		15.56	104.0
8	52.5	628.05	0.6	284	49	89	82	1.6	2.0		16.25	104.0
	55	629.73	0.6	284	49	89	82	1.6	2.0		16.25	103.3
	57.5	631.41	0.6	284	48	90	83	1.6	2.0		16.25	103.3
9	60	633.08	0.7	284	48	90	83	1.7	2.0		17.55	102.5
	62.5	634.84	0.7	284	48	91	84	1.7	2.0		17.55	100.1
	65	636.58	0.7	284	48	91	84	1.7	2.0		17.55	98.7
10	67.5	638.33	0.82	285	47	91	84	1.8	2.0		19.01	99.3
	70	640.16	0.75	285	47	91	84	1.8	2.0		18.18	96.0
	72.5	641.97	0.75	284	47	91	84	1.8	2.0		18.17	99.3
11	75	643.80	0.75	284	47	91	85	1.8	2.0		18.17	100.4

ORTECH Environmental

Plant:	Covanta DYEC	Plant Location:	Courtice, ON
Test No.:	3 Particulate & Metals	Test Location:	APC Outlet No. 2
Date:	June 18 2020	Operator:	RW

Pitot Factor	0.85	Filter (mg)	3.3
DGMCF	1.008	Probe (mg)	2.9
Barometric Pressure	29.85 "Hg	CWTR (g)	476.5
Static Pressure	-7.800 "H_2O	WCBDA (g)	18.1
Nozzle	0.2501 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.47 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%	8.48
CO2%	10.89
COppm	12.2

Measured H2O
16.1 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	645.65	0.75	284	47	91	85	1.8	2.0		18.17	101.4
	80	647.43	0.75	283	47	92	85	1.8	2.0		18.15	97.5
12	82.5	649.26	0.72	283	47	92	85	1.8	2.0		17.79	100.1
	85	651.07	0.72	283	48	92	86	1.8	2.0		17.79	101.0
	87.5	652.90	0.72	283	48	92	86	1.8	2.0		17.79	102.1
	90	654.80								0.47		106.0
1	0	655.27	0.71	284	60	89	86	1.7	2.5		17.67	
	2.5	657.01	0.7	282	51	89	86	1.7	2.5		17.53	98.0
	5	658.83	0.68	282	47	88	86	1.7	2.5		17.27	103.1
2	7.5	660.64	0.71	282	46	89	88	1.7	2.5		17.65	104.2
	10	662.44	0.7	282	45	89	86	1.7	2.5		17.53	101.1
	12.5	664.23	0.73	282	45	89	86	1.7	2.5		17.90	101.4
3	15	666.03	0.73	283	45	89	86	1.7	2.5		17.91	99.9
	17.5	667.81	0.72	283	45	90	86	1.7	2.5		17.79	98.8
	20	669.61	0.73	283	45	90	86	1.7	2.5		17.91	100.6
4	22.5	671.42	0.7	284	44	90	86	1.7	2.5		17.55	100.4
	25	673.19	0.7	284	45	91	87	1.7	2.5		17.55	100.4
	27.5	674.99	0.7	284	45	91	87	1.7	2.5		17.55	101.9
5	30	676.79	0.65	284	45	91	86	1.6	2.5		16.91	101.9
	32.5	678.50	0.65	284	46	92	87	1.6	2.5		16.91	100.5
	35	680.20	0.65	284	46	92	87	1.6	2.5		16.91	99.7
6	37.5	681.92	0.6	284	46	91	87	1.6	2.5		16.25	100.9
	40	683.62	0.6	284	46	91	87	1.6	2.5		16.25	103.9
	42.5	685.31	0.6	285	47	91	87	1.6	2.5		16.26	103.3
7	45	687.02	0.63	285	46	92	87	1.6	2.5		16.66	104.6
	47.5	688.71	0.63	285	46	92	87	1.6	2.5		16.66	100.8
	50	690.42	0.65	285	46	92	87	1.6	2.5		16.92	102.0
8	52.5	692.10	0.65	286	47	92	87	1.6	2.5		16.93	98.6
	55	693.82	0.65	286	47	92	87	1.6	2.5		16.93	101.0
	57.5	695.56	0.65	286	47	92	87	1.6	2.5		16.93	102.2
9	60	697.29	0.65	285	47	92	87	1.6	2.5		16.92	101.6

Plant:	Covanta DYEC	Plant Location:	Courtice, ON
Test No.:	3 Particulate & Metals	Test Location:	APC Outlet No. 2
Date:	June 18 2020	Operator:	RW

Pitot Factor	0.85	Filter (mg)	3.3
DGMCF	1.008	Probe (mg)	2.9
Barometric Pressure	29.85 "Hg	CWTR (g)	476.5
Static Pressure	-7.800 "H_2O	WCBDA (g)	18.1
Nozzle	0.2501 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.47 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%	8.48
CO2%	10.89
COppm	12.2

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 %
	62.5	699.00	0.7	285	47	92	87	1.7	2.5		17.56	100.4
	65	700.77	0.7	286	47	92	87	1.7	2.5		17.57	100.1
10	67.5	702.54	0.7	286	47	92	87	1.7	2.5		17.57	100.2
	70	704.30	0.71	286	47	92	87	1.7	2.5		17.70	99.6
	72.5	706.00	0.7	286	47	92	87	1.7	2.5		17.57	95.6
11	75	707.83	0.65	286	47	92	87	1.6	2.5		16.93	103.6
	77.5	709.56	0.6	286	47	92	87	1.6	2.5		16.27	101.6
	80	711.27	0.62	286	47	92	87	1.6	2.5		16.54	104.5
12	82.5	712.96	0.62	286	47	92	87	1.6	2.5		16.54	101.6
	85	714.64	0.62	286	47	92	88	1.6	2.5		16.54	101.0
	87.5	716.35	0.64	286	48	92	88	1.6	2.5		16.80	102.8
	90	718.04										100.0

APPENDIX 23

Particle Size Distribution Test Emission Calculations
(12 pages)

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	June 16, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 1

Project No.: 22001
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	1.008
Pitot Factor	0.848
Barometric Pressure (" Hg)	30.11
Static Pressure ("H_2O)	-8.36
Oxygen Content (%)	9.12
Carbon Dioxide Content (%)	10.38
Carbon Monoxide Content (PPM)	14.2
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft³/min*	10.0 l/min*
Cyclone Qs_{actual}	0.59 ft³/min	16.6 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.4 Rft³*	1.200 Rm³*
Average Cyclone I Cut Diameter		10.28 µm
Average Cyclone IV Cut Diameter		2.37 µm
Average Isokineticity		99.5 %
Stack Gas Physical Parameters		
B_{ws}	15.2 % v/v	
Average m	222.0 (dimensionless)	
M_d	30.03 lbs/lbs mole	
M_w	28.20 lbs/lbs mole	
Average T_s	287 °F	142 °C
Average U_s	57.0 ft/s	17.4 m/s
Stack Area	15.9 ft²	1.48 m²
Actual Q_s	54439 ACFM	25.7 m³/s
Wet Reference Q_s	38570 SCFM*	18.2 Rm³/s*
Dry Reference Q_s	32725 SCFM*	15.4 Rm³/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.25 mg/Rm³*	0.0193 g/s
Total Part. (b)	5.67 mg/Rm³*	0.088 g/s
PM_{10} Part. (b)	5.17 mg/Rm³*	0.080 g/s
$PM_{2.5}$ Part. (b)	4.67 mg/Rm³*	0.072 g/s
Cond. Part.	4.42 mg/Rm³*	0.068 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)	526.7	669.6	750.0	935.7	
final volume or weight (ml or mg)	669.9	670.6	750.3	948.9	
gain in volume or weight (ml or mg)	143.2	1.0	0.3	13.2	0.0
				TOTAL	157.7

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.6	0.6	0.2	<0.1	5.3

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: June 16, 2020	Plant: DYEC	Test No.: 1	Project No.: 22001
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	10.8	4.00	0.78	0.35	282	75	73	0.38	3.0	60.4	10.18	2.32	94.6
	2	10.8	10.8	7.79	0.79	0.35	286	75	73	0.38	3.0	60.9	10.40	2.41	91.6
	3	21.6	10.4	11.45	0.75	0.35	287	77	74	0.38	3.0	59.4	10.26	2.36	95.9
	4	32.0	9.6	15.05	0.71	0.35	287	77	74	0.38	3.0	57.8	10.39	2.41	96.9
	5	41.6	8.8	18.32	0.61	0.35	288	77	74	0.38	3.0	53.6	10.28	2.37	106.2
	6	50.4	8.9	21.37	0.56	0.35	288	78	75	0.38	3.0	51.4	10.22	2.34	111.8
		59.2		24.48											
2	1	0.00	10.6	24.48	0.77	0.35	288	78	76	0.38	3.0	60.2	10.43	2.43	92.6
	2	10.6	10.3	28.08	0.77	0.35	288	79	76	0.38	3.0	60.2	10.24	2.35	95.0
	3	20.9	10.4	31.68	0.69	0.35	288	79	77	0.38	3.0	57.0	9.80	2.18	106.9
	4	31.3	10.3	35.57	0.65	0.35	288	80	76	0.38	3.0	55.3	10.74	2.55	96.7
	5	41.6	9.8	38.94	0.63	0.35	288	79	76	0.38	3.0	54.5	10.15	2.32	106.4
	6	51.4	9.4	42.41	0.59	0.35	288	79	76	0.38	3.0	52.7	10.24	2.35	108.6
		60.8		45.68											
Averages					**0.69**		**287**		**76**	**0.38**		**57.0**	**10.28**	**2.37**	**99.5**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	June 16, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 1

Project No.: 22001
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	1.008
Pitot Factor	0.848
Barometric Pressure (" Hg)	30.06
Static Pressure ("H_2O)	-8.36
Oxygen Content (%)	9.13
Carbon Dioxide Content (%)	10.25
Carbon Monoxide Content (PPM)	12.2
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft³/min*	9.9 l/min*
Cyclone Qs_{actual}	0.59 ft³/min	16.6 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.0 Rft³*	1.189 Rm³*
Average Cyclone I Cut Diameter		10.28 µm
Average Cyclone IV Cut Diameter		2.37 µm
Average Isokineticity		97.5 %
Stack Gas Physical Parameters		
B_{ws}	15.7 % v/v	
Average m	221.8 (dimensionless)	
M_d	30.01 lbs/lbs mole	
M_w	28.12 lbs/lbs mole	
Average T_s	288 °F	142 °C
Average U_s	57.9 ft/s	17.7 m/s
Stack Area	15.9 ft²	1.48 m²
Actual Q_s	55354 ACFM	26.1 m³/s
Wet Reference Q_s	39126 SCFM*	18.5 Rm³/s*
Dry Reference Q_s	32997 SCFM*	15.6 Rm³/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.01 mg/Rm³*	0.0157 g/s
Total Part. (b)	13.79 mg/Rm³*	0.215 g/s
PM_{10} Part. (b)	13.45 mg/Rm³*	0.210 g/s
$PM_{2.5}$ Part. (b)	12.95 mg/Rm³*	0.202 g/s
Cond. Part.	12.78 mg/Rm³*	0.199 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)	491.0	661.3	755.8	963.8	
final volume or weight (ml or mg)	643.6	662.9	751.6	976.3	
gain in volume or weight (ml or mg)	152.6	1.6	-4.2	12.5	0.0
				TOTAL	162.5

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.4	0.6	0.1	<0.1	15.2

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: June 16, 2020	Plant: DYEC	Test No.: 2	Project No.: 22001
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	10.6	45.90	0.83	0.35	286	77	77	0.38	3.0	62.6	10.28	2.37	90.6
	2	10.6	10.7	49.57	0.88	0.35	288	76	84	0.38	3.0	64.5	10.39	2.42	86.8
	3	21.3	10.4	53.23	0.79	0.35	288	78	75	0.38	3.0	61.1	10.22	2.34	93.9
	4	31.8	10.1	56.86	0.72	0.35	288	78	76	0.38	3.0	58.4	10.37	2.41	96.3
	5	41.9	9.4	60.32	0.68	0.35	288	80	77	0.38	3.0	56.7	10.16	2.32	102.0
	6	51.3	9.0	63.63	0.58	0.35	288	80	78	0.38	3.0	52.4	10.17	2.33	110.2
		60.3		66.80											
2	1	0.00	10.6	66.80	0.77	0.35	288	79	77	0.38	3.5	60.4	10.35	2.40	93.4
	2	10.6	10.6	70.42	0.77	0.35	288	79	77	0.38	3.5	60.4	10.35	2.40	93.4
	3	21.1	10.0	74.04	0.72	0.35	288	82	79	0.38	3.5	58.4	10.32	2.38	97.0
	4	31.1	9.7	77.50	0.66	0.35	288	83	80	0.38	3.5	55.9	10.20	2.34	103.0
	5	40.9	9.6	80.92	0.60	0.35	287	83	80	0.38	3.5	53.2	10.32	2.38	106.1
	6	50.4	9.3	84.23	0.55	0.35	287	82	80	0.38	3.5	51.0	10.23	2.35	112.2
		59.7		87.47											
Averages					**0.71**		**288**	**79**		**0.38**		**57.9**	**10.28**	**2.37**	**97.5**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	June 16, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 1

Project No.: 22001
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	1.008
Pitot Factor	0.848
Barometric Pressure (" Hg)	30.02
Static Pressure ("H_2O)	-8.36
Oxygen Content (%)	8.86
Carbon Dioxide Content (%)	10.40
Carbon Monoxide Content (PPM)	13.4
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft³/min*	9.8 l/min*
Cyclone Qs_{actual}	0.57 ft³/min	16.2 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.7 Rft³*	1.180 Rm³*
Average Cyclone I Cut Diameter		10.43 µm
Average Cyclone IV Cut Diameter		2.43 µm
Average Isokineticity		100.3 %
Stack Gas Physical Parameters		
B_{ws}	14.5 % v/v	
Average m	221.5 (dimensionless)	
M_d	30.02 lbs/lbs mole	
M_w	28.27 lbs/lbs mole	
Average T_s	284 °F	140 °C
Average U_s	55.0 ft/s	16.8 m/s
Stack Area	15.9 ft²	1.48 m²
Actual Q_s	52590 ACFM	24.8 m³/s
Wet Reference Q_s	37301 SCFM*	17.6 Rm³/s*
Dry Reference Q_s	31877 SCFM*	15.0 Rm³/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.27 mg/Rm³*	0.0191 g/s
Total Part. (b)	5.17 mg/Rm³*	0.078 g/s
PM_{10} Part. (b)	4.83 mg/Rm³*	0.073 g/s
$PM_{2.5}$ Part. (b)	4.24 mg/Rm³*	0.064 g/s
Cond. Part.	3.90 mg/Rm³*	0.059 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)	527.6	669.6	750.3	948.9	
final volume or weight (ml or mg)	667.1	669.6	744.2	963.2	
gain in volume or weight (ml or mg)	139.5	0.0	-6.1	14.3	0.0
				TOTAL	147.7

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.4	0.7	0.3	<0.1	4.6

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: June 16, 2020	Plant: DYEC	Test No.: 3	Project No.: 22001
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	10.8	87.66	0.77	0.35	284	83	81	0.38	3.0	60.1	10.48	2.44	91.7
	2	10.8	11.1	91.38	0.75	0.35	287	75	81	0.38	3.0	59.4	10.47	2.44	93.3
	3	22.0	10.6	95.19	0.72	0.35	286	81	80	0.38	3.0	58.2	10.51	2.46	94.7
	4	32.5	10.1	98.80	0.61	0.35	286	82	81	0.38	3.0	53.5	10.45	2.43	103.7
	5	42.6	9.8	102.28	0.56	0.35	286	83	81	0.38	3.0	51.3	10.41	2.42	108.8
	6	52.4	9.0	105.68	0.50	0.35	284	83	81	0.38	3.0	48.4	10.46	2.44	114.2
		61.4		108.80											
2	1	0.00	10.4	108.80	0.68	0.35	282	83	81	0.38	3.0	56.4	10.44	2.43	97.9
	2	10.4	10.4	112.40	0.65	0.35	281	83	81	0.38	3.0	55.1	10.36	2.39	101.2
	3	20.8	10.1	116.04	0.70	0.35	282	84	82	0.38	3.0	57.2	10.38	2.40	97.4
	4	30.9	9.6	119.56	0.67	0.35	283	85	83	0.38	3.0	56.0	10.37	2.40	99.8
	5	40.6	9.2	122.94	0.65	0.35	284	84	82	0.38	3.0	55.2	10.43	2.42	100.5
	6	49.8	8.8	126.13	0.52	0.35	284	85	83	0.38	3.0	49.4	10.43	2.42	112.4
		58.6		129.19											
Averages					0.65		284	82		0.38		55.0	10.43	2.43	100.3

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	June 15, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 2

Project No.: 22001
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	1.008
Pitot Factor	0.848
Barometric Pressure (" Hg)	30.18
Static Pressure ("H_2O)	-8.25
Oxygen Content (%)	8.41
Carbon Dioxide Content (%)	10.90
Carbon Monoxide Content (PPM)	23.3
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft³/min*	10.0 l/min*
Cyclone Qs_{actual}	0.59 ft³/min	16.6 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.6 Rft³*	1.206 Rm³*
Average Cyclone I Cut Diameter		10.25 µm
Average Cyclone IV Cut Diameter		2.35 µm
Average Isokineticity		103.6 %
Stack Gas Physical Parameters		
B_{ws}	15.0 % v/v	
Average m	221.1 (dimensionless)	
M_d	30.08 lbs/lbs mole	
M_w	28.27 lbs/lbs mole	
Average T_s	285 °F	141 °C
Average U_s	54.5 ft/s	16.6 m/s
Stack Area	15.9 ft²	1.48 m²
Actual Q_s	52062 ACFM	24.6 m³/s
Wet Reference Q_s	37084 SCFM*	17.5 Rm³/s*
Dry Reference Q_s	31514 SCFM*	14.9 Rm³/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.24 mg/Rm³*	0.0185 g/s
Total Part. (b)	5.31 mg/Rm³*	0.079 g/s
PM_{10} Part. (b)	4.56 mg/Rm³*	0.068 g/s
$PM_{2.5}$ Part. (b)	4.23 mg/Rm³*	0.063 g/s
Cond. Part.	4.06 mg/Rm³*	0.060 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)	526.7	669.6	759.6	914.7	
final volume or weight (ml or mg)	675.4	669.6	757.5	924.9	
gain in volume or weight (ml or mg)	148.7	0.0	-2.1	10.2	0.0
				TOTAL	156.8

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.9	0.4	<0.1	<0.1	4.9

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: June 15, 2020	Plant: DYEC	Test No.: 1	Project No.: 22001
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	73.70	0.71	0.35	286	73	72	0.38	3.0	57.6	10.36	2.39	97.2
	2	10.4	10.4	77.25	0.72	0.35	286	75	73	0.38	3.0	58.0	9.84	2.19	103.7
	3	20.8	10.3	81.05	0.69	0.35	285	77	74	0.38	3.0	56.8	10.41	2.41	97.9
	4	31.1	10.0	84.55	0.63	0.35	285	78	75	0.38	3.0	54.2	10.22	2.34	105.0
	5	41.1	9.4	88.05	0.59	0.35	285	80	76	0.38	3.0	52.5	10.22	2.34	108.6
	6	50.5	9.0	91.36	0.54	0.35	285	81	77	0.38	3.0	50.2	10.24	2.34	113.2
		59.5		94.51											
2	1	0.00	10.62	94.51	0.65	0.35	285	81	77	0.38	3.0	55.1	10.24	2.34	103.1
	2	10.6	10.69	98.23	0.67	0.35	284	81	78	0.38	3.0	55.9	10.14	2.30	103.0
	3	21.3	10.49	102.03	0.67	0.35	285	82	79	0.38	3.0	55.9	10.43	2.42	99.0
	4	31.8	10.02	105.62	0.63	0.35	285	83	79	0.38	3.0	54.2	10.37	2.40	103.0
	5	41.8	9.66	109.08	0.61	0.35	285	83	79	0.38	3.0	53.4	10.27	2.36	106.0
	6	51.5	8.99	112.46	0.53	0.35	286	83	80	0.38	3.0	49.8	10.27	2.36	113.8
		60.5		115.61											
Averages					**0.64**		**285**	**78**		**0.38**		**54.5**	**10.25**	**2.35**	**103.6**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	June 15, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 2

Project No.: 22001
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	1.008
Pitot Factor	0.848
Barometric Pressure (" Hg)	30.16
Static Pressure ("H_2O)	-8.28
Oxygen Content (%)	8.51
Carbon Dioxide Content (%)	10.82
Carbon Monoxide Content (PPM)	14
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}	0.59 ft^3/min	16.6 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.3 Rft^3*	1.199 Rm^3*
Average Cyclone I Cut Diameter		10.23 µm
Average Cyclone IV Cut Diameter		2.34 µm
Average Isokineticity		99.6 %
Stack Gas Physical Parameters		
B_{ws}	15.6 % v/v	
Average m	221.0 (dimensionless)	
M_d	30.07 lbs/lbs mole	
M_w	28.19 lbs/lbs mole	
Average T_s	286 °F	141 °C
Average U_s	57.0 ft/s	17.4 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	54476 ACFM	25.7 m^3/s
Wet Reference Q_s	38743 SCFM*	18.3 Rm^3/s*
Dry Reference Q_s	32702 SCFM*	15.4 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.67 mg/Rm^3*	0.0103 g/s
Total Part. (b)	4.51 mg/Rm^3*	0.070 g/s
PM_{10} Part. (b)	4.17 mg/Rm^3*	0.064 g/s
$PM_{2.5}$ Part. (b)	4.00 mg/Rm^3*	0.062 g/s
Cond. Part.	3.84 mg/Rm^3*	0.059 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)	491.0	661.3	757.0	954.1	
final volume or weight (ml or mg)	645.4	661.3	755.8	963.8	
gain in volume or weight (ml or mg)	154.4	0.0	-1.2	9.7	0.0
				TOTAL	162.9

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.4	0.2	0.1	<0.1	4.6

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: June 15, 2020	Plant: DYEC	Test No.: 2	Project No.: 22001
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	10.9	15.72	0.82	0.35	286	80	78	0.38	3.0	62.0	10.40	2.41	89.7
	2	10.9	10.5	19.42	0.77	0.35	286	79	78	0.38	3.0	60.1	10.11	2.30	96.4
	3	21.4	10.4	23.15	0.75	0.35	286	79	78	0.38	3.0	59.3	10.45	2.43	93.1
	4	31.8	10.1	26.66	0.70	0.35	285	81	78	0.38	3.0	57.3	10.25	2.35	98.9
	5	41.9	9.3	30.15	0.60	0.35	286	82	79	0.38	3.0	53.1	9.97	2.24	111.3
	6	51.2	9.0	33.52	0.56	0.35	286	82	79	0.38	3.0	51.3	10.02	2.26	114.3
		60.2		36.75											
2	1	0.00	10.2	36.75	0.72	0.35	285	82	79	0.38	3.0	58.1	10.27	2.36	97.4
	2	10.2	10.3	40.29	0.73	0.35	285	82	79	0.38	3.0	58.5	10.20	2.33	97.7
	3	20.5	10.7	43.89	0.79	0.35	287	83	80	0.38	3.0	60.9	10.61	2.50	89.0
	4	31.1	9.9	47.44	0.68	0.35	286	83	80	0.38	3.0	56.5	10.16	2.32	101.8
	5	41.1	9.6	50.94	0.64	0.35	286	83	80	0.38	3.0	54.8	10.06	2.28	106.3
	6	50.7	9.2	54.38	0.58	0.35	285	83	80	0.38	3.0	52.1	10.23	2.34	109.1
		59.8		57.58											
Averages					0.70		286	80		0.38		57.0	10.23	2.34	99.6

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	June 15, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 2

Project No.: 22001
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	1.008
Pitot Factor	0.848
Barometric Pressure (" Hg)	30.12
Static Pressure ("H_2O)	-8.30
Oxygen Content (%)	8.61
Carbon Dioxide Content (%)	10.77
Carbon Monoxide Content (PPM)	11.6
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.36 Rft^3/min*	10.1 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	17.0 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.7 Rft^3*	1.210 Rm^3*
Average Cyclone I Cut Diameter		10.08 µm
Average Cyclone IV Cut Diameter		2.29 µm
Average Isokineticity		102.1 %
Stack Gas Physical Parameters		
B_{ws}	16.4 % v/v	
Average m	220.6 (dimensionless)	
M_d	30.07 lbs/lbs mole	
M_w	28.09 lbs/lbs mole	
Average T_s	286 °F	141 °C
Average U_s	56.7 ft/s	17.3 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	54226 ACFM	25.6 m^3/s
Wet Reference Q_s	38494 SCFM*	18.2 Rm^3/s*
Dry Reference Q_s	32192 SCFM*	15.2 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.07 mg/Rm^3*	0.0163 g/s
Total Part. (b)	3.72 mg/Rm^3*	0.056 g/s
PM_{10} Part. (b)	3.30 mg/Rm^3*	0.050 g/s
$PM_{2.5}$ Part. (b)	3.06 mg/Rm^3*	0.046 g/s
Cond. Part.	2.64 mg/Rm^3*	0.040 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)	526.7	669.6	757.5	924.9	
final volume or weight (ml or mg)	691.2	669.6	756.5	935.7	
gain in volume or weight (ml or mg)	164.5	0.0	-1.0	10.8	0.0
				TOTAL	174.3

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.5	0.3	0.3	0.2	3.2

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: June 15, 2020	Plant: DYEC	Test No.: 3	Project No.: 22001
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	10.9	57.83	0.80	0.35	287	81	81	0.38	3.0	61.5	9.87	2.21	97.6
	2	10.9	10.5	61.79	0.78	0.35	287	81	80	0.38	3.0	60.7	10.14	2.31	95.1
	3	21.4	10.4	65.48	0.75	0.35	287	81	80	0.38	3.0	59.5	10.14	2.31	96.9
	4	31.8	10.1	69.12	0.68	0.35	286	83	81	0.38	3.0	56.6	9.67	2.13	108.8
	5	41.9	9.3	72.89	0.60	0.35	286	84	81	0.38	3.0	53.2	9.64	2.12	116.3
	6	51.2	9.0	76.40	0.54	0.35	287	85	84	0.38	3.0	50.5	10.30	2.38	111.8
		60.2		79.50											
2	1	0.00	10.2	79.50	0.76	0.35	289	85	84	0.38	3.0	60.0	10.19	2.34	95.8
	2	10.2	10.3	83.07	0.73	0.35	286	84	82	0.38	3.0	58.7	10.18	2.33	97.7
	3	20.5	10.7	86.66	0.69	0.35	286	85	82	0.38	3.0	57.0	10.17	2.33	100.5
	4	31.1	9.9	90.40	0.67	0.35	284	85	82	0.38	3.0	56.1	10.38	2.41	99.0
	5	41.1	9.6	93.77	0.65	0.35	284	85	82	0.38	3.0	55.3	10.16	2.32	103.6
	6	50.7	9.2	97.14	0.57	0.35	284	85	82	0.38	3.0	51.8	10.16	2.32	110.7
		59.8		100.35											
Averages					**0.69**		**286**	**83**		**0.38**		**56.7**	**10.08**	**2.29**	**102.1**

APPENDIX 24

Acid Gases Test Emission Calculations
(12 pages)

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	1 - M26A
Date:	June 15, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.007
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	1.191 m^3
AVGERGE ISOKINETICITY	98.5 %
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	140.7 °C
AVERAGE GAS MOISTURE BY VOLUME	14.5 %
AVERAGE GAS VELOCITY	16.81 m/s
BAROMETRIC PRESSURE (Station)	102.201 Kpa
STATIC PRESSURE	-2.121 Kpa
ABSOLUTE GAS PRESSURE	100.080 Kpa
OXYGEN CONCENTRATION	8.8 %
CARBON DIOXIDE CONCENTRATION	10.21 %
CARBON MONOXIDE CONCENTRATION	11.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.83 m^3/s
DRY REF GAS FLOWRATE	15.10 Rm^3/s
DRY ADJ GAS FLOWRATE	18.46 Rm^3/s
WET REF GAS FLOWRATE	17.67 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.191 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

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No. 1
Date:	June 15, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.007	Probe (mg)	0
Barometric Pressure	30.18 "Hg	CWTR (g)	137.5
Static Pressure	-8.520 "H_2O	WCBDA (g)	11.3
Nozzle	0.2546 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%	8.8
CO2%	10.21
COppm	11.9

Measured H2O
14.5 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	58.02	0.77	274	74	68	72	1.7	5.0		18.12	
2	5	61.80	0.81	287	51	73	73	2	5.0		18.75	100.3
3	10	65.62	0.74	287	55	78	74	1.8	5.0		17.92	99.3
4	15	69.25	0.68	287	58	79	74	1.65	5.0		17.18	98.1
5	20	72.74	0.62	287	61	82	73	1.5	5.0		16.40	98.2
6	25	76.03	0.55	288	62	83	73	1.3	5.0		15.46	96.8
7	30	79.23	0.61	287	58	84	75	1.5	5.0		16.27	99.9
8	35	82.55	0.61	287	53	85	76	1.5	5.0		16.27	98.1
9	40	85.90	0.65	286	49	75	73	1.55	5.0		16.78	98.8
10	45	89.24	0.65	282	46	78	74	1.6	5.0		16.74	96.5
11	50	92.68	0.62	285	48	81	75	1.5	5.0		16.38	98.8
12	55	96.05	0.55	286	48	82	77	1.3	4.8		15.44	98.9
	60	99.20										97.9

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	2 - M26A
Date:	June 15, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.007
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	1.225 m^3
AVGERGE ISOKINETICITY	99.7 %
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	140.6 °C
AVERAGE GAS MOISTURE BY VOLUME	15.4 %
AVERAGE GAS VELOCITY	17.28 m/s
BAROMETRIC PRESSURE (Station)	102.032 Kpa
STATIC PRESSURE	-2.121 Kpa
ABSOLUTE GAS PRESSURE	99.910 Kpa
OXYGEN CONCENTRATION	8.51 %
CARBON DIOXIDE CONCENTRATION	10.77 %
CARBON MONOXIDE CONCENTRATION	13.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.53 m^3/s
DRY REF GAS FLOWRATE	15.34 Rm^3/s
DRY ADJ GAS FLOWRATE	19.20 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		1.225 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, 2020	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	1.007	**Probe (mg)**	0
Barometric Pressure	30.13 "Hg	**CWTR (g)**	154.4
Static Pressure	-8.520 "H_2O	**WCBDA (g)**	9.6
Nozzle	0.2546 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%	8.51
CO2%	10.77
COppm	13.6

Measured H2O
15.4 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	99.51	0.73	284	75	75	75	1.7	5.0		17.79	
2	5	103.15	0.78	284	51	77	74	1.9	5.0		18.39	99.9
3	10	106.87	0.76	284	49	80	77	1.9	5.0		18.15	98.7
4	15	110.60	0.7	284	49	82	77	1.75	5.0		17.42	99.7
5	20	114.15	0.68	284	49	84	75	1.7	5.0		17.17	98.6
6	25	117.70	0.61	285	50	85	75	1.5	4.5		16.27	100.1
7	30	121.05	0.67	286	49	86	77	1.65	5.0		17.06	99.6
8	35	124.55	0.72	286	46	87	77	1.8	5.0		17.69	99.1
9	40	128.25	0.74	286	46	88	77	1.9	5.0		17.93	101.0
10	45	131.99	0.75	286	46	89	77	1.85	5.0		18.05	100.7
11	50	135.73	0.63	286	48	89	78	1.55	5.0		16.55	99.9
12	55	139.12	0.51	286	48	89	79	1.25	4.5		14.89	98.6
	60	142.22										100.1

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	3 - M26A
Date:	June 15, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.007
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	1.238 m^3
AVGERGE ISOKINETICITY	98.8 %
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	140.0 °C
AVERAGE GAS MOISTURE BY VOLUME	14.7 %
AVERAGE GAS VELOCITY	17.46 m/s
BAROMETRIC PRESSURE (Station)	101.998 Kpa
STATIC PRESSURE	-2.121 Kpa
ABSOLUTE GAS PRESSURE	99.877 Kpa
OXYGEN CONCENTRATION	8.74 %
CARBON DIOXIDE CONCENTRATION	10.64 %
CARBON MONOXIDE CONCENTRATION	17.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.79 m^3/s
DRY REF GAS FLOWRATE	15.66 Rm^3/s
DRY ADJ GAS FLOWRATE	19.23 Rm^3/s
WET REF GAS FLOWRATE	18.35 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.238 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, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.007	Probe (mg)	0
Barometric Pressure	30.12 "Hg	CWTR (g)	147.9
Static Pressure	-8.520 "H_2O	WCBDA (g)	8.4
Nozzle	0.2546 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%	8.74
CO2%	10.64
COppm	17.4

Measured H2O
14.7 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	42.44	0.65	274	68	81	81	1.65	5.0		16.65	
2	5	45.94	0.68	285	60	83	77	1.7	5.0		17.16	99.2
3	10	49.48	0.76	286	56	86	78	1.9	5.0		18.15	99.0
4	15	53.19	0.76	286	56	86	78	1.9	5.0		18.15	97.9
5	20	56.98	0.74	283	53	89	78	1.85	5.5		17.87	100.0
6	25	60.67	0.66	284	52	89	79	1.65	5.0		16.89	98.2
7	30	64.21	0.61	284	52	89	79	1.5	5.0		16.24	99.7
8	35	67.62	0.66	285	52	89	79	1.65	5.0		16.90	99.8
9	40	71.08	0.69	285	55	90	79	1.7	5.5		17.28	97.5
10	45	74.65	0.73	285	52	90	81	1.8	5.5		17.78	98.3
11	50	78.34	0.76	285	53	90	79	1.9	5.5		18.14	98.6
12	55	82.10	0.77	285	52	90	80	1.9	5.5		18.26	98.7
	60	85.87										98.2

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	1 - M26A
Date:	June 16, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.007
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	1.180 m^3
AVGERGE ISOKINETICITY	97.1 %
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	140.7 °C
AVERAGE GAS MOISTURE BY VOLUME	14.0 %
AVERAGE GAS VELOCITY	16.83 m/s
BAROMETRIC PRESSURE (Station)	102.066 Kpa
STATIC PRESSURE	-2.052 Kpa
ABSOLUTE GAS PRESSURE	100.014 Kpa
OXYGEN CONCENTRATION	8.33 %
CARBON DIOXIDE CONCENTRATION	11.01 %
CARBON MONOXIDE CONCENTRATION	20.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.87 m^3/s
DRY REF GAS FLOWRATE	15.20 Rm^3/s
DRY ADJ GAS FLOWRATE	19.30 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		1.180 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, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.007	Probe (mg)	0
Barometric Pressure	30.14 "Hg	CWTR (g)	133.4
Static Pressure	-8.240 "H_2O	WCBDA (g)	8.3
Nozzle	0.2546 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	12

Combustion Gases	
O2%	8.33
CO2%	11.01
COppm	20.8

Measured H2O
14.0 %

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	86.23	0.81	285	67	69	69	1.9	5.0		18.68	
2	5	89.87	0.82	285	50	72	73	1.9	5.0		18.79	94.8
3	10	93.59	0.77	285	47	77	71	1.75	5.0		18.21	95.6
4	15	97.21	0.73	286	49	80	73	1.7	4.5		17.74	95.7
5	20	100.70	0.63	286	51	79	72	1.4	4.5		16.48	94.4
6	25	103.93	0.55	286	50	80	73	1.25	4.0		15.40	94.1
7	30	106.98	0.6	285	48	82	73	1.45	4.5		16.07	94.9
8	35	110.23	0.61	285	47	82	73	1.4	4.5		16.21	96.6
9	40	113.55	0.62	285	48	83	73	1.5	5.0		16.34	97.9
10	45	116.98	0.67	285	50	83	74	1.7	5.0		16.99	100.3
11	50	120.55	0.56	285	49	83	74	1.4	4.5		15.53	100.3
12	55	123.82	0.56	285	50	83	74	1.4	4.5		15.53	100.5
	60	127.07										99.8

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	2 - M26A
Date:	June 16, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.007
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	1.237 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	140.9 °C
AVERAGE GAS MOISTURE BY VOLUME	15.0 %
AVERAGE GAS VELOCITY	17.40 m/s
BAROMETRIC PRESSURE (Station)	102.032 Kpa
STATIC PRESSURE	-2.052 Kpa
ABSOLUTE GAS PRESSURE	99.980 Kpa
OXYGEN CONCENTRATION	8.56 %
CARBON DIOXIDE CONCENTRATION	10.67 %
CARBON MONOXIDE CONCENTRATION	14.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.70 m^3/s
DRY REF GAS FLOWRATE	15.51 Rm^3/s
DRY ADJ GAS FLOWRATE	19.34 Rm^3/s
WET REF GAS FLOWRATE	18.27 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.237 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, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.007	Probe (mg)	0
Barometric Pressure	30.13 "Hg	CWTR (g)	148.6
Static Pressure	-8.240 "H_2O	WCBDA (g)	12.5
Nozzle	0.2546 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	12

Combustion Gases	
O2%	8.56
CO2%	10.67
COppm	14.4

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	28.02	0.77	285	73	75	75	1.9	5.0		18.26	
2	5	31.77	0.81	285	52	75	75	2	5.0		18.73	99.9
3	10	35.58	0.76	286	52	78	75	1.9	5.0		18.16	99.0
4	15	39.32	0.73	286	53	80	75	1.8	5.0		17.80	100.0
5	20	42.96	0.69	286	53	82	75	1.7	5.0		17.30	99.1
6	25	46.60	0.62	286	53	83	75	1.5	5.0		16.40	101.8
7	30	49.98	0.68	287	54	84	76	1.7	5.0		17.19	99.5
8	35	53.44	0.68	287	56	85	76	1.7	5.0		17.19	97.2
9	40	56.98	0.69	286	57	86	76	1.75	5.0		17.30	99.4
10	45	60.62	0.74	285	59	86	76	1.9	5.0		17.91	101.3
11	50	64.32	0.72	285	59	86	76	1.85	5.0		17.66	99.4
12	55	67.98	0.51	283	60	86	76	1.2	4.5		14.84	99.7
	60	71.05										99.1

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	3 - M26A
Date:	June 16, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.007
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	1.258 m^3
AVGERGE ISOKINETICITY	101.2 %
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	140.8 °C
AVERAGE GAS MOISTURE BY VOLUME	15.1 %
AVERAGE GAS VELOCITY	17.43 m/s
BAROMETRIC PRESSURE (Station)	101.998 Kpa
STATIC PRESSURE	-2.052 Kpa
ABSOLUTE GAS PRESSURE	99.946 Kpa
OXYGEN CONCENTRATION	8.39 %
CARBON DIOXIDE CONCENTRATION	11.05 %
CARBON MONOXIDE CONCENTRATION	11.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.75 m^3/s
DRY REF GAS FLOWRATE	15.53 Rm^3/s
DRY ADJ GAS FLOWRATE	19.62 Rm^3/s
WET REF GAS FLOWRATE	18.30 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.258 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, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.007	Probe (mg)	0
Barometric Pressure	30.12 "Hg	CWTR (g)	155.8
Static Pressure	-8.240 "H_2O	WCBDA (g)	8.9
Nozzle	0.2546 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%	8.39
CO2%	11.05
COppm	11.1

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	71.42	0.62	285	65	76	75	1.6	4.5		16.38	
2	5	74.87	0.71	285	48	79	76	1.8	4.5		17.53	102.4
3	10	78.49	0.78	285	47	82	76	2	5.0		18.37	100.0
4	15	82.34	0.75	285	49	83	76	1.9	5.0		18.02	101.3
5	20	86.11	0.7	286	48	84	76	1.8	5.0		17.42	101.0
6	25	89.77	0.69	286	49	85	76	1.75	5.0		17.29	101.5
7	30	93.40	0.62	286	48	86	76	1.6	5.0		16.39	101.3
8	35	96.83	0.62	286	48	86	76	1.6	5.0		16.39	100.8
9	40	100.29	0.68	285	49	86	76	1.75	5.0		17.16	101.7
10	45	103.87	0.77	285	51	87	77	2	5.0		18.26	100.4
11	50	107.73	0.72	286	49	86	78	1.85	5.0		17.66	101.6
12	55	111.46	0.77	285	50	86	78	2	5.0		18.26	101.6
	60	115.28										100.6

APPENDIX 25

SVOC Test Emission Calculations
(18 pages)

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 SVOC
Date:	June 17, 202

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.007
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	5.174 m^3
AVGERGE ISOKINETICITY	100.1 %
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	141.2 °C
AVERAGE GAS MOISTURE BY VOLUME	15.0 %
AVERAGE GAS VELOCITY	18.18 m/s
BAROMETRIC PRESSURE (Station)	101.524 Kpa
STATIC PRESSURE	-2.082 Kpa
ABSOLUTE GAS PRESSURE	99.442 Kpa
OXYGEN CONCENTRATION	8.91 %
CARBON DIOXIDE CONCENTRATION	10.61 %
CARBON MONOXIDE CONCENTRATION	18.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.87 m^3/s
DRY REF GAS FLOWRATE	16.13 Rm^3/s
DRY ADJ GAS FLOWRATE	19.54 Rm^3/s
WET REF GAS FLOWRATE	18.98 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.174 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, ON
Test No.:	1 SVOC	**Test Location:**	APC Outlet No. 1
Date:	June 17, 202	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	1.007	**Probe (mg)**	0
Barometric Pressure	29.98 "Hg	**CWTR (g)**	657
Static Pressure	-8.360 "H_2O	**WCBDA (g)**	12.9
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 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%	8.91
CO2%	10.61
COppm	18.9

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	16.03	0.89	284	73	73	74	2.2	7.0		19.67	
	5	20.15	0.89	288	59	76	74	2.2	7.0		19.72	102.1
2	10	24.16	0.87	287	57	78	74	2.15	7.0		19.49	99.3
	15	28.18	0.88	287	52	80	74	2.2	8.0		19.60	100.4
3	20	32.27	0.87	287	54	82	75	2.15	7.5		19.49	101.4
	25	36.44	0.87	287	55	83	76	2.1	8.0		19.49	103.7
4	30	40.38	0.81	287	55	84	76	2.05	8.0		18.80	97.8
	35	44.27	0.81	288	56	84	77	2.05	8.0		18.82	100.0
5	40	48.18	0.72	287	58	84	77	1.8	7.0		17.73	100.4
	45	51.85	0.72	287	58	85	77	1.8	7.0		17.73	99.9
6	50	55.52	0.63	287	59	86	77	1.6	7.0		16.58	99.8
	55	58.97	0.64	287	59	86	78	1.65	7.0		16.72	100.1
7	60	62.47	0.74	288	54	86	78	1.9	7.5		17.99	100.7
	65	66.22	0.73	287	52	87	78	1.9	7.5		17.85	100.5
8	70	70.00	0.75	287	52	86	78	1.9	7.5		18.09	101.8
	75	73.81	0.77	287	51	87	79	1.9	7.5		18.33	101.3
9	80	77.59	0.8	287	50	88	79	2	7.5		18.69	99.0
	85	81.46	0.76	287	50	87	79	1.9	7.5		18.22	99.4
10	90	85.24	0.77	285	50	87	79	1.95	7.5		18.31	99.7
	95	89.07	0.75	285	51	87	79	1.9	7.0		18.07	100.2
11	100	92.82	0.69	285	51	88	79	1.7	7.0		17.33	99.4
	105	96.42	0.71	285	51	89	79	1.75	7.0		17.58	99.4
12	110	100.04	0.59	285	51	89	79	1.5	6.5		16.03	98.4
	115	103.42	0.59	285	52	87	79	1.5	6.5		16.03	100.7
	120	106.75								0.46		99.4
1	0	107.21	0.85	285	70	79	78	2.1	8.0		19.24	
	5	111.09	0.95	287	50	80	78	2.4	8.5		20.37	97.5
2	10	115.35	0.86	287	47	81	78	2.15	8.0		19.38	101.4
	15	119.39	0.88	287	47	82	78	2.2	8.0		19.60	100.9
3	20	123.50	0.83	287	47	83	78	2.1	8.0		19.04	101.4

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 SVOC	**Test Location:**	APC Outlet No. 1
Date:	June 17, 202	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.007	Probe (mg)	0
Barometric Pressure	29.98 "Hg	CWTR (g)	657
Static Pressure	-8.360 "H_2O	WCBDA (g)	12.9
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.46 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%	8.91
CO2%	10.61
COppm	18.9

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	127.43	0.81	287	47	83	79	2.05	8.0		18.80	99.7
4	30	131.34	0.76	286	47	83	78	1.95	7.5		18.20	100.3
	35	135.17	0.77	286	48	83	78	1.9	7.5		18.32	101.4
5	40	138.97	0.71	286	48	83	78	1.75	7.0		17.59	100.0
	45	142.60	0.7	287	48	84	78	1.75	7.0		17.48	99.4
6	50	146.20	0.65	287	49	85	79	1.65	7.0		16.85	99.3
	55	149.72	0.64	286	48	85	79	1.65	7.0		16.70	100.5
7	60	153.25	0.69	286	49	85	79	1.7	7.0		17.34	101.5
	65	156.84	0.71	286	48	85	79	1.8	7.0		17.59	99.4
8	70	160.48	0.77	286	41	86	79	1.9	7.5		18.32	99.4
	75	164.27	0.75	286	48	86	79	1.85	7.5		18.08	99.3
9	80	168.04	0.79	285	49	85	79	1.95	8.0		18.55	100.1
	85	171.85	0.79	286	49	85	79	1.95	8.0		18.56	98.6
10	90	175.66	0.78	286	49	85	80	1.95	8.0		18.44	98.7
	95	179.49	0.81	284	49	84	80	2	8.0		18.77	99.7
11	100	183.40	0.76	284	49	85	80	1.9	7.5		18.18	99.9
	105	187.24	0.73	284	52	84	80	1.9	7.5		17.82	101.2
12	110	191.05	0.63	284	50	84	79	1.6	7.0		16.55	102.5
	115	194.50	0.64	284	50	84	80	1.6	7.0		16.68	99.9
	120	197.99										100.2

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 SVOC
Date:	June 18, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.007
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	4.904 m^3
AVGERGE ISOKINETICITY	100.6 %
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	141.1 °C
AVERAGE GAS MOISTURE BY VOLUME	15.5 %
AVERAGE GAS VELOCITY	17.33 m/s
BAROMETRIC PRESSURE (Station)	101.084 Kpa
STATIC PRESSURE	-2.067 Kpa
ABSOLUTE GAS PRESSURE	99.017 Kpa
OXYGEN CONCENTRATION	8.33 %
CARBON DIOXIDE CONCENTRATION	11.01 %
CARBON MONOXIDE CONCENTRATION	12.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.61 m^3/s
DRY REF GAS FLOWRATE	15.22 Rm^3/s
DRY ADJ GAS FLOWRATE	19.32 Rm^3/s
WET REF GAS FLOWRATE	18.01 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.904 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 18, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.007	Probe (mg)	0
Barometric Pressure	29.85 "Hg	CWTR (g)	644.1
Static Pressure	-8.300 "H_2O	WCBDA (g)	17.4
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.27 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%	8.33
CO2%	11.01
COppm	12.9

Measured H2O
15.5 %

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	92.56	0.83	286	74	72	72	2.1	6.0		19.07	
	5	96.48	0.85	287	57	76	74	2.05	7.0		19.32	101.3
2	10	100.36	0.85	287	55	80	74	2.1	7.0		19.32	98.6
	15	104.29	0.84	287	56	82	74	2.1	7.0		19.20	99.5
3	20	108.23	0.8	287	53	84	75	2	7.0		18.74	100.2
	25	112.09	0.82	287	54	86	77	2.1	7.0		18.97	100.2
4	30	116.04	0.75	287	53	86	76	1.85	7.0		18.14	101.0
	35	119.76	0.74	287	54	87	77	1.85	7.0		18.02	99.5
5	40	123.46	0.65	287	54	88	77	1.6	6.5		16.89	99.4
	45	126.99	0.66	287	48	89	78	1.65	6.5		17.02	101.0
6	50	130.54	0.55	287	54	90	79	1.35	6.0		15.54	100.7
	55	133.77	0.56	286	55	90	79	1.4	6.0		15.67	100.1
7	60	137.05	0.63	286	55	90	79	1.6	6.5		16.62	100.7
	65	140.49	0.63	286	54	91	80	1.6	6.5		16.62	99.6
8	70	143.98	0.68	286	56	90	80	1.7	7.0		17.26	100.8
	75	147.61	0.66	286	55	90	80	1.65	7.0		17.01	101.1
9	80	151.18	0.68	287	55	92	81	1.7	7.0		17.28	100.9
	85	154.79	0.68	286	55	92	81	1.75	7.0		17.26	100.3
10	90	158.43	0.65	286	56	93	81	1.65	7.0		16.88	101.1
	95	161.97	0.66	285	57	92	81	1.7	7.0		17.00	100.4
11	100	165.55	0.56	286	58	92	82	1.45	6.5		15.67	100.8
	105	168.89	0.57	285	58	93	82	1.45	6.5		15.80	102.0
12	110	172.20	0.57	285	57	93	83	1.45	6.5		15.80	100.1
	115	175.54	0.54	284	55	94	82	1.4	6.0		15.36	100.9
	120	178.77								0.27		100.2
1	0	179.04	0.73	285	64	86	82	1.9	8.0		17.88	
	5	182.73	0.76	286	49	87	83	1.95	8.0		18.25	99.3
2	10	186.55	0.75	286	47	88	82	1.9	7.0		18.13	100.7
	15	190.37	0.75	286	48	86	83	1.95	7.0		18.13	101.3
3	20	194.18	0.73	286	50	87	83	1.9	7.0		17.89	101.2

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 SVOC	**Test Location:**	APC Outlet No. 1
Date:	June 18, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.007	Probe (mg)	0
Barometric Pressure	29.85 "Hg	CWTR (g)	644.1
Static Pressure	-8.300 "H_2O	WCBDA (g)	17.4
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.27 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%	8.33
CO2%	11.01
COppm	12.9

Measured H2O
15.5 %

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	197.93	0.73	287	49	88	83	1.9	7.0		17.90	100.8
4	30	201.67	0.69	287	49	89	82	1.75	7.0		17.40	100.5
	35	205.32	0.71	287	49	89	82	1.8	7.0		17.65	100.9
5	40	209.03	0.64	287	49	89	82	1.6	6.5		16.76	101.1
	45	212.55	0.66	288	50	89	82	1.7	6.5		17.03	101.0
6	50	216.13	0.61	288	50	90	83	1.5	6.5		16.37	101.2
	55	219.59	0.6	288	50	90	82	1.5	6.5		16.24	101.5
7	60	222.96	0.6	288	51	91	82	1.5	6.5		16.24	99.8
	65	226.34	0.68	287	51	90	82	1.7	7.0		17.28	100.0
8	70	229.94	0.7	288	51	91	82	1.8	7.0		17.54	100.1
	75	233.60	0.71	287	51	90	82	1.8	7.0		17.65	100.3
9	80	237.27	0.72	288	52	90	83	18	7.0		17.79	99.9
	85	241.01	0.74	258	52	90	83	2	7.0		17.67	105.1
10	90	244.84	0.72	288	52	89	83	1.85	7.0		17.79	100.1
	95	248.59	0.71	288	52	89	83	1.8	7.0		17.66	101.5
11	100	252.29	0.67	288	53	89	82	1.7	7.0		17.16	100.8
	105	255.92	0.65	288	52	89	83	1.65	7.0		16.90	101.9
12	110	259.46	0.67	287	53	90	83	1.7	7.0		17.15	100.8
	115	263.06	0.66	282	52	90	83	1.7	7.0		16.96	100.8
	120	266.62										100.1

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 SVOC
Date:	June 18, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.007
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	5.010 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	141.6 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	17.69 m/s
BAROMETRIC PRESSURE (Station)	101.930 Kpa
STATIC PRESSURE	-2.067 Kpa
ABSOLUTE GAS PRESSURE	99.864 Kpa
OXYGEN CONCENTRATION	8.22 %
CARBON DIOXIDE CONCENTRATION	10.96 %
CARBON MONOXIDE CONCENTRATION	14.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.13 m^3/s
DRY REF GAS FLOWRATE	15.49 Rm^3/s
DRY ADJ GAS FLOWRATE	19.83 Rm^3/s
WET REF GAS FLOWRATE	18.52 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.010 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.:	3 SVOC	**Test Location:**	APC Outlet No. 1
Date:	June 18, 2020	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	1.007	**Probe (mg)**	0
Barometric Pressure	30.1 "Hg	**CWTR (g)**	705.5
Static Pressure	-8.300 "H_2O	**WCBDA (g)**	14.1
Nozzle	0.2548 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.35 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%	8.22
CO2%	10.96
COppm	14.6

Measured H2O
16.3 %

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	67.02	0.87	285	73	73	74	2.1	7.0		19.47	
	5	70.93	0.85	288	64	87	82	2.1	7.5		19.28	99.4
2	10	74.88	0.87	289	60	89	82	2.2	8.0		19.52	99.7
	15	78.98	0.88	288	58	90	83	2.25	8.0		19.62	102.2
3	20	83.14	0.83	289	55	91	83	2.1	8.0		19.07	102.9
	25	87.12	0.83	289	58	91	83	2.1	8.0		19.07	101.3
4	30	91.23	0.77	289	56	92	84	2	7.5		18.37	104.6
	35	95.11	0.76	289	60	92	84	1.9	7.5		18.25	102.3
5	40	98.95	0.68	289	52	93	84	1.7	7.0		17.26	101.9
	45	102.57	0.68	289	50	94	85	1.7	7.0		17.26	101.4
6	50	106.18	0.58	288	50	95	85	1.5	7.0		15.93	100.9
	55	109.60	0.59	288	46	94	85	1.5	7.0		16.07	103.3
7	60	112.97	0.67	288	46	95	85	1.7	7.0		17.12	101.1
	65	116.57	0.67	289	46	94	85	1.7	7.0		17.13	101.3
8	70	120.17	0.7	288	46	94	85	1.8	7.5		17.50	101.4
	75	123.91	0.69	288	46	93	85	1.75	7.0		17.37	103.0
9	80	127.55	0.71	288	46	93	85	1.8	8.0		17.62	101.1
	85	131.25	0.67	288	48	93	86	1.7	7.0		17.12	101.3
10	90	134.88	0.66	285	48	94	85	1.7	7.0		16.96	102.2
	95	138.49	0.66	285	48	94	85	1.7	7.0		16.96	102.2
11	100	142.07	0.61	285	49	94	86	1.6	7.0		16.30	101.3
	105	145.59	0.61	285	50	94	85	1.55	7.0		16.30	103.5
12	110	149.02	0.61	285	49	94	86	1.55	7.0		16.30	101.0
	115	152.42	0.61	285	50	94	85	1.55	7.0		16.30	100.0
	120	154.64								0.35		65.3
1	0	154.99	0.83	288	62	87	85	2.1	8.0		19.06	
	5	158.97	0.83	288	49	89	85	2.1	8.0		19.06	101.4
2	10	162.96	0.87	288	44	89	85	2.2	8.0		19.51	101.5
	15	167.08	0.83	289	44	90	85	2.1	8.0		19.07	102.4
3	20	171.12	0.79	288	45	90	85	2	8.0		18.59	102.7

ORTECH Consulting Inc.

Plant:	Covanta DYEC	Plant Location:	Courtice, ON
Test No.:	3 SVOC	Test Location:	APC Outlet No. 1
Date:	June 18, 2020	Operator:	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.007	Probe (mg)	0
Barometric Pressure	30.1 "Hg	CWTR (g)	705.5
Static Pressure	-8.300 "H_2O	WCBDA (g)	14.1
Nozzle	0.2548 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.35 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%	8.22
CO2%	10.96
COppm	14.6

Measured H2O
16.3 %

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 %
	25	175.01	0.79	288	44	90	85	2	8.0		18.59	101.3
4	30	178.90	0.73	289	44	92	85	1.8	7.5		17.88	101.3
	35	182.60	0.72	289	44	92	85	1.8	7.5		17.76	100.1
5	40	186.29	0.71	288	44	93	85	1.8	7.5		17.62	100.5
	45	189.99	0.62	288	45	93	85	1.6	7.0		16.47	101.3
6	50	193.42	0.65	287	45	94	86	1.7	7.0		16.85	100.4
	55	196.99	0.63	287	47	94	86	1.6	7.0		16.59	101.9
7	60	200.50	0.66	287	47	94	86	1.75	7.0		16.98	101.7
	65	204.10	0.66	286	46	95	86	1.75	7.0		16.97	102.0
8	70	207.70	0.74	286	46	94	86	1.9	7.8		17.97	101.8
	75	211.45	0.72	287	47	95	87	1.9	7.8		17.74	100.3
9	80	215.21	0.73	287	47	94	87	1.9	7.8		17.86	101.8
	85	218.95	0.76	287	47	95	87	2	8.0		18.22	100.7
10	90	222.80	0.75	287	48	95	88	2	8.0		18.10	101.5
	95	226.65	0.76	284	48	95	87	2	8.0		18.19	102.1
11	100	230.50	0.66	282	49	94	87	1.7	7.5		16.92	101.3
	105	234.11	0.66	281	48	95	88	1.7	7.5		16.91	101.8
12	110	237.71	0.66	281	48	96	88	1.7	7.5		16.91	101.3
	115	241.32	0.66	281	49	95	88	1.7	7.5		16.91	101.5
	120	244.92										101.3

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	1 SVOC
Date:	June 17, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.85
DGM CORRECTION FACTOR	1.001
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.913 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	139.5 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	17.57 m/s
BAROMETRIC PRESSURE (Station)	101.490 Kpa
STATIC PRESSURE	-1.942 Kpa
ABSOLUTE GAS PRESSURE	99.548 Kpa
OXYGEN CONCENTRATION	8.6 %
CARBON DIOXIDE CONCENTRATION	10.88 %
CARBON MONOXIDE CONCENTRATION	12.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.96 m^3/s
DRY REF GAS FLOWRATE	15.43 Rm^3/s
DRY ADJ GAS FLOWRATE	19.17 Rm^3/s
WET REF GAS FLOWRATE	18.43 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.913 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, Ontario
Test No.:	1 SVOC	**Test Location:**	APC Outlet No. 2
Date:	June 17, 2020	**Operator:**	RW JB

Pitot Factor	0.85	Filter (mg)	0
DGMCF	1.001	Probe (mg)	0
Barometric Pressure	29.97 "Hg	CWTR (g)	685.4
Static Pressure	-7.800 "H_2O	WCBDA (g)	16.5
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.52 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%	8.6
CO2%	10.88
COppm	12.6

Measured H2O
16.3 %

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	709.32	0.82	280	56	75	76	2	5.0		18.91	
	5	713.15	0.83	280	53	75	76	2	5.0		19.03	98.7
2	10	717.01	0.82	280	52	76	76	2	5.0		18.91	98.9
	15	720.87	0.82	280	52	76	77	2	5.0		18.91	99.4
3	20	724.72	0.8	281	52	76	77	2	5.0		18.69	99.0
	25	728.53	0.82	283	52	77	78	2	5.0		18.95	99.3
4	30	732.38	0.81	284	52	77	78	2	6.0		18.85	99.0
	35	736.20	0.82	284	52	77	80	2	6.0		18.96	98.9
5	40	740.02	0.73	285	54	77	79	1.85	5.8		17.90	98.2
	45	743.75	0.75	285	54	78	80	1.85	5.8		18.15	101.7
6	50	747.47	0.65	285	53	78	80	1.6	5.3		16.89	99.9
	55	750.91	0.65	286	54	79	81	1.6	5.3		16.90	99.2
7	60	754.35	0.68	285	54	79	81	1.7	5.0		17.28	99.0
	65	757.88	0.68	285	54	80	82	1.7	5.0		17.28	99.3
8	70	761.40	0.69	285	54	79	82	1.75	5.3		17.41	98.9
	75	765.00	0.71	285	54	80	83	1.75	5.3		17.66	100.5
9	80	768.61	0.72	285	54	80	83	1.8	5.5		17.78	99.1
	85	772.26	0.71	285	55	80	83	1.8	5.5		17.66	99.6
10	90	775.92	0.75	285	55	80	83	1.85	5.5		18.15	100.5
	95	779.63	0.74	284	55	80	83	1.85	5.5		18.01	99.2
11	100	783.31	0.74	284	55	81	83	1.85	5.5		18.01	99.0
	105	787.02	0.75	284	55	81	83	1.85	5.5		18.13	99.7
12	110	790.74	0.73	284	55	81	83	1.85	5.5		17.89	99.3
	115	794.44	0.73	284	55	81	83	1.85	5.5		17.89	100.1
	120	798.12								0.52		99.5
1	0	798.64	0.8	284	55	81	81	1.95	6.3		18.73	
	5	802.44	0.79	283	58	81	81	1.95	6.3		18.60	98.4
2	10	806.26	0.8	282	51	81	81	1.95	6.3		18.70	99.5
	15	810.09	0.82	283	49	81	81	2	6.3		18.95	99.0
3	20	813.92	0.8	283	48	81	81	1.95	6.3		18.72	97.9

ORTECH Environmental

Plant:	Covanta DYEC	Plant Location:	Courtice, Ontario
Test No.:	1 SVOC	Test Location:	APC Outlet No. 2
Date:	June 17, 2020	Operator:	RW JB

Pitot Factor	0.85	Filter (mg)	0
DGMCF	1.001	Probe (mg)	0
Barometric Pressure	29.97 "Hg	CWTR (g)	685.4
Static Pressure	-7.800 "H_2O	WCBDA (g)	16.5
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.52 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%	8.6
CO2%	10.88
COppm	12.6

Measured H2O
16.3 %

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 %
	25	817.76	0.77	283	47	80	81	1.9	6.3		18.36	99.4
4	30	821.53	0.74	283	48	81	81	1.85	6.3		18.00	99.5
	35	825.27	0.73	283	48	81	82	1.8	6.3		17.88	100.6
5	40	828.94	0.65	283	48	81	82	1.6	6.0		16.87	99.3
	45	832.41	0.66	283	48	80	82	1.6	6.0		17.00	99.4
6	50	835.88	0.6	284	48	81	82	1.65	6.0		16.22	98.8
	55	839.34	0.56	283	49	81	83	1.5	6.0		15.66	103.3
7	60	842.73	0.55	283	50	81	84	1.4	5.5		15.52	104.5
	65	845.97	0.55	283	50	81	84	1.4	5.3		15.52	100.7
8	70	849.17	0.55	282	50	81	84	1.4	5.3		15.51	99.4
	75	852.38	0.55	282	51	82	85	1.4	5.3		15.51	99.7
9	80	855.59	0.59	282	51	82	85	1.5	5.5		16.06	99.5
	85	858.90	0.59	281	51	82	85	1.5	5.5		16.05	99.1
10	90	862.24	0.65	281	51	82	85	1.65	5.8		16.85	99.9
	95	865.69	0.63	282	51	82	86	1.6	5.8		16.60	98.4
11	100	869.16	0.64	282	51	82	86	1.6	5.8		16.73	100.5
	105	872.65	0.64	281	51	83	86	1.6	5.8		16.72	100.2
12	110	876.11	0.68	280	51	83	86	1.7	6.0		17.22	99.2
	115	879.68	0.68	281	51	83	86	1.7	6.0		17.23	99.3
	120	883.26										99.6

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	2 SVOC
Date:	June 17, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.85
DGM CORRECTION FACTOR	1.001
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.687 m^3
AVGERGE ISOKINETICITY	98.7 %
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	140.0 °C
AVERAGE GAS MOISTURE BY VOLUME	15.7 %
AVERAGE GAS VELOCITY	16.86 m/s
BAROMETRIC PRESSURE (Station)	101.253 Kpa
STATIC PRESSURE	-1.942 Kpa
ABSOLUTE GAS PRESSURE	99.311 Kpa
OXYGEN CONCENTRATION	8.43 %
CARBON DIOXIDE CONCENTRATION	10.88 %
CARBON MONOXIDE CONCENTRATION	11.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.91 m^3/s
DRY REF GAS FLOWRATE	14.85 Rm^3/s
DRY ADJ GAS FLOWRATE	18.71 Rm^3/s
WET REF GAS FLOWRATE	17.62 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.687 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, Ontario
Test No.:	2 SVOC	**Test Location:**	APC Outlet No. 2
Date:	June 17, 2020	**Operator:**	RW JB

Pitot Factor	0.85	Filter (mg)	0
DGMCF	1.001	Probe (mg)	0
Barometric Pressure	29.9 "Hg	CWTR (g)	625.4
Static Pressure	-7.800 "H_2O	WCBDA (g)	15.1
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.38 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%	8.43
CO2%	10.88
COppm	11.5

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	883.73	0.73	284	52	81	81	1.8	5.5		17.89	
	5	887.37	0.72	284	54	81	81	1.8	5.5		17.77	97.9
2	10	890.95	0.71	284	54	81	81	1.8	5.5		17.64	97.0
	15	894.51	0.71	284	54	81	82	1.8	5.5		17.64	97.1
3	20	898.13	0.71	284	52	81	82	1.8	5.5		17.64	98.7
	25	901.76	0.71	284	48	82	83	1.8	5.5		17.64	98.9
4	30	905.38	0.65	284	46	82	83	1.65	5.5		16.88	98.5
	35	908.90	0.66	284	46	82	84	1.65	5.5		17.01	100.0
5	40	912.43	0.61	285	46	83	84	1.55	5.5		16.37	99.5
	45	915.86	0.61	285	43	84	85	1.55	5.5		16.37	100.5
6	50	919.26	0.56	285	43	83	86	1.4	5.5		15.68	99.4
	55	922.51	0.58	285	43	83	85	1.4	5.5		15.96	99.2
7	60	925.76	0.65	285	43	83	86	1.65	5.5		16.89	97.5
	65	929.25	0.65	285	44	84	87	1.65	5.5		16.89	98.9
8	70	932.74	0.64	286	43	84	87	1.65	5.5		16.77	98.7
	75	936.23	0.64	286	44	84	87	1.65	5.5		16.77	99.5
9	80	939.72	0.62	285	44	84	87	1.6	5.5		16.50	99.5
	85	943.16	0.64	285	44	84	87	1.6	5.5		16.76	99.6
10	90	946.62	0.68	284	44	84	87	1.7	6.0		17.27	98.6
	95	950.17	0.69	283	44	85	87	1.7	6.0		17.38	98.1
11	100	953.75	0.63	283	46	85	88	1.6	6.0		16.61	98.1
	105	957.23	0.68	283	46	85	87	1.7	6.0		17.26	99.7
12	110	960.79	0.67	282	46	85	87	1.7	6.0		17.12	98.2
	115	964.35	0.67	282	47	85	88	1.7	6.0		17.12	98.9
	120	967.89								0.38		98.3
1	0	968.27	0.78	282	52	85	86	1.9	7.0		18.47	
	5	972.03	0.8	285	49	86	86	1.95	7.0		18.74	96.9
2	10	975.90	0.78	285	47	85	86	1.95	7.0		18.51	98.6
	15	979.73	0.75	284	48	85	86	1.85	7.0		18.13	99.0
3	20	983.48	0.75	284	48	85	87	1.85	7.0		18.13	98.7

ORTECH Environmental

Plant:	Covanta DYEC	Plant Location:	Courtice, Ontario
Test No.:	2 SVOC	Test Location:	APC Outlet No. 2
Date:	June 17, 2020	Operator:	RW JB

Pitot Factor	0.85	Filter (mg)	0
DGMCF	1.001	Probe (mg)	0
Barometric Pressure	29.9 "Hg	CWTR (g)	625.4
Static Pressure	-7.800 "H_2O	WCBDA (g)	15.1
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.38 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%	8.43
CO2%	10.88
COppm	11.5

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 %
	25	987.22	0.7	284	48	85	87	1.75	6.8		17.52	98.4
4	30	990.85	0.62	283	48	85	88	1.55	6.5		16.48	98.8
	35	994.27	0.65	283	48	86	88	1.6	6.5		16.87	98.7
5	40	997.75	0.65	283	48	86	89	1.6	6.5		16.87	98.0
	45	1001.20	0.61	283	49	86	89	1.55	6.5		16.34	97.1
6	50	1004.61	0.55	283	49	86	89	1.4	6.0		15.52	99.0
	55	1007.86	0.55	283	49	86	89	1.4	6.0		15.52	99.4
7	60	1011.07	0.56	284	50	86	89	1.4	6.0		15.67	98.1
	65	1014.30	0.6	284	50	86	90	1.5	6.3		16.22	97.9
8	70	1017.65	0.58	285	50	87	90	1.5	6.3		15.96	98.1
	75	1021.02	0.59	284	50	86	90	1.5	6.3		16.08	100.3
9	80	1024.36	0.6	285	51	87	90	1.5	6.5		16.23	98.6
	85	1027.71	0.6	285	51	87	90	1.5	6.5		16.23	98.0
10	90	1031.04	0.62	284	51	87	90	1.55	6.5		16.49	97.5
	95	1034.48	0.62	284	51	87	90	1.55	6.5		16.49	99.0
11	100	1037.90	0.6	284	51	87	90	1.55	6.5		16.22	98.4
	105	1041.30	0.6	283	52	87	90	1.55	6.5		16.21	99.5
12	110	1044.75	0.6	283	52	87	90	1.55	6.5		16.21	100.9
	115	1048.13	0.6	283	52	87	90	1.5	6.5		16.21	98.8
	120	1051.49										98.2

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	3 SVOC
Date:	June 18, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.85
DGM CORRECTION FACTOR	1.001
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.721 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	139.2 °C
AVERAGE GAS MOISTURE BY VOLUME	16.1 %
AVERAGE GAS VELOCITY	17.01 m/s
BAROMETRIC PRESSURE (Station)	101.084 Kpa
STATIC PRESSURE	-1.942 Kpa
ABSOLUTE GAS PRESSURE	99.141 Kpa
OXYGEN CONCENTRATION	8.39 %
CARBON DIOXIDE CONCENTRATION	10.97 %
CARBON MONOXIDE CONCENTRATION	12.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.13 m^3/s
DRY REF GAS FLOWRATE	14.91 Rm^3/s
DRY ADJ GAS FLOWRATE	18.84 Rm^3/s
WET REF GAS FLOWRATE	17.78 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.721 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, Ontario
Test No.:	3 SVOC	**Test Location:**	APC Outlet No. 2
Date:	June 18, 2020	**Operator:**	JB

Pitot Factor	0.85	Filter (mg)	0
DGMCF	1.001	Probe (mg)	0
Barometric Pressure	29.85 "Hg	CWTR (g)	655.2
Static Pressure	-7.800 "H_2O	WCBDA (g)	12
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.34 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%	8.39
CO2%	10.97
COppm	12.0

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	51.87	0.73	283	52	74	74	1.7	4.0		17.91	
	5	55.44	0.74	282	54	74	75	1.75	4.0		18.02	97.6
2	10	59.02	0.74	281	56	74	75	1.75	4.0		18.01	97.0
	15	62.62	0.74	280	54	74	76	1.8	4.0		17.99	97.5
3	20	66.24	0.74	280	53	75	77	1.8	4.0		17.99	97.9
	25	69.88	0.73	282	48	75	78	1.8	4.0		17.90	98.3
4	30	73.51	0.69	282	47	76	79	1.7	4.0		17.40	98.7
	35	77.05	0.69	283	45	76	81	1.7	4.0		17.41	98.8
5	40	80.61	0.67	282	45	77	82	1.7	4.0		17.14	99.3
	45	84.13	0.6	281	45	78	82	1.5	4.0		16.21	99.3
6	50	87.45	0.6	281	46	78	83	1.5	4.0		16.21	98.8
	55	90.77	0.61	281	45	79	83	1.5	4.0		16.35	98.7
7	60	94.13	0.63	281	45	79	84	1.6	4.0		16.61	99.0
	65	97.56	0.64	281	45	80	85	1.6	4.0		16.74	99.4
8	70	101.02	0.63	282	47	80	85	1.6	4.0		16.62	99.3
	75	104.47	0.64	282	48	81	86	1.6	4.0		16.76	99.8
9	80	107.92	0.65	281	49	81	86	1.65	4.0		16.88	98.9
	85	111.43	0.66	281	50	82	86	1.65	4.0		17.00	99.8
10	90	114.93	0.72	281	51	82	86	1.8	4.5		17.76	98.6
	95	118.60	0.7	281	51	83	87	1.8	4.5		17.51	99.0
11	100	122.27	0.7	281	51	83	87	1.8	4.5		17.51	100.3
	105	125.96	0.71	281	53	84	87	1.8	4.5		17.64	100.8
12	110	129.64	0.57	281	53	84	87	1.4	4.0		15.80	99.7
	115	132.97	0.57	281	54	84	87	1.4	4.0		15.80	100.6
	120	136.24								0.34		98.8
1	0	136.58	0.55	282	52	84	84	1.4	4.0		15.53	
	5	139.86	0.61	281	56	84	84	1.5	4.0		16.35	101.2
2	10	143.18	0.61	281	52	83	83	1.5	4.0		16.35	97.3
	15	146.51	0.61	281	54	83	84	1.5	4.0		16.35	97.7
3	20	149.83	0.64	280	52	83	84	1.6	4.3		16.73	97.4

ORTECH Environmental

Plant:	Covanta DYEC	Plant Location:	Courtice, Ontario
Test No.:	3 SVOC	Test Location:	APC Outlet No. 2
Date:	June 18, 2020	Operator:	JB

Pitot Factor	0.85	Filter (mg)	0
DGMCF	1.001	Probe (mg)	0
Barometric Pressure	29.85 "Hg	CWTR (g)	655.2
Static Pressure	-7.800 "H_2O	WCBDA (g)	12
Nozzle	0.2544 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.34 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%	8.39
CO2%	10.97
COppm	12.0

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 %
	25	153.27	0.63	282	54	83	86	1.6	4.3		16.62	98.4
4	30	156.73	0.62	282	54	84	86	1.55	4.3		16.49	99.7
	35	160.14	0.61	283	55	84	87	1.55	4.3		16.37	99.0
5	40	163.54	0.61	283	55	84	87	1.55	4.3		16.37	99.5
	45	166.95	0.61	284	55	84	88	1.55	4.3		16.38	99.8
6	50	170.36	0.59	285	53	84	88	1.5	4.3		16.12	99.8
	55	173.72	0.6	286	52	85	88	1.5	4.3		16.27	100.0
7	60	177.08	0.6	286	52	85	88	1.5	4.3		16.27	99.1
	65	180.44	0.58	286	52	85	88	1.5	4.3		15.99	99.1
8	70	183.80	0.64	286	51	85	88	1.6	4.5		16.80	100.8
	75	187.33	0.64	285	51	85	89	1.6	4.5		16.79	100.9
9	80	190.81	0.69	285	51	85	89	1.7	4.5		17.43	99.3
	85	194.42	0.7	286	52	85	89	1.7	4.5		17.57	99.2
10	90	198.03	0.73	286	52	85	89	1.8	5.0		17.94	98.6
	95	201.72	0.72	285	53	86	90	1.8	5.0		17.81	98.7
11	100	205.40	0.75	284	53	86	90	1.85	5.0		18.16	98.9
	105	209.20	0.75	284	54	87	93	1.85	5.0		18.16	100.0
12	110	212.85	0.75	284	53	87	90	1.85	5.0		18.16	95.7
	115	216.57	0.75	284	54	87	90	1.9	5.0		18.16	97.8
	120	220.34										99.1

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, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
10:00	0.6	
10:01	0.8	
10:02	0.7	
10:03	0.5	
10:04	0.5	
10:05	0.5	
10:06	0.5	
10:07	0.3	
10:08	0.2	
10:09	0.3	0.5
10:10	0.3	0.5
10:11	0.3	0.4
10:12	0.4	0.4
10:13	0.4	0.4
10:14	0.3	0.3
10:15	0.2	0.3
10:16	0.1	0.3
10:17	0.0	0.2
10:18	0.0	0.2
10:19	0.0	0.2
10:20	0.1	0.2
10:21	0.1	0.1
10:22	0.1	0.1
10:23	0.1	0.1
10:24	0.1	0.1
10:25	0.2	0.1
10:26	0.2	0.1
10:27	0.0	0.1
10:28	0.0	0.1
10:29	0.0	0.1
10:30	0.1	0.1
10:31	0.0	0.1
10:32	0.0	0.1
10:33	0.0	0.1
10:34	0.0	0.1
10:35	0.0	0.0
10:36	0.0	0.0
10:37	0.0	0.0
10:38	0.0	0.0
10:39	0.0	0.0
10:40	0.0	0.0
10:41	0.0	0.0
10:42	0.0	0.0
10:43	0.0	0.0
10:44	0.0	0.0
10:45	0.0	0.0
10:46	0.0	0.0
10:47	0.0	0.0
10:48	0.0	0.0
10:49	0.0	0.0
10:50	0.0	0.0
10:51	0.0	0.0
10:52	0.0	0.0
10:53	0.0	0.0
10:54	0.0	0.0
10:55	0.0	0.0
10:56	0.0	0.0
10:57	0.0	0.0
10:58	0.0	0.0
10:59	0.0	0.0
11:00	0.0	0.0
Min	0.0	0.0
Max	0.8	0.5
Avg	0.1	0.1

Test No. 2 — June 15, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
11:08	1.2	
11:09	0.4	
11:10	0.2	
11:11	0.4	
11:12	0.3	
11:13	0.2	
11:14	0.3	
11:15	0.3	
11:16	0.3	
11:17	0.3	0.4
11:18	0.2	0.3
11:19	0.1	0.3
11:20	0.1	0.3
11:33	0.0	0.2
11:34	0.0	0.2
11:35	0.0	0.2
11:36	0.0	0.1
11:37	0.0	0.1
11:38	0.2	0.1
11:39	0.3	0.1
11:40	0.2	0.1
11:41	0.2	0.1
11:42	0.3	0.1
11:43	0.1	0.1
11:44	0.2	0.1
11:45	0.2	0.2
11:46	0.3	0.2
11:47	0.3	0.2
11:48	0.2	0.2
11:49	0.2	0.2
11:50	0.3	0.2
11:51	0.3	0.2
11:52	0.2	0.2
11:53	0.2	0.2
11:54	0.2	0.2
11:55	0.2	0.2
11:56	0.2	0.2
11:57	0.2	0.2
11:58	0.2	0.2
11:59	0.2	0.2
12:00	0.1	0.2
12:01	0.2	0.2
12:02	0.2	0.2
12:03	0.2	0.2
12:04	0.2	0.2
12:05	0.1	0.2
12:06	0.1	0.2
12:07	0.1	0.2
12:08	0.2	0.2
12:09	0.1	0.2
12:10	0.2	0.2
12:11	0.2	0.2
12:12	0.1	0.2
12:13	0.2	0.1
12:14	0.2	0.2
12:15	0.2	0.2
12:18	1.4	0.3
12:19	0.4	0.3
12:20	0.6	0.4
12:21	0.7	0.4
12:22	0.8	0.5
Min	0.0	0.1
Max	1.4	0.5
Avg	0.3	0.2

Test No. 3 — June 15, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
12:23	1.0	
12:24	1.0	
12:25	0.7	
12:26	0.6	
12:27	0.4	
12:28	0.4	
12:29	0.4	
12:30	0.4	
12:31	0.3	
12:32	0.3	0.5
12:33	0.2	0.5
12:34	0.2	0.4
12:35	0.2	0.3
12:36	0.1	0.3
12:37	0.1	0.3
12:38	0.1	0.2
12:39	0.1	0.2
12:40	0.1	0.2
12:41	0.1	0.2
12:42	0.1	0.1
12:43	0.1	0.1
12:44	0.1	0.1
12:45	0.1	0.1
12:46	0.2	0.1
12:47	0.2	0.1
12:48	0.3	0.1
12:49	0.2	0.1
12:50	0.2	0.2
12:51	0.2	0.2
12:52	0.1	0.2
12:53	0.1	0.2
12:54	0.1	0.2
12:55	0.1	0.2
12:56	0.1	0.2
12:57	0.0	0.1
12:58	0.0	0.1
12:59	0.0	0.1
13:00	0.0	0.1
13:01	0.0	0.1
13:02	0.0	0.0
13:03	0.0	0.0
13:04	0.0	0.0
13:05	0.0	0.0
13:06	0.0	0.0
13:07	0.0	0.0
13:08	0.0	0.0
13:09	0.0	0.0
13:10	0.0	0.0
13:11	0.0	0.0
13:12	0.0	0.0
13:13	0.0	0.0
13:14	0.1	0.0
13:15	0.0	0.0
13:16	0.0	0.0
13:17	0.0	0.0
13:18	0.0	0.0
13:19	0.0	0.0
13:20	0.0	0.0
13:21	0.3	0.0
13:22	0.0	0.0
13:23	0.0	0.0
Min	0.0	0.0
Max	1.0	0.5
Avg	0.2	0.1

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet

Test No. 1
June 15, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
10:00	3.1	
10:01	2.8	
10:02	2.6	
10:03	3.0	
10:04	2.8	
10:05	2.8	
10:06	3.0	
10:07	3.1	
10:08	2.9	
10:09	3.0	2.9
10:10	2.5	2.8
10:11	2.5	2.8
10:12	2.7	2.8
10:13	2.4	2.8
10:14	2.4	2.7
10:15	2.6	2.7
10:16	2.6	2.7
10:17	2.8	2.6
10:18	2.8	2.6
10:19	2.5	2.6
10:20	2.2	2.5
10:21	2.5	2.5
10:22	2.2	2.5
10:23	2.0	2.5
10:24	2.2	2.4
10:25	2.1	2.4
10:26	2.0	2.3
10:27	2.3	2.3
10:28	2.1	2.2
10:29	1.8	2.2
10:30	1.9	2.1
10:31	1.8	2.1
10:32	8.2	2.7
10:33	14.8	3.9
10:34	13.9	5.1
10:35	9.2	5.8
10:36	5.9	6.2
10:37	5.0	6.5
10:38	4.1	6.7
10:39	3.9	6.9
10:40	3.6	7.0
10:41	2.7	7.1
10:42	2.7	6.6
10:43	2.2	5.3
10:44	2.1	4.1
10:45	1.8	3.4
10:46	2.5	3.0
10:47	2.1	2.8
10:48	1.7	2.5
10:49	2.2	2.3
10:50	2.3	2.2
10:51	2.0	2.1
10:52	1.9	2.1
10:53	2.2	2.1
10:54	1.9	2.1
10:55	1.9	2.1
10:56	1.7	2.0
10:57	1.7	2.0
10:58	1.7	2.0
10:59	1.8	1.9
11:00	1.6	1.8
Min	1.6	1.8
Max	14.8	7.1
Avg	3.1	3.2

Test No. 2
June 15, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
11:08	2.2	
11:09	1.5	
11:10	0.5	
11:11	1.5	
11:12	2.2	
11:13	1.7	
11:14	1.7	
11:15	1.5	
11:16	1.8	
11:17	1.9	1.6
11:18	1.9	1.6
11:19	1.8	1.6
11:20	1.9	1.8
11:33	1.5	1.8
11:34	1.4	1.7
11:35	1.3	1.7
11:36	1.6	1.7
11:37	1.5	1.7
11:38	1.4	1.6
11:39	1.3	1.6
11:40	1.2	1.5
11:41	1.3	1.4
11:42	1.2	1.4
11:43	1.2	1.3
11:44	1.2	1.3
11:45	1.2	1.3
11:46	1.1	1.3
11:47	1.3	1.2
11:48	1.6	1.3
11:49	1.3	1.3
11:50	1.5	1.3
11:51	1.5	1.3
11:52	1.4	1.3
11:53	1.2	1.3
11:54	1.1	1.3
11:55	1.2	1.3
11:56	1.2	1.3
11:57	1.1	1.3
11:58	1.1	1.3
11:59	1.2	1.3
12:00	1.3	1.2
12:01	1.2	1.2
12:02	1.5	1.2
12:03	1.6	1.3
12:04	1.5	1.3
12:05	1.2	1.3
12:06	1.4	1.3
12:07	1.6	1.4
12:08	1.3	1.4
12:09	1.4	1.4
12:10	1.2	1.4
12:11	1.4	1.4
12:12	1.2	1.4
12:13	1.2	1.3
12:14	1.1	1.3
12:15	1.1	1.3
12:18	1.4	1.3
12:19	1.2	1.2
12:20	1.2	1.2
12:21	0.8	1.2
12:22	0.7	1.1
Min	0.5	1.1
Max	2.2	1.8
Avg	1.4	1.4

Test No. 3
June 15, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
12:23	0.5	
12:24	0.8	
12:25	0.9	
12:26	0.7	
12:27	0.9	
12:28	0.7	
12:29	0.5	
12:30	0.4	
12:31	0.4	
12:32	0.9	0.7
12:33	0.9	0.7
12:34	1.0	0.7
12:35	1.0	0.7
12:36	1.0	0.8
12:37	0.8	0.8
12:38	0.8	0.8
12:39	0.7	0.8
12:40	1.1	0.9
12:41	0.8	0.9
12:42	0.7	0.9
12:43	0.7	0.9
12:44	0.7	0.8
12:45	0.7	0.8
12:46	0.7	0.8
12:47	0.7	0.8
12:48	0.8	0.8
12:49	0.9	0.8
12:50	0.9	0.8
12:51	1.0	0.8
12:52	0.8	0.8
12:53	0.8	0.8
12:54	0.9	0.8
12:55	0.9	0.8
12:56	0.9	0.8
12:57	0.9	0.9
12:58	0.8	0.9
12:59	0.7	0.8
13:00	0.7	0.8
13:01	0.9	0.8
13:02	1.0	0.8
13:03	0.8	0.8
13:04	0.7	0.8
13:05	0.8	0.8
13:06	0.7	0.8
13:07	0.8	0.8
13:08	0.8	0.8
13:09	0.6	0.8
13:10	0.6	0.8
13:11	0.7	0.7
13:12	0.7	0.7
13:13	0.6	0.7
13:14	0.7	0.7
13:15	0.8	0.7
13:16	0.8	0.7
13:17	0.8	0.7
13:18	0.6	0.7
13:19	0.5	0.7
13:20	0.4	0.7
13:21	0.6	0.6
13:22	0.5	0.6
13:23	0.5	0.6
Min	0.4	0.6
Max	1.1	0.9
Avg	0.7	0.8

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 1 APC Outlet

Test No. 1
June 15, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
15:10	2.0	
15:11	2.2	
15:12	1.6	
15:13	1.5	
15:14	1.6	
15:15	1.3	
15:16	1.2	
15:17	1.1	
15:18	1.0	
15:19	1.0	1.5
15:20	0.9	1.4
15:21	1.1	1.2
15:22	1.0	1.2
15:23	0.9	1.1
15:24	1.1	1.1
15:25	1.1	1.0
15:26	2.8	1.2
15:27	6.4	1.7
15:28	3.6	2.0
15:29	2.9	2.2
15:30	2.6	2.3
15:31	2.3	2.5
15:32	2.1	2.6
15:33	2.1	2.7
15:34	2.0	2.8
15:35	3.8	3.1
15:36	3.5	3.1
15:37	2.7	2.8
15:38	2.5	2.7
15:39	2.1	2.6
15:40	1.8	2.5
15:41	1.7	2.4
15:42	1.5	2.4
15:43	1.5	2.3
15:44	2.8	2.4
15:45	2.3	2.2
15:46	1.5	2.0
15:47	1.6	1.9
15:48	1.5	1.8
15:49	1.9	1.8
15:50	1.4	1.8
15:51	1.2	1.7
15:52	1.1	1.7
15:53	1.0	1.6
15:54	1.0	1.4
15:55	0.9	1.3
15:56	1.0	1.2
15:57	0.9	1.2
15:58	1.0	1.1
15:59	1.7	1.1
16:00	1.4	1.1
16:01	1.3	1.1
16:02	1.2	1.1
16:03	1.0	1.1
16:04	0.9	1.1
16:05	0.9	1.1
16:06	0.9	1.1
16:07	0.9	1.1
16:08	1.0	1.1
16:09	1.0	1.0
16:10	1.0	1.0
Min	0.9	1.0
Max	6.4	3.1
Avg	1.7	1.7

Test No. 2
June 16, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
10:00	1.0	
10:01	0.4	
10:02	0.5	
10:03	0.6	
10:04	0.6	
10:05	0.6	
10:06	0.5	
10:07	0.6	
10:08	0.6	
10:09	0.5	0.6
10:10	0.6	0.5
10:11	0.5	0.6
10:12	0.6	0.6
10:13	0.5	0.6
10:14	0.6	0.6
10:15	0.5	0.5
10:16	1.1	0.6
10:17	0.4	0.6
10:18	0.4	0.6
10:19	0.5	0.6
10:20	0.6	0.6
10:21	0.5	0.6
10:22	0.6	0.6
10:23	0.6	0.6
10:24	0.6	0.6
10:25	0.5	0.6
10:26	0.6	0.5
10:27	0.5	0.5
10:28	0.5	0.5
10:29	0.5	0.5
10:30	0.5	0.5
10:31	0.6	0.5
10:32	0.6	0.5
10:33	0.6	0.6
10:34	0.6	0.6
10:35	0.6	0.6
10:36	0.6	0.6
10:37	0.6	0.6
10:38	0.5	0.6
10:39	0.6	0.6
10:40	0.5	0.6
10:41	0.5	0.6
10:42	0.5	0.5
10:43	0.5	0.5
10:44	0.5	0.5
10:45	1.0	0.6
10:46	0.5	0.6
10:47	0.3	0.5
10:48	0.4	0.5
10:49	0.5	0.5
10:50	0.5	0.5
10:51	0.5	0.5
10:52	0.6	0.5
10:53	0.6	0.5
10:54	0.6	0.5
10:55	0.6	0.5
10:56	0.5	0.5
10:57	0.6	0.5
10:58	0.6	0.5
10:59	0.6	0.6
11:00	0.6	0.6
Min	0.3	0.5
Max	1.1	0.6
Avg	0.6	0.5

Test No. 3
June 16, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
11:05	0.5	
11:06	0.5	
11:07	0.5	
11:08	0.5	
11:09	0.5	
11:10	0.5	
11:11	0.5	
11:12	0.5	
11:13	0.5	
11:14	0.5	0.5
11:15	0.5	0.5
11:16	0.5	0.5
11:17	0.5	0.5
11:18	0.5	0.5
11:19	0.5	0.5
11:20	0.5	0.5
11:21	0.5	0.5
11:22	0.4	0.5
11:23	0.4	0.5
11:24	0.4	0.5
11:25	0.4	0.5
11:26	0.4	0.4
11:27	0.5	0.5
11:28	0.4	0.4
11:29	0.4	0.4
11:30	0.4	0.4
11:31	0.4	0.4
11:32	0.4	0.4
11:33	0.4	0.4
11:34	0.4	0.4
11:35	0.4	0.4
11:36	0.7	0.4
11:37	0.2	0.4
11:38	0.3	0.4
11:39	0.4	0.4
11:40	0.4	0.4
11:41	0.5	0.4
11:42	0.5	0.4
11:43	0.5	0.4
11:44	0.5	0.4
11:45	0.5	0.4
11:46	0.5	0.4
11:47	0.5	0.5
11:48	0.5	0.5
11:49	0.5	0.5
11:50	0.4	0.5
11:51	0.4	0.5
11:52	0.4	0.5
11:53	0.4	0.5
11:54	0.7	0.5
11:55	0.5	0.5
11:56	0.2	0.5
11:57	0.3	0.4
11:58	0.3	0.4
11:59	0.4	0.4
12:00	0.5	0.4
12:01	0.6	0.4
12:02	0.5	0.4
12:03	0.5	0.4
12:04	0.5	0.4
12:05	0.5	0.4
Min	0.2	0.4
Max	0.7	0.5
Avg	0.5	0.4

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 APC Outlet

Test No. 1
June 15, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
15:10	0.0	
15:11	1.0	
15:12	1.3	
15:13	1.3	
15:14	1.4	
15:15	1.4	
15:16	1.4	
15:17	1.3	
15:18	1.3	
15:19	1.3	1.2
15:20	1.3	1.3
15:21	1.3	1.3
15:22	1.3	1.3
15:23	1.3	1.3
15:24	1.3	1.3
15:25	1.3	1.3
15:26	1.4	1.3
15:27	1.4	1.3
15:28	1.3	1.3
15:29	1.3	1.3
15:30	1.3	1.3
15:31	1.3	1.3
15:32	1.3	1.3
15:33	1.4	1.3
15:34	1.4	1.3
15:35	1.4	1.3
15:36	1.4	1.3
15:37	1.3	1.3
15:38	1.3	1.3
15:39	1.3	1.3
15:40	1.3	1.3
15:41	1.3	1.3
15:42	1.3	1.3
15:43	1.3	1.3
15:44	1.3	1.3
15:45	1.3	1.3
15:46	1.3	1.3
15:47	1.2	1.3
15:48	1.3	1.3
15:49	1.3	1.3
15:50	1.3	1.3
15:51	1.3	1.3
15:52	1.3	1.3
15:53	1.4	1.3
15:54	1.3	1.3
15:55	1.3	1.3
15:56	1.3	1.3
15:57	1.3	1.3
15:58	1.3	1.3
15:59	1.4	1.3
16:00	1.3	1.3
16:01	1.4	1.3
16:02	1.4	1.3
16:03	1.3	1.3
16:04	1.3	1.3
16:05	1.4	1.3
16:06	1.4	1.3
16:07	1.3	1.4
16:08	1.4	1.4
16:09	1.4	1.4
16:10	1.3	1.4
Min	0.0	1.2
Max	1.4	1.4
Avg	1.3	1.3

Test No. 2
June 15, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
16:18	1.3	
16:19	1.4	
16:20	1.4	
16:21	1.4	
16:22	1.4	
16:23	1.4	
16:24	1.4	
16:25	1.4	
16:26	1.4	
16:27	1.3	1.4
16:28	1.3	1.4
16:29	1.3	1.4
16:30	1.3	1.3
16:31	1.3	1.3
16:32	1.3	1.3
16:33	1.3	1.3
16:34	1.3	1.3
16:35	1.4	1.3
16:36	1.4	1.3
16:37	1.4	1.3
16:38	1.5	1.4
16:39	1.4	1.4
16:40	1.5	1.4
16:41	1.4	1.4
16:42	1.4	1.4
16:43	1.4	1.4
16:44	1.4	1.4
16:45	1.4	1.4
16:46	1.5	1.4
16:47	1.5	1.4
16:48	1.4	1.4
16:49	1.5	1.4
16:50	1.5	1.5
16:51	1.5	1.5
16:52	1.5	1.5
16:53	1.5	1.5
16:54	1.4	1.5
16:55	1.4	1.5
16:56	1.3	1.4
16:57	1.3	1.4
16:58	1.3	1.4
16:59	1.3	1.4
17:00	1.2	1.4
17:01	1.3	1.3
17:02	1.3	1.3
17:03	1.3	1.3
17:04	1.3	1.3
17:05	1.3	1.3
17:06	1.3	1.3
17:07	1.3	1.3
17:08	1.3	1.3
17:09	1.3	1.3
17:10	1.2	1.3
17:11	1.2	1.3
17:12	1.2	1.3
17:13	1.3	1.3
17:14	1.2	1.3
17:15	1.2	1.2
17:16	1.2	1.2
17:17	1.2	1.2
17:18	1.2	1.2
Min	1.2	1.2
Max	1.5	1.5
Avg	1.3	1.4

Test No. 3
June 15, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
17:25	1.2	
17:26	1.2	
17:27	1.2	
17:28	1.2	
17:29	1.2	
17:30	1.2	
17:31	1.2	
17:32	1.2	
17:33	1.2	
17:34	1.2	1.2
17:35	1.2	1.2
17:36	1.2	1.2
17:37	1.2	1.2
17:38	1.2	1.2
17:39	1.2	1.2
17:40	1.2	1.2
17:41	1.2	1.2
17:42	1.2	1.2
17:43	1.2	1.2
17:44	1.2	1.2
17:45	1.2	1.2
17:46	1.2	1.2
17:47	1.2	1.2
17:48	1.2	1.2
17:49	1.2	1.2
17:50	1.2	1.2
17:51	1.2	1.2
17:52	1.2	1.2
17:53	1.2	1.2
17:54	1.2	1.2
17:55	1.2	1.2
17:56	1.3	1.2
17:57	1.3	1.2
17:58	1.3	1.2
17:59	1.3	1.2
18:00	1.4	1.3
18:01	1.4	1.3
18:02	1.3	1.3
18:03	1.3	1.3
18:04	1.3	1.3
18:05	1.3	1.3
18:06	1.3	1.3
18:07	1.3	1.3
18:08	1.3	1.3
18:09	1.2	1.3
18:10	1.2	1.3
18:11	1.2	1.3
18:12	1.2	1.3
18:13	1.2	1.2
18:14	1.1	1.2
18:15	1.1	1.2
18:16	1.1	1.2
18:17	1.1	1.2
18:18	1.1	1.2
18:19	1.1	1.2
18:20	1.1	1.1
18:21	1.1	1.1
18:22	1.1	1.1
18:23	1.2	1.1
18:24	1.3	1.1
18:25	1.4	1.2
Min	1.1	1.1
Max	1.4	1.3
Avg	1.2	1.2

APPENDIX 27

Dispersion Modelling Results
for the June 2020 Testing Program
(18 pages)

GOLDER

TECHNICAL MEMORANDUM

DATE August 17, 2020 **Project No.** 20137524

TO Amanda Huxter
Covanta Durham York Renewable Energy LP

CC Anthony Ciccone

FROM Katherine Armstrong **EMAIL** ksarmstrong@golder.com

CALPUFF MODELLING FOR JUNE 2020 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 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.

Condition 7, Testing, Monitoring and Auditing, of the current ECA requires annual source testing be completed at the DYEC for over 100 different contaminants. According to Schedule "E" Source Testing Procedures, of the ECA, 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 modelling results for the Voluntary June 2020 source testing program using the same CALPUFF model and other input data sets used in the ESDM Report and Environmental Assessment, however, the results are compared to O.Reg. 419/05 Schedule 3 limits last updated April 2018.

2.0 EMISSION RATES

Voluntary source testing was completed by Ortech Environmental in June 2020 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

As part of the ECA application, the MECP approved the use of the CALPUFF modelling software and CALMET meteorological data to demonstrate compliance with Ontario Regulation 419/05 Schedule 3 standards at the DYEC. As a result, the same modelling approach has been taken for this update. The following models and pre- and post-processors were used in the assessment:

- CALMET diagnostic meteorological model (v. 5.8, level 070623);
- CALPUFF dispersion model (v. 6.263, level 080827);
- CALPOST post processor (v. 6.221, Level 080724);
- BPIP building downwash pre-processor (v. 04274);
- POSTUTIL post processor (v.1.64, Level 101025).

These model versions are consistent with those used in the original ESDM report. Dispersion Modelling inputs are described in the following subsections.

3.1 Model Domain

The CALPUFF Model domain used in this assessment is the same as the domain used in the previous Environmental Assessment (EA) and ESDM Report. It extends 40 km by 30 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 is the same as the meteorology and terrain data used in the EA and ESDM Report.

3.3 Receptors

The receptors used in this assessment are the same as the receptors used in the ESDM Report. 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. 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 500m) and the grid size (250m), 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. The flag MCHEM is set to 1 for model runs used to produce concentrations of particulate matter. This setting requires the input of monthly background ozone concentrations. The monthly background ozone data used in the modelling of secondary particulate matter is consistent with that used in the EA 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 ESDM report

3.9 Dispersion Modelling Options

The options used in the CALPUFF dispersion model are summarized in the Table 2. The model options used are 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 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	1 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	1 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	Chemical Transformation Scheme 0 = chemical transformation not modeled 1 = transformation rates computed internally (MESOPUFF II 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
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.)

Flag	Value used in ESDM Report	Value Used in this Assessment	Comments
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)	51.25 (UPDATED)	22.58 (UPDATED)	413.7 (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]	32.23	23.44	19.53	1.02	0.12	0.03
Dispersion Factor with meteorological anomaly removal [µg/m³ per g/s]	9.66	7.02	5.85	0.97	0.12	0.03

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 current Schedule 3 standards listed in O.Reg. 419/05 and in the case of $PM_{2.5}$ and PM_{10}, the MECP AAQC.

The MECP has recently 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 6% 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 2020 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 ESDM Report
Emission Rates	Updated to use June 2020 Source Testing Data. List of contaminants assessed expanded to include all contaminants for which source testing data was performed.
Model and Model Version	No Change
Meteorology and Terrain data	No Change
Receptors	No Change
Building Downwash	No Change
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.

Modelling Inputs	Changes from ESDM Report
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.

K. Armstrong

Katherine Armstrong, M.Sc.
Air Quality Specialist

Anthony Ciccone, Ph.D., P.Eng.
Principal, Vice-President

KSA/ADC/ng

https://golderassociates.sharepoint.com/sites/121611/project files/6 deliverables/june 2020 - reporting/final/20137524-tm-rev0 covanta updated modelling memo 17aug2020.docx

APPENDIX A

Site-Wide Emission Inventory

Appendix A
Site-Wide Emission Inventory

		Source Parameters					Emission Data						
Source Identifier	Source Description	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 2020 Source Testing Conditions	51.25	140.5	1.7	87.6	(680538, 4860346)	1 – methylnaphthalene	90-12-0	7.38E-07	1,24, annual	ST	Above-Average	100%
							1,1,2-Trichloroethane	79-00-5	3.11E-05	1,24, annual	ST	Above-Average	100%
							1,2,3,4-tetrachlorobenzene	634-66-2	7.51E-08	1,24, annual	ST	Above-Average	100%
							1,2,3-trichlorobenzene	87-61-6	1.17E-07	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	120-82-1	4.58E-07	1,24, annual	ST	Above-Average	100%
							1,2,4,5-Tetrachlorobenzene	95-94-3	1.08E-07	1,24, annual	ST	Above-Average	100%
							1,2-Dichlorobenzene	95-50-1	1.21E-06	1,24, annual	ST	Above-Average	100%
							1,2-Dichloroethane	107-06-2	1.55E-05	1,24, annual	ST	Above-Average	100%
							1,2-Dichloropropane	78-87-5	1.53E-05	1,24, annual	ST	Above-Average	100%
							1,3,5-trichlorobenzene	108-70-3	9.26E-08	1,24, annual	ST	Above-Average	100%
							1,3-Butadiene	106-99-0	3.06E-05	1,24, annual	ST	Above-Average	100%
							1,3-Dichlorobenzene	541-73-1	1.69E-06	1,24, annual	ST	Above-Average	100%
							1,4-Dichlorobenzene	106-46-7	1.51E-06	1,24, annual	ST	Above-Average	100%
							1-Methylphenanthrene	832-69-9	7.03E-07	1,24, annual	ST	Above-Average	100%
							2 – methylnaphthalene	91-57-6	1.33E-06	1,24, annual	ST	Above-Average	100%
							2,3,4,5-tetrachlorophenol	4901-51-3	3.75E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,6-Tetrachlorophenol	58-90-2	3.75E-07	1,24, annual	ST	Above-Average	100%
							2,3,4-trichlorophenol	15950-66-0	3.75E-07	1,24, annual	ST	Above-Average	100%
							2,3,5,6-tetrachlorophenol	935-95-5	3.75E-07	1,24, annual	ST	Above-Average	100%
							2,3,5-trichlorophenol	933-78-8	3.75E-07	1,24, annual	ST	Above-Average	100%
							2,3,6-trichlorophenol	933-75-5	3.75E-07	1,24, annual	ST	Above-Average	100%
							2,3-dichlorophenol	576-24-9	3.75E-07	1,24, annual	ST	Above-Average	100%
							2,4,5-trichlorophenol	95-95-4	3.75E-07	1,24, annual	ST	Above-Average	100%
							2,4,6-Trichlorophenol	88-06-2	4.36E-07	1,24, annual	ST	Above-Average	100%
							2,4-Dichlorophenol	120-83-2	6.07E-07	1,24, annual	ST	Above-Average	100%
							2,6-dichlorophenol	87-65-0	6.56E-07	1,24, annual	ST	Above-Average	100%
							2-Butanone	78-93-3	1.41E-04	1,24, annual	ST	Above-Average	100%
							2-Chloronaphthalene	91-58-7	7.51E-08	1,24, annual	ST	Above-Average	100%
							2-Methylanthracene	613-12-7	4.23E-07	1,24, annual	ST	Above-Average	100%
							2-monochlorophenol	95-57-8	3.75E-07	1,24, annual	ST	Above-Average	100%
							3,4,5-trichlorophenol	609-19-8	3.75E-07	1,24, annual	ST	Above-Average	100%
							3,4-dichlorophenol	95-77-2	3.75E-07	1,24, annual	ST	Above-Average	100%
							3,5-dichlorophenol	591-35-5	4.49E-07	1,24, annual	ST	Above-Average	100%
							3-Methylcholanthrene	56-49-5	3.75E-07	1,24, annual	ST	Above-Average	100%
							3-monochlorophenol	108-43-0	3.75E-07	1,24, annual	ST	Above-Average	100%
							4-monochlorophenol	106-48-9	3.75E-07	1,24, annual	ST	Above-Average	100%
							7,12-Dimethylbenzo(a)anthracene	57-97-6	7.51E-08	1,24, annual	ST	Above-Average	100%
							9,10-Dimethylanthracene	781-43-1	7.51E-08	1,24, annual	ST	Above-Average	100%

Made by: TK
Checked by: KSA

Source Identifier	Source Description	Source Parameters: Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Emission Data: Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							9-Methylphenanthrene	883-20-5	2.28E-07	1,24, annual	ST	Above-Average	100%
							Acenaphthene	83-32-9	1.08E-06	1,24, annual	ST	Above-Average	41%
							Acenaphthylene	208-96-8	4.42E-07	1,24, annual	ST	Above-Average	13%
							Acetaldehyde	75-07-0	6.91E-03	1,24, annual	ST	Above-Average	100%
							Acetone	67-64-1	5.35E-04	1,24, annual	ST	Above-Average	100%
							Acrolein	107-02-8	9.60E-05	1,24, annual	ST	Above-Average	97%
							Ammonia	7664-41-7	2.04E-02	1,24, annual	ST	Above-Average	100%
							Anthracene	120-12-7	8.51E-08	1,24, annual	ST	Above-Average	17%
							Antimony	7440-36-0	1.69E-06	1,24, annual	ST	Above-Average	100%
							Arsenic	7440-38-2	1.70E-06	1,24, annual	ST	Above-Average	100%
							Barium	7440-39-3	1.02E-04	1,24, annual	ST	Above-Average	100%
							Benzene	71-43-2	8.69E-05	1,24, annual	ST	Above-Average	25%
							Benzo(a)anthracene	56-55-3	7.51E-08	1,24, annual	ST	Above-Average	27%
							Benzo(a)fluorene	238-84-6	7.51E-08	1,24, annual	ST	Above-Average	100%
							Benzo(a)pyrene	50-32-8	7.51E-08	1,24, annual	ST	Above-Average	47%
							Benzo(b)fluoranthene	205-99-2	7.51E-08	1,24, annual	ST	Above-Average	17%
							Benzo(b)fluorene	243-17-4	7.51E-08	1,24, annual	ST	Above-Average	100%
							Benzo(e)pyrene	192-97-2	1.27E-07	1,24, annual	ST	Above-Average	100%
							Benzo(g,h,i)perylene	191-24-2	4.18E-07	1,24, annual	ST	Above-Average	100%
							Benzo(k)fluoranthene	207-08-9	7.51E-08	1,24, annual	ST	Above-Average	51%
							Beryllium	7440-41-7	1.70E-06	1,24, annual	ST	Above-Average	100%
							Biphenyl	92-51-3	1.76E-06	1,24, annual	ST	Above-Average	100%
							Bromodichloromethane	75-27-4	1.79E-05	1,24, annual	ST	Above-Average	100%
							Bromoform	75-25-2	1.53E-05	1,24, annual	ST	Above-Average	100%
							Bromomethane	74-83-9	1.38E-04	1,24, annual	ST	Above-Average	100%
							Cadmium	7440-43-9	3.13E-06	1,24, annual	ST	Above-Average	100%
							Carbon Monoxide	630-08-0	4.94E-01	1,24, annual	ST	Above-Average	66%
							Carbon tetrachloride	56-23-5	1.63E-05	1,24, annual	ST	Above-Average	100%
							Chlorobenzene	108-90-7	1.39E-05	1,24, annual	ST	Above-Average	100%
							Chloroform	67-66-3	2.50E-05	1,24, annual	ST	Above-Average	100%
							Chromium (hexavalent)	18540-29-9	3.49E-05	1,24, annual	ST	Above-Average	100%
							Chrysene	218-01-9	8.30E-08	1,24, annual	ST	Above-Average	14%
							Cobalt	7440-48-4	5.31E-06	1,24, annual	ST	Above-Average	100%
							Copper	7440-50-8	4.59E-05	1,24, annual	ST	Above-Average	100%
							Coronene	191-07-1	5.72E-07	1,24, annual	ST	Above-Average	100%
							Cumene (Isopropylbenzene)	98-82-8	3.19E-05	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,c)anthracene	215-58-7	7.51E-08	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,e)pyrene	192-65-4	3.75E-07	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,h)anthracene	53-70-3	7.51E-08	1,24, annual	ST	Above-Average	40%
							Dibromochloromethane	124-48-1	1.53E-05	1,24, annual	ST	Above-Average	100%
							Dichlorodifluoromethane	75-71-8	3.06E-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 [%]
							Dichloroethene, 1,1 -	75-34-3	1.53E-05	1,24, annual	ST	Above-Average	100%
							Dichloromethane	75-09-2	1.37E-03	1,24, annual	ST	Above-Average	100%
							Dioxins, Furans and Dioxin- like PCBs	N/A	0.00009 µg TEQ/s	1,24, annual	ST	Above-Average	100%
							Ethylbenzene	100-41-4	1.78E-04	1,24, annual	ST	Above-Average	100%
							Ethylene Dibromide	106-93-4	3.06E-05	1,24, annual	ST	Above-Average	100%
							Fluoranthene	206-44-0	4.35E-07	1,24, annual	ST	Above-Average	25%
							Fluorides	7664-39-3	4.08E-03	1,24, annual	ST	Above-Average	100%
							Fluorine	86-73-7	1.12E-05	1,24, annual	ST	Above-Average	100%
							Formaldehyde	50-00-0	3.19E-03	1,24, annual	ST	Above-Average	99%
							Hexachlorobenzene	118-74-1	7.51E-08	1,24, annual	ST	Above-Average	100%
							Hydrogen Chloride	7647-01-0	1.84E-01	1,24, annual	ST	Above-Average	100%
							Indeno(1,2,3 – cd)pyrene	193-39-5	9.54E-08	1,24, annual	ST	Above-Average	41%
							Lead	7439-92-1	2.23E-05	1,24, annual	ST	Above-Average	100%
							M&P-Xylene	179601-23-1	1.18E-03	1,24, annual	ST	Above-Average	100%
							Mercury	7439-97-6	4.42E-06	1,24, annual	ST	Above-Average	100%
							Mesitylene (1,3,5-Trimethylbenzene)	108-67-8	8.33E-05	1,24, annual	ST	Above-Average	100%
							Molybdenum	7439-98-7	1.90E-04	1,24, annual	ST	Above-Average	100%
							m-Terphenyl	92-06-8	1.32E-07	1,24, annual	ST	Above-Average	100%
							Naphthalene	91-20-3	6.92E-06	1,24, annual	ST	Above-Average	14%
							Nickel	7440-02-0	5.94E-05	1,24, annual	ST	Above-Average	100%
							Nitrogen Oxides	10102-44-0	4.15E+00	1,24, annual	ST	Above-Average	44%
							Nitrogen Oxides	10102-44-0	4.15E+00	1,24, annual	ST	Above-Average	44%
							O-terphenyl	84-15-1	9.29E-08	1,24, annual	ST	Above-Average	100%
							O-Xylene	95-47-6	3.41E-04	1,24, annual	ST	Above-Average	100%
							Pentachlorobenzene	608-93-5	7.51E-08	1,24, annual	ST	Above-Average	100%
							Pentachlorophenol	87-86-5	4.23E-07	1,24, annual	ST	Above-Average	100%
							Perylene	198-55-0	7.51E-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	3.75E-07	1,24, annual	ST	Above-Average	100%
							PM10 (Condensable and Filterable)	N/A	1.81E-01	1,24, annual	ST	Above-Average	100%
							PM10 (Filterable Only)	N/A	1.95E-02	1,24, annual	ST	Above-Average	100%
							PM2.5 (Condensable and Filterable)	N/A	1.70E-01	1,24, annual	ST	Above-Average	100%
							PM2.5 (Filterable Only)	N/A	7.62E-03	1,24, annual	ST	Above-Average	100%
							Polychlorinated Biphenyls (PCB)	N/A	9.20E-05	1,24, annual	ST	Above-Average	100%
							p-Terphenyl	92-94-4	8.01E-08	1,24, annual	ST	Above-Average	100%
							Pyrene	129-00-0	4.39E-07	1,24, annual	ST	Above-Average	27%
							Selenium	7782-49-2	1.14E-05	1,24, annual	ST	Above-Average	100%
							Silver	7440-22-4	1.70E-06	1,24, annual	ST	Above-Average	100%
							Styrene	100-42-5	5.72E-05	1,24, annual	ST	Above-Average	100%
							Sulphur Dioxide	7446-09-5	0.00E+00	1,24, annual	ST	Above-Average	<1%
							Tetrachloroethene	127-18-4	1.76E-05	1,24, annual	ST	Above-Average	100%

		Source Parameters					Emission Data						
Source Identifier	Source Description	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 [%]
							Tetralin	119-64-2	1.09E-06	1,24, annual	ST	Above-Average	100%
							Thallium	7440-28-0	2.09E-06	1,24, annual	ST	Above-Average	100%
							Toluene	108-88-3	7.10E-04	1,24, annual	ST	Above-Average	89%
							Total Chromium (and compounds)	7440-47-3	3.49E-05	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Condensable and Filterable)	N/A	2.04E-01	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Filterable Only)	N/A	4.17E-02	1,24, annual	ST	Above-Average	100%
							trans,1,2-Dichloroethene	156-60-5	1.79E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethane, 1,1,1 -	71-55-6	1.53E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethene	86-42-0	3.11E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethylene, 1,1,2 -	79-01-6	1.76E-05	1,24, annual	ST	Above-Average	100%
							Trichlorofluoromethane	75-69-4	3.06E-05	1,24, annual	ST	Above-Average	100%
							Trichlorotrifluoroethane	76-13-1	3.06E-05	1,24, annual	ST	Above-Average	100%
							Vanadium	7440-62-2	9.59E-07	1,24, annual	ST	Above-Average	100%
							Vinyl chloride	75-01-4	3.06E-05	1,24, annual	ST	Above-Average	100%
							Xylenes, m-, p- and o-	1330-20-7	1.52E-03	1,24, annual	ST	Above-Average	96%
							Zinc	7440-66-6	1.93E-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	34%
							Nitrogen Oxides	10102-44-0	1.12E+00	½	EF	Marginal	12%
							Sulphur Dioxide	7446-09-5	1.88E-02	½	EF	Above-Average	100%
							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	75%
							Toluene	108-88-3	9.21E-05	½	EF	Marginal	11%
							Xylenes, m-, p- and o-	1330-20-7	6.32E-05	½	EF	Marginal	4%
							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%

Source Identifier	Source Description	Source Parameters: Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Emission Data: Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Acrolein	107-02-8	2.58E-06	½	EF	Marginal	3%
							Naphthalene	91-20-3	4.26E-05	½	EF	Marginal	86%
							Acenaphthylene	208-96-8	3.02E-06	½	EF	Marginal	87%
							Acenaphthene	83-32-9	1.53E-06	½	EF	Marginal	59%
							Fluorene	86-73-7	4.19E-06	½	EF	Marginal	100%
							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	75%
							Pyrene	129-00-0	1.22E-06	½	EF	Marginal	73%
							Benzo(a)anthracene	56-55-3	2.04E-07	½	EF	Marginal	73%
							Chrysene	218-01-9	5.01E-07	½	EF	Marginal	86%
							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	49%
							Benzo(a)pyrene	50-32-8	8.42E-08	½	EF	Marginal	53%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.36E-07	½	EF	Marginal	59%
							Dibenzo(a,h)anthracene	53-70-3	1.13E-07	½	EF	Marginal	60%
							Benzo(ghi)perylene	191-24-2	1.82E-07	½	EF	Marginal	100%

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 Meeorological 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	7.38E-07	Calpuff	7.56E-07	7.15E-07	24-hour	35.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
1,2,4 – Trichlorobenzene	120-82-1	4.58E-07	Calpuff	4.69E-07	4.44E-07	24-hour	400	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
1,2,4,5-Tetrachlorobenzene	95-94-3	1.08E-07	Calpuff	1.10E-07	1.04E-07	24-hour	1	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
1,2-Dichlorobenzene	95-50-1	1.21E-06	Calpuff	2.36E-05	7.07E-06	1-hour	30500	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
2 – methylnaphthalene	91-57-6	1.33E-06	Calpuff	1.37E-06	1.29E-06	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
2,3,4,6-Tetrachlorophenol	58-90-2	3.75E-07	Calpuff	3.85E-07	3.64E-07	24-hour	0.75	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
2,4,6-Trichlorophenol	88-06-2	4.36E-07	Calpuff	4.46E-07	4.22E-07	24-hour	1.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
2,4-Dichlorophenol	120-83-2	6.07E-07	Calpuff	6.22E-07	5.89E-07	24-hour	33.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
3-Methylcholanthrene	56-49-5	3.75E-07	Calpuff	3.85E-07	3.64E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Apr-18
7,12-Dimethylbenzo(a)anthracene	57-97-6	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Apr-18
Acenaphthene	83-32-9	1.08E-06	Calpuff	1.11E-06	1.05E-06	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acenaphthylene	208-96-8	4.42E-07	Calpuff	4.53E-07	4.28E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acetaldehyde	75-07-0	6.91E-03	Calpuff	7.08E-03	6.69E-03	24-hour	500	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acetaldehyde	75-07-0	6.91E-03	Calpuff	7.08E-03	6.69E-03	24-hour	5000	—	Sch. 6	URT	—	<1%	—	
Acrolein	107-02-8	9.60E-05	Calpuff	9.84E-05	9.30E-05	24-hour	0.4	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acrolein	107-02-8	9.60E-05	Calpuff	1.87E-03	5.62E-04	1-hour	4.5	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acrolein	107-02-8	9.60E-05	Calpuff	9.84E-05	9.30E-05	24-hour	4	Health	Sch. 6	URT	—	<1%	—	Apr-18
Ammonia	7664-41-7	2.04E-02	Calpuff	2.09E-02	1.97E-02	24-hour	100	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Ammonia	7664-41-7	2.04E-02	Calpuff	2.09E-02	1.97E-02	24-hour	1000	Health	Sch. 6	URT	—	<1%	—	Apr-18
Anthracene	120-12-7	8.51E-08	Calpuff	8.72E-08	8.24E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Antimony	7440-36-0	1.69E-06	Calpuff	1.73E-06	1.64E-06	24-hour	25	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Arsenic	7440-38-2	1.70E-06	Calpuff	1.74E-06	1.65E-06	24-hour	0.3	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Barium	7440-39-3	1.02E-04	Calpuff	1.05E-04	9.90E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Benzene	71-43-2	8.69E-05	Calpuff	2.79E-06	2.79E-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	8.69E-05	Calpuff	8.90E-05	8.42E-05	24-hour	100	Health	Sch. 6	URT/DAV	B1	<1%	—	
Benzene	71-43-2	8.69E-05	Calpuff	2.79E-06	2.79E-06	Annual	4.5	Health	—	AAV	—	<1%	—	Apr-18
Benzo(a)anthracene	56-55-3	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(a)fluorene	238-84-6	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(a)pyrene	50-32-8	7.51E-08	Calpuff	2.41E-09	2.41E-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	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.005	Health	Sch. 6	URT	—	<1%	—	Apr-18
Benzo(a)pyrene	50-32-8	7.51E-08	Calpuff	2.41E-09	2.41E-09	Annual	0.0001	Health	—	AAV	—	<1%	—	Apr-18
Benzo(b)fluoranthene	205-99-2	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(b)fluorene	243-17-4	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(e)pyrene	192-97-2	1.27E-07	Calpuff	1.30E-07	1.23E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(g,h,i)perylene	191-24-2	4.18E-07	Calpuff	4.29E-07	4.05E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(k)fluoranthene	207-08-9	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Beryllium	7440-41-7	1.70E-06	Calpuff	1.74E-06	1.65E-06	24-hour	0.01	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Biphenyl	92-51-3	1.76E-06	Calpuff	1.80E-06	1.70E-06	24-hour	175	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
Bromodichloromethane	75-27-4	1.79E-05	Calpuff	1.83E-05	1.73E-05	24-hour	350	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
Bromoform	75-25-2	1.53E-05	Calpuff	1.57E-05	1.48E-05	24-hour	55	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Bromomethane	74-83-9	1.38E-04	Calpuff	1.41E-04	1.33E-04	24-hour	1350	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Cadmium	7440-43-9	3.13E-06	Calpuff	3.21E-06	3.03E-06	24-hour	0.025	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Cadmium	7440-43-9	3.13E-06	Calpuff	3.21E-06	3.03E-06	24-hour	0.25	Health	Sch. 6	URT	—	<1%	—	Apr-18
Carbon Monoxide	630-08-0	4.94E-01	Calpuff	1.16E+01	3.47E+00	1/2-hour	6000	Health	Sch. 3	Standard	B1	<1%	Note 9	Apr-18
Carbon tetrachloride	56-23-5	1.63E-05	Calpuff	1.67E-05	1.58E-05	24-hour	2.4	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Carbon tetrachloride	56-23-5	1.63E-05	Calpuff	1.67E-05	1.58E-05	24-hour	24	Health	Sch. 6	URT	—	<1%	—	Apr-18
Chlorobenzene	108-90-7	1.39E-05	Calpuff	2.71E-04	8.11E-05	1-hour	3500	Health	Sch. 3	Guideline	B1	<1%	Note 2, 3	
Chlorobenzene	108-90-7	1.39E-05	Calpuff	4.47E-04	1.34E-04	10-minute	4500	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	
Chloroform	67-66-3	2.50E-05	Calpuff	2.56E-05	2.42E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Chloroform	67-66-3	2.50E-05	Calpuff	2.56E-05	2.42E-05	24-hour	100	Health	Sch. 6	URT	—	<1%	—	Apr-18
Chromium (hexavalent)	18540-29-9	3.49E-05	Calpuff	1.12E-06	1.12E-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	3.49E-05	Calpuff	3.57E-05	3.38E-05	24-hour	0.07	Health	Sch. 6	URT	—	<1%	—	
Chrysene	218-01-9	8.30E-08	Calpuff	8.51E-08	8.05E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Cobalt	7440-48-4	5.31E-06	Calpuff	5.44E-06	5.14E-06	24-hour	0.1	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Copper	7440-50-8	4.59E-05	Calpuff	4.71E-05	4.45E-05	24-hour	50	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Dibenzo(a,c)anthracene	215-58-7	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Dibenzo(a,h)anthracene	53-70-3	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Dichlorodifluoromethane	75-71-8	3.06E-05	Calpuff	3.13E-05	2.96E-05	24-hour	500000	Health	Sch. 3	Guideline	B1	<1%	Note 10	Apr-18
Dichloroethene, 1,1 -	75-34-3	1.53E-05	Calpuff	1.57E-05	1.48E-05	24-hour	165	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Dichloroethene, 1,1 -	75-34-3	1.53E-05	Calpuff	1.57E-05	1.48E-05	24-hour	1650	Health	Sch. 6	URT	—	<1%	—	Apr-18
Dichloromethane	75-09-2	1.37E-03	Calpuff	1.40E-03	1.33E-03	24-hour	220	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Dichloromethane	75-09-2	1.37E-03	Calpuff	1.40E-03	1.33E-03	24-hour	22000	Health	Sch. 6	URT	—	<1%	—	Apr-18
Dioxins, Furans and Dioxin- like PCBs	N/A	0.00009 µg TEQ/s	Calpuff	0.00009 pg TEQ/m³	0.00009 pg TEQ/m³	24-hour	0.1 pg TEQ/m³	Health	Sch. 3	Guideline	B1	<1%	Note 8, 8a, Table 1URT - Note 4, Table 4	Apr-18
Ethylbenzene	100-41-4	1.78E-04	Calpuff	1.83E-04	1.73E-04	24-hour	1000	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Ethylbenzene	100-41-4	1.78E-04	Calpuff	5.74E-03	1.72E-03	10-minute	1900	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Ethylbenzene	100-41-4	1.78E-04	Calpuff	1.83E-04	1.73E-04	24-hour	14000	Not Applicable	Sch. 6	URT	—	<1%	—	Apr-18
Ethylene Dibromide	106-93-4	3.06E-05	Calpuff	3.13E-05	2.96E-05	24-hour	3	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Fluoranthene	206-44-0	4.35E-07	Calpuff	4.46E-07	4.22E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Fluorides	7664-39-3	4.08E-03	Calpuff	4.18E-03	3.95E-03	24-hour	0.86	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.08E-03	Calpuff	4.73E-04	4.73E-04	30-day	0.34	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.08E-03	Calpuff	4.18E-03	3.95E-03	24-hour	1.74	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.08E-03	Calpuff	4.73E-04	4.73E-04	30-day	0.69	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.08E-03	Calpuff	4.18E-03	3.95E-03	24-hour	3.44	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.08E-03	Calpuff	4.73E-04	4.73E-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 [µg/m³]	Maximum POI Concentration After Meeorological 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
Fluorine	86-73-7	1.12E-05	Calpuff	1.15E-05	1.09E-05	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Formaldehyde	50-00-0	3.19E-03	Calpuff	3.27E-03	3.09E-03	24-hour	65	Odour & Irritation	Sch. 3	Standard	B1	<1%	—	Apr-18
Hexachlorobenzene	118-74-1	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.011	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Hydrogen Chloride	7647-01-0	1.84E-01	Calpuff	1.89E-01	1.78E-01	24-hour	20	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Hydrogen Chloride	7647-01-0	1.84E-01	Calpuff	1.89E-01	1.78E-01	24-hour	200	Health	Sch. 6	URT	—	<1%	—	Apr-18
Indeno(1,2,3 – cd)pyrene	193-39-5	9.54E-08	Calpuff	9.77E-08	9.24E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Lead	7439-92-1	2.23E-05	Calpuff	2.29E-05	2.16E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	2.23E-05	Calpuff	2.59E-06	2.59E-06	30-day	0.2	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	2.23E-05	Calpuff	2.29E-05	2.16E-05	24-hour	2	Health	Sch. 6	URT	—	<1%	Note 2URT - Note 4, Table 4	Apr-18
Mercury	7439-97-6	4.42E-06	Calpuff	4.53E-06	4.29E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Molybdenum	7439-98-7	1.90E-04	Calpuff	1.95E-04	1.84E-04	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Naphthalene	91-20-3	6.92E-06	Calpuff	7.09E-06	6.70E-06	24-hour	22.5	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Naphthalene	91-20-3	6.92E-06	Calpuff	2.23E-04	6.68E-05	10-minute	50	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Nickel	7440-02-0	5.94E-05	Calpuff	1.91E-06	1.91E-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	5.94E-05	Calpuff	6.09E-05	5.76E-05	24-hour	2	Health	Sch. 6	URT	—	<1%	—	Apr-18
Nickel	7440-02-0	5.94E-05	Calpuff	1.91E-06	1.91E-06	Annual	0.4	Health	—	AAV	—	<1%	—	Apr-18
Nitrogen Oxides	10102-44-0	4.15E+00	Calpuff	4.25E+00	4.02E+00	24-hour	200	Health	Sch. 3	Standard	B1	2%	Notes 2, 17	Apr-18
Nitrogen Oxides	10102-44-0	4.15E+00	Calpuff	8.10E+01	2.43E+01	1-hour	400	Health	Sch. 3	Standard	B1	6%	Notes 2, 17	Apr-18
O-terphenyl	84-15-1	9.29E-08	Calpuff	9.52E-08	9.00E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	
PM_{10} (Condensable and Filterable)	N/A	1.81E-01	Calpuff	4.26E-01	4.16E-01	24-hour	50	—	—	AAQC	—	<1%	—	
PM_{10} (Filterable Only)	N/A	1.95E-02	Calpuff	2.00E-02	2.59E-01	24-hour	50	—	—	AAQC	—	<1%	—	
$PM_{2.5}$ (Condensable and Filterable)	N/A	1.70E-01	Calpuff	1.74E-01	4.04E-01	24-hour	30	—	—	AAQC	—	1%	—	
$PM_{2.5}$ (Filterable Only)	N/A	7.62E-03	Calpuff	7.81E-03	2.48E-01	24-hour	30	—	—	AAQC	—	<1%	—	
Pentachlorobenzene	608-93-5	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	80	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Pentachlorophenol	87-86-5	4.23E-07	Calpuff	4.33E-07	4.10E-07	24-hour	20	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Perylene	198-55-0	7.51E-08	Calpuff	7.70E-08	7.28E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Phenanthrene	85-01-8	1.92E-06	Calpuff	1.96E-06	1.86E-06	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Pyrene	129-00-0	4.39E-07	Calpuff	4.50E-07	4.25E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Selenium	7782-49-2	1.14E-05	Calpuff	1.17E-05	1.10E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Silver	7440-22-4	1.70E-06	Calpuff	1.74E-06	1.65E-06	24-hour	1	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Sulphur Dioxide	7446-09-5	0.00E+00	Calpuff	0.00E+00	0.00E+00	24-hour	275	Health	Sch. 3	Standard	B1	<1%	Effective until July 1, 2023Note 2URT - Note 4, Table 4	Apr-18
Sulphur Dioxide	7446-09-5	0.00E+00	Calpuff	0.00E+00	0.00E+00	1-hour	690	Health	Sch. 3	Standard	B1	<1%	Effective until July 1, 2023Note 2URT - Note 4, Table 4	Apr-18
Tetrachloroethene	127-18-4	1.76E-05	Calpuff	1.80E-05	1.71E-05	24-hour	360	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Tetrachloroethene	127-18-4	1.76E-05	Calpuff	1.80E-05	1.71E-05	24-hour	3600	Health	Sch. 6	URT	—	<1%	—	
Tetralin	119-64-2	1.09E-06	Calpuff	1.12E-06	1.05E-06	24-hour	151.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Thallium	7440-28-0	2.09E-06	Calpuff	2.15E-06	2.03E-06	24-hour	0.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Toluene	108-88-3	7.10E-04	Calpuff	7.28E-04	6.88E-04	24-hour	2000	Not Applicable	Sch. 3	Guideline	B1	<1%	To be updated - Note 5	Apr-18
Total Chromium (and compounds)	7440-47-3	3.49E-05	Calpuff	3.57E-05	3.38E-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	3.49E-05	Calpuff	3.57E-05	3.38E-05	24-hour	5	Health	Sch. 6	URT	—	<1%	—	Apr-18
Total Particulate Matter (Condensable and Filterable)	N/A	2.04E-01	Calpuff	2.09E-01	4.37E-01	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Total Particulate Matter (Filterable only)	N/A	2.04E-01	Calpuff	2.09E-01	4.37E-01	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Trichloroethane, 1,1,1 -	71-55-6	1.53E-05	Calpuff	1.57E-05	1.48E-05	24-hour	115000	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Trichloroethene	86-42-0	3.11E-05	Calpuff	3.19E-05	3.02E-05	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	1.76E-05	Calpuff	1.80E-05	1.71E-05	24-hour	12	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	1.76E-05	Calpuff	1.80E-05	1.71E-05	24-hour	1200	Health	Sch. 6	URT	—	<1%	—	Apr-18
Trichlorofluoromethane	75-69-4	3.06E-05	Calpuff	3.13E-05	2.96E-05	24-hour	6000	Health	Sch. 3	Guideline	B1	<1%	Note 10	Apr-18
Vanadium	7440-62-2	9.59E-07	Calpuff	9.83E-07	9.30E-07	24-hour	2	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Vinyl chloride	75-01-4	3.06E-05	Calpuff	3.13E-05	2.96E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Vinyl chloride	75-01-4	3.06E-05	Calpuff	3.13E-05	2.96E-05	24-hour	100	Health	Sch. 6	URT	—	<1%	—	Apr-18
Xylenes, m-, p- and o-	1330-20-7	1.52E-03	Calpuff	1.56E-03	1.48E-03	24-hour	730	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3, 22	Apr-18
Xylenes, m-, p- and o-	1330-20-7	1.52E-03	Calpuff	4.91E-02	1.47E-02	10-minute	3000	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3, 22	Apr-18
Xylenes, m-, p- and o-	1330-20-7	1.52E-03	Calpuff	1.56E-03	1.48E-03	24-hour	7300	Not Applicable	Sch. 6	URT	—	<1%	—	Apr-18
Zinc	7440-66-6	1.93E-04	Calpuff	1.97E-04	1.87E-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-20	0:00	8.58	17		0		112		5		0	8
15-Jun-20	1:00	8.31	20		0		107		5		0	8
15-Jun-20	2:00	8.61	18		0		104		5		0	8
15-Jun-20	3:00	8.65	25	20.0	0		103		4		0	8
15-Jun-20	4:00	8.65	16	19.8	0		108		3		0	8
15-Jun-20	5:00	8.55	16	18.8	0		100		4		0	8
15-Jun-20	6:00	8.75	37	23.5	0		105		5		0	8
15-Jun-20	7:00	8.37	24	23.3	0		110		4		0	8
15-Jun-20	8:00	8.68	22	24.8	0		107		4		0	8
15-Jun-20	9:00	8.64	29	28.0	0		111		4		0	8
15-Jun-20	10:00	8.87	21	24.0	0		108		5		0	8
15-Jun-20	11:00	8.72	46	29.5	0		108		4		0	8
15-Jun-20	12:00	8.73	5	25.3	0		110		5		0	8
15-Jun-20	13:00	9.50	21	23.3	0		116		5		0	9
15-Jun-20	14:00	9.27	20	23.0	0		99		5		0	
15-Jun-20	15:00	8.94	24	17.5	0		111		5		0	9
15-Jun-20	16:00	8.65	10	18.8	0		110		5		0	8
15-Jun-20	17:00	8.36	12	16.5	0		106		4		0	8
15-Jun-20	18:00	8.78	17	15.8	0		107		3		0	9
15-Jun-20	19:00	8.96	10	12.3	0		108		3		0	9
15-Jun-20	20:00	9.08	13	13.0	0		115		6		0	9
15-Jun-20	21:00	8.88	19	14.8	0		109		4		0	9
15-Jun-20	22:00	9.00	20	15.5	0		114		5		0	9
15-Jun-20	23:00	8.73	16	17.0	0	0.0	100	108	4	4.4	0	10
16-Jun-20	0:00	8.59	9	16.0	0	0.0	113	108	4	4.4	0	8
16-Jun-20	1:00	8.85	24	17.3	0	0.0	111	108	4	4.3	0	9
16-Jun-20	2:00	8.89	12	15.3	0	0.0	108	108	4	4.3	0	8
16-Jun-20	3:00	8.50	18	15.8	0	0.0	91	108	2	4.2	0	8
16-Jun-20	4:00	8.32	17	17.8	0	0.0	100	107	3	4.2	0	8
16-Jun-20	5:00	9.36	37	21.0	0	0.0	104	108	4	4.2	0	9
16-Jun-20	6:00	9.36	27	24.8	0	0.0	106	108	5	4.2	0	9
16-Jun-20	7:00	10.31	22	25.8	0	0.0	111	108	5	4.3	0	10
16-Jun-20	8:00	9.31	26	28.0	0	0.0	109	108	4	4.3	0	9
16-Jun-20	9:00	8.89	14	22.3	0	0.0	107	108	4	4.3	0	9
16-Jun-20	10:00	9.14	19	20.3	0	0.0	113	108	5	4.3	0	9
16-Jun-20	11:00	9.22	14	18.3	0	0.0	110	108	4	4.3	0	9
16-Jun-20	12:00	9.03	14	15.3	0	0.0	112	108	5	4.3	0	9
16-Jun-20	13:00	9.08	13	15.0	0	0.0	110	108	5	4.3	0	9
16-Jun-20	14:00	9.19	17	14.5	0	0.0	109	108	5	4.3	0	9
16-Jun-20	15:00	9.13	9	13.3	0	0.0	107	108	5	4.3	0	9
16-Jun-20	16:00	9.37	30	17.3	0	0.0	114	108	6	4.3	0	9
16-Jun-20	17:00	8.99	19	18.8	0	0.0	113	108	4	4.3	0	9
16-Jun-20	18:00	8.92	8	16.5	0	0.0	104	108	5	4.4	0	9
16-Jun-20	19:00	9.20	12	17.3	0	0.0	108	108	2	4.3	0	9
16-Jun-20	20:00	9.22	9	12.0	0	0.0	117	108	4	4.3	0	9
16-Jun-20	21:00	8.94	9	9.5	0	0.0	108	108	5	4.3	0	9
16-Jun-20	22:00	9.77	10	10.0	0	0.0	115	108	5	4.3	0	9
16-Jun-20	23:00	9.45	10	9.5	0	0.0	108	109	4	4.3	0	9
17-Jun-20	0:00	9.02	10	9.8	0	0.0	107	108	4	4.3	0	9
17-Jun-20	1:00	9.05	11	10.3	0	0.0	109	108	5	4.3	0	9
17-Jun-20	2:00	9.38	17	12.0	0	0.0	112	109	4	4.3	0	9
17-Jun-20	3:00	9.49	15	13.3	0	0.0	104	109	2	4.3	0	9
17-Jun-20	4:00	9.04	16	14.8	0	0.0	112	110	4	4.4	0	9
17-Jun-20	5:00	8.75	10	14.5	0	0.0	102	109	5	4.4	0	8
17-Jun-20	6:00	9.08	11	13.0	0	0.0	113	110	6	4.5	0	9
17-Jun-20	7:00	8.94	12	12.3	0	0.0	109	110	6	4.5	0	9
17-Jun-20	8:00	8.80	9	10.5	0	0.0	105	110	5	4.5	0	9
17-Jun-20	9:00	8.95	26	14.5	0	0.0	111	110	5	4.6	0	9
17-Jun-20	10:00	9.06	13	15.0	0	0.0	109	110	6	4.6	0	9
17-Jun-20	11:00	8.98	18	16.5	0	0.0	110	110	5	4.7	0	9
17-Jun-20	12:00	8.83	17	18.5	0	0.0	116	110	5	4.7	0	9
17-Jun-20	13:00	8.92	8	14.0	0	0.0	109	110	6	4.7	0	9
17-Jun-20	14:00	8.90	8	12.8	0	0.0	111	110	5	4.7	0	8
17-Jun-20	15:00	8.82	6	9.8	0	0.0	111	110	5	4.7	0	9
17-Jun-20	16:00	8.52	8	7.5	0	0.0	108	110	5	4.7	0	8
17-Jun-20	17:00	8.18	10	8.0	0	0.0	109	109	4	4.7	0	8
17-Jun-20	18:00	8.61	22	11.5	0	0.0	111	110	5	4.7	0	8
17-Jun-20	19:00	8.37	13	13.3	0	0.0	110	110	4	4.8	0	8
17-Jun-20	20:00	8.78	14	14.8	0	0.0	105	109	3	4.7	0	8
17-Jun-20	21:00	8.64	10	14.8	0	0.0	109	109	3	4.6	0	8
17-Jun-20	22:00	8.78	17	13.5	0	0.0	111	109	6	4.7	0	9
17-Jun-20	23:00	8.62	10	12.8	0	0.0	111	109	5	4.7	0	8

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

		BH Outlet										Scrubber Inlet
		O_2 %	CO mg/m³ @ 11% O_2		SO_2 mg/m³ @ 11% O_2		NOx mg/m³ @ 11% O_2		HCl mg/m³ @ 11% O_2		THC mg/m³ @ 11% O_2	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-20	0:00	8.66	6	10.8	0	0.0	110	109	6	4.8	0	8
18-Jun-20	1:00	8.59	7	10.0	0	0.0	107	109	6	4.8	0	8
18-Jun-20	2:00	8.81	9	8.0	0	0.0	113	109	5	4.9	0	8
18-Jun-20	3:00	8.58	16	9.5	0	0.0	98	109	2	4.9	0	8
18-Jun-20	4:00	8.76	11	10.8	0	0.0	110	109	4	4.9	0	8
18-Jun-20	5:00	8.68	5	10.3	0	0.0	110	109	5	4.9	0	8
18-Jun-20	6:00	8.49	23	13.8	0	0.0	111	109	6	4.9	0	8
18-Jun-20	7:00	8.38	9	12.0	0	0.0	108	109	5	4.8	0	8
18-Jun-20	8:00	8.57	13	12.5	0	0.0	111	110	5	4.8	0	8
18-Jun-20	9:00	8.30	9	13.5	0	0.0	109	109	4	4.8	0	8
18-Jun-20	10:00	8.39	13	11.0	0	0.0	113	110	5	4.8	0	8
18-Jun-20	11:00	8.38	10	11.3	0	0.0	107	110	5	4.8	0	8
18-Jun-20	12:00	8.25	14	11.5	0	0.0	117	110	5	4.8	0	8
18-Jun-20	13:00	8.19	13	12.5	0	0.0	107	109	5	4.7	0	8
18-Jun-20	14:00	8.55	12	12.3	0	0.0	111	109	5	4.7	0	8
18-Jun-20	15:00	8.20	16	13.8	0	0.0	113	110	4	4.7	0	8
18-Jun-20	16:00	8.28	11	13.0	0	0.0	111	110	3	4.6	0	8
18-Jun-20	17:00	8.54	8	11.8	0	0.0	107	110	6	4.7	0	8
18-Jun-20	18:00	8.57	13	12.0	0	0.0	108	109	3	4.6	0	8
18-Jun-20	19:00	8.59	8	10.0	0	0.0	113	110	6	4.7	0	8
18-Jun-20	20:00	8.51	7	9.0	0	0.0	110	110	5	4.8	0	8
18-Jun-20	21:00	8.41	9	9.3	0	0.0	109	110	6	4.9	0	8
18-Jun-20	22:00	8.35	11	8.8	0	0.0	111	110	6	4.9	0	8
18-Jun-20	23:00	8.55	15	10.5	0	0.0	114	110	6	4.9	0	8
	Min	8.18	5	7.5	0	0	91	107	2	4.2	0	8
	Max	10.31	46	29.5	0	0	117	110	6	4.9	0	10
	Avg	8.81	15	15.2	0	0	109	109	5	4.5	0	8
	Std Dev	0.37	7.3	5.1	-	-	4.23	0.8	1.0	0.2	-	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 mg/m³ @ 11% O_2		SO_2 mg/m³ @ 11% O_2		NOx mg/m³ @ 11% O_2		HCl mg/m³ @ 11% O_2		THC mg/m³ @ 11% O_2	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-20	0:00	8.60	9		0		109		5		0	8
15-Jun-20	1:00	8.73	9		0		112		5		0	8
15-Jun-20	2:00	8.86	10		0		104		5		0	8
15-Jun-20	3:00	8.66	7	8.8	0		105		4		0	8
15-Jun-20	4:00	8.59	10	9.0	0		117		5		0	8
15-Jun-20	5:00	8.88	9	9.0	0		112		5		0	8
15-Jun-20	6:00	8.80	10	9.0	0		117		5		0	8
15-Jun-20	7:00	8.57	11	10.0	0		109		6		0	8
15-Jun-20	8:00	8.62	13	10.8	0		110		5		0	8
15-Jun-20	9:00	8.40	14	12.0	0		107		5		0	8
15-Jun-20	10:00	8.45	23	15.3	0		110		5		0	8
15-Jun-20	11:00	8.41	21	17.8	0		105		5		0	8
15-Jun-20	12:00	8.39	18	19.0	0		113		6		0	8
15-Jun-20	13:00	8.50	15	19.3	0		109		6		0	8
15-Jun-20	14:00	8.38	10	16.0	0		107		6		0	8
15-Jun-20	15:00	8.65	11	13.5	0		109		6		0	8
15-Jun-20	16:00	8.68	10	11.5	0		114		6		0	8
15-Jun-20	17:00	8.61	11	10.5	0		106		5		0	8
15-Jun-20	18:00	8.48	11	10.8	0		108		5		0	8
15-Jun-20	19:00	8.79	9	10.3	0		112		4		0	8
15-Jun-20	20:00	8.80	12	10.8	0		106		4		0	8
15-Jun-20	21:00	8.45	7	9.8	0		114		4		0	8
15-Jun-20	22:00	8.55	11	9.8	0		109		5		0	8
15-Jun-20	23:00	8.53	14	11.0	0	0.0	107	110	5	5.1	0	8
16-Jun-20	0:00	8.45	7	9.8	0	0.0	112	110	5	5.1	0	8
16-Jun-20	1:00	8.37	15	11.8	0	0.0	107	110	5	5.1	0	8
16-Jun-20	2:00	8.31	9	11.3	0	0.0	103	110	5	5.1	0	8
16-Jun-20	3:00	8.66	13	11.0	0	0.0	101	109	4	5.1	0	8
16-Jun-20	4:00	8.71	11	12.0	0	0.0	117	109	4	5.0	0	8
16-Jun-20	5:00	8.73	17	12.5	0	0.0	97	109	5	5.0	0	8
16-Jun-20	6:00	8.55	12	13.3	0	0.0	119	109	5	5.0	0	8
16-Jun-20	7:00	8.61	15	13.8	0	0.0	111	109	5	5.0	0	8
16-Jun-20	8:00	8.33	12	14.0	0	0.0	106	109	5	5.0	0	8
16-Jun-20	9:00	8.42	17	14.0	0	0.0	112	109	5	5.0	0	8
16-Jun-20	10:00	8.41	13	14.3	0	0.0	109	109	5	5.0	0	8
16-Jun-20	11:00	8.78	12	13.5	0	0.0	97	109	5	5.0	0	8
16-Jun-20	12:00	8.44	10	13.0	0	0.0	112	109	5	5.0	0	8
16-Jun-20	13:00	8.40	10	11.3	0	0.0	112	109	6	5.0	0	8
16-Jun-20	14:00	8.40	9	10.3	0	0.0	102	108	5	4.9	0	8
16-Jun-20	15:00	8.46	8	9.3	0	0.0	111	109	5	4.9	0	8
16-Jun-20	16:00	8.56	9	9.0	0	0.0	112	108	5	4.8	0	8
16-Jun-20	17:00	8.63	10	9.0	0	0.0	105	108	5	4.8	0	8
16-Jun-20	18:00	8.90	10	9.3	0	0.0	111	109	5	4.8	0	8
16-Jun-20	19:00	9.20	12	10.3	0	0.0	112	109	5	4.9	0	9
16-Jun-20	20:00	8.86	10	10.5	0	0.0	101	108	4	4.9	0	8
16-Jun-20	21:00	8.49	11	10.8	0	0.0	112	108	5	4.9	0	8
16-Jun-20	22:00	8.64	10	10.8	0	0.0	112	108	5	4.9	0	8
16-Jun-20	23:00	9.29	9	10.0	0	0.0	111	109	5	4.9	0	9
17-Jun-20	0:00	8.91	14	11.0	0	0.0	109	108	5	4.9	0	8
17-Jun-20	1:00	8.63	17	12.5	0	0.0	110	109	5	4.9	0	8
17-Jun-20	2:00	8.72	12	13.0	0	0.0	108	109	5	4.9	0	8
17-Jun-20	3:00	8.96	13	14.0	0	0.0	96	109	4	4.9	0	8
17-Jun-20	4:00	8.58	13	13.8	0	0.0	120	109	4	4.9	0	8
17-Jun-20	5:00	8.35	18	14.0	0	0.0	106	109	6	5.0	0	8
17-Jun-20	6:00	8.38	16	15.0	0	0.0	117	109	6	5.0	0	8
17-Jun-20	7:00	8.69	14	15.3	0	0.0	107	109	6	5.0	0	8
17-Jun-20	8:00	8.60	10	14.5	0	0.0	110	109	6	5.1	0	8
17-Jun-20	9:00	8.68	14	13.5	0	0.0	112	109	5	5.1	0	8
17-Jun-20	10:00	8.64	10	12.0	0	0.0	105	109	5	5.1	0	8
17-Jun-20	11:00	8.64	10	11.0	0	0.0	105	109	5	5.1	0	8
17-Jun-20	12:00	8.63	12	11.5	0	0.0	115	109	6	5.1	0	8
17-Jun-20	13:00	8.41	14	11.5	0	0.0	107	109	6	5.1	0	8
17-Jun-20	14:00	8.35	8	11.0	0	0.0	113	109	5	5.1	0	8
17-Jun-20	15:00	8.44	8	10.5	0	0.0	108	109	5	5.1	0	8
17-Jun-20	16:00	8.49	14	11.0	0	0.0	108	109	5	5.1	0	8
17-Jun-20	17:00	7.96	10	10.0	0	0.0	105	109	5	5.1	0	8
17-Jun-20	18:00	8.73	10	10.5	0	0.0	111	109	6	5.2	0	8
17-Jun-20	19:00	8.20	11	11.3	0	0.0	113	109	6	5.2	0	8
17-Jun-20	20:00	8.78	12	10.8	0	0.0	106	109	5	5.3	0	8
17-Jun-20	21:00	9.32	18	12.8	0	0.0	111	109	5	5.3	0	9
17-Jun-20	22:00	8.66	13	13.5	0	0.0	109	109	5	5.3	0	8
17-Jun-20	23:00	8.35	9	13.0	0	0.0	106	109	5	5.3	0	8

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-20	0:00	8.76	11	12.8	0	0.0	111	109	6	5.3	0	8
18-Jun-20	1:00	8.69	10	10.8	0	0.0	108	109	5	5.3	0	8
18-Jun-20	2:00	8.92	11	10.3	0	0.0	110	109	5	5.3	0	8
18-Jun-20	3:00	8.85	11	10.8	0	0.0	102	109	4	5.3	0	8
18-Jun-20	4:00	8.74	9	10.3	0	0.0	119	109	5	5.3	0	8
18-Jun-20	5:00	8.91	11	10.5	0	0.0	106	109	6	5.3	0	8
18-Jun-20	6:00	8.52	10	10.3	0	0.0	115	109	6	5.3	0	8
18-Jun-20	7:00	8.42	10	10.0	0	0.0	112	109	7	5.4	0	8
18-Jun-20	8:00	8.27	9	10.0	0	0.0	113	110	6	5.4	0	8
18-Jun-20	9:00	8.51	12	10.3	0	0.0	108	109	5	5.4	0	8
18-Jun-20	10:00	8.38	9	10.0	0	0.0	113	110	6	5.4	0	8
18-Jun-20	11:00	8.81	11	10.3	0	0.0	107	110	6	5.5	0	8
18-Jun-20	12:00	8.16	14	11.5	0	0.0	108	110	6	5.5	0	8
18-Jun-20	13:00	8.45	8	10.5	0	0.0	111	110	6	5.5	0	8
18-Jun-20	14:00	8.55	6	9.8	0	0.0	107	109	5	5.5	0	8
18-Jun-20	15:00	8.28	7	8.8	0	0.0	113	110	5	5.5	0	8
18-Jun-20	16:00	8.11	10	7.8	0	0.0	111	110	5	5.5	0	7
18-Jun-20	17:00	8.48	8	7.8	0	0.0	109	110	5	5.5	0	8
18-Jun-20	18:00	8.55	9	8.5	0	0.0	107	110	5	5.4	0	8
18-Jun-20	19:00	8.20	6	8.3	0	0.0	110	110	4	5.3	0	8
18-Jun-20	20:00	8.08	7	7.5	0	0.0	108	110	4	5.3	0	8
18-Jun-20	21:00	8.31	8	7.5	0	0.0	109	110	6	5.3	0	8
18-Jun-20	22:00	8.69	13	8.5	0	0.0	109	110	6	5.4	0	8
18-Jun-20	23:00	8.69	16	11.0	0	0.0	105	110	5	5.4	0	8
	Min	7.96	6	7.5	0	0	96	108	4	4.8	0	7
	Max	9.32	23	19.3	0	0	120	110	7	5.5	0	9
	Avg	8.58	11	11.4	0	0	109	109	5	5.1	0	8
	Std Dev	0.24	3.2	2.3	-	-	4.49	0.5	0.6	0.2	-	0.2

Note: All times are Eastern Standard Time