Report No. 22160

ORTECH
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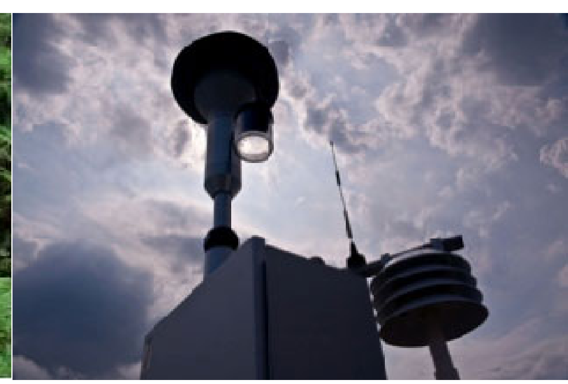
Report:

Covanta Durham York Renewable Energy Limited Partnership Durham York Energy Centre 2022 Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX

Date: March 1, 2023





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Revision History

Version	Date	Summary Changes/Purpose of Revision
1	March 1, 2023	None

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EXECUTIVE SUMMARY

ORTECH Consulting Inc. (ORTECH) completed the annual compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between November 29 and December 2, 2022. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA 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". This program is the fifteenth comprehensive Schedule E source testing program conducted at the facility. A list of the test programs conducted by ORTECH to date is provided below:

Test Program	Test Date	ORTECH Report No.
2015 Compliance	September/October 2015	21546
2016 Voluntary	May 2016	21656
2016 Compliance	October/November 2016	21698
2017 Voluntary	May 2017	21754
2017 Compliance	October 2017	21800
2018 Voluntary	May/June 2018	21840
2018 Compliance	September 2018	21880
2019 Voluntary	June 2019	21936
2019 Compliance	September 2019	21960
2020 Voluntary	June 2020	22001
2020 Compliance	November 2020	22050
2021 Voluntary	June 2021	22081
2021 Compliance	November/December 2021	22085
2022 Voluntary	May 2022	22158
2022 Compliance	November/December 2022	22160

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 September 2022, 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 (November 29 to December 2, 2022) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on November 29, 2022 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)*	-	-	-	392	-
Average Combustion Zone Temp. (°C)*	-	-	-	1169	-
Steam (tonnes/day)*	-	-	-	806	-
MSW Combusted (tonnes/day)*	-	-	-	206	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	1008	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	4158	-
Filterable Particulate (mg/Rm^3) (1)	<0.38	<0.20	0.25	<0.27	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.76	<4.26	<4.00	<4.01	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.29	<4.19	<3.94	<3.81	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	1.06	1.10	1.12	1.09	-
Cadmium (µg/Rm^3) (1)	0.032	0.11	0.046	0.063	7
Lead (µg/Rm^3) (1)	0.21	0.26	0.22	0.23	50
Mercury (µg/Rm^3) (1)	<0.092	<0.095	<0.091	<0.093	15
Antimony (µg/Rm^3) (1)	<0.045	<0.044	<0.045	<0.044	-
Arsenic (µg/Rm^3) (1)	<0.045	<0.044	<0.045	<0.044	-
Barium (µg/Rm^3) (1)	1.67	1.50	1.66	1.61	-
Beryllium (µg/Rm^3) (1)	<0.045	<0.044	<0.045	<0.044	-
Chromium (µg/Rm^3) (1)	1.20	1.64	1.06	1.30	-
Cobalt (µg/Rm^3) (1)	0.028	0.15	<0.045	<0.074	-
Copper (µg/Rm^3) (1)	3.41	2.04	2.26	2.57	-
Molybdenum (µg/Rm^3) (1)	7.87	7.71	5.62	7.07	-
Nickel (µg/Rm^3) (1)	2.14	1.46	1.12	1.57	-
Selenium (µg/Rm^3) (1)	<0.22	<0.22	<0.22	<0.22	-
Silver (µg/Rm^3) (1)	<0.045	<0.044	<0.045	<0.044	-
Thallium (µg/Rm^3) (1)	<0.045	<0.044	<0.045	<0.044	-
Vanadium (µg/Rm^3) (1)	0.028	0.039	0.029	0.032	-
Zinc (µg/Rm^3) (1)	4.47	4.39	5.02	4.63	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<3.90	<3.62	<3.53	<3.68	60
Total Chlorobenzenes (ng/Rm^3) (1) (5)	<102	<114	<88.3	<102	-
Total Chlorophenols (ng/Rm^3) (1)	<169	<172	<165	<168	-
Total PAHs (ng/Rm^3) (1)	<271	<538	<169	<326	-
VOCs (µg/Rm^3) (1)	<128	<45.0	<204	<125	-
Aldehydes (µg/Rm^3) (1)	<13.0	<11.7	<11.8	<12.2	-
Total VOCs (µg/Rm^3) (1) (4)	<141	<56.7	<216	<137	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.1	0	0.2	0.1	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).

(5) Total excludes monochlorobenzene as the analytical lab couldn't quantify this compound from the SVOC test train. Chlorobenzene was below the detection limit in the VOC test trains.

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)*	-	-	-	392	-
Average Combustion Zone Temp. (°C)*	-	-	-	1281	-
Steam (tonnes/day)*	-	-	-	804	-
MSW Combusted (tonnes/day)*	-	-	-	180	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	929	-
Carbon Injection (kg/day)*	-	-	-	128	-
Lime Injection (kg/day)*	-	-	-	4234	-
Filterable Particulate (mg/Rm^3) (1)	<0.19	0.22	0.20	<0.20	9
PM_{10} with Condensable (mg/Rm^3) (1)	<2.86	<3.51	<3.73	<3.37	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<2.64	<3.29	<3.66	<3.20	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm^3) (1)	1.01	0.74	0.75	0.83	-
Cadmium (µg/Rm^3) (1)	0.026	0.025	0.033	0.028	7
Lead (µg/Rm^3) (1)	0.17	0.049	0.22	0.15	50
Mercury (µg/Rm^3) (1)	<0.088	<0.087	<0.088	<0.088	15
Antimony (µg/Rm^3) (1)	<0.021	<0.022	0.051	<0.031	-
Arsenic (µg/Rm^3) (1)	<0.043	<0.043	<0.044	<0.043	-
Barium (µg/Rm^3) (1)	0.12	1.24	1.37	0.91	-
Beryllium (µg/Rm^3) (1)	<0.043	<0.043	<0.044	<0.043	-
Chromium (µg/Rm^3) (1)	0.85	0.70	1.01	0.85	-
Cobalt (µg/Rm^3) (1)	<0.021	<0.022	<0.022	<0.022	-
Copper (µg/Rm^3) (1)	2.03	1.95	2.08	2.02	-
Molybdenum (µg/Rm^3) (1)	7.21	7.41	7.79	7.47	-
Nickel (µg/Rm^3) (1)	1.16	1.13	0.92	1.07	-
Selenium (µg/Rm^3) (1)	<0.21	<0.22	<0.22	<0.22	-
Silver (µg/Rm^3) (1)	<0.043	<0.043	<0.044	<0.043	-
Thallium (µg/Rm^3) (1)	<0.043	<0.043	<0.044	<0.043	-
Vanadium (µg/Rm^3) (1)	<0.021	<0.022	<0.022	<0.022	-
Zinc (µg/Rm^3) (1)	3.92	3.53	5.33	4.26	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<2.05	<7.79	<1.90	<3.91	60
Total Chlorobenzenes (ng/Rm^3) (1) (5)	<141	<119	<123	<128	-
Total Chlorophenols (ng/Rm^3) (1)	<169	<170	<169	<169	-
Total PAHs (ng/Rm^3) (1)	<177	<294	<248	<240	-
VOCs (µg/Rm^3) (1)	<102	<103	<55.7	<87.1	-
Aldehydes (µg/Rm^3) (1)	<14.2	<17.4	<14.3	<15.3	-
Total VOCs (µg/Rm^3) (1) (4)	<116	<120	<70.0	<102	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.1	0.2	0.7	0.3	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).

(5) Total excludes monochlorobenzene as the analytical lab couldn't quantify this compound from the SVOC test train. Chlorobenzene was below the detection limit in the VOC test trains.

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)	5.8	9.1	17.0	40
	Hydrogen Chloride (mg/Rm^3) (2)	0.2	0.4	0.6	9
	Nitrogen Oxides (mg/Rm^3) (2)	111	112	113	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.5	0.8	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	6.0	9.4	13.5	40
	Hydrogen Chloride (mg/Rm^3) (2)	3.3	3.8	4.3	9
	Nitrogen Oxides (mg/Rm^3) (2)	110	111	112	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.6	1.4	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.

Dispersion modelling was completed using the CALPUFF model (using Version 7.2.1 level 150618 as approved by the MECP in December 2021) by WSP Canada Inc. (formerly 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 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 797 tonnes of steam per day for each Boiler (approximately 98.7% 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 the annual compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between November 29 and December 2, 2022. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA 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". This program is the fifteenth comprehensive Schedule E source testing program conducted at the facility. 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
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2021 Voluntary	June 2021	22081
2021 Compliance	November/December 2021	22085
2022 Voluntary	May 2022	22158
2022 Compliance	November/December 2022	22160

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, a Pre-Test Plan letter was submitted to the MECP stating that the sampling program would follow the procedures detailed in ORTECH Pre-Test Plan No. 22050, "Covanta Durham York Renewable Energy Limited Partnership Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (Air) No. 7306-8FDKNX", dated September 8, 2020. Provided in Appendix 3 is a copy of the Pre-Test Plan acceptance email received from the MECP, dated October 4, 2022, indicating acceptance of the proposed sampling strategy. 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 November 29 and December 2, 2022.

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. ECA Notice No. 2, dated December 23, 2021, allows the facility to receive and thermally treat up to 142,000 tonnes/year of MSW for the 2021 operating year. The maximum continuous rating (MCR) for the facility is defined as 218 tonnes per day, per unit, of MSW with a heat content of 13 MJ/kg per train. The steam production MCR is 33.64 tonnes per hour for each Boiler.

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

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

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

2.1 Control Equipment

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

2.2 Continuous Emission Monitoring Systems

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

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

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

3. SAMPLING LOCATIONS

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

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

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

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

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

The results for the cyclonic flow checks are summarized below:

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

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

4. SAMPLING PROCEDURES

4.1 General

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

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

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

Since relative accuracy and system bias testing was conducted in September 2022, 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 (November 29 to December 2, 2022) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on November 29, 2022 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

4.2 Particulate and Metals

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

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

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

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

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

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

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

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

4.3 Particle Size Distribution

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

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

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

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

4.4 Semi-Volatile Organic Compounds

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

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

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

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

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

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

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

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

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

4.5 Acid Gases

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

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

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

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

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

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

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

4.6 Volatile Organic Compounds

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

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

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 September 2022, 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 November 29, 2022 at 08:00 to December 2, 2022 at 13:00, 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 November 29, 2022. 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 the analytical laboratory for analysis.

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

The SVOC analytical reports are provided in Appendix 15.

5.4 Acid Gases

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

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

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

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

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

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

5.5 Volatile Organics Train Recovery

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

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

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

The VOST analytical report is provided in Appendix 17.

5.6 Aldehydes

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

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

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

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

6. INTERNAL AND EXTERNAL QA/QC PROGRAM

6.1 General

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

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

6.2 Pre-Test Activities

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

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

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

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

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

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

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

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

6.3 Emission Testing QA/QC Results

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

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

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

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

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 6.7% well within the acceptable limit of less than ±20%, for elements that are greater than 5 times the minimum detection limit, except for copper in the back half. The copper relative percent difference was greater than 20%; the greater value was used to calculate the emission data.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 87-108%. The acceptable limit is 80-115% 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 88-114%. 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.

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

Mercury Analysis

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

- One duplicate sample analysis was performed for each fraction. However, mercury was not detected on any of the fractions in quantities greater than the detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 93-99% 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 89-95%, 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 1.0%, well within the acceptable limit of less than ±20% for compounds that are greater than 5 times the minimum detection limit.
- A blank spike sample was analyzed with the test samples. The recovery results for the blank spike sample were 104% for hydrogen chloride, 104% for hydrogen fluoride and 107% for ammonia, within the acceptable range of 90-110%.
- A matrix spike (spike confirmation) sample was analyzed with every 20 samples to confirm the identity of each peak. The recovery results of the matrix spike sample were 105% for hydrogen chloride, 102% for hydrogen fluoride and 101% for ammonia, within the acceptable range of 85-115%.

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

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

6.5.3 Aldehyde Sample Analysis QA/QC

Analysis for formaldehyde, acetaldehyde and acrolein was performed via GC/MS. Laboratory control samples were analyzed with the test samples. Two laboratory control samples were prepared by the analytical laboratory and analyzed with the test samples (10µg and 2µg). The recoveries for the 10µg samples were 87% for acetaldehyde, 76% for formaldehyde and 41% for acrolein. The recoveries for the 2µg sample were 88% for acetaldehyde, 127% formaldehyde and 23% for acrolein. The low recoveries may indicate a low bias in the sample data.

Acrolein and acetaldehyde were not detected in any of the samples in quantities greater than the reported detection limit. Formaldehyde was detected in both blank samples in quantities similar to those found in the test samples. Formaldehyde was also detected in the method blank. The test sample data may be biased high for formaldehyde 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 68-112% 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, chlorobenzene data is not available from the SVOC trains since the chlorobenzene-13C6 extraction standard was not recovered. ALS made every reasonable attempt to report chlorobenzene from the SVOC test trains, however monochlorobenzene was not able to be quantified in any of the SVOC samples. ORTECH requested a more detailed explanation for the lack of monochlorobenzene data, which had been reported for previous testing programs from the SVOC test samples, and ALS stated the volatility of chlorobenzene as affecting the recovery amount necessary for quantitative determinations.

The analytical laboratory was able to provide chlorobenzene data from the VOST tubes, however this data was inconsistent with data reported for monochlorobenzene from the SVOC sampling train for previous test programs. Chlorobenzene was not detected in any of the VOST test samples in quantities greater than the reportable detection limit (<0.01 µg or 10ng). Historically, monochlorobenzene has been detected in quantities greater than 1000ng in the SVOC test train samples. The total chlorobenzene data presented in this report excludes monochlorobenzene and caution should be used when comparing the total chlorobenzene emission data from this test program to previous testing programs at the site.

Note that while chlorobenzene emission data is presented in the VOC tables, it is excluded from the total VOC so that total VOCs is consistent with previous emission testing programs.

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.

Methylene chloride and toluene were detected in the field blank samples and methylene chloride was also detected in the trip blank in quantities significantly higher than the analytical detection limit. The field blank samples are taken to the sampling location, opened then recapped to provide background levels at the sampling location. The trip blank is taken to the sampling location but remains sealed.

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 79.8 – 105.4%.

As per the VOST analytical report, the recovery of d14-hexane was marginally above the method control limit for three of the samples. However, the surrogate and field standard recoveries are not biased, except as noted below. Sample data are not expected to be biased. For the sample 22-22160-VOST-9A/B FIELD BLANK APC OUTLET#1, the recovery of the d10-ethylbenzene is elevated.

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 (November 29 to December 2, 2022) by the DYEC CEMS. Total hydrocarbon concentrations were also measured at the BH Outlet and Quench Inlet by ORTECH on November 29, 2022.

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)	139	140
Moisture by Volume (%)	16.3	15.4
Velocity (m/s)	18.9	19.6
Static Pressure (kPa)	-2.65	-2.94
Absolute Pressure (kPa)	97.9	97.8
Carbon Dioxide by Volume (%)**	10.7	10.2
Oxygen by Volume (%)**	8.99	9.39

* 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)	27.9	28.9
Dry Reference Flowrate (Rm^3/s)**	16.3	17.1
Dry Adjusted Flowrate (Rm^3/s)***	19.6	19.8
Wet Reference Flowrate (Rm^3/s)**	19.5	20.2

* 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)	<0.19	<0.14
Dry Reference Conc. (mg/Rm^3)*	<0.32	<0.24
Dry Adjusted Conc. (mg/Rm^3)**	<0.27	<0.20
Wet Reference Conc. (mg/Rm^3)*	<0.27	<0.20
Emission Rate (mg/s)	<5.28	<4.07

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

The ECA stipulates maximum in-stack limits for the emissions of various compounds including particulate matter. The average particulate dry adjusted concentration at the Boiler No. 1 BH Outlet (<0.27 mg/Rm^3, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (<0.20 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 1.1 mg and <0.1 mg, respectively. The amount of particulate detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 2 BH Outlet was <0.1 mg and <0.1 mg, respectively. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the particulate emission data.

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

PM_{10} and $PM_{2.5}$ Emission Parameter	PM_{10}		$PM_{2.5}$	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<0.32	<0.23	<0.18	<0.11
Dry Reference Conc. (mg/Rm^3)*	<0.55	<0.39	<0.30	<0.19
Dry Adjusted Conc. (mg/Rm^3)**	<0.45	<0.34	<0.25	<0.17
Wet Reference Conc. (mg/Rm^3)*	<0.46	<0.33	<0.25	<0.16
Emission Rate (mg/s)	<9.15	<6.63	<5.06	<3.31

* at 25°C and 1 atmosphere

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

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

Condensable Particulate Emission Parameter	Inorganic Fraction		Organic Fraction	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	1.66	1.13	0.85	0.92
Dry Reference Conc. (mg/Rm^3)*	2.89	1.90	1.47	1.54
Dry Adjusted Conc. (mg/Rm^3)**	2.36	1.67	1.20	1.35
Wet Reference Conc. (mg/Rm^3)*	2.40	1.61	1.23	1.31
Emission Rate (mg/s)	47.8	32.4	24.4	26.6

* at 25°C and 1 atmosphere

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

The amount of condensable particulate detected in the blank sampling train for Boiler No. 1 was 0.2 mg for the inorganic fraction and 0.8 mg for the organic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 1.8 mg for the inorganic fraction and 0.4 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/m³)	<2.83	<2.27	<2.68	<2.16
Dry Reference Conc. (mg/Rm³)*	<4.91	<3.83	<4.66	<3.64
Dry Adjusted Conc. (mg/Rm³)**	<4.01	<3.37	<3.81	<3.20
Wet Reference Conc. (mg/Rm³)*	<4.09	<3.25	<3.88	<3.09
Emission Rate (mg/s)	<81.4	<65.7	<77.3	<62.3

* 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/m³)	2.01	2.21	<0.075	<0.071	0.76	0.57
Dry Reference Conc. (mg/Rm³)*	3.42	3.86	<0.13	<0.12	1.29	0.99
Dry Adjusted Conc. (mg/Rm³)**	2.90	3.23	<0.11	<0.10	1.09	0.83
Wet Reference Conc. (mg/Rm³)*	2.87	3.23	<0.11	<0.10	1.08	0.83
Emission Rate (mg/s)	55.7	65.4	<2.08	<2.09	21.1	16.8
Dry Adjusted Conc. (ppm)**	1.94	2.17	<0.13	<0.13	1.57	1.19

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

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

7.6 Combustion Gas Emission Data

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

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. DYEC CEMS data was provided from November 29 to December 2, 2022 for each Boiler.

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

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

Combustion Gases Emission Parameter		In-Stack ECA Limit	Maximum Concentration	
			Boiler No. 1	Boiler No. 2
BH Outlet	Oxygen (%, 1-hr)	-	9.76	10.19
	Carbon Monoxide (mg/Rm^3, 4-hr)*	≤ 40	17.0	13.5
	Sulphur Dioxide (mg/Rm^3, 24-hr)*	≤ 35	0.8	1.4
	Nitrogen Oxides (mg/Rm^3, 24-hr)*	≤ 121	113	112
	Hydrogen Chloride (mg/Rm^3, 24-hr)*	≤ 9	0.6	4.3
	Total Hydrocarbons (mg/Rm^3, 1-hr)*	-	1	1
Quench Inlet	Oxygen (%, 1-hr)	≥ 6	9	9

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

Total hydrocarbon concentration data was measured by ORTECH on November 29, 2022 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)*	-	0.2	0.1
	Total Hydrocarbons (10-minute)**	-	0.1	0.05
Quench Inlet	Total Hydrocarbons (1-minute)*	-	0.1	0.3
	Total Hydrocarbons (10-minute)**	50	0.1	0.3

* 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.

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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)	0.044	0.019
Dry Reference Conc. (µg/Rm^3)*	0.075	0.033
Dry Adjusted Conc. (µg/Rm^3)**	0.063	0.028
Wet Reference Conc. (µg/Rm^3)*	0.063	0.028
Emission Rate (mg/s)	0.0012	0.00056

* 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)	0.16	0.10
Dry Reference Conc. (µg/Rm^3)*	0.27	0.18
Dry Adjusted Conc. (µg/Rm^3)**	0.23	0.15
Wet Reference Conc. (µg/Rm^3)*	0.23	0.15
Emission Rate (mg/s)	0.0044	0.0030

* 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 not detected in quantities greater than the method detection limit in the three tests at Boiler No. 1 and Boiler No. 2, and as is the case with all other analyses the mercury analytical results are not blank corrected.

The average mercury emission data is summarized below:

Mercury Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	<0.064	<0.060
Dry Reference Conc. (µg/Rm^3)*	<0.11	<0.10
Dry Adjusted Conc. (µg/Rm^3)**	<0.093	<0.088
Wet Reference Conc. (µg/Rm^3)*	<0.092	<0.087
Emission Rate (mg/s)	<0.0018	<0.0018

* 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)	0.26	<0.068
Dry Reference Conc. (ng/Rm^3)*	0.44	<0.12
Dry Adjusted Conc. (ng/Rm^3)**	0.36	<0.099
Wet Reference Conc. (ng/Rm^3)*	0.37	<0.098
Emission Rate (ng/s)	7.04	<1.95

* 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)	0.031	<0.014
Dry Reference Conc. (ng/Rm^3)*	0.053	<0.023
Dry Adjusted Conc. (ng/Rm^3)**	0.044	<0.020
Wet Reference Conc. (ng/Rm^3)*	0.044	<0.020
Emission Rate (ng/s)	0.85	<0.40

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

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

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

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

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

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

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

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

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

Total Dioxin and Furan Isomer and PBCs Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (pg TEQ/m^3)	2.00	1.86
Dry Reference Conc. (pg TEQ/Rm^3)*	3.37	3.13
Dry Adjusted Conc. (pg TEQ/Rm^3)**	2.80	2.69
Wet Reference Conc. (pg TEQ/Rm^3)*	2.83	2.66
Emission Rate (ng TEQ/s)	0.054	0.053

* 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)*	<3.68	<3.91

* 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.

Neither monochlorobenzene nor the 13C6-chlorobenzene spike, were recovered during analysis of the chlorobenzene samples. As a result, monochlorobenzene could not be quantified in any of the SVOC samples. The analytical laboratory was able to provide chlorobenzene data from the VOST tubes, however this data was inconsistent with data reported for monochlorobenzene from the SVOC sampling train for previous test programs. The total chlorobenzene data presented below excludes monochlorobenzene and caution should be used when comparing the total chlorobenzene emission data from this test program to previous testing programs at the site. Note, chlorobenzene is reported with the VOCs in Tables 82 to 91.

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)	<72.4	<88.5
Dry Reference Conc. (ng/Rm^3)*	<122	<149
Dry Adjusted Conc. (ng/Rm^3)**	<102	<128
Wet Reference Conc. (ng/Rm^3)*	<103	<126
Emission Rate (μg/s)	<1.96	<2.53

* 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)	<120	<117
Dry Reference Conc. (ng/Rm^3)*	<203	<197
Dry Adjusted Conc. (ng/Rm^3)**	<168	<169
Wet Reference Conc. (ng/Rm^3)*	<170	<168
Emission Rate (μg/s)	<3.26	<3.35

* 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)	<231	<166
Dry Reference Conc. (ng/Rm^3)*	<388	<280
Dry Adjusted Conc. (ng/Rm^3)**	<326	<240
Wet Reference Conc. (ng/Rm^3)*	<327	<237
Emission Rate (µg/s)	<6.26	<4.73

* 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)	<1.73	<1.94	5.06	6.63	<1.73	<1.94
Dry Reference Conc. (µg/Rm^3)*	<2.90	<3.27	8.50	11.2	<2.90	<3.27
Dry Adjusted Conc. (µg/Rm^3)**	<2.46	<2.82	7.21	9.63	<2.46	<2.82
Wet Reference Conc. (µg/Rm^3)*	<2.45	<2.78	7.19	9.48	<2.45	<2.78
Emission Rate (mg/s)	<0.047	<0.056	0.14	0.19	<0.047	<0.056

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

Acetaldehyde and acrolein were not detected in any of the test samples or in the blank samples in quantities greater than the reported detection limit. Formaldehyde was detected in both blank samples and the method blank 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 for Boiler No. 1 and Test No. 1, Test No. 2 and Test No. 4 for Boiler No. 2. 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.

Methylene chloride and toluene were detected in the field blank samples and methylene chloride was also detected in the trip blank in quantities significantly higher than the analytical detection limit. The field blank samples are taken to the sampling location, opened then recapped to provide background levels at the sampling location. The trip blank is taken to the sampling location but remains sealed.

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)	<88.6	<60.0
Dry Reference Conc. (µg/Rm^3)*	<149	<101
Dry Adjusted Conc. (µg/Rm^3)**	<125	<87.1
Wet Reference Conc. (µg/Rm^3)*	<126	<86.2
Emission Rate (mg/s)	<2.42	<1.76

* 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)*	<166	<119
Dry Adjusted Conc. (µg/Rm^3)**	<137	<102
Emission Rate (mg/s)	<2.65	<2.06

* 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. 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 7.2.1 level 150618 as approved by the MECP in December 2021) by WSP Canada Inc. (formerly Golder Associates). The dispersion modelling results are detailed in Appendix 27. WSP 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 November/December 2022 emission testing program was well below the applicable standard, guideline or upper risk threshold. The contaminants with the highest predicted concentrations relative to the standard were nitrogen oxides (11% of the 1-hour standard and 3% of the 24-hour standard with meteorological anomaly removal) and chromium (hexavalent) (2% of the annual standard), all other contaminants were 1% or less than the relevant standard with meteorological anomaly removal.

Note the particulate and metals sampling train collects total chromium, including metallic, divalent, trivalent and hexavalent forms of chromium. For the predicted POI, it was assumed all chromium collected was hexavalent chromium; this is a conservative assumption and may overestimate the hexavalent chromium emissions from the facility. The chromium emission data was also assessed against the chromium (metallic, divalent and trivalent forms) standard and was <1% of the 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 November 29 to December 2, 2022 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
29-Nov-22	387	0	0	1173	1258	797	799	190	194	921	791	126	128	4183	4215
30-Nov-22	394	0	0	1178	1276	807	802	202	160	971	998	126	127	4181	4385
01-Dec-22	393	0	0	1165	1283	810	807	216	184	1134	1027	126	128	4192	4214
02-Dec-22	393	0	0	1159	1308	811	806	216	184	1009	901	126	128	4076	4122
Average	392	0	0	1169	1281	806	804	206	180	1008	929	126	128	4158	4234

* 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:

- 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 797 tonnes of steam per day for each Boiler (approximately 98.7% 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 the ECA.
- Using CALPUFF dispersion modelling techniques (using Version 7.2.1 level 150618 as approved by the MECP in December 2021), 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.

Since relative accuracy and system bias testing was conducted in September 2022, 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 (November 29 to December 2, 2022) 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 November 29, 2022 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)*	-	-	-	392	-
Average Combustion Zone Temp. (°C)*	-	-	-	1169	-
Steam (tonnes/day)*	-	-	-	806	-
MSW Combusted (tonnes/day)*	-	-	-	206	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	1008	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	4158	-
Filterable Particulate (mg/Rm^3) (1)	<0.38	<0.20	0.25	<0.27	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.76	<4.26	<4.00	<4.01	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.29	<4.19	<3.94	<3.81	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	1.06	1.10	1.12	1.09	-
Cadmium (µg/Rm^3) (1)	0.032	0.11	0.046	0.063	7
Lead (µg/Rm^3) (1)	0.21	0.26	0.22	0.23	50
Mercury (µg/Rm^3) (1)	<0.092	<0.095	<0.091	<0.093	15
Antimony (µg/Rm^3) (1)	<0.045	<0.044	<0.045	<0.044	-
Arsenic (µg/Rm^3) (1)	<0.045	<0.044	<0.045	<0.044	-
Barium (µg/Rm^3) (1)	1.67	1.50	1.66	1.61	-
Beryllium (µg/Rm^3) (1)	<0.045	<0.044	<0.045	<0.044	-
Chromium (µg/Rm^3) (1)	1.20	1.64	1.06	1.30	-
Cobalt (µg/Rm^3) (1)	0.028	0.15	<0.045	<0.074	-
Copper (µg/Rm^3) (1)	3.41	2.04	2.26	2.57	-
Molybdenum (µg/Rm^3) (1)	7.87	7.71	5.62	7.07	-
Nickel (µg/Rm^3) (1)	2.14	1.46	1.12	1.57	-
Selenium (µg/Rm^3) (1)	<0.22	<0.22	<0.22	<0.22	-
Silver (µg/Rm^3) (1)	<0.045	<0.044	<0.045	<0.044	-
Thallium (µg/Rm^3) (1)	<0.045	<0.044	<0.045	<0.044	-
Vanadium (µg/Rm^3) (1)	0.028	0.039	0.029	0.032	-
Zinc (µg/Rm^3) (1)	4.47	4.39	5.02	4.63	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<3.90	<3.62	<3.53	<3.68	60
Total Chlorobenzenes (ng/Rm^3) (1) (5)	<102	<114	<88.3	<102	-
Total Chlorophenols (ng/Rm^3) (1)	<169	<172	<165	<168	-
Total PAHs (ng/Rm^3) (1)	<271	<538	<169	<326	-
VOCs (µg/Rm^3) (1)	<128	<45.0	<204	<125	-
Aldehydes (µg/Rm^3) (1)	<13.0	<11.7	<11.8	<12.2	-
Total VOCs (µg/Rm^3) (1) (4)	<141	<56.7	<216	<137	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.1	0	0.2	0.1	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).
(5) Total excludes monochlorobenzene as the analytical lab couldn't quantify this compound from the SVOC test train. Chlorobenzene was below the detection limit in the VOC test trains.

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)*	-	-	-	392	-
Average Combustion Zone Temp. (°C)*	-	-	-	1281	-
Steam (tonnes/day)*	-	-	-	804	-
MSW Combusted (tonnes/day)*	-	-	-	180	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	929	-
Carbon Injection (kg/day)*	-	-	-	128	-
Lime Injection (kg/day)*	-	-	-	4234	-
Filterable Particulate (mg/Rm^3) (1)	<0.19	0.22	0.20	<0.20	9
PM_{10} with Condensable (mg/Rm^3) (1)	<2.86	<3.51	<3.73	<3.37	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<2.64	<3.29	<3.66	<3.20	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm^3) (1)	1.01	0.74	0.75	0.83	-
Cadmium (µg/Rm^3) (1)	0.026	0.025	0.033	0.028	7
Lead (µg/Rm^3) (1)	0.17	0.049	0.22	0.15	50
Mercury (µg/Rm^3) (1)	<0.088	<0.087	<0.088	<0.088	15
Antimony (µg/Rm^3) (1)	<0.021	<0.022	0.051	<0.031	-
Arsenic (µg/Rm^3) (1)	<0.043	<0.043	<0.044	<0.043	-
Barium (µg/Rm^3) (1)	0.12	1.24	1.37	0.91	-
Beryllium (µg/Rm^3) (1)	<0.043	<0.043	<0.044	<0.043	-
Chromium (µg/Rm^3) (1)	0.85	0.70	1.01	0.85	-
Cobalt (µg/Rm^3) (1)	<0.021	<0.022	<0.022	<0.022	-
Copper (µg/Rm^3) (1)	2.03	1.95	2.08	2.02	-
Molybdenum (µg/Rm^3) (1)	7.21	7.41	7.79	7.47	-
Nickel (µg/Rm^3) (1)	1.16	1.13	0.92	1.07	-
Selenium (µg/Rm^3) (1)	<0.21	<0.22	<0.22	<0.22	-
Silver (µg/Rm^3) (1)	<0.043	<0.043	<0.044	<0.043	-
Thallium (µg/Rm^3) (1)	<0.043	<0.043	<0.044	<0.043	-
Vanadium (µg/Rm^3) (1)	<0.021	<0.022	<0.022	<0.022	-
Zinc (µg/Rm^3) (1)	3.92	3.53	5.33	4.26	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<2.05	<7.79	<1.90	<3.91	60
Total Chlorobenzenes (ng/Rm^3) (1) (5)	<141	<119	<123	<128	-
Total Chlorophenols (ng/Rm^3) (1)	<169	<170	<169	<169	-
Total PAHs (ng/Rm^3) (1)	<177	<294	<248	<240	-
VOCs (µg/Rm^3) (1)	<102	<103	<55.7	<87.1	-
Aldehydes (µg/Rm^3) (1)	<14.2	<17.4	<14.3	<15.3	-
Total VOCs (µg/Rm^3) (1) (4)	<116	<120	<70.0	<102	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.1	0.2	0.7	0.3	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).

(5) Total excludes monochlorobenzene as the analytical lab couldn't quantify this compound from the SVOC test train. Chlorobenzene was below the detection limit in the VOC test trains.

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)	5.8	9.1	17.0	40
	Hydrogen Chloride (mg/Rm^3) (2)	0.2	0.4	0.6	9
	Nitrogen Oxides (mg/Rm^3) (2)	111	112	113	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.5	0.8	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	6.0	9.4	13.5	40
	Hydrogen Chloride (mg/Rm^3) (2)	3.3	3.8	4.3	9
	Nitrogen Oxides (mg/Rm^3) (2)	110	111	112	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.6	1.4	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	Sampling Period Finish	Sampling Time* min
1	November 29, 2022	8:49	11:59	180
2	November 29, 2022	12:49	15:57	180
3	November 29, 2022	16:55	20:03	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 30, 2022	8:52	10:57	120
2	November 30, 2022	11:55	13:57	120
3	November 30, 2022	14:54	16:56	120

Acid Gases Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 29, 2022	8:54	9:54	60
2	November 29, 2022	10:40	11:40	60
3	November 29, 2022	12:52	13:52	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	December 1, 2022	8:32	12:43	240
2	December 1, 2022	13:39	17:48	240
3	December 2, 2022	9:34	13:41	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 Start	Sampling Period Finish	Sampling Time min
1	December 1, 2022	11:45	12:45	60
2	December 1, 2022	12:57	13:57	60
3	December 1, 2022	14:18	15:18	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	December 1, 2022	8:32	9:12	40
2	December 1, 2022	9:16	9:56	40
3	December 1, 2022	10:00	10:40	40
4	December 1, 2022	10:45	11:25	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
BH Outlet	1	November 29, 2022	9:40	10:40	60
BH Outlet	2	November 29, 2022	10:55	11:55	60
BH Outlet	3	November 29, 2022	12:05	13:05	60
Quench Inlet	1	November 29, 2022	9:40	10:40	60
Quench Inlet	2	November 29, 2022	10:55	11:55	60
Quench Inlet	3	November 29, 2022	12:05	13:05	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	0.847	1.017	6.34	3.796	100.9
2	0.847	1.017	6.34	3.811	101.5
3	0.847	1.017	6.34	3.789	100.8

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	0.854	1.010	4.51	1.199	93.9
2	0.854	1.010	4.51	1.183	91.9
3	0.854	1.010	4.51	1.222	92.2

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.853	0.973	6.40	1.253	99.6
2	0.853	0.973	6.40	1.323	101.4
3	0.853	0.973	6.40	1.292	100.6

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.853	1.010	6.40	5.077	99.9
2	0.853	1.010	6.40	5.062	99.5
3	0.853	1.017	6.40	4.959	99.9

* 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	141	16.1	18.8	-2.66	98.7	10.7	9.21
2	140	16.5	18.8	-2.66	98.5	10.7	9.16
3	139	16.7	18.9	-2.66	98.2	10.5	9.19
Average	140	16.4	18.8	-2.66	98.4	10.6	9.19

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	137	17.5	19.3	-2.66	96.4	10.8	8.64
2	138	16.5	19.4	-2.66	96.0	10.8	8.74
3	138	15.9	19.6	-2.66	96.6	10.6	8.97
Average	138	16.6	19.4	-2.66	96.3	10.7	8.78

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	15.9	18.4	-2.66	98.7	10.8	9.07
2	141	15.5	19.0	-2.66	98.6	10.5	9.39
3	141	16.5	19.0	-2.66	98.5	10.7	9.10
Average	141	16.0	18.8	-2.66	98.6	10.7	9.19

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	15.6	18.5	-2.66	98.5	10.7	9.12
2	140	15.4	18.4	-2.66	99.0	10.6	9.28
3	140	16.3	18.1	-2.57	99.1	11.3	8.59
Average	140	15.8	18.3	-2.63	98.8	10.9	9.00

* 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	27.7	16.3	19.2	19.4
2	27.8	16.2	19.3	19.5
3	27.9	16.3	19.3	19.5
Average	27.8	16.3	19.2	19.5

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	28.6	16.3	20.2	19.8
2	28.8	16.5	20.3	19.8
3	29.0	16.9	20.4	20.1
Average	28.8	16.6	20.3	19.9

Acid Gases Trains ***

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.2	16.0	19.1	19.1
2	28.1	16.6	19.3	19.7
3	28.0	16.4	19.5	19.6
Average	27.8	16.3	19.3	19.4

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.3	16.2	19.3	19.2
2	27.2	16.2	19.0	19.2
3	26.8	15.8	19.7	18.9
Average	27.1	16.1	19.3	19.1

* 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 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	1.6	<0.1	<1.7	3.796	<0.26	<0.45	<0.38	<0.38	<7.29
2	0.8	<0.1	<0.9	3.811	<0.14	<0.24	<0.20	<0.20	<3.83
3	0.9	0.2	1.1	3.789	0.17	0.29	0.25	0.24	4.72
Average					<0.19	<0.32	<0.27	<0.27	<5.28
Blank	<0.1	1.1	<1.2						

* 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	1.199	<0.14	<0.25	<0.20	<0.21	<4.08
2	<0.2	1.183	<0.10	<0.17	<0.14	<0.14	<2.79
3	<0.6	1.222	<0.29	<0.49	<0.41	<0.41	<8.30
Average			<0.18	<0.30	<0.25	<0.25	<5.06
Blank	0.4						

PM_{10}

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	PM_{10} Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<1.0	1.199	<0.48	<0.83	<0.67	<0.69	<13.6
2	<0.3	1.183	<0.15	<0.25	<0.21	<0.21	<4.18
3	<0.7	1.222	<0.33	<0.57	<0.47	<0.48	<9.68
Average			<0.32	<0.55	<0.45	<0.46	<9.15
Blank	0.5						

* At 25 °C and 1 atmosphere

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

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	3.6	1.199	1.71	3.00	2.42	2.47	48.9
2	3.9	1.183	1.89	3.30	2.68	2.75	54.4
3	2.9	1.222	1.38	2.37	1.97	2.00	40.1
Average			1.66	2.89	2.36	2.40	47.8
Blank	0.2						

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	1.0	1.199	0.48	0.83	0.67	0.69	13.6
2	2.0	1.183	0.97	1.69	1.37	1.41	27.9
3	2.3	1.222	1.10	1.88	1.56	1.58	31.8
Average			0.85	1.47	1.20	1.23	24.4
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 Rm³*	Hydrogen Chloride Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	HCl Emission Rate mg/s
1	5.29	1.253	2.48	4.22	3.58	3.55	68.8
2	4.34	1.323	1.93	3.28	2.78	2.76	53.5
3	3.57	1.292	1.61	2.76	2.32	2.30	44.8
Average			2.01	3.42	2.90	2.87	55.7
Blank	<0.154						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm³*	Hydrogen Fluoride Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	HF Emission Rate mg/s
1	<0.165	1.253	<0.077	<0.13	<0.11	<0.11	<2.15
2	<0.165	1.323	<0.073	<0.12	<0.11	<0.10	<2.03
3	<0.165	1.292	<0.074	<0.13	<0.11	<0.11	<2.07
Average			<0.075	<0.13	<0.11	<0.11	<2.08
Blank	<0.105						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm³*	Ammonia Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	Ammonia Emission Rate mg/s
1	1.57	1.253	0.74	1.25	1.06	1.05	20.4
2	1.71	1.323	0.76	1.29	1.10	1.09	21.1
3	1.73	1.292	0.78	1.34	1.12	1.11	21.7
Average			0.76	1.29	1.09	1.08	21.1
Blank	<0.283						

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 November 29 to December 2, 2022

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	8.46	9.14	9.76
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	5	9	22
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	5.8	9.1	17.0
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.4	13
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.5	0.8
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	98	112	133
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	111	112	113
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	0	0	2
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	0.2	0.4	0.6
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	1
Quench Inlet	Oxygen (%, 1 hr Avg)	8	8	9

Data measured by the ORTECH CEMS on November 29, 2022

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	1.8
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	1.3
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	2.4
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.2	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	0.3
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	0.6
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.1	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.1	0.3
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0.1	0.3	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	6.68	0.78	7.46
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.14	<0.05	0.14
Chromium	4.61	0.76	5.37
Cobalt	<0.2	0.12	0.12
Copper	7.59	7.67	15.3
Lead	0.61	0.32	0.93
Mercury *	<0.015	<0.41	<0.41
Molybdenum	35.2	<0.1	35.2
Nickel	8.62	0.95	9.57
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.13	0.13
Zinc	13.2	6.79	20.0
Total			<96.6

* 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 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	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	5.98	0.85	6.83
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.51	<0.05	0.51
Chromium	4.85	2.61	7.46
Cobalt	0.57	0.11	0.69
Copper	7.29	1.98	9.27
Lead	0.72	0.47	1.19
Mercury *	<0.015	<0.43	<0.43
Molybdenum	35.0	<0.1	35.0
Nickel	4.25	2.39	6.64
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	13.9	6.05	20.0
Total			<90.1

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

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	6.68	0.77	7.45
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.15	0.054	0.21
Chromium	2.76	1.98	4.74
Cobalt	<0.2	<0.1	<0.20
Copper	8.59	1.56	10.2
Lead	0.65	0.32	0.97
Mercury *	<0.015	<0.41	<0.41
Molybdenum	25.1	0.10	25.2
Nickel	3.43	1.58	5.01
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.13	0.13
Zinc	11.5	11.0	22.5
Total			<79.0

* 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	<0.031	<0.053	<0.045	<0.044	<0.00086
Arsenic	<0.20	<0.031	<0.053	<0.045	<0.044	<0.00086
Barium	7.46	1.16	1.97	1.67	1.65	0.032
Beryllium	<0.20	<0.031	<0.053	<0.045	<0.044	<0.00086
Cadmium	0.14	0.022	0.037	0.032	0.031	0.00061
Chromium	5.37	0.83	1.41	1.20	1.19	0.023
Cobalt	0.12	0.019	0.032	0.028	0.027	0.00053
Copper	15.3	2.37	4.02	3.41	3.38	0.066
Lead	0.93	0.14	0.24	0.21	0.21	0.0040
Mercury	<0.41	<0.064	<0.11	<0.092	<0.091	<0.0018
Molybdenum	35.2	5.46	9.27	7.87	7.79	0.15
Nickel	9.57	1.48	2.52	2.14	2.12	0.041
Selenium	<1.00	<0.16	<0.26	<0.22	<0.22	<0.0043
Silver	<0.20	<0.031	<0.053	<0.045	<0.044	<0.00086
Thallium	<0.20	<0.031	<0.053	<0.045	<0.044	<0.00086
Vanadium	0.13	0.019	0.033	0.028	0.028	0.00054
Zinc	20.0	3.10	5.27	4.47	4.42	0.086
Total	<96.6	<15.0	<25.4	<21.6	<21.4	<0.41

Dry Gas Volume Sampled (Rm³*) :	3.796
Actual Flowrate (m³/s) :	27.7
Dry Reference Flowrate (Rm³/s*) :	16.3
Dry Adjusted Flowrate (Rm³/s**) :	19.2
Wet Reference Flowrate (Rm³/s*) :	19.4

* 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	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00085
Arsenic	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00085
Barium	6.83	1.04	1.79	1.50	1.49	0.029
Beryllium	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00085
Cadmium	0.51	0.078	0.13	0.11	0.11	0.0022
Chromium	7.46	1.14	1.96	1.64	1.63	0.032
Cobalt	0.69	0.10	0.18	0.15	0.15	0.0029
Copper	9.27	1.42	2.43	2.04	2.02	0.039
Lead	1.19	0.18	0.31	0.26	0.26	0.0051
Mercury	<0.43	<0.066	<0.11	<0.095	<0.094	<0.0018
Molybdenum	35.0	5.35	9.18	7.71	7.63	0.15
Nickel	6.64	1.02	1.74	1.46	1.45	0.028
Selenium	<1.00	<0.15	<0.26	<0.22	<0.22	<0.0043
Silver	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00085
Thallium	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00085
Vanadium	0.18	0.027	0.046	0.039	0.039	0.00075
Zinc	20.0	3.05	5.23	4.39	4.35	0.085
Total	<90.1	<13.8	<23.7	<19.9	<19.6	<0.38

Dry Gas Volume Sampled (Rm³*) :	3.811
Actual Flowrate (m³/s) :	27.8
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.5

* 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. 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	<0.031	<0.053	<0.045	<0.044	<0.00086
Arsenic	<0.20	<0.031	<0.053	<0.045	<0.044	<0.00086
Barium	7.45	1.15	1.97	1.66	1.64	0.032
Beryllium	<0.20	<0.031	<0.053	<0.045	<0.044	<0.00086
Cadmium	0.21	0.032	0.055	0.046	0.046	0.00089
Chromium	4.74	0.73	1.25	1.06	1.05	0.020
Cobalt	<0.20	<0.031	<0.053	<0.045	<0.044	<0.00086
Copper	10.2	1.57	2.68	2.26	2.24	0.044
Lead	0.97	0.15	0.26	0.22	0.21	0.0042
Mercury	<0.41	<0.063	<0.11	<0.091	<0.090	<0.0018
Molybdenum	25.2	3.89	6.65	5.62	5.56	0.11
Nickel	5.01	0.77	1.32	1.12	1.11	0.022
Selenium	<1.00	<0.15	<0.26	<0.22	<0.22	<0.0043
Silver	<0.20	<0.031	<0.053	<0.045	<0.044	<0.00086
Thallium	<0.20	<0.031	<0.053	<0.045	<0.044	<0.00086
Vanadium	0.13	0.020	0.034	0.029	0.028	0.00055
Zinc	22.5	3.47	5.94	5.02	4.96	0.097
Total	<79.0	<12.2	<20.8	<17.6	<17.4	<0.34

Dry Gas Volume Sampled (Rm³*) :	3.789
Actual Flowrate (m³/s) :	27.9
Dry Reference Flowrate (Rm³/s*) :	16.3
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.5

* 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	<0.031	<0.031	<0.031	<0.031	0.7
Arsenic	<0.031	<0.031	<0.031	<0.031	0.7
Barium	1.16	1.04	1.15	1.12	5.6
Beryllium	<0.031	<0.031	<0.031	<0.031	0.7
Cadmium	0.022	0.078	0.032	0.044	68.1
Chromium	0.83	1.14	0.73	0.90	23.7
Cobalt	0.019	0.10	<0.031	<0.052	90.2
Copper	2.37	1.42	1.57	1.78	28.6
Lead	0.14	0.18	0.15	0.16	12.8
Mercury	<0.064	<0.066	<0.063	<0.064	2.1
Molybdenum	5.46	5.35	3.89	4.90	17.9
Nickel	1.48	1.02	0.77	1.09	33.1
Selenium	<0.16	<0.15	<0.15	<0.15	0.7
Silver	<0.031	<0.031	<0.031	<0.031	0.7
Thallium	<0.031	<0.031	<0.031	<0.031	0.7
Vanadium	0.019	0.027	0.020	0.022	19.4
Zinc	3.10	3.05	3.47	3.21	7.1
Total	<15.0	<13.8	<12.2	<13.6	10.3

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 µg/Rm³*	Test No. 2 µg/Rm³*	Test No. 3 µg/Rm³*	Average µg/Rm³*	Coefficient of Variation %
Antimony	<0.053	<0.052	<0.053	<0.053	0.3
Arsenic	<0.053	<0.052	<0.053	<0.053	0.3
Barium	1.97	1.79	1.97	1.91	5.3
Beryllium	<0.053	<0.052	<0.053	<0.053	0.3
Cadmium	0.037	0.13	0.055	0.075	68.5
Chromium	1.41	1.96	1.25	1.54	24.0
Cobalt	0.032	0.18	<0.053	<0.088	90.5
Copper	4.02	2.43	2.68	3.04	28.1
Lead	0.24	0.31	0.26	0.27	13.2
Mercury	<0.11	<0.11	<0.11	<0.11	2.5
Molybdenum	9.27	9.18	6.65	8.37	17.8
Nickel	2.52	1.74	1.32	1.86	32.7
Selenium	<0.26	<0.26	<0.26	<0.26	0.3
Silver	<0.053	<0.052	<0.053	<0.053	0.3
Thallium	<0.053	<0.052	<0.053	<0.053	0.3
Vanadium	0.033	0.046	0.034	0.038	19.8
Zinc	5.27	5.23	5.94	5.48	7.3
Total	<25.4	<23.7	<20.8	<23.3	9.9

* 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	<0.045	<0.044	<0.045	<0.044	0.8
Arsenic	<0.045	<0.044	<0.045	<0.044	0.8
Barium	1.67	1.50	1.66	1.61	5.8
Beryllium	<0.045	<0.044	<0.045	<0.044	0.8
Cadmium	0.032	0.11	0.046	0.063	68.0
Chromium	1.20	1.64	1.06	1.30	23.5
Cobalt	0.028	0.15	<0.045	<0.074	90.0
Copper	3.41	2.04	2.26	2.57	28.6
Lead	0.21	0.26	0.22	0.23	12.6
Mercury	<0.092	<0.095	<0.091	<0.093	2.0
Molybdenum	7.87	7.71	5.62	7.07	17.8
Nickel	2.14	1.46	1.12	1.57	33.1
Selenium	<0.22	<0.22	<0.22	<0.22	0.8
Silver	<0.045	<0.044	<0.045	<0.044	0.8
Thallium	<0.045	<0.044	<0.045	<0.044	0.8
Vanadium	0.028	0.039	0.029	0.032	19.3
Zinc	4.47	4.39	5.02	4.63	7.3
Total	<21.6	<19.9	<17.6	<19.7	10.2

** 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	<0.044	<0.044	<0.044	<0.044	0.8
Arsenic	<0.044	<0.044	<0.044	<0.044	0.8
Barium	1.65	1.49	1.64	1.59	5.8
Beryllium	<0.044	<0.044	<0.044	<0.044	0.8
Cadmium	0.031	0.11	0.046	0.063	68.0
Chromium	1.19	1.63	1.05	1.29	23.5
Cobalt	0.027	0.15	<0.044	<0.074	90.0
Copper	3.38	2.02	2.24	2.55	28.6
Lead	0.21	0.26	0.21	0.23	12.6
Mercury	<0.091	<0.094	<0.090	<0.092	2.0
Molybdenum	7.79	7.63	5.56	6.99	17.8
Nickel	2.12	1.45	1.11	1.56	33.1
Selenium	<0.22	<0.22	<0.22	<0.22	0.8
Silver	<0.044	<0.044	<0.044	<0.044	0.8
Thallium	<0.044	<0.044	<0.044	<0.044	0.8
Vanadium	0.028	0.039	0.028	0.032	19.3
Zinc	4.42	4.35	4.96	4.58	7.3
Total	<21.4	<19.6	<17.4	<19.5	10.2

* At 25°C and 1 atmosphere

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

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	<0.00086	<0.00085	<0.00086	<0.00086	0.6
Arsenic	<0.00086	<0.00085	<0.00086	<0.00086	0.6
Barium	0.032	0.029	0.032	0.031	5.6
Beryllium	<0.00086	<0.00085	<0.00086	<0.00086	0.6
Cadmium	0.00061	0.0022	0.00089	0.0012	68.1
Chromium	0.023	0.032	0.020	0.025	23.6
Cobalt	0.00053	0.0029	<0.00086	<0.0014	90.1
Copper	0.066	0.039	0.044	0.050	28.3
Lead	0.0040	0.0051	0.0042	0.0044	12.8
Mercury	<0.0018	<0.0018	<0.0018	<0.0018	2.1
Molybdenum	0.15	0.15	0.11	0.14	17.6
Nickel	0.041	0.028	0.022	0.030	32.8
Selenium	<0.0043	<0.0043	<0.0043	<0.0043	0.6
Silver	<0.00086	<0.00085	<0.00086	<0.00086	0.6
Thallium	<0.00086	<0.00085	<0.00086	<0.00086	0.6
Vanadium	0.00054	0.00075	0.00055	0.00061	19.5
Zinc	0.086	0.085	0.097	0.089	7.5
Total	<0.41	<0.38	<0.34	<0.38	9.9

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	<0.031	<0.053	<0.044	<0.044	<0.00086
Arsenic	<0.031	<0.053	<0.044	<0.044	<0.00086
Barium	1.12	1.91	1.61	1.59	0.031
Beryllium	<0.031	<0.053	<0.044	<0.044	<0.00086
Cadmium	0.044	0.075	0.063	0.063	0.0012
Chromium	0.90	1.54	1.30	1.29	0.025
Cobalt	<0.052	<0.088	<0.074	<0.074	<0.0014
Copper	1.78	3.04	2.57	2.55	0.050
Lead	0.16	0.27	0.23	0.23	0.0044
Mercury	<0.064	<0.11	<0.093	<0.092	<0.0018
Molybdenum	4.90	8.37	7.07	6.99	0.14
Nickel	1.09	1.86	1.57	1.56	0.030
Selenium	<0.15	<0.26	<0.22	<0.22	<0.0043
Silver	<0.031	<0.053	<0.044	<0.044	<0.00086
Thallium	<0.031	<0.053	<0.044	<0.044	<0.00086
Vanadium	0.022	0.038	0.032	0.032	0.00061
Zinc	3.21	5.48	4.63	4.58	0.089
Total	<13.6	<23.3	<19.7	<19.5	<0.38

* 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	6.41	<0.5	6.41
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.27	0.65	2.92
Cobalt	<0.2	<0.1	<0.20
Copper	7.68	0.58	8.26
Lead	<0.5	0.35	0.35
Mercury *	<0.015	<0.15	<0.15
Molybdenum	23.7	<0.1	23.7
Nickel	2.72	0.33	3.05
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	6.14	<3	6.14
Total			<53.4

* 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. 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	96.2	0.011	0.019	0.016	0.016	0.31
Pentachlorodibenzo-p-dioxins	235	0.027	0.046	0.039	0.039	0.75
Hexachlorodibenzo-p-dioxins	509	0.059	0.10	0.084	0.085	1.62
Heptachlorodibenzo-p-dioxins	767	0.090	0.15	0.13	0.13	2.45
Octachlorodibenzo-p-dioxin	800	0.094	0.16	0.13	0.13	2.55
Total	2407	0.28	0.47	0.40	0.40	7.68

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	17.3	0.0020	0.0034	0.0029	0.0029	0.055
Pentachlorodibenzofurans	61.2	0.0072	0.012	0.010	0.010	0.20
Hexachlorodibenzofurans	49.7	0.0058	0.0098	0.0082	0.0083	0.16
Heptachlorodibenzofurans	6.53	0.00076	0.0013	0.0011	0.0011	0.021
Octachlorodibenzofuran	65.9	0.0077	0.013	0.011	0.011	0.21
Total	201	0.023	0.040	0.033	0.033	0.64

Dry Gas Volume Sampled (Rm^3*) :	5.077
Actual Flowrate (m^3/s) :	27.3
Dry Reference Flowrate (Rm^3/s*) :	16.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

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

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/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	187	0.022	0.037	0.031	0.031	0.60
Pentachlorodibenzo-p-dioxins	194	0.023	0.038	0.033	0.032	0.62
Hexachlorodibenzo-p-dioxins	504	0.059	0.10	0.085	0.084	1.61
Heptachlorodibenzo-p-dioxins	296	0.035	0.058	0.050	0.049	0.95
Octachlorodibenzo-p-dioxin	803	0.094	0.16	0.14	0.13	2.57
Total	1984	0.23	0.39	0.33	0.33	6.35

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	70.7	0.0083	0.014	0.012	0.012	0.23
Pentachlorodibenzofurans	74.1	0.0087	0.015	0.012	0.012	0.24
Hexachlorodibenzofurans	67.0	0.0079	0.013	0.011	0.011	0.21
Heptachlorodibenzofurans	71.2	0.0084	0.014	0.012	0.012	0.23
Octachlorodibenzofuran	84.3	0.0099	0.017	0.014	0.014	0.27
Total	367	0.043	0.073	0.062	0.061	1.18

Dry Gas Volume Sampled (Rm^3*) :	5.062
Actual Flowrate (m^3/s) :	27.2
Dry Reference Flowrate (Rm^3/s*) :	16.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

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

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/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	107	0.013	0.022	0.017	0.018	0.34
Pentachlorodibenzo-p-dioxins	155	0.018	0.031	0.025	0.026	0.49
Hexachlorodibenzo-p-dioxins	477	0.057	0.096	0.077	0.080	1.52
Heptachlorodibenzo-p-dioxins	740	0.088	0.15	0.12	0.12	2.36
Octachlorodibenzo-p-dioxin	750	0.089	0.15	0.12	0.13	2.39
Total	2229	0.26	0.45	0.36	0.38	7.10

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	4.75	0.00056	0.00096	0.00077	0.00080	0.015
Pentachlorodibenzofurans	71.8	0.0085	0.014	0.012	0.012	0.23
Hexachlorodibenzofurans	31.4	0.0037	0.0063	0.0051	0.0053	0.10
Heptachlorodibenzofurans	54.9	0.0065	0.011	0.0089	0.0093	0.17
Octachlorodibenzofuran	64.4	0.0077	0.013	0.010	0.011	0.21
Total	227	0.027	0.046	0.037	0.038	0.72

Dry Gas Volume Sampled (Rm³*) :	4.959
Actual Flowrate (m³/s) :	26.8
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	19.7
Wet Reference Flowrate (Rm³/s*) :	18.9

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

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	0.022	0.013	0.015	38.1
Pentachlorodibenzo-p-dioxins	0.027	0.023	0.018	0.023	19.7
Hexachlorodibenzo-p-dioxins	0.059	0.059	0.057	0.059	2.7
Heptachlorodibenzo-p-dioxins	0.090	0.035	0.088	0.071	44.0
Octachlorodibenzo-p-dioxin	0.094	0.094	0.089	0.092	3.1
Total	0.28	0.23	0.26	0.26	9.4

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	0.0020	0.0083	0.00056	0.0036	113
Pentachlorodibenzofurans	0.0072	0.0087	0.0085	0.0081	10.5
Hexachlorodibenzofurans	0.0058	0.0079	0.0037	0.0058	35.7
Heptachlorodibenzofurans	0.00076	0.0084	0.0065	0.0052	76.0
Octachlorodibenzofuran	0.0077	0.0099	0.0077	0.0084	15.3
Total	0.023	0.043	0.027	0.031	33.7

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	0.037	0.022	0.026	37.6
Pentachlorodibenzo-p-dioxins	0.046	0.038	0.031	0.039	19.5
Hexachlorodibenzo-p-dioxins	0.10	0.10	0.096	0.099	2.2
Heptachlorodibenzo-p-dioxins	0.15	0.058	0.15	0.12	44.3
Octachlorodibenzo-p-dioxin	0.16	0.16	0.15	0.16	2.6
Total	0.47	0.39	0.45	0.44	9.6

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	0.0034	0.014	0.00096	0.0061	113
Pentachlorodibenzofurans	0.012	0.015	0.014	0.014	10.6
Hexachlorodibenzofurans	0.0098	0.013	0.0063	0.0098	35.3
Heptachlorodibenzofurans	0.0013	0.014	0.011	0.0088	75.9
Octachlorodibenzofuran	0.013	0.017	0.013	0.014	14.9
Total	0.040	0.073	0.046	0.053	33.3

* At 25°C and 1 atmosphere

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

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.016	0.031	0.017	0.022	40.0
Pentachlorodibenzo-p-dioxins	0.039	0.033	0.025	0.032	21.4
Hexachlorodibenzo-p-dioxins	0.084	0.085	0.077	0.082	5.2
Heptachlorodibenzo-p-dioxins	0.13	0.050	0.12	0.099	43.0
Octachlorodibenzo-p-dioxin	0.13	0.14	0.12	0.13	5.7
Total	0.40	0.33	0.36	0.36	8.8

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	0.012	0.00077	0.0052	114
Pentachlorodibenzofurans	0.010	0.012	0.012	0.011	10.5
Hexachlorodibenzofurans	0.0082	0.011	0.0051	0.0082	37.9
Heptachlorodibenzofurans	0.0011	0.012	0.0089	0.0073	76.8
Octachlorodibenzofuran	0.011	0.014	0.010	0.012	17.4
Total	0.033	0.062	0.037	0.044	35.6

* 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	0.031	0.018	0.022	37.9
Pentachlorodibenzo-p-dioxins	0.039	0.032	0.026	0.033	19.9
Hexachlorodibenzo-p-dioxins	0.085	0.084	0.080	0.083	2.7
Heptachlorodibenzo-p-dioxins	0.13	0.049	0.12	0.10	44.1
Octachlorodibenzo-p-dioxin	0.13	0.13	0.13	0.13	3.1
Total	0.40	0.33	0.38	0.37	9.5

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	0.0029	0.012	0.00080	0.0052	113
Pentachlorodibenzofurans	0.010	0.012	0.012	0.012	10.3
Hexachlorodibenzofurans	0.0083	0.011	0.0053	0.0082	35.6
Heptachlorodibenzofurans	0.0011	0.012	0.0093	0.0074	76.0
Octachlorodibenzofuran	0.011	0.014	0.011	0.012	15.2
Total	0.033	0.061	0.038	0.044	33.6

* At 25°C and 1 atmosphere

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

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.31	0.60	0.34	0.42	38.4
Pentachlorodibenzo-p-dioxins	0.75	0.62	0.49	0.62	20.6
Hexachlorodibenzo-p-dioxins	1.62	1.61	1.52	1.59	3.6
Heptachlorodibenzo-p-dioxins	2.45	0.95	2.36	1.92	43.9
Octachlorodibenzo-p-dioxin	2.55	2.57	2.39	2.50	4.0
Total	7.68	6.35	7.10	7.04	9.5

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	0.23	0.015	0.099	113
Pentachlorodibenzofurans	0.20	0.24	0.23	0.22	10.1
Hexachlorodibenzofurans	0.16	0.21	0.10	0.16	36.3
Heptachlorodibenzofurans	0.021	0.23	0.17	0.14	76.2
Octachlorodibenzofuran	0.21	0.27	0.21	0.23	15.7
Total	0.64	1.18	0.72	0.85	34.0

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

Dioxins

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m^3	ng/Rm^3*	ng/Rm^3**	ng/Rm^3*	ng/s
Tetrachlorodibenzo-p-dioxins	0.015	0.026	0.022	0.022	0.42
Pentachlorodibenzo-p-dioxins	0.023	0.039	0.032	0.033	0.62
Hexachlorodibenzo-p-dioxins	0.059	0.099	0.082	0.083	1.59
Heptachlorodibenzo-p-dioxins	0.071	0.12	0.099	0.10	1.92
Octachlorodibenzo-p-dioxin	0.092	0.16	0.13	0.13	2.50
Total	0.26	0.44	0.36	0.37	7.04

Furans

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m^3	ng/Rm^3*	ng/Rm^3**	ng/Rm^3*	ng/s
Tetrachlorodibenzofurans	0.0036	0.0061	0.0052	0.0052	0.099
Pentachlorodibenzofurans	0.0081	0.014	0.011	0.012	0.22
Hexachlorodibenzofurans	0.0058	0.0098	0.0082	0.0082	0.16
Heptachlorodibenzofurans	0.0052	0.0088	0.0073	0.0074	0.14
Octachlorodibenzofuran	0.0084	0.014	0.012	0.012	0.23
Total	0.031	0.053	0.044	0.044	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. 1 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Method Blank pg
Tetrachlorodibenzo-p-dioxins	<7.4	<1.5
Pentachlorodibenzo-p-dioxins	<8.2	<2.0
Hexachlorodibenzo-p-dioxins	<7.8	<2.2
Heptachlorodibenzo-p-dioxins	<16	<4.4
Octachlorodibenzo-p-dioxin	<23	18.5
Total	<62.4	<28.6

Furans

Congener Group	Blank Train pg	Method Blank pg
Tetrachlorodibenzofurans	<10	<1.4
Pentachlorodibenzofurans	<4.7	2.18
Hexachlorodibenzofurans	<4.1	3.41
Heptachlorodibenzofurans	<8.5	<3.0
Octachlorodibenzofuran	<15	<15
Total	<42.3	<25.0

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.9	<0.22	<0.37	<0.31	<0.32	<0.0061
12378-pentachlorodibenzo-p-dioxin	6.51	0.76	1.28	1.08	1.08	0.021
123478-hexachlorodibenzo-p-dioxin	<13	<1.52	<2.56	<2.15	<2.16	<0.041
123678-hexachlorodibenzo-p-dioxin	25.0	2.92	4.92	4.13	4.15	0.080
123789-hexachlorodibenzo-p-dioxin	<11	<1.29	<2.17	<1.82	<1.83	<0.035
1234678-heptachlorodibenzo-p-dioxin	328	38.3	64.6	54.2	54.5	1.05
Octachlorodibenzo-p-dioxin	800	93.5	158	132	133	2.55
2378-tetrachlorodibenzofuran	<3.0	<0.35	<0.59	<0.50	<0.50	<0.0096
12378-pentachlorodibenzofuran	5.07	0.59	1.00	0.84	0.84	0.016
23478-pentachlorodibenzofuran	<8.8	<1.03	<1.73	<1.45	<1.46	<0.028
123478-hexachlorodibenzofuran	<7.6	<0.89	<1.50	<1.26	<1.26	<0.024
123678-hexachlorodibenzofuran	8.08	0.94	1.59	1.34	1.34	0.026
234678-hexachlorodibenzofuran	15.7	1.84	3.09	2.60	2.61	0.050
123789-hexachlorodibenzofuran	<7.7	<0.90	<1.52	<1.27	<1.28	<0.025
1234678-heptachlorodibenzofuran	<44	<5.14	<8.67	<7.27	<7.31	<0.14
1234789-heptachlorodibenzofuran	6.53	0.76	1.29	1.08	1.09	0.021
Octachlorodibenzofuran	65.9	7.70	13.0	10.9	11.0	0.21
PCB 81	<18	<2.10	<3.55	<2.98	<2.99	<0.057
PCB 77	86.0	10.1	16.9	14.2	14.3	0.27
PCB 123	<21	<2.45	<4.14	<3.47	<3.49	<0.067
PCB 118	1270	148	250	210	211	4.05
PCB 114	<29	<3.39	<5.71	<4.79	<4.82	<0.093
PCB 105	360	42.1	70.9	59.5	59.8	1.15
PCB 126	<26	<3.04	<5.12	<4.30	<4.32	<0.083
PCB 167	<13	<1.52	<2.56	<2.15	<2.16	<0.041
PCB 156/157	<36	<4.21	<7.09	<5.95	<5.98	<0.11
PCB 169	<8.5	<0.99	<1.67	<1.41	<1.41	<0.027
PCB 189	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Total Dioxins & Furans Only	<1358	<159	<267	<224	<226	<4.33
Total PCBs Only	<1880	<220	<370	<311	<312	<6.00
Total Dioxins & Furans and PCBs	<3237	<378	<638	<535	<538	<10.3

Dry Gas Volume Sampled (Rm³*) :	5.077
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.2

* 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 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	<2.3	<0.27	<0.45	<0.39	<0.38	<0.0074
12378-pentachlorodibenzo-p-dioxin	<6.5	<0.76	<1.28	<1.09	<1.08	<0.021
123478-hexachlorodibenzo-p-dioxin	12.1	1.42	2.39	2.04	2.02	0.039
123678-hexachlorodibenzo-p-dioxin	<27	<3.18	<5.33	<4.55	<4.50	<0.086
123789-hexachlorodibenzo-p-dioxin	<8.1	<0.95	<1.60	<1.36	<1.35	<0.026
1234678-heptachlorodibenzo-p-dioxin	296	34.8	58.5	49.9	49.3	0.95
Octachlorodibenzo-p-dioxin	803	94.5	159	135	134	2.57
2378-tetrachlorodibenzofuran	2.80	0.33	0.55	0.47	0.47	0.0090
12378-pentachlorodibenzofuran	<5.0	<0.59	<0.99	<0.84	<0.83	<0.016
23478-pentachlorodibenzofuran	<6.5	<0.76	<1.28	<1.09	<1.08	<0.021
123478-hexachlorodibenzofuran	6.69	0.79	1.32	1.13	1.12	0.021
123678-hexachlorodibenzofuran	<7.5	<0.88	<1.48	<1.26	<1.25	<0.024
234678-hexachlorodibenzofuran	11.4	1.34	2.25	1.92	1.90	0.036
123789-hexachlorodibenzofuran	<4.2	<0.49	<0.83	<0.71	<0.70	<0.013
1234678-heptachlorodibenzofuran	51.6	6.07	10.2	8.69	8.60	0.17
1234789-heptachlorodibenzofuran	7.16	0.84	1.41	1.21	1.19	0.023
Octachlorodibenzofuran	84.3	9.92	16.7	14.2	14.1	0.27
PCB 81	<8.9	<1.05	<1.76	<1.50	<1.48	<0.028
PCB 77	83.4	9.81	16.5	14.0	13.9	0.27
PCB 123	23.6	2.78	4.66	3.98	3.93	0.076
PCB 118	1240	146	245	209	207	3.97
PCB 114	42.0	4.94	8.30	7.07	7.00	0.13
PCB 105	463	54.5	91.5	78.0	77.2	1.48
PCB 126	<11	<1.29	<2.17	<1.85	<1.83	<0.035
PCB 167	16.0	1.88	3.16	2.70	2.67	0.051
PCB 156/157	46.6	5.48	9.21	7.85	7.77	0.15
PCB 169	<6.3	<0.74	<1.24	<1.06	<1.05	<0.020
PCB 189	<4.0	<0.47	<0.79	<0.67	<0.67	<0.013
Total Dioxins & Furans Only	<1342	<158	<265	<226	<224	<4.30
Total PCBs Only	<1945	<229	<384	<328	<324	<6.22
Total Dioxins & Furans and PCBs	<3287	<387	<649	<554	<548	<10.5

Dry Gas Volume Sampled (Rm^3*) :	5.062
Actual Flowrate (m^3/s) :	27.2
Dry Reference Flowrate (Rm^3/s*) :	16.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected 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	<2.7	<0.32	<0.54	<0.44	<0.46	<0.0086
12378-pentachlorodibenzo-p-dioxin	<3.2	<0.38	<0.65	<0.52	<0.54	<0.010
123478-hexachlorodibenzo-p-dioxin	<10	<1.19	<2.02	<1.62	<1.69	<0.032
123678-hexachlorodibenzo-p-dioxin	<27	<3.21	<5.44	<4.37	<4.55	<0.086
123789-hexachlorodibenzo-p-dioxin	15.3	1.82	3.09	2.47	2.58	0.049
1234678-heptachlorodibenzo-p-dioxin	318	37.8	64.1	51.4	53.6	1.01
Octachlorodibenzo-p-dioxin	750	89.2	151	121	126	2.39
2378-tetrachlorodibenzofuran	<3.7	<0.44	<0.75	<0.60	<0.62	<0.012
12378-pentachlorodibenzofuran	<5.5	<0.65	<1.11	<0.89	<0.93	<0.018
23478-pentachlorodibenzofuran	<8.7	<1.03	<1.75	<1.41	<1.47	<0.028
123478-hexachlorodibenzofuran	<3.7	<0.44	<0.75	<0.60	<0.62	<0.012
123678-hexachlorodibenzofuran	<7.5	<0.89	<1.51	<1.21	<1.26	<0.024
234678-hexachlorodibenzofuran	<10	<1.19	<2.02	<1.62	<1.69	<0.032
123789-hexachlorodibenzofuran	<6.2	<0.74	<1.25	<1.00	<1.05	<0.020
1234678-heptachlorodibenzofuran	54.9	6.53	11.1	8.88	9.25	0.17
1234789-heptachlorodibenzofuran	<4.5	<0.53	<0.91	<0.73	<0.76	<0.014
Octachlorodibenzofuran	64.4	7.66	13.0	10.4	10.9	0.21
PCB 81	<10	<1.19	<2.02	<1.62	<1.69	<0.032
PCB 77	43.7	5.20	8.81	7.07	7.37	0.14
PCB 123	<11	<1.31	<2.22	<1.78	<1.85	<0.035
PCB 118	669	79.5	135	108	113	2.13
PCB 114	<11	<1.31	<2.22	<1.78	<1.85	<0.035
PCB 105	220	26.2	44.4	35.6	37.1	0.70
PCB 126	<12	<1.43	<2.42	<1.94	<2.02	<0.038
PCB 167	8.69	1.03	1.75	1.41	1.46	0.028
PCB 156/157	<23	<2.73	<4.64	<3.72	<3.88	<0.073
PCB 169	<9.5	<1.13	<1.92	<1.54	<1.60	<0.030
PCB 189	<5.3	<0.63	<1.07	<0.86	<0.89	<0.017
Total Dioxins & Furans Only	<1295	<154	<261	<209	<218	<4.13
Total PCBs Only	<1023	<122	<206	<165	<172	<3.26
Total Dioxins & Furans and PCBs	<2318	<276	<468	<375	<391	<7.39

Dry Gas Volume Sampled (Rm^3*) :	4.959
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 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	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.22	<0.27	<0.32	<0.27	18.2
12378-pentachlorodibenzo-p-dioxin	0.76	<0.76	<0.38	<0.64	34.7
123478-hexachlorodibenzo-p-dioxin	<1.52	1.42	<1.19	<1.38	12.4
123678-hexachlorodibenzo-p-dioxin	2.92	<3.18	<3.21	<3.10	5.1
123789-hexachlorodibenzo-p-dioxin	<1.29	<0.95	1.82	<1.35	32.3
1234678-heptachlorodibenzo-p-dioxin	38.3	34.8	37.8	37.0	5.1
Octachlorodibenzo-p-dioxin	93.5	94.5	89.2	92.4	3.1
2378-tetrachlorodibenzofuran	<0.35	0.33	<0.44	<0.37	15.7
12378-pentachlorodibenzofuran	0.59	<0.59	<0.65	<0.61	6.0
23478-pentachlorodibenzofuran	<1.03	<0.76	<1.03	<0.94	16.3
123478-hexachlorodibenzofuran	<0.89	0.79	<0.44	<0.71	33.4
123678-hexachlorodibenzofuran	0.94	<0.88	<0.89	<0.91	3.7
234678-hexachlorodibenzofuran	1.84	1.34	<1.19	<1.46	23.2
123789-hexachlorodibenzofuran	<0.90	<0.49	<0.74	<0.71	28.7
1234678-heptachlorodibenzofuran	<5.14	6.07	6.53	<5.91	11.9
1234789-heptachlorodibenzofuran	0.76	0.84	<0.53	<0.71	22.4
Octachlorodibenzofuran	7.70	9.92	7.66	8.43	15.3
PCB 81	<2.10	<1.05	<1.19	<1.45	39.6
PCB 77	10.1	9.81	5.20	8.35	32.8
PCB 123	<2.45	2.78	<1.31	<2.18	35.4
PCB 118	148	146	79.5	125	31.3
PCB 114	<3.39	4.94	<1.31	<3.21	56.8
PCB 105	42.1	54.5	26.2	40.9	34.7
PCB 126	<3.04	<1.29	<1.43	<1.92	50.6
PCB 167	<1.52	1.88	1.03	<1.48	28.8
PCB 156/157	<4.21	5.48	<2.73	<4.14	33.2
PCB 169	<0.99	<0.74	<1.13	<0.95	20.6
PCB 189	<1.40	<0.47	<0.63	<0.83	59.7
Total Dioxins & Furans Only	<159	<158	<154	<157	1.6
Total PCBs Only	<220	<229	<122	<190	31.3
Total Dioxins & Furans and PCBs	<378	<387	<276	<347	17.8

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

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

Specific Isomer	Dry Reference Concentration 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	<0.37	<0.45	<0.54	<0.46	18.6
12378-pentachlorodibenzo-p-dioxin	1.28	<1.28	<0.65	<1.07	34.4
123478-hexachlorodibenzo-p-dioxin	<2.56	2.39	<2.02	<2.32	12.0
123678-hexachlorodibenzo-p-dioxin	4.92	<5.33	<5.44	<5.23	5.2
123789-hexachlorodibenzo-p-dioxin	<2.17	<1.60	3.09	<2.28	32.8
1234678-heptachlorodibenzo-p-dioxin	64.6	58.5	64.1	62.4	5.5
Octachlorodibenzo-p-dioxin	158	159	151	156	2.6
2378-tetrachlorodibenzofuran	<0.59	0.55	<0.75	<0.63	16.2
12378-pentachlorodibenzofuran	1.00	<0.99	<1.11	<1.03	6.5
23478-pentachlorodibenzofuran	<1.73	<1.28	<1.75	<1.59	16.7
123478-hexachlorodibenzofuran	<1.50	1.32	<0.75	<1.19	33.1
123678-hexachlorodibenzofuran	1.59	<1.48	<1.51	<1.53	3.7
234678-hexachlorodibenzofuran	3.09	2.25	<2.02	<2.45	23.0
123789-hexachlorodibenzofuran	<1.52	<0.83	<1.25	<1.20	28.9
1234678-heptachlorodibenzofuran	<8.67	10.2	11.1	<9.98	12.2
1234789-heptachlorodibenzofuran	1.29	1.41	<0.91	<1.20	21.9
Octachlorodibenzofuran	13.0	16.7	13.0	14.2	14.9
PCB 81	<3.55	<1.76	<2.02	<2.44	39.6
PCB 77	16.9	16.5	8.81	14.1	32.4
PCB 123	<4.14	4.66	<2.22	<3.67	35.0
PCB 118	250	245	135	210	31.0
PCB 114	<5.71	8.30	<2.22	<5.41	56.4
PCB 105	70.9	91.5	44.4	68.9	34.3
PCB 126	<5.12	<2.17	<2.42	<3.24	50.5
PCB 167	<2.56	3.16	1.75	<2.49	28.4
PCB 156/157	<7.09	9.21	<4.64	<6.98	32.8
PCB 169	<1.67	<1.24	<1.92	<1.61	21.1
PCB 189	<2.36	<0.79	<1.07	<1.41	59.7
Total Dioxins & Furans Only	<267	<265	<261	<265	1.2
Total PCBs Only	<370	<384	<206	<320	30.9
Total Dioxins & Furans and PCBs	<638	<649	<468	<585	17.4

* 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	<0.31	<0.39	<0.44	<0.38	16.3
12378-pentachlorodibenzo-p-dioxin	1.08	<1.09	<0.52	<0.90	36.6
123478-hexachlorodibenzo-p-dioxin	<2.15	2.04	<1.62	<1.93	14.5
123678-hexachlorodibenzo-p-dioxin	4.13	<4.55	<4.37	<4.35	4.8
123789-hexachlorodibenzo-p-dioxin	<1.82	<1.36	2.47	<1.89	29.6
1234678-heptachlorodibenzo-p-dioxin	54.2	49.9	51.4	51.8	4.3
Octachlorodibenzo-p-dioxin	132	135	121	130	5.7
2378-tetrachlorodibenzofuran	<0.50	0.47	<0.60	<0.52	12.9
12378-pentachlorodibenzofuran	0.84	<0.84	<0.89	<0.86	3.3
23478-pentachlorodibenzofuran	<1.45	<1.09	<1.41	<1.32	14.8
123478-hexachlorodibenzofuran	<1.26	1.13	<0.60	<0.99	35.1
123678-hexachlorodibenzofuran	1.34	<1.26	<1.21	<1.27	4.9
234678-hexachlorodibenzofuran	2.60	1.92	<1.62	<2.04	24.5
123789-hexachlorodibenzofuran	<1.27	<0.71	<1.00	<0.99	28.4
1234678-heptachlorodibenzofuran	<7.27	8.69	8.88	<8.28	10.6
1234789-heptachlorodibenzofuran	1.08	1.21	<0.73	<1.00	24.7
Octachlorodibenzofuran	10.9	14.2	10.4	11.8	17.4
PCB 81	<2.98	<1.50	<1.62	<2.03	40.4
PCB 77	14.2	14.0	7.07	11.8	34.6
PCB 123	<3.47	3.98	<1.78	<3.08	37.4
PCB 118	210	209	108	176	33.3
PCB 114	<4.79	7.07	<1.78	<4.55	58.4
PCB 105	59.5	78.0	35.6	57.7	36.9
PCB 126	<4.30	<1.85	<1.94	<2.70	51.4
PCB 167	<2.15	2.70	1.41	<2.08	31.1
PCB 156/157	<5.95	7.85	<3.72	<5.84	35.4
PCB 169	<1.41	<1.06	<1.54	<1.33	18.4
PCB 189	<1.98	<0.67	<0.86	<1.17	60.6
Total Dioxins & Furans Only	<224	<226	<209	<220	4.2
Total PCBs Only	<311	<328	<165	<268	33.3
Total Dioxins & Furans and PCBs	<535	<554	<375	<488	20.1

* 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 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	<0.32	<0.38	<0.46	<0.38	18.1
12378-pentachlorodibenzo-p-dioxin	1.08	<1.08	<0.54	<0.90	34.8
123478-hexachlorodibenzo-p-dioxin	<2.16	2.02	<1.69	<1.95	12.5
123678-hexachlorodibenzo-p-dioxin	4.15	<4.50	<4.55	<4.40	4.9
123789-hexachlorodibenzo-p-dioxin	<1.83	<1.35	2.58	<1.92	32.3
1234678-heptachlorodibenzo-p-dioxin	54.5	49.3	53.6	52.5	5.3
Octachlorodibenzo-p-dioxin	133	134	126	131	3.1
2378-tetrachlorodibenzofuran	<0.50	0.47	<0.62	<0.53	15.7
12378-pentachlorodibenzofuran	0.84	<0.83	<0.93	<0.87	6.0
23478-pentachlorodibenzofuran	<1.46	<1.08	<1.47	<1.34	16.5
123478-hexachlorodibenzofuran	<1.26	1.12	<0.62	<1.00	33.4
123678-hexachlorodibenzofuran	1.34	<1.25	<1.26	<1.29	3.9
234678-hexachlorodibenzofuran	2.61	1.90	<1.69	<2.07	23.4
123789-hexachlorodibenzofuran	<1.28	<0.70	<1.05	<1.01	28.9
1234678-heptachlorodibenzofuran	<7.31	8.60	9.25	<8.39	11.8
1234789-heptachlorodibenzofuran	1.09	1.19	<0.76	<1.01	22.4
Octachlorodibenzofuran	11.0	14.1	10.9	12.0	15.2
PCB 81	<2.99	<1.48	<1.69	<2.05	39.9
PCB 77	14.3	13.9	7.37	11.9	32.8
PCB 123	<3.49	3.93	<1.85	<3.09	35.4
PCB 118	211	207	113	177	31.4
PCB 114	<4.82	7.00	<1.85	<4.56	56.7
PCB 105	59.8	77.2	37.1	58.0	34.6
PCB 126	<4.32	<1.83	<2.02	<2.73	50.8
PCB 167	<2.16	2.67	1.46	<2.10	28.8
PCB 156/157	<5.98	7.77	<3.88	<5.88	33.1
PCB 169	<1.41	<1.05	<1.60	<1.35	20.7
PCB 189	<1.99	<0.67	<0.89	<1.18	59.9
Total Dioxins & Furans Only	<226	<224	<218	<223	1.7
Total PCBs Only	<312	<324	<172	<270	31.3
Total Dioxins & Furans and PCBs	<538	<548	<391	<492	17.9

* 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	<0.0061	<0.0074	<0.0086	<0.0073	17.3
12378-pentachlorodibenzo-p-dioxin	0.021	<0.021	<0.010	<0.017	35.4
123478-hexachlorodibenzo-p-dioxin	<0.041	0.039	<0.032	<0.037	13.3
123678-hexachlorodibenzo-p-dioxin	0.080	<0.086	<0.086	<0.084	4.4
123789-hexachlorodibenzo-p-dioxin	<0.035	<0.026	0.049	<0.037	31.4
1234678-heptachlorodibenzo-p-dioxin	1.05	0.95	1.01	1.00	5.0
Octachlorodibenzo-p-dioxin	2.55	2.57	2.39	2.50	4.0
2378-tetrachlorodibenzofuran	<0.0096	0.0090	<0.012	<0.010	14.7
12378-pentachlorodibenzofuran	0.016	<0.016	<0.018	<0.017	5.0
23478-pentachlorodibenzofuran	<0.028	<0.021	<0.028	<0.026	16.1
123478-hexachlorodibenzofuran	<0.024	0.021	<0.012	<0.019	34.1
123678-hexachlorodibenzofuran	0.026	<0.024	<0.024	<0.025	4.3
234678-hexachlorodibenzofuran	0.050	0.036	<0.032	<0.039	24.0
123789-hexachlorodibenzofuran	<0.025	<0.013	<0.020	<0.019	29.0
1234678-heptachlorodibenzofuran	<0.14	0.17	0.17	<0.16	11.1
1234789-heptachlorodibenzofuran	0.021	0.023	<0.014	<0.019	23.1
Octachlorodibenzofuran	0.21	0.27	0.21	0.23	15.7
PCB 81	<0.057	<0.028	<0.032	<0.039	40.3
PCB 77	0.27	0.27	0.14	0.23	33.5
PCB 123	<0.067	0.076	<0.035	<0.059	36.1
PCB 118	4.05	3.97	2.13	3.38	32.1
PCB 114	<0.093	0.13	<0.035	<0.087	57.1
PCB 105	1.15	1.48	0.70	1.11	35.3
PCB 126	<0.083	<0.035	<0.038	<0.052	51.3
PCB 167	<0.041	0.051	0.028	<0.040	29.5
PCB 156/157	<0.11	0.15	<0.073	<0.11	33.8
PCB 169	<0.027	<0.020	<0.030	<0.026	20.0
PCB 189	<0.038	<0.013	<0.017	<0.023	60.4
Total Dioxins & Furans Only	<4.33	<4.30	<4.13	<4.25	2.6
Total PCBs Only	<6.00	<6.22	<3.26	<5.16	32.0
Total Dioxins & Furans and PCBs	<10.3	<10.5	<7.39	<9.41	18.7

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	<0.27	<0.46	<0.38	<0.38	<0.0073
12378-pentachlorodibenzo-p-dioxin	<0.64	<1.07	<0.90	<0.90	<0.017
123478-hexachlorodibenzo-p-dioxin	<1.38	<2.32	<1.93	<1.95	<0.037
123678-hexachlorodibenzo-p-dioxin	<3.10	<5.23	<4.35	<4.40	<0.084
123789-hexachlorodibenzo-p-dioxin	<1.35	<2.28	<1.89	<1.92	<0.037
1234678-heptachlorodibenzo-p-dioxin	37.0	62.4	51.8	52.5	1.00
Octachlorodibenzo-p-dioxin	92.4	156	130	131	2.50
2378-tetrachlorodibenzofuran	<0.37	<0.63	<0.52	<0.53	<0.010
12378-pentachlorodibenzofuran	<0.61	<1.03	<0.86	<0.87	<0.017
23478-pentachlorodibenzofuran	<0.94	<1.59	<1.32	<1.34	<0.026
123478-hexachlorodibenzofuran	<0.71	<1.19	<0.99	<1.00	<0.019
123678-hexachlorodibenzofuran	<0.91	<1.53	<1.27	<1.29	<0.025
234678-hexachlorodibenzofuran	<1.46	<2.45	<2.04	<2.07	<0.039
123789-hexachlorodibenzofuran	<0.71	<1.20	<0.99	<1.01	<0.019
1234678-heptachlorodibenzofuran	<5.91	<9.98	<8.28	<8.39	<0.16
1234789-heptachlorodibenzofuran	<0.71	<1.20	<1.00	<1.01	<0.019
Octachlorodibenzofuran	8.43	14.2	11.8	12.0	0.23
PCB 81	<1.45	<2.44	<2.03	<2.05	<0.039
PCB 77	8.35	14.1	11.8	11.9	0.23
PCB 123	<2.18	<3.67	<3.08	<3.09	<0.059
PCB 118	125	210	176	177	3.38
PCB 114	<3.21	<5.41	<4.55	<4.56	<0.087
PCB 105	40.9	68.9	57.7	58.0	1.11
PCB 126	<1.92	<3.24	<2.70	<2.73	<0.052
PCB 167	<1.48	<2.49	<2.08	<2.10	<0.040
PCB 156/157	<4.14	<6.98	<5.84	<5.88	<0.11
PCB 169	<0.95	<1.61	<1.33	<1.35	<0.026
PCB 189	<0.83	<1.41	<1.17	<1.18	<0.023
Total Dioxins & Furans Only	<157	<265	<220	<223	<4.25
Total PCBs Only	<190	<320	<268	<270	<5.16
Total Dioxins & Furans and PCBs	<347	<585	<488	<492	<9.41

* 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	Method Blank pg
2378-tetrachlorodibenzo-p-dioxin	<7.4	<1.5
12378-pentachlorodibenzo-p-dioxin	<8.2	<2.0
123478-hexachlorodibenzo-p-dioxin	<7.8	<2.2
123678-hexachlorodibenzo-p-dioxin	<7.5	<2.1
123789-hexachlorodibenzo-p-dioxin	<7.7	<2.1
1234678-heptachlorodibenzo-p-dioxin	<16	<4.4
Octachlorodibenzo-p-dioxin	<23	18.5
2378-tetrachlorodibenzofuran	<10	<1.4
12378-pentachlorodibenzofuran	<4.7	2.18
23478-pentachlorodibenzofuran	<4.3	<1.1
123478-hexachlorodibenzofuran	<3.5	<1.5
123678-hexachlorodibenzofuran	<3.3	<1.4
234678-hexachlorodibenzofuran	<3.4	<1.5
123789-hexachlorodibenzofuran	<4.1	3.14
1234678-heptachlorodibenzofuran	<7.0	<2.6
1234789-heptachlorodibenzofuran	<8.5	<3.0
Octachlorodibenzofuran	<15	<15
PCB 81	<4.7	<8.7
PCB 77	<5.0	<9.1
PCB 123	<7.6	<15
PCB 118	20.7	<14
PCB 114	<7.5	<14
PCB 105	<7.4	<14
PCB 126	<8.0	<17
PCB 167	<2.9	<4.9
PCB 156/157	<4.5	<7.5
PCB 169	<3.1	<5.3
PCB 189	<3.1	<6.8
Total Dioxins & Furans Only	<141	<65.6
Total PCBs Only	<74.5	<116
Total Dioxins & Furans and PCBs	<216	<182

"<" 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	<0.22	<0.27	<0.32	<0.27
12378-pentachlorodibenzo-p-dioxin	1.00000	0.76	<0.76	<0.38	<0.64
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.15	0.14	<0.12	<0.14
123678-hexachlorodibenzo-p-dioxin	0.10000	0.29	<0.32	<0.32	<0.31
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.13	<0.095	0.18	<0.14
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.38	0.35	0.38	0.37
Octachlorodibenzo-p-dioxin	0.00030	0.028	0.028	0.027	0.028
2378-tetrachlorodibenzofuran	0.10000	<0.035	0.033	<0.044	<0.037
12378-pentachlorodibenzofuran	0.03000	0.018	<0.018	<0.020	<0.018
23478-pentachlorodibenzofuran	0.30000	<0.31	<0.23	<0.31	<0.28
123478-hexachlorodibenzofuran	0.10000	<0.089	0.079	<0.044	<0.071
123678-hexachlorodibenzofuran	0.10000	0.094	<0.088	<0.089	<0.091
234678-hexachlorodibenzofuran	0.10000	0.18	0.13	<0.12	<0.15
123789-hexachlorodibenzofuran	0.10000	<0.090	<0.049	<0.074	<0.071
1234678-heptachlorodibenzofuran	0.01000	<0.051	0.061	0.065	<0.059
1234789-heptachlorodibenzofuran	0.01000	0.0076	0.0084	<0.0053	<0.0071
Octachlorodibenzofuran	0.00030	0.0023	0.0030	0.0023	0.0025
PCB 81	0.00030	<0.00063	<0.00031	<0.00036	<0.00043
PCB 77	0.00010	0.0010	0.00098	0.00052	0.00084
PCB 123	0.00003	<0.000074	0.000083	<0.000039	<0.000065
PCB 118	0.00003	0.0045	0.0044	0.0024	0.0037
PCB 114	0.00003	<0.00010	0.00015	<0.000039	<0.000096
PCB 105	0.00003	0.0013	0.0016	0.00078	0.0012
PCB 126	0.10000	<0.30	<0.13	<0.14	<0.19
PCB 167	0.00003	<0.000046	0.000056	0.000031	<0.000044
PCB 156/157	0.00003	<0.00013	0.00016	<0.000082	<0.00012
PCB 169	0.03000	<0.030	<0.022	<0.034	<0.029
PCB 189	0.00003	<0.000042	<0.000014	<0.000019	<0.000025
Total Dioxins & Furans Only		<2.85	<2.67	<2.50	<2.67
Total PCBs Only		<0.34	<0.16	<0.18	<0.23
Total Dioxins & Furans and PCBs		<3.19	<2.83	<2.68	<2.90

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	<0.37	<0.45	<0.54	<0.46
12378-pentachlorodibenzo-p-dioxin	1.00000	1.28	<1.28	<0.65	<1.07
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.26	0.24	<0.20	<0.23
123678-hexachlorodibenzo-p-dioxin	0.10000	0.49	<0.53	<0.54	<0.52
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.22	<0.16	0.31	<0.23
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.65	0.58	0.64	0.62
Octachlorodibenzo-p-dioxin	0.00030	0.047	0.048	0.045	0.047
2378-tetrachlorodibenzofuran	0.10000	<0.059	0.055	<0.075	<0.063
12378-pentachlorodibenzofuran	0.03000	0.030	<0.030	<0.033	<0.031
23478-pentachlorodibenzofuran	0.30000	<0.52	<0.39	<0.53	<0.48
123478-hexachlorodibenzofuran	0.10000	<0.15	0.13	<0.075	<0.12
123678-hexachlorodibenzofuran	0.10000	0.16	<0.15	<0.15	<0.15
234678-hexachlorodibenzofuran	0.10000	0.31	0.23	<0.20	<0.25
123789-hexachlorodibenzofuran	0.10000	<0.15	<0.083	<0.13	<0.12
1234678-heptachlorodibenzofuran	0.01000	<0.087	0.10	0.11	<0.10
1234789-heptachlorodibenzofuran	0.01000	0.013	0.014	<0.0091	<0.012
Octachlorodibenzofuran	0.00030	0.0039	0.0050	0.0039	0.0043
PCB 81	0.00030	<0.0011	<0.00053	<0.00060	<0.00073
PCB 77	0.00010	0.0017	0.00165	0.00088	0.00141
PCB 123	0.00003	<0.00012	0.00014	<0.000067	<0.00011
PCB 118	0.00003	0.0075	0.0073	0.0040	0.0063
PCB 114	0.00003	<0.00017	0.00025	<0.000067	<0.00016
PCB 105	0.00003	0.0021	0.0027	0.00133	0.0021
PCB 126	0.10000	<0.51	<0.22	<0.24	<0.32
PCB 167	0.00003	<0.000077	0.000095	0.000053	<0.000075
PCB 156/157	0.00003	<0.00021	0.00028	<0.00014	<0.00021
PCB 169	0.03000	<0.050	<0.037	<0.057	<0.048
PCB 189	0.00003	<0.000071	<0.000024	<0.000032	<0.000042
Total Dioxins & Furans Only		<4.80	<4.48	<4.24	<4.51
Total PCBs Only		<0.58	<0.27	<0.31	<0.38
Total Dioxins & Furans and PCBs		<5.37	<4.75	<4.55	<4.89

* 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	<0.31	<0.39	<0.44	<0.38
12378-pentachlorodibenzo-p-dioxin	1.00000	1.08	<1.09	<0.52	<0.90
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.21	0.20	<0.16	<0.19
123678-hexachlorodibenzo-p-dioxin	0.10000	0.41	<0.45	<0.44	<0.43
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.18	<0.14	0.25	<0.19
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.54	0.50	0.51	0.52
Octachlorodibenzo-p-dioxin	0.00030	0.040	0.041	0.036	0.039
2378-tetrachlorodibenzofuran	0.10000	<0.050	0.047	<0.060	<0.052
12378-pentachlorodibenzofuran	0.03000	0.025	<0.025	<0.027	<0.026
23478-pentachlorodibenzofuran	0.30000	<0.44	<0.33	<0.42	<0.40
123478-hexachlorodibenzofuran	0.10000	<0.13	0.11	<0.060	<0.099
123678-hexachlorodibenzofuran	0.10000	0.13	<0.13	<0.12	<0.13
234678-hexachlorodibenzofuran	0.10000	0.26	0.19	<0.16	<0.20
123789-hexachlorodibenzofuran	0.10000	<0.13	<0.071	<0.10	<0.099
1234678-heptachlorodibenzofuran	0.01000	<0.073	0.087	0.089	<0.083
1234789-heptachlorodibenzofuran	0.01000	0.011	0.012	<0.0073	<0.010
Octachlorodibenzofuran	0.00030	0.0033	0.0043	0.0031	0.0036
PCB 81	0.00030	<0.00089	<0.00045	<0.00049	<0.00061
PCB 77	0.00010	0.0014	0.0014	0.00071	0.0012
PCB 123	0.00003	<0.00010	0.00012	<0.000053	<0.000092
PCB 118	0.00003	0.0063	0.0063	0.0032	0.0053
PCB 114	0.00003	<0.00014	0.00021	<0.000053	<0.00014
PCB 105	0.00003	0.0018	0.0023	0.0011	0.0017
PCB 126	0.10000	<0.43	<0.19	<0.19	<0.27
PCB 167	0.00003	<0.000064	0.000081	0.000042	<0.000062
PCB 156/157	0.00003	<0.00018	0.00024	<0.00011	<0.00018
PCB 169	0.03000	<0.042	<0.032	<0.046	<0.040
PCB 189	0.00003	<0.000060	<0.000020	<0.000026	<0.000035
Total Dioxins & Furans Only		<4.03	<3.82	<3.40	<3.75
Total PCBs Only		<0.48	<0.23	<0.25	<0.32
Total Dioxins & Furans and PCBs		<4.51	<4.05	<3.65	<4.07

* 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	0.16	0.19	0.22	0.19
12378-pentachlorodibenzo-p-dioxin	1.00000	1.08	0.55	0.26	0.63
123478-hexachlorodibenzo-p-dioxin	0.10000	0.11	0.20	0.081	0.13
123678-hexachlorodibenzo-p-dioxin	0.10000	0.41	0.23	0.22	0.29
123789-hexachlorodibenzo-p-dioxin	0.10000	0.091	0.068	0.25	0.14
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.54	0.50	0.51	0.52
Octachlorodibenzo-p-dioxin	0.00030	0.040	0.041	0.036	0.039
2378-tetrachlorodibenzofuran	0.10000	0.025	0.047	0.030	0.034
12378-pentachlorodibenzofuran	0.03000	0.025	0.013	0.013	0.017
23478-pentachlorodibenzofuran	0.30000	0.22	0.16	0.21	0.20
123478-hexachlorodibenzofuran	0.10000	0.063	0.11	0.030	0.068
123678-hexachlorodibenzofuran	0.10000	0.13	0.063	0.061	0.086
234678-hexachlorodibenzofuran	0.10000	0.26	0.19	0.081	0.18
123789-hexachlorodibenzofuran	0.10000	0.064	0.035	0.050	0.050
1234678-heptachlorodibenzofuran	0.01000	0.036	0.087	0.089	0.071
1234789-heptachlorodibenzofuran	0.01000	0.011	0.012	0.0036	0.0088
Octachlorodibenzofuran	0.00030	0.0033	0.0043	0.0031	0.0036
PCB 81	0.00030	0.00045	0.00022	0.00024	0.00030
PCB 77	0.00010	0.0014	0.0014	0.00071	0.0012
PCB 123	0.00003	0.000052	0.00012	0.000027	0.000066
PCB 118	0.00003	0.0063	0.0063	0.0032	0.0053
PCB 114	0.00003	0.000072	0.00021	0.000027	0.00010
PCB 105	0.00003	0.0018	0.0023	0.0011	0.0017
PCB 126	0.10000	0.21	0.093	0.097	0.13
PCB 167	0.00003	0.000032	0.000081	0.000042	0.000052
PCB 156/157	0.00003	0.000089	0.00024	0.000056	0.00013
PCB 169	0.03000	0.021	0.016	0.023	0.020
PCB 189	0.00003	0.000030	0.000010	0.000013	0.000018
Total Dioxins & Furans Only		3.27	2.51	2.15	2.64
Total PCBs Only		0.25	0.12	0.13	0.16
Total Dioxins & Furans and PCBs		3.51	2.63	2.27	2.80

* 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	<0.31	<0.39	<0.44	<0.38
12378-pentachlorodibenzo-p-dioxin	0.500	0.54	<0.55	<0.26	<0.45
123478-hexachlorodibenzo-p-dioxin	0.100	<0.21	0.20	<0.16	<0.19
123678-hexachlorodibenzo-p-dioxin	0.100	0.41	<0.45	<0.44	<0.43
123789-hexachlorodibenzo-p-dioxin	0.100	<0.18	<0.14	0.25	<0.19
1234678-heptachlorodibenzo-p-dioxin	0.010	0.54	0.50	0.51	0.52
Octachlorodibenzo-p-dioxin	0.001	0.13	0.14	0.121	0.130
2378-tetrachlorodibenzofuran	0.100	<0.050	0.047	<0.060	<0.052
12378-pentachlorodibenzofuran	0.050	0.042	<0.042	<0.044	<0.043
23478-pentachlorodibenzofuran	0.500	<0.73	<0.55	<0.70	<0.66
123478-hexachlorodibenzofuran	0.100	<0.13	0.11	<0.060	<0.099
123678-hexachlorodibenzofuran	0.100	0.13	<0.13	<0.12	<0.13
234678-hexachlorodibenzofuran	0.100	0.26	0.19	<0.16	<0.20
123789-hexachlorodibenzofuran	0.100	<0.13	<0.071	<0.10	<0.099
1234678-heptachlorodibenzofuran	0.010	<0.073	0.087	0.089	<0.083
1234789-heptachlorodibenzofuran	0.010	0.011	0.012	<0.0073	<0.010
Octachlorodibenzofuran	0.001	0.011	0.014	0.010	0.012
Total Dioxins & Furans		<3.90	<3.62	<3.53	<3.68
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	<0.32	<0.38	<0.46	<0.38
12378-pentachlorodibenzo-p-dioxin	1.00000	1.08	<1.08	<0.54	<0.90
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.22	0.20	<0.17	<0.20
123678-hexachlorodibenzo-p-dioxin	0.10000	0.42	<0.45	<0.46	<0.44
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.18	<0.14	0.26	<0.19
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.55	0.49	0.54	0.52
Octachlorodibenzo-p-dioxin	0.00030	0.040	0.040	0.038	0.039
2378-tetrachlorodibenzofuran	0.10000	<0.050	0.047	<0.062	<0.053
12378-pentachlorodibenzofuran	0.03000	0.025	<0.025	<0.028	<0.026
23478-pentachlorodibenzofuran	0.30000	<0.44	<0.33	<0.44	<0.40
123478-hexachlorodibenzofuran	0.10000	<0.13	0.11	<0.062	<0.10
123678-hexachlorodibenzofuran	0.10000	0.13	<0.13	<0.13	<0.13
234678-hexachlorodibenzofuran	0.10000	0.26	0.19	<0.17	<0.21
123789-hexachlorodibenzofuran	0.10000	<0.13	<0.070	<0.10	<0.10
1234678-heptachlorodibenzofuran	0.01000	<0.073	0.086	0.093	<0.084
1234789-heptachlorodibenzofuran	0.01000	0.011	0.012	<0.0076	<0.010
Octachlorodibenzofuran	0.00030	0.0033	0.0042	0.0033	0.0036
PCB 81	0.00030	<0.00090	<0.00045	<0.00051	<0.00062
PCB 77	0.00010	0.0014	0.0014	0.00074	0.0012
PCB 123	0.00003	<0.00010	0.00012	<0.000056	<0.000093
PCB 118	0.00003	0.0063	0.0062	0.0034	0.0053
PCB 114	0.00003	<0.00014	0.00021	<0.000056	<0.00014
PCB 105	0.00003	0.0018	0.0023	0.0011	0.0017
PCB 126	0.10000	<0.43	<0.18	<0.20	<0.27
PCB 167	0.00003	<0.000065	0.000080	0.000044	<0.000063
PCB 156/157	0.00003	<0.00018	0.00023	<0.00012	<0.00018
PCB 169	0.03000	<0.042	<0.032	<0.048	<0.041
PCB 189	0.00003	<0.000060	<0.000020	<0.000027	<0.000036
Total Dioxins & Furans Only		<4.05	<3.78	<3.55	<3.79
Total PCBs Only		<0.49	<0.23	<0.26	<0.32
Total Dioxins & Furans and PCBs		<4.53	<4.01	<3.80	<4.11

* 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	<0.0061	<0.0074	<0.0086	<0.0073
12378-pentachlorodibenzo-p-dioxin	1.00000	0.021	<0.021	<0.010	<0.017
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.0041	0.0039	<0.0032	<0.0037
123678-hexachlorodibenzo-p-dioxin	0.10000	0.0080	<0.0086	<0.0086	<0.0084
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.0035	<0.0026	0.0049	<0.0037
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.010	0.0095	0.010	0.010
Octachlorodibenzo-p-dioxin	0.00030	0.00077	0.00077	0.00072	0.00075
2378-tetrachlorodibenzofuran	0.10000	<0.00096	0.00090	<0.0012	<0.0010
12378-pentachlorodibenzofuran	0.03000	0.00049	<0.00048	<0.00053	<0.00050
23478-pentachlorodibenzofuran	0.30000	<0.0084	<0.0062	<0.0083	<0.0077
123478-hexachlorodibenzofuran	0.10000	<0.0024	0.0021	<0.0012	<0.0019
123678-hexachlorodibenzofuran	0.10000	0.0026	<0.0024	<0.0024	<0.0025
234678-hexachlorodibenzofuran	0.10000	0.0050	0.0036	<0.0032	<0.0039
123789-hexachlorodibenzofuran	0.10000	<0.0025	<0.0013	<0.0020	<0.0019
1234678-heptachlorodibenzofuran	0.01000	<0.0014	0.0017	0.0017	<0.0016
1234789-heptachlorodibenzofuran	0.01000	0.00021	0.00023	<0.00014	<0.00019
Octachlorodibenzofuran	0.00030	0.000063	0.000081	0.000062	0.000069
PCB 81	0.00030	<0.000017	<0.0000085	<0.0000096	<0.000012
PCB 77	0.00010	0.000027	0.000027	0.000014	0.000023
PCB 123	0.00003	<0.0000020	0.0000023	<0.0000011	<0.0000018
PCB 118	0.00003	0.00012	0.00012	0.000064	0.00010
PCB 114	0.00003	<0.0000028	0.0000040	<0.0000011	<0.0000026
PCB 105	0.00003	0.000034	0.000044	0.000021	0.000033
PCB 126	0.10000	<0.0083	<0.0035	<0.0038	<0.0052
PCB 167	0.00003	<0.0000012	0.0000015	0.00000083	<0.0000012
PCB 156/157	0.00003	<0.0000034	0.0000045	<0.0000022	<0.0000034
PCB 169	0.03000	<0.00081	<0.00060	<0.00091	<0.00078
PCB 189	0.00003	<0.0000011	<0.00000038	<0.00000051	<0.00000068
Total Dioxins & Furans Only		<0.078	<0.073	<0.067	<0.072
Total PCBs Only		<0.0093	<0.0043	<0.0048	<0.0062
Total Dioxins & Furans and PCBs		<0.087	<0.077	<0.072	<0.079

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	<0.27	<0.46	<0.38	<0.38	<0.0073
12378-pentachlorodibenzo-p-dioxin	<0.64	<1.07	<0.90	<0.90	<0.017
123478-hexachlorodibenzo-p-dioxin	<0.14	<0.23	<0.19	<0.20	<0.0037
123678-hexachlorodibenzo-p-dioxin	<0.31	<0.52	<0.43	<0.44	<0.0084
123789-hexachlorodibenzo-p-dioxin	<0.14	<0.23	<0.19	<0.19	<0.0037
1234678-heptachlorodibenzo-p-dioxin	0.37	0.62	0.52	0.52	0.010
Octachlorodibenzo-p-dioxin	0.028	0.047	0.039	0.039	0.00075
2378-tetrachlorodibenzofuran	<0.037	<0.063	<0.052	<0.053	<0.0010
12378-pentachlorodibenzofuran	<0.018	<0.031	<0.026	<0.026	<0.00050
23478-pentachlorodibenzofuran	<0.28	<0.48	<0.40	<0.40	<0.0077
123478-hexachlorodibenzofuran	<0.071	<0.12	<0.099	<0.10	<0.0019
123678-hexachlorodibenzofuran	<0.091	<0.15	<0.13	<0.13	<0.0025
234678-hexachlorodibenzofuran	<0.15	<0.25	<0.20	<0.21	<0.0039
123789-hexachlorodibenzofuran	<0.071	<0.12	<0.099	<0.10	<0.0019
1234678-heptachlorodibenzofuran	<0.059	<0.10	<0.083	<0.084	<0.0016
1234789-heptachlorodibenzofuran	<0.0071	<0.012	<0.010	<0.010	<0.00019
Octachlorodibenzofuran	0.0025	0.0043	0.0036	0.0036	0.000069
PCB 81	<0.00043	<0.00073	<0.00061	<0.00062	<0.000012
PCB 77	0.00084	0.0014	0.0012	0.0012	0.000023
PCB 123	<0.000065	<0.00011	<0.000092	<0.000093	<0.0000018
PCB 118	0.0037	0.0063	0.0053	0.0053	0.00010
PCB 114	<0.000096	<0.00016	<0.00014	<0.00014	<0.0000026
PCB 105	0.0012	0.0021	0.0017	0.0017	0.000033
PCB 126	<0.19	<0.32	<0.27	<0.27	<0.0052
PCB 167	<0.000044	<0.000075	<0.000062	<0.000063	<0.0000012
PCB 156/157	<0.00012	<0.00021	<0.00018	<0.00018	<0.0000034
PCB 169	<0.029	<0.048	<0.040	<0.041	<0.00078
PCB 189	<0.000025	<0.000042	<0.000035	<0.000036	<0.00000068
Total Dioxins & Furans Only	<2.67	<4.51	<3.75	<3.79	<0.072
Total PCBs Only	<0.23	<0.38	<0.32	<0.32	<0.0062
Total Dioxins & Furans and PCBs	<2.90	<4.89	<4.07	<4.11	<0.079

* 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	0.14	0.23	0.19	0.19	0.0037
12378-pentachlorodibenzo-p-dioxin	0.44	0.75	0.63	0.63	0.012
123478-hexachlorodibenzo-p-dioxin	0.093	0.16	0.13	0.13	0.0025
123678-hexachlorodibenzo-p-dioxin	0.20	0.34	0.29	0.29	0.0055
123789-hexachlorodibenzo-p-dioxin	0.098	0.17	0.14	0.14	0.0026
1234678-heptachlorodibenzo-p-dioxin	0.37	0.62	0.52	0.52	0.010
Octachlorodibenzo-p-dioxin	0.028	0.047	0.039	0.039	0.00075
2378-tetrachlorodibenzofuran	0.024	0.041	0.034	0.034	0.00065
12378-pentachlorodibenzofuran	0.012	0.020	0.017	0.017	0.00033
23478-pentachlorodibenzofuran	0.14	0.24	0.20	0.20	0.0038
123478-hexachlorodibenzofuran	0.048	0.081	0.068	0.069	0.0013
123678-hexachlorodibenzofuran	0.061	0.10	0.086	0.087	0.0017
234678-hexachlorodibenzofuran	0.13	0.21	0.18	0.18	0.0034
123789-hexachlorodibenzofuran	0.036	0.060	0.050	0.050	0.00096
1234678-heptachlorodibenzofuran	0.051	0.085	0.071	0.072	0.0014
1234789-heptachlorodibenzofuran	0.0062	0.011	0.0088	0.0089	0.00017
Octachlorodibenzofuran	0.0025	0.0043	0.0036	0.0036	0.000069
PCB 81	0.00022	0.00037	0.00030	0.00031	0.0000059
PCB 77	0.00084	0.0014	0.0012	0.0012	0.000023
PCB 123	0.000047	0.000078	0.000066	0.000066	0.0000013
PCB 118	0.0037	0.0063	0.0053	0.0053	0.00010
PCB 114	0.000073	0.00012	0.00010	0.00010	0.0000020
PCB 105	0.0012	0.0021	0.0017	0.0017	0.000033
PCB 126	0.096	0.16	0.13	0.14	0.0026
PCB 167	0.000037	0.000062	0.000052	0.000052	0.0000010
PCB 156/157	0.000090	0.00015	0.00013	0.00013	0.0000024
PCB 169	0.014	0.024	0.020	0.020	0.00039
PCB 189	0.000013	0.000021	0.000018	0.000018	0.00000034
Total Dioxins & Furans Only	1.88	3.17	2.64	2.67	0.051
Total PCBs Only	0.12	0.20	0.16	0.17	0.0032
Total Dioxins & Furans and PCBs	2.00	3.37	2.80	2.83	0.054

* 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	NQ	NQ	NQ	NQ	NQ	NQ
1,3-Dichlorobenzene	89.9	10.5	17.7	14.9	14.9	0.29
1,4-Dichlorobenzene	299	34.9	58.9	49.4	49.7	0.95
1,2-Dichlorobenzene	117	13.7	23.0	19.3	19.4	0.37
Total Dichlorobenzene	506	59.1	99.6	83.6	84.1	1.61
1,3,5-trichlorobenzene	14.2	1.66	2.80	2.35	2.36	0.045
1,2,4-trichlorobenzene	38.9	4.55	7.66	6.43	6.46	0.12
1,2,3-trichlorobenzene	12.0	1.40	2.36	1.98	1.99	0.038
Total Trichlorobenzene	65.1	7.61	12.8	10.8	10.8	0.21
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	12.6	1.47	2.48	2.08	2.09	0.040
1,2,3,4-tetrachlorobenzene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Total Tetrachlorobenzene	<24.6	<2.88	<4.85	<4.07	<4.09	<0.078
Pentachlorobenzene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Hexachlorobenzene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Total Chlorobenzenes	<620	<72.4	<122	<102	<103	<1.98

Dry Gas Volume Sampled (Rm³*) :	5.077
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.2

* 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.

NQ - Indicates that this compound is not quantifiable due to spike recovery loss.

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/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	NQ	NQ	NQ	NQ	NQ	NQ
1,3-Dichlorobenzene	135	15.9	26.7	22.7	22.5	0.43
1,4-Dichlorobenzene	253	29.8	50.0	42.6	42.2	0.81
1,2-Dichlorobenzene	158	18.6	31.2	26.6	26.3	0.51
Total Dichlorobenzene	546	64.2	108	92.0	91.0	1.75
1,3,5-trichlorobenzene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
1,2,4-trichlorobenzene	53.5	6.29	10.6	9.01	8.92	0.17
1,2,3-trichlorobenzene	12.5	1.47	2.47	2.11	2.08	0.040
Total Trichlorobenzene	<78.0	<9.18	<15.4	<13.1	<13.0	<0.25
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	18.4	2.16	3.63	3.10	3.07	0.059
1,2,3,4-tetrachlorobenzene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Total Tetrachlorobenzene	<30.4	<3.58	<6.01	<5.12	<5.07	<0.097
Pentachlorobenzene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Hexachlorobenzene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Total Chlorobenzenes	<678	<79.8	<134	<114	<113	<2.17

Dry Gas Volume Sampled (Rm³*) :	5.062
Actual Flowrate (m³/s) :	27.2
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	19.2

* 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.

NQ - Indicates that this compound is not quantifiable due to spike recovery loss.

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	NQ	NQ	NQ	NQ	NQ	NQ
1,3-Dichlorobenzene	120	14.3	24.2	19.4	20.2	0.38
1,4-Dichlorobenzene	199	23.7	40.1	32.2	33.5	0.63
1,2-Dichlorobenzene	118	14.0	23.8	19.1	19.9	0.38
Total Dichlorobenzene	437	52.0	88.1	70.7	73.7	1.39
1,3,5-trichlorobenzene	12.2	1.45	2.46	1.97	2.06	0.039
1,2,4-trichlorobenzene	35.8	4.26	7.22	5.79	6.04	0.11
1,2,3-trichlorobenzene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Total Trichlorobenzene	<60.0	<7.13	<12.1	<9.70	<10.1	<0.19
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	12.7	1.51	2.56	2.05	2.14	0.040
1,2,3,4-tetrachlorobenzene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Total Tetrachlorobenzene	<24.7	<2.94	<4.98	<3.99	<4.16	<0.079
Pentachlorobenzene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Hexachlorobenzene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Total Chlorobenzenes	<546	<64.9	<110	<88.3	<92.0	<1.74

Dry Gas Volume Sampled (Rm³*) :	4.959
Actual Flowrate (m³/s) :	26.8
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	19.7
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.
NQ - Indicates that this compound is not quantifiable due to spike recovery loss.

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

Specific Isomer	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	%
Monochlorobenzene	NQ	NQ	NQ	NQ	-
1,3-Dichlorobenzene	10.5	15.9	14.3	13.6	20.4
1,4-Dichlorobenzene	34.9	29.8	23.7	29.5	19.2
1,2-Dichlorobenzene	13.7	18.6	14.0	15.4	17.8
Total Dichlorobenzene	59.1	64.2	52.0	58.4	10.6
1,3,5-trichlorobenzene	1.66	<1.41	1.45	<1.51	8.8
1,2,4-trichlorobenzene	4.55	6.29	4.26	5.03	21.9
1,2,3-trichlorobenzene	1.40	1.47	<1.43	<1.43	2.4
Total Trichlorobenzene	7.61	<9.18	<7.13	<7.97	13.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	1.47	2.16	1.51	1.72	22.7
1,2,3,4-tetrachlorobenzene	<1.40	<1.41	<1.43	<1.41	0.9
Total Tetrachlorobenzene	<2.88	<3.58	<2.94	<3.13	12.4
Pentachlorobenzene	<1.40	<1.41	<1.43	<1.41	0.9
Hexachlorobenzene	<1.40	<1.41	<1.43	<1.41	0.9
Total Chlorobenzenes	<72.4	<79.8	<64.9	<72.4	10.3

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	NQ	NQ	NQ	NQ	-
1,3-Dichlorobenzene	17.7	26.7	24.2	22.9	20.3
1,4-Dichlorobenzene	58.9	50.0	40.1	49.7	18.9
1,2-Dichlorobenzene	23.0	31.2	23.8	26.0	17.4
Total Dichlorobenzene	99.6	108	88.1	98.5	10.1
1,3,5-trichlorobenzene	2.80	<2.37	2.46	<2.54	8.8
1,2,4-trichlorobenzene	7.66	10.6	7.22	8.48	21.4
1,2,3-trichlorobenzene	2.36	2.47	<2.42	<2.42	2.2
Total Trichlorobenzene	12.8	<15.4	<12.1	<13.4	12.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.48	3.63	2.56	2.89	22.3
1,2,3,4-tetrachlorobenzene	<2.36	<2.37	<2.42	<2.38	1.3
Total Tetrachlorobenzene	<4.85	<6.01	<4.98	<5.28	12.0
Pentachlorobenzene	<2.36	<2.37	<2.42	<2.38	1.3
Hexachlorobenzene	<2.36	<2.37	<2.42	<2.38	1.3
Total Chlorobenzenes	<122	<134	<110	<122	9.8

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Monochlorobenzene	NQ	NQ	NQ	NQ	-
1,3-Dichlorobenzene	14.9	22.7	19.4	19.0	20.8
1,4-Dichlorobenzene	49.4	42.6	32.2	41.4	21.0
1,2-Dichlorobenzene	19.3	26.6	19.1	21.7	19.7
Total Dichlorobenzene	83.6	92.0	70.7	82.1	13.1
1,3,5-trichlorobenzene	2.35	<2.02	1.97	<2.11	9.6
1,2,4-trichlorobenzene	6.43	9.01	5.79	7.08	24.1
1,2,3-trichlorobenzene	1.98	2.11	<1.94	<2.01	4.2
Total Trichlorobenzene	10.8	<13.1	<9.70	<11.2	15.7
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.08	3.10	2.05	2.41	24.7
1,2,3,4-tetrachlorobenzene	<1.98	<2.02	<1.94	<1.98	2.0
Total Tetrachlorobenzene	<4.07	<5.12	<3.99	<4.39	14.3
Pentachlorobenzene	<1.98	<2.02	<1.94	<1.98	2.0
Hexachlorobenzene	<1.98	<2.02	<1.94	<1.98	2.0
Total Chlorobenzenes	<102	<114	<88.3	<102	12.8

* 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	NQ	NQ	NQ	NQ	-
1,3-Dichlorobenzene	14.9	22.5	20.2	19.2	20.2
1,4-Dichlorobenzene	49.7	42.2	33.5	41.8	19.3
1,2-Dichlorobenzene	19.4	26.3	19.9	21.9	17.6
Total Dichlorobenzene	84.1	91.0	73.7	82.9	10.5
1,3,5-trichlorobenzene	2.36	<2.00	2.06	<2.14	9.0
1,2,4-trichlorobenzene	6.46	8.92	6.04	7.14	21.8
1,2,3-trichlorobenzene	1.99	2.08	<2.02	<2.03	2.2
Total Trichlorobenzene	10.8	<13.0	<10.1	<11.3	13.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.09	3.07	2.14	2.43	22.5
1,2,3,4-tetrachlorobenzene	<1.99	<2.00	<2.02	<2.01	0.8
Total Tetrachlorobenzene	<4.09	<5.07	<4.16	<4.44	12.3
Pentachlorobenzene	<1.99	<2.00	<2.02	<2.01	0.8
Hexachlorobenzene	<1.99	<2.00	<2.02	<2.01	0.8
Total Chlorobenzenes	<103	<113	<92.0	<103	10.3

* 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	NQ	NQ	NQ	NQ	-
1,3-Dichlorobenzene	0.29	0.43	0.38	0.37	20.1
1,4-Dichlorobenzene	0.95	0.81	0.63	0.80	20.1
1,2-Dichlorobenzene	0.37	0.51	0.38	0.42	18.1
Total Dichlorobenzene	1.61	1.75	1.39	1.58	11.3
1,3,5-trichlorobenzene	0.045	<0.038	0.039	<0.041	9.4
1,2,4-trichlorobenzene	0.12	0.17	0.11	0.14	22.4
1,2,3-trichlorobenzene	0.038	0.040	<0.038	<0.039	2.6
Total Trichlorobenzene	0.21	<0.25	<0.19	<0.22	13.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.040	0.059	0.040	0.047	23.0
1,2,3,4-tetrachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.2
Total Tetrachlorobenzene	<0.078	<0.097	<0.079	<0.085	12.7
Pentachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.2
Hexachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.2
Total Chlorobenzenes	<1.98	<2.17	<1.74	<1.96	11.0

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	NQ	NQ	NQ	NQ	NQ
1,3-Dichlorobenzene	13.6	22.9	19.0	19.2	0.37
1,4-Dichlorobenzene	29.5	49.7	41.4	41.8	0.80
1,2-Dichlorobenzene	15.4	26.0	21.7	21.9	0.42
Total Dichlorobenzene	58.4	98.5	82.1	82.9	1.58
1,3,5-trichlorobenzene	<1.51	<2.54	<2.11	<2.14	<0.041
1,2,4-trichlorobenzene	5.03	8.48	7.08	7.14	0.14
1,2,3-trichlorobenzene	<1.43	<2.42	<2.01	<2.03	<0.039
Total Trichlorobenzene	<7.97	<13.4	<11.2	<11.3	<0.22
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	1.72	2.89	2.41	2.43	0.047
1,2,3,4-tetrachlorobenzene	<1.41	<2.38	<1.98	<2.01	<0.038
Total Tetrachlorobenzene	<3.13	<5.28	<4.39	<4.44	<0.085
Pentachlorobenzene	<1.41	<2.38	<1.98	<2.01	<0.038
Hexachlorobenzene	<1.41	<2.38	<1.98	<2.01	<0.038
Total Chlorobenzenes	<72.4	<122	<102	<103	<1.96

* 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	Method Blank Total ng
Monochlorobenzene	NQ	NQ
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	<12	<12
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<36.0	<36.0
1,3,5-trichlorobenzene	<12	<12
1,2,4-trichlorobenzene	<12	<12
1,2,3-trichlorobenzene	<12	<12
Total Trichlorobenzene	<36.0	<36.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<12
1,2,3,4-tetrachlorobenzene	<12	<12
Total Tetrachlorobenzene	<24.0	<24.0
Pentachlorobenzene	<12	<12
Hexachlorobenzene	<12	<12
Total Chlorobenzenes	<120	<120

"<" 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.

NQ - Indicates that this compound is not quantifiable due to spike recovery loss.

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/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
3-monochlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
4-monochlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
Total Monochlorophenols	<180	<21.0	<35.5	<29.8	<29.9	<0.57
2,6-dichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
3,5-dichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
2,3-dichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
3,4-dichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
Total Dichlorophenols	<300	<35.1	<59.1	<49.6	<49.9	<0.96
2,4,6-trichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
2,3,6-trichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
2,3,5-trichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
2,4,5-trichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
2,3,4-trichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
3,4,5-trichlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
Total Trichlorophenols	<360	<42.1	<70.9	<59.5	<59.8	<1.15
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
Total Tetrachlorophenols	<120	<14.0	<23.6	<19.8	<19.9	<0.38
Pentachlorophenol	<60	<7.01	<11.8	<9.92	<9.97	<0.19
Total Chlorophenols	<1020	<119	<201	<169	<170	<3.25

Dry Gas Volume Sampled (Rm^3*) :	5.077
Actual Flowrate (m^3/s) :	27.3
Dry Reference Flowrate (Rm^3/s*) :	16.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	19.2

* 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 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 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	<7.06	<11.9	<10.1	<10.0	<0.19
3-monochlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
4-monochlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
Total Monochlorophenols	<180	<21.2	<35.6	<30.3	<30.0	<0.58
2,6-dichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
3,5-dichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
2,3-dichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
3,4-dichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
Total Dichlorophenols	<300	<35.3	<59.3	<50.5	<50.0	<0.96
2,4,6-trichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
2,3,6-trichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
2,3,5-trichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
2,4,5-trichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
2,3,4-trichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
3,4,5-trichlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
Total Trichlorophenols	<360	<42.4	<71.1	<60.6	<60.0	<1.15
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
Total Tetrachlorophenols	<120	<14.1	<23.7	<20.2	<20.0	<0.38
Pentachlorophenol	<60	<7.06	<11.9	<10.1	<10.0	<0.19
Total Chlorophenols	<1020	<120	<202	<171.8	<170	<3.26

Dry Gas Volume Sampled (Rm³*) :	5.062
Actual Flowrate (m³/s) :	27.2
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	19.2

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

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

Specific Isomer	Total Collected 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
2-monochlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
3-monochlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
4-monochlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
Total Monochlorophenols	<180	<21.4	<36.3	<29.1	<30.3	<0.57
2,6-dichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
3,5-dichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
2,3-dichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
3,4-dichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
Total Dichlorophenols	<300	<35.7	<60.5	<48.5	<50.6	<0.96
2,4,6-trichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
2,3,6-trichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
2,3,5-trichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
2,4,5-trichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
2,3,4-trichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
3,4,5-trichlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
Total Trichlorophenols	<360	<42.8	<72.6	<58.2	<60.7	<1.15
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
Total Tetrachlorophenols	<120	<14.3	<24.2	<19.4	<20.2	<0.38
Pentachlorophenol	<60	<7.13	<12.1	<9.70	<10.1	<0.19
Total Chlorophenols	<1020	<121	<206	<165	<172	<3.25

Dry Gas Volume Sampled (Rm^3*) :	4.959
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

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

Specific Isomer	Actual Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
3-monochlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
4-monochlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
Total Monochlorophenols	<21.0	<21.2	<21.4	<21.2	0.9
2,6-dichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
2,4 & 2,5-dichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
3,5-dichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
2,3-dichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
3,4-dichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
Total Dichlorophenols	<35.1	<35.3	<35.7	<35.3	0.9
2,4,6-trichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
2,3,6-trichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
2,3,5-trichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
2,4,5-trichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
2,3,4-trichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
3,4,5-trichlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
Total Trichlorophenols	<42.1	<42.4	<42.8	<42.4	0.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
2,3,4,5-tetrachlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
Total Tetrachlorophenols	<14.0	<14.1	<14.3	<14.1	0.9
Pentachlorophenol	<7.01	<7.06	<7.13	<7.07	0.9
Total Chlorophenols	<119	<120	<121	<120	0.9

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	<11.8	<11.9	<12.1	<11.9	1.3
3-monochlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
4-monochlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
Total Monochlorophenols	<35.5	<35.6	<36.3	<35.8	1.3
2,6-dichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
2,4 & 2,5-dichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
3,5-dichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
2,3-dichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
3,4-dichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
Total Dichlorophenols	<59.1	<59.3	<60.5	<59.6	1.3
2,4,6-trichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
2,3,6-trichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
2,3,5-trichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
2,4,5-trichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
2,3,4-trichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
3,4,5-trichlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
Total Trichlorophenols	<70.9	<71.1	<72.6	<71.5	1.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
2,3,4,5-tetrachlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
Total Tetrachlorophenols	<23.6	<23.7	<24.2	<23.8	1.3
Pentachlorophenol	<11.8	<11.9	<12.1	<11.9	1.3
Total Chlorophenols	<201	<202	<206	<203	1.3

* 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	<9.92	<10.1	<9.70	<9.91	2.0
3-monochlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
4-monochlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
Total Monochlorophenols	<29.8	<30.3	<29.1	<29.7	2.0
2,6-dichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
2,4 & 2,5-dichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
3,5-dichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
2,3-dichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
3,4-dichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
Total Dichlorophenols	<49.6	<50.5	<48.5	<49.5	2.0
2,4,6-trichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
2,3,6-trichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
2,3,5-trichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
2,4,5-trichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
2,3,4-trichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
3,4,5-trichlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
Total Trichlorophenols	<59.5	<60.6	<58.2	<59.5	2.0
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
2,3,4,5-tetrachlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
Total Tetrachlorophenols	<19.8	<20.2	<19.4	<19.8	2.0
Pentachlorophenol	<9.92	<10.1	<9.70	<9.91	2.0
Total Chlorophenols	<169	<172	<165	<168	2.0

* 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	<9.97	<10.0	<10.1	<10.0	0.8
3-monochlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
4-monochlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
Total Monochlorophenols	<29.9	<30.0	<30.3	<30.1	0.8
2,6-dichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
2,4 & 2,5-dichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
3,5-dichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
2,3-dichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
3,4-dichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
Total Dichlorophenols	<49.9	<50.0	<50.6	<50.1	0.8
2,4,6-trichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
2,3,6-trichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
2,3,5-trichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
2,4,5-trichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
2,3,4-trichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
3,4,5-trichlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
Total Trichlorophenols	<59.8	<60.0	<60.7	<60.2	0.8
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
2,3,4,5-tetrachlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
Total Tetrachlorophenols	<19.9	<20.0	<20.2	<20.1	0.8
Pentachlorophenol	<9.97	<10.0	<10.1	<10.0	0.8
Total Chlorophenols	<170	<170	<172	<170	0.8

* 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	0.2
3-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
4-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
Total Monochlorophenols	<0.57	<0.58	<0.57	<0.57	0.2
2,6-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
2,4 & 2,5-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
3,5-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
2,3-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
3,4-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
Total Dichlorophenols	<0.96	<0.96	<0.96	<0.96	0.2
2,4,6-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
2,3,6-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
2,3,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
2,4,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
2,3,4-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
3,4,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
Total Trichlorophenols	<1.15	<1.15	<1.15	<1.15	0.2
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
2,3,4,5-tetrachlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
Total Tetrachlorophenols	<0.38	<0.38	<0.38	<0.38	0.2
Pentachlorophenol	<0.19	<0.19	<0.19	<0.19	0.2
Total Chlorophenols	<3.25	<3.26	<3.25	<3.26	0.2

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	<7.07	<11.9	<9.91	<10.0	<0.19
3-monochlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
4-monochlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
Total Monochlorophenols	<21.2	<35.8	<29.7	<30.1	<0.57
2,6-dichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
2,4 & 2,5-dichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
3,5-dichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
2,3-dichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
3,4-dichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
Total Dichlorophenols	<35.3	<59.6	<49.5	<50.1	<0.96
2,4,6-trichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
2,3,6-trichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
2,3,5-trichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
2,4,5-trichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
2,3,4-trichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
3,4,5-trichlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
Total Trichlorophenols	<42.4	<71.5	<59.5	<60.2	<1.15
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
2,3,4,5-tetrachlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
Total Tetrachlorophenols	<14.1	<23.8	<19.8	<20.1	<0.38
Pentachlorophenol	<7.07	<11.9	<9.91	<10.0	<0.19
Total Chlorophenols	<120	<203	<168	<170	<3.26

* 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	Media 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	17.3	2.02	3.41	2.86	2.88	0.055
Acenaphthylene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Anthracene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Benzo(a)Anthracene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Benzo(b)Fluoranthene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Benzo(k)Fluoranthene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Benzo(a)fluorene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Benzo(b)fluorene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Benzo(g,h,i)Perylene	39.0	4.56	7.68	6.45	6.48	0.12
Benzo(a)Pyrene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Benzo(e)Pyrene	38.9	4.55	7.66	6.43	6.46	0.12
Biphenyl	21.9	2.56	4.31	3.62	3.64	0.070
2-Chloronaphthalene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Chrysene/Triphenylene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Coronene	<60	<7.01	<11.8	<9.92	<9.97	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Dibenzo(a,e)pyrene	<60	<7.01	<11.8	<9.92	<9.97	<0.19
9,10-dimethylanthracene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Fluoranthene	84.7	9.90	16.7	14.0	14.1	0.27
Fluorene	19.5	2.28	3.84	3.22	3.24	0.062
Indeno(1,2,3-cd)Pyrene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
2-methylanthracene	29.4	3.44	5.79	4.86	4.89	0.094
3-Methylcholanthrene	<60	<7.01	<11.8	<9.92	<9.97	<0.19
1-Methylnaphthalene	25.1	2.93	4.94	4.15	4.17	0.080
2-Methylnaphthalene	38.7	4.52	7.62	6.40	6.43	0.12
1-Methylphenanthrene	33.3	3.89	6.56	5.51	5.53	0.11
9-Methylphenanthrene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Naphthalene	352	41.1	69.3	58.2	58.5	1.12
Perylene	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Phenanthrene	127	14.8	25.0	21.0	21.1	0.41
Picene	<60	<7.01	<11.8	<9.92	<9.97	<0.19
Pyrene	212	24.8	41.8	35.0	35.2	0.68
Tetralin	135	15.8	26.6	22.3	22.4	0.43
m-terphenyl	<12	<1.40	<2.36	<1.98	<1.99	<0.038
o-Terphenyl	<12	<1.40	<2.36	<1.98	<1.99	<0.038
p-terphenyl	<12	<1.40	<2.36	<1.98	<1.99	<0.038
Total	<1642	<192	<323	<271	<273	<5.24

Dry Gas Volume Sampled (Rm³*) :	5.077
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.2

* 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 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	38.3	4.51	7.57	6.45	6.38	0.12
Acenaphthylene	14.8	1.74	2.92	2.49	2.47	0.047
Anthracene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Benzo(a)Anthracene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Benzo(b)Fluoranthene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Benzo(k)Fluoranthene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Benzo(a)fluorene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Benzo(b)fluorene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Benzo(g,h,i)Perylene	109	12.8	21.5	18.4	18.2	0.35
Benzo(a)Pyrene	21.6	2.54	4.27	3.64	3.60	0.069
Benzo(e)Pyrene	34.1	4.01	6.74	5.74	5.68	0.11
Biphenyl	41.6	4.89	8.22	7.01	6.93	0.13
2-Chloronaphthalene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Chrysene/Triphenylene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Coronene	103	12.1	20.3	17.3	17.2	0.33
Dibenzo(a,c/a,h)Anthracene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Dibenzo(a,e)pyrene	<60	<7.06	<11.9	<10.1	<10.0	<0.19
9,10-dimethylanthracene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Fluoranthene	91.8	10.8	18.1	15.5	15.3	0.29
Fluorene	19.2	2.26	3.79	3.23	3.20	0.061
Indeno(1,2,3-cd)Pyrene	14.8	1.74	2.92	2.49	2.47	0.047
2-methylanthracene	47.0	5.53	9.28	7.92	7.83	0.15
3-Methylcholanthrene	<60	<7.06	<11.9	<10.1	<10.0	<0.19
1-Methylnaphthalene	156	18.4	30.8	26.3	26.0	0.50
2-Methylnaphthalene	323	38.0	63.8	54.4	53.8	1.03
1-Methylphenanthrene	37.9	4.46	7.49	6.38	6.32	0.12
9-Methylphenanthrene	18.7	2.20	3.69	3.15	3.12	0.060
Naphthalene	1300	153	257	219	217	4.16
Perylene	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Phenanthrene	135	15.9	26.7	22.7	22.5	0.43
Picene	<60	<7.06	<11.9	<10.1	<10.0	<0.19
Pyrene	195	22.9	38.5	32.8	32.5	0.62
Tetralin	134	15.8	26.5	22.6	22.3	0.43
m-terphenyl	<12	<1.41	<2.37	<2.02	<2.00	<0.038
o-Terphenyl	<12	<1.41	<2.37	<2.02	<2.00	<0.038
p-terphenyl	<12	<1.41	<2.37	<2.02	<2.00	<0.038
Total	<3195	<376	<631	<538	<533	<10.2

Dry Gas Volume Sampled (Rm³*) :	5.062
Actual Flowrate (m³/s) :	27.2
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	19.2

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected 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	15.3	1.82	3.09	2.47	2.58	0.049
Acenaphthylene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Anthracene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Benzo(a)Anthracene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Benzo(b)Fluoranthene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Benzo(k)Fluoranthene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Benzo(a)fluorene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Benzo(b)fluorene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Benzo(g,h,i)Perylene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Benzo(a)Pyrene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Benzo(e)Pyrene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Biphenyl	13.1	1.56	2.64	2.12	2.21	0.042
2-Chloronaphthalene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Chrysene/Triphenylene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Coronene	<60	<7.13	<12.1	<9.70	<10.1	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Dibenzo(a,e)pyrene	<60	<7.13	<12.1	<9.70	<10.1	<0.19
9,10-dimethylanthracene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
7,12-Dimethylbenzo(a)anthracene	59.1	7.03	11.9	9.56	9.96	0.19
Fluoranthene	15.5	1.84	3.13	2.51	2.61	0.049
Fluorene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Indeno(1,2,3-cd)Pyrene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
2-methylanthracene	20.8	2.47	4.19	3.36	3.51	0.066
3-Methylcholanthrene	<60	<7.13	<12.1	<9.70	<10.1	<0.19
1-Methylnaphthalene	16.6	1.97	3.35	2.68	2.80	0.053
2-Methylnaphthalene	26.5	3.15	5.34	4.29	4.47	0.084
1-Methylphenanthrene	27.1	3.22	5.46	4.38	4.57	0.086
9-Methylphenanthrene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Naphthalene	146	17.4	29.4	23.6	24.6	0.47
Perylene	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Phenanthrene	54.1	6.43	10.9	8.75	9.12	0.17
Picene	<60	<7.13	<12.1	<9.70	<10.1	<0.19
Pyrene	17.4	2.07	3.51	2.81	2.93	0.055
Tetralin	140	16.6	28.2	22.6	23.6	0.45
m-terphenyl	<12	<1.43	<2.42	<1.94	<2.02	<0.038
o-Terphenyl	<12	<1.43	<2.42	<1.94	<2.02	<0.038
p-terphenyl	<12	<1.43	<2.42	<1.94	<2.02	<0.038
Total	<1044	<124	<210	<169	<176	<3.32

Dry Gas Volume Sampled (Rm^3*) :	4.959
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

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

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Acenaphthene	2.02	4.51	1.82	2.78	53.8
Acenaphthylene	<1.40	1.74	<1.43	<1.52	12.4
Anthracene	<1.40	<1.41	<1.43	<1.41	0.9
Benzo(a)Anthracene	<1.40	<1.41	<1.43	<1.41	0.9
Benzo(b)Fluoranthene	<1.40	<1.41	<1.43	<1.41	0.9
Benzo(k)Fluoranthene	<1.40	<1.41	<1.43	<1.41	0.9
Benzo(a)fluorene	<1.40	<1.41	<1.43	<1.41	0.9
Benzo(b)fluorene	<1.40	<1.41	<1.43	<1.41	0.9
Benzo(g,h,i)Perylene	4.56	12.8	<1.43	<6.27	93.9
Benzo(a)Pyrene	<1.40	2.54	<1.43	<1.79	36.3
Benzo(e)Pyrene	4.55	4.01	<1.43	<3.33	50.1
Biphenyl	2.56	4.89	1.56	3.00	57.0
2-Chloronaphthalene	<1.40	<1.41	<1.43	<1.41	0.9
Chrysene/Triphenylene	<1.40	<1.41	<1.43	<1.41	0.9
Coronene	<7.01	12.1	<7.13	<8.75	33.3
Dibenzo(a,c/a,h)Anthracene	<1.40	<1.41	<1.43	<1.41	0.9
Dibenzo(a,e)pyrene	<7.01	<7.06	<7.13	<7.07	0.9
9,10-dimethylanthracene	<1.40	<1.41	<1.43	<1.41	0.9
7,12-Dimethylbenzo(a)anthracene	<1.40	<1.41	7.03	<3.28	98.9
Fluoranthene	9.90	10.8	1.84	7.51	65.6
Fluorene	2.28	2.26	<1.43	<1.99	24.5
Indeno(1,2,3-cd)Pyrene	<1.40	1.74	<1.43	<1.52	12.4
2-methylanthracene	3.44	5.53	2.47	3.81	41.0
3-Methylcholanthrene	<7.01	<7.06	<7.13	<7.07	0.9
1-Methylnaphthalene	2.93	18.4	1.97	7.75	119
2-Methylnaphthalene	4.52	38.0	3.15	15.2	130
1-Methylphenanthrene	3.89	4.46	3.22	3.86	16.1
9-Methylphenanthrene	<1.40	2.20	<1.43	<1.68	27.1
Naphthalene	41.1	153	17.4	70.5	103
Perylene	<1.40	<1.41	<1.43	<1.41	0.9
Phenanthrene	14.8	15.9	6.43	12.4	41.8
Picene	<7.01	<7.06	<7.13	<7.07	0.9
Pyrene	24.8	22.9	2.07	16.6	76.0
Tetralin	15.8	15.8	16.6	16.1	3.1
m-terphenyl	<1.40	<1.41	<1.43	<1.41	0.9
o-Terphenyl	<1.40	<1.41	<1.43	<1.41	0.9
p-terphenyl	<1.40	<1.41	<1.43	<1.41	0.9
Total	<192	<376	<124	<231	56.5

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	3.41	7.57	3.09	4.69	53.3
Acenaphthylene	<2.36	2.92	<2.42	<2.57	12.0
Anthracene	<2.36	<2.37	<2.42	<2.38	1.3
Benzo(a)Anthracene	<2.36	<2.37	<2.42	<2.38	1.3
Benzo(b)Fluoranthene	<2.36	<2.37	<2.42	<2.38	1.3
Benzo(k)Fluoranthene	<2.36	<2.37	<2.42	<2.38	1.3
Benzo(a)fluorene	<2.36	<2.37	<2.42	<2.38	1.3
Benzo(b)fluorene	<2.36	<2.37	<2.42	<2.38	1.3
Benzo(g,h,i)Perylene	7.68	21.5	<2.42	<10.5	93.6
Benzo(a)Pyrene	<2.36	4.27	<2.42	<3.02	35.9
Benzo(e)Pyrene	7.66	6.74	<2.42	<5.61	49.9
Biphenyl	4.31	8.22	2.64	5.06	56.6
2-Chloronaphthalene	<2.36	<2.37	<2.42	<2.38	1.3
Chrysene/Triphenylene	<2.36	<2.37	<2.42	<2.38	1.3
Coronene	<11.8	20.3	<12.1	<14.8	32.8
Dibenzo(a,c/a,h)Anthracene	<2.36	<2.37	<2.42	<2.38	1.3
Dibenzo(a,e)pyrene	<11.8	<11.9	<12.1	<11.9	1.3
9,10-dimethylanthracene	<2.36	<2.37	<2.42	<2.38	1.3
7,12-Dimethylbenzo(a)anthracene	<2.36	<2.37	11.9	<5.55	99.3
Fluoranthene	16.7	18.1	3.13	12.6	65.5
Fluorene	3.84	3.79	<2.42	<3.35	24.1
Indeno(1,2,3-cd)Pyrene	<2.36	2.92	<2.42	<2.57	12.0
2-methylanthracene	5.79	9.28	4.19	6.42	40.5
3-Methylcholanthrene	<11.8	<11.9	<12.1	<11.9	1.3
1-Methylnaphthalene	4.94	30.8	3.35	13.0	118
2-Methylnaphthalene	7.62	63.8	5.34	25.6	129
1-Methylphenanthrene	6.56	7.49	5.46	6.50	15.6
9-Methylphenanthrene	<2.36	3.69	<2.42	<2.83	26.6
Naphthalene	69.3	257	29.4	119	102
Perylene	<2.36	<2.37	<2.42	<2.38	1.3
Phenanthrene	25.0	26.7	10.9	20.9	41.5
Picene	<11.8	<11.9	<12.1	<11.9	1.3
Pyrene	41.8	38.5	3.51	27.9	75.9
Tetralin	26.6	26.5	28.2	27.1	3.6
m-terphenyl	<2.36	<2.37	<2.42	<2.38	1.3
o-Terphenyl	<2.36	<2.37	<2.42	<2.38	1.3
p-terphenyl	<2.36	<2.37	<2.42	<2.38	1.3
Total	<323	<631	<210	<388	56.1

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	2.86	6.45	2.47	3.93	55.8
Acenaphthylene	<1.98	2.49	<1.94	<2.14	14.4
Anthracene	<1.98	<2.02	<1.94	<1.98	2.0
Benzo(a)Anthracene	<1.98	<2.02	<1.94	<1.98	2.0
Benzo(b)Fluoranthene	<1.98	<2.02	<1.94	<1.98	2.0
Benzo(k)Fluoranthene	<1.98	<2.02	<1.94	<1.98	2.0
Benzo(a)fluorene	<1.98	<2.02	<1.94	<1.98	2.0
Benzo(b)fluorene	<1.98	<2.02	<1.94	<1.98	2.0
Benzo(g,h,i)Perylene	6.45	18.4	<1.94	<8.92	95.1
Benzo(a)Pyrene	<1.98	3.64	<1.94	<2.52	38.4
Benzo(e)Pyrene	6.43	5.74	<1.94	<4.71	51.4
Biphenyl	3.62	7.01	2.12	4.25	58.9
2-Chloronaphthalene	<1.98	<2.02	<1.94	<1.98	2.0
Chrysene/Triphenylene	<1.98	<2.02	<1.94	<1.98	2.0
Coronene	<9.92	17.3	<9.70	<12.3	35.3
Dibenzo(a,c/a,h)Anthracene	<1.98	<2.02	<1.94	<1.98	2.0
Dibenzo(a,e)pyrene	<9.92	<10.1	<9.70	<9.91	2.0
9,10-dimethylanthracene	<1.98	<2.02	<1.94	<1.98	2.0
7,12-Dimethylbenzo(a)anthracene	<1.98	<2.02	9.56	<4.52	96.5
Fluoranthene	14.0	15.5	2.51	10.7	66.6
Fluorene	3.22	3.23	<1.94	<2.80	26.6
Indeno(1,2,3-cd)Pyrene	<1.98	2.49	<1.94	<2.14	14.4
2-methylanthracene	4.86	7.92	3.36	5.38	43.1
3-Methylcholanthrene	<9.92	<10.1	<9.70	<9.91	2.0
1-Methylnaphthalene	4.15	26.3	2.68	11.0	120
2-Methylnaphthalene	6.40	54.4	4.29	21.7	131
1-Methylphenanthrene	5.51	6.38	4.38	5.42	18.5
9-Methylphenanthrene	<1.98	3.15	<1.94	<2.36	29.1
Naphthalene	58.2	219	23.6	100	104
Perylene	<1.98	<2.02	<1.94	<1.98	2.0
Phenanthrene	21.0	22.7	8.75	17.5	43.6
Picene	<9.92	<10.1	<9.70	<9.91	2.0
Pyrene	35.0	32.8	2.81	23.6	76.4
Tetralin	22.3	22.6	22.6	22.5	0.8
m-terphenyl	<1.98	<2.02	<1.94	<1.98	2.0
o-Terphenyl	<1.98	<2.02	<1.94	<1.98	2.0
p-terphenyl	<1.98	<2.02	<1.94	<1.98	2.0
Total	<271	<538	<169	<326	58.5

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

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

Compound	Wet Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	2.88	6.38	2.58	3.95	53.6
Acenaphthylene	<1.99	2.47	<2.02	<2.16	12.3
Anthracene	<1.99	<2.00	<2.02	<2.01	0.8
Benzo(a)Anthracene	<1.99	<2.00	<2.02	<2.01	0.8
Benzo(b)Fluoranthene	<1.99	<2.00	<2.02	<2.01	0.8
Benzo(k)Fluoranthene	<1.99	<2.00	<2.02	<2.01	0.8
Benzo(a)fluorene	<1.99	<2.00	<2.02	<2.01	0.8
Benzo(b)fluorene	<1.99	<2.00	<2.02	<2.01	0.8
Benzo(g,h,i)Perylene	6.48	18.2	<2.02	<8.89	93.8
Benzo(a)Pyrene	<1.99	3.60	<2.02	<2.54	36.2
Benzo(e)Pyrene	6.46	5.68	<2.02	<4.72	50.2
Biphenyl	3.64	6.93	2.21	4.26	56.9
2-Chloronaphthalene	<1.99	<2.00	<2.02	<2.01	0.8
Chrysene/Triphenylene	<1.99	<2.00	<2.02	<2.01	0.8
Coronene	<9.97	17.2	<10.1	<12.4	33.1
Dibenzo(a,c/a,h)Anthracene	<1.99	<2.00	<2.02	<2.01	0.8
Dibenzo(a,e)pyrene	<9.97	<10.0	<10.1	<10.0	0.8
9,10-dimethylanthracene	<1.99	<2.00	<2.02	<2.01	0.8
7,12-Dimethylbenzo(a)anthracene	<1.99	<2.00	9.96	<4.65	98.9
Fluoranthene	14.1	15.3	2.61	10.7	65.6
Fluorene	3.24	3.20	<2.02	<2.82	24.5
Indeno(1,2,3-cd)Pyrene	<1.99	2.47	<2.02	<2.16	12.3
2-methylanthracene	4.89	7.83	3.51	5.41	40.9
3-Methylcholanthrene	<9.97	<10.0	<10.1	<10.0	0.8
1-Methylnaphthalene	4.17	26.0	2.80	11.0	118
2-Methylnaphthalene	6.43	53.8	4.47	21.6	130
1-Methylphenanthrene	5.53	6.32	4.57	5.47	16.0
9-Methylphenanthrene	<1.99	3.12	<2.02	<2.38	26.9
Naphthalene	58.5	217	24.6	99.9	103
Perylene	<1.99	<2.00	<2.02	<2.01	0.8
Phenanthrene	21.1	22.5	9.12	17.6	41.9
Picene	<9.97	<10.0	<10.1	<10.0	0.8
Pyrene	35.2	32.5	2.93	23.6	76.0
Tetralin	22.4	22.3	23.6	22.8	3.1
m-terphenyl	<1.99	<2.00	<2.02	<2.01	0.8
o-Terphenyl	<1.99	<2.00	<2.02	<2.01	0.8
p-terphenyl	<1.99	<2.00	<2.02	<2.01	0.8
Total	<273	<533	<176	<327	56.4

* 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 Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Acenaphthene	0.055	0.12	0.049	0.076	54.1
Acenaphthylene	<0.038	0.047	<0.038	<0.041	12.7
Anthracene	<0.038	<0.038	<0.038	<0.038	0.2
Benzo(a)Anthracene	<0.038	<0.038	<0.038	<0.038	0.2
Benzo(b)Fluoranthene	<0.038	<0.038	<0.038	<0.038	0.2
Benzo(k)Fluoranthene	<0.038	<0.038	<0.038	<0.038	0.2
Benzo(a)fluorene	<0.038	<0.038	<0.038	<0.038	0.2
Benzo(b)fluorene	<0.038	<0.038	<0.038	<0.038	0.2
Benzo(g,h,i)Perylene	0.12	0.35	<0.038	<0.17	94.0
Benzo(a)Pyrene	<0.038	0.069	<0.038	<0.049	36.7
Benzo(e)Pyrene	0.12	0.11	<0.038	<0.090	50.7
Biphenyl	0.070	0.13	0.042	0.082	57.4
2-Chloronaphthalene	<0.038	<0.038	<0.038	<0.038	0.2
Chrysene/Triphenylene	<0.038	<0.038	<0.038	<0.038	0.2
Coronene	<0.19	0.33	<0.19	<0.24	33.6
Dibenzo(a,c/a,h)Anthracene	<0.038	<0.038	<0.038	<0.038	0.2
Dibenzo(a,e)pyrene	<0.19	<0.19	<0.19	<0.19	0.2
9,10-dimethylanthracene	<0.038	<0.038	<0.038	<0.038	0.2
7,12-Dimethylbenzo(a)anthracene	<0.038	<0.038	0.19	<0.088	98.0
Fluoranthene	0.27	0.29	0.049	0.20	65.9
Fluorene	0.062	0.061	<0.038	<0.054	25.3
Indeno(1,2,3-cd)Pyrene	<0.038	0.047	<0.038	<0.041	12.7
2-methylanthracene	0.094	0.15	0.066	0.10	41.4
3-Methylcholanthrene	<0.19	<0.19	<0.19	<0.19	0.2
1-Methylnaphthalene	0.080	0.50	0.053	0.21	119
2-Methylnaphthalene	0.12	1.03	0.084	0.41	130
1-Methylphenanthrene	0.11	0.12	0.086	0.10	16.8
9-Methylphenanthrene	<0.038	0.060	<0.038	<0.045	27.4
Naphthalene	1.12	4.16	0.47	1.92	103
Perylene	<0.038	<0.038	<0.038	<0.038	0.2
Phenanthrene	0.41	0.43	0.17	0.34	42.4
Picene	<0.19	<0.19	<0.19	<0.19	0.2
Pyrene	0.68	0.62	0.055	0.45	76.2
Tetralin	0.43	0.43	0.45	0.44	2.2
m-terphenyl	<0.038	<0.038	<0.038	<0.038	0.2
o-Terphenyl	<0.038	<0.038	<0.038	<0.038	0.2
p-terphenyl	<0.038	<0.038	<0.038	<0.038	0.2
Total	<5.24	<10.2	<3.32	<6.26	56.9

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	2.78	4.69	3.93	3.95	0.076
Acenaphthylene	<1.52	<2.57	<2.14	<2.16	<0.041
Anthracene	<1.41	<2.38	<1.98	<2.01	<0.038
Benzo(a)Anthracene	<1.41	<2.38	<1.98	<2.01	<0.038
Benzo(b)Fluoranthene	<1.41	<2.38	<1.98	<2.01	<0.038
Benzo(k)Fluoranthene	<1.41	<2.38	<1.98	<2.01	<0.038
Benzo(a)fluorene	<1.41	<2.38	<1.98	<2.01	<0.038
Benzo(b)fluorene	<1.41	<2.38	<1.98	<2.01	<0.038
Benzo(g,h,i)Perylene	<6.27	<10.5	<8.92	<8.89	<0.17
Benzo(a)Pyrene	<1.79	<3.02	<2.52	<2.54	<0.049
Benzo(e)Pyrene	<3.33	<5.61	<4.71	<4.72	<0.090
Biphenyl	3.00	5.06	4.25	4.26	0.082
2-Chloronaphthalene	<1.41	<2.38	<1.98	<2.01	<0.038
Chrysene/Triphenylene	<1.41	<2.38	<1.98	<2.01	<0.038
Coronene	<8.75	<14.8	<12.3	<12.4	<0.24
Dibenzo(a,c/a,h)Anthracene	<1.41	<2.38	<1.98	<2.01	<0.038
Dibenzo(a,e)pyrene	<7.07	<11.9	<9.91	<10.0	<0.19
9,10-dimethylanthracene	<1.41	<2.38	<1.98	<2.01	<0.038
7,12-Dimethylbenzo(a)anthracene	<3.28	<5.55	<4.52	<4.65	<0.088
Fluoranthene	7.51	12.6	10.7	10.7	0.20
Fluorene	<1.99	<3.35	<2.80	<2.82	<0.054
Indeno(1,2,3-cd)Pyrene	<1.52	<2.57	<2.14	<2.16	<0.041
2-methylanthracene	3.81	6.42	5.38	5.41	0.10
3-Methylcholanthrene	<7.07	<11.9	<9.91	<10.0	<0.19
1-Methylnaphthalene	7.75	13.0	11.0	11.0	0.21
2-Methylnaphthalene	15.2	25.6	21.7	21.6	0.41
1-Methylphenanthrene	3.86	6.50	5.42	5.47	0.10
9-Methylphenanthrene	<1.68	<2.83	<2.36	<2.38	<0.045
Naphthalene	70.5	119	100	99.9	1.92
Perylene	<1.41	<2.38	<1.98	<2.01	<0.038
Phenanthrene	12.4	20.9	17.5	17.6	0.34
Picene	<7.07	<11.9	<9.91	<10.0	<0.19
Pyrene	16.6	27.9	23.6	23.6	0.45
Tetralin	16.1	27.1	22.5	22.8	0.44
m-terphenyl	<1.41	<2.38	<1.98	<2.01	<0.038
o-Terphenyl	<1.41	<2.38	<1.98	<2.01	<0.038
p-terphenyl	<1.41	<2.38	<1.98	<2.01	<0.038
Total	<231	<388	<326	<327	<6.26

* 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	Media Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	<12	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	<12	<12
1-Methylphenanthrene	316	440
9-Methylphenanthrene	<12	<12
Naphthalene	133	186
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	118	75.5
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<1167	<1302

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

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

Acetaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	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	<0.1	0.0326	<1.82	<3.07	<2.58	<2.59	<0.050
2	<0.1	0.0314	<1.90	<3.18	<2.71	<2.69	<0.052
3	<0.1	0.0317	<1.88	<3.15	<2.68	<2.67	<0.051
Average			<1.87	<3.13	<2.66	<2.65	<0.051
Blank	<0.1						

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	0.34	0.0326	6.19	10.4	8.77	8.81	0.17
2	0.28	0.0314	5.31	8.91	7.59	7.54	0.14
3	0.26	0.0317	4.89	8.19	6.98	6.93	0.13
Average			5.46	9.18	7.78	7.76	0.15
Blank	0.20						

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	0.0326	<1.82	<3.07	<2.58	<2.59	<0.050
2	<0.1	0.0314	<1.90	<3.18	<2.71	<2.69	<0.052
3	<0.1	0.0317	<1.88	<3.15	<2.68	<2.67	<0.051
Average			<1.87	<3.13	<2.66	<2.65	<0.051
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 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	0.128	3.50	5.90	4.95	4.98	0.096
Benzene	<0.05	<1.37	<2.31	<1.94	<1.95	<0.037
Bromodichloromethane	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Bromoform	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Bromomethane	<0.09	<2.46	<4.15	<3.48	<3.50	<0.067
1,3-Butadiene	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
2-Butanone	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Carbon Tetrachloride	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Chloroform	0.024	0.66	1.11	0.93	0.93	0.018
Cumene (Isopropylbenzene)	<0.02	<0.55	<0.92	<0.77	<0.78	<0.015
Dibromochloromethane	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Dichlorodifluoromethane	<0.02	<0.55	<0.92	<0.77	<0.78	<0.015
1,2-Dichloroethane	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
trans,1,2-Dichloroethene	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
1,1-Dichloroethene	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
1,2-Dichloropropane	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Ethylbenzene	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Ethylene Dibromide	<0.02	<0.55	<0.92	<0.77	<0.78	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.55	<0.92	<0.77	<0.78	<0.015
Methylene Chloride	1.438	39.4	66.3	55.7	56.0	1.07
Styrene	<0.02	<0.55	<0.92	<0.77	<0.78	<0.015
Tetrachloroethene	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Toluene	1.657	45.3	76.4	64.1	64.5	1.24
1,1,1-Trichloroethane	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Trichlorotrifluoroethane	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Trichlorofluoromethane	<0.02	<0.55	<0.92	<0.77	<0.78	<0.015
M&P-Xylene	<0.03	<0.82	<1.38	<1.16	<1.17	<0.022
O-Xylene	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075
Vinyl Chloride	<0.02	<0.55	<0.92	<0.77	<0.78	<0.015
Total	<3.72	<102	<171	<144	<145	<2.78
Chlorobenzene	<0.01	<0.27	<0.46	<0.39	<0.39	<0.0075

Dry Gas Volume Sampled (Rm^3*) :	0.0217
Actual Flowrate (m^3/s) :	27.3
Dry Reference Flowrate (Rm^3/s*) :	16.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	19.2

* 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. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

Chlorobenzene has been reported with the VOC samples as the analytical laboratory could not quantify the data from the SVOC trains. This compound is excluded from the total VOCs to be consistent with previous testing programs.

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/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<0.1	<2.72	<4.58	<3.84	<3.86	<0.074
Benzene	<0.05	<1.36	<2.29	<1.92	<1.93	<0.037
Bromodichloromethane	0.013	0.35	0.60	0.50	0.50	0.0096
Bromoform	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Bromomethane	<0.09	<2.45	<4.12	<3.46	<3.48	<0.067
1,3-Butadiene	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
2-Butanone	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Carbon Tetrachloride	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Chloroform	0.022	0.60	1.01	0.85	0.85	0.016
Cumene (Isopropylbenzene)	<0.02	<0.54	<0.92	<0.77	<0.77	<0.015
Dibromochloromethane	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Dichlorodifluoromethane	<0.02	<0.54	<0.92	<0.77	<0.77	<0.015
1,2-Dichloroethane	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
trans,1,2-Dichloroethene	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
1,1-Dichloroethene	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
1,2-Dichloropropane	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Ethylbenzene	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Ethylene Dibromide	<0.02	<0.54	<0.92	<0.77	<0.77	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.54	<0.92	<0.77	<0.77	<0.015
Methylene Chloride	0.273	7.42	12.5	10.5	10.5	0.20
Styrene	<0.02	<0.54	<0.92	<0.77	<0.77	<0.015
Tetrachloroethene	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Toluene	0.385	10.5	17.6	14.8	14.9	0.29
1,1,1-Trichloroethane	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Trichlorotrifluoroethane	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Trichlorofluoromethane	<0.02	<0.54	<0.92	<0.77	<0.77	<0.015
M&P-Xylene	<0.03	<0.82	<1.37	<1.15	<1.16	<0.022
O-Xylene	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074
Vinyl Chloride	<0.02	<0.54	<0.92	<0.77	<0.77	<0.015
Total	<1.25	<34.0	<57.4	<48.2	<48.4	<0.93
Chlorobenzene	<0.01	<0.27	<0.46	<0.38	<0.39	<0.0074

Dry Gas Volume Sampled (Rm³*) :	0.0218
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.2

* 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. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.
Chlorobenzene has been reported with the VOC samples as the analytical laboratory could not quantify the data from the SVOC trains. This compound is excluded from the total VOCs to be consistent with previous testing programs.

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	0.164	4.54	7.66	6.43	6.46	0.12
Benzene	<0.05	<1.39	<2.33	<1.96	<1.97	<0.038
Bromodichloromethane	0.012	0.33	0.56	0.47	0.47	0.0091
Bromoform	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Bromomethane	<0.09	<2.49	<4.20	<3.53	<3.55	<0.068
1,3-Butadiene	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
2-Butanone	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Carbon Tetrachloride	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Chloroform	0.027	0.75	1.26	1.06	1.06	0.020
Cumene (Isopropylbenzene)	<0.02	<0.55	<0.93	<0.78	<0.79	<0.015
Dibromochloromethane	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Dichlorodifluoromethane	<0.02	<0.55	<0.93	<0.78	<0.79	<0.015
1,2-Dichloroethane	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
trans,1,2-Dichloroethene	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
1,1-Dichloroethene	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
1,2-Dichloropropane	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Ethylbenzene	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Ethylene Dibromide	<0.02	<0.55	<0.93	<0.78	<0.79	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.55	<0.93	<0.78	<0.79	<0.015
Methylene Chloride	1.654	45.8	77.2	64.8	65.2	1.25
Styrene	<0.02	<0.55	<0.93	<0.78	<0.79	<0.015
Tetrachloroethene	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Toluene	3.527	97.7	165	138	139	2.67
1,1,1-Trichloroethane	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Trichlorotrifluoroethane	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Trichlorofluoromethane	<0.02	<0.55	<0.93	<0.78	<0.79	<0.015
M&P-Xylene	<0.03	<0.83	<1.40	<1.18	<1.18	<0.023
O-Xylene	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076
Vinyl Chloride	<0.02	<0.55	<0.93	<0.78	<0.79	<0.015
Total	<5.84	<162	<273	<229	<230	<4.42
Chlorobenzene	<0.01	<0.28	<0.47	<0.39	<0.39	<0.0076

Dry Gas Volume Sampled (Rm³*) :	0.0214
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.2

* 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. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

Chlorobenzene has been reported with the VOC samples as the analytical laboratory could not quantify the data from the SVOC trains. This compound is excluded from the total VOCs to be consistent with previous testing programs.

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

Compound	Actual Concentration Test No. 1 µg/m³	Test No. 2 µg/m³	Test No. 3 µg/m³	Average µg/m³	Coefficient of Variation %
Acetone	3.50	<2.72	4.54	<3.59	25.5
Benzene	<1.37	<1.36	<1.39	<1.37	1.0
Bromodichloromethane	<0.27	0.35	0.33	<0.32	12.9
Bromoform	<0.27	<0.27	<0.28	<0.27	1.0
Bromomethane	<2.46	<2.45	<2.49	<2.47	1.0
1,3-Butadiene	<0.27	<0.27	<0.28	<0.27	1.0
2-Butanone	<0.27	<0.27	<0.28	<0.27	1.0
Carbon Tetrachloride	<0.27	<0.27	<0.28	<0.27	1.0
Chloroform	0.66	0.60	0.75	0.67	11.3
Cumene (Isopropylbenzene)	<0.55	<0.54	<0.55	<0.55	1.0
Dibromochloromethane	<0.27	<0.27	<0.28	<0.27	1.0
Dichlorodifluoromethane	<0.55	<0.54	<0.55	<0.55	1.0
1,2-Dichloroethane	<0.27	<0.27	<0.28	<0.27	1.0
trans,1,2-Dichloroethene	<0.27	<0.27	<0.28	<0.27	1.0
1,1-Dichloroethene	<0.27	<0.27	<0.28	<0.27	1.0
1,2-Dichloropropane	<0.27	<0.27	<0.28	<0.27	1.0
Ethylbenzene	<0.27	<0.27	<0.28	<0.27	1.0
Ethylene Dibromide	<0.55	<0.54	<0.55	<0.55	1.0
Mesitylene (1,3,5-Trimethylbenzene)	<0.55	<0.54	<0.55	<0.55	1.0
Methylene Chloride	39.4	7.42	45.8	30.9	66.6
Styrene	<0.55	<0.54	<0.55	<0.55	1.0
Tetrachloroethene	<0.27	<0.27	<0.28	<0.27	1.0
Toluene	45.3	10.5	97.7	51.2	85.8
1,1,1-Trichloroethane	<0.27	<0.27	<0.28	<0.27	1.0
Trichloroethene/1,1,2-Trichloroethene	<0.27	<0.27	<0.28	<0.27	1.0
Trichlorotrifluoroethane	<0.27	<0.27	<0.28	<0.27	1.0
Trichlorofluoromethane	<0.55	<0.54	<0.55	<0.55	1.0
M&P-Xylene	<0.82	<0.82	<0.83	<0.82	1.0
O-Xylene	<0.27	<0.27	<0.28	<0.27	1.0
Vinyl Chloride	<0.55	<0.54	<0.55	<0.55	1.0
Total	<102	<34.0	<162	<99.2	64.5
Chlorobenzene	<0.27	<0.27	<0.28	<0.27	1.0

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

Compound	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%
Acetone	5.90	<4.58	7.66	<6.05	25.5
Benzene	<2.31	<2.29	<2.33	<2.31	1.0
Bromodichloromethane	<0.46	0.60	0.56	<0.54	12.9
Bromoform	<0.46	<0.46	<0.47	<0.46	1.0
Bromomethane	<4.15	<4.12	<4.20	<4.16	1.0
1,3-Butadiene	<0.46	<0.46	<0.47	<0.46	1.0
2-Butanone	<0.46	<0.46	<0.47	<0.46	1.0
Carbon Tetrachloride	<0.46	<0.46	<0.47	<0.46	1.0
Chloroform	1.11	1.01	1.26	1.12	11.3
Cumene (Isopropylbenzene)	<0.92	<0.92	<0.93	<0.92	1.0
Dibromochloromethane	<0.46	<0.46	<0.47	<0.46	1.0
Dichlorodifluoromethane	<0.92	<0.92	<0.93	<0.92	1.0
1,2-Dichloroethane	<0.46	<0.46	<0.47	<0.46	1.0
trans,1,2-Dichloroethene	<0.46	<0.46	<0.47	<0.46	1.0
1,1-Dichloroethene	<0.46	<0.46	<0.47	<0.46	1.0
1,2-Dichloropropane	<0.46	<0.46	<0.47	<0.46	1.0
Ethylbenzene	<0.46	<0.46	<0.47	<0.46	1.0
Ethylene Dibromide	<0.92	<0.92	<0.93	<0.92	1.0
Mesitylene (1,3,5-Trimethylbenzene)	<0.92	<0.92	<0.93	<0.92	1.0
Methylene Chloride	66.3	12.5	77.2	52.0	66.6
Styrene	<0.92	<0.92	<0.93	<0.92	1.0
Tetrachloroethene	<0.46	<0.46	<0.47	<0.46	1.0
Toluene	76.4	17.6	165	86.2	85.8
1,1,1-Trichloroethane	<0.46	<0.46	<0.47	<0.46	1.0
Trichloroethene/1,1,2-Trichloroethene	<0.46	<0.46	<0.47	<0.46	1.0
Trichlorotrifluoroethane	<0.46	<0.46	<0.47	<0.46	1.0
Trichlorofluoromethane	<0.92	<0.92	<0.93	<0.92	1.0
M&P-Xylene	<1.38	<1.37	<1.40	<1.39	1.0
O-Xylene	<0.46	<0.46	<0.47	<0.46	1.0
Vinyl Chloride	<0.92	<0.92	<0.93	<0.92	1.0
Total	<171	<57.4	<273	<167	64.5
Chlorobenzene	<0.46	<0.46	<0.47	<0.46	1.0

* 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 Test No. 1 µg/Rm³*	Test No. 2 µg/Rm³*	Test No. 3 µg/Rm³*	Average µg/Rm³*	Coefficient of Variation %
Acetone	4.95	<3.84	6.43	<5.08	25.5
Benzene	<1.94	<1.92	<1.96	<1.94	1.0
Bromodichloromethane	<0.39	0.50	0.47	<0.45	12.9
Bromoform	<0.39	<0.38	<0.39	<0.39	1.0
Bromomethane	<3.48	<3.46	<3.53	<3.49	1.0
1,3-Butadiene	<0.39	<0.38	<0.39	<0.39	1.0
2-Butanone	<0.39	<0.38	<0.39	<0.39	1.0
Carbon Tetrachloride	<0.39	<0.38	<0.39	<0.39	1.0
Chloroform	0.93	0.85	1.06	0.94	11.3
Cumene (Isopropylbenzene)	<0.77	<0.77	<0.78	<0.78	1.0
Dibromochloromethane	<0.39	<0.38	<0.39	<0.39	1.0
Dichlorodifluoromethane	<0.77	<0.77	<0.78	<0.78	1.0
1,2-Dichloroethane	<0.39	<0.38	<0.39	<0.39	1.0
trans,1,2-Dichloroethene	<0.39	<0.38	<0.39	<0.39	1.0
1,1-Dichloroethene	<0.39	<0.38	<0.39	<0.39	1.0
1,2-Dichloropropane	<0.39	<0.38	<0.39	<0.39	1.0
Ethylbenzene	<0.39	<0.38	<0.39	<0.39	1.0
Ethylene Dibromide	<0.77	<0.77	<0.78	<0.78	1.0
Mesitylene (1,3,5-Trimethylbenzene)	<0.77	<0.77	<0.78	<0.78	1.0
Methylene Chloride	55.7	10.5	64.8	43.7	66.6
Styrene	<0.77	<0.77	<0.78	<0.78	1.0
Tetrachloroethene	<0.39	<0.38	<0.39	<0.39	1.0
Toluene	64.1	14.8	138	72.4	85.8
1,1,1-Trichloroethane	<0.39	<0.38	<0.39	<0.39	1.0
Trichloroethene/1,1,2-Trichloroethene	<0.39	<0.38	<0.39	<0.39	1.0
Trichlorotrifluoroethane	<0.39	<0.38	<0.39	<0.39	1.0
Trichlorofluoromethane	<0.77	<0.77	<0.78	<0.78	1.0
M&P-Xylene	<1.16	<1.15	<1.18	<1.16	1.0
O-Xylene	<0.39	<0.38	<0.39	<0.39	1.0
Vinyl Chloride	<0.77	<0.77	<0.78	<0.78	1.0
Total	<144	<48.2	<229	<140	64.5
Chlorobenzene	<0.39	<0.38	<0.39	<0.39	1.0

* 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 Test No. 1 µg/Rm³*	Test No. 2 µg/Rm³*	Test No. 3 µg/Rm³*	Average µg/Rm³*	Coefficient of Variation %
Acetone	4.98	<3.86	6.46	<5.10	25.5
Benzene	<1.95	<1.93	<1.97	<1.95	1.0
Bromodichloromethane	<0.39	0.50	0.47	<0.45	12.9
Bromoform	<0.39	<0.39	<0.39	<0.39	1.0
Bromomethane	<3.50	<3.48	<3.55	<3.51	1.0
1,3-Butadiene	<0.39	<0.39	<0.39	<0.39	1.0
2-Butanone	<0.39	<0.39	<0.39	<0.39	1.0
Carbon Tetrachloride	<0.39	<0.39	<0.39	<0.39	1.0
Chloroform	0.93	0.85	1.06	0.95	11.3
Cumene (Isopropylbenzene)	<0.78	<0.77	<0.79	<0.78	1.0
Dibromochloromethane	<0.39	<0.39	<0.39	<0.39	1.0
Dichlorodifluoromethane	<0.78	<0.77	<0.79	<0.78	1.0
1,2-Dichloroethane	<0.39	<0.39	<0.39	<0.39	1.0
trans,1,2-Dichloroethene	<0.39	<0.39	<0.39	<0.39	1.0
1,1-Dichloroethene	<0.39	<0.39	<0.39	<0.39	1.0
1,2-Dichloropropane	<0.39	<0.39	<0.39	<0.39	1.0
Ethylbenzene	<0.39	<0.39	<0.39	<0.39	1.0
Ethylene Dibromide	<0.78	<0.77	<0.79	<0.78	1.0
Mesitylene (1,3,5-Trimethylbenzene)	<0.78	<0.77	<0.79	<0.78	1.0
Methylene Chloride	56.0	10.5	65.2	43.9	66.6
Styrene	<0.78	<0.77	<0.79	<0.78	1.0
Tetrachloroethene	<0.39	<0.39	<0.39	<0.39	1.0
Toluene	64.5	14.9	139	72.8	85.8
1,1,1-Trichloroethane	<0.39	<0.39	<0.39	<0.39	1.0
Trichloroethene/1,1,2-Trichloroethene	<0.39	<0.39	<0.39	<0.39	1.0
Trichlorotrifluoroethane	<0.39	<0.39	<0.39	<0.39	1.0
Trichlorofluoromethane	<0.78	<0.77	<0.79	<0.78	1.0
M&P-Xylene	<1.17	<1.16	<1.18	<1.17	1.0
O-Xylene	<0.39	<0.39	<0.39	<0.39	1.0
Vinyl Chloride	<0.78	<0.77	<0.79	<0.78	1.0
Total	<145	<48.4	<230	<141	64.5
Chlorobenzene	<0.39	<0.39	<0.39	<0.39	1.0

* 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 Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	Coefficient of Variation %
Acetone	0.096	<0.074	0.12	<0.098	25.5
Benzene	<0.037	<0.037	<0.038	<0.037	1.0
Bromodichloromethane	<0.0075	0.0096	0.0091	<0.0087	12.9
Bromoform	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Bromomethane	<0.067	<0.067	<0.068	<0.067	1.0
1,3-Butadiene	<0.0075	<0.0074	<0.0076	<0.0075	1.0
2-Butanone	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Carbon Tetrachloride	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Chloroform	0.018	0.016	0.020	0.018	11.3
Cumene (Isopropylbenzene)	<0.015	<0.015	<0.015	<0.015	1.0
Dibromochloromethane	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Dichlorodifluoromethane	<0.015	<0.015	<0.015	<0.015	1.0
1,2-Dichloroethane	<0.0075	<0.0074	<0.0076	<0.0075	1.0
trans,1,2-Dichloroethene	<0.0075	<0.0074	<0.0076	<0.0075	1.0
1,1-Dichloroethene	<0.0075	<0.0074	<0.0076	<0.0075	1.0
1,2-Dichloropropane	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Ethylbenzene	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Ethylene Dibromide	<0.015	<0.015	<0.015	<0.015	1.0
Mesitylene (1,3,5-Trimethylbenzene)	<0.015	<0.015	<0.015	<0.015	1.0
Methylene Chloride	1.07	0.20	1.25	0.84	66.6
Styrene	<0.015	<0.015	<0.015	<0.015	1.0
Tetrachloroethene	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Toluene	1.24	0.29	2.67	1.40	85.8
1,1,1-Trichloroethane	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Trichloroethene/1,1,2-Trichloroethene	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Trichlorotrifluoroethane	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Trichlorofluoromethane	<0.015	<0.015	<0.015	<0.015	1.0
M&P-Xylene	<0.022	<0.022	<0.023	<0.022	1.0
O-Xylene	<0.0075	<0.0074	<0.0076	<0.0075	1.0
Vinyl Chloride	<0.015	<0.015	<0.015	<0.015	1.0
Total	<2.78	<0.93	<4.42	<2.71	64.5
Chlorobenzene	<0.0075	<0.0074	<0.0076	<0.0075	1.0

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

Compound	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³*	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<3.59	<6.05	<5.08	<5.10	<0.098
Benzene	<1.37	<2.31	<1.94	<1.95	<0.037
Bromodichloromethane	<0.32	<0.54	<0.45	<0.45	<0.0087
Bromoform	<0.27	<0.46	<0.39	<0.39	<0.0075
Bromomethane	<2.47	<4.16	<3.49	<3.51	<0.067
1,3-Butadiene	<0.27	<0.46	<0.39	<0.39	<0.0075
2-Butanone	<0.27	<0.46	<0.39	<0.39	<0.0075
Carbon Tetrachloride	<0.27	<0.46	<0.39	<0.39	<0.0075
Chloroform	0.67	1.12	0.94	0.95	0.018
Cumene (Isopropylbenzene)	<0.55	<0.92	<0.78	<0.78	<0.015
Dibromochloromethane	<0.27	<0.46	<0.39	<0.39	<0.0075
Dichlorodifluoromethane	<0.55	<0.92	<0.78	<0.78	<0.015
1,2-Dichloroethane	<0.27	<0.46	<0.39	<0.39	<0.0075
trans,1,2-Dichloroethene	<0.27	<0.46	<0.39	<0.39	<0.0075
1,1-Dichloroethene	<0.27	<0.46	<0.39	<0.39	<0.0075
1,2-Dichloropropane	<0.27	<0.46	<0.39	<0.39	<0.0075
Ethylbenzene	<0.27	<0.46	<0.39	<0.39	<0.0075
Ethylene Dibromide	<0.55	<0.92	<0.78	<0.78	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.55	<0.92	<0.78	<0.78	<0.015
Methylene Chloride	30.9	52.0	43.7	43.9	0.84
Styrene	<0.55	<0.92	<0.78	<0.78	<0.015
Tetrachloroethene	<0.27	<0.46	<0.39	<0.39	<0.0075
Toluene	51.2	86.2	72.4	72.8	1.40
1,1,1-Trichloroethane	<0.27	<0.46	<0.39	<0.39	<0.0075
Trichloroethene/1,1,2-Trichloroethene	<0.27	<0.46	<0.39	<0.39	<0.0075
Trichlorotrifluoroethane	<0.27	<0.46	<0.39	<0.39	<0.0075
Trichlorofluoromethane	<0.55	<0.92	<0.78	<0.78	<0.015
M&P-Xylene	<0.82	<1.39	<1.16	<1.17	<0.022
O-Xylene	<0.27	<0.46	<0.39	<0.39	<0.0075
Vinyl Chloride	<0.55	<0.92	<0.78	<0.78	<0.015
Total	<99.2	<167	<140	<141	<2.71
Chlorobenzene	<0.27	<0.46	<0.39	<0.39	<0.0075

* 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 9A/9B µg	Field Blank 2 Tube 13A/13B µg	Trip Blank Tube 15A/15B µg	Method Blank µg
Acetone	<0.1	<0.1	<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	<0.01	<0.01	<0.01	<0.01
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	2.28	0.70	1.19	<0.1
Styrene	<0.02	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01	<0.01
Toluene	0.88	0.14	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01	<0.01	<0.01
Trichlorotrifluoroethane	<0.01	<0.01	<0.01	<0.01
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	<3.74	<1.42	<1.77	<0.73
Chlorobenzene	<0.01	<0.01	<0.01	<0.01

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.
Chlorobenzene has been reported with the VOC samples as the analytical laboratory could not quantify the data from the SVOC trains. This compound is excluded from the total VOCs to be consistent with previous testing programs.

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	November 30, 2022	8:39	11:51	180
2	November 30, 2022	12:29	15:36	180
3	December 1, 2022	8:26	12:22	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 29, 2022	8:48	10:51	120
2	November 29, 2022	12:01	15:15	120
3	November 29, 2022	16:06	18:08	120

Acid Gases Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 30, 2022	8:40	9:40	60
2	November 30, 2022	10:26	12:03	60
3	November 30, 2022	12:29	13:29	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	December 1, 2022	8:38	13:04	240
2	December 1, 2022	13:49	18:02	240
3	December 2, 2022	8:26	12:36	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 Start	Sampling Period Finish	Sampling Time min
1	December 1, 2022	12:11	13:11	60
2	December 1, 2022	13:19	14:19	60
3	December 1, 2022	14:23	15:23	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	December 1, 2022	8:27	9:07	40
2	December 1, 2022	9:13	9:53	40
3	December 1, 2022	10:01	10:41	40
4	December 1, 2022	10:50	11:30	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
BH Outlet	1	November 29, 2022	14:30	15:30	60
BH Outlet	2	November 29, 2022	15:40	16:40	60
BH Outlet	3	November 29, 2022	16:50	17:50	60
Quench Inlet	1	November 29, 2022	14:30	15:30	60
Quench Inlet	2	November 29, 2022	15:40	16:40	60
Quench Inlet	3	November 29, 2022	16:50	17:50	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	0.847	1.017	6.34	3.936	100.4
2	0.847	1.017	6.34	3.842	98.1
3	0.847	1.017	6.34	3.926	98.8

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	0.854	1.010	4.51	1.206	86.9
2	0.854	1.010	4.51	1.211	94.0
3	0.854	1.010	4.51	1.209	90.5

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.853	0.973	6.40	1.338	101.1
2	0.853	0.973	6.40	1.337	100.2
3	0.853	0.973	6.40	1.362	100.7

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	0.847	0.973	6.38	5.207	96.1
2	0.847	0.973	6.38	5.169	97.2
3	0.847	0.973	6.38	5.133	100.5

* 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	16.4	20.0	-2.86	96.1	10.3	9.08
2	139	16.0	20.0	-3.06	95.9	10.4	9.05
3	140	15.4	19.7	-3.11	98.1	10.2	9.41
Average	140	15.9	19.9	-3.01	96.7	10.3	9.18

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	139	15.0	20.1	-2.79	98.5	10.1	9.67
2	138	14.5	18.6	-2.79	98.3	9.78	9.96
3	141	16.3	19.8	-2.79	98.2	10.3	9.29
Average	139	15.3	19.5	-2.79	98.3	10.0	9.64

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	137	16.3	19.8	-2.86	96.2	10.3	9.01
2	140	16.2	20.1	-2.86	95.9	10.2	9.19
3	139	15.9	20.2	-2.86	96.1	10.6	8.96
Average	139	16.1	20.0	-2.86	96.0	10.4	9.05

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	14.8	19.8	-3.11	98.1	10.3	9.40
2	141	15.1	19.5	-3.11	98.5	10.3	9.44
3	139	15.3	18.6	-2.81	98.9	10.5	9.25
Average	140	15.1	19.3	-3.01	98.5	10.3	9.36

* 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	29.6	16.9	20.2	20.3
2	29.5	16.9	20.3	20.2
3	29.0	17.2	19.9	20.3
Average	29.4	17.0	20.1	20.2

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	29.8	17.8	20.2	20.9
2	27.6	16.6	18.3	19.4
3	29.3	17.1	20.1	20.4
Average	28.9	17.2	19.5	20.2

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	29.2	16.9	20.2	20.1
2	29.7	17.0	20.1	20.3
3	29.9	17.2	20.8	20.5
Average	29.6	17.0	20.4	20.3

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	29.3	17.4	20.2	20.4
2	28.8	17.1	19.8	20.1
3	27.5	16.4	19.3	19.4
Average	28.5	17.0	19.8	20.0

* 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	0.8	<0.1	<0.9	3.936	<0.13	<0.23	<0.19	<0.19	<3.88
2	0.9	0.1	1.0	3.842	0.15	0.26	0.22	0.22	4.41
3	0.7	0.2	0.9	3.926	0.14	0.23	0.20	0.19	3.94
Average					<0.14	<0.24	<0.20	<0.20	<4.07
Blank	<0.1	<0.1	<0.2						

* 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	<0.099	<0.17	<0.15	<0.14	<2.95
2	<0.2	1.211	<0.099	<0.17	<0.15	<0.14	<2.74
3	<0.3	1.209	<0.14	<0.25	<0.21	<0.21	<4.24
Average			<0.11	<0.19	<0.17	<0.16	<3.31
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	<0.5	1.206	<0.25	<0.41	<0.37	<0.35	<7.38
2	<0.5	1.211	<0.25	<0.41	<0.37	<0.35	<6.85
3	<0.4	1.209	<0.19	<0.33	<0.28	<0.28	<5.66
Average			<0.23	<0.39	<0.34	<0.33	<6.63
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. 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	1.5	1.206	0.74	1.24	1.10	1.06	22.1
2	2.7	1.211	1.34	2.23	2.02	1.91	37.0
3	2.7	1.209	1.30	2.23	1.90	1.87	38.2
Average			1.13	1.90	1.67	1.61	32.4
Blank	1.8						

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	1.9	1.206	0.94	1.58	1.39	1.34	28.0
2	1.5	1.211	0.74	1.24	1.12	1.06	20.6
3	2.2	1.209	1.06	1.82	1.55	1.53	31.1
Average			0.92	1.54	1.35	1.31	26.6
Blank	0.4						

* 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	4.36	1.338	1.86	3.26	2.73	2.72	55.2
2	6.20	1.337	2.65	4.64	3.88	3.88	78.6
3	5.01	1.362	2.11	3.68	3.07	3.09	62.3
Average			2.21	3.86	3.23	3.23	65.4
Blank	<0.157						

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	<0.171	1.338	<0.073	<0.13	<0.11	<0.11	<2.16
2	<0.165	1.337	<0.071	<0.12	<0.10	<0.10	<2.09
3	<0.163	1.362	<0.069	<0.12	<0.10	<0.10	<2.03
Average			<0.071	<0.12	<0.10	<0.10	<2.09
Blank	<0.107						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Ammonia Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	1.61	1.338	0.69	1.20	1.01	1.01	20.4
2	1.18	1.337	0.51	0.88	0.74	0.74	15.0
3	1.22	1.362	0.51	0.90	0.75	0.75	15.2
Average			0.57	0.99	0.83	0.83	16.8
Blank	<0.288						

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 November 29 to December 2, 2022

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	8.93	9.47	10.19
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	5	9	17
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	6.0	9.4	13.5
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.6	8
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.6	1.4
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	97	111	125
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	110	111	112
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	3	4	5
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	3.3	3.8	4.3
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	1
Quench Inlet	Oxygen (%, 1 hr Avg)	8	9	9

Data measured by the ORTECH CEMS on November 29, 2022

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0.3
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	0.7
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	1.0
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.1	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	0.4
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	8.6
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.7	4.4
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.3	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.1	0.3
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0.9
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.8	2.0
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		0.3	

* 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	<0.10
Arsenic	<1	<0.2	<0.20
Barium	<5	0.55	0.55
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.12	<0.05	0.12
Chromium	2.93	1.07	4.00
Cobalt	<0.2	<0.1	<0.10
Copper	7.58	1.97	9.55
Lead	0.63	0.19	0.82
Mercury *	<0.015	<0.415	<0.42
Molybdenum	33.9	<0.1	33.9
Nickel	4.14	1.31	5.45
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	13.5	4.94	18.4
Total			<75.3

* 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	<0.1	<0.10
Arsenic	<1	<0.2	<0.20
Barium	5.11	0.64	5.75
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.11	<0.05	0.11
Chromium	2.78	0.44	3.22
Cobalt	<0.2	<0.1	<0.10
Copper	6.60	2.38	8.98
Lead	<0.5	0.23	0.23
Mercury *	<0.015	<0.4	<0.40
Molybdenum	34.2	<0.1	34.2
Nickel	4.70	0.50	5.20
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	10.2	6.09	16.3
Total			<76.5

* Includes the permanganate impingers

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

TABLE 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	0.23	<0.1	0.23
Arsenic	<1	<0.2	<0.20
Barium	5.56	0.66	6.22
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.15	<0.05	0.15
Chromium	3.25	1.33	4.58
Cobalt	<0.2	<0.1	<0.10
Copper	7.41	2.02	9.43
Lead	0.59	0.43	1.02
Mercury *	<0.015	<0.4	<0.40
Molybdenum	35.4	<0.1	35.4
Nickel	3.05	1.14	4.19
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	13.8	10.4	24.2
Total			<87.8

* 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	<0.10	<0.015	<0.025	<0.021	<0.021	<0.00043
Arsenic	<0.20	<0.029	<0.051	<0.043	<0.042	<0.00086
Barium	0.55	0.079	0.14	0.12	0.12	0.0023
Beryllium	<0.20	<0.029	<0.051	<0.043	<0.042	<0.00086
Cadmium	0.12	0.017	0.030	0.026	0.025	0.00052
Chromium	4.00	0.58	1.02	0.85	0.85	0.017
Cobalt	<0.10	<0.015	<0.025	<0.021	<0.021	<0.00043
Copper	9.55	1.39	2.43	2.03	2.02	0.041
Lead	0.82	0.12	0.21	0.17	0.17	0.0035
Mercury	<0.42	<0.060	<0.11	<0.088	<0.088	<0.0018
Molybdenum	33.9	4.92	8.61	7.21	7.17	0.15
Nickel	5.45	0.79	1.38	1.16	1.15	0.023
Selenium	<1.00	<0.15	<0.25	<0.21	<0.21	<0.0043
Silver	<0.20	<0.029	<0.051	<0.043	<0.042	<0.00086
Thallium	<0.20	<0.029	<0.051	<0.043	<0.042	<0.00086
Vanadium	<0.10	<0.015	<0.025	<0.021	<0.021	<0.00043
Zinc	18.4	2.67	4.68	3.92	3.90	0.079
Total	<75.3	<10.9	<19.1	<16.0	<15.9	<0.32

Dry Gas Volume Sampled (Rm³*) :	3.936
Actual Flowrate (m³/s) :	29.6
Dry Reference Flowrate (Rm³/s*) :	16.9
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	20.3

* 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	<0.015	<0.026	<0.022	<0.022	<0.00044
Arsenic	<0.20	<0.030	<0.052	<0.043	<0.044	<0.00088
Barium	5.75	0.86	1.50	1.24	1.25	0.025
Beryllium	<0.20	<0.030	<0.052	<0.043	<0.044	<0.00088
Cadmium	0.11	0.017	0.030	0.025	0.025	0.00050
Chromium	3.22	0.48	0.84	0.70	0.70	0.014
Cobalt	<0.10	<0.015	<0.026	<0.022	<0.022	<0.00044
Copper	8.98	1.34	2.34	1.95	1.96	0.040
Lead	0.23	0.034	0.059	0.049	0.049	0.0010
Mercury	<0.40	<0.060	<0.10	<0.087	<0.087	<0.0018
Molybdenum	34.2	5.10	8.90	7.41	7.45	0.15
Nickel	5.20	0.78	1.35	1.13	1.13	0.023
Selenium	<1.00	<0.15	<0.26	<0.22	<0.22	<0.0044
Silver	<0.20	<0.030	<0.052	<0.043	<0.044	<0.00088
Thallium	<0.20	<0.030	<0.052	<0.043	<0.044	<0.00088
Vanadium	<0.10	<0.015	<0.026	<0.022	<0.022	<0.00044
Zinc	16.3	2.43	4.24	3.53	3.55	0.072
Total	<76.5	<11.4	<19.9	<16.6	<16.7	<0.34

Dry Gas Volume Sampled (Rm³*) :	3.842
Actual Flowrate (m³/s) :	29.5
Dry Reference Flowrate (Rm³/s*) :	16.9
Dry Adjusted Flowrate (Rm³/s**) :	20.3
Wet Reference Flowrate (Rm³/s*) :	20.2

* At 25°C and 1 atmosphere

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

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

Metal	Total Collected 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	0.23	0.035	0.059	0.051	0.050	0.0010
Arsenic	<0.20	<0.030	<0.051	<0.044	<0.043	<0.00088
Barium	6.22	0.94	1.58	1.37	1.34	0.027
Beryllium	<0.20	<0.030	<0.051	<0.044	<0.043	<0.00088
Cadmium	0.15	0.023	0.038	0.033	0.032	0.00066
Chromium	4.58	0.69	1.17	1.01	0.99	0.020
Cobalt	<0.10	<0.015	<0.025	<0.022	<0.022	<0.00044
Copper	9.43	1.42	2.40	2.08	2.04	0.041
Lead	1.02	0.15	0.26	0.22	0.22	0.0045
Mercury	<0.40	<0.060	<0.10	<0.088	<0.086	<0.0018
Molybdenum	35.4	5.35	9.02	7.79	7.64	0.16
Nickel	4.19	0.63	1.07	0.92	0.90	0.018
Selenium	<1.00	<0.15	<0.25	<0.22	<0.22	<0.0044
Silver	<0.20	<0.030	<0.051	<0.044	<0.043	<0.00088
Thallium	<0.20	<0.030	<0.051	<0.044	<0.043	<0.00088
Vanadium	<0.10	<0.015	<0.025	<0.022	<0.022	<0.00044
Zinc	24.2	3.66	6.16	5.33	5.22	0.11
Total	<87.8	<13.3	<22.4	<19.3	<19.0	<0.38

Dry Gas Volume Sampled (Rm³*) :	3.926
Actual Flowrate (m³/s) :	29.0
Dry Reference Flowrate (Rm³/s*) :	17.2
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	20.3

* 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
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	<0.015	<0.015	0.035	<0.021	54.4
Arsenic	<0.029	<0.030	<0.030	<0.030	2.1
Barium	0.079	0.86	0.94	0.63	75.9
Beryllium	<0.029	<0.030	<0.030	<0.030	2.1
Cadmium	0.017	0.017	0.023	0.019	16.6
Chromium	0.58	0.48	0.69	0.58	18.2
Cobalt	<0.015	<0.015	<0.015	<0.015	2.1
Copper	1.39	1.34	1.42	1.38	3.1
Lead	0.12	0.034	0.15	0.10	60.4
Mercury	<0.060	<0.060	<0.060	<0.060	0.7
Molybdenum	4.92	5.10	5.35	5.12	4.2
Nickel	0.79	0.78	0.63	0.73	11.9
Selenium	<0.15	<0.15	<0.15	<0.15	2.1
Silver	<0.029	<0.030	<0.030	<0.030	2.1
Thallium	<0.029	<0.030	<0.030	<0.030	2.1
Vanadium	<0.015	<0.015	<0.015	<0.015	2.1
Zinc	2.67	2.43	3.66	2.92	22.2
Total	<10.9	<11.4	<13.3	<11.9	10.4

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	<0.025	<0.026	0.059	<0.037	52.0
Arsenic	<0.051	<0.052	<0.051	<0.051	1.3
Barium	0.14	1.50	1.58	1.07	75.5
Beryllium	<0.051	<0.052	<0.051	<0.051	1.3
Cadmium	0.030	0.030	0.038	0.033	14.4
Chromium	1.02	0.84	1.17	1.01	16.4
Cobalt	<0.025	<0.026	<0.025	<0.026	1.3
Copper	2.43	2.34	2.40	2.39	1.9
Lead	0.21	0.059	0.26	0.18	59.3
Mercury	<0.11	<0.10	<0.10	<0.10	1.7
Molybdenum	8.61	8.90	9.02	8.84	2.4
Nickel	1.38	1.35	1.07	1.27	13.8
Selenium	<0.25	<0.26	<0.25	<0.26	1.3
Silver	<0.051	<0.052	<0.051	<0.051	1.3
Thallium	<0.051	<0.052	<0.051	<0.051	1.3
Vanadium	<0.025	<0.026	<0.025	<0.026	1.3
Zinc	4.68	4.24	6.16	5.03	20.0
Total	<19.1	<19.9	<22.4	<20.5	8.2

* At 25°C and 1 atmosphere

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

Metal	Dry Adjusted Concentration				Coefficient
	Test No. 1 µg/Rm³**	Test No. 2 µg/Rm³**	Test No. 3 µg/Rm³**	Average µg/Rm³**	of Variation %
Antimony	<0.021	<0.022	0.051	<0.031	54.3
Arsenic	<0.043	<0.043	<0.044	<0.043	1.8
Barium	0.12	1.24	1.37	0.91	75.9
Beryllium	<0.043	<0.043	<0.044	<0.043	1.8
Cadmium	0.026	0.025	0.033	0.028	16.5
Chromium	0.85	0.70	1.01	0.85	18.3
Cobalt	<0.021	<0.022	<0.022	<0.022	1.8
Copper	2.03	1.95	2.08	2.02	3.3
Lead	0.17	0.049	0.22	0.15	60.5
Mercury	<0.088	<0.087	<0.088	<0.088	1.0
Molybdenum	7.21	7.41	7.79	7.47	4.0
Nickel	1.16	1.13	0.92	1.07	12.0
Selenium	<0.21	<0.22	<0.22	<0.22	1.8
Silver	<0.043	<0.043	<0.044	<0.043	1.8
Thallium	<0.043	<0.043	<0.044	<0.043	1.8
Vanadium	<0.021	<0.022	<0.022	<0.022	1.8
Zinc	3.92	3.53	5.33	4.26	22.2
Total	<16.0	<16.6	<19.3	<17.3	10.3

** 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	<0.021	<0.022	0.050	<0.031	53.0
Arsenic	<0.042	<0.044	<0.043	<0.043	1.5
Barium	0.12	1.25	1.34	0.90	75.7
Beryllium	<0.042	<0.044	<0.043	<0.043	1.5
Cadmium	0.025	0.025	0.032	0.028	15.3
Chromium	0.85	0.70	0.99	0.85	17.0
Cobalt	<0.021	<0.022	<0.022	<0.022	1.5
Copper	2.02	1.96	2.04	2.00	2.1
Lead	0.17	0.049	0.22	0.15	59.7
Mercury	<0.088	<0.087	<0.086	<0.087	0.8
Molybdenum	7.17	7.45	7.64	7.42	3.2
Nickel	1.15	1.13	0.90	1.06	13.0
Selenium	<0.21	<0.22	<0.22	<0.22	1.5
Silver	<0.042	<0.044	<0.043	<0.043	1.5
Thallium	<0.042	<0.044	<0.043	<0.043	1.5
Vanadium	<0.021	<0.022	<0.022	<0.022	1.5
Zinc	3.90	3.55	5.22	4.22	20.9
Total	<15.9	<16.7	<19.0	<17.2	9.2

* At 25°C and 1 atmosphere

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

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	<0.00043	<0.00044	0.0010	<0.00063	53.2
Arsenic	<0.00086	<0.00088	<0.00088	<0.00087	1.3
Barium	0.0023	0.025	0.027	0.018	75.7
Beryllium	<0.00086	<0.00088	<0.00088	<0.00087	1.3
Cadmium	0.00052	0.00050	0.00066	0.00056	15.4
Chromium	0.017	0.014	0.020	0.017	17.3
Cobalt	<0.00043	<0.00044	<0.00044	<0.00044	1.3
Copper	0.041	0.040	0.041	0.041	2.4
Lead	0.0035	0.0010	0.0045	0.0030	59.9
Mercury	<0.0018	<0.0018	<0.0018	<0.0018	0.9
Molybdenum	0.15	0.15	0.16	0.15	3.2
Nickel	0.023	0.023	0.018	0.022	12.9
Selenium	<0.0043	<0.0044	<0.0044	<0.0044	1.3
Silver	<0.00086	<0.00088	<0.00088	<0.00087	1.3
Thallium	<0.00086	<0.00088	<0.00088	<0.00087	1.3
Vanadium	<0.00043	<0.00044	<0.00044	<0.00044	1.3
Zinc	0.079	0.072	0.11	0.086	21.1
Total	<0.32	<0.34	<0.38	<0.35	9.3

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

Metal	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	<0.021	<0.037	<0.031	<0.031	<0.00063
Arsenic	<0.030	<0.051	<0.043	<0.043	<0.00087
Barium	0.63	1.07	0.91	0.90	0.018
Beryllium	<0.030	<0.051	<0.043	<0.043	<0.00087
Cadmium	0.019	0.033	0.028	0.028	0.00056
Chromium	0.58	1.01	0.85	0.85	0.017
Cobalt	<0.015	<0.026	<0.022	<0.022	<0.00044
Copper	1.38	2.39	2.02	2.00	0.041
Lead	0.10	0.18	0.15	0.15	0.0030
Mercury	<0.060	<0.10	<0.088	<0.087	<0.0018
Molybdenum	5.12	8.84	7.47	7.42	0.15
Nickel	0.73	1.27	1.07	1.06	0.022
Selenium	<0.15	<0.26	<0.22	<0.22	<0.0044
Silver	<0.030	<0.051	<0.043	<0.043	<0.00087
Thallium	<0.030	<0.051	<0.043	<0.043	<0.00087
Vanadium	<0.015	<0.026	<0.022	<0.022	<0.00044
Zinc	2.92	5.03	4.26	4.22	0.086
Total	<11.9	<20.5	<17.3	<17.2	<0.35

* 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	0.25	0.25
Arsenic	<1	<0.2	<0.20
Barium	<5	0.51	0.51
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.21	0.47	2.68
Cobalt	<0.2	<0.1	<0.10
Copper	6.80	1.47	8.27
Lead	<0.5	0.20	0.20
Mercury *	<0.015	<0.15	<0.15
Molybdenum	32.8	<0.1	32.8
Nickel	1.07	0.34	1.41
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	<6	<3	<6.00
Total			<54.4

* 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	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m^3	ng/Rm^3*	ng/Rm^3**	ng/Rm^3*	ng/s
Tetrachlorodibenzo-p-dioxins	64.1	0.0073	0.012	0.011	0.011	0.21
Pentachlorodibenzo-p-dioxins	127	0.014	0.024	0.021	0.021	0.42
Hexachlorodibenzo-p-dioxins	202	0.023	0.039	0.033	0.033	0.68
Heptachlorodibenzo-p-dioxins	107	0.012	0.021	0.018	0.018	0.36
Octachlorodibenzo-p-dioxin	163	0.019	0.031	0.027	0.027	0.54
Total	663	0.076	0.13	0.11	0.11	2.22

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m^3	ng/Rm^3*	ng/Rm^3**	ng/Rm^3*	ng/s
Tetrachlorodibenzofurans	25.1	0.0029	0.0048	0.0042	0.0041	0.084
Pentachlorodibenzofurans	28.7	0.0033	0.0055	0.0047	0.0047	0.096
Hexachlorodibenzofurans	29.8	0.0034	0.0057	0.0049	0.0049	0.10
Heptachlorodibenzofurans	32.8	0.0037	0.0063	0.0054	0.0054	0.11
Octachlorodibenzofuran	<32	<0.0036	<0.0061	<0.0053	<0.0052	<0.11
Total	<148	<0.017	<0.029	<0.025	<0.024	<0.50

Dry Gas Volume Sampled (Rm^3*) :	5.207
Actual Flowrate (m^3/s) :	29.3
Dry Reference Flowrate (Rm^3/s*) :	17.4
Dry Adjusted Flowrate (Rm^3/s**) :	20.2
Wet Reference Flowrate (Rm^3/s*) :	20.4

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 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/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	46.9	0.0054	0.0091	0.0078	0.0077	0.16
Pentachlorodibenzo-p-dioxins	<15	<0.0017	<0.0029	<0.0025	<0.0025	<0.050
Hexachlorodibenzo-p-dioxins	<22	<0.0025	<0.0043	<0.0037	<0.0036	<0.073
Heptachlorodibenzo-p-dioxins	195	0.022	0.038	0.033	0.032	0.65
Octachlorodibenzo-p-dioxin	240	0.028	0.046	0.040	0.040	0.79
Total	<519	<0.060	<0.10	<0.087	<0.085	<1.72

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	<14	<0.0016	<0.0027	<0.0023	<0.0023	<0.046
Pentachlorodibenzofurans	<9.0	<0.0010	<0.0017	<0.0015	<0.0015	<0.030
Hexachlorodibenzofurans	32.4	0.0037	0.0063	0.0054	0.0053	0.11
Heptachlorodibenzofurans	18.9	0.0022	0.0037	0.0032	0.0031	0.063
Octachlorodibenzofuran	<44	<0.0051	<0.0085	<0.0074	<0.0072	<0.146
Total	<118	<0.014	<0.023	<0.020	<0.019	<0.39

Dry Gas Volume Sampled (Rm³*) :	5.169
Actual Flowrate (m³/s) :	28.8
Dry Reference Flowrate (Rm³/s*) :	17.1
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	20.1

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 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/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	34.4	0.0040	0.0067	0.0057	0.0057	0.11
Pentachlorodibenzo-p-dioxins	30.4	0.0035	0.0059	0.0050	0.0050	0.097
Hexachlorodibenzo-p-dioxins	188	0.022	0.037	0.031	0.031	0.60
Heptachlorodibenzo-p-dioxins	202	0.023	0.039	0.033	0.033	0.65
Octachlorodibenzo-p-dioxin	148	0.017	0.029	0.025	0.024	0.47
Total	603	0.070	0.12	0.10	0.099	1.93

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	19.2	0.0022	0.0037	0.0032	0.0032	0.061
Pentachlorodibenzofurans	15.3	0.0018	0.0030	0.0025	0.0025	0.049
Hexachlorodibenzofurans	36.5	0.0042	0.0071	0.0060	0.0060	0.12
Heptachlorodibenzofurans	<4.9	<0.00057	<0.00095	<0.00081	<0.00081	<0.016
Octachlorodibenzofuran	19.4	0.0023	0.0038	0.0032	0.0032	0.062
Total	<95.3	<0.011	<0.019	<0.016	<0.016	<0.30

Dry Gas Volume Sampled (Rm³*) :	5.133
Actual Flowrate (m³/s) :	27.5
Dry Reference Flowrate (Rm³/s*) :	16.4
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.4

* 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 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	0.0073	0.0054	0.0040	0.0056	29.9
Pentachlorodibenzo-p-dioxins	0.014	<0.0017	0.0035	<0.0066	105
Hexachlorodibenzo-p-dioxins	0.023	<0.0025	0.022	<0.016	72.9
Heptachlorodibenzo-p-dioxins	0.012	0.022	0.023	0.019	32.1
Octachlorodibenzo-p-dioxin	0.019	0.028	0.017	0.021	26.7
Total	0.076	<0.060	0.070	<0.068	11.9

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	0.0029	<0.0016	0.0022	<0.0022	28.1
Pentachlorodibenzofurans	0.0033	<0.0010	0.0018	<0.0020	56.2
Hexachlorodibenzofurans	0.0034	0.0037	0.0042	0.0038	11.2
Heptachlorodibenzofurans	0.0037	0.0022	<0.00057	<0.0022	73.4
Octachlorodibenzofuran	<0.0036	<0.0051	0.0023	<0.0037	38.3
Total	<0.017	<0.014	<0.011	<0.014	21.2

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	0.012	0.0091	0.0067	0.0094	30.1
Pentachlorodibenzo-p-dioxins	0.024	<0.0029	0.0059	<0.011	105
Hexachlorodibenzo-p-dioxins	0.039	<0.0043	0.037	<0.027	72.8
Heptachlorodibenzo-p-dioxins	0.021	0.038	0.039	0.033	32.0
Octachlorodibenzo-p-dioxin	0.031	0.046	0.029	0.036	26.8
Total	0.13	<0.10	0.12	<0.12	11.9

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	0.0048	<0.0027	0.0037	<0.0038	28.1
Pentachlorodibenzofurans	0.0055	<0.0017	0.0030	<0.0034	56.3
Hexachlorodibenzofurans	0.0057	0.0063	0.0071	0.0064	11.0
Heptachlorodibenzofurans	0.0063	0.0037	<0.00095	<0.0036	73.5
Octachlorodibenzofuran	<0.0061	<0.0085	0.0038	<0.0061	38.5
Total	<0.029	<0.023	<0.019	<0.023	21.4

* 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	Test No. 1 ng/Rm³*	Dry Adjusted Concentration Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.011	0.0078	0.0057	0.0080	30.6
Pentachlorodibenzo-p-dioxins	0.021	<0.0025	0.0050	<0.0095	105
Hexachlorodibenzo-p-dioxins	0.033	<0.0037	0.031	<0.023	72.8
Heptachlorodibenzo-p-dioxins	0.018	0.033	0.033	0.028	31.7
Octachlorodibenzo-p-dioxin	0.027	0.040	0.025	0.031	27.5
Total	0.11	<0.087	0.10	<0.099	11.7

Furans

Congener Group	Test No. 1 ng/Rm³*	Dry Adjusted Concentration Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0042	<0.0023	0.0032	<0.0032	28.2
Pentachlorodibenzofurans	0.0047	<0.0015	0.0025	<0.0029	56.6
Hexachlorodibenzofurans	0.0049	0.0054	0.0060	0.0055	10.2
Heptachlorodibenzofurans	0.0054	0.0032	<0.00081	<0.0031	73.7
Octachlorodibenzofuran	<0.0053	<0.0074	0.0032	<0.0053	39.2
Total	<0.025	<0.020	<0.016	<0.020	21.9

* 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/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.011	0.0077	0.0057	0.0080	30.5
Pentachlorodibenzo-p-dioxins	0.021	<0.0025	0.0050	<0.0094	105
Hexachlorodibenzo-p-dioxins	0.033	<0.0036	0.031	<0.023	72.9
Heptachlorodibenzo-p-dioxins	0.018	0.032	0.033	0.028	31.7
Octachlorodibenzo-p-dioxin	0.027	0.040	0.024	0.030	27.0
Total	0.11	<0.085	0.099	<0.098	11.9

Furans

Congener Group	Wet Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0041	<0.0023	0.0032	<0.0032	28.3
Pentachlorodibenzofurans	0.0047	<0.0015	0.0025	<0.0029	56.7
Hexachlorodibenzofurans	0.0049	0.0053	0.0060	0.0054	10.5
Heptachlorodibenzofurans	0.0054	0.0031	<0.00081	<0.0031	73.7
Octachlorodibenzofuran	<0.0052	<0.0072	0.0032	<0.0052	38.7
Total	<0.024	<0.019	<0.016	<0.020	21.8

* 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	0.21	0.16	0.11	0.16	32.7
Pentachlorodibenzo-p-dioxins	0.42	<0.050	0.097	<0.19	107
Hexachlorodibenzo-p-dioxins	0.68	<0.073	0.60	<0.45	73.0
Heptachlorodibenzo-p-dioxins	0.36	0.65	0.65	0.55	30.2
Octachlorodibenzo-p-dioxin	0.54	0.79	0.47	0.60	27.9
Total	2.22	<1.72	1.93	<1.95	12.8

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	0.084	<0.046	0.061	<0.064	29.6
Pentachlorodibenzofurans	0.096	<0.030	0.049	<0.058	58.5
Hexachlorodibenzofurans	0.100	0.11	0.12	0.11	7.9
Heptachlorodibenzofurans	0.11	0.063	<0.016	<0.063	75.0
Octachlorodibenzofuran	<0.11	<0.15	0.062	<0.10	39.9
Total	<0.50	<0.39	<0.30	<0.40	24.1

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/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.0056	0.0094	0.0080	0.0080	0.16
Pentachlorodibenzo-p-dioxins	<0.0066	<0.011	<0.0095	<0.0094	<0.19
Hexachlorodibenzo-p-dioxins	<0.016	<0.027	<0.023	<0.023	<0.45
Heptachlorodibenzo-p-dioxins	0.019	0.033	0.028	0.028	0.55
Octachlorodibenzo-p-dioxin	0.021	0.036	0.031	0.030	0.60
Total	<0.068	<0.12	<0.099	<0.098	<1.95

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	<0.0022	<0.0038	<0.0032	<0.0032	<0.064
Pentachlorodibenzofurans	<0.0020	<0.0034	<0.0029	<0.0029	<0.058
Hexachlorodibenzofurans	0.0038	0.0064	0.0055	0.0054	0.11
Heptachlorodibenzofurans	<0.0022	<0.0036	<0.0031	<0.0031	<0.063
Octachlorodibenzofuran	<0.0037	<0.0061	<0.0053	<0.0052	<0.10
Total	<0.014	<0.023	<0.020	<0.020	<0.40

* 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	Method Blank pg
Tetrachlorodibenzo-p-dioxins	<1.1	<1.5
Pentachlorodibenzo-p-dioxins	<0.93	<2.0
Hexachlorodibenzo-p-dioxins	<1.1	<2.2
Heptachlorodibenzo-p-dioxins	<1.4	<4.4
Octachlorodibenzo-p-dioxin	7.23	18.5
Total	<11.8	<28.6

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<1.1	<1.4
Pentachlorodibenzofurans	<0.91	2.18
Hexachlorodibenzofurans	<0.78	3.41
Heptachlorodibenzofurans	<1.0	<3.0
Octachlorodibenzofuran	2.40	<15
Total	<6.19	<25.0

"<" 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 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	<2.2	<0.25	<0.42	<0.36	<0.36	<0.0074
12378-pentachlorodibenzo-p-dioxin	<4.0	<0.46	<0.77	<0.66	<0.66	<0.013
123478-hexachlorodibenzo-p-dioxin	<3.2	<0.36	<0.61	<0.53	<0.52	<0.011
123678-hexachlorodibenzo-p-dioxin	10.3	1.17	1.98	1.70	1.69	0.034
123789-hexachlorodibenzo-p-dioxin	5.34	0.61	1.03	0.88	0.87	0.018
1234678-heptachlorodibenzo-p-dioxin	<79	<9.01	<15.2	<13.1	<12.9	<0.26
Octachlorodibenzo-p-dioxin	163	18.6	31.3	27.0	26.7	0.54
2378-tetrachlorodibenzofuran	<2.5	<0.29	<0.48	<0.41	<0.41	<0.0084
12378-pentachlorodibenzofuran	3.27	0.37	0.63	0.54	0.54	0.011
23478-pentachlorodibenzofuran	<4.6	<0.52	<0.88	<0.76	<0.75	<0.015
123478-hexachlorodibenzofuran	4.82	0.55	0.93	0.80	0.79	0.016
123678-hexachlorodibenzofuran	<5.8	<0.66	<1.11	<0.96	<0.95	<0.019
234678-hexachlorodibenzofuran	7.30	0.83	1.40	1.21	1.20	0.024
123789-hexachlorodibenzofuran	5.72	0.65	1.10	0.95	0.94	0.019
1234678-heptachlorodibenzofuran	19.0	2.17	3.65	3.14	3.11	0.063
1234789-heptachlorodibenzofuran	<2.6	<0.30	<0.50	<0.43	<0.43	<0.0087
Octachlorodibenzofuran	<32	<3.65	<6.15	<5.29	<5.24	<0.11
PCB 81	<8.4	<0.96	<1.61	<1.39	<1.38	<0.028
PCB 77	93.7	10.7	18.0	15.5	15.3	0.31
PCB 123	<10	<1.14	<1.92	<1.65	<1.64	<0.033
PCB 118	659	75.2	127	109	108	2.20
PCB 114	<16	<1.82	<3.07	<2.65	<2.62	<0.053
PCB 105	213	24.3	40.9	35.2	34.9	0.71
PCB 126	<11	<1.25	<2.11	<1.82	<1.80	<0.037
PCB 167	12.8	1.46	2.46	2.12	2.10	0.043
PCB 156/157	<29	<3.31	<5.57	<4.80	<4.75	<0.097
PCB 169	<4.3	<0.49	<0.83	<0.71	<0.70	<0.014
PCB 189	<4.2	<0.48	<0.81	<0.69	<0.69	<0.014
Total Dioxins & Furans Only	<355	<40.4	<68.1	<58.7	<58.1	<1.19
Total PCBs Only	<1061	<121	<204	<176	<174	<3.55
Total Dioxins & Furans and PCBs	<1416	<162	<272	<234	<232	<4.73

Dry Gas Volume Sampled (Rm³*) :	5.207
Actual Flowrate (m³/s) :	29.3
Dry Reference Flowrate (Rm³/s*) :	17.4
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	20.4

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<17	<1.95	<3.29	<2.84	<2.80	<0.056
12378-pentachlorodibenzo-p-dioxin	<15	<1.72	<2.90	<2.51	<2.47	<0.050
123478-hexachlorodibenzo-p-dioxin	<22	<2.53	<4.26	<3.68	<3.62	<0.073
123678-hexachlorodibenzo-p-dioxin	<21	<2.41	<4.06	<3.51	<3.46	<0.069
123789-hexachlorodibenzo-p-dioxin	<21	<2.41	<4.06	<3.51	<3.46	<0.069
1234678-heptachlorodibenzo-p-dioxin	99.5	11.4	19.2	16.6	16.4	0.33
Octachlorodibenzo-p-dioxin	240	27.6	46.4	40.1	39.5	0.79
2378-tetrachlorodibenzofuran	<14	<1.61	<2.71	<2.34	<2.30	<0.046
12378-pentachlorodibenzofuran	<9.0	<1.03	<1.74	<1.50	<1.48	<0.030
23478-pentachlorodibenzofuran	<8.4	<0.96	<1.63	<1.40	<1.38	<0.028
123478-hexachlorodibenzofuran	<16	<1.84	<3.10	<2.67	<2.63	<0.053
123678-hexachlorodibenzofuran	<16	<1.84	<3.10	<2.67	<2.63	<0.053
234678-hexachlorodibenzofuran	<16	<1.84	<3.10	<2.67	<2.63	<0.053
123789-hexachlorodibenzofuran	32.4	3.72	6.27	5.41	5.33	0.11
1234678-heptachlorodibenzofuran	18.9	2.17	3.66	3.16	3.11	0.063
1234789-heptachlorodibenzofuran	<16	<1.84	<3.10	<2.67	<2.63	<0.053
Octachlorodibenzofuran	<44	<5.05	<8.51	<7.35	<7.24	<0.15
PCB 81	<6.0	<0.69	<1.16	<1.00	<0.99	<0.020
PCB 77	184	21.1	35.6	30.7	30.28	0.61
PCB 123	<34	<3.91	<6.58	<5.68	<5.60	<0.11
PCB 118	2000	230	387	334	329	6.62
PCB 114	<50	<5.74	<9.67	<8.35	<8.23	<0.17
PCB 105	630	72.4	122	105	104	2.08
PCB 126	<7.7	<0.88	<1.49	<1.29	<1.27	<0.025
PCB 167	19.4	2.23	3.75	3.24	3.19	0.064
PCB 156/157	<43	<4.94	<8.32	<7.18	<7.08	<0.14
PCB 169	<3.2	<0.37	<0.62	<0.53	<0.53	<0.011
PCB 189	<3.1	<0.36	<0.60	<0.52	<0.51	<0.010
Total Dioxins & Furans Only	<626	<71.9	<121	<105	<103	<2.07
Total PCBs Only	<2980	<342	<577	<498	<491	<9.86
Total Dioxins & Furans and PCBs	<3607	<414	<698	<603	<594	<11.9

Dry Gas Volume Sampled (Rm³*) :	5.169
Actual Flowrate (m³/s) :	28.8
Dry Reference Flowrate (Rm³/s*) :	17.1
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	20.1

* At 25°C and 1 atmosphere

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

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

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m^3	pg/Rm^3*	pg/Rm^3**	pg/Rm^3*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.7	<0.20	<0.33	<0.28	<0.28	<0.0054
12378-pentachlorodibenzo-p-dioxin	3.66	0.43	0.71	0.61	0.60	0.012
123478-hexachlorodibenzo-p-dioxin	<4.3	<0.50	<0.84	<0.71	<0.71	<0.014
123678-hexachlorodibenzo-p-dioxin	<9.6	<1.12	<1.87	<1.59	<1.58	<0.031
123789-hexachlorodibenzo-p-dioxin	<4.4	<0.51	<0.86	<0.73	<0.72	<0.014
1234678-heptachlorodibenzo-p-dioxin	95.6	11.1	18.6	15.8	15.7	0.31
Octachlorodibenzo-p-dioxin	148	17.2	28.8	24.5	24.4	0.47
2378-tetrachlorodibenzofuran	2.68	0.31	0.52	0.44	0.44	0.0086
12378-pentachlorodibenzofuran	4.52	0.53	0.88	0.75	0.74	0.014
23478-pentachlorodibenzofuran	<5.0	<0.58	<0.97	<0.83	<0.82	<0.016
123478-hexachlorodibenzofuran	3.77	0.44	0.73	0.62	0.62	0.012
123678-hexachlorodibenzofuran	4.40	0.51	0.86	0.73	0.72	0.014
234678-hexachlorodibenzofuran	6.23	0.72	1.21	1.03	1.03	0.020
123789-hexachlorodibenzofuran	<4.0	<0.46	<0.78	<0.66	<0.66	<0.013
1234678-heptachlorodibenzofuran	<14	<1.63	<2.73	<2.32	<2.31	<0.045
1234789-heptachlorodibenzofuran	<4.9	<0.57	<0.95	<0.81	<0.81	<0.016
Octachlorodibenzofuran	19.4	2.25	3.78	3.21	3.20	0.062
PCB 81	<13	<1.51	<2.53	<2.15	<2.14	<0.042
PCB 77	<42	<4.88	<8.18	<6.95	<6.92	<0.13
PCB 123	<21	<2.44	<4.09	<3.48	<3.46	<0.067
PCB 118	785	91.2	153	130	129	2.51
PCB 114	<19	<2.21	<3.70	<3.15	<3.13	<0.061
PCB 105	265	30.8	51.6	43.9	43.6	0.85
PCB 126	<23	<2.67	<4.48	<3.81	<3.79	<0.073
PCB 167	9.67	1.12	1.88	1.60	1.59	0.031
PCB 156/157	32.7	3.80	6.37	5.41	5.39	0.10
PCB 169	<8.4	<0.98	<1.64	<1.39	<1.38	<0.027
PCB 189	<9.8	<1.14	<1.91	<1.62	<1.61	<0.031
Total Dioxins & Furans Only	<336	<39.1	<65.5	<55.6	<55.4	<1.07
Total PCBs Only	<1229	<143	<239	<203	<202	<3.93
Total Dioxins & Furans and PCBs	<1565	<182	<305	<259	<258	<5.00

Dry Gas Volume Sampled (Rm^3*) :	5.133
Actual Flowrate (m^3/s) :	27.5
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	19.4

* 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 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 pg/m³	Test No. 2 pg/m³	Test No. 3 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.25	<1.95	<0.20	<0.80	125
12378-pentachlorodibenzo-p-dioxin	<0.46	<1.72	0.43	<0.87	85.3
123478-hexachlorodibenzo-p-dioxin	<0.36	<2.53	<0.50	<1.13	107
123678-hexachlorodibenzo-p-dioxin	1.17	<2.41	<1.12	<1.57	46.7
123789-hexachlorodibenzo-p-dioxin	0.61	<2.41	<0.51	<1.18	90.9
1234678-heptachlorodibenzo-p-dioxin	<9.01	11.4	11.1	<10.5	12.5
Octachlorodibenzo-p-dioxin	18.6	27.6	17.2	21.1	26.7
2378-tetrachlorodibenzofuran	<0.29	<1.61	0.31	<0.73	103
12378-pentachlorodibenzofuran	0.37	<1.03	0.53	<0.64	53.7
23478-pentachlorodibenzofuran	<0.52	<0.96	<0.58	<0.69	34.7
123478-hexachlorodibenzofuran	0.55	<1.84	0.44	<0.94	82.6
123678-hexachlorodibenzofuran	<0.66	<1.84	0.51	<1.00	72.4
234678-hexachlorodibenzofuran	0.83	<1.84	0.72	<1.13	54.3
123789-hexachlorodibenzofuran	0.65	3.72	<0.46	<1.61	113
1234678-heptachlorodibenzofuran	2.17	2.17	<1.63	<1.99	15.8
1234789-heptachlorodibenzofuran	<0.30	<1.84	<0.57	<0.90	91.3
Octachlorodibenzofuran	<3.65	<5.05	2.25	<3.65	38.3
PCB 81	<0.96	<0.69	<1.51	<1.05	39.8
PCB 77	10.7	21.1	<4.88	<12.2	67.3
PCB 123	<1.14	<3.91	<2.44	<2.50	55.4
PCB 118	75.2	230	91.2	132	64.4
PCB 114	<1.82	<5.74	<2.21	<3.26	66.3
PCB 105	24.3	72.4	30.8	42.5	61.4
PCB 126	<1.25	<0.88	<2.67	<1.60	58.8
PCB 167	1.46	2.23	1.12	1.60	35.3
PCB 156/157	<3.31	<4.94	3.80	<4.02	20.8
PCB 169	<0.49	<0.37	<0.98	<0.61	52.6
PCB 189	<0.48	<0.36	<1.14	<0.66	64.0
Total Dioxins & Furans Only	<40.4	<71.9	<39.1	<50.5	36.8
Total PCBs Only	<121	<342	<143	<202	60.4
Total Dioxins & Furans and PCBs	<162	<414	<182	<253	55.6

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	<0.42	<3.29	<0.33	<1.35	125
12378-pentachlorodibenzo-p-dioxin	<0.77	<2.90	0.71	<1.46	85.4
123478-hexachlorodibenzo-p-dioxin	<0.61	<4.26	<0.84	<1.90	107
123678-hexachlorodibenzo-p-dioxin	1.98	<4.06	<1.87	<2.64	46.9
123789-hexachlorodibenzo-p-dioxin	1.03	<4.06	<0.86	<1.98	91.0
1234678-heptachlorodibenzo-p-dioxin	<15.2	19.2	18.6	<17.7	12.4
Octachlorodibenzo-p-dioxin	31.3	46.4	28.8	35.5	26.8
2378-tetrachlorodibenzofuran	<0.48	<2.71	0.52	<1.24	103
12378-pentachlorodibenzofuran	0.63	<1.74	0.88	<1.08	53.9
23478-pentachlorodibenzofuran	<0.88	<1.63	<0.97	<1.16	34.9
123478-hexachlorodibenzofuran	0.93	<3.10	0.73	<1.59	82.7
123678-hexachlorodibenzofuran	<1.11	<3.10	0.86	<1.69	72.5
234678-hexachlorodibenzofuran	1.40	<3.10	1.21	<1.90	54.4
123789-hexachlorodibenzofuran	1.10	6.27	<0.78	<2.72	113
1234678-heptachlorodibenzofuran	3.65	3.66	<2.73	<3.34	16.0
1234789-heptachlorodibenzofuran	<0.50	<3.10	<0.95	<1.52	91.4
Octachlorodibenzofuran	<6.15	<8.51	3.78	<6.15	38.5
PCB 81	<1.61	<1.16	<2.53	<1.77	39.5
PCB 77	18.0	35.6	<8.18	<20.6	67.5
PCB 123	<1.92	<6.58	<4.09	<4.20	55.5
PCB 118	127	387	153	222	64.5
PCB 114	<3.07	<9.67	<3.70	<5.48	66.4
PCB 105	40.9	122	51.6	71.5	61.5
PCB 126	<2.11	<1.49	<4.48	<2.69	58.6
PCB 167	2.46	3.75	1.88	2.70	35.5
PCB 156/157	<5.57	<8.32	6.37	<6.75	20.9
PCB 169	<0.83	<0.62	<1.64	<1.03	52.4
PCB 189	<0.81	<0.60	<1.91	<1.11	63.7
Total Dioxins & Furans Only	<68.1	<121	<65.5	<84.9	37.0
Total PCBs Only	<204	<577	<239	<340	60.5
Total Dioxins & Furans and PCBs	<272	<698	<305	<425	55.8

* 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	<0.36	<2.84	<0.28	<1.16	125
12378-pentachlorodibenzo-p-dioxin	<0.66	<2.51	0.61	<1.26	86.0
123478-hexachlorodibenzo-p-dioxin	<0.53	<3.68	<0.71	<1.64	108
123678-hexachlorodibenzo-p-dioxin	1.70	<3.51	<1.59	<2.27	47.5
123789-hexachlorodibenzo-p-dioxin	0.88	<3.51	<0.73	<1.71	91.5
1234678-heptachlorodibenzo-p-dioxin	<13.1	16.6	15.8	<15.2	12.3
Octachlorodibenzo-p-dioxin	27.0	40.1	24.5	30.5	27.5
2378-tetrachlorodibenzofuran	<0.41	<2.34	0.44	<1.07	104
12378-pentachlorodibenzofuran	0.54	<1.50	0.75	<0.93	54.4
23478-pentachlorodibenzofuran	<0.76	<1.40	<0.83	<1.00	35.4
123478-hexachlorodibenzofuran	0.80	<2.67	0.62	<1.36	83.3
123678-hexachlorodibenzofuran	<0.96	<2.67	0.73	<1.45	73.1
234678-hexachlorodibenzofuran	1.21	<2.67	1.03	<1.64	55.1
123789-hexachlorodibenzofuran	0.95	5.41	<0.66	<2.34	114
1234678-heptachlorodibenzofuran	3.14	3.16	<2.32	<2.87	16.7
1234789-heptachlorodibenzofuran	<0.43	<2.67	<0.81	<1.30	92.0
Octachlorodibenzofuran	<5.29	<7.35	3.21	<5.29	39.2
PCB 81	<1.39	<1.00	<2.15	<1.51	38.6
PCB 77	15.5	30.7	<6.95	<17.7	68.0
PCB 123	<1.65	<5.68	<3.48	<3.60	55.9
PCB 118	109	334	130	191	65.1
PCB 114	<2.65	<8.35	<3.15	<4.72	67.0
PCB 105	35.2	105	43.9	61.5	62.1
PCB 126	<1.82	<1.29	<3.81	<2.30	57.7
PCB 167	2.12	3.24	1.60	2.32	36.2
PCB 156/157	<4.80	<7.18	5.41	<5.80	21.4
PCB 169	<0.71	<0.53	<1.39	<0.88	51.4
PCB 189	<0.69	<0.52	<1.62	<0.95	62.8
Total Dioxins & Furans Only	<58.7	<105	<55.6	<73.0	37.6
Total PCBs Only	<176	<498	<203	<292	61.1
Total Dioxins & Furans and PCBs	<234	<603	<259	<365	56.4

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

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

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.36	<2.80	<0.28	<1.15	125
12378-pentachlorodibenzo-p-dioxin	<0.66	<2.47	0.60	<1.24	85.5
123478-hexachlorodibenzo-p-dioxin	<0.52	<3.62	<0.71	<1.62	107
123678-hexachlorodibenzo-p-dioxin	1.69	<3.46	<1.58	<2.24	47.0
123789-hexachlorodibenzo-p-dioxin	0.87	<3.46	<0.72	<1.69	91.1
1234678-heptachlorodibenzo-p-dioxin	<12.9	16.4	15.7	<15.0	12.2
Octachlorodibenzo-p-dioxin	26.7	39.5	24.4	30.2	27.0
2378-tetrachlorodibenzofuran	<0.41	<2.30	0.44	<1.05	103
12378-pentachlorodibenzofuran	0.54	<1.48	0.74	<0.92	54.0
23478-pentachlorodibenzofuran	<0.75	<1.38	<0.82	<0.99	34.9
123478-hexachlorodibenzofuran	0.79	<2.63	0.62	<1.35	82.8
123678-hexachlorodibenzofuran	<0.95	<2.63	0.72	<1.44	72.6
234678-hexachlorodibenzofuran	1.20	<2.63	1.03	<1.62	54.6
123789-hexachlorodibenzofuran	0.94	5.33	<0.66	<2.31	114
1234678-heptachlorodibenzofuran	3.11	3.11	<2.31	<2.84	16.4
1234789-heptachlorodibenzofuran	<0.43	<2.63	<0.81	<1.29	91.6
Octachlorodibenzofuran	<5.24	<7.24	3.20	<5.23	38.7
PCB 81	<1.38	<0.99	<2.14	<1.50	39.1
PCB 77	15.3	30.28	<6.92	<17.5	67.6
PCB 123	<1.64	<5.60	<3.46	<3.56	55.6
PCB 118	108	329	129	189	64.6
PCB 114	<2.62	<8.23	<3.13	<4.66	66.6
PCB 105	34.9	104	43.6	60.7	61.7
PCB 126	<1.80	<1.27	<3.79	<2.29	58.1
PCB 167	2.10	3.19	1.59	2.29	35.7
PCB 156/157	<4.75	<7.08	5.39	<5.74	21.0
PCB 169	<0.70	<0.53	<1.38	<0.87	51.9
PCB 189	<0.69	<0.51	<1.61	<0.94	63.2
Total Dioxins & Furans Only	<58.1	<103	<55.4	<72.2	37.1
Total PCBs Only	<174	<491	<202	<289	60.6
Total Dioxins & Furans and PCBs	<232	<594	<258	<361	55.9

* 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 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.0074	<0.056	<0.0054	<0.023	125
12378-pentachlorodibenzo-p-dioxin	<0.013	<0.050	0.012	<0.025	86.1
123478-hexachlorodibenzo-p-dioxin	<0.011	<0.073	<0.014	<0.032	108
123678-hexachlorodibenzo-p-dioxin	0.034	<0.069	<0.031	<0.045	47.7
123789-hexachlorodibenzo-p-dioxin	0.018	<0.069	<0.014	<0.034	91.6
1234678-heptachlorodibenzo-p-dioxin	<0.26	0.33	0.31	<0.30	11.0
Octachlorodibenzo-p-dioxin	0.54	0.79	0.47	0.60	27.9
2378-tetrachlorodibenzofuran	<0.0084	<0.046	0.0086	<0.021	104
12378-pentachlorodibenzofuran	0.011	<0.030	0.014	<0.018	54.5
23478-pentachlorodibenzofuran	<0.015	<0.028	<0.016	<0.020	35.5
123478-hexachlorodibenzofuran	0.016	<0.053	0.012	<0.027	83.3
123678-hexachlorodibenzofuran	<0.019	<0.053	0.014	<0.029	73.2
234678-hexachlorodibenzofuran	0.024	<0.053	0.020	<0.032	55.3
123789-hexachlorodibenzofuran	0.019	0.11	<0.013	<0.046	114
1234678-heptachlorodibenzofuran	0.063	0.063	<0.045	<0.057	18.6
1234789-heptachlorodibenzofuran	<0.0087	<0.053	<0.016	<0.026	92.4
Octachlorodibenzofuran	<0.11	<0.15	0.062	<0.10	39.9
PCB 81	<0.028	<0.020	<0.042	<0.030	36.7
PCB 77	0.31	0.61	<0.13	<0.35	68.1
PCB 123	<0.033	<0.11	<0.067	<0.071	55.9
PCB 118	2.20	6.62	2.51	3.78	65.3
PCB 114	<0.053	<0.17	<0.061	<0.093	67.2
PCB 105	0.71	2.08	0.85	1.21	62.3
PCB 126	<0.037	<0.025	<0.073	<0.045	55.5
PCB 167	0.043	0.064	0.031	0.046	36.7
PCB 156/157	<0.097	<0.14	0.10	<0.11	21.2
PCB 169	<0.014	<0.011	<0.027	<0.017	49.3
PCB 189	<0.014	<0.010	<0.031	<0.019	60.6
Total Dioxins & Furans Only	<1.19	<2.07	<1.07	<1.44	37.9
Total PCBs Only	<3.55	<9.86	<3.93	<5.78	61.3
Total Dioxins & Furans and PCBs	<4.73	<11.9	<5.00	<7.22	56.5

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	<0.80	<1.35	<1.16	<1.15	<0.023
12378-pentachlorodibenzo-p-dioxin	<0.87	<1.46	<1.26	<1.24	<0.025
123478-hexachlorodibenzo-p-dioxin	<1.13	<1.90	<1.64	<1.62	<0.032
123678-hexachlorodibenzo-p-dioxin	<1.57	<2.64	<2.27	<2.24	<0.045
123789-hexachlorodibenzo-p-dioxin	<1.18	<1.98	<1.71	<1.69	<0.034
1234678-heptachlorodibenzo-p-dioxin	<10.5	<17.7	<15.2	<15.0	<0.30
Octachlorodibenzo-p-dioxin	21.1	35.5	30.5	30.2	0.60
2378-tetrachlorodibenzofuran	<0.73	<1.24	<1.07	<1.05	<0.021
12378-pentachlorodibenzofuran	<0.64	<1.08	<0.93	<0.92	<0.018
23478-pentachlorodibenzofuran	<0.69	<1.16	<1.00	<0.99	<0.020
123478-hexachlorodibenzofuran	<0.94	<1.59	<1.36	<1.35	<0.027
123678-hexachlorodibenzofuran	<1.00	<1.69	<1.45	<1.44	<0.029
234678-hexachlorodibenzofuran	<1.13	<1.90	<1.64	<1.62	<0.032
123789-hexachlorodibenzofuran	<1.61	<2.72	<2.34	<2.31	<0.046
1234678-heptachlorodibenzofuran	<1.99	<3.34	<2.87	<2.84	<0.057
1234789-heptachlorodibenzofuran	<0.90	<1.52	<1.30	<1.29	<0.026
Octachlorodibenzofuran	<3.65	<6.15	<5.29	<5.23	<0.10
PCB 81	<1.05	<1.77	<1.51	<1.50	<0.030
PCB 77	<12.2	<20.6	<17.7	<17.5	<0.35
PCB 123	<2.50	<4.20	<3.60	<3.56	<0.071
PCB 118	132	222	191	189	3.78
PCB 114	<3.26	<5.48	<4.72	<4.66	<0.093
PCB 105	42.5	71.5	61.5	60.7	1.21
PCB 126	<1.60	<2.69	<2.30	<2.29	<0.045
PCB 167	1.60	2.70	2.32	2.29	0.046
PCB 156/157	<4.02	<6.75	<5.80	<5.74	<0.11
PCB 169	<0.61	<1.03	<0.88	<0.87	<0.017
PCB 189	<0.66	<1.11	<0.95	<0.94	<0.019
Total Dioxins & Furans Only	<50.5	<84.9	<73.0	<72.2	<1.44
Total PCBs Only	<202	<340	<292	<289	<5.78
Total Dioxins & Furans and PCBs	<253	<425	<365	<361	<7.22

* 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	Method Blank pg
2378-tetrachlorodibenzo-p-dioxin	<1.1	<1.5
12378-pentachlorodibenzo-p-dioxin	<0.93	<2.0
123478-hexachlorodibenzo-p-dioxin	<1.1	<2.2
123678-hexachlorodibenzo-p-dioxin	<1.0	<2.1
123789-hexachlorodibenzo-p-dioxin	<1.0	<2.1
1234678-heptachlorodibenzo-p-dioxin	<2.4	<4.4
Octachlorodibenzo-p-dioxin	7.23	18.5
2378-tetrachlorodibenzofuran	<1.1	<1.4
12378-pentachlorodibenzofuran	<1.8	2.18
23478-pentachlorodibenzofuran	<0.85	<1.1
123478-hexachlorodibenzofuran	<0.66	<1.5
123678-hexachlorodibenzofuran	<0.63	<1.4
234678-hexachlorodibenzofuran	<0.65	<1.5
123789-hexachlorodibenzofuran	<2.5	3.41
1234678-heptachlorodibenzofuran	<0.85	<2.6
1234789-heptachlorodibenzofuran	<1.0	<3.0
Octachlorodibenzofuran	2.40	<15
PCB 81	<5.9	<8.7
PCB 77	<6.4	<9.1
PCB 123	<10	<15
PCB 118	<17	<14
PCB 114	<9.6	<14
PCB 105	<10	<14
PCB 126	<11	<17
PCB 167	<4.3	<4.9
PCB 156/157	<6.8	<7.5
PCB 169	<4.8	<5.3
PCB 189	<4.2	<6.8
Total Dioxins & Furans Only	<27.2	<65.9
Total PCBs Only	<90.0	<116
Total Dioxins & Furans and PCBs	<117	<182

"<" 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	<0.25	<1.95	<0.20	<0.80
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.46	<1.72	0.43	<0.87
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.036	<0.25	<0.050	<0.11
123678-hexachlorodibenzo-p-dioxin	0.10000	0.12	<0.24	<0.11	<0.16
123789-hexachlorodibenzo-p-dioxin	0.10000	0.061	<0.24	<0.051	<0.12
1234678-heptachlorodibenzo-p-dioxin	0.01000	<0.090	0.11	0.11	<0.11
Octachlorodibenzo-p-dioxin	0.00030	0.0056	0.0083	0.0052	0.0063
2378-tetrachlorodibenzofuran	0.10000	<0.029	<0.16	0.031	<0.073
12378-pentachlorodibenzofuran	0.03000	0.011	<0.031	0.016	<0.019
23478-pentachlorodibenzofuran	0.30000	<0.16	<0.29	<0.17	<0.21
123478-hexachlorodibenzofuran	0.10000	0.055	<0.18	0.044	<0.094
123678-hexachlorodibenzofuran	0.10000	<0.066	<0.18	0.051	<0.10
234678-hexachlorodibenzofuran	0.10000	0.083	<0.18	0.072	<0.11
123789-hexachlorodibenzofuran	0.10000	0.065	0.37	<0.046	<0.16
1234678-heptachlorodibenzofuran	0.01000	0.022	0.022	<0.016	<0.020
1234789-heptachlorodibenzofuran	0.01000	<0.0030	<0.018	<0.0057	<0.0090
Octachlorodibenzofuran	0.00030	<0.0011	<0.0015	0.00068	<0.0011
PCB 81	0.00030	<0.00029	<0.00021	<0.00045	<0.00032
PCB 77	0.00010	0.0011	0.0021	<0.00049	<0.0012
PCB 123	0.00003	<0.000034	<0.00012	<0.000073	<0.000075
PCB 118	0.00003	0.0023	0.0069	0.0027	0.0040
PCB 114	0.00003	<0.000055	<0.00017	<0.000066	<0.000098
PCB 105	0.00003	0.00073	0.0022	0.00092	0.0013
PCB 126	0.10000	<0.13	<0.088	<0.27	<0.16
PCB 167	0.00003	0.000044	0.000067	0.000034	0.000048
PCB 156/157	0.00003	<0.000099	<0.00015	0.00011	<0.00012
PCB 169	0.03000	<0.015	<0.011	<0.029	<0.018
PCB 189	0.00003	<0.000014	<0.000011	<0.000034	<0.000020
Total Dioxins & Furans Only		<1.51	<5.98	<1.41	<2.97
Total PCBs Only		<0.14	<0.11	<0.30	<0.19
Total Dioxins & Furans and PCBs		<1.65	<6.09	<1.71	<3.15

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	<0.42	<3.29	<0.33	<1.35
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.77	<2.90	0.71	<1.46
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.061	<0.43	<0.084	<0.19
123678-hexachlorodibenzo-p-dioxin	0.10000	0.20	<0.41	<0.19	<0.26
123789-hexachlorodibenzo-p-dioxin	0.10000	0.10	<0.41	<0.086	<0.20
1234678-heptachlorodibenzo-p-dioxin	0.01000	<0.15	0.19	0.19	<0.18
Octachlorodibenzo-p-dioxin	0.00030	0.0094	0.014	0.0086	0.011
2378-tetrachlorodibenzofuran	0.10000	<0.048	<0.27	0.052	<0.12
12378-pentachlorodibenzofuran	0.03000	0.019	<0.052	0.026	<0.032
23478-pentachlorodibenzofuran	0.30000	<0.27	<0.49	<0.29	<0.35
123478-hexachlorodibenzofuran	0.10000	0.093	<0.31	0.073	<0.16
123678-hexachlorodibenzofuran	0.10000	<0.11	<0.31	0.086	<0.17
234678-hexachlorodibenzofuran	0.10000	0.14	<0.31	0.12	<0.19
123789-hexachlorodibenzofuran	0.10000	0.11	0.63	<0.078	<0.27
1234678-heptachlorodibenzofuran	0.01000	0.036	0.037	<0.027	<0.033
1234789-heptachlorodibenzofuran	0.01000	<0.0050	<0.031	<0.0095	<0.015
Octachlorodibenzofuran	0.00030	<0.0018	<0.0026	0.0011	<0.0018
PCB 81	0.00030	<0.00048	<0.00035	<0.00076	<0.00053
PCB 77	0.00010	0.0018	0.0036	<0.00082	<0.0021
PCB 123	0.00003	<0.000058	<0.00020	<0.00012	<0.00013
PCB 118	0.00003	0.0038	0.012	0.0046	0.0067
PCB 114	0.00003	<0.000092	<0.00029	<0.00011	<0.00016
PCB 105	0.00003	0.0012	0.0037	0.0015	0.0021
PCB 126	0.10000	<0.21	<0.15	<0.45	<0.27
PCB 167	0.00003	0.000074	0.00011	0.000057	0.000081
PCB 156/157	0.00003	<0.00017	<0.00025	0.00019	<0.00020
PCB 169	0.03000	<0.025	<0.019	<0.049	<0.031
PCB 189	0.00003	<0.000024	<0.000018	<0.000057	<0.000033
Total Dioxins & Furans Only		<2.54	<10.1	<2.36	<4.99
Total PCBs Only		<0.24	<0.19	<0.51	<0.31
Total Dioxins & Furans and PCBs		<2.79	<10.3	<2.87	<5.30

* 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	<0.36	<2.84	<0.28	<1.16
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.66	<2.51	0.61	<1.26
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.053	<0.37	<0.071	<0.16
123678-hexachlorodibenzo-p-dioxin	0.10000	0.17	<0.35	<0.16	<0.23
123789-hexachlorodibenzo-p-dioxin	0.10000	0.088	<0.35	<0.073	<0.17
1234678-heptachlorodibenzo-p-dioxin	0.01000	<0.13	0.17	0.16	<0.15
Octachlorodibenzo-p-dioxin	0.00030	0.0081	0.012	0.0074	0.0092
2378-tetrachlorodibenzofuran	0.10000	<0.041	<0.23	0.044	<0.11
12378-pentachlorodibenzofuran	0.03000	0.016	<0.045	0.022	<0.028
23478-pentachlorodibenzofuran	0.30000	<0.23	<0.42	<0.25	<0.30
123478-hexachlorodibenzofuran	0.10000	0.080	<0.27	0.062	<0.14
123678-hexachlorodibenzofuran	0.10000	<0.096	<0.27	0.073	<0.15
234678-hexachlorodibenzofuran	0.10000	0.12	<0.27	0.10	<0.16
123789-hexachlorodibenzofuran	0.10000	0.095	0.54	<0.066	<0.23
1234678-heptachlorodibenzofuran	0.01000	0.031	0.032	<0.023	<0.029
1234789-heptachlorodibenzofuran	0.01000	<0.0043	<0.027	<0.0081	<0.013
Octachlorodibenzofuran	0.00030	<0.0016	<0.0022	0.00096	<0.0016
PCB 81	0.00030	<0.00042	<0.00030	<0.00065	<0.00045
PCB 77	0.00010	0.0016	0.0031	<0.00070	<0.0018
PCB 123	0.00003	<0.000050	<0.00017	<0.00010	<0.00011
PCB 118	0.00003	0.0033	0.010	0.0039	0.0057
PCB 114	0.00003	<0.000079	<0.00025	<0.000094	<0.00014
PCB 105	0.00003	0.0011	0.0032	0.0013	0.0018
PCB 126	0.10000	<0.18	<0.13	<0.38	<0.23
PCB 167	0.00003	0.000064	0.000097	0.000048	0.000070
PCB 156/157	0.00003	<0.00014	<0.00022	0.00016	<0.00017
PCB 169	0.03000	<0.021	<0.016	<0.042	<0.026
PCB 189	0.00003	<0.000021	<0.000016	<0.000049	<0.000028
Total Dioxins & Furans Only		<2.19	<8.70	<2.01	<4.30
Total PCBs Only		<0.21	<0.16	<0.43	<0.27
Total Dioxins & Furans and PCBs		<2.40	<8.86	<2.44	<4.57

* 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	0.18	1.42	0.14	0.58
12378-pentachlorodibenzo-p-dioxin	1.00000	0.33	1.25	0.61	0.73
123478-hexachlorodibenzo-p-dioxin	0.10000	0.026	0.18	0.036	0.082
123678-hexachlorodibenzo-p-dioxin	0.10000	0.17	0.18	0.079	0.14
123789-hexachlorodibenzo-p-dioxin	0.10000	0.088	0.18	0.036	0.10
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.065	0.17	0.16	0.13
Octachlorodibenzo-p-dioxin	0.00030	0.0081	0.012	0.0074	0.0092
2378-tetrachlorodibenzofuran	0.10000	0.021	0.12	0.044	0.061
12378-pentachlorodibenzofuran	0.03000	0.016	0.023	0.022	0.020
23478-pentachlorodibenzofuran	0.30000	0.11	0.21	0.12	0.15
123478-hexachlorodibenzofuran	0.10000	0.080	0.13	0.062	0.092
123678-hexachlorodibenzofuran	0.10000	0.048	0.13	0.073	0.085
234678-hexachlorodibenzofuran	0.10000	0.12	0.13	0.10	0.12
123789-hexachlorodibenzofuran	0.10000	0.095	0.54	0.033	0.22
1234678-heptachlorodibenzofuran	0.01000	0.031	0.032	0.012	0.025
1234789-heptachlorodibenzofuran	0.01000	0.0022	0.013	0.0041	0.0065
Octachlorodibenzofuran	0.00030	0.00079	0.0011	0.00096	0.00095
PCB 81	0.00030	0.00021	0.00015	0.00032	0.00023
PCB 77	0.00010	0.0016	0.0031	0.00035	0.0017
PCB 123	0.00003	0.000025	0.000085	0.000052	0.000054
PCB 118	0.00003	0.0033	0.010	0.0039	0.0057
PCB 114	0.00003	0.000040	0.00013	0.000047	0.000071
PCB 105	0.00003	0.0011	0.0032	0.0013	0.0018
PCB 126	0.10000	0.091	0.064	0.19	0.12
PCB 167	0.00003	0.000064	0.000097	0.000048	0.000070
PCB 156/157	0.00003	0.000072	0.00011	0.00016	0.00011
PCB 169	0.03000	0.011	0.0080	0.021	0.013
PCB 189	0.00003	0.000010	0.0000078	0.0000243	0.000014
Total Dioxins & Furans Only		1.40	4.72	1.54	2.56
Total PCBs Only		0.11	0.089	0.22	0.14
Total Dioxins & Furans and PCBs		1.51	4.81	1.76	2.69

* 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	1.00	<0.36	<2.84	<0.28	<1.16
12378-pentachlorodibenzo-p-dioxin	0.50	<0.33	<1.25	0.30	<0.63
123478-hexachlorodibenzo-p-dioxin	0.10	<0.053	<0.37	<0.071	<0.16
123678-hexachlorodibenzo-p-dioxin	0.10	0.17	<0.35	<0.16	<0.23
123789-hexachlorodibenzo-p-dioxin	0.10	0.088	<0.35	<0.073	<0.17
1234678-heptachlorodibenzo-p-dioxin	0.01	<0.13	0.17	0.16	<0.15
Octachlorodibenzo-p-dioxin	0.00	0.027	0.040	0.025	0.031
2378-tetrachlorodibenzofuran	0.10	<0.041	<0.23	0.044	<0.11
12378-pentachlorodibenzofuran	0.05	0.027	<0.075	0.037	<0.047
23478-pentachlorodibenzofuran	0.50	<0.38	<0.70	<0.41	<0.50
123478-hexachlorodibenzofuran	0.10	0.080	<0.27	0.062	<0.14
123678-hexachlorodibenzofuran	0.10	<0.096	<0.27	0.073	<0.15
234678-hexachlorodibenzofuran	0.10	0.12	<0.27	0.10	<0.16
123789-hexachlorodibenzofuran	0.10	0.095	0.54	<0.066	<0.23
1234678-heptachlorodibenzofuran	0.01	0.031	0.032	<0.023	<0.029
1234789-heptachlorodibenzofuran	0.01	<0.0043	<0.027	<0.0081	<0.013
Octachlorodibenzofuran	0.00	<0.0053	<0.0074	0.0032	<0.0053
Total Dioxins & Furans		<2.05	<7.79	<1.90	<3.91
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	<0.36	<2.80	<0.28	<1.15
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.66	<2.47	0.60	<1.24
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.052	<0.36	<0.071	<0.16
123678-hexachlorodibenzo-p-dioxin	0.10000	0.17	<0.35	<0.16	<0.22
123789-hexachlorodibenzo-p-dioxin	0.10000	0.087	<0.35	<0.072	<0.17
1234678-heptachlorodibenzo-p-dioxin	0.01000	<0.13	0.16	0.16	<0.15
Octachlorodibenzo-p-dioxin	0.00030	0.0080	0.012	0.0073	0.0091
2378-tetrachlorodibenzofuran	0.10000	<0.041	<0.23	0.044	<0.11
12378-pentachlorodibenzofuran	0.03000	0.016	<0.044	0.022	<0.028
23478-pentachlorodibenzofuran	0.30000	<0.23	<0.41	<0.25	<0.30
123478-hexachlorodibenzofuran	0.10000	0.079	<0.26	0.062	<0.13
123678-hexachlorodibenzofuran	0.10000	<0.095	<0.26	0.072	<0.14
234678-hexachlorodibenzofuran	0.10000	0.12	<0.26	0.10	<0.16
123789-hexachlorodibenzofuran	0.10000	0.094	0.53	<0.066	<0.23
1234678-heptachlorodibenzofuran	0.01000	0.031	0.031	<0.023	<0.028
1234789-heptachlorodibenzofuran	0.01000	<0.0043	<0.026	<0.0081	<0.013
Octachlorodibenzofuran	0.00030	<0.0016	<0.0022	0.00096	<0.0016
PCB 81	0.00030	<0.00041	<0.00030	<0.00064	<0.00045
PCB 77	0.00010	0.0015	0.0030	<0.00069	<0.0018
PCB 123	0.00003	<0.000049	<0.00017	<0.00010	<0.00011
PCB 118	0.00003	0.0032	0.0099	0.0039	0.0057
PCB 114	0.00003	<0.000079	<0.00025	<0.000094	<0.00014
PCB 105	0.00003	0.0010	0.0031	0.0013	0.0018
PCB 126	0.10000	<0.18	<0.13	<0.38	<0.23
PCB 167	0.00003	0.000063	0.000096	0.000048	0.000069
PCB 156/157	0.00003	<0.00014	<0.00021	0.00016	<0.00017
PCB 169	0.03000	<0.021	<0.016	<0.042	<0.026
PCB 189	0.00003	<0.000021	<0.000015	<0.000048	<0.000028
Total Dioxins & Furans Only		<2.17	<8.57	<2.00	<4.24
Total PCBs Only		<0.21	<0.16	<0.43	<0.26
Total Dioxins & Furans and PCBs		<2.38	<8.73	<2.42	<4.51

* 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	<0.0074	<0.056	<0.0054	<0.023
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.013	<0.050	0.012	<0.025
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.0011	<0.0073	<0.0014	<0.0032
123678-hexachlorodibenzo-p-dioxin	0.10000	0.0034	<0.0069	<0.0031	<0.0045
123789-hexachlorodibenzo-p-dioxin	0.10000	0.0018	<0.0069	<0.0014	<0.0034
1234678-heptachlorodibenzo-p-dioxin	0.01000	<0.0026	0.0033	0.0031	<0.0030
Octachlorodibenzo-p-dioxin	0.00030	0.00016	0.00024	0.00014	0.00018
2378-tetrachlorodibenzofuran	0.10000	<0.00084	<0.0046	0.00086	<0.0021
12378-pentachlorodibenzofuran	0.03000	0.00033	<0.00089	0.00043	<0.00055
23478-pentachlorodibenzofuran	0.30000	<0.0046	<0.0083	<0.0048	<0.0059
123478-hexachlorodibenzofuran	0.10000	0.0016	<0.0053	0.0012	<0.0027
123678-hexachlorodibenzofuran	0.10000	<0.0019	<0.0053	0.0014	<0.0029
234678-hexachlorodibenzofuran	0.10000	0.0024	<0.0053	0.0020	<0.0032
123789-hexachlorodibenzofuran	0.10000	0.0019	0.011	<0.0013	<0.0046
1234678-heptachlorodibenzofuran	0.01000	0.00063	0.00063	<0.00045	<0.00057
1234789-heptachlorodibenzofuran	0.01000	<0.000087	<0.00053	<0.00016	<0.00026
Octachlorodibenzofuran	0.00030	<0.000032	<0.000044	0.000019	<0.000031
PCB 81	0.00030	<0.0000084	<0.0000060	<0.000012	<0.0000089
PCB 77	0.00010	0.000031	0.000061	<0.000013	<0.000035
PCB 123	0.00003	<0.0000010	<0.0000034	<0.0000020	<0.0000021
PCB 118	0.00003	0.000066	0.00020	0.000075	0.00011
PCB 114	0.00003	<0.0000016	<0.0000050	<0.0000018	<0.0000028
PCB 105	0.00003	0.000021	0.000063	0.000025	0.000036
PCB 126	0.10000	<0.0037	<0.0025	<0.0073	<0.0045
PCB 167	0.00003	0.0000013	0.0000019	0.00000093	0.0000014
PCB 156/157	0.00003	<0.0000029	<0.0000043	0.0000031	<0.0000034
PCB 169	0.03000	<0.00043	<0.00032	<0.00081	<0.00052
PCB 189	0.00003	<0.00000042	<0.00000031	<0.00000094	<0.00000056
Total Dioxins & Furans Only		<0.044	<0.17	<0.039	<0.085
Total PCBs Only		<0.0042	<0.0032	<0.0083	<0.0052
Total Dioxins & Furans and PCBs		<0.048	<0.18	<0.047	<0.090

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	<0.80	<1.35	<1.16	<1.15	<0.023
12378-pentachlorodibenzo-p-dioxin	<0.87	<1.46	<1.26	<1.24	<0.025
123478-hexachlorodibenzo-p-dioxin	<0.11	<0.19	<0.16	<0.16	<0.0032
123678-hexachlorodibenzo-p-dioxin	<0.16	<0.26	<0.23	<0.22	<0.0045
123789-hexachlorodibenzo-p-dioxin	<0.12	<0.20	<0.17	<0.17	<0.0034
1234678-heptachlorodibenzo-p-dioxin	<0.11	<0.18	<0.15	<0.15	<0.0030
Octachlorodibenzo-p-dioxin	0.0063	0.011	0.0092	0.0091	0.00018
2378-tetrachlorodibenzofuran	<0.073	<0.12	<0.11	<0.11	<0.0021
12378-pentachlorodibenzofuran	<0.019	<0.032	<0.028	<0.028	<0.00055
23478-pentachlorodibenzofuran	<0.21	<0.35	<0.30	<0.30	<0.0059
123478-hexachlorodibenzofuran	<0.094	<0.16	<0.14	<0.13	<0.0027
123678-hexachlorodibenzofuran	<0.10	<0.17	<0.15	<0.14	<0.0029
234678-hexachlorodibenzofuran	<0.11	<0.19	<0.16	<0.16	<0.0032
123789-hexachlorodibenzofuran	<0.16	<0.27	<0.23	<0.23	<0.0046
1234678-heptachlorodibenzofuran	<0.020	<0.033	<0.029	<0.028	<0.00057
1234789-heptachlorodibenzofuran	<0.0090	<0.015	<0.013	<0.013	<0.00026
Octachlorodibenzofuran	<0.0011	<0.0018	<0.0016	<0.0016	<0.000031
PCB 81	<0.00032	<0.00053	<0.00045	<0.00045	<0.0000089
PCB 77	<0.0012	<0.0021	<0.0018	<0.0018	<0.000035
PCB 123	<0.000075	<0.00013	<0.00011	<0.00011	<0.0000021
PCB 118	0.0040	0.0067	0.0057	0.0057	0.00011
PCB 114	<0.000098	<0.00016	<0.00014	<0.00014	<0.0000028
PCB 105	0.0013	0.0021	0.0018	0.0018	0.000036
PCB 126	<0.16	<0.27	<0.23	<0.23	<0.0045
PCB 167	0.000048	0.000081	0.000070	0.000069	0.0000014
PCB 156/157	<0.00012	<0.00020	<0.00017	<0.00017	<0.0000034
PCB 169	<0.018	<0.031	<0.026	<0.026	<0.00052
PCB 189	<0.000020	<0.000033	<0.000028	<0.000028	<0.00000056
Total Dioxins & Furans Only	<2.97	<4.99	<4.30	<4.24	<0.085
Total PCBs Only	<0.19	<0.31	<0.27	<0.26	<0.0052
Total Dioxins & Furans and PCBs	<3.15	<5.30	<4.57	<4.51	<0.090

* 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	0.40	0.67	0.58	0.57	0.012
12378-pentachlorodibenzo-p-dioxin	0.50	0.85	0.73	0.72	0.014
123478-hexachlorodibenzo-p-dioxin	0.057	0.095	0.082	0.081	0.0016
123678-hexachlorodibenzo-p-dioxin	0.098	0.16	0.14	0.14	0.0028
123789-hexachlorodibenzo-p-dioxin	0.069	0.12	0.10	0.099	0.0020
1234678-heptachlorodibenzo-p-dioxin	0.090	0.15	0.13	0.13	0.0026
Octachlorodibenzo-p-dioxin	0.0063	0.011	0.0092	0.0091	0.00018
2378-tetrachlorodibenzofuran	0.042	0.071	0.061	0.060	0.0012
12378-pentachlorodibenzofuran	0.014	0.024	0.020	0.020	0.00040
23478-pentachlorodibenzofuran	0.10	0.17	0.15	0.15	0.0030
123478-hexachlorodibenzofuran	0.064	0.11	0.092	0.091	0.0018
123678-hexachlorodibenzofuran	0.059	0.099	0.085	0.084	0.0017
234678-hexachlorodibenzofuran	0.083	0.14	0.12	0.12	0.0024
123789-hexachlorodibenzofuran	0.15	0.26	0.22	0.22	0.0044
1234678-heptachlorodibenzofuran	0.017	0.029	0.025	0.025	0.00049
1234789-heptachlorodibenzofuran	0.0045	0.0076	0.0065	0.0064	0.00013
Octachlorodibenzofuran	0.00066	0.0011	0.00095	0.00094	0.000019
PCB 81	0.00016	0.00027	0.00023	0.00023	0.0000045
PCB 77	0.0011	0.0019	0.0017	0.0016	0.000033
PCB 123	0.000037	0.000063	0.000054	0.000053	0.0000011
PCB 118	0.0040	0.0067	0.0057	0.0057	0.00011
PCB 114	0.000049	0.000082	0.000071	0.000070	0.0000014
PCB 105	0.0013	0.0021	0.0018	0.0018	0.000036
PCB 126	0.080	0.13	0.12	0.11	0.0023
PCB 167	0.000048	0.000081	0.000070	0.000069	0.0000014
PCB 156/157	0.000079	0.00013	0.00011	0.00011	0.0000022
PCB 169	0.0092	0.015	0.013	0.013	0.00026
PCB 189	0.0000099	0.000017	0.000014	0.000014	0.00000028
Total Dioxins & Furans Only	1.77	2.97	2.56	2.53	0.051
Total PCBs Only	0.096	0.16	0.14	0.14	0.0027
Total Dioxins & Furans and PCBs	1.86	3.13	2.69	2.66	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: 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	NQ	NQ	NQ	NQ	NQ	NQ
1,3-Dichlorobenzene	199	22.7	38.2	32.9	32.6	0.66
1,4-Dichlorobenzene	290	33.1	55.7	48.0	47.5	0.97
1,2-Dichlorobenzene	208	23.7	39.9	34.4	34.1	0.70
Total Dichlorobenzene	697	79.5	134	115	114	2.33
1,3,5-trichlorobenzene	20.1	2.29	3.86	3.33	3.29	0.067
1,2,4-trichlorobenzene	62.6	7.14	12.0	10.4	10.3	0.21
1,2,3-trichlorobenzene	18.0	2.05	3.46	2.98	2.95	0.060
Total Trichlorobenzene	101	11.5	19.3	16.7	16.5	0.34
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	20.3	2.32	3.90	3.36	3.33	0.068
1,2,3,4-tetrachlorobenzene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Total Tetrachlorobenzene	<32.3	<3.68	<6.20	<5.34	<5.29	<0.11
Pentachlorobenzene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Hexachlorobenzene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Total Chlorobenzenes	<854	<97.4	<164	<141	<140	<2.85

Dry Gas Volume Sampled (Rm³*) :	5.207
Actual Flowrate (m³/s) :	29.3
Dry Reference Flowrate (Rm³/s*) :	17.4
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	20.4

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.
NQ - Indicates that this compound is not quantifiable due to spike recovery loss.

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/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	NQ	NQ	NQ	NQ	NQ	NQ
1,3-Dichlorobenzene	153	17.6	29.6	25.6	25.2	0.51
1,4-Dichlorobenzene	257	29.5	49.7	42.9	42.3	0.85
1,2-Dichlorobenzene	159	18.3	30.8	26.6	26.2	0.53
Total Dichlorobenzene	569	65.4	110	95.1	93.6	1.88
1,3,5-trichlorobenzene	15.7	1.80	3.04	2.62	2.58	0.052
1,2,4-trichlorobenzene	55.3	6.35	10.7	9.24	9.10	0.18
1,2,3-trichlorobenzene	15.9	1.83	3.08	2.66	2.62	0.053
Total Trichlorobenzene	86.9	9.98	16.8	14.5	14.3	0.29
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	18.5	2.13	3.58	3.09	3.04	0.061
1,2,3,4-tetrachlorobenzene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Total Tetrachlorobenzene	<30.5	<3.50	<5.90	<5.10	<5.02	<0.10
Pentachlorobenzene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Hexachlorobenzene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Total Chlorobenzenes	<710	<81.6	<137	<119	<117	<2.35

Dry Gas Volume Sampled (Rm^3*) :	5.169
Actual Flowrate (m^3/s) :	28.8
Dry Reference Flowrate ($Rm^3/s*$) :	17.1
Dry Adjusted Flowrate ($Rm^3/s**$) :	19.8
Wet Reference Flowrate ($Rm^3/s*$) :	20.1

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.
NQ - Indicates that this compound is not quantifiable due to spike recovery loss.

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	NQ	NQ	NQ	NQ	NQ	NQ
1,3-Dichlorobenzene	167	19.4	32.5	27.6	27.5	0.53
1,4-Dichlorobenzene	280	32.5	54.5	46.4	46.1	0.89
1,2-Dichlorobenzene	176	20.4	34.3	29.1	29.0	0.56
Total Dichlorobenzene	623	72.4	121	103	103	1.99
1,3,5-trichlorobenzene	14.1	1.64	2.75	2.33	2.32	0.045
1,2,4-trichlorobenzene	44.5	5.17	8.67	7.37	7.33	0.14
1,2,3-trichlorobenzene	12.7	1.48	2.47	2.10	2.09	0.041
Total Trichlorobenzene	71.3	8.28	13.9	11.8	11.7	0.23
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	14.0	1.63	2.73	2.32	2.31	0.045
1,2,3,4-tetrachlorobenzene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Total Tetrachlorobenzene	<26.0	<3.02	<5.07	<4.30	<4.28	<0.083
Pentachlorobenzene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Hexachlorobenzene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Total Chlorobenzenes	<744	<86.5	<145	<123	<123	<2.38

Dry Gas Volume Sampled (Rm³*) :	5.133
Actual Flowrate (m³/s) :	27.5
Dry Reference Flowrate (Rm³/s*) :	16.4
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.4

* 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.
NQ - Indicates that this compound is not quantifiable due to spike recovery loss.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 2 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	NQ	NQ	NQ	NQ	-
1,3-Dichlorobenzene	22.7	17.6	19.4	19.9	13.0
1,4-Dichlorobenzene	33.1	29.5	32.5	31.7	6.0
1,2-Dichlorobenzene	23.7	18.3	20.4	20.8	13.2
Total Dichlorobenzene	79.5	65.4	72.4	72.4	9.8
1,3,5-trichlorobenzene	2.29	1.80	1.64	1.91	17.8
1,2,4-trichlorobenzene	7.14	6.35	5.17	6.22	15.9
1,2,3-trichlorobenzene	2.05	1.83	1.48	1.78	16.3
Total Trichlorobenzene	11.5	9.98	8.28	9.92	16.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.32	2.13	1.63	2.02	17.6
1,2,3,4-tetrachlorobenzene	<1.37	<1.38	<1.39	<1.38	0.9
Total Tetrachlorobenzene	<3.68	<3.50	<3.02	<3.40	10.1
Pentachlorobenzene	<1.37	<1.38	<1.39	<1.38	0.9
Hexachlorobenzene	<1.37	<1.38	<1.39	<1.38	0.9
Total Chlorobenzenes	<97.4	<81.6	<86.5	<88.5	9.1

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 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Monochlorobenzene	NQ	NQ	NQ	NQ	-
1,3-Dichlorobenzene	38.2	29.6	32.5	33.5	13.1
1,4-Dichlorobenzene	55.7	49.7	54.5	53.3	5.9
1,2-Dichlorobenzene	39.9	30.8	34.3	35.0	13.2
Total Dichlorobenzene	134	110	121	122	9.8
1,3,5-trichlorobenzene	3.86	3.04	2.75	3.21	18.0
1,2,4-trichlorobenzene	12.0	10.7	8.67	10.5	16.1
1,2,3-trichlorobenzene	3.46	3.08	2.47	3.00	16.5
Total Trichlorobenzene	19.3	16.8	13.9	16.7	16.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.90	3.58	2.73	3.40	17.8
1,2,3,4-tetrachlorobenzene	<2.30	<2.32	<2.34	<2.32	0.7
Total Tetrachlorobenzene	<6.20	<5.90	<5.07	<5.72	10.3
Pentachlorobenzene	<2.30	<2.32	<2.34	<2.32	0.7
Hexachlorobenzene	<2.30	<2.32	<2.34	<2.32	0.7
Total Chlorobenzenes	<164	<137	<145	<149	9.2

* 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/Rm^3*	Test No. 2 ng/Rm^3*	Test No. 3 ng/Rm^3*	Average ng/Rm^3*	Coefficient of Variation %
Monochlorobenzene	NQ	NQ	NQ	NQ	-
1,3-Dichlorobenzene	32.9	25.6	27.6	28.7	13.2
1,4-Dichlorobenzene	48.0	42.9	46.4	45.8	5.6
1,2-Dichlorobenzene	34.4	26.6	29.1	30.0	13.3
Total Dichlorobenzene	115	95.1	103	105	9.7
1,3,5-trichlorobenzene	3.33	2.62	2.33	2.76	18.5
1,2,4-trichlorobenzene	10.4	9.24	7.37	8.99	16.8
1,2,3-trichlorobenzene	2.98	2.66	2.10	2.58	17.2
Total Trichlorobenzene	16.7	14.5	11.8	14.3	17.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.36	3.09	2.32	2.92	18.5
1,2,3,4-tetrachlorobenzene	<1.99	<2.00	<1.99	<1.99	0.6
Total Tetrachlorobenzene	<5.34	<5.10	<4.30	<4.91	11.0
Pentachlorobenzene	<1.99	<2.00	<1.99	<1.99	0.6
Hexachlorobenzene	<1.99	<2.00	<1.99	<1.99	0.6
Total Chlorobenzenes	<141	<119	<123	<128	9.4

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	NQ	NQ	NQ	NQ	-
1,3-Dichlorobenzene	32.6	25.2	27.5	28.4	13.3
1,4-Dichlorobenzene	47.5	42.3	46.1	45.3	5.9
1,2-Dichlorobenzene	34.1	26.2	29.0	29.7	13.5
Total Dichlorobenzene	114	93.6	103	103	9.9
1,3,5-trichlorobenzene	3.29	2.58	2.32	2.73	18.4
1,2,4-trichlorobenzene	10.3	9.10	7.33	8.89	16.6
1,2,3-trichlorobenzene	2.95	2.62	2.09	2.55	16.9
Total Trichlorobenzene	16.5	14.3	11.7	14.2	16.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.33	3.04	2.31	2.89	18.2
1,2,3,4-tetrachlorobenzene	<1.97	<1.98	<1.98	<1.97	0.3
Total Tetrachlorobenzene	<5.29	<5.02	<4.28	<4.86	10.7
Pentachlorobenzene	<1.97	<1.98	<1.98	<1.97	0.3
Hexachlorobenzene	<1.97	<1.98	<1.98	<1.97	0.3
Total Chlorobenzenes	<140	<117	<123	<126	9.5

* 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	NQ	NQ	NQ	NQ	-
1,3-Dichlorobenzene	0.66	0.51	0.53	0.57	14.9
1,4-Dichlorobenzene	0.97	0.85	0.89	0.90	6.6
1,2-Dichlorobenzene	0.70	0.53	0.56	0.59	15.0
Total Dichlorobenzene	2.33	1.88	1.99	2.07	11.3
1,3,5-trichlorobenzene	0.067	0.052	0.045	0.055	20.7
1,2,4-trichlorobenzene	0.21	0.18	0.14	0.18	19.0
1,2,3-trichlorobenzene	0.060	0.053	0.041	0.051	19.3
Total Trichlorobenzene	0.34	0.29	0.23	0.28	19.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.068	0.061	0.045	0.058	20.5
1,2,3,4-tetrachlorobenzene	<0.040	<0.040	<0.038	<0.039	2.3
Total Tetrachlorobenzene	<0.11	<0.10	<0.083	<0.097	13.2
Pentachlorobenzene	<0.040	<0.040	<0.038	<0.039	2.3
Hexachlorobenzene	<0.040	<0.040	<0.038	<0.039	2.3
Total Chlorobenzenes	<2.85	<2.35	<2.38	<2.53	11.2

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	NQ	NQ	NQ	NQ	NQ
1,3-Dichlorobenzene	19.9	33.5	28.7	28.4	0.57
1,4-Dichlorobenzene	31.7	53.3	45.8	45.3	0.90
1,2-Dichlorobenzene	20.8	35.0	30.0	29.7	0.59
Total Dichlorobenzene	72.4	122	105	103	2.07
1,3,5-trichlorobenzene	1.91	3.21	2.76	2.73	0.055
1,2,4-trichlorobenzene	6.22	10.5	8.99	8.89	0.18
1,2,3-trichlorobenzene	1.78	3.00	2.58	2.55	0.051
Total Trichlorobenzene	9.92	16.7	14.3	14.2	0.28
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.02	3.40	2.92	2.89	0.058
1,2,3,4-tetrachlorobenzene	<1.38	<2.32	<1.99	<1.97	<0.039
Total Tetrachlorobenzene	<3.40	<5.72	<4.91	<4.86	<0.097
Pentachlorobenzene	<1.38	<2.32	<1.99	<1.97	<0.039
Hexachlorobenzene	<1.38	<2.32	<1.99	<1.97	<0.039
Total Chlorobenzenes	<88.5	<149	<128	<126	<2.53

* 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	Method Blank Total ng
Monochlorobenzene	NQ	NQ
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	<12	<12
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<36.0	<36.0
1,3,5-trichlorobenzene	<12	<12
1,2,4-trichlorobenzene	<12	<12
1,2,3-trichlorobenzene	<12	<12
Total Trichlorobenzene	<36.0	<36.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<12
1,2,3,4-tetrachlorobenzene	<12	<12
Total Tetrachlorobenzene	<24.0	<24.0
Pentachlorobenzene	<12	<12
Hexachlorobenzene	<12	<12
Total Chlorobenzenes	<120	<120

"<" 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.

"NQ" indcates that the compound could not be quantified by the analytical laboratory.

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 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	<6.84	<11.5	<9.93	<9.83	<0.20
3-monochlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
4-monochlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
Total Monochlorophenols	<180	<20.5	<34.6	<29.8	<29.5	<0.60
2,6-dichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
2,4 & 2,5-dichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
3,5-dichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
2,3-dichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
3,4-dichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
Total Dichlorophenols	<300	<34.2	<57.6	<49.6	<49.1	<1.00
2,4,6-trichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
2,3,6-trichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
2,3,5-trichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
2,4,5-trichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
2,3,4-trichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
3,4,5-trichlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
Total Trichlorophenols	<360	<41.1	<69.1	<59.6	<59.0	<1.20
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
2,3,4,5-tetrachlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
Total Tetrachlorophenols	<120	<13.7	<23.0	<19.9	<19.7	<0.40
Pentachlorophenol	<60	<6.84	<11.5	<9.93	<9.83	<0.20
Total Chlorophenols	<1020	<116	<196	<169	<167	<3.41

Dry Gas Volume Sampled (Rm³*) :	5.207
Actual Flowrate (m³/s) :	29.3
Dry Reference Flowrate (Rm³/s*) :	17.4
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	20.4

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 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	<6.89	<11.6	<10.0	<9.88	<0.20
3-monochlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
4-monochlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
Total Monochlorophenols	<180	<20.7	<34.8	<30.1	<29.6	<0.60
2,6-dichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
2,4 & 2,5-dichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
3,5-dichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
2,3-dichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
3,4-dichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
Total Dichlorophenols	<300	<34.5	<58.0	<50.1	<49.4	<0.99
2,4,6-trichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
2,3,6-trichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
2,3,5-trichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
2,4,5-trichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
2,3,4-trichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
3,4,5-trichlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
Total Trichlorophenols	<360	<41.4	<69.6	<60.1	<59.3	<1.19
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
2,3,4,5-tetrachlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
Total Tetrachlorophenols	<120	<13.8	<23.2	<20.0	<19.8	<0.40
Pentachlorophenol	<60	<6.89	<11.6	<10.0	<9.88	<0.20
Total Chlorophenols	<1020	<117	<197	<170	<168	<3.37

Dry Gas Volume Sampled (Rm³*) :	5.169
Actual Flowrate (m³/s) :	28.8
Dry Reference Flowrate (Rm³/s*) :	17.1
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	20.1

* At 25°C and 1 atmosphere

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

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

TABLE 63
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
3-monochlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
4-monochlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
Total Monochlorophenols	<180	<20.9	<35.1	<29.8	<29.6	<0.58
2,6-dichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
2,4 & 2,5-dichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
3,5-dichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
2,3-dichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
3,4-dichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
Total Dichlorophenols	<300	<34.9	<58.4	<49.7	<49.4	<0.96
2,4,6-trichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
2,3,6-trichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
2,3,5-trichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
2,4,5-trichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
2,3,4-trichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
3,4,5-trichlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
Total Trichlorophenols	<360	<41.8	<70.1	<59.6	<59.3	<1.15
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
2,3,4,5-tetrachlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
Total Tetrachlorophenols	<120	<13.9	<23.4	<19.9	<19.8	<0.38
Pentachlorophenol	<60	<6.97	<11.7	<9.93	<9.88	<0.19
Total Chlorophenols	<1020	<119	<199	<169	<168	<3.26

Dry Gas Volume Sampled (Rm³*) :	5.133
Actual Flowrate (m³/s) :	27.5
Dry Reference Flowrate (Rm³/s*) :	16.4
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.4

* 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 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	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
3-monochlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
4-monochlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
Total Monochlorophenols	<20.5	<20.7	<20.9	<20.7	0.9
2,6-dichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
2,4 & 2,5-dichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
3,5-dichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
2,3-dichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
3,4-dichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
Total Dichlorophenols	<34.2	<34.5	<34.9	<34.5	0.9
2,4,6-trichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
2,3,6-trichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
2,3,5-trichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
2,4,5-trichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
2,3,4-trichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
3,4,5-trichlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
Total Trichlorophenols	<41.1	<41.4	<41.8	<41.4	0.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
2,3,4,5-tetrachlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
Total Tetrachlorophenols	<13.7	<13.8	<13.9	<13.8	0.9
Pentachlorophenol	<6.84	<6.89	<6.97	<6.90	0.9
Total Chlorophenols	<116	<117	<119	<117	0.9

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	<11.5	<11.6	<11.7	<11.6	0.7
3-monochlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
4-monochlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
Total Monochlorophenols	<34.6	<34.8	<35.1	<34.8	0.7
2,6-dichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
2,4 & 2,5-dichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
3,5-dichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
2,3-dichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
3,4-dichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
Total Dichlorophenols	<57.6	<58.0	<58.4	<58.0	0.7
2,4,6-trichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
2,3,6-trichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
2,3,5-trichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
2,4,5-trichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
2,3,4-trichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
3,4,5-trichlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
Total Trichlorophenols	<69.1	<69.6	<70.1	<69.6	0.7
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
2,3,4,5-tetrachlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
Total Tetrachlorophenols	<23.0	<23.2	<23.4	<23.2	0.7
Pentachlorophenol	<11.5	<11.6	<11.7	<11.6	0.7
Total Chlorophenols	<196	<197	<199	<197	0.7

* 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	<9.93	<10.0	<9.93	<9.96	0.6
3-monochlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
4-monochlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
Total Monochlorophenols	<29.8	<30.1	<29.8	<29.9	0.6
2,6-dichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
2,4 & 2,5-dichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
3,5-dichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
2,3-dichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
3,4-dichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
Total Dichlorophenols	<49.6	<50.1	<49.7	<49.8	0.6
2,4,6-trichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
2,3,6-trichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
2,3,5-trichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
2,4,5-trichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
2,3,4-trichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
3,4,5-trichlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
Total Trichlorophenols	<59.6	<60.1	<59.6	<59.8	0.6
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
2,3,4,5-tetrachlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
Total Tetrachlorophenols	<19.9	<20.0	<19.9	<19.9	0.6
Pentachlorophenol	<9.93	<10.0	<9.93	<9.96	0.6
Total Chlorophenols	<169	<170	<169	<169	0.6

* 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	<9.83	<9.88	<9.88	<9.86	0.3
3-monochlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
4-monochlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
Total Monochlorophenols	<29.5	<29.6	<29.6	<29.6	0.3
2,6-dichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
2,4 & 2,5-dichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
3,5-dichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
2,3-dichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
3,4-dichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
Total Dichlorophenols	<49.1	<49.4	<49.4	<49.3	0.3
2,4,6-trichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
2,3,6-trichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
2,3,5-trichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
2,4,5-trichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
2,3,4-trichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
3,4,5-trichlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
Total Trichlorophenols	<59.0	<59.3	<59.3	<59.2	0.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
2,3,4,5-tetrachlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
Total Tetrachlorophenols	<19.7	<19.8	<19.8	<19.7	0.3
Pentachlorophenol	<9.83	<9.88	<9.88	<9.86	0.3
Total Chlorophenols	<167	<168	<168	<168	0.3

* 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	<0.20	<0.20	<0.19	<0.20	2.3
3-monochlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
4-monochlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
Total Monochlorophenols	<0.60	<0.60	<0.58	<0.59	2.3
2,6-dichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
2,4 & 2,5-dichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
3,5-dichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
2,3-dichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
3,4-dichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
Total Dichlorophenols	<1.00	<0.99	<0.96	<0.98	2.3
2,4,6-trichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
2,3,6-trichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
2,3,5-trichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
2,4,5-trichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
2,3,4-trichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
3,4,5-trichlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
Total Trichlorophenols	<1.20	<1.19	<1.15	<1.18	2.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
2,3,4,5-tetrachlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
Total Tetrachlorophenols	<0.40	<0.40	<0.38	<0.39	2.3
Pentachlorophenol	<0.20	<0.20	<0.19	<0.20	2.3
Total Chlorophenols	<3.41	<3.37	<3.26	<3.35	2.3

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	<6.90	<11.6	<9.96	<9.86	<0.20
3-monochlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
4-monochlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
Total Monochlorophenols	<20.7	<34.8	<29.9	<29.6	<0.59
2,6-dichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
2,4 & 2,5-dichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
3,5-dichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
2,3-dichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
3,4-dichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
Total Dichlorophenols	<34.5	<58.0	<49.8	<49.3	<0.98
2,4,6-trichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
2,3,6-trichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
2,3,5-trichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
2,4,5-trichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
2,3,4-trichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
3,4,5-trichlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
Total Trichlorophenols	<41.4	<69.6	<59.8	<59.2	<1.18
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
2,3,4,5-tetrachlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
Total Tetrachlorophenols	<13.8	<23.2	<19.9	<19.7	<0.39
Pentachlorophenol	<6.90	<11.6	<9.96	<9.86	<0.20
Total Chlorophenols	<117	<197	<169	<168	<3.35

* 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/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Acenaphthylene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Anthracene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Benzo(a)Anthracene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Benzo(b)Fluoranthene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Benzo(k)Fluoranthene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Benzo(a)fluorene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Benzo(b)fluorene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Benzo(g,h,i)Perylene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Benzo(a)Pyrene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Benzo(e)Pyrene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Biphenyl	18.8	2.14	3.61	3.11	3.08	0.063
2-Chloronaphthalene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Chrysene/Triphenylene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Coronene	<60	<6.84	<11.5	<9.93	<9.83	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Dibenzo(a,e)pyrene	<60	<6.84	<11.5	<9.93	<9.83	<0.20
9,10-dimethylanthracene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
7,12-Dimethylbenzo(a)anthracene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Fluoranthene	19.7	2.25	3.78	3.26	3.23	0.066
Fluorene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Indeno(1,2,3-cd)Pyrene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
2-methylanthracene	49.9	5.69	9.58	8.25	8.17	0.17
3-Methylcholanthrene	<60	<6.84	<11.5	<9.93	<9.83	<0.20
1-Methylnaphthalene	12.5	1.43	2.40	2.07	2.05	0.042
2-Methylnaphthalene	18.8	2.14	3.61	3.11	3.08	0.063
1-Methylphenanthrene	27.4	3.12	5.26	4.53	4.49	0.092
9-Methylphenanthrene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Naphthalene	157	17.9	30.2	26.0	25.7	0.52
Perylene	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Phenanthrene	49.7	5.67	9.54	8.22	8.14	0.17
Picene	<60	<6.84	<11.5	<9.93	<9.83	<0.20
Pyrene	35.3	4.03	6.78	5.84	5.78	0.12
Tetralin	166	18.9	31.9	27.5	27.2	0.55
m-terphenyl	<12	<1.37	<2.30	<1.99	<1.97	<0.040
o-Terphenyl	<12	<1.37	<2.30	<1.99	<1.97	<0.040
p-terphenyl	<12	<1.37	<2.30	<1.99	<1.97	<0.040
Total	<1071	<122	<206	<177	<175	<3.58

Dry Gas Volume Sampled (Rm³*) :	5.207
Actual Flowrate (m³/s) :	29.3
Dry Reference Flowrate (Rm³/s*) :	17.4
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	20.4

* At 25°C and 1 atmosphere

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

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

TABLE 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	19.9	2.29	3.85	3.32	3.28	0.066
Acenaphthylene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Anthracene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Benzo(a)Anthracene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Benzo(b)Fluoranthene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Benzo(k)Fluoranthene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Benzo(a)fluorene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Benzo(b)fluorene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Benzo(g,h,i)Perylene	177	20.3	34.2	29.6	29.1	0.59
Benzo(a)Pyrene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Benzo(e)Pyrene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Biphenyl	20.3	2.33	3.93	3.39	3.34	0.067
2-Chloronaphthalene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Chrysene/Triphenylene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Coronene	162	18.6	31.3	27.1	26.7	0.54
Dibenzo(a,c/a,h)Anthracene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Dibenzo(a,e)pyrene	<60	<6.89	<11.6	<10.0	<9.88	<0.20
9,10-dimethylanthracene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
7,12-Dimethylbenzo(a)anthracene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Fluoranthene	43.0	4.94	8.32	7.18	7.08	0.14
Fluorene	35.3	4.05	6.83	5.90	5.81	0.12
Indeno(1,2,3-cd)Pyrene	22.5	2.58	4.35	3.76	3.70	0.074
2-methylanthracene	49.1	5.64	9.50	8.20	8.08	0.16
3-Methylcholanthrene	<60	<6.89	<11.6	<10.0	<9.88	<0.20
1-Methylnaphthalene	24.8	2.85	4.80	4.14	4.08	0.082
2-Methylnaphthalene	37.8	4.34	7.31	6.32	6.22	0.13
1-Methylphenanthrene	61.4	7.05	11.9	10.3	10.1	0.20
9-Methylphenanthrene	15.7	1.80	3.04	2.62	2.58	0.052
Naphthalene	232	26.6	44.9	38.8	38.2	0.77
Perylene	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Phenanthrene	150	17.2	29.0	25.1	24.7	0.50
Picene	<60	<6.89	<11.6	<10.0	<9.88	<0.20
Pyrene	71.0	8.16	13.7	11.9	11.7	0.23
Tetralin	244	28.0	47.2	40.8	40.2	0.81
m-terphenyl	<12	<1.38	<2.32	<2.00	<1.98	<0.040
o-Terphenyl	<12	<1.38	<2.32	<2.00	<1.98	<0.040
p-terphenyl	<12	<1.38	<2.32	<2.00	<1.98	<0.040
Total	<1762	<202	<341	<294	<290	<5.83

Dry Gas Volume Sampled (Rm³*) :	5.169
Actual Flowrate (m³/s) :	28.8
Dry Reference Flowrate (Rm³/s*) :	17.1
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	20.1

* At 25°C and 1 atmosphere

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

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

TABLE 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	20.2	2.35	3.94	3.34	3.33	0.065
Acenaphthylene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Anthracene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Benzo(a)Anthracene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Benzo(b)Fluoranthene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Benzo(k)Fluoranthene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Benzo(a)fluorene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Benzo(b)fluorene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Benzo(g,h,i)Perylene	63.4	7.37	12.4	10.5	10.4	0.20
Benzo(a)Pyrene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Benzo(e)Pyrene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Biphenyl	33.1	3.85	6.45	5.48	5.45	0.11
2-Chloronaphthalene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Chrysene/Triphenylene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Coronene	85.7	9.96	16.7	14.2	14.1	0.27
Dibenzo(a,c/a,h)Anthracene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Dibenzo(a,e)pyrene	<60	<6.97	<11.7	<9.93	<9.88	<0.19
9,10-dimethylanthracene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Fluoranthene	48.4	5.62	9.43	8.01	7.97	0.15
Fluorene	12.9	1.50	2.51	2.14	2.12	0.041
Indeno(1,2,3-cd)Pyrene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
2-methylanthracene	28.6	3.32	5.57	4.73	4.71	0.091
3-Methylcholanthrene	<60	<6.97	<11.7	<9.93	<9.88	<0.19
1-Methylnaphthalene	25.1	2.92	4.89	4.16	4.13	0.080
2-Methylnaphthalene	43.4	5.04	8.46	7.18	7.15	0.14
1-Methylphenanthrene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
9-Methylphenanthrene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Naphthalene	343	39.9	66.8	56.8	56.5	1.10
Perylene	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Phenanthrene	88.4	10.3	17.2	14.6	14.6	0.28
Picene	<60	<6.97	<11.7	<9.93	<9.88	<0.19
Pyrene	105	12.2	20.5	17.4	17.3	0.34
Tetralin	171	19.9	33.3	28.3	28.2	0.55
m-terphenyl	<12	<1.39	<2.34	<1.99	<1.98	<0.038
o-Terphenyl	<12	<1.39	<2.34	<1.99	<1.98	<0.038
p-terphenyl	<12	<1.39	<2.34	<1.99	<1.98	<0.038
Total	<1500	<174	<292	<248	<247	<4.79

Dry Gas Volume Sampled (Rm³*) :	5.133
Actual Flowrate (m³/s) :	27.5
Dry Reference Flowrate (Rm³/s*) :	16.4
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	19.4

* 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 74
Covanta - Durham York Energy Centre
Boiler No. 2 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	<1.37	2.29	2.35	<2.00	27.4
Acenaphthylene	<1.37	<1.38	<1.39	<1.38	0.9
Anthracene	<1.37	<1.38	<1.39	<1.38	0.9
Benzo(a)Anthracene	<1.37	<1.38	<1.39	<1.38	0.9
Benzo(b)Fluoranthene	<1.37	<1.38	<1.39	<1.38	0.9
Benzo(k)Fluoranthene	<1.37	<1.38	<1.39	<1.38	0.9
Benzo(a)fluorene	<1.37	<1.38	<1.39	<1.38	0.9
Benzo(b)fluorene	<1.37	<1.38	<1.39	<1.38	0.9
Benzo(g,h,i)Perylene	<1.37	20.3	7.37	<9.69	100
Benzo(a)Pyrene	<1.37	<1.38	<1.39	<1.38	0.9
Benzo(e)Pyrene	<1.37	<1.38	<1.39	<1.38	0.9
Biphenyl	2.14	2.33	3.85	2.77	33.6
2-Chloronaphthalene	<1.37	<1.38	<1.39	<1.38	0.9
Chrysene/Triphenylene	<1.37	<1.38	<1.39	<1.38	0.9
Coronene	<6.84	18.6	9.96	<11.8	51.6
Dibenzo(a,c/a,h)Anthracene	<1.37	<1.38	<1.39	<1.38	0.9
Dibenzo(a,e)pyrene	<6.84	<6.89	<6.97	<6.90	0.9
9,10-dimethylanthracene	<1.37	<1.38	<1.39	<1.38	0.9
7,12-Dimethylbenzo(a)anthracene	<1.37	<1.38	<1.39	<1.38	0.9
Fluoranthene	2.25	4.94	5.62	4.27	41.8
Fluorene	<1.37	4.05	1.50	<2.31	65.6
Indeno(1,2,3-cd)Pyrene	<1.37	2.58	<1.39	<1.78	39.0
2-methylanthracene	5.69	5.64	3.32	4.88	27.7
3-Methylcholanthrene	<6.84	<6.89	<6.97	<6.90	0.9
1-Methylnaphthalene	1.43	2.85	2.92	2.40	35.1
2-Methylnaphthalene	2.14	4.34	5.04	3.84	39.4
1-Methylphenanthrene	3.12	7.05	<1.39	<3.86	75.2
9-Methylphenanthrene	<1.37	1.80	<1.39	<1.52	16.0
Naphthalene	17.9	26.6	39.9	28.1	39.3
Perylene	<1.37	<1.38	<1.39	<1.38	0.9
Phenanthrene	5.67	17.2	10.3	11.1	52.6
Picene	<6.84	<6.89	<6.97	<6.90	0.9
Pyrene	4.03	8.16	12.2	8.13	50.3
Tetralin	18.9	28.0	19.9	22.3	22.5
m-terphenyl	<1.37	<1.38	<1.39	<1.38	0.9
o-Terphenyl	<1.37	<1.38	<1.39	<1.38	0.9
p-terphenyl	<1.37	<1.38	<1.39	<1.38	0.9
Total	<122	<202	<174	<166	24.5

TABLE 75
Covanta - Durham York Energy Centre
Boiler No. 2 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	<2.30	3.85	3.94	<3.36	27.3
Acenaphthylene	<2.30	<2.32	<2.34	<2.32	0.7
Anthracene	<2.30	<2.32	<2.34	<2.32	0.7
Benzo(a)Anthracene	<2.30	<2.32	<2.34	<2.32	0.7
Benzo(b)Fluoranthene	<2.30	<2.32	<2.34	<2.32	0.7
Benzo(k)Fluoranthene	<2.30	<2.32	<2.34	<2.32	0.7
Benzo(a)fluorene	<2.30	<2.32	<2.34	<2.32	0.7
Benzo(b)fluorene	<2.30	<2.32	<2.34	<2.32	0.7
Benzo(g,h,i)Perylene	<2.30	34.2	12.4	<16.3	100
Benzo(a)Pyrene	<2.30	<2.32	<2.34	<2.32	0.7
Benzo(e)Pyrene	<2.30	<2.32	<2.34	<2.32	0.7
Biphenyl	3.61	3.93	6.45	4.66	33.4
2-Chloronaphthalene	<2.30	<2.32	<2.34	<2.32	0.7
Chrysene/Triphenylene	<2.30	<2.32	<2.34	<2.32	0.7
Coronene	<11.5	31.3	16.7	<19.9	51.8
Dibenzo(a,c/a,h)Anthracene	<2.30	<2.32	<2.34	<2.32	0.7
Dibenzo(a,e)pyrene	<11.5	<11.6	<11.7	<11.6	0.7
9,10-dimethylanthracene	<2.30	<2.32	<2.34	<2.32	0.7
7,12-Dimethylbenzo(a)anthracene	<2.30	<2.32	<2.34	<2.32	0.7
Fluoranthene	3.78	8.32	9.43	7.18	41.7
Fluorene	<2.30	6.83	2.51	<3.88	65.8
Indeno(1,2,3-cd)Pyrene	<2.30	4.35	<2.34	<3.00	39.1
2-methylanthracene	9.58	9.50	5.57	8.22	27.9
3-Methylcholanthrene	<11.5	<11.6	<11.7	<11.6	0.7
1-Methylnaphthalene	2.40	4.80	4.89	4.03	35.0
2-Methylnaphthalene	3.61	7.31	8.46	6.46	39.2
1-Methylphenanthrene	5.26	11.9	<2.34	<6.49	75.3
9-Methylphenanthrene	<2.30	3.04	<2.34	<2.56	16.2
Naphthalene	30.2	44.9	66.8	47.3	39.0
Perylene	<2.30	<2.32	<2.34	<2.32	0.7
Phenanthrene	9.54	29.0	17.2	18.6	52.8
Picene	<11.5	<11.6	<11.7	<11.6	0.7
Pyrene	6.78	13.7	20.5	13.7	50.1
Tetralin	31.9	47.2	33.3	37.5	22.6
m-terphenyl	<2.30	<2.32	<2.34	<2.32	0.7
o-Terphenyl	<2.30	<2.32	<2.34	<2.32	0.7
p-terphenyl	<2.30	<2.32	<2.34	<2.32	0.7
Total	<206	<341	<292	<280	24.5

* 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 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Acenaphthene	<1.99	3.32	3.34	<2.88	27.0
Acenaphthylene	<1.99	<2.00	<1.99	<1.99	0.6
Anthracene	<1.99	<2.00	<1.99	<1.99	0.6
Benzo(a)Anthracene	<1.99	<2.00	<1.99	<1.99	0.6
Benzo(b)Fluoranthene	<1.99	<2.00	<1.99	<1.99	0.6
Benzo(k)Fluoranthene	<1.99	<2.00	<1.99	<1.99	0.6
Benzo(a)fluorene	<1.99	<2.00	<1.99	<1.99	0.6
Benzo(b)fluorene	<1.99	<2.00	<1.99	<1.99	0.6
Benzo(g,h,i)Perylene	<1.99	29.6	10.5	<14.0	101
Benzo(a)Pyrene	<1.99	<2.00	<1.99	<1.99	0.6
Benzo(e)Pyrene	<1.99	<2.00	<1.99	<1.99	0.6
Biphenyl	3.11	3.39	5.48	3.99	32.4
2-Chloronaphthalene	<1.99	<2.00	<1.99	<1.99	0.6
Chrysene/Triphenylene	<1.99	<2.00	<1.99	<1.99	0.6
Coronene	<9.93	27.1	14.2	<17.1	52.3
Dibenzo(a,c/a,h)Anthracene	<1.99	<2.00	<1.99	<1.99	0.6
Dibenzo(a,e)pyrene	<9.93	<10.0	<9.93	<9.96	0.6
9,10-dimethylanthracene	<1.99	<2.00	<1.99	<1.99	0.6
7,12-Dimethylbenzo(a)anthracene	<1.99	<2.00	<1.99	<1.99	0.6
Fluoranthene	3.26	7.18	8.01	6.15	41.3
Fluorene	<1.99	5.90	2.14	<3.34	66.4
Indeno(1,2,3-cd)Pyrene	<1.99	3.76	<1.99	<2.58	39.7
2-methylanthracene	8.25	8.20	4.73	7.06	28.6
3-Methylcholanthrene	<9.93	<10.0	<9.93	<9.96	0.6
1-Methylnaphthalene	2.07	4.14	4.16	3.46	34.8
2-Methylnaphthalene	3.11	6.32	7.18	5.54	38.8
1-Methylphenanthrene	4.53	10.3	<1.99	<5.59	75.8
9-Methylphenanthrene	<1.99	2.62	<1.99	<2.20	16.7
Naphthalene	26.0	38.8	56.8	40.5	38.2
Perylene	<1.99	<2.00	<1.99	<1.99	0.6
Phenanthrene	8.22	25.1	14.6	16.0	53.2
Picene	<9.93	<10.0	<9.93	<9.96	0.6
Pyrene	5.84	11.9	17.4	11.7	49.4
Tetralin	27.5	40.8	28.3	32.2	23.2
m-terphenyl	<1.99	<2.00	<1.99	<1.99	0.6
o-Terphenyl	<1.99	<2.00	<1.99	<1.99	0.6
p-terphenyl	<1.99	<2.00	<1.99	<1.99	0.6
Total	<177	<294	<248	<240	24.6

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.97	3.28	3.33	<2.86	27.0
Acenaphthylene	<1.97	<1.98	<1.98	<1.97	0.3
Anthracene	<1.97	<1.98	<1.98	<1.97	0.3
Benzo(a)Anthracene	<1.97	<1.98	<1.98	<1.97	0.3
Benzo(b)Fluoranthene	<1.97	<1.98	<1.98	<1.97	0.3
Benzo(k)Fluoranthene	<1.97	<1.98	<1.98	<1.97	0.3
Benzo(a)fluorene	<1.97	<1.98	<1.98	<1.97	0.3
Benzo(b)fluorene	<1.97	<1.98	<1.98	<1.97	0.3
Benzo(g,h,i)Perylene	<1.97	29.1	10.4	<13.8	100
Benzo(a)Pyrene	<1.97	<1.98	<1.98	<1.97	0.3
Benzo(e)Pyrene	<1.97	<1.98	<1.98	<1.97	0.3
Biphenyl	3.08	3.34	5.45	3.96	32.9
2-Chloronaphthalene	<1.97	<1.98	<1.98	<1.97	0.3
Chrysene/Triphenylene	<1.97	<1.98	<1.98	<1.97	0.3
Coronene	<9.83	26.7	14.1	<16.9	51.9
Dibenzo(a,c/a,h)Anthracene	<1.97	<1.98	<1.98	<1.97	0.3
Dibenzo(a,e)pyrene	<9.83	<9.88	<9.88	<9.86	0.3
9,10-dimethylanthracene	<1.97	<1.98	<1.98	<1.97	0.3
7,12-Dimethylbenzo(a)anthracene	<1.97	<1.98	<1.98	<1.97	0.3
Fluoranthene	3.23	7.08	7.97	6.09	41.4
Fluorene	<1.97	5.81	2.12	<3.30	65.9
Indeno(1,2,3-cd)Pyrene	<1.97	3.70	<1.98	<2.55	39.2
2-methylanthracene	8.17	8.08	4.71	6.99	28.2
3-Methylcholanthrene	<9.83	<9.88	<9.88	<9.86	0.3
1-Methylnaphthalene	2.05	4.08	4.13	3.42	34.8
2-Methylnaphthalene	3.08	6.22	7.15	5.48	38.9
1-Methylphenanthrene	4.49	10.1	<1.98	<5.52	75.4
9-Methylphenanthrene	<1.97	2.58	<1.98	<2.18	16.3
Naphthalene	25.7	38.2	56.5	40.1	38.6
Perylene	<1.97	<1.98	<1.98	<1.97	0.3
Phenanthrene	8.14	24.7	14.6	15.8	52.8
Picene	<9.83	<9.88	<9.88	<9.86	0.3
Pyrene	5.78	11.7	17.3	11.6	49.7
Tetralin	27.2	40.2	28.2	31.8	22.7
m-terphenyl	<1.97	<1.98	<1.98	<1.97	0.3
o-Terphenyl	<1.97	<1.98	<1.98	<1.97	0.3
p-terphenyl	<1.97	<1.98	<1.98	<1.97	0.3
Total	<175	<290	<247	<237	24.4

* 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 Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Acenaphthene	<0.040	0.066	0.065	<0.057	25.5
Acenaphthylene	<0.040	<0.040	<0.038	<0.039	2.3
Anthracene	<0.040	<0.040	<0.038	<0.039	2.3
Benzo(a)Anthracene	<0.040	<0.040	<0.038	<0.039	2.3
Benzo(b)Fluoranthene	<0.040	<0.040	<0.038	<0.039	2.3
Benzo(k)Fluoranthene	<0.040	<0.040	<0.038	<0.039	2.3
Benzo(a)fluorene	<0.040	<0.040	<0.038	<0.039	2.3
Benzo(b)fluorene	<0.040	<0.040	<0.038	<0.039	2.3
Benzo(g,h,i)Perylene	<0.040	0.59	0.20	<0.28	101
Benzo(a)Pyrene	<0.040	<0.040	<0.038	<0.039	2.3
Benzo(e)Pyrene	<0.040	<0.040	<0.038	<0.039	2.3
Biphenyl	0.063	0.067	0.11	0.079	30.1
2-Chloronaphthalene	<0.040	<0.040	<0.038	<0.039	2.3
Chrysene/Triphenylene	<0.040	<0.040	<0.038	<0.039	2.3
Coronene	<0.20	0.54	0.27	<0.34	52.4
Dibenzo(a,c/a,h)Anthracene	<0.040	<0.040	<0.038	<0.039	2.3
Dibenzo(a,e)pyrene	<0.20	<0.20	<0.19	<0.20	2.3
9,10-dimethylanthracene	<0.040	<0.040	<0.038	<0.039	2.3
7,12-Dimethylbenzo(a)anthracene	<0.040	<0.040	<0.038	<0.039	2.3
Fluoranthene	0.066	0.14	0.15	0.12	39.8
Fluorene	<0.040	0.12	0.041	<0.066	66.6
Indeno(1,2,3-cd)Pyrene	<0.040	0.074	<0.038	<0.051	39.9
2-methylanthracene	0.17	0.16	0.091	0.14	30.2
3-Methylcholanthrene	<0.20	<0.20	<0.19	<0.20	2.3
1-Methylnaphthalene	0.042	0.082	0.080	0.068	33.4
2-Methylnaphthalene	0.063	0.13	0.14	0.11	37.1
1-Methylphenanthrene	0.092	0.20	<0.038	<0.11	75.8
9-Methylphenanthrene	<0.040	0.052	<0.038	<0.043	17.0
Naphthalene	0.52	0.77	1.10	0.80	36.0
Perylene	<0.040	<0.040	<0.038	<0.039	2.3
Phenanthrene	0.17	0.50	0.28	0.31	53.2
Picene	<0.20	<0.20	<0.19	<0.20	2.3
Pyrene	0.12	0.23	0.34	0.23	47.4
Tetralin	0.55	0.81	0.55	0.64	23.3
m-terphenyl	<0.040	<0.040	<0.038	<0.039	2.3
o-Terphenyl	<0.040	<0.040	<0.038	<0.039	2.3
p-terphenyl	<0.040	<0.040	<0.038	<0.039	2.3
Total	<3.58	<5.83	<4.79	<4.73	23.8

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	<2.00	<3.36	<2.88	<2.86	<0.057
Acenaphthylene	<1.38	<2.32	<1.99	<1.97	<0.039
Anthracene	<1.38	<2.32	<1.99	<1.97	<0.039
Benzo(a)Anthracene	<1.38	<2.32	<1.99	<1.97	<0.039
Benzo(b)Fluoranthene	<1.38	<2.32	<1.99	<1.97	<0.039
Benzo(k)Fluoranthene	<1.38	<2.32	<1.99	<1.97	<0.039
Benzo(a)fluorene	<1.38	<2.32	<1.99	<1.97	<0.039
Benzo(b)fluorene	<1.38	<2.32	<1.99	<1.97	<0.039
Benzo(g,h,i)Perylene	<9.69	<16.3	<14.0	<13.8	<0.28
Benzo(a)Pyrene	<1.38	<2.32	<1.99	<1.97	<0.039
Benzo(e)Pyrene	<1.38	<2.32	<1.99	<1.97	<0.039
Biphenyl	2.77	4.66	3.99	3.96	0.079
2-Chloronaphthalene	<1.38	<2.32	<1.99	<1.97	<0.039
Chrysene/Triphenylene	<1.38	<2.32	<1.99	<1.97	<0.039
Coronene	<11.8	<19.9	<17.1	<16.9	<0.34
Dibenzo(a,c/a,h)Anthracene	<1.38	<2.32	<1.99	<1.97	<0.039
Dibenzo(a,e)pyrene	<6.90	<11.6	<9.96	<9.86	<0.20
9,10-dimethylanthracene	<1.38	<2.32	<1.99	<1.97	<0.039
7,12-Dimethylbenzo(a)anthracene	<1.38	<2.32	<1.99	<1.97	<0.039
Fluoranthene	4.27	7.18	6.15	6.09	0.12
Fluorene	<2.31	<3.88	<3.34	<3.30	<0.066
Indeno(1,2,3-cd)Pyrene	<1.78	<3.00	<2.58	<2.55	<0.051
2-methylanthracene	4.88	8.22	7.06	6.99	0.14
3-Methylcholanthrene	<6.90	<11.6	<9.96	<9.86	<0.20
1-Methylnaphthalene	2.40	4.03	3.46	3.42	0.068
2-Methylnaphthalene	3.84	6.46	5.54	5.48	0.11
1-Methylphenanthrene	<3.86	<6.49	<5.59	<5.52	<0.11
9-Methylphenanthrene	<1.52	<2.56	<2.20	<2.18	<0.043
Naphthalene	28.1	47.3	40.5	40.1	0.80
Perylene	<1.38	<2.32	<1.99	<1.97	<0.039
Phenanthrene	11.1	18.6	16.0	15.8	0.31
Picene	<6.90	<11.6	<9.96	<9.86	<0.20
Pyrene	8.13	13.7	11.7	11.6	0.23
Tetralin	22.3	37.5	32.2	31.8	0.64
m-terphenyl	<1.38	<2.32	<1.99	<1.97	<0.039
o-Terphenyl	<1.38	<2.32	<1.99	<1.97	<0.039
p-terphenyl	<1.38	<2.32	<1.99	<1.97	<0.039
Total	<166	<280	<240	<237	<4.73

* 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	Media Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	<12	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	67.3	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	274	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	<12	<12
1-Methylphenanthrene	354	440
9-Methylphenanthrene	106	<12
Naphthalene	<12	186
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	172	75.5
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<1549	<1302

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

TABLE 81
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Acetaldehyde, Formaldehyde and Acrolein Emission Data

Acetaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acetaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acetaldehyde Emission Rate mg/s
1	<0.1	0.0310	<1.92	<3.23	<2.78	<2.75	<0.056
2	<0.1	0.0293	<2.02	<3.41	<2.94	<2.89	<0.058
3	<0.1	0.0314	<1.89	<3.18	<2.75	<2.70	<0.054
Average			<1.94	<3.27	<2.82	<2.78	<0.056
Blank	<0.1						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Formaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Formaldehyde Emission Rate mg/s
1	0.31	0.0310	5.95	10.0	8.61	8.52	0.17
2	0.39	0.0293	7.89	13.3	11.5	11.3	0.23
3	0.32	0.0314	6.05	10.2	8.79	8.64	0.17
Average			6.63	11.2	9.63	9.48	0.19
Blank	0.23						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acrolein Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acrolein Emission Rate mg/s
1	<0.1	0.0310	<1.92	<3.23	<2.78	<2.75	<0.056
2	<0.1	0.0293	<2.02	<3.41	<2.94	<2.89	<0.058
3	<0.1	0.0314	<1.89	<3.18	<2.75	<2.70	<0.054
Average			<1.94	<3.27	<2.82	<2.78	<0.056
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	<0.1	<2.86	<4.82	<4.15	<4.11	<0.084
Benzene	<0.05	<1.43	<2.41	<2.08	<2.06	<0.042
Bromodichloromethane	0.011	0.32	0.53	0.46	0.45	0.0092
Bromoform	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
Bromomethane	<0.09	<2.58	<4.34	<3.74	<3.70	<0.076
1,3-Butadiene	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
2-Butanone	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
Carbon Tetrachloride	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
Chloroform	0.035	1.00	1.69	1.45	1.44	0.029
Cumene (Isopropylbenzene)	<0.02	<0.57	<0.96	<0.83	<0.82	<0.017
Dibromochloromethane	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
Dichlorodifluoromethane	<0.02	<0.57	<0.96	<0.83	<0.82	<0.017
1,2-Dichloroethane	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
trans,1,2-Dichloroethene	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
1,1-Dichloroethene	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
1,2-Dichloropropane	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
Ethylbenzene	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
Ethylene Dibromide	<0.02	<0.57	<0.96	<0.83	<0.82	<0.017
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.57	<0.96	<0.83	<0.82	<0.017
Methylene Chloride	0.29	8.42	14.2	12.2	12.1	0.25
Styrene	<0.02	<0.57	<0.96	<0.83	<0.82	<0.017
Tetrachloroethene	0.011	0.32	0.53	0.46	0.45	0.0092
Toluene	1.56	44.6	75.1	64.7	64.1	1.31
1,1,1-Trichloroethane	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
Trichlorotrifluoroethane	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
Trichlorofluoromethane	<0.02	<0.57	<0.96	<0.83	<0.82	<0.017
M&P-Xylene	<0.03	<0.86	<1.45	<1.25	<1.23	<0.025
O-Xylene	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084
Vinyl Chloride	<0.02	<0.57	<0.96	<0.83	<0.82	<0.017
Total	<2.46	<70.4	<119	<102	<101	<2.06
Chlorobenzene	<0.01	<0.29	<0.48	<0.42	<0.41	<0.0084

Dry Gas Volume Sampled (Rm^3*) :	0.0207
Actual Flowrate (m^3/s) :	29.3
Dry Reference Flowrate (Rm^3/s*) :	17.4
Dry Adjusted Flowrate (Rm^3/s**) :	20.2
Wet Reference Flowrate (Rm^3/s*) :	20.4

* At 25°C and 1 atmosphere

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

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.
Chlorobenzene has been reported with the VOC samples as the analytical laboratory could not quantify the data from the SVOC trains. This compound is excluded from the total VOCs to be consistent with previous testing programs.

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/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	0.32	10.8	18.1	15.6	15.4	0.32
Benzene	0.062	2.06	3.48	2.99	2.97	0.060
Bromodichloromethane	0.014	0.47	0.79	0.68	0.67	0.014
Bromoform	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
Bromomethane	<0.09	<3.00	<5.05	<4.35	<4.30	<0.088
1,3-Butadiene	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
2-Butanone	0.020	0.67	1.12	0.97	0.96	0.020
Carbon Tetrachloride	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
Chloroform	0.026	0.87	1.46	1.26	1.24	0.025
Cumene (Isopropylbenzene)	<0.02	<0.67	<1.12	<0.97	<0.96	<0.020
Dibromochloromethane	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
Dichlorodifluoromethane	<0.02	<0.67	<1.12	<0.97	<0.96	<0.020
1,2-Dichloroethane	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
trans,1,2-Dichloroethene	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
1,1-Dichloroethene	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
1,2-Dichloropropane	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
Ethylbenzene	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
Ethylene Dibromide	<0.02	<0.67	<1.12	<0.97	<0.96	<0.020
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.67	<1.12	<0.97	<0.96	<0.020
Methylene Chloride	0.36	12.1	20.4	17.6	17.4	0.36
Styrene	<0.02	<0.67	<1.12	<0.97	<0.96	<0.020
Tetrachloroethene	0.011	0.37	0.62	0.53	0.53	0.011
Toluene	0.93	31.0	52.1	44.9	44.5	0.91
1,1,1-Trichloroethane	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
Trichlorotrifluoroethane	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
Trichlorofluoromethane	<0.02	<0.67	<1.12	<0.97	<0.96	<0.020
M&P-Xylene	<0.03	<1.00	<1.68	<1.45	<1.43	<0.029
O-Xylene	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098
Vinyl Chloride	<0.02	<0.67	<1.12	<0.97	<0.96	<0.020
Total	<2.14	<71.3	<120	<103	<102	<2.09
Chlorobenzene	<0.01	<0.33	<0.56	<0.48	<0.48	<0.0098

Dry Gas Volume Sampled (Rm³*) :	0.0178
Actual Flowrate (m³/s) :	29.3
Dry Reference Flowrate (Rm³/s*) :	17.4
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	20.4

* At 25°C and 1 atmosphere

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

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.
Chlorobenzene has been reported with the VOC samples as the analytical laboratory could not quantify the data from the SVOC trains. This compound is excluded from the total VOCs to be consistent with previous testing programs.

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 4

Compound	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	0.10	2.85	4.79	4.13	4.09	0.083
Benzene	0.057	1.59	2.68	2.31	2.28	0.047
Bromodichloromethane	0.014	0.39	0.66	0.57	0.56	0.011
Bromoform	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
Bromomethane	<0.09	<2.51	<4.23	<3.64	<3.61	<0.074
1,3-Butadiene	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
2-Butanone	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
Carbon Tetrachloride	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
Chloroform	0.034	0.95	1.60	1.38	1.36	0.028
Cumene (Isopropylbenzene)	<0.02	<0.56	<0.94	<0.81	<0.80	<0.016
Dibromochloromethane	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
Dichlorodifluoromethane	<0.02	<0.56	<0.94	<0.81	<0.80	<0.016
1,2-Dichloroethane	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
trans,1,2-Dichloroethene	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
1,1-Dichloroethene	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
1,2-Dichloropropane	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
Ethylbenzene	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
Ethylene Dibromide	<0.02	<0.56	<0.94	<0.81	<0.80	<0.016
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.56	<0.94	<0.81	<0.80	<0.016
Methylene Chloride	0.16	4.58	7.71	6.64	6.57	0.13
Styrene	<0.02	<0.56	<0.94	<0.81	<0.80	<0.016
Tetrachloroethene	0.032	0.89	1.50	1.30	1.28	0.026
Toluene	0.57	16.0	26.9	23.2	23.0	0.47
1,1,1-Trichloroethane	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
Trichlorotrifluoroethane	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
Trichlorofluoromethane	<0.02	<0.56	<0.94	<0.81	<0.80	<0.016
M&P-Xylene	<0.03	<0.84	<1.41	<1.21	<1.20	<0.025
O-Xylene	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082
Vinyl Chloride	<0.02	<0.56	<0.94	<0.81	<0.80	<0.016
Total	<1.38	<38.4	<64.7	<55.7	<55.2	<1.13
Chlorobenzene	<0.01	<0.28	<0.47	<0.40	<0.40	<0.0082

Dry Gas Volume Sampled (Rm³*) :	0.0213
Actual Flowrate (m³/s) :	29.3
Dry Reference Flowrate (Rm³/s*) :	17.4
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	20.4

* At 25°C and 1 atmosphere

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

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

Chlorobenzene has been reported with the VOC samples as the analytical laboratory could not quantify the data from the SVOC trains. This compound is excluded from the total VOCs to be consistent with previous testing programs.

TABLE 85
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 4	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Acetone	<2.86	10.8	2.85	<5.49	83.1
Benzene	<1.43	2.06	1.59	<1.70	19.4
Bromodichloromethane	0.32	0.47	0.39	0.39	19.3
Bromoform	<0.29	<0.33	<0.28	<0.30	9.8
Bromomethane	<2.58	<3.00	<2.51	<2.70	9.8
1,3-Butadiene	<0.29	<0.33	<0.28	<0.30	9.8
2-Butanone	<0.29	0.67	<0.28	<0.41	53.9
Carbon Tetrachloride	<0.29	<0.33	<0.28	<0.30	9.8
Chloroform	1.00	0.87	0.95	0.94	7.3
Cumene (Isopropylbenzene)	<0.57	<0.67	<0.56	<0.60	9.8
Dibromochloromethane	<0.29	<0.33	<0.28	<0.30	9.8
Dichlorodifluoromethane	<0.57	<0.67	<0.56	<0.60	9.8
1,2-Dichloroethane	<0.29	<0.33	<0.28	<0.30	9.8
trans,1,2-Dichloroethene	<0.29	<0.33	<0.28	<0.30	9.8
1,1-Dichloroethene	<0.29	<0.33	<0.28	<0.30	9.8
1,2-Dichloropropane	<0.29	<0.33	<0.28	<0.30	9.8
Ethylbenzene	<0.29	<0.33	<0.28	<0.30	9.8
Ethylene Dibromide	<0.57	<0.67	<0.56	<0.60	9.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.57	<0.67	<0.56	<0.60	9.8
Methylene Chloride	8.42	12.1	4.58	8.37	45.1
Styrene	<0.57	<0.67	<0.56	<0.60	9.8
Tetrachloroethene	0.32	0.37	0.89	0.52	61.0
Toluene	44.6	31.0	16.0	30.5	46.9
1,1,1-Trichloroethane	<0.29	<0.33	<0.28	<0.30	9.8
Trichloroethene/1,1,2-Trichloroethene	<0.29	<0.33	<0.28	<0.30	9.8
Trichlorotrifluoroethane	<0.29	<0.33	<0.28	<0.30	9.8
Trichlorofluoromethane	<0.57	<0.67	<0.56	<0.60	9.8
M&P-Xylene	<0.86	<1.00	<0.84	<0.90	9.8
O-Xylene	<0.29	<0.33	<0.28	<0.30	9.8
Vinyl Chloride	<0.57	<0.67	<0.56	<0.60	9.8
Total	<70.4	<71.3	<38.4	<60.0	31.2
Chlorobenzene	<0.29	<0.33	<0.28	<0.30	9.8

TABLE 86
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 4	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Acetone	<4.82	18.1	4.79	<9.24	83.1
Benzene	<2.41	3.48	2.68	<2.86	19.4
Bromodichloromethane	0.53	0.79	0.66	0.66	19.3
Bromoform	<0.48	<0.56	<0.47	<0.50	9.8
Bromomethane	<4.34	<5.05	<4.23	<4.54	9.8
1,3-Butadiene	<0.48	<0.56	<0.47	<0.50	9.8
2-Butanone	<0.48	1.12	<0.47	<0.69	53.9
Carbon Tetrachloride	<0.48	<0.56	<0.47	<0.50	9.8
Chloroform	1.69	1.46	1.60	1.58	7.3
Cumene (Isopropylbenzene)	<0.96	<1.12	<0.94	<1.01	9.8
Dibromochloromethane	<0.48	<0.56	<0.47	<0.50	9.8
Dichlorodifluoromethane	<0.96	<1.12	<0.94	<1.01	9.8
1,2-Dichloroethane	<0.48	<0.56	<0.47	<0.50	9.8
trans,1,2-Dichloroethene	<0.48	<0.56	<0.47	<0.50	9.8
1,1-Dichloroethene	<0.48	<0.56	<0.47	<0.50	9.8
1,2-Dichloropropane	<0.48	<0.56	<0.47	<0.50	9.8
Ethylbenzene	<0.48	<0.56	<0.47	<0.50	9.8
Ethylene Dibromide	<0.96	<1.12	<0.94	<1.01	9.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.96	<1.12	<0.94	<1.01	9.8
Methylene Chloride	14.2	20.4	7.71	14.1	45.1
Styrene	<0.96	<1.12	<0.94	<1.01	9.8
Tetrachloroethene	0.53	0.62	1.50	0.88	61.0
Toluene	75.1	52.1	26.9	51.4	46.9
1,1,1-Trichloroethane	<0.48	<0.56	<0.47	<0.50	9.8
Trichloroethene/1,1,2-Trichloroethene	<0.48	<0.56	<0.47	<0.50	9.8
Trichlorotrifluoroethane	<0.48	<0.56	<0.47	<0.50	9.8
Trichlorofluoromethane	<0.96	<1.12	<0.94	<1.01	9.8
M&P-Xylene	<1.45	<1.68	<1.41	<1.51	9.8
O-Xylene	<0.48	<0.56	<0.47	<0.50	9.8
Vinyl Chloride	<0.96	<1.12	<0.94	<1.01	9.8
Total	<119	<120	<64.7	<101	31.2
Chlorobenzene	<0.48	<0.56	<0.47	<0.50	9.8

* 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
	Test No. 1	Test No. 2	Test No. 4	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Acetone	<4.15	15.6	4.13	<7.96	83.1
Benzene	<2.08	2.99	2.31	<2.46	19.4
Bromodichloromethane	0.46	0.68	0.57	0.57	19.3
Bromoform	<0.42	<0.48	<0.40	<0.43	9.8
Bromomethane	<3.74	<4.35	<3.64	<3.91	9.8
1,3-Butadiene	<0.42	<0.48	<0.40	<0.43	9.8
2-Butanone	<0.42	0.97	<0.40	<0.60	53.9
Carbon Tetrachloride	<0.42	<0.48	<0.40	<0.43	9.8
Chloroform	1.45	1.26	1.38	1.36	7.3
Cumene (Isopropylbenzene)	<0.83	<0.97	<0.81	<0.87	9.8
Dibromochloromethane	<0.42	<0.48	<0.40	<0.43	9.8
Dichlorodifluoromethane	<0.83	<0.97	<0.81	<0.87	9.8
1,2-Dichloroethane	<0.42	<0.48	<0.40	<0.43	9.8
trans,1,2-Dichloroethene	<0.42	<0.48	<0.40	<0.43	9.8
1,1-Dichloroethene	<0.42	<0.48	<0.40	<0.43	9.8
1,2-Dichloropropane	<0.42	<0.48	<0.40	<0.43	9.8
Ethylbenzene	<0.42	<0.48	<0.40	<0.43	9.8
Ethylene Dibromide	<0.83	<0.97	<0.81	<0.87	9.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.83	<0.97	<0.81	<0.87	9.8
Methylene Chloride	12.2	17.6	6.64	12.1	45.1
Styrene	<0.83	<0.97	<0.81	<0.87	9.8
Tetrachloroethene	0.46	0.53	1.30	0.76	61.0
Toluene	64.7	44.9	23.2	44.3	46.9
1,1,1-Trichloroethane	<0.42	<0.48	<0.40	<0.43	9.8
Trichloroethene/1,1,2-Trichloroethene	<0.42	<0.48	<0.40	<0.43	9.8
Trichlorotrifluoroethane	<0.42	<0.48	<0.40	<0.43	9.8
Trichlorofluoromethane	<0.83	<0.97	<0.81	<0.87	9.8
M&P-Xylene	<1.25	<1.45	<1.21	<1.30	9.8
O-Xylene	<0.42	<0.48	<0.40	<0.43	9.8
Vinyl Chloride	<0.83	<0.97	<0.81	<0.87	9.8
Total	<102	<103	<55.7	<87.1	31.2
Chlorobenzene	<0.42	<0.48	<0.40	<0.43	9.8

* 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 Test No. 1 µg/Rm³*	Test No. 2 µg/Rm³*	Test No. 4 µg/Rm³*	Average µg/Rm³*	Coefficient of Variation %
Acetone	<4.11	15.4	4.09	<7.88	83.1
Benzene	<2.06	2.97	2.28	<2.44	19.4
Bromodichloromethane	0.45	0.67	0.56	0.56	19.3
Bromoform	<0.41	<0.48	<0.40	<0.43	9.8
Bromomethane	<3.70	<4.30	<3.61	<3.87	9.8
1,3-Butadiene	<0.41	<0.48	<0.40	<0.43	9.8
2-Butanone	<0.41	0.96	<0.40	<0.59	53.9
Carbon Tetrachloride	<0.41	<0.48	<0.40	<0.43	9.8
Chloroform	1.44	1.24	1.36	1.35	7.3
Cumene (Isopropylbenzene)	<0.82	<0.96	<0.80	<0.86	9.8
Dibromochloromethane	<0.41	<0.48	<0.40	<0.43	9.8
Dichlorodifluoromethane	<0.82	<0.96	<0.80	<0.86	9.8
1,2-Dichloroethane	<0.41	<0.48	<0.40	<0.43	9.8
trans,1,2-Dichloroethene	<0.41	<0.48	<0.40	<0.43	9.8
1,1-Dichloroethene	<0.41	<0.48	<0.40	<0.43	9.8
1,2-Dichloropropane	<0.41	<0.48	<0.40	<0.43	9.8
Ethylbenzene	<0.41	<0.48	<0.40	<0.43	9.8
Ethylene Dibromide	<0.82	<0.96	<0.80	<0.86	9.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.82	<0.96	<0.80	<0.86	9.8
Methylene Chloride	12.1	17.4	6.57	12.0	45.1
Styrene	<0.82	<0.96	<0.80	<0.86	9.8
Tetrachloroethene	0.45	0.53	1.28	0.75	61.0
Toluene	64.1	44.5	23.0	43.8	46.9
1,1,1-Trichloroethane	<0.41	<0.48	<0.40	<0.43	9.8
Trichloroethene/1,1,2-Trichloroethene	<0.41	<0.48	<0.40	<0.43	9.8
Trichlorotrifluoroethane	<0.41	<0.48	<0.40	<0.43	9.8
Trichlorofluoromethane	<0.82	<0.96	<0.80	<0.86	9.8
M&P-Xylene	<1.23	<1.43	<1.20	<1.29	9.8
O-Xylene	<0.41	<0.48	<0.40	<0.43	9.8
Vinyl Chloride	<0.82	<0.96	<0.80	<0.86	9.8
Total	<101	<102	<55.2	<86.2	31.2
Chlorobenzene	<0.41	<0.48	<0.40	<0.43	9.8

* 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. 4 mg/s	Average mg/s	Coefficient of Variation %
Acetone	<0.084	0.32	0.083	<0.16	83.1
Benzene	<0.042	0.060	0.047	<0.050	19.4
Bromodichloromethane	0.0092	0.014	0.011	0.011	19.3
Bromoform	<0.0084	<0.0098	<0.0082	<0.0088	9.8
Bromomethane	<0.076	<0.088	<0.074	<0.079	9.8
1,3-Butadiene	<0.0084	<0.0098	<0.0082	<0.0088	9.8
2-Butanone	<0.0084	0.020	<0.0082	<0.012	53.9
Carbon Tetrachloride	<0.0084	<0.0098	<0.0082	<0.0088	9.8
Chloroform	0.029	0.025	0.028	0.028	7.3
Cumene (Isopropylbenzene)	<0.017	<0.020	<0.016	<0.018	9.8
Dibromochloromethane	<0.0084	<0.0098	<0.0082	<0.0088	9.8
Dichlorodifluoromethane	<0.017	<0.020	<0.016	<0.018	9.8
1,2-Dichloroethane	<0.0084	<0.0098	<0.0082	<0.0088	9.8
trans,1,2-Dichloroethene	<0.0084	<0.0098	<0.0082	<0.0088	9.8
1,1-Dichloroethene	<0.0084	<0.0098	<0.0082	<0.0088	9.8
1,2-Dichloropropane	<0.0084	<0.0098	<0.0082	<0.0088	9.8
Ethylbenzene	<0.0084	<0.0098	<0.0082	<0.0088	9.8
Ethylene Dibromide	<0.017	<0.020	<0.016	<0.018	9.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.017	<0.020	<0.016	<0.018	9.8
Methylene Chloride	0.25	0.36	0.13	0.25	45.1
Styrene	<0.017	<0.020	<0.016	<0.018	9.8
Tetrachloroethene	0.0092	0.011	0.026	0.015	61.0
Toluene	1.31	0.91	0.47	0.89	46.9
1,1,1-Trichloroethane	<0.0084	<0.0098	<0.0082	<0.0088	9.8
Trichloroethene/1,1,2-Trichloroethene	<0.0084	<0.0098	<0.0082	<0.0088	9.8
Trichlorotrifluoroethane	<0.0084	<0.0098	<0.0082	<0.0088	9.8
Trichlorofluoromethane	<0.017	<0.020	<0.016	<0.018	9.8
M&P-Xylene	<0.025	<0.029	<0.025	<0.026	9.8
O-Xylene	<0.0084	<0.0098	<0.0082	<0.0088	9.8
Vinyl Chloride	<0.017	<0.020	<0.016	<0.018	9.8
Total	<2.06	<2.09	<1.13	<1.76	31.2
Chlorobenzene	<0.0084	<0.0098	<0.0082	<0.0088	9.8

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³*	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<5.49	<9.24	<7.96	<7.88	<0.16
Benzene	<1.70	<2.86	<2.46	<2.44	<0.050
Bromodichloromethane	0.39	0.66	0.57	0.56	0.011
Bromoform	<0.30	<0.50	<0.43	<0.43	<0.0088
Bromomethane	<2.70	<4.54	<3.91	<3.87	<0.079
1,3-Butadiene	<0.30	<0.50	<0.43	<0.43	<0.0088
2-Butanone	<0.41	<0.69	<0.60	<0.59	<0.012
Carbon Tetrachloride	<0.30	<0.50	<0.43	<0.43	<0.0088
Chloroform	0.94	1.58	1.36	1.35	0.028
Cumene (Isopropylbenzene)	<0.60	<1.01	<0.87	<0.86	<0.018
Dibromochloromethane	<0.30	<0.50	<0.43	<0.43	<0.0088
Dichlorodifluoromethane	<0.60	<1.01	<0.87	<0.86	<0.018
1,2-Dichloroethane	<0.30	<0.50	<0.43	<0.43	<0.0088
trans,1,2-Dichloroethene	<0.30	<0.50	<0.43	<0.43	<0.0088
1,1-Dichloroethene	<0.30	<0.50	<0.43	<0.43	<0.0088
1,2-Dichloropropane	<0.30	<0.50	<0.43	<0.43	<0.0088
Ethylbenzene	<0.30	<0.50	<0.43	<0.43	<0.0088
Ethylene Dibromide	<0.60	<1.01	<0.87	<0.86	<0.018
Mesitylene (1,3,5-Trimethylbenzene)	<0.60	<1.01	<0.87	<0.86	<0.018
Methylene Chloride	8.37	14.1	12.1	12.0	0.25
Styrene	<0.60	<1.01	<0.87	<0.86	<0.018
Tetrachloroethene	0.52	0.88	0.76	0.75	0.015
Toluene	30.5	51.4	44.3	43.8	0.89
1,1,1-Trichloroethane	<0.30	<0.50	<0.43	<0.43	<0.0088
Trichloroethene/1,1,2-Trichloroethene	<0.30	<0.50	<0.43	<0.43	<0.0088
Trichlorotrifluoroethane	<0.30	<0.50	<0.43	<0.43	<0.0088
Trichlorofluoromethane	<0.60	<1.01	<0.87	<0.86	<0.018
M&P-Xylene	<0.90	<1.51	<1.30	<1.29	<0.026
O-Xylene	<0.30	<0.50	<0.43	<0.43	<0.0088
Vinyl Chloride	<0.60	<1.01	<0.87	<0.86	<0.018
Total	<60.0	<101	<87.1	<86.2	<1.76
Chlorobenzene	<0.30	<0.50	<0.43	<0.43	0.01

* 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 9A/9B	Field Blank 2 Tube 13A/13B	Trip Blank Tube 15A/15B	Method Blank
	µg	µg	µg	µg
Acetone	<0.1	<0.1	<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	<0.01	<0.01	<0.01	<0.01
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	2.28	0.70	1.19	<0.1
Styrene	<0.02	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01	<0.01
Toluene	0.88	0.14	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01	<0.01	<0.01
Trichlorotrifluoroethane	<0.01	<0.01	<0.01	<0.01
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	<3.74	<1.42	<1.77	<0.73
Chlorobenzene	<0.01	<0.01	<0.01	<0.01

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.
Chlorobenzene has been reported with the VOC samples as the analytical laboratory could not quantify the data from the SVOC trains. This compound is excluded from the total VOCs to be consistent with previous testing programs.

APPENDIX 3

Pre-Test Plan Acceptance Letter and ECA No. 7306-8FDKNX (107 pages)

Ministry of the Environment, Conservation and Parks
Technical Assessment and Standards Development Branch
40 St. Clair Avenue West
7th Floor
Toronto ON M4V 1M2
Phone: 416.327.5519
Fax: 416.327.2936

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Direction des évaluations techniques et de l'élaboration des normes
40, avenue St. Clair Ouest
7e étage
Toronto, ON M4V 1M2
Tél: 416 .327.5519
Téléc: 416. 327.2936

Ontario

Via email: cbelore@ortech.ca

TSS File No.: CR:SA: 110124:22

2022/10/04

Chris Belore
ORTECH Consulting Inc.

Dear Mr. Belore:

Subject: Pre-test plan review for source testing to be conducted at Durham York Energy Centre

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We received your pre-test plan letter (Project #22160), dated September 29, 2022, prepared on behalf of the Durham-York Energy Centre (DYEC) and referring to source testing to be conducted at their facility in Clarington, Ontario.

Testing is a requirement under amended Environmental Compliance Approval No. 7306-8FDKNX issued June 28, 2011.

The letter outlines the intent to use the previously approved pre-test plan (submitted 09/08/2020) for the 2022 annual compliance source testing.

The use of the previously approved pre-test plan (TSS File No. CR:SA:109912:20 dated 10/14/2020) is acceptable for the 2022 testing program.

We have noted the sampling schedule to commence the week of November 28, 2022. If changes to this schedule occur, please notify both the MECP's York-Durham District Office and the Source Testing Group.

Just a reminder that the source testing report is required to be submitted in electronic format to the source testing group at sourcetesting@ontario.ca.

If you have any questions with regards to this assessment, I can be reached by phone at 437-995-2835 or by email at sourcetesting@ontario.ca

Sincerely,

Caitlyn Ruddy
Source Assessment Specialist
Technology Standards Section

cc: Celeste Dugas – Manager, MECP York-Durham D.O. (celeste.dugas@ontario.ca)
Philip Dunn – Senior Environmental Officer, MECP York-Durham D.O. (philip.dunn@ontario.ca)
Jeff Butchart – Issues Project Coordinator, MECP York-Durham D.O. (jeff.butchart@ontario.ca)
Ben Parayankuzhiyil – Facility Manager, Covanta DYEC L.P (bparayanku@covanta.com)
John Walker – VP Regional Operations Manager, Covanta DYEC L.P. (JWalker@covanta.com)
Rick Kohler – Environmental Engineer, Covanta DYEC L.P. (rkohler@covant.com)
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J. McKerrall –TSS (jeffrey.mckerrall@ontario.ca)
B. Fullerton- TSS (bill.fullerton@ontario.ca)

File AQ-02 (Durham-York Energy Centre)

Doc.Mgmt # 5AF100105

Ontario

Ministry of the Environment
Ministère de l'Environnement

CERTIFICATE OF APPROVAL

MULTI-MEDIA
Number 7306-8FDKNX
Issue Date: June 28, 2011

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Road
Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham

You have applied in accordance with Sections 9 and 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act for approval of:

A thermal treatment facility to be used for the receipt and manual and/or mechanical sorting of solid non-hazardous post-diversion municipal waste (Waste), temporary storage and thermal treatment of the Waste, abatement of the emissions from the processes and activities undertaken at the Site, handling, screening, sorting and/or conditioning of the residual wastes and management of the wastewater and the non-contact stormwater generated at the Site. The Facility's maximum Waste thermal treatment rate is 140,000 tonnes per year of Waste, the nominal electricity generation rate is 20 Megawatts and the nominal steam generation rate 72,000 kilograms per hour of steam.

The facility consists of the following major processes and support units:

(1) two (2) identical combustion trains, each having a nominal capacity of 218 tonnes of Waste per day venting into the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

Each combustion train is an independent process train and it consists of the following main components:

(a) a stoker grate steam Boiler, having a design heat input of 118 Gigajoules per hour, equipped with a natural gas fired auxiliary Low NOx burner, having a nominal heat input of 59.5 Gigajoules per hour; and

(b) the following air pollution control equipment:

(i) a Selective Non Catalytic Reduction System (SNCR System) with ammonia injection for NOx control;
(ii) an activated carbon injection system, to reduce mercury and dioxins in flue gas;
(iii) a dry recirculation lime injection scrubber to control acid gases;
(iv) a pulse jet type baghouse to control particulate emissions;

(2) one (1) steam turbine generator set having a rated capacity of 20 Megawatts;

(3) waste and reagent storage as described in Condition 2.:

(4) fly ash conditioning system including two (2) surge bins, two (2) pugmills and seven (7) curing/storage bunkers;

(5) bottom ash sorting system including conveyors, screens, a rotary drum magnet and an eddy separator;

(6) one (1) emergency diesel generator, rated at 250 Kilowatts;

(7) natural gas-fired combustion equipment for comfort heating;

(8) a wastewater management system for collection, recirculation and reuse of the process water; and

(9) a stormwater management facility for collection, transmission and discharge of non-contact runoff at the Site, as described in the attached Schedule "G",

Note: Use of the site for any other type of waste is not approved under this Certificate, and requires obtaining a separate approval amending this Certificate.

For the purpose of this Provisional Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"***Acoustic Assessment Report***" means the report, prepared in accordance with *Publication NPC-233* by Paul Niejadlik / Golder Associates Ltd. and dated March 2011 submitted in support of the application, that documents all sources of noise emissions and Noise Control Measures present at the Facility;

"**Acoustic Assessment Summary Table**" means a table summarizing the results of the Acoustic Assessment Report;

"**Acoustic Audit**" means an investigative procedure consisting of measurements of all noise emissions due to the operation of the Facility, assessed in comparison to the Performance Limits for the Facility regarding noise emissions, completed in accordance with the procedures set in the Ministry's *Publication NPC-103* and reported in accordance with the Ministry's *Publication NPC-233;*

"**Acoustic Audit Report**" means a report presenting the results of an Acoustic Audit, prepared in accordance with the Ministry's *Publication NPC-233;*

"**Acoustical Consultant**" means a person currently active in the field of environmental acoustics and noise/vibration control, who is familiar with Ministry noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from a Facility;

"**Air Standards Manager**" means the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**APC Building**" means the building at the Site where the APC Equipment and the reagent indoor storage tanks are located;

"**APC Equipment**" means all the air pollution control equipment at the Facility, including the SNCR System, the activated carbon injection system, the dry recirculation lime injection scrubber and the pulse jet type baghouse to control emissions from the combustion chamber of the Boilers, the dust collectors to control emissions from the Residue Building and the dust collectors to control emissions from the reagent storage silos;

"**Boiler Building**" means the building at the Site where the Boilers, turbine generator and the air cooled condenser(s) are located;

"**Boilers**" means the two (2) steam boilers firing the approved Waste described in this Certificate;

"**Bulky Unprocessable Items**" means the incoming Waste received at the Site that cannot be processed in the Equipment;

"**CEM Systems**" means the continuous monitoring and recording systems used to measure and record the temperature and the emissions from the Boilers as specified in the attached Schedule "F";

"**Certificate**" means this entire provisional Certificate of Approval, issued in accordance with Sections 39 and 9 of the *EPA* and Section 53 of the *OWRA,* and includes any schedules attached to it, the application and the supporting documentation listed in the attached Schedule "A;

"***40 CFR 60***" means title 40, part 60 under the Code of Federal Regulations (Air Programs, U.S. Environmental Protection Agency), revised as of July 1, 1990, published by the Office of the Federal Register, National Archives and Records, Administration in the United States of America;

"**Complaint**" means a complaint received either by the Owner or the District Manager that has been confirmed by staff of the Ministry and the cause of which is attributed to the Owner's activities at the Facility;

"**Commencement Date of Operation**" means the date when the approved Waste is first received at the Site;

"**Compound of Concern**" means a contaminant that, based on generally available information, may be emitted to the atmosphere in a quantity from any source at the Facility that is significant either in comparison to the relevant Ministry Point of Impingement Limit or if a Ministry Point of Impingement Limit is not available for the compound then, based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the *EPA* at a Point of Impingement;

"**Controlled Shutdown**" means an immediate cut-off of all waste into the Boilers, while maintaining the operation of the combustion chamber and the APC Equipment within the Performance Requirements;

"**Description Section**" means the section on page one of the Certificate describing the Owner's operations and the Equipment located at the Facility and specifying the Facility Production Limit for the Facility;

"**Dioxins and Furans**" means polychlorinated dibenzo-dioxins and polychlorinated dibenzofurans;

"**Director**" means any person appointed in writing by the Minister of the Environment pursuant to section 5 of the *EPA* and pursuant to section 5 of the *OWRA* as a Director for the purposes of Part V of the *EPA,* section 9 of the *EPA* and section 53 of the *OWRA;*

"**District Manager**" means the District Manager of the York Durham District Office of the Ministry;

"**Emergency Shutdown**" means an immediate cut-off of all waste feed into the Boilers, followed by an accelerated extinction of all combustion in the Boilers, while maintaining the combustion temperature within the Performance Requirements, except when unreasonable;

"**Emission Summary Table**" means the table prepared in accordance with *O. Reg. 419/05* and the Procedure Document listing the appropriate Point of Impingement concentrations of each Compound of Concern from the Facility and providing comparison to the corresponding Ministry Point of Impingement Limit;

"*EAA*" means the Environmental Assessment Act, R.S.O. 1990, c. E.18, as amended;

"**EA Approval**" means the Notice of Approval to Proceed with the Undertaking signed by the Minister of the Environment on November 3, 2010, EA File No. 04-EA-02-08;

"*EPA*" means the Environmental Protection Act, R.S.O. 1990, c. E.19, as amended;

"**Equipment**" means equipment or processes associated with the thermal treatment of the approved Waste described in this Certificate and in the Supporting Documentation referred to herein and any other equipment or processes handling wastes and reagents;

"**ESDM Report**" means the Emission Summary and Dispersion Modelling Report prepared in accordance with the Procedure Document by Golder Associates and dated March 2011 submitted in support of the application, and includes any amendments to the ESDM Report listed in the attached Schedule "A" and all subsequent up-dated ESDM Reports as applicable;

"**Facility**" means the entire operation associated with thermal treatment of Waste located on the property where the Equipment is located;

"**Facility Production Limit**" means the production limit placed on the main product(s) or raw materials used by the Facility that represents the design capacity of the Facility and assists in the definition of the operations approved by the Director;

"**Grizzly Building**" means the building at the Site where the bottom ash is screened and where the oversized constituents of the bottom ash (grizzly overs) are temporarily stored prior to transport for subsequent storage in the Residue Building;

"**Independent Acoustical Consultant**" means an Acoustical Consultant who is not representing the Owner and was not involved in preparing the Acoustic Assessment Report or the design/implementation of Noise Control Measures for the Facility and/or Equipment. The Independent Acoustical Consultant shall not be retained by the Acoustical Consultant involved in the noise impact assessment or the design/implementation of Noise Control Measures for the Facility and/or Equipment;

"**I-TEF**" means International Toxic Equivalency Factor derived for each dioxin and furan congener by comparing its toxicity to the toxicity of 2,3,7,8 tetrachloro dibenzo-p-dioxin, as recommended by the North Atlantic Treaty Organization Committee on Challenges to Modern Society (NATO CCMS) in 1989 and adopted by Canada in 1990;

"**I-TEQ**" means International Toxic Equivalent of dioxins and furans calculated using the I-TEFs, as recommended by the NATO CCMS in 1989 and adopted by Canada in 1990;

"**Manager**" means the Manager, Technology Standards Section, Standards Development Branch, who has been appointed under Section 5 of the *EPA* for the purposes of Section 11(1)2 of the *O. Reg. 419/05*, or any other person who represents and carries out the duties of the Manager, Technology Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**Ministry**" means the ministry of the government of Ontario responsible for the *EPA* and the *OWRA* and includes all officials, employees or other persons acting on its behalf or the Ontario Ministry of the Environment;

"**Municipality**" means the Municipality of Clarington;

"*NMA*" means the *Nutrient Management Act*, 2002, S.O. 2002, c. 4, as amended;

"**Noise Control Measures**" means measures to reduce the noise emission from the Facility and/or Equipment including, but not limited to silencers, acoustic louvers, enclosures, absorptive treatment, plenums and barriers;

"**LDR**" means the Lands Disposal Restrictions referred to in sections 74 through 85 of the *O. Reg. 347,* which prohibit the disposal of hazardous wastes on land until they have been treated to meet the treatment standards under the *O. Reg. 347;*

"**Leachate Toxicity Criteria**" means the concentrations of any of the contaminants listed in Schedule 4 at a concentration equal to or in excess of the concentration specified for that contaminant in Schedule 4 using the Toxicity Characteristic Leaching Procedure, defined in the *O. Reg. 347*;

"***O. Reg. 419/05***" means the *Ontario Regulation 419/05,* Air Pollution – Local Air Quality enacted under the *EPA,* as amended;

*"**O. Reg. 347**"* means the *Ontario Regulation 347,* R.R.O 1990 (General –Waste Management) enacted under the *EPA,* as amended;

"***OWRA***" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;

"**Owner**" means any person that is responsible for the establishment and operation of the Site being approved by this Certificate, and it includes The Regional Municipality of Durham, The Regional Municipality of York, and Covanta Durham York Renewable Energy Limited Partnership (operator), their successors and assignees;

"***PA***" means the *Pesticides Act*, R.S.O. 1990, c.P. 11, as amended;

"**Performance Requirements**" means the performance requirements and emission limits specified in the section of this Certificate entitled "Performance Requirements";

"**Point of Impingement**" means any point outside the Facility in the natural environment and as defined by s.2 of the *O. Reg. 419/05;*

"**Point of Reception**" means the Point of Reception as defined by *Publication NPC-205* and/or *Publication NPC-232*, as applicable;

"**Pre-test Information**" means the information outlined in Section 1.1 of the Source Testing Code;

"**Procedure Document**" means the Ministry's document entitled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;

"**Professional Engineer**" means a Professional Engineer as defined within the *Professional Engineers Act*, R.S.O. 1990, c. P.28, as amended;

"**Provincial Officer**" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA* or Section 5 of the *EPA* or Section 17 of the *PA* or Section 4 of the *NMA* or Section 8 of the *SDWA;*

"***Publication NPC-103***" means the Ministry's Publication NPC-103 of the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-205***" means the Ministry's Publication NPC-205, entitled "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)", dated October, 1995, as amended;

"***Publication NPC-207***" means the Ministry's draft technical publication entitled "Impulse Vibration in Residential Buildings", dated November 1983, supplementing the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-232***" means the Ministry's Publication NPC-232, entitled "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)", dated October, 1995, as amended;

"***Publication NPC-233***" means the Ministry's Publication NPC-233, entitled "Information to be Submitted for Approval of Stationary Sources of Sound", dated October, 1995, as amended;

"**Rejected Waste**" means either municipal waste which cannot be processed at the Facility or waste which the Site is not approved to accept. Rejected Waste includes but is not limited to the Bulky Unprocessable Items and the Unacceptable Waste;

"**Regional Director**" means the Regional Director of the Central Region of the Ministry;

"**Regions**" means The Regional Municipality of Durham and The Regional Municipality of York;

"***Report EPS 1/PG/7***" means the Environment Canada Report EPS 1/PG/7, entitled "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Generation", dated September, 1993, as amended;

"**Residual Waste**" means waste resulting from the Waste processing activities at the Site. Residual Waste is limited to the recovered ferrous metals, the recovered non-ferrous metals, the bottom ash (consisting of the ash fines and the grizzly overs) and the fly ash (untreated and following conditioning);

"**Residue Building**" means the building at the Site where the bottom ash and the fly ash are processed, temporarily stored and loaded in transport vehicles for off-site disposal;

"**Schedules**" means the following schedules "A", "B", "C", "D", "F" and "G", attached to the Certificate and forming part of the Certificate;

"***SDWA***" means the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, as amended;

"**Sensitive Receptor**" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from odour discharges from the Facility, including one or a combination of:

(a) private residences or public facilities where people sleep (e.g.: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.);

(b) institutional facilities (e.g.: schools, churches, community centres, day care centres, recreational centres, etc.);

(c) outdoor public recreational areas (e.g.: trailer parks, play grounds, picnic areas, etc.); and

(d) other outdoor public areas where there are continuous human activities (e.g.: commercial plazas and office buildings);

"**Site**" means the property where the Owner has located and operates the Facility and the Works and located at 72 Osbourne Road, 27, Concession Broken Front, Part 1 in the Municipality of Clarington, Regional Municipality of Durham;

"**Source Testing**" means monitoring, sampling and testing to measure emissions resulting from operating the Facility under conditions which yield the worst case emissions within the approved operating range of the Facility;

"***Source Testing Code***" means the Ministry's document entitled "Source Testing Code, Version 2, Report No. ARB-66-80", dated November 1980, as amended;

"**Stack**" means the stack that discharges emissions from the Boilers after those emissions have been controlled by the associated APC Equipment;

"**Substantial Completion**" has the same meaning as "substantial performance" in the *Construction Lien Act* R.S.O. 1990, c.C-30, as amended;

"**Supporting Documentation**" means the documents listed in the attached Schedule "A" of this Certificate which forms part of this Certificate;

"**Test Contaminants**" means the contaminants set out in the attached Schedule "D";

"**Tipping Building**" means the building at the Site where the incoming Waste is received, sorted and temporarily stored;

"**Total Power Failure**" means the loss of the external power supply and concurrent loss of all in-plant power generation;

"**Trained Personnel**" means one or more Site personnel trained in accordance with the requirements of Condition 9.;

"**Waste**" means municipal solid waste as defined in the *O. Reg. 347* and limited to the approved waste set out in Condition No. 2.(2);

"**Waste Processing Rate** means the mass of Waste fed into one of the Boilers;

"**Works**" means the sewage works described in the Owner's application, this Certificate and in the Supporting Documentation referred to herein, to the extent approved by this Certificate;

"**Unacceptable Waste**" means the incoming Waste received at the Site that does not meet the incoming Waste quality criteria set out in this Certificate, is of hazardous nature and requires caution when handling; and

"**Undiluted Gases**" means the flue gas stream which contains oxygen, carbon monoxide, total hydrocarbons and all contaminants in the same concentrations as they exist in the flue gas stream emerging from an individual piece of equipment, such as the combustion chamber of one Boiler or one baghouse, and into which gas stream no ambient air and/or no other gas stream originating from another piece of equipment, except for dilution air introduced within the CEM Systems, has been introduced.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

GENERAL PROVISIONS

1. GENERAL

Compliance

(1) The Owner shall ensure compliance with all the conditions of this Certificate and shall ensure that any person authorized to carry out work on or operate any aspect of the Site, including the Works, is notified of this Certificate and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Certificate.

Build in Accordance

(3) (a) Except as otherwise provided by this Certificate, the Site shall be designed, developed, built, operated, monitored, inspected and maintained in accordance with the following applications:

(i) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of

Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(ii) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(iii) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(b) (i) Any design optimization or modification that is inconsistent with the conceptual design set out in the Supporting Documentation in Schedule "A" shall be clearly identified, along with an explanation of the reasons for the change and submitted to the Director for approval.

(ii) If a change to the conceptual design is submitted to the Director for approval, no construction of the Site shall commence prior to the Director approving, in writing, the final conceptual design of the Site.

As-built Drawings

(4) (a) Within ninety (90) days of the completion of the initial successful Source Testing program, a set of as-built drawings showing the Facility and the Works and bearing the stamp of a Professional Engineer, shall be prepared and retained at the Site.

(b) These drawings shall be kept up-to-date through revisions undertaken from time to time and a copy shall be retained at the location of the Site or at the operational office of the Owner for the operational life of the Site.

(c) Notwithstanding provisions of Condition 1.(4)(b), an amendment to this Certificate shall be sought for changes to the as-built drawings, requiring approval.

(d) The as-built drawings shall be made available to Ministry staff upon request.

Interpretation

(5) Where there is a conflict between a provision of any document, including the application referred to in this Certificate and the conditions of this Certificate, the conditions in this Certificate shall take precedence.

(6) Where there is a conflict between the applications and a provision in any documents listed in Schedule "A", the applications shall take precedence, unless it is clear that the purpose of the document was to amend the applications and that the Ministry approved the amendment.

(7) Where there is a conflict between any two documents listed in Schedule "A", other than the applications, the document bearing the most recent date shall take precedence.

(8) The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.

Other Legal Obligations

(9) The issuance of, and compliance with the conditions of this Certificate does not:

- (a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or
- (b) limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner to furnish any further information related to compliance with this Certificate.

Adverse Effects

(10) The Site shall be constructed, operated and maintained in a manner which ensures the health and safety of all persons and prevents adverse effects on the natural environment or on any persons.

(11) The Owner shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the approved operations at the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

(12) Despite the Owner or any other person fulfilling any obligations imposed by this Certificate, the person remains responsible for any contravention of any other condition of this Certificate or any applicable statute, regulation, or other legal requirement resulting from any act or emission that caused the adverse effect to the natural environment or impairment of water quality.

(13) If at any time odours, pests, litter, dust, noise or other such negative effects are generated at this Site and cause an adverse effect, the Owner shall take immediate appropriate remedial action that may be necessary to alleviate the adverse effect, including suspension of all waste management activities if necessary.

Change of Ownership

(14) The Owner shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Owner;
(d) the partners, where the Owner is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Owner is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Owner shall notify the successor of and provide the successor with a copy of this Certificate, and the Owner shall provide a copy of the notification to the District Manager and the Director.

Inspections by the Ministry

(16) No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the *OWRA,* the *EPA,* the *PA,* the *SDWA* or the *NMA* of any place to which this Certificate relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved processing is undertaken, or the location where the records required by the conditions of this Certificate are kept;
(b) to have access to, inspect, and copy any records required to be kept by the conditions of this Certificate;
(c) to inspect the Site, related equipment and appurtenances;
(d) to inspect the practices, procedures, or operations required by the conditions of this Certificate;
(e) to conduct interviews with staff, contractors, agents and assignees of the Owner; and
(f) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Certificate or the *EPA,* the *OWRA,* the *PA,* the *SDWA* or the *NMA.*

Information

(17) Any information requested by the Ministry, concerning the operation of the Site and its operation under this Certificate, including but not limited to any records required to be kept by this Certificate, manuals, plans, records, data, procedures and supporting documentation shall be provided to the Ministry, in a timely manner, upon request.

(18) The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this Certificate or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Certificate or any statute, regulation or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

(19) The Owner shall ensure that a copy of this Certificate, in its entirety and including all its Notices of Amendment and the Supporting Documentation listed in Schedule "A" are retained at the Site at all times.

2. **SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE**

(1) The service area for the Site is the area within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(2) The operation of this Site is limited to:

(a) receipt, temporary storage, transfer and processing, including thermal treatment, of solid non-hazardous waste remaining after Waste Diversion required by the EA Approval, limited to Waste from the following sources:

(i) domestic waste and Industrial Commercial and Institutional waste from the Regions' curbside collection and/or from the Regions' waste management facilities; and

(ii) waste generated on-Site through activities not relating to the handling and processing of Waste (ie. office, lunch room, etc.);

(b) collection and management of the stormwater run-off generated at the Site.

(3) The following Unacceptable Waste is prohibited from being accepted at the Site:

(a) hazardous waste, as defined in the *O. Reg. 347;*
(b) wastes which have been source-separated for the purposes of diversion;

(c) international waste generated outside of Canada, but collected within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(4) Waste Receipt Rate:

(a) The maximum daily amount of Waste that is approved to be accepted at the Site shall not exceed 1,520 tonnes per day.

(5) Storage Restrictions:

Solids:

(a) A maximum of 7,350 cubic metres shall be stored inside the Waste pit within the Tipping Building as shown in the Supporting Documentation.

(b) Rejected Waste, limited to the Bulky Unprocessable Items removed from the incoming Waste in the Tipping Building shall be stored:

(i) in two (2) roll-off bins having a maximum total storage capacity of 30 cubic metres, located within the confines of the Tipping Building; and/or

(ii) in the appropriate dedicated bunkers, located within the confines of the Residue Building and described in Conditions 2.(5)(c), 2.(5)(d) and 2.(5)(d), below.

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of thirty six (36) days.

(g) A maximum of 85 cubic metres of activated carbon for the carbon injection system shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(h) A maximum of 150 cubic metres of lime for the dry scrubber shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(i) If required, recirculated residue shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(j) A maximum of 35 tonnes or 25 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

(k) A maximum of 25 tonnes or 45 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

Liquids:

(l) (i) A maximum of 36 cubic metres or 40 tonnes of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(ii) The Owner shall ensure that the aqueous ammonia storage tank is equipped with a liquid level monitoring device designed to provide a visual and an auditory alarm when the high level setpoint is reached.

(iii) The aqueous ammonia storage tank spill containment area and the loading area shall be designed in accordance with the requirements in the Ministry's document entitled *"Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities"* dated May 2007, as amended.

(6) No outdoor storage of waste, including storage in vehicles, is approved under this Certificate.

(7) The Owner shall ensure that storage of all wastes is undertaken in a manner that does not cause an adverse effect or a hazard to the environment or any person.

(8) (a) Waste received at the Site shall be processed within four (4) days from its receipt at the Site.

(b) Emergency Waste storage duration extension:

(i) The Owner may store the incoming Waste inside the tipping pit within the confines of the Tipping Building for up-to seven (7) days from its receipt at the Site, on an emergency basis only.

(ii) Within twenty four (24) hours from the start of the emergency storage of the incoming Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste is being stored longer then four (4) days.

(iii) Should there be public complaints about the extended incoming Waste storage, the Owner, in consultation with the District Manager, shall determine the cause of the complaints, propose appropriate abatement measures, including but not be limited to the removal and off-site disposal of the Waste contained in the tipping pit, and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(9) In the event that Waste cannot be processed at the Site and the Site is at its approved storage capacity, the Owner shall cease accepting additional Waste. Receipt of additional Waste may be resumed once such receipt complies with the waste storage limitations approved in this Certificate.

3. **SIGNS and SITE SECURITY**

(1) Prior to receipt of Waste at the Site, the Owner shall ensure that a sign is posted at the entrance to the Site. The sign shall be visible from the main road leading to the Site. The following information shall be included on the sign:

(a) name of the Owner;
(b) this Certificate number;
(c) hours during which the Site is open;
(d) waste types that are approved to be accepted at the Site;
(e) Owner's telephone number to which complaints may be directed;
(f) Owner's twenty-four hour emergency telephone number (if different from above);
(g) a warning against unauthorized access; and
(h) a warning against dumping at the Site.

(2) The Owner shall ensure that appropriate and visible signs are posted at the Site clearly identifying the wastes and the process reagents and stating warnings about the nature and any possible hazards of the wastes and the reagents.

(3) The Owner shall ensure that appropriate and visible signs are posted at the Site to prohibit smoking, open flames or sources of ignition from being allowed near any flammable materials storage areas.

(4) The Owner shall install and maintain appropriate and visible signs at the Site to direct vehicles to the Waste receiving and Residual Waste removal areas and to the reagent unloading areas.

(5) The Owner shall post appropriate and visible signs along the traffic route providing clear directions to the Site.

(6) The Owner shall ensure that the Site is fenced in and that all entrances are secured by lockable gates to restrict access only to authorized personnel when the Site is not open.

(7) The Owner shall ensure that access to the Site, with the exception of the area designated as a Public Information Centre, is regulated and that no unauthorized persons are permitted at the Site without the Trained Personnel escort.

(8) The Owner shall ensure that the Site is operated in a safe and secure manner, and that Waste, the Residual Waste and the Unacceptable Waste are properly handled, packaged or contained and stored so as not to pose any threat to the general public and the Site personnel.

4. **SITE OPERATIONS**

(1) **Operating hours:**

(a) The Site is approved to operate twenty-four (24) hours per day three hundred and sixty-five (365) days per year.

(b) Notwithstanding Condition 4.(1)(a), Waste shall only be received at the Site and the Residual Waste shall only be transferred from the Site between 7:00 a.m. and 7:00 p.m. Monday to Saturday. No receipt of the Waste or transfer of the Residual Waste shall be undertaken on statutory holidays.

(c) Emergency Receipt of Waste:

(i) The Owner may receive Waste at the Site outside of the operating hours specified in Condition 4.(1)(b), above, on an emergency basis only.

(ii) Within twenty four (24) hours from the receipt of Waste outside of the approved receiving hours, the Owner shall notify, in writing, the District Manager that Waste was received outside of the approved receiving hours.

(iii) Should there be complaints about Waste shipments outside of the approved hours, the Owner, in consultation with the District Manager, shall determine the cause of the complaint, propose appropriate abatement measures and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(2) **Incoming Waste receipt:**

(a) At the weigh scale, the Trained Personnel shall:

(i) inspect the required documentation prior to acceptance of the incoming Waste at the Site; and

(ii) inspect the incoming Waste with radiation detection equipment.

(b) In the Tipping Building, the Trained Personnel shall:

(i) visually inspect all incoming Waste being unloaded into the Waste pit; and

(ii) once per hour, or as accepted by the District Manager, unload the incoming Waste on the tipping floor for a manual visual inspection and sorting of the incoming Waste.

(c) The Owner shall only accept the incoming Waste that is delivered in vehicles that have been approved by the Ministry.

(d) The Owner shall ensure that all unloading of incoming Waste at the Site takes place entirely within the confines of the Tipping Building.

(3) **Unacceptable Waste handling:**

(a) In the event that waste that is not approved under this Certificate is inadvertently accepted at the Site, the Owner shall ensure that the Unacceptable Waste:

(i) is stored in a way that ensures that no adverse effects result from its storage;
(ii) is segregated from all other waste;
(iii) is handled and removed from the Site in accordance with the *O. Reg. 347* and the *EPA*; and
(iv) is removed from the Site within (4) days of its receipt or as acceptable to the District Manager.

(b) The Owner shall ensure that all loading of the Unacceptable Waste into transport vehicles is carried out entirely within the confines of the Tipping Building.

(4) **Waste Sorting:**

(a) The Trained Personnel shall remove the Bulky Unprocessable Items and Unacceptable Waste from the incoming Waste prior to charging of the Waste to the Boilers.

(b) All sorting of the incoming Waste at the Site shall be undertaken indoors, within the confines of the Tipping Building and/or the Refuse Building.

(5) **Residual Waste Handling and Disposal:**

(a) (i) Except for transportation of the Residual Waste between the Grizzly Building and the Residue Building, the Owner shall ensure that all handling of the bottom ash and its segregated constituents, and of the fly ash, is undertaken within the confines of enclosed conveyors and enclosed buildings.

(ii) The Owner shall ensure that all loading of the Residual Waste into vehicles for its transport from the Site is carried out entirely within the confines of the Residue Building.

(b) (i) Different constituents of the Residual Waste shall not be comingled prior to the required compliance testing, unless all Residual Waste is to be disposed of at a Waste Disposal Site that is approved to accept hazardous waste.

(ii) The Owner shall ensure that the equipment used in handling of the hazardous wastes or that came in direct contact with the hazardous wastes is not used to handle other wastes.

(iii) On an emergency basis, the Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

(c) (i) Only haulers approved by the Ministry shall be used to transport the Residual Waste from the Site.

(ii) The Residual Waste shall be transported from the Site in appropriately covered vehicles that will not allow fugitive dust emissions to be emitted into the natural environment during the said transport.

d) Residual Waste generated at the Site shall be disposed of shall only be disposed of at an approved waste disposal site in accordance with the requirements in the *EPA* and the *O. Reg. 347* or at a location with the appropriate jurisdictional approval or a license, if required.

(e) Should the Residual Waste limited to the conditioned fly ash and/or the bottom ash be deemed a hazardous waste, the ash shall be disposed of at an approved waste disposal site in accordance with the Land Disposal Restrictions requirements in the *EPA* and the *O. Reg.* 347 or at a location with the appropriate jurisdictional approval or a license, if required.

(6) **Wastewater Management**

(a) The Owner shall ensure that all wastewater generated at the Site is contained within enclosed buildings, tanks, pipes and conveyors at the Site and the approved outdoor Wastewater Settling Basin.

(b) The Owner shall ensure that all wastewater generated at the Site is collected in leak-proof and sufficiently designed wastewater storage facilities:

(i) Wastewater Holding Tank, to collect the continuous reject water flow from the Boiler make-up water treatment system and the Boiler blowdown, having an approximate holding capacity of 100 cubic metres, located within the confines of the Boiler Building and venting to the atmosphere; and

(ii) Wastewater Settling Basin, to collect the wastewater from the floor drains in the buildings at the Site, except for the Tipping Building and the Residue Building, the ash discharger overflow and drain water, the Boiler and turbine-generator washdown water and the APC Equipment area washdown water, having an approximate holding capacity of 38 cubic metres, located outdoors, open to the atmosphere and equipped with a filter basket and an oil skimmer board.

(c) The wastewater pumps shall be located in the area designed in accordance with the Supporting Documentation to ensure that any potential leaks or drips are contained and directed to the Wastewater Settling Basin.

(d) (i) The wastewater level in the Wastewater Holding Tank shall be monitored and controlled to ensure that the wastewater inflow to the Tank does not cause the Tank overflow.

(ii) The wastewater level in the Wastewater Settling Basin shall be monitored and controlled to ensure that the atmospheric precipitation does not cause an overflow from the Basin.

(e) The Owner shall regularly empty, and clean as necessary, all sumps, wastewater storage/holding areas and equipment that are used to contain, collect and handling the wastewater generated at the Site.

(f) Should the Owner find it necessary to remove the wastewater from the Site, the wastewater shall only be disposed of at a Ministry-approved site in accordance with the site's certificate of approval or be discharged to the sanitary sewer in accordance with the agreement with the municipality accepting the discharge.

(g) The floors of the Tipping Building and the Residue Building shall be sufficiently sloped to facilitate the flow of the wastewater generated from the floor cleaning activities and from the truck washdown towards the designated wastewater collection area.

(h) The Owner shall ensure that the Wastewater Settling Basin is regularly cleaned out and that it does not become a source of odour emissions.

(7) All activities approved under this Certificate shall only be carried out by appropriately Trained Personnel.

5. **EQUIPMENT and SITE INSPECTIONS and MAINTENANCE**

Operation and Maintenance

(1) Prior to the receipt of the Waste at the Site, the Owner shall prepare and update as necessary, an Operation and Maintenance Manual for all the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility. The Manual shall be prepared in accordance with the written manufacturer's and/or supplier's specifications and good engineering practice.

As a minimum, the Operation and Maintenance Manual shall specify:

(a) operation procedures of the Equipment, the APC Equipment, the CEM Systems, the Works, and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility, in accordance with manufacturers' recommendations and good engineering practices to achieve compliance with this Certificate, the *EPA,* the *OWRA* and their Regulations;
(b) calibration procedures for the CEM Systems as required by this Certificate;
(c) procedures for start-up and shutdown, including Controlled Shutdown and Emergency Shutdown;
(d) quality assurance procedures for the operation and calibration of the CEM Systems in accordance with *40 CFR 60*, Appendix F or *Report EPS 1/PG/7,* as appropriate;
(e) Waste receiving and screening procedures;
(f) Waste, Rejected Waste and Residual Waste handling procedures;
(g) testing and monitoring procedures as required by this Certificate;
(h) maintenance and preventative maintenance procedures as required by this Certificate;
(i) Facility inspection, including frequency of inspections, procedures;
(j) procedure for handling complaints as required by this Certificate.
(k) contingency measures to resolve upset conditions and/or minimize the environmental impacts from the Facility;
(l) emergency response procedures, including procedures for dealing with power failure, fire, explosion, spills and any other potential emergencies;
(m) procedures for record keeping activities as required by this Certificate;
(n) description of the responsibilities of the Site personnel and the personnel training protocols; and
(o) a list of personnel positions responsible for operation and maintenance, including supervisory personnel and personnel responsible for handling of the emergency situations, recording and reporting pursuant to the requirements of this Certificate, along with the training and experience required for the positions and a description of the responsibilities.

(2) A copy of this Operations and Maintenance Manual shall be kept at the Site, be accessible to the Site personnel at all times and be updated, as required. The Operations and Maintenance Manual shall be available for inspection by a Provincial Officer upon request.

(3) The Owner shall implement the operation, maintenance, preventative maintenance and calibration procedures set out in the Operations and Maintenance Manual required by this Certificate.

Critical Spare Parts

(4) (a) The Owner shall prepare a list of critical spare parts, update this list annually or more frequently, if necessary, to ensure that this list is maintained up-to-date and shall be available for inspection by a Provincial Officer upon request.

(b) The Owner shall ensure that the critical spare parts are available at the Site at all times or are immediately available from an off-Site supplier.

Inspections

(5) Prior to receipt of the Waste at the Site, the Owner shall prepare a comprehensive written inspection program which includes inspections of all aspects of the Site's operations including, but not limited to the following:

(a) buildings and the indoor waste storage facilities and presence of dust and odour and leaks in or near any openings, such as doorways, window, vent, louver or any other opening;
(b) outdoor Residual Waste transport equipment, and the presence of dust and leaks at or near transfer points or the equipment seams;
(c) the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility;
(d) spill containment areas, loading areas and the conditions around the Wastewater Settling Basin;
(e) security fencing, gates, barriers and signs;
(f) off-site nuisance impacts such as odour, dust, litter, etc.
(g) presence of stormwater pooling at the Site; and
(h) condition of the on-Site roads for presence of leaks and drips from the waste delivery trucks or excessive dust emissions.

(6) The inspections, except for the inspection of the Works, are to be undertaken daily by the Trained Personnel in accordance with the inspection program to ensure that the Facility is maintained in good working order at all times and that no off-Site impacts are occurring. Any deficiencies detected during these regular inspections must be promptly corrected.

Inspections and Maintenance of the Works

(7) The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

6. PERFORMANCE REQUIREMENTS

(1) The Owner shall, ensure that the Facility/Equipment is designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) the maximum 10-minute average concentration of odour at the most impacted Sensitive Receptor, resulting from the operation of the Facility/Equipment, calculated in accordance with the procedures outlined in the attached Schedule "B", shall not exceed 1 odour unit;

(b) the noise emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-205;*

(c) the vibration emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-207.*

(2) The Owner shall ensure that the Boilers and the associated APC Equipment and the CEM Systems are designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) (i) The temperature in the combustion zone of each Boiler shall reach a minimum of 1000 degrees Celsius (°C) for one second, prior to introduction of the Waste into the combustion chamber of the Boiler during the start-up, and thereafter maintained during the entire thermal treatment cycle and subsequent shutdown until all Waste combustion is completed.

(ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000°C (the Target Location) or by correlation of the required temperature of 1000°C for one second to the temperature measured downstream of the Target Location as proven by a method acceptable to the Director.

(b) The concentration of residual oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be less than 6 percent by volume on a dry basis.

(c) (i) The operational target for the concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler is 40 milligrams per dry cubic metre, as a 4-hour rolling average, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, as measured and recorded by the CEM System, for the period from and including initial commissioning of the facility to twelve months following the completion of the first Source Testing program.

(ii) The 4-hour average concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be more than 40 milligrams per dry cubic metre, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, after the first twelve months following the completion of the first Source Testing program.

(d) The emissions from the Boilers after those emissions have been controlled by the associated APC Equipment for discharge into the atmosphere via the Stack shall comply with the emission concentration limits listed in the attached Schedule "C", as measured by a CEM System or by Source Testing as applicable.

(e) The Boilers shall include combustion air control systems, which are capable of automatically adjusting the distribution and the quantity of combustion air, in such a manner that changes in the Waste Processing Rate and/or Waste composition or irregularities in the loading and/or combustion shall not adversely affect the performance of the Boilers.

(f) The Boilers shall provide and maintain a high degree of gas turbulence and mixing in the combustion chamber.

(g) The Boilers shall achieve the temperature, oxygen availability and turbulence requirements over the complete range of operating parameters, including feed rate, feed characteristics, combustion air, flue gas flow rate and heat losses.

(h) The inlet temperature into each baghouse of the APC Equipment of the Boilers shall not be less than 120°C and not more than 185°C.

(3) The Owner shall install and maintain visual and audible alarm systems to alert the Facility/Equipment operators of any potential deviation from the above Performance Requirements for parameters that are continuously monitored by applicable CEM Systems and shall forthwith take all reasonable actions to bring the Equipment/Facility into compliance with all Performance Conditions.

(4) In the event that the CEM Systems indicate that emissions from the Boilers and the Stack exceed any Performance Requirements in the attached Schedule "C" for a continuous three (3) hour period, the Owner shall forthwith cut-off all Waste feed into the affected Boiler and initiate an Emergency Shutdown, while maintaining a temperature of 1000°C, as practicable, in the combustion zone of the Boiler.

Residual Waste Compliance Criteria

(5) (a) The Residual Waste generated at the Site and destined for a non-hazardous waste disposal site in Ontario shall not meet any of the criteria from the definition of "hazardous waste" set out in the *O. Reg. 347.*

(b) The Residual Waste that meets any of the criteria from the definition of "hazardous waste" set out in the *O. Reg.* 347 shall be handled and disposed of in accordance with the LDR requirements set out in the *EPA* and the *O. Reg. 347.*

(6) The Residual Waste, limited to the bottom ash, destined for a non-hazardous waste disposal site shall meet the definition of "incinerator ash" set out in the *O. Reg. 347.*

7. TESTING, MONITORING and AUDITING

Source Testing

(1) The Owner shall perform annual Source Testing in accordance with the procedures and schedule outlined in the attached Schedule "E", to determine the rate of emission of the Test Contaminants from the Stack. The first Source Testing program shall be conducted not later than six (6) months after the Commencement Date of Operation of the Facility/Equipment and subsequent Source Testing program shall be conducted once (1) every calendar year thereafter.

Continuous Monitoring

(2) The Owner shall select, test and install appropriate CEM Systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule "F" to conduct and maintain a program to continuously monitor, as a minimum, the following parameters prior to commencement of operation of the Boilers:

(a) the temperature at one (1) second downstream of the combustion zone of each Boiler where most of the combustion has been completed and the combustion temperature is fully developed;

(b) the inlet temperature of the gases into each baghouse of the APC Equipment of each Boiler;

(c) the concentration of carbon monoxide, oxygen and organic matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler;

(d) the opacity and moisture content of the flue gas and the concentration of oxygen, nitrogen oxides, sulphur dioxide, hydrogen chloride, hydrogen fluoride and ammonia in the Undiluted Gases leaving the baghouse of the APC Equipment of each Boiler.

Long-Term Sampling for Dioxins and Furans

(3) (a) The Owner shall develop, install, maintain and update as necessary a long-term sampling system, with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the APC Equipment associated with each Boiler. The performance of

this sampling system will be evaluated during the annual Source Testing programs in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4.

(b) The Owner shall evaluate the performance of the long-term sampling system in determining Dioxins and Furans emission trends and/or fluctuations as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers.

Ambient Air Monitoring

(4) (a) The Regions shall develop and implement the Ambient Air Monitoring and Reporting Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable by the Regional Director.

(b) The Regions shall report the results of the Ambient Air Monitoring program to the Regional Director in accordance with the Ambient Air Monitoring and Reporting Plan and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

Residual Waste Testing

(7) (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg.* 347 and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.

(b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.

(c) The Testing Protocol shall include the rationale for the proposed methods and the following:

(i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;

(ii) sample(s) handling and preserving procedures;

(iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and

(iv) a testing protocol for the bottom ash during the Site commissioning period.

(d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.

(8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:

(a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;

(b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the "incinerator ash" definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

(c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the "incinerator ash" definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re - establish compliance with the "incinerator ash" definition from the *O. Reg. 347* and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and

(d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re - establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.

(9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347.*

(b) The Owner shall follow the following schedule for compliance testing:

(i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;

(ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and

(iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re - establish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

Soil Testing:

(10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.

(b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

Disposal of Residual Waste

(11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.

(12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347,* may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

(13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

Groundwater and Surface Water Monitoring

(14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

8. NUISANCE IMPACT CONTROL and HOUSEKEEPING

Odour Management

(1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.

(b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.

(ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained to maintain a negative air pressure atmosphere throughout the Tipping Building.

(c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.

(3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.

(4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.

(5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.

(6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.

(7) (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.

(ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.

(iii) These tests shall be repeated as directed or agreed by the District Manager.

(8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(9) (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:

(i) identification of all potential sources of odourous emissions;

(ii) description of the preventative and control measures to minimize odourous emissions from the identified sources;
(iii) procedures for the implementation of the Odour Management and Mitigation Plan;
(iv) inspection and maintenance procedures to ensure effective implementation of the Odour Management and Mitigation Plan; and
(v) procedures for verification and recording the progress of the implementation of the Odour Management and Mitigation Plan.

(b) The Owner shall continue to submit an updated Odour Management and Mitigation Plan until such time as the Regional Director notifies the Owner in writing that further submissions are no longer required.

Vehicles and Traffic

(10) (a) The Owner shall ensure that all vehicles transporting waste to and from the Site are not leaking or dripping waste when arriving at or leaving the Site.

(b) Should the Owner become aware that the truck(s) delivering waste to the Site have leaked wastewater on the municipal roadways, the Owner shall immediately report the violation to the owner of the vehicle(s) and to the District Manager.

(c) The Owner shall ensure that the exterior of all vehicles delivering Waste to the Site or hauling waste from the Site is washed prior to the trucks' departure from the Site, if necessary.

(d) Any necessary truck washing shall occur only in the designated wash down area of the Tipping Building or the Residue Building.

(11) The Owner shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Site on any roadway that is not a distinct part of the Site.

Litter

(12) The Owner shall:

(a) take all practical steps to prevent the escape of litter from the Site;
(b) pick up litter around the Site on a daily basis, or more frequently if necessary; and
(c) if necessary, erect litter fences around the areas causing a litter problem.

Dust

(13) The Owner shall ensure that all on-site roads and operations/yard areas are regularly swept/washed to prevent dust impacts off-Site.

Vermin and Vectors

(14) The Owner shall:

(a) implement necessary housekeeping procedures to eliminate sources and potential sources of attraction for vermin and vectors; and

(b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the Site. The pest control plan shall remain in place, and be updated from time to time as necessary, until the Site has been closed and this Certificate has been revoked.

Visual Screening

(15) The Owner shall provide visual screening for the Site in accordance with the documentation included in the attached Schedule "A".

9. STAFF TRAINING

(1) (a) The Owner shall ensure that all operators of the Site are trained with respect to the following, as per the specific job requirements of each individual operator:

(i) terms and conditions of this Certificate and the requirements of the EA Approval;
(ii) operation and management of the Site, or area(s) within the Site, as per the specific job requirements of each individual operator, and which may include procedures for receiving, screening and identifying Waste, refusal, handling, processing and temporarily storing wastes, operation of the Equipment, the APC Equipment, the CEM System and the Works;
(iii) testing, monitoring and operating requirements;
(iv) maintenance and inspection procedures;
(v) recording procedures;
(vi) nuisance impact control and housekeeping procedures;
(vii) procedures for recording and responding to public complaints;
(viii) an outline of the responsibilities of Site personnel including roles and responsibilities during emergency situations;
(ix) the Contingency and Emergency Response Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
(x) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
(xi) emergency first-aid information; and
(xii) relevant waste management legislation and regulations, including the *EPA*, the *OWRA*, the *O. Reg. 347*, the *O. Reg. 419/05* and the Ministry guidelines affecting thermal treatment facilities.

(2) The Owner shall ensure that all personnel are trained in the requirements of this Certificate relevant to the employee's position:

(a) upon commencing employment at the Site in a particular position;
(b) whenever items listed in Condition 9.(1) are changed or updated; and
(c) during the planned refresher training.

10. **<u>COMPLAINTS / ODOUR-CONTAMINANT EMISSIONS RESPONSE PROCEDURE</u>**

(1) The Owner or a designated representative of the Owner shall be available to receive public complaints caused by the operations at the Site twenty-four (24) hours per day, seven (7) days per week.

(2) If at any time, the Owner or the Ministry receives a complaint or the Owner or the Provincial Officer detects an emission of odour or any contaminant, (Emission Event), from the Site, in addition to the requirements set out in the EA approval, the Owner shall record all relevant information in the computerized tracking system and shall respond to the complaint/Emission Event according to the following procedure:

Step 1: Record of Complaint/Emission Event

(a) (i) The Owner shall record each complaint/Emission Event and each record shall include the following:

(A) name, address and the telephone number of the complainant, if known;
(B) time and date of the complaint/Emission Event;
(C) details of the complaint; and

(ii) After the complaint/Emission Event has been recorded in the tracking system, the Owner shall immediately report to the District Manager by phone or e-mail during office hours and to the Ministry's Spills Actions Centre at 1-800-268-6060 after office hours on the receipt of the complaint or occurrence of the Emission Event.

Step 2: Investigation and Handling of Complaint/Emission Event

(b) The Owner shall immediately initiate investigation of the complaint/Emission Event. As a minimum, the investigation shall include the following:

(i) determination of the activities being undertaken at the Site at the time of the complaint/Emission Event;
(ii) meteorological conditions including, but not limited to the ambient temperature, approximate wind speed and its direction.
(iii) determination if the complaint is attributed to activities being undertaken at the Site and if so, the possible cause(s) of the complaint/Emission Event; and

(iv) determination of the remedial action(s) to address the cause(s) of the Complaint/Emission Event, and the schedule for the implementation of the necessary remedial action(s).

(c) The Owner shall respond to the complainant, if known, and the response shall include the results of the investigation of the Complaint, the action(s) taken or planned to be taken to address the cause(s) of the Complaint, and if any follow-up response(s) will be provided.

(d) Upon completed investigation of the Complaint/Emission event, the Owner shall, within three (3) business days, submit a report to the District Manager on the Complaint, on the action(s) taken or planned to be taken to address the cause(s) of the Complaint and on all proposed action(s) to prevent recurrence of the Complaint/Emission Event in the future.

(3) If, in the opinion of the District Manager, failure of the APC Equipment and/or any other process or equipment upset or malfunction results in off-site Complaint/Emission Event, confirmed by the Owner or a Provincial Officer of the Ministry, the Owner shall, immediately upon notification from the District Manager, implement any necessary additional control measures, including, but not necessarily limited to, those in the Contingency and Emergency Response Plan required by this Certificate.

(4) If the District Manager deems the additional control measures taken as per condition 10.(3) to be unsuitable, insufficient or ineffective, the District Manager may direct the Owner, in writing, to take further measures to address the noted failure, upset or malfunction including pursuant to section 39 of the *EPA* requiring a reduction in the receipt of Waste, cessation of the receipt of Waste, removal and off-site disposal of Waste from the Tipping Building as well as making repairs or modifications to equipment or processes.

11. CONTINGENCY and EMERGENCY RESPONSE PLAN

(1) (a) The Owner shall develop and implement a Contingency and Emergency Response Plan in accordance with the requirements set out in the EA Approval.

(b) Notwithstanding the requirements set out in the EA Approval, the Contingency and Emergency Response Plan shall be prepared in consultation with the District Manager or designate, the local Municipality and the Fire Department.

(2) In addition to the requirements set out in the EA Approval, the Contingency and Emergency Response Plan, as a minimum, shall include the following:

(a) the Site plan clearly showing the equipment layout and all storage areas for wastes and reagents;

(b) a list of Site personnel responsible for the implementation of the contingency measures and various emergency response tasks and their training requirements;
(c) a list of equipment and materials required for the implementation of the contingency measures and the emergency situation response;
(d) maintenance and testing program for equipment required for the implementation of the contingency measures and the emergency situation response;
(e) procedures to be undertaken as part of the implementation of the contingency measures and the emergency situation response;
(f) names and telephone numbers of waste management companies available for emergency response;
(g) notification protocol, with names and telephone numbers of persons to be contacted, including the Owner, the Site personnel, the Ministry of the Environment Spills Action Centre and the York Durham District, the local Fire and Police Departments, the local Municipality, the local Medical Officer of Health, and the Ministry of Labour;
(h) procedures and actions to be taken should the incoming Waste not meet the applicable quality criteria specified in this Certificate;
(i) procedures and actions to be taken should the outgoing Residual Waste fail to meet the criteria specified in this Certificate;
(j) procedures and actions to be taken should the current disposal options for the outgoing Residual Waste become unavailable;
(k) design of the contingency measure, procedures and actions should the emissions from the Site, including the fugitive odour/dust emissions, cause occurrences of public Complaints;
(l) procedures and actions to be taken should the Owner be unable to maintain the negative pressure in the Tipping Building;
(m) procedures and actions to be taken should the occurrence of Complaints require the Owner to suspend the waste processing activities at the Site; and
(n) identification and risk assessment of all reasonably foreseeable incidents that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate, including but not limited to:
    (i) a breakdown of the Facility/Equipment or part of the Facility/Equipment, including the APC Equipment and the CEM Systems associated with the Boilers;
    (ii) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements;
    (iii) any change in process parameters which may result in non compliance with the Performance Requirements;
    (iv) power failure resulting in the use of the Emergency Diesel Generator or Total Power Failure; and
    (v) description of the preventative and control measures to minimize the occurrence or impacts of the above incidents; and
    (vi) procedures for corrective measures and timelines to take to address the above incidents in a timely manner to effectively prevent or minimize the discharge of any contaminant into the natural environment and continue to maintain compliance with the *EPA* , the Regulations and

this Certificate, including procedures for Waste Processing Rate reduction, waste feed cut-off, Controlled Shutdown or Emergency Shutdown of the Boilers as applicable.

(3) The Owner shall submit the finalized Contingency and Emergency Response Plan to the Director a minimum of one hundred and twenty (120) days prior to the Commencement Date of Operation, for approval.

(4) An up-to-date version of the Contingency and Emergency Response Plan shall be kept at the Site at all times, in a central location available to all staff, and it shall be available for inspection by a Provincial Officer upon request.

(5) The Owner shall ensure that the names and telephone numbers of the persons to be contacted in the event of an emergency situation are kept up-to-date, and that these numbers are prominently displayed at the Site and at all times available to all staff and emergency response personnel.

(6) The Contingency and Emergency Response Plan shall be reviewed on a regular basis and updated, as necessary. The revised version of the Contingency and Emergency Response Plan shall be submitted to the local Municipality and the Fire Department for comments and to the District Manager for comments and concurrence.

(7) The Owner shall implement the recommendations of the updated Contingency and Emergency Response Plan, immediately upon receipt of the written concurrence from the District Manager.

12. **EMERGENCY SITUATION RESPONSE and REPORTING**

(1) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site and manage any emergency situation in accordance with the Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the equipment and materials listed in the Contingency and Emergency Response Plan are immediately available at the Site, are in a good state of repair, and fully operational at all times.

(3) The Owner shall ensure that all Site personnel responsible for the emergency situation response are fully trained in the use of the equipment and related materials, and in the procedures to be employed in the event of an emergency.

(4) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

13. **SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER**

(1) The Owner shall notify the District Manager in writing, at least six (60) days prior to the scheduled date for the first receipt of Waste at the Site, as to whether or not the construction of the Facility has been carried out in accordance with this Certificate to a point of Substantial Completion.

(2) (a) The Owner shall forthwith notify the District Manager and the Spills Action Centre by telephone, when any of the following incidents occur that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate:

(i) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements triggering a Waste Processing Rate Reduction, Waste Feed cut-off, Controlled Shutdown or Emergency Shutdown as specified in the Emergency Response and Contingency Plan;
(ii) failure of the APC Equipment associated with the Boilers; and
(iii) power failure resulting in the use of the emergency diesel generator or Total Power Failure;

(b) In addition to fulfilling the notification requirements from the *EPA,* the Owner shall prepare and submit a written report to the District Manager with respect to any of the above said occurrences, within five (5) calendar days of the occurrence, in the following format:

(i) date of the occurrence;
(ii) general description of the occurrence;
(iii) duration of the occurrence;
(iv) effect of the occurrence on the emissions from the Facility;
(v) measures taken to alleviate the effect of the occurrence on the emissions from the Facility; and
(vi) measures taken to prevent the occurrence of the same or similar occurrence in the future.

(3) Should a Spill, as defined in the *EPA*, occur at the Site, in addition to fulfilling the requirements from the *EPA* and applicable regulations, the Owner shall submit to the District Manager a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the Site.

(4) (a) Within ninety (90) days from the date of this Certificate, the Regions shall prepare and submit to the District Manager for concurrence, a Soil Testing Plan to monitor the impact of the Site operations at the locations where the ambient air monitoring is proposed by the Owner in accordance with the requirements set out in the EA Approval.

(b) (i) This Plan shall ensure that representative samples of the soil to be tested are collected in sufficient numbers and that the samples are properly preserved and tested so that reliable data on the soil characteristics is collected.

(ii) As a minimum, the Plan shall include testing for cadmium, lead, chromium, nickel, cobalt, copper, molybdenum, selenium, zinc and mercury, Dioxins and Furans.

(iii) This Plan shall comply with the Ministry's regulatory requirements for sampling and testing of soil and it shall include the rationale for the proposed methods.

(iv) This Plan be kept at the Site at all times and be available for inspection by a Provincial Officer upon request.

14. **RECORDS KEEPING**

(1) Any information requested by the Ministry concerning the Facility and its operation under this Certificate, including, but not limited to, any records required to be kept by this Certificate, shall be provided to the Ministry, upon request, in a timely manner.

(2) The Owner shall retain, for a minimum of seven (7) years from the date of their creation, except as noted below, all reports, records and information described in this Certificate.

Daily Activities

(3) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) date of record and the name and signature of the person completing the report;
(b) quantity and source of the incoming Waste received at the Site;
(c) records of the estimated quantity of Waste thermally treated in the Boilers;
(d) quantity of the Unacceptable Waste received at the Site by the end of the approved Waste receipt period and the type(s) of the Unacceptable Waste received;
(e) quantity and type of the Residual Waste shipped from the Site, including any required outgoing Residual Waste characterization results;
(f) destination and/or receiving site(s) for the Residual Waste shipped from the Site;
(g) quantity and type of any Rejected Waste accepted at the Site;
(h) destination and/or receiving site(s) for the Rejected Waste shipped from the Site;
(i) housekeeping activities, including litter collection and washing/cleaning activities, etc.
(j) amount of electricity produced;

(k) amount of excess electricity exported to the electrical grid.

Monitoring and Testing Records

(4) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) day and time of the activity;
(b) all original records produced by the recording devices associated with the CEM Systems;
(c) a summary of daily records of readings of the CEM Systems, including:
  (i) the daily minimum and maximum 4-hour average readings for carbon monoxide;
  (ii) the daily minimum and maximum one hour average readings for oxygen;
  (iii) the daily minimum and maximum 10-minute average readings for organic matter;
  (iv) the daily minimum and maximum 24-hour average readings for sulphur dioxide;
  (v) the daily minimum and maximum 24-hour average readings for nitrogen oxides;
  (vi) the daily minimum and maximum 24-hour average readings for hydrogen chloride;
  (vii) the daily minimum and maximum 6-minute average and 2-hour average opacity readings; and
  (viii) the daily minimum and maximum one-hour average readings for temperature measurements.
(d) records of all excursions from the applicable Performance Requirements as measured by the CEM Systems, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions;
(e) all records produced during any Acoustic Audit;
(f) all records produced during any Source Testing;
(g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;
(h) all records produced during the Residual Waste compliance testing;
(i) all records produced during the Soil Testing;
(j) all records produced during the Groundwater and Surface Water Monitoring required by this Certificate;
(k) all records produced during the Ambient Air Monitoring required by this Certificate;
(l) all records associated with radiation monitoring of the incoming Waste, including but not limited to:
  (i) transaction number;
  (ii) hauler;
  (iii) vehicle ID;
  (iv) alarm level;
  (v) maximum CPS;
  (vi) uSv/hr;

(vii) comment;
(viii) background CPS;
(ix) driver time in and out; and
(x) name of the Trainer Personnel that carried out the monitoring.

(m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;
(n) results the negative pressure in the Tipping Building carried out, as required.

Inspections/Maintenance/Repairs

(5) The Owner shall maintain an on-Site written or digital record of inspections and maintenance as required by this Certificate. As a minimum, the record shall include the following:

(a) the name and signature of the Trained Personnel that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered, including the need for a maintenance or repair activity;
(d) the recommendations for remedial action;
(e) the date, time and description of actions (repair or maintenance) undertaken;
(f) the name and signature of the Trained Personnel who undertook the remedial action; and
(g) an estimate of the quantity of any materials removed during cleaning of the Works.

Emergency Situations

(6) The Owner shall maintain an on-Site written or digital record of the emergency situations. As a minimum, the record shall include the following:

(a) the type of an emergency situation;
(b) description of how the emergency situation was handled;
(c) the type and amount of material spilled, if applicable;
(d) a description of how the material was cleaned up and stored, if generated; and
(e) the location and time of final disposal, if applicable; and
(f) description of the preventative and control measures undertaken to minimize the potential for re-occurrence of the emergency situation in the future.

Complaints Response Records

(7) The Owner shall establish and maintain a written or digital record of complaints received and the responses made as required by this Certificate.

Training

(8) The Owner shall maintain an on-Site written or digital record of training as required by this Certificate. As a minimum, the record shall include the following:

(a) date of training;
(b) name and signature of person who has been trained; and
(c) description of the training provided.

Reports

(9) The Owner shall keep at the Site the following reports required by this Certificate:

(a) the ESDM Report
(b) the Acoustic Assessment Report;
(c) the Annual Report; and
(d) the Third Party Audit.

15. <u>REPORTING</u>

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.

SCHEDULE "F"

PARAMETER:
Temperature

LOCATION:
The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000°C for a period of not less than one second. Compliance shall be proven by direct measurement or/and a correlation between the measured temperature and the intended target proven by a method acceptable to the Director.

PERFORMANCE:
The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	SPECIFICATION
1)	Type:	"K", "J" or other type or alternative measurement device with equivalent measurement accuracy and suitable to the temperature range being measured
2)	Accuracy:	± 1.5 percent of the minimum gas temperature

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 1 minutes or better. Temperature readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

PARAMETER:
Carbon Monoxide

INSTALLATION:
The Continuous Carbon Monoxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2.5 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤5 percent of span value
8) Response Time (90 percent response to a step change):	≤180 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Oxygen

INSTALLATION:
The Continuous Oxygen Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (percentage):	0 - 20 or 0 - 25
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (percentage):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data
3) Calibration Error:	0.25 percent O_2
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 0.5 percent O_2
7) Span Calibration Drift (24-hour):	≤ 0.5 percent O_2
8) Response Time (90 percent response to a step change):	≤ 90 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Oxygen concentration readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Hydrogen Chloride

INSTALLATION:
The Continuous Hydrogen Chloride Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of hydrogen chloride in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Hydrogen Chloride Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 20 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated daily at the sample point, to ensure that it meets the drift limits specified above, during the periods of the operation of the . The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 5 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Nitrogen Oxides

INSTALLATION:
The Continuous Nitrogen Oxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of nitrogen oxides in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Analyzer Operating Range (parts per million, ppm):	0 to ≥200 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Nitrogen Oxides Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Sulphur Dioxide

INSTALLATION:
The Continuous Sulphur Dioxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of sulphur dioxide in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1. Range (parts per million, ppm):	0 to ≥100 ppm
2. Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1. Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2. Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3. Calibration Error:	≤ 2 percent of actual concentration
4. System Bias:	≤ 4 percent of the mean value of the reference method test data
5. Procedure for Zero and Span Calibration Check:	all system components checked
6. Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7. Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8. Response Time (90 percent response to a step change):	≤ 200 seconds
9. Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and shall meet the following installation specifications.

	PARAMETERS	**SPECIFICATION**
1.	Detector Type:	Flame Ionization
2.	Oven Temperature:	160°C minimum
3.	Flame Temperature:	1800 °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

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Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: August 12, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

1. The following definition has been added:

"Contingency and Emergency Response Plan" also means the document entitled "Spill Contingency and Emergency Response Plan";

2. The following Conditions are amended to read as follows:

2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

4.(5)(e) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is as follows:

(i) The storage duration is limited to a maximum of seven (7) days.

(ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The notification shall include the duration of the extension and the reasons.

3. The following Conditions are added:

7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.

11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).

4. The following documents have been added to Schedule "A":

4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by by Golder Associates and dated June 2014.

5. Document entitled "Durham York Energy Centre, Spill Contingency & Emergency Response Plan" prepared by Covanta Durham York Renewable Energy Limited Partnership and dated January 13, 2014, excluding section entitled "Containment Evaluation".

6. Document entitled "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations", prepared by Covanta Durham York Renewable Energy Limited Partnership and dated June 2014.

7. Document entitled "Durham York Energy Centre, Noise Monitoring and Reporting Plan", prepared by Golder Associates and dated September 2011.

The reasons for this amendment to the Approval are as follows:

to approve the "Ash Sampling and Testing Protocol" as required Condition 7.(7)(a), the "Durham York Energy Centre, Spill Contingency & Emergency Response Plan", as required Condition 11.(3), "Durham York Energy Centre, Noise Monitoring and Reporting Plan" as required Condition 7.(5)(a) and "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations" as proposed by the applicant.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served *upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 12th day of August, 2014

Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MOE York-Durham
n/a, The Regional Municipality of Durham

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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

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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.

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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.

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Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 5
Issue Date: March 14, 2016

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

I. The following conditions have been amended to read as follows:

2 . SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

(5) Storage Restrictions:

Solids:

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. (d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation.

(e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(j) A maximum of 65 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

(k) A maximum of 105 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

Liquids: (l) (i) A maximum of 57 cubic metres of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the Residue Building.

(8) (a) Waste received at the Site shall be processed within six (6) days from its receipt at the Site.

(b) Emergency storage of Waste requirements:

(i) On an emergency basis only, the storage duration of Waste inside the tipping pit may be extended beyond the limit set out in Condition 2.(8)(a), above, subject to compliance with the following requirements:

(A) prior to the start of the emergency storage of Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste will be stored longer than six (6) days from its receipt;

(B) any additional information that the District Manager may require shall be submitted within a time period acceptable to the District Manager;

(C) the proposed preventative measures for emergency storage of Waste as identified in the Operations and Maintenance Manual shall be implemented upon commencement of the emergency storage of Waste and shall remain in effect for the entire duration of the emergency storage, unless otherwise advised by the District Manager; and

(D) the Owner shall notify, in writing, the District Manager when emergency storage is no longer required.

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

(p) all measures deemed necessary to prevent an occurrence of an adverse effect from the emergency storage of Waste.

II. The following section of Schedule "F" has been amended to read as follows:

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler or at any other location that has been determined in consultation with the Ministry to be suitable/equivalent for the determination of Total Hydrocarbons leaving the combustion zone of each Boiler and has been approved by the Director. The Total Hydrocarbons Monitor shall meet the following installation specifications:

PARAMETERS SPECIFICATION

1. Detector Type: Flame Ionization
2. Oven Temperature: 160 o C minimum
3. Flame Temperature: 1800 o C minimum at the corona of the hydrogen flame
4. Range (parts per million, ppm): 0 to ³ 200 ppm
5. Calibration Gas: propane in air or nitrogen
6. Calibration Gas Ports: close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS SPECIFICATION

1. Span Value (nearest ppm equivalent): 2 times the average normal concentration of the source
2. Relative Accuracy: £ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3. System Bias: £ 4 percent of the mean value of the reference method test data
4. Noise: £ 1 percent of span value on most sensitive range
5. Repeatability: £ 1 percent of span value
6. Linearity (response with propane in air): £ 3 percent of span value over all ranges
7. Calibration Error: £ 2 percent of actual concentration
8. Procedure for Zero and Span Calibration Check: all system components checked on all ranges
9. Zero Calibration Drift (24-hours): £ 2.5 percent of span value on all ranges
10. Span Calibration Drift (24-hours): £ 2.5 percent of span value
11. Response Time (90 percent response £ 60 seconds to a step change):
12. Operational Test Period: ³ 168 hours without corrective

maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter .

III. The following Item #4 in Schedule "A" has been amended to read as follows:

4. Letter dated October 31, 2013 from Mirka Januszkiewicz, The Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", excluding a reference to the Loss-on-Ignition test method on page 6, prepared by Golder Associates and dated June 2014.

IV. The following document has been added to Schedule "A":

5. Letter dated February 29, 2016 from Leon Brasowski, TransRiver Canada Incorporated, to Dale Gable, Ministry of the Environment and Climate Change, requesting change to the total hydrocarbon monitor location as reviewed and accepted by the Ministry`s Standards Development Branch.

The reasons for this amendment to the Approval are as follows:

1. to remove the storage duration limits on storage of recovered ferrous and non-ferrous metals since such storage does not pose an environmental risk;

2. to increase the amounts of cement, pozzolan and aqueous ammonia approved for storage at the Site since the currently approved amounts result in partial filling of the tanks, necessitating more frequent deliveries resulting in increased truck traffic and a chance of interrupting fly ash and flue gas treatment;

3. to revise the protocol for an emergency storage of the incoming Waste so that the Owner is able to deal more effectively with emergency situations occurring at the Site while providing more flexibility to the Districting Manager to oversee management of such situations;

4. to remove a reference to an incorrect bottom ash testing method erroneously included within the text of the DYEC Ash Sampling and Testing Protocol included as Item #4 in Schedule "A" in order to ensure that only the approved testing method for compliance testing is referenced in the supporting documentation.

5. to approve the revised location of the Total Hydrocarbons Monitor following the Ministry's acceptance of the results of the test program in which two (2) Total Hydrocarbons Monitor monitors were operated in the existing and the proposed locations simultaneously.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment and Climate Change 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 14th day of March, 2016

Dale Gable, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MOECC York-Durham

n/a, TransRiver Canada Incorporated operating as Covanta Durham York Renewable Energy Limited Partnership

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Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: April 22, 2020

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

Notwithstanding the existing conditions of this Environmental Compliance Approval, the following provisions of this Emergency Approval are in effect for the time durations set out as follows:

1. Until December 31, 2020, the Owner may temporarily increase the amount of Waste to be received and thermally treated at the Site up-to 160,000 tonnes per year.

2. From the date of this Approval to the date that corresponds to up-to ninety (90) days after the Ontario Government ends the current Declaration of Emergency to Protect the Public Health, unless an extension has been issued in writing by the District Manager, the following Conditions Nos. 3 through 10 are in effect.

3. The Owner shall provide a written notification to the District Manager when any of the following Conditions Nos. 4 through 9 are implemented.

4. All conditions that set out limitations on hours/days for shipping and receiving of materials including the Waste, the reagents and the Residual Waste are temporarily rescinded.

5. The Owner may temporarily increase the maximum tonnage amounts for the bottom and fly ash within the Residue Building up-to 80% of the total achievable storage capacity of the Residue Building.

6. The Owner may temporarily store the Residual Waste and the reagents in the outdoor locations at the Site and the storage shall be done as follows:

a. the storage shall be in covered and leak-proof trailers or bins or containers;
b. trailers or bins or containers shall be parked or located away from catchbasins, if possible; and
c. if trailers or bins or containers must be parked or be located near catchbasins, covers or booms shall be readily available to protect catchbasins in the event of a spill or leak.

7. All conditions that set out limitations on receipt and storage of reagents are temporarily rescinded.

8. The Owner may temporarily reduce the number of loads tipped on the tipping floor for a manual visual inspection and sorting of the incoming Waste from one load per hour to two loads per shift, unless instructed otherwise by the local Medical Officer of Health to cease inspections on the tipping floor.

9. Following commencement of the outdoor storage of the Residual Waste or the reagents at the Site, the Owner shall conduct daily inspections of any outdoor storage location for evidence of spills, odour, vermin/vectors, dust, litter and other nuisance impacts, and shall maintain a written or electronic log of these inspections. The log shall be kept at the Site for the duration acceptable to the District Manager and it shall contain the following information:

a. the date of the inspection;
b. the location of the inspection;
c. the name of person undertaking the inspection;
d. any impacts identified during the inspection; and
e. any remedial actions taken to address those impacts.

10. By the end of the ninety (90) day-period from the date when the Ontario Government ends the current Declaration of Emergency to Protect the Public Health,

the Owner shall provide to the District Manager a summary report of the expected timelines for the storage and the operational practices to return to normal operating levels/protocols as approved in this Approval.

The reasons for this amendment to the Approval are as follows:

to provide temporary additional thermal treatment capacity at the Site and the operational flexibility as requested in the letter dated March 20, 2020 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham and Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York to respond to the current Declaration of Emergency to Protect the Public Health and to alleviate impacts and prevent any danger to the health and safety of the public and the environment.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment, Conservation and Parks 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

* **Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or** www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 22nd day of April, 2020

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York

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Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: December 23, 2021

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

Notwithstanding the existing conditions of this Environmental Compliance Approval, the following provisions of this Emergency Approval are in effect for the time durations set out as follows:

1. Until December 31, 2021, the Owner may temporarily increase the amount of Waste to be received and thermally treated at the Site from 140,000 tonnes per year up-to 142,000 tonnes per year.

The reasons for this amendment to the Approval are as follows:

1. to provide temporary additional thermal treatment capacity at the Site as requested in the Environmental Compliance Approval Application dated November 23, 2021 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Director Waste Management Services, the Regional Municipality of Durham (Durham Region) on behalf of York

Region, Durham Region and Covanta;

2. to effectively manage the increase in the quantities of waste being disposed of within the existing curbside programs and received at transfer stations within the approved service area due to work from home arrangements and behaviour change of residents resulting from the ongoing COVID-19 pandemic; and

3. to safely manage waste generated in the approved service area to prevent,

d. danger to the health or safety of any person;

e. impairment or immediate risk of impairment of the quality of the natural environment for any use that can be made of it; or

f. injury or damage or immediate risk of injury or damage to any property or to any plant or animal life environment and present potential hazard to the health and safety of neighbouring sites, wildlife and the public and prevent any danger to the health and safety of the public and the environment.

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In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me and the Ontario Land 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 ("the Notice") shall state:

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5. The name of the Director, and;
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And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar* Ontario Land Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5 OLT.Registrar@ontario.ca	and	The Director appointed for the purposes of Part II.1 of the *Environmental Protection Act* Ministry of the Environment, Conservation and Parks 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or** www.oltt.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, 2021

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York
Andrew Evans, The Regional Municipality of Durham

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Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: April 22, 2020

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

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a. the storage shall be in covered and leak-proof trailers or bins or containers;

b. trailers or bins or containers shall be parked or located away from catchbasins, if possible; and

c. if trailers or bins or containers must be parked or be located near catchbasins, covers or booms shall be readily available to protect catchbasins in the event of a spill or leak.

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8. The Owner may temporarily reduce the number of loads tipped on the tipping floor for a manual visual inspection and sorting of the incoming Waste from one load per hour to two loads per shift, unless instructed otherwise by the local Medical Officer of Health to cease inspections on the tipping floor.

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a. the date of the inspection;

b. the location of the inspection;

c. the name of person undertaking the inspection;

d. any impacts identified during the inspection; and

e. any remedial actions taken to address those impacts.

10. By the end of the ninety (90) day-period from the date when the Ontario Government ends the current Declaration of Emergency to Protect the Public Health,

the Owner shall provide to the District Manager a summary report of the expected timelines for the storage and the operational practices to return to normal operating levels/protocols as approved in this Approval.

The reasons for this amendment to the Approval are as follows:

to provide temporary additional thermal treatment capacity at the Site and the operational flexibility as requested in the letter dated March 20, 2020 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham and Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York to respond to the current Declaration of Emergency to Protect the Public Health and to alleviate impacts and prevent any danger to the health and safety of the public and the environment.

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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:

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2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

* **Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or** www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 22nd day of April, 2020

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York

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Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: December 23, 2021

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

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The reasons for this amendment to the Approval are as follows:

1. to provide temporary additional thermal treatment capacity at the Site as requested in the Environmental Compliance Approval Application dated November 23, 2021 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Director Waste Management Services, the Regional Municipality of Durham (Durham Region) on behalf of York

Region, Durham Region and Covanta;

2. to effectively manage the increase in the quantities of waste being disposed of within the existing curbside programs and received at transfer stations within the approved service area due to work from home arrangements and behaviour change of residents resulting from the ongoing COVID-19 pandemic; and

3. to safely manage waste generated in the approved service area to prevent,

d. danger to the health or safety of any person;

e. impairment or immediate risk of impairment of the quality of the natural environment for any use that can be made of it; or

f. injury or damage or immediate risk of injury or damage to any property or to any plant or animal life environment and present potential hazard to the health and safety of neighbouring sites, wildlife and the public and prevent any danger to the health and safety of the public and the environment.

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5. The name of the Director, and;
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This Notice must be served upon:

Registrar* Ontario Land Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5 OLT.Registrar@ontario.ca	and	The Director appointed for the purposes of Part II.1 of the *Environmental Protection Act* Ministry of the Environment, Conservation and Parks 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

* **Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or** www.oltt.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, 2021

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York
Andrew Evans, The Regional Municipality of Durham

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	Nov 29 / 22
Test Location	APC Outlet No. 1
Operator	R

Project No.:	22160	
Page	1 of 5	
Probe No.:		
Meter Box No.:	TEAM 4	
Impinger Box No.:		

Pitot Factor	~~0.847~~ 0.845	
DGMCF	1.017	
Barometric Pressure	29.92	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	.2498	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	510.4	g
WCBDA	23.9	g

Combustion Gas Concentration

Oxygen	9.21	%
Carbon Dioxide	10.67	%
Carbon Monoxide	6.8	ppm

Measuring Device	MII Numbers
Probe / Pitot	~~S4~~ SP6
Trendicator	
Control Box	COE 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	COE 20126
Barometer	Env. Can.
Calipers	22136

Nozzle Measurements	
1	.2495
2	.2500
3	.2500
4	.2495
Average:	.2498

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: Nov. 29/22	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 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	51.58	0.95	0.80	282	258	258	74	189	83	83	~~4~~0.82	4
	2.5	52.85	0.98	0.81	286	255	253	72	208	83	82	~~6~~2.3	6
	5	54.70	0.98	0.81	286	258	258	69	217	83	83	~~6~~2.3	6
2	7.5	56.77	0.98	0.81	287	258	258	67	219	83	83	2.3	6
	10	58.78	0.90	0.76	287	260	260	66	213	83	83	2.3	6
	12.5	60.83	0.89	0.77	287	262	257	66	218	83	85	2.1	5.5
3	15	62.72	0.85	0.76	287	263	252	62	218	83	86	2.1	5.5
	17.5	64.65	0.84	0.75	287	262	254	59	218	83	87	2.1	5.5
	20	66.53	0.92	0.79	286	263	252	55	218	83	89	2.3	6
4	22.5	68.61	0.90	0.78	286	263	257	56	220	83	90	2.3	6
	25	70.65	0.93	0.79	287	260	257	56	219	84	91	2.2	6
	27.5	72.65	0.95	0.81	287	259	253	56	220	84	93	2.2	6
5	30	74.69	0.80	0.74	288	259	260	54	219	84	93	2	5.5
	32.5	76.51	0.75	0.72	288	257	251	52	219	84	97	2	5.5
	35	78.39	0.76	0.72	288	257	250	51	219	85	94	2	5.5
6	37.5	80.27	0.67	0.68	288	261	251	50	218	83	95	1.7	5
	40	81.98	0.66	0.67	288	260	251	50	218	85	95	1.7	5
	42.5	83.70	0.67	0.68	288	261	250	50	219	85	95	1.7	5
7	45	85.42	0.78	0.73	288	262	252	49	217	85	96	2	5.5
	47.5	87.30	0.75	0.72	288	263	254	48	218	86	98	2	5.5
	50	89.17	0.75	0.72	288	263	253	47	218	86	98	2	5.5

Traverse: 1 FW	
Start Time: 8:49	Initial Leak Check: <.002 cfm@ 15 "Hg
Finish Time: 10:19	Final Leak Check: .003 cfm@ 15 "Hg

Project No.: 22160

Operator : RV

Field Data Sheet

Date: Nov 29	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 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	91.05	0.78	0.73	287	261	258	46	219	86	98	2	5.5
	55	92.97	0.79	0.74	287	260	258	46	219	86	98	2	5.5
	57.5	94.82	0.78	0.74	288	260	260	46	220	87	99	2	5.5
9	60	96.67	0.78	0.74	287	260	260	46	220	87	99	2	5.5
	62.5	98.53	0.78	0.74	287	258	259	47	219	87	99	2	5.5
	65	100.37	0.75	0.72	286	260	258	47	218	87	99	2	5.5
10	67.5	102.23	0.70	0.70	286	263	255	47	218	87	99	1.9	5.5
	70	104.03	0.70	0.70	286	262	258	47	218	87	99	1.8	5.5
	72.5	105.83	0.72	0.71	286	263	258	47	219	87	99	1.8	5.5
11	75	107.62	0.65	0.67	286	260	259	47	217	87	99	1.7	5
	77.5	109.34	0.65	0.67	286	259	254	47	216	88	99	1.7	5
	80	110.70	0.65	0.67	286	259	256	47	217	88	99	~~1.9 2.2~~	~~5.5 6~~ 1.8
12	82.5	112.13	0.67	0.68	286	260	256	47	217	88	99	2.2	6
	85	114.80	0.67	0.68	286	261	255	47	217	88	87	1.7	5
	87.5	116.63	0.66	0.68	286	262	252	48	216	88	100	1.7	5
	90	118.37											

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

I don't know what happened between 80 & 85? Reading at the wrong time I would guess.

Project No.: 22160

Operator : [illegible]

Field Data Sheet

Date: Nov 29/22	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 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	118.83	0.90	0.79	286	260	256	54	190	88	91	2.2	6
	2.5	120.86	0.90	0.79	286	261	259	48	206	87	92	2	5.5
	5	122.65	0.95	0.81	287	257	262	47	207	87	93	2.3	6
2	7.5	124.65	0.95	0.81	287	258	251	46	209	87	94	2.3	6
	10	126.69	0.95	0.81	287	258	263	45	213	87	94	2.3	6
	12.5	128.72	0.95	0.81	287	257	255	45	214	87	95	2.3	6
3	15	130.79	0.90	0.79	287	263	262	45	215	87	96	2.1	6
	17.5	132.75	0.90	0.79	287	259	256	46	215	87	96	2.1	6
	20	134.71	0.90	.79	287	259	258	46	215	87	97	2.1	6
4	22.5	136.60	0.88	.78	287	264	262	46	215	88	98	2.1	6
	25	138.60	0.87	.78	287	268	260	46	215	88	98	2.1	6
	27.5	140.47	0.87	.76	287	260	252	46	216	88	98	2.1	6
5	30	142.36	0.84	.76	287	259	257	46	216	88	99	2.1	6
	32.5	144.25	0.83	.76	287	259	254	46	215	88	99	2.1	6
	35	146.14	0.83	.76	288	262	259	47	216	88	99	2.1	6
6	37.5	148.05	0.75	.72	288	260	252	47	215	88	99	1.85	5.6
	40	149.90	0.73	.71	288	258	258	47	215	88	100	1.8	5.5
	42.5	151.67	0.73	.71	288	259	259	47	215	88	100	1.8	5.5
7	45	153.44	0.78	.74	288	261	255	47	214	89	100	2	6
	47.5	155.29	0.78	.74	288	262	253	47	215	89	100	2	6
	50	157.18	0.78	.74	288	262	253	47	215	89	100	2	6

Traverse: 2 FW

Start Time: 10:29 | Initial Leak Check: .002 cfm@ 15 "Hg

Finish Time: — | Final Leak Check: — cfm@ — "Hg

Project No.: 22160

Operator : R

Field Data Sheet

Date: Nov 29/22	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 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 *
8	52.5	159.02	.78	.74	287	258	255	47	214	89	100	2	6
	55	160.91	.79	.75	287	261	260	47	210	89	100	2	6
	57.5	162.79	.79	.75	287	260	261	47	213	89	100	2	6
9	60	164.69	.78	.74	287	262	256	47	212	89	100	2	6
	62.5	166.58	.78	.74	286	261	257	47	214	89	100	2	6
	65	168.48	.78	.74	286	262	256	47	211	89	100	2	6
10	67.5	170.38	.83	.76	285	261	261	47	211	89	100	2.1	6
	70	172.29	.82	.76	285	261	257	47	212	89	100	2.1	6
	72.5	174.21	.82	.76	285	260	262	47	212	89	100	2.1	6
11	75	176.12	.75	.72	285	260	258	47	212	89	100	1.9	6
	77.5	177.96	.75	.72	285	260	258	47	211	89	100	1.9	6
	80	179.80	.74	.72	285	261	261	47	211	89	100	1.9	6
12	82.5	181.64	.65	.67	284	261	252	47	210	89	100	1.6	5.5
	85	183.33	.65	.67	284	258	261	48	210	89	100	1.6	5.5
	87.5	184.97	.65	.67	284	261	254	48	210	90	101	1.6	5.5
	90	186.66											

Traverse: 2				
Start Time: —	Initial Leak Check:	—	cfm@ —	"Hg
Finish Time: 11:59	Final Leak Check:	.004	cfm@ 15	"Hg

Project No.: 22160

Operator : RW CB

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: #2	Particulate/Metals	
Test Date	Nov 29/22	
Test Location	APC Outlet No. 1	
Operator	RW	

Project No.:	22160	
Page	1 of 5	
Probe No.:		
Meter Box No.:	TEAM 4	
Impinger Box No.:		

Pitot Factor	0.847	
DGMCF	1.017	
Barometric Pressure	29.86	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	.2498	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	529.1	g
WCBDA	24.0	g

Combustion Gas Concentration

Oxygen	9.16	%
Carbon Dioxide	10.67	%
Carbon Monoxide	7.7	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	SP6
Trendicator	
Control Box	COE 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can
Calipers	22136

Nozzle Measurements	
1	.2495
2	.2500
3	.2500
4	.2495
Average:	.2498

Notes:

Field Data Sheet

Date: Nov. 29/22	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	87.69	0.95	0.80	287	256	253	69	116	87	87	2.2	5.5
	2.5	89.68	0.95	0.80	286	258	259	59	204	87	87	2.2	5.5
	5	91.69	0.94	0.80	287	262	261	53	212	87	88	2.2	5.5
2	7.5	93.70	0.94	0.80	286	262	255	49	210	88	90	2.2	5.5
	10	95.71	0.94	0.80	286	261	251	47	226	88	91	2.2	5.5
	12.5	97.72	0.94	0.80	286	262	256	47	231	88	93	2.2	5.5
3	15	99.73	0.87	0.77	287	259	258	47	236	88	94	2.1	5.5
	17.5	101.69	0.88	0.78	286	263	256	47	237	88	95	2.1	5.5
	20	103.64	0.89	0.79	286	262	252	47	236	88	96	2.2	5.5
4	22.5	105.63	0.84	0.76	286	260	255	47	237	88	97	2.1	5.5
	25	107.53	0.84	0.76	286	261	254	47	237	88	97	2.1	5.5
	27.5	109.47	0.84	0.77	286	260	255	47	240	89	99	2.1	5.5
5	30	111.43	0.80	0.75	286	264	252	47	239	89	99	2	5.5
	32.5	113.31	0.80	0.75	286	262	257	47	240	89	100	2	5.5
	35	115.94	0.80	0.75	286	261	257	47	241	89	101	2	5.5
6	37.5	117.02	.74	.72	286	264	252	47	239	90	101	1.9	5.3
	40	118.82	.74	.72	286	265	255	47	238	90	101	1.9	5.3
	42.5	120.64	.74	.72	286	265	257	47	241	90	102	1.9	5.3
7	45	122.44	.76	.73	286	263	253	47	240	90	102	1.9	5.3
	47.5	124.28	.76	.73	286	263	253	47	240	90	102	1.9	5.3
	50	126.11	.76	.73	286	264	254	47	238	90	102	1.9	5.3

Traverse:	2 FW				
Start Time:	12:49	Initial Leak Check:	.002	cfm@ 16	"Hg
Finish Time:		Final Leak Check:		cfm@	"Hg

Project No.: 22160

Operator : R

Field Data Sheet

Date: Nov. 29/22	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 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	127.98	.79	.75	286	260	265	47	242	91	103	2	5.5
	55	129.88	.79	.75	286	264	257	46	241	91	103	2	5.5
	57.5	131.77	.79	.75	286	258	264	46	241	91	103	2	5.5
9	60	133.70	.81	.76	286	260	264	46	241	91	103	2	5.5
	62.5	135.62	.81	.76	286	264	251	46	239	91	103	2	5.5
	65	137.52	.81	.76	286	258	257	46	240	91	103	2	5.5
10	67.5	139.43	.81	.76	286	261	258	47	243	91	103	2	5.5
	70	141.33	.80	.76	286	260	255	47	242	91	103	2	5.5
	72.5	143.24	.80	.76	285	258	253	47	240	92	103	2	5.5
11	75	145.14	.78	.74	285	258	253	47	238	91	103	1.95	5.5
	77.5	146.96	.79	.75	285	258	253	47	238	91	103	1.95	5.5
	80	148.90	.80	.76	285	262	259	47	244	92	103	1.95	5.5
12	82.5	150.75	.73	.72	285	263	256	47	243	92	104	1.80	5.3
	85	152.57	.73	.72	285	264	260	47	239	92	104	1.8	5.3
	87.5	154.34	.70	.70	285	264	260	47	240	92	104	1.8	5.3
	90	156.15											

Traverse: 2					
Start Time: —	Initial Leak Check:		cfm@		"Hg
Finish Time: 14:19	Final Leak Check:	0.003	cfm@	15	"Hg

Project No.: 22160

Operator : R

Field Data Sheet

Date: Nov. 29/22	Plant: Covanta DYEC	Test No.: 2	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	156.71	.88	.78	286	261	267	58	182	92	96	2.2	5.5
	2.5	158.73	.88	.78	285	257	260	45	240	92	98	2.2	5.5
	5	160.74	.88	.78	284	262	254	42	238	92	98	2.2	5.5
2	7.5	162.72	.90	.80	284	262	251	42	236	92	99	2.2	5.5
	10	164.71	.90	.80	284	260	252	41	235	92	100	2.2	5.5
	12.5	166.72	.90	.80	284	261	259	41	239	92	100	2.2	5.5
3	15	168.71	.88	.79	284	258	262	41	242	92	101	2.2	5.5
	17.5	170.70	.88	.79	284	260	261	41	242	92	101	2.2	5.5
	20	172.69	.89	.79	284	258	257	42	240	92	102	2.2	5.5
4	22.5	174.68	.82	.76	284	261	257	42	240	92	102	2.0	5.5
	25	176.58	.82	.76	284	264	257	42	238	92	103	2.1	5.5
	27.5	178.53	.82	.76	284	260	259	43	240	92	103	2.1	5.5
5	30	180.44	.70	.70	284	259	261	43	242	92	103	1.8	5
	32.5	182.25	.70	.70	284	261	257	43	241	92	103	1.8	5
	35	184.06	.70	.71	284	264	256	43	239	92	104	1.8	5
6	37.5	185.88	.66	.68	284	258	252	44	235	92	104	1.6	5
	40	187.60	.66	.68	284	261	255	44	236	92	104	1.6	5
	42.5	189.30	.67	.69	284	259	260	44	238	92	104	1.7	5
7	45	191.05	.80	.76	284	258	260	44	240	93	105	2.1	5.5
	47.5	192.96	.80	.76	284	262	258	45	240	93	105	2.1	5.5
	50	194.94	.78	.75	284	264	254	46	238	93	104	2.1	5.5

Traverse:	1				
Start Time: 14:27	Initial Leak Check:	.003	cfm@	15	"Hg
Finish Time: 15:57	Final Leak Check:	.002	cfm@	13	"Hg

Project No.: 22160
Operator : RW CB

Field Data Sheet

Date: Nov. 29/22	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
*		*	*		*			*		*	*	*	*
8	52.5	196.88	.78	.74	285	260	252	45	236	93	104	2.1	5.5
	55	198.78	.77	.74	284	264	258	45	238	93	104	2.0	5.5
	57.5	200.67	.77	.74	284	259	261	46	240	93	104	2.0	5.5
9	60	202.56	.78	.74	285	262	260	46	241	93	104	2.0	5.5
	62.5	204.44	.78	.74	284	264	257	46	239	93	104	2.0	5.5
	65	206.32	.79	.75	285	258	253	47	237	93	104	2.0	5.5
10	67.5	208.19	.77	.74	285	262	254	47	236	93	104	2.0	5.5
	70	210.07	.76	.73	283	264	260	47	238	93	104	2.0	5.5
	72.5	211.94	.79	.75	283	260	262	47	241	93	104	2.0	5.5
11	75	213.81	.83	.77	283	260	260	47	240	93	104	2.0	5.5
	77.5	215.69	.76	.74	~~28~~ 276	263	256	47	237	93	104	2.0	5.5
	80	217.58	.75	.73	276	264	252	48	234	93	104	2.0	5.5
12	82.5	219.46	.66	.69	276	260	256	48	235	93	104	2.0	5.5
	85	221.30	.66	.69	276	257	261	48	239	93	104	1.8	5.5
	87.5	~~223.08~~ 223.08	.67	.69	276	261	261	48	239	93	104	1.6	5.5
	90	224.8			~~276~~								

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

Project No.: 22160

Operator : R CB

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date	Nov 29, 2022
Test Location	APC Outlet No. 1
Operator	BP

Project No.:	22160	
Page	1 of 5	
Probe No.:		
Meter Box No.:	TEAM 4	
Impinger Box No.:	3	

Pitot Factor	0.847	
DGMCF	1.017	
Barometric Pressure	29.79	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	.2498	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	530.0	g
WCBDA	27.2	g

Combustion Gas Concentration

Oxygen	9.19	%
Carbon Dioxide	10.48	%
Carbon Monoxide	10.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	3P6
Trendicator	
Control Box	COE 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can.
Calipers	22136

Nozzle Measurements	
1	.2495
2	.2500
3	.2500
4	.2495
Average:	.2498

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: Nov 29, 2022	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	26.56	.99	.79	286	260	248	87	101	90	90	2.1	5.5
	2.5	28.50	.99	.83	287	259	262	74	204	91	91	~~2.1~~ 2.2	5.5
	5	30.47	.96	.81	288	258	270	67	230	91	92	2.4	5.5
2	7.5	32.44	.97	.82	288	263	264	65	240	91	93	2.2	5.5
	10	34.47	.99	.83	288	266	258	63	237	91	94	2.3	5.5
	12.5	36.51	.95	.81	289	263	253	62	233	91	95	2.4	~~5.5~~ 6
3	15	38.55	.94	.81	288	264	258	60	236	91	97	2.3	6
	17.5	40.59	.92	.80	288	261	256	59	236	91	98	2.3	6
	20	42.64	.94	.81	288	258	254	58	235	91	99	2.3	6
4	22.5	44.68	.88	.78	289	260	256	58	236	91	99	2.3	6
	25	46.64	.87	.78	287	263	254	57	221	92	100	2.2	6
	27.5	48.59	.87	.78	287	264	256	57	220	92	101	2.2	6
5	30	50.53	.86	.78	287	258	257	57	221	92	101	2.1	6
	32.5	52.49	.80	.75	287	259	255	57	221	92	102	2.2	6
	35	54.39	.8	.75	286	262	254	57	219	92	102	2.1	6
6	37.5	56.32	.72	.71	286	259	258	57	222	92	103	1.8	5.7
	40	58.11	.72	.71	286	263	257	57	220	93	103	1.8	5.7
	42.5	59.90	.73	.72	287	259	254	58	218	93	104	1.8	5.7
7	45	61.70	.80	.75	287	260	255	58	218	93	104	2.1	6
	47.5	63.60	.80	.75	287	260	255	58	225	93	104	2.1	6
	50	65.51	.80	.75	287	257	257	58	225	93	104	2.1	6

Traverse: 2 FW					
Start Time: 4:55	Initial Leak Check:	.008	cfm@	15	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg

Project No.: 22160

Operator : R, BP, CB

Field Data Sheet

Date: Nov 29, 2022	Plant:	Covanta DYEC	Test No.: 3	Particulate/Metals	Page 3 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter 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 *
8	52.5	67.38	.81	.76	287	263	254	58	221	93	104	2.1	6
	55	69.35	.81	.76	287	260	257	58	220	93	104	2.1	6
	57.5	71.30	.81	.76	287	260	256	58	220	93	104	2.1	6
9	60	73.26	.85	.78	286	269	257	58	229	93	104	2.2	6
	62.5	75.21	.83	.77	286	261	253	58	226	93	104	2.1	6
	65	77.13	.83	.77	286	260	257	57	226	93	104	2.1	6
10	67.5	79.08	.82	.77	286	259	257	57	228	93	104	2.1	6
	70	80.98	.81	.76	283	260	255	57	228	94	104	2.1	6
	72.5	82.91	.81	.76	283	260	255	57	228	94	104	2.1	6
11	75	84.83	.74	.73	283	260	255	57	228	94	104	1.9	6
	77.5	86.65	.75	.74	283	260	255	57	236	94	105	1.9	6
	80	88.50	.75	.74	283	263	254	57	234	94	104	1.9	6
12	82.5	90.36	.66	.69	283	263	259	57	237	94	105	1.7	5.7
	85	92.08	.64	.68	283	260	258	57	238	94	105	1.7	5.7
	87.5	93.80	.64	.68	283	260	259	57	238	94	105	1.7	5.7
	90	95.55											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 6:35	Final Leak Check: .004	cfm@ 15	"Hg

Project No.: 22160
Operator : CB RW RP

Field Data Sheet

Date: Nov 29, 2022	Plant:	Covanta DYEC	Test No.: 3	Particulate/Metals	Page 4 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/~~Trap~~ °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	96.01	.90	.80	283	262	260	65	187	93	98	2.2	6
	2.5	98.23	.93	.81	284	258	253	51	235	93	99	2.2	6
	5	100.20	.97	.83	284	257	260	50	238	93	100	2	6
2	7.5	102.10	.98	.83	284	257	260	50	238	93	100	2.3	6
	10	104.08	.99	.84	286	258	258	48	238	93	101	2.5	6.3
	12.5	106.10	.99	.84	286	261	255	48	238	93	101	2.5	6.3
3	15	108.20	.94	.81	286	264	258	48	239	93	101	2.3	6.3
	17.5	110.27	.95	.82	286	259	254	48	239	93	102	2.3	6.3
	20	112.32	.95	.82	286	264	259	48	239	93	102	2.3	6.3
4	22.5	114.35	.95	.82	287	264	255	48	240	93	102	2.3	6.3
	25	116.40	.94	.81	288	260	257	47	239	93	102	2.3	6.3
	27.5	118.44	.94	.81	288	260	257	47	239	93	102	2.3	6.3
5	30	120.48	.80	.75	289	260	256	47	239	93	103	2.3	6
	32.5	122.40	.77	.74	289	260	258	48	239	93	103	2.1	6
	35	124.27	.73	.72	289	262	255	48	238	93	103	2	6
6	37.5	126.14	.68	.69	289	264	259	48	240	93	104	2	6
	40	127.91	.67	.69	288	262	254	48	237	93	104	1.8	5.9
	42.5	129.63	.64	.67	288	258	259	48	238	93	104	1.7	5.9
7	45	131.37	.72	.71	287	259	255	49	237	93	105	1.7	5.9
	47.5	133.07	.71	.71	287	261	258	49	237	93	105	1.7	5.7
	50	134.84	.71	.71	286	263	256	49	238	93	105	1.8	6

Traverse:	1				
Start Time: 06:33	Initial Leak Check:	.002	cfm@	14	"Hg
Finish Time: 8:03	Final Leak Check:	.002	cfm@	14	"Hg

Project No.: 22160

Operator : CB RW BP

Field Data Sheet

Date: Nov 29, 2022	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	136.64	.73	.72	286	263	256	49	236	94	105	1.8	6
	55	138.44	.74	.73	286	264	254	49	238	94	105	1.8	6
	57.5	140.24	.73	.72	285	262	254	49	237	94	105	1.8	6
9	60	142.05	.75	.73	284	260	254	49	236	94	105	1.9	6
	62.5	143.87	.74	.73	283	264	257	50	237	94	105	1.9	6
	65	145.68	.77	.74	283	258	258	50	235	94	105	1.8	5.9
10	67.5	147.51	.78	.75	282	258	256	50	237	94	105	1.9	6
	70	149.37	.75	.73	281	257	255	50	235	94	105	2.0	6
	72.5	151.24	.75	.73	281	259	256	50	236	94	105	2.0	6
11	75	153.12	.62	.67	243	263	256	50	235	94	105	2.0	6
	77.5	154.80	.62	.68	238	263	257	51	234	94	105	1.6	5.5
	80	156.48	.63	.69	237	261	256	51	232	94	105	1.6	5.5
12	82.5	158.22	.64	.70	238	258	256	51	234	94	105	1.7	5.9
	85	159.96	.65	.70	237	261	258	51	234	94	105	1.7	5.9
	87.5	161.70	.66	.71	237	263	255	51	234	94	105	1.7	5.9
	90	163.47											

Traverse:	1				
Start Time:	—	Initial Leak Check:	— cfm@	— "Hg	
Finish Time:	8:03	Final Leak Check:	cfm@	"Hg	

Project No.: 22160

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Particulate/Metals
Test Date	Nov. 30/22
Test Location	APC Outlet No. 2
Operator	N

Project No.:	22160
Page	1 of 5
Probe No.:	
Meter Box No.:	TEAM 4
Impinger Box No.:	

Pitot Factor	0.847	
DGMCF	1.017	
Barometric Pressure	29.21	"Hg
Static Pressure	-11.5	"H2O
Nozzle Size	0.2498	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	544.3	g
WCBDA	22.5	g

Combustion Gas Concentration

Oxygen	9.08	%
Carbon Dioxide	10.30	%
Carbon Monoxide	8.8	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	SP6
Trendicator	
Control Box	COG 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	20126
Barometer	
Calipers	22136

Nozzle Measurements	
1	.2495
2	.2500
3	.2495
4	.2500
Average:	.2498

Notes:

Field Data Sheet

Date: Nov 30/22	Plant: Covanta DYEC	Test No.: (1) Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter 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	64.15	.99	.83	277	255	253	81	87	92	92	2.4	5.5
	2.5	66.40	.99	.83	278	261	255	57	231	91	90	2.4	5.5
	5	68.65	.98	.83	279	259	257	52	236	91	90	2.3	5.5
2	7.5	70.73	.98	.83	279	258	259	51	237	91	91	2.3	5.5
	10	72.79	.98	.83	280	262	258	50	240	91	92	2.3	5.5
	12.5	74.90	.98	.83	280	260	256	50	240	91	94	2.3	5.5
3	15	76.96	.98	.83	280	257	253	51	238	91	95	2.3	5.5
	17.5	79.02	.98	.83	281	264	257	51	239	91	96	2.3	5.5
	20	81.09	.98	.83	281	264	260	52	241	91	97	2.3	5.5
4	22.5	83.16	.95	.82	281	261	257	53	241	92	98	2.2	5.5
	25	85.20	.96	.82	281	256	253	52	238	92	99	2.2	5.5
	27.5	87.25	.95	.82	282	259	255	51	240	92	99	2.2	5.5
5	30	89.29	.85	.78	282	262	259	54	239	92	100	2.1	5
	32.5	91.24	.85	.78	283	263	258	52	240	92	101	2.1	5
	35	93.20	.86	.78	283	258	255	52	239	92	101	2.1	5
6	37.5	95.15	.82	.76	283	259	260	52	239	92	101	2.0	5
	40	97.04	.82	.76	284	259	258	52	238	93	102	2.0	5
	42.5	98.94	.81	.76	284	262	259	52	240	93	102	2.0	5
7	45	100.84	.90	.80	284	264	256	52	239	93	103	2.2	5.5
	47.5	102.85	.89	.80	284	264	256	52	239	93	103	2.2	5.5
	50	104.85	.88	.79	284	260	255	52	237	93	103	2.2	5.5

Traverse: (1) FW					
Start Time: 8:39	Initial Leak Check:	.005	cfm@	15	"Hg
Finish Time: 10:09	Final Leak Check:	.002	cfm@	15	"Hg

Project No.: 22160

Operator : lw

Field Data Sheet

Date: Nov. 30/22	Plant: Covanta DYEC	Test No.: (1) Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot 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	106.86	.88	.79	284	258	259	52	239	93	103	2.2	5.5
	55	108.88	.89	.80	284	262	257	52	239	93	103	2.2	5.5
	57.5	110.90	.89	.80	284	263	252	52	237	94	103	2.2	5.5
9	60	112.91	.91	.80	284	260	254	52	236	94	103	2.2	5.5
	62.5	114.95	.91	.80	285	263	260	52	239	94	103	2.2	5.5
	65	116.98	.91	.80	285	262	260	52	240	94	103	2.2	5.5
10	67.5	119.01	.90	.80	284	260	256	53	240	94	103	2.2	5.5
	70	121.08	.91	.80	284	263	252	53	237	94	103	2.2	5.5
	72.5	123.08	.91	.80	284	258	257	53	238	94	103	2.2	5.5
11	75	125.11	.80	.76	284	262	260	53	240	94	103	2.0	5
	77.5	127.03	.80	.75	284	261	257	53	239	94	103	2.0	5
	80	128.95	.80	.75	284	263	253	53	237	94	103	2.0	5
12	82.5	130.83	.80	.75	284	262	255	53	237	94	103	2.0	5
	85	132.71	.80	.75	284	257	260	54	238	94	103	2.0	5
	87.5	134.61	.80	.75	284	260	261	54	238	94	103	2.0	5
	90	136.51											

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

Project No.: 22160

Operator : RJ

Field Data Sheet

Date: Nov 30/22	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	137.15	1.0	0.84	284	256	249	58	225	93	95	2.4	6
	2.5	139.22	1.0	0.84	285	258	259	55	231	93	96	2.4	6
	5	141.35	1.0	0.84	286	260	263	52	240	93	97	2.4	6
2	7.5	143.48	1.0	0.84	285	260	261	51	243	93	98	2.4	6
	10	145.60	1.0	0.84	286	259	256	51	242	93	99	2.4	6
	12.5	147.72	1.0	0.84	286	263	254	51	240	93	99	2.4	6
3	15	149.83	1.0	0.84	286	263	258	52	241	93	100	2.4	6
	17.5	151.94	1.0	0.84	286	258	256	52	242	93	100	2.4	6
	20	154.08	1.0	0.84	286	263	253	52	241	93	101	2.4	6
4	22.5	156.21	.96	0.82	285	264	257	52	241	93	101	2.3	6
	25	158.29	.99	0.84	285	264	255	52	242	93	101	2.3	6
	27.5	160.37	.96	0.82	285	264	254	52	240	93	101	2.3	6
5	30	162.47	.89	0.79	285	258	258	53	242	93	101	2.2	6
	32.5	164.50	.87	0.79	284	281	256	53	242	93	102	2.2	6
	35	166.52	.87	0.79	284	262	252	53	241	93	102	2.2	6
6	37.5	168.56	.74	0.72	284	259	258	54	241	93	102	1.8	5.5
	40	170.37	.75	0.73	285	262	255	54	242	93	102	1.8	5.5
	42.5	172.22	.75	0.73	285	261	254	54	241	93	103	1.8	5.5
7	45	174.07	.81	0.76	285	260	261	54	241	93	103	2.0	5.5
	47.5	176.01	.82	0.76	283	259	256	54	240	93	103	2.0	5.5
	50	177.90	.82	0.76	285	263	254	53	240	93	103	2.0	5.5

Traverse: 2 FW			
Start Time: 10:21	Initial Leak Check: .008	cfm@ 15	"Hg
Finish Time: 11:51	Final Leak Check: .015	cfm@ 15	"Hg

Project No.: 22160

Operator : RV

Field Data Sheet

Date: Nov 30/22	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 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	179.82	0.83	~~0.85~~ 0.78	285	258	259	52	241	94	103	2.1	5.5
	55	181.75	0.85	0.78	285	262	259	52	243	94	103	2.1	5.5
	57.5	183.70	0.84	0.77	284	259	255	52	241	94	103	2.1	5.5
9	60	185.72	0.86	0.78	284	261	253	51	239	93	102	2.1	5.5
	62.5	187.71	0.86	0.78	284	260	255	51	240	93	103	2.1	5.5
	65	189.69	0.86	0.78	284	263	258	50	242	94	103	2.1	5.5
10	67.5	191.67	0.86	0.78	283	261	254	50	242	94	102	2.1	5.5
	70	193.62	0.93	0.81	283	262	261	50	242	94	102	2.3	6
	72.5	195.71	0.92	0.81	283	262	257	50	241	93	102	2.3	6
11	75	197.77	0.82	0.76	283	260	255	50	242	93	102	2.0	~~6~~ 5.5
	77.5	199.70	0.82	0.76	283	260	254	50	242	93	102	2.0	5.5
	80	201.62	0.82	0.76	283	263	252	50	240	93	101	2.0	5.5
12	82.5	203.53	0.75	0.73	283	262	252	50	240	93	101	1.8	5.5
	85	205.38	0.75	0.73	283	258	257	51	238	93	102	1.8	5.5
	87.5	207.20	0.73	0.73	283	257	260	51	239	93	102	1.8	5.5
	90	209.03											

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

Project No.: 22160

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date	Nov. 30/22
Test Location	APC Outlet No. 2
Operator	RV

Project No.:	22160	
Page	1 of 5	
Probe No.:		
Meter Box No.:	TEAM 4	
Impinger Box No.:		

Pitot Factor	0.847	
DGMCF	1.017	
Barometric Pressure	29.21	"Hg
Static Pressure	~~11.5~~ -12.3	"H2O
Nozzle Size	~~11.5~~ 0.2498	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	511.9	g
WCBDA	26.0	g

Combustion Gas Concentration

Oxygen	9.05	%
Carbon Dioxide	10.42	%
Carbon Monoxide	6.8	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP6
Trendicator	
Control Box	COE 20096
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	20126
Barometer	
Calipers	22136

Nozzle Measurements	
1	.2495
2	.2500
3	.2500
4	.2495
Average:	.2498

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: Nov. 30/22	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot 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	9.80	1.0	0.82	284	258	267	54	136	89	89	2.4	6
	2.5	11.86	1.0	0.82	281	258	251	55	217	90	88	2.4	6
	5	13.96	1.0	0.82	282	255	256	51	222	89	88	2.4	6
2	7.5	16.04	1.0	0.82	282	256	252	49	224	89	89	2.4	6
	10	18.10	1.0	0.82	282	256	251	48	223	89	89	2.4	6
	12.5	20.16	1.0	0.82	282	251	260	48	223	89	91	2.4	6
3	15	22.20	1.0	0.82	282	261	254	48	229	89	92	2.4	6
	17.5	24.23	1.0	0.82	283	257	254	48	228	89	93	2.4	6
	20	26.28	1.0	0.82	283	262	253	48	229	89	94	2.4	6
4	22.5	28.33	.99	0.82	283	258	253	48	229	89	95	2.4	6
	25	30.36	.99	0.82	283	260	254	48	229	89	96	2.4	6
	27.5	32.41	.99	0.82	283	259	255	48	228	89	96	2.4	6
5	30	34.47	.85	.76	284	257	255	47	231	89	96	2.0	5.5
	32.5	36.39	.85	.76	284	263	253	47	228	89	96	2.0	5.5
	35	38.30	.85	.76	284	263	254	47	228	89	97	2.0	5.5
6	37.5	40.24	.89	.78	284	263	255	47	228	89	97	2.2	6
	40	42.11	.89	.78	284	263	255	47	228	89	97	2.2	6
	42.5	44.06	.89	.78	284	260	253	47	228	89	97	2.2	6
7	45	46.05	.83	.76	284	260	254	47	228	89	98	2.1	5.7
	47.5	47.95	.83	.76	284	260	254	47	228	89	98	2.1	5.7
	50	49.86	.82	.76	284	257	252	47	226	89	98	2.1	5.7

Traverse: 2 FW					
Start Time: 12:29	Initial Leak Check:	.006	cfm@	15	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg

Project No.: 22160

Operator : R

Field Data Sheet

Date: Nov. 30/22	Plant:	Covanta DYEC	Test No.: 2	Particulate/Metals	Page 3 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	51.77	.85	.76	283	263	254	47	228	89	98	2.1	5.7
	55	53.70	.85	.76	283	260	252	47	228	89	98	2.1	5.7
	57.5	55.59	.85	.76	283	263	254	47	227	89	98	2.1	5.7
9	60	57.51	.91	.79	283	258	253	48	227	89	98	2.2	6
	62.5	59.54	.90	.78	283	258	253	48	227	89	98	2.2	6
	65	61.55	.90	.78	283	257	253	48	227	89	97	2.2	6
10	67.5	63.58	.87	.77	283	257	253	48	227	89	97	2.1	5.8
	70	65.53	.87	.77	283	257	253	49	227	89	97	2.1	5.8
	72.5	67.43	.87	.77	283	262	253	49	226	88	97	2.1	5.8
11	75	69.34	.80	.74	283	261	253	49	226	88	97	1.9	5.8
	77.5	71.17	.80	.74	283	260	253	49	226	88	97	1.9	5.6
	80	72.99	.81	.74	283	260	251	49	225	88	97	1.9	5.6
12	82.5	74.84	.60	.64	283	262	252	49	224	88	97	1.4	5
	85	76.46	.59	.63	283	262	252	49	223	88	97	1.4	5
	87.5	78.05	.60	.64	283	261	252	50	222	88	98	1.4	5
	90	79.64											

Traverse: 2					
Start Time: —	Initial Leak Check:	—	cfm@	—	"Hg
Finish Time: 13:59	Final Leak Check:	.004	cfm@	15	"Hg

Project No.: 22160

Operator : CR RW

Field Data Sheet

Date: Nov. 30/22	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 Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/~~Trap~~ °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
1	0	80.02	.98	.81	286	255	252	60	166	87	91	2.3	6
	2.5	82.07	.98	.81	286	261	258	50	227	87	92	2.3	6
	5	84.10	1.0	.82	287	256	257	50	231	87	92	2.3	6
2	7.5	86.12	1.0	.82	287	257	252	50	231	87	92	2.3	6
	10	88.18	1.0	.82	287	259	256	51	232	87	93	2.3	6
	12.5	90.24	1.0	.82	288	262	254	51	234	87	93	2.3	6
3	15	92.31	1.0	.82	287	263	251	52	232	87	94	2.3	6
	17.5	94.35	1.0	.82	287	263	251	52	232	87	94	2.3	6
	20	96.44	.99	.82	284	263	255	52	235	87	93	2.3	6
4	22.5	98.52	.89	.78	283	259	250	52	231	86	93	2.1	5.9
	25	100.44	.91	.78	283	257	253	52	230	86	93	2.1	5.9
	27.5	102.35	.92	.79	282	263	257	52	234	86	94	2.2	6
5	30	104.31	.86	.76	283	258	255	52	234	86	94	2.0	5.9
	32.5	106.21	.86	.76	283	257	251	52	232	86	94	2.0	5.9
	35	108.08	.87	.77	283	257	256	53	271	86	94	2.1	6.0
6	37.5	110.00	.79	.73	283	257	256	53	231	86	94	1.9	5.9
	40	111.83	.80	.74	283	262	255	52	231	85	94	1.9	5.9
	42.5	113.65	.81	.74	282	259	251	52	229	85	94	1.9	5.9
7	45	115.49	.87	.77	282	262	252	51	227	85	94	1.9	5.9
	47.5	117.36	.86	.76	282	259	257	51	231	85	94	2.0	5.9
	50	119.26	.86	.76	282	257	255	51	230	85	94	2.1	6

Traverse: 1			
Start Time: 14:00	Initial Leak Check: .003	cfm@ 14	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22160

Operator : CR RW

Field Data Sheet

Date: Jun 30, 2022	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 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	121.16	.87	.77	282	261	249	51	226	85	94	2.1	6
	55	123.07	.88	.77	282	257	251	51	226	84	93	2.1	6
	57.5	124.98	.87	.77	282	260	257	51	231	84	93	2.1	6
9	60	126.88	.89	.77	282	261	257	51	231	84	93	2.1	6
	62.5	128.78	.89	.77	281	256	254	52	227	84	93	2.1	6
	65	130.72	.87	.77	281	261	248	52	223	84	93	2.1	6
10	67.5	132.65	.89	.78	279	258	257	52	228	84	93	2.1	6
	70	134.54	.92	.79	280	259	256	52	231	84	93	2.1	6
	72.5	136.58	.90	.78	280	261	255	53	230	84	92	2.2	6.1
11	75	138.58	.82	.74	~~280~~ 280	257	249	53	225	84	92	2.2	6.1
	77.5	140.45	.80	.74	~~287~~ 280	261	251	54	224	84	92	2.0	5.9
	80	142.28	.81	.74	280	256	256	54	229	84	92	2.0	5.9
12	82.5	144.12	.76	.72	280	259	255	55	228	83	92	2.0	5.9
	85	145.90	.77	.72	280	261	252	55	223	83	92	1.8	5.9
	87.5	147.69	.77	.72	280	257	250	55	219	83	92	1.9	5.9
	90	149.47			~~280~~								

Traverse:				
Start Time: —	Initial Leak Check: —	cfm@	—	"Hg
Finish Time: 15:36	Final Leak Check: .002	cfm@	14	"Hg

Project No.: 22160

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 3	Particulate/Metals	
Test Date	Dec 1/22	
Test Location	APC Outlet No. 2	
Operator	R	

Project No.:	22160	
Page	1 of 5	
Probe No.:		
Meter Box No.:	TEAM 4	
Impinger Box No.:		

Pitot Factor	0.847	
DGMCF	1.017	
Barometric Pressure	29.88	"Hg
Static Pressure	-12.5	"H2O
Nozzle Size	0.2498	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	500.4	g
WCBDA	23.3	g

Combustion Gas Concentration

Oxygen	9.41	%
Carbon Dioxide	10.23	%
Carbon Monoxide	9.4	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP6
Trendicator	
Control Box	COE 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	20126
Barometer	
Calipers	22136

Nozzle Measurements	
1	.2495
2	.2500
3	.2500
4	.2495
Average:	.2498

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: Dec 1	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 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	50.28	1.0	0.79	284	253	253	58	123	69	69	2.3	6
	2.5	52.33	1.0	0.79	283	261	243	51	214	69	68	2.3	6
	5	54.30	1.0	0.79	284	257	250	48	213	69	68	2.3	6
2	7.5	56.29	1.0	0.79	284	262	254	46	213	69	70	2.3	6
	10	58.28	1.0	0.79	284	264	251	45	213	69	71	2.3	6
	12.5	60.27	1.0	0.79	284	259	247	45	213	69	72	2.3	6
3	15	62.24	1.0	0.79	284	258	247	44	213	69	73	2.3	6
	17.5	64.23	1.0	0.79	284	263	253	45	213	70	75	2.3	6
	20	66.21	1.0	0.80	284	259	251	43	213	70	76	2.3	6
4	22.5	68.19	0.98	0.79	284	238	247	43	224	70	77	2.2	6
	25	70.17	0.96	0.78	283	261	251	44	225	70	78	2.2	6
	27.5	72.11	0.95	0.78	283	259	258	44	225	70	79	2.2	6
5	30	74.06	0.83	0.73	283	263	246	44	228	71	80	1.9	6
	32.5	75.90	0.84	0.73	282	263	248	44	226	71	80	1.9	6
	35	77.73	0.84	0.73	283	260	252	45	228	71	81	1.9	6
6	37.5	79.56	0.80	0.72	282	260	249	45	228	72	82	1.8	6
	40	81.35	0.80	0.72	282	263	247	44	223	72	82	1.8	6
	42.5	83.14	0.80	0.72	283	262	252	43	227	72	83	1.8	6
7	45	84.93	0.80	0.72	282	264	251	43	228	72	83	1.8	6
	47.5	86.73	0.82	0.73	282	262	247	42	226	73	84	1.9	6
	50	88.56	0.82	0.73	282	263	250	42	229	73	84	1.9	6

Traverse: (1) FW				
Start Time: 8:26	Initial Leak Check:	.006	cfm@ 15	"Hg
Finish Time: 9:56	Final Leak Check:	.004	cfm@ 16	"Hg

Project No.: 22160

Operator : R

Field Data Sheet

Date: Dec 1	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	90.38	0.87	0.75	282	262	250	42	228	73	84	2.0	6
	55	92.26	0.87	0.75	282	257	248	41	227	73	84	2.0	6
	57.5	94.15	0.85	0.74	282	259	252	42	228	73	84	2.0	6
9	60	96.03	0.89	0.76	282	259	251	42	229	74	84	2.1	6
	62.5	98.00	0.88	0.76	282	258	247	42	228	74	84	2.1	6
	65	99.89	0.85	0.74	282	264	252	42	228	74	84	2.1	6
10	67.5	101.77	0.86	0.75	281	264	253	42	230	74	84	2.1	6
	70	103.65	0.85	0.74	281	260	250	42	229	74	84	2.1	6
	72.5	105.52	0.85	0.74	281	263	247	42	227	74	85	2.1	6
11	75	107.40	0.82	0.73	280	258	254	43	228	74	85	2.0	6
	77.5	109.27	0.83	0.74	~~280~~ 276	261	252	43	230	75	85	2.0	6
	80	111.09	0.83	0.74	~~280~~ 276	260	249	43	228	75	85	2.0	6
12	82.5	112.91	0.83	0.74	280	261	249	43	226	75	85	2.0	6
	85	114.77	0.83	0.74	280	262	255	43	229	75	85	2.0	6
	87.5	116.63	0.83	0.74	280	263	253	43	230	75	86	2.0	6
	90	118.46											

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

Project No.: 22160

Operator : R

Field Data Sheet

Date: Dec 1	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 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	118.92	1.00	0.79	284	255	249	65	143	72	72	2.3	6
	2.5	120.91	1.00	0.80	282	261	252	47	228	72	72	2.3	6
	5	122.94	1.00	0.79	283	260	251	44	231	72	72	2.3	6
2	7.5	124.94	1.00	0.80	284	262	247	43	229	72	73	2.3	6
	10	126.92	1.00	0.80	284	262	250	43	230	72	74	2.3	6
	12.5	128.90	1.00	0.80	284	258	256	43	233	72	76	2.3	6
3	15	130.88	1.00	0.80	284	262	253	43	234	72	77	2.3	6
	17.5	132.87	0.98	0.79	284	264	249	43	231	72	78	2.3	6
	20	134.80	1.00	0.80	284	262	249	43	229	72	79	2.3	6
4	22.5	136.86	0.94	0.78	284	258	252	43	232	73	80	2.1	6
	25	138.77	0.94	0.78	284	260	251	43	232	73	81	2.1	6
	27.5	140.70	0.93	0.77	284	260	248	43	230	73	82	2.1	6
5	30	142.64	0.85	0.74	284	261	252	43	230	73	83	1.9	6
	32.5	144.58	0.85	0.74	284	258	252	43	232	74	83	1.9	6
	35	146.42	0.85	0.74	284	264	248	44	230	74	84	2.0	6
6	37.5	148.28	0.75	0.70	284	265	251	44	230	74	84	1.8	6
	40	150.05	0.73	0.69	284	263	254	44	231	74	85	1.8	6
	42.5	151.80	0.72	0.68	284	264	253	44	231	75	85	1.8	6
7	45	153.54	0.80	0.72	284	261	248	44	229	75	86	1.9	6
	47.5	155.37	0.80	0.72	283	260	248	44	231	75	86	1.9	6
	50	157.19	0.80	0.72	287	263	253	45	230	75	86	1.9	6

Traverse: 2 FW						
Start Time: 10:52	Initial Leak Check:	.004	cfm@	15	"Hg	
Finish Time: 12:22	Final Leak Check:	.004	cfm@	15	"Hg	

Project No.: 22160

Operator : R

Field Data Sheet

Date: Dec 1	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 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	159.02	0.8	0.72	284	262	255	45	229	75	86	1.9	6
	55	160.84	0.85	0.74	285	262	248	45	228	75	86	2.0	6
	57.5	162.69	0.85	0.74	285	260	253	45	230	75	86	2.0	6
9	60	164.54	0.85	0.74	286	257	251	45	231	76	86	2.0	6
	62.5	166.41	0.85	0.74	286	258	248	45	229	76	86	2.0	6
	65	168.23	0.85	0.74	286	260	251	45	229	76	86	2.0	6
10	67.5	170.07	0.87	0.75	286	260	252	46	231	76	86	2.1	6
	70	171.93	0.87	0.75	286	259	255	46	229	76	86	2.1	6
	72.5	173.84	0.88	0.76	286	282	250	46	230	76	86	2.1	6
11	75	175.75	0.88	0.76	286	258	252	46	233	76	87	2.1	6
	77.5	177.65	0.75	0.70	286	261	250	46	233	76	86	1.8	6
	80	179.43	0.76	0.70	286	256	249	46	231	76	86	1.8	6
12	82.5	181.21	0.75	0.70	286	257	254	47	234	76	86	1.8	6
	85	182.97	0.75	0.70	286	256	254	47	235	76	87	1.8	6
	87.5	184.74	0.75	0.70	286	256	250	47	234	77	87	1.8	6
	90	186.51											

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

Project No.: 22160

Operator : RW

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	NOV 30/22
Test Location	APC Outlet No. 1
Operator	D. J. US

Project No.:	22160	
Page	1 of 2	
Probe No.:	PM10/2.5	
Meter Box No.:	T2	
Impinger Box No.:	11	

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	TEST
Control Box	1
Incline Manometer	
Comb.Gas.Analyzer	UNIT
Micromanometer	
Barometer	2
Calipers	

Pitot Factor	0.854	
DGMCF	1.010	
Barometric Pressure	29.24	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	175.5	g
WCBDA	11.0	g

Combustion Gas Concentration

Oxygen	8.64	%
Carbon Dioxide	10.83	%
Carbon Monoxide	22.2	ppm

Nozzle Measurements
1
2
3
4
Average:

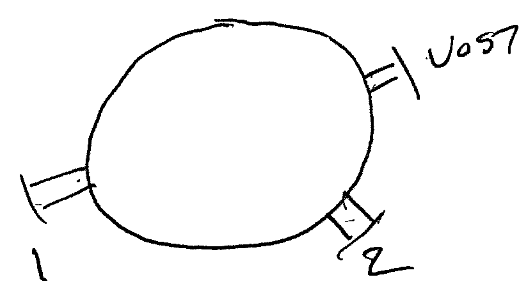
Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram



Notes:

Field Data Sheet

Date: NOV 30/22	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 *
1	0	37.30	.90	0.35	278	245	246	88	71	95	95	.38	4
2	10.8	41.34	.89		278	246	267	67	61	95	95	.38	4
3	21.4	45.34	.85		273	246	267	65	61	95	95	.38	4
4	31.6	49.17	.80		273	247	268	65	60	96	98	.38	4
5	41.6	52.90	.74		280	246	268	66	62	97	99	.38	4
6	51.2	56.50	.73		280	246	268	65	61	97	99	.38	4
	60.2	59.87											
1	0	59.87	.89		278	246	268	64	61	98	100	.38	4
2	10.8	63.84	.98		279	247	269	65	63	99	100	.38	4
3	21.1	67.64	.95		279	247	269	64	62	98	101	.38	4
4	31.4	71.39	.78 ~~.86~~		279	249	268	63	61	98	100	.38	4
5	41.5	75.07	.69		279	250	268	63	62	99	100	.38	4
6	50.9	78.43	.69		280	241	268	62	62	99	101	.38	4
	59.8	81.79											

Traverse: 2			
Start Time: 852	Initial Leak Check: .003	cfm@ 17	"Hg
Finish Time: 952	Final Leak Check:	cfm@	"Hg

Traverse: 1			
Start Time: 957	Initial Leak Check:	cfm @	"Hg
Finish Time: 1057	Final Leak Check:	cfm @	"Hg

Project No.: 22160
Operator : RM

COV - COURTICE

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	NOV 30/22
Test Location	APC Outlet No. 1
Operator	[illegible]

Project No.:	22160	
Page	1 of 2	
Probe No.:	PM10/2.5	
Meter Box No.:	T2	
Impinger Box No.:		

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST 1
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	UNIT 2
Barometer	
Calipers	

Pitot Factor	.854	
DGMCF	1.010	
Barometric Pressure	29.14	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	163.1	g
WCBDA	9.3	g

Combustion Gas Concentration

Oxygen	8.74	%
Carbon Dioxide	10.75	%
Carbon Monoxide	11.0	ppm

Reading Interval	ONELL
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: NOV 30/22	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 Δ P "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure Δ H "H_2O	* Pump Vacuum "Hg Gauge
1	0	81.92	.88	.35	279	245	269	85	85	97	97	.38	4.5
2	10.5	85.80	.87		279	247	266	60	62	95	95	.38	4.5
3	21.4	89.80	.80		280	246	266	60	61	95	95	.38	4.5
4	31.7	93.67	.75		279	246	266	61	61	95	96	.38	4.5
5	41.5	97.20	.76		280	247	265	61	61	96	97	.39	4.5
6	50.7	100.50	.73		280	248	266	62	60	96	97	.38	4.5
	59.9	103.91											
1	0	103.91	.95		279	247	266	59	61	96	96	.38	4.5
2	10.5	107.70	.95		279	246	267	58	60	94	96	.38	4.5
3	21.0	111.55	.95		279	247	266	59	61	94	96	.38	4.5
4	31.2	115.21	.81		281	247	265	59	60	95	96	.39	4.5
5	41.1	118.90	.75		280	248	265	59	60	95	96	.38	4.5
6	50.7	122.43	.77		281	247	265	59	59	94	95	.38	4.5
	60.1	125.82											

Traverse: 1			
Start Time: 1155	Initial Leak Check:	.003 cfm@ 16	"Hg
Finish Time: 1255	Final Leak Check:	cfm@	"Hg

Traverse: 2			
Start Time: 1257	Initial Leak Check:	cfm @	"Hg
Finish Time: 1357	Final Leak Check:	cfm @	"Hg

Project No.: 22160

Operator: [illegible]

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.:	3 Particle Size	
Test Date	NOVEMBER 30, 2022	
Test Location	APC Outlet No. 1	
Operator	RW	

Project No.:	22160	
Page	1 of 2	
Probe No.:	PM10/2.5	
Meter Box No.:	T2	
Impinger Box No.:	11	

Pitot Factor	.854	
DGMCF	1.010	
Barometric Pressure	29.31	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	QUELL
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	160.0	g
WCBDA	9.5	g

Combustion Gas Concentration

Oxygen	8.97	%
Carbon Dioxide	10.56	%
Carbon Monoxide	16.0	ppm

Site Diagram

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

Nozzle Measurements

1 __________
2 __________
3 __________
4 __________
Average:

Notes:

Field Data Sheet

Date: Nov 30/22	Plant:	Covanta DYEC	Test No.: 3	Particle Size	Page 2 of 2
	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	25.92	.95	.35	281	246	268	77	78	90	90	.38	4
2	10.7	29.87	.95		280	247	267	67	62	88	88	.38	4
3	21.5	33.85	.88		279	243	267	63	61	87	87	.38	4
4	32.2	37.83	.83		280	244	266	60	61	87	88	.38	4
5	42.1	41.47	.77		280	244	242	63	61	87	88	.38	4
6	51.7	44.97	.69		279	245	249	62	61	86	88	.38	4
	61.0	48.40											
1	0	48.40	.95		280	246	269	61	61	86	88	.39	4
2	10.3	52.03	.95		281	247	269	60	60	86	87	.38	4
3	20.6	55.81	.84		280	247	267	61	62	86	87	.38	4
4	30.5	59.43	.79		281	247	267	61	63	86	87	.38	4
5	40.0	62.93	.78		280	249	267	60	59	86	87	.39	4
6	49.6	66.40	.78		281	247	266	61	60	86	87	.38	4
	59.0	70.31											

Traverse: 2				
Start Time: 1455	Initial Leak Check:	.003	cfm@ 17	"Hg
Finish Time: 1555	Final Leak Check:		cfm@	"Hg

Traverse: 1				
Start Time: 1557	Initial Leak Check:		cfm @	"Hg
Finish Time: 1656	Final Leak Check:		cfm @	"Hg

Project No.: 22160

Operator : [signature]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Particle Size
Test Date	NOVEMBER 29, 2022
Test Location	APC Outlet No. 2
Operator	[illegible]

Project No.:	22160	
Page	1 of 2	
Probe No.:	PM10/2.5	
Meter Box No.:	I 2	
Impinger Box No.:	7	

Pitot Factor	.854	
DGMCF	1.010	
Barometric Pressure	29.92	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	146.0	g
WCBDA	10.0	g

Combustion Gas Concentration

Oxygen	9.67	%
Carbon Dioxide	10.06	%
Carbon Monoxide	14.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	COE 20132
Trendicator	COE 20097
Control Box	COE 20097
Incline Manometer	COE 20097
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV.CAN
Calipers	B03906

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

Nozzle Measurements	
1	.1775
2	.1775
3	.1775
4	.1780
Average:	

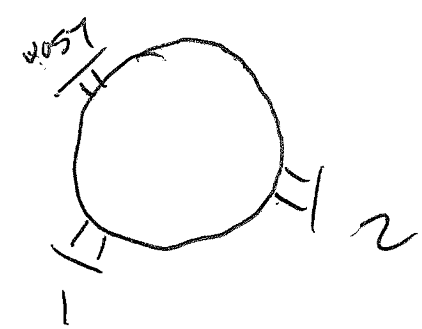
Probe Liner Glass / Metal / Teflon / Other TPA

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram



Notes:

Field Data Sheet

Date: NOV 29/22	Plant: Covanta DYEC	Test No.: 1	Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	4.48	1.0	.38	279	255	265	80	80	85	85	.38	4.5
2	10.5	8.20	1.0		280	255	255	60	59	86	86	.38	4.5
3	20.9	12.05	.92		281	250	251	61	58	86	88	.38	4.5
4	31.2	15.70	.90		282	250	265	61	52	87	89	.38	4.5
5	41.3	19.39	.84		282	261	260	62	53	87	90	.38	4.5
6	50.9	22.85	.77		283	255	261	63	59	88	91	.38	4.5
	60.	26.10											
1	0	26.10	.98		283	245	260	63	58	89	92	.38	4.5
2	10.2	29.76	.96		283	242	245	63	60	89	91	.38	4.5
3	20.4	33.32	.93		283	245	255	63	57	89	90	.38	4.5
4	30.6	36.97	.89		283	245	270	57	57	89	91	.38	4.5
5	40.7	40.64	.86		283	245	245	56	58	89	92	.39	4.5
6	50.6	44.15	.84		281	245	245	56	59	89	92	.38	4.5
	60.0	47.51											

Traverse: 2		Traverse: 1	
Start Time: 848	Initial Leak Check: .003 cfm@ 15 "Hg	Start Time: 951	Initial Leak Check: cfm @ "Hg
Finish Time: 948	Final Leak Check: cfm@ "Hg	Finish Time: 1051	Final Leak Check: cfm @ "Hg

Project No.: 22160

Operator : Du

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 2	Particle Size	
Test Date	NOV 29/22	
Test Location	APC Outlet No. 2	
Operator	[illegible]	

Project No.:	22160	
Page	1 of 2	
Probe No.:	PM10/2.5	
Meter Box No.:	72	
Impinger Box No.:	11	

Pitot Factor	.854	
DGMCF	1.010	
Barometric Pressure	29.86	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	143.9	g
WCBDA	7.3	g

Combustion Gas Concentration

Oxygen	9.96	%
Carbon Dioxide	9.78	%
Carbon Monoxide	11.2	ppm

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

Nozzle Measurements

1 ____

2 ____

3 ____

4 ____

Average:

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other____

Union None /Metal / Teflon / Other____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov 29/17	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	47.66	.94	.35	~~264~~ 292	250	252	85	57	89	89	.38	4
2	10.5	51.55	.91		280	248	248	62	55	89	89	.38	4
3	21.0	55.31	.72		280	248	249	59	60	89	91	.38	4
4	31.1	59.00	.72		281	249	255	59	61	90	92	.38	4
5	41.1	62.65	.66		280	249	265	59	61	90	93	.38	4
6	50.7	66.15	.63		290	247	264	59	61	91	93	.38	4
	59.9	69.57											
1	0	69.57	.88		279	250	267	67	67	91	93	.38	4
2	10.4	73.32	.84		287	257	268	67	65	94	96	.38	4
3	20.7	77.00	.82		285	256	269	64	64	92	92	.38	4
4	30.8	80.54	.79		279	257	269	62	63	92	93	.38	4
5	40.7	84.01	.77		280	257	268	62	61	93	95	.38	4
6	50.5	87.76	.68		281	258	269	61	62	94	96	.38	4
	60.1	91.20											

Traverse: 2			
Start Time: 1201	Initial Leak Check: .003	cfm@ 17	"Hg
Finish Time: 1301	Final Leak Check:	cfm@	"Hg

Traverse: 1			
Start Time: 1305	Initial Leak Check:	cfm @	"Hg
Finish Time: ~~1405~~ 1515	Final Leak Check:	cfm @	"Hg

PAUSED @ 1321 RESTART @ 1431

Project No.: 22160
Operator : [signature]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date	NOVEMBER 29, 2022
Test Location	APC Outlet No. 2
Operator	[illegible]

Project No.:	22160
Page	1 of 2
Probe No.:	PM10/2.5
Meter Box No.:	T2
Impinger Box No.:	7

Pitot Factor	.854	
DGMCF	1.010	
Barometric Pressure	29.81	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

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	161.7	g
WCBDA	11.4	g

Combustion Gas Concentration

Oxygen	9.29	%
Carbon Dioxide	10.26	%
Carbon Monoxide	12.5	ppm

Site Diagram

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

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Notes:

Field Data Sheet

Date: NOV 29/22	Plant: Covanta DYEC	Test No.: 3	Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	91.35	1.00	.35	281	255	268	96	73	93	94	.38	4.5
2	11.0	95.20	1.00		286	255	267	63	64	93	94	.38	4.5
3	21.9	98.99	.92		287	254	269	62	63	94	96	.38	4.5
4	31.4	102.36	.88		286	253	267	61	62	94	96	.38	4.5
5	41.1	105.73	.81		287	254	267	60	62	95	97	.38	4.5
6	50.3	109.30	.77		286	254	268	61	62	96	98	.38	4.5
	59.3	112.70											
1	0	112.70	.95		285	260	269	66	62	95	97	.38	4.5
2	10.6	116.44	.90		285	261	269	64	62	95	97	.38	4.5
3	21.0	120.30	.88		286	262	269	62	59	96	98	.38	4.5
4	31.3	124.20	.82		286	261	267	61	57	96	98	.38	4.5
5	41.4	128.00	.77		285	260	268	60	56	96	98	.38	4.5
6	51.4	131.71	.72		284	260	268	59	56	96	99	.38	4.5
	60.7	135.10											

Traverse: 2		
Start Time: 1606	Initial Leak Check: .003 cfm@ 16 "Hg	
Finish Time: 1705	Final Leak Check: cfm@ "Hg	

Traverse: 1	
Start Time: 1709	Initial Leak Check: cfm @ "Hg
Finish Time: 1808	Final Leak Check: cfm @ "Hg

Project No.: 22160

Operator : R d U

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	December 1 2022
Test Location	APC Outlet No. 1
Operator	TT

Project No.:	22160	
Page	1 of 5	
Probe No.:		
Meter Box No.:	Team 2	
Impinger Box No.:		

Pitot Factor	.853	
DGMCF	1.010	
Barometric Pressure	29.88	"Hg
Static Pressure	- 10.7	"H2O
Nozzle Size	.2521	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	675.2	g
WCBDA	13.4	g

Combustion Gas Concentration

Oxygen	9.12	%
Carbon Dioxide	10.72	%
Carbon Monoxide	6.6	ppm

Measuring Device	MII Numbers
Probe / Pitot S7	B03768
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 .2520
2 .2520
3 .2525
4 .2520
Average: .2521

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: Dec. 1 2022	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 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	470.83	.95	.80	279	255	263	55	43	71	72	2.3	5.5
	5	475.43	.95	.80	284	255	264	42	47	71	72	2.3	5.5
2	10	479.45	.95	.80	284	255	266	41	48	71	75	2.3	5.5
	15	483.51	.92	.79	284	256	266	42	47	72	75	2.1	5.5
3	20	487.46	.87	.77	283	256	259	42	46	72	75	2.0	5.5
	25	491.30	.87	.77	283	257	259	42	45	72	78	2.0	5.5
4	30	495.17	.76	.72	282	257	260	42	46	73	79	1.8	5
	35	498.82	.76	.72	282	257	260	42	46	72	79	1.8	5
5	40	502.46	.72	.70	283	258	260	44	45	75	82	1.7	5
	45	506.06	.72	.70	283	259	261	44	45	76	82	1.7	5
6	50	509.64	.70	.69	282	257	260	43	44	75	82	1.65	4.5
	55	513.16	.68	.68	282	257	259	43	44	75	82	1.65	4.5
7	60	516.62	.74	.72	281	258	260	43	43	76	83	1.8	4.5
	65	520.29	.73	.71	281	259	260	44	45	77	83	1.7	4.5
8	70	523.86	.76	.73	281	258	260	44	44	77	83	1.8	4.5
	75	527.50	.78	.74	281	259	260	44	45	77	84	1.9	5
9	80	531.23	.78	.74	281	258	260	44	45	78	84	1.9	5
	85	534.97	.78	.74	282	259	261	45	47	79	85	1.9	5
10	90	538.71	.77	.73	281	258	261	45	45	79	85	1.8	5
	95	542.41	.80	.75	282	259	262	46	47	80	86	1.9	5
11	100	546.15	.71	.70	282	259	261	46	46	79	85	1.7	5

Traverse: 1				
Start Time: 8:32	Initial Leak Check: .005	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	

Project No.: 22160
Operator :

Field Data Sheet

Date: Dec, 1 2022	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	105	549.74	.75	.73	281	259	262	46	46	80	86	1.8	5
12	110	553.38	.65	.67	281	262	261	46	46	80	85	1.7	5
	115	556.85	.64	.67	281	260	262	46	47	81	87	1.7	5
	120	560.53											

Traverse: 1			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 10:32	Final Leak Check: .001	cfm@ 14	"Hg

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

Project No.: 22160

Operator :

Field Data Sheet

Date: Dec. 1 2022	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter 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	561.14	.90	.79	282	258	256	58	41	80	82	2.1	5.5
	5	565.10	.90	.79	282	259	262	47	43	80	82	2.1	5.5
2	10	~~[illegible]~~ 569.10	.91	.80	284	261	261	48	46	82	84	2.1	5.5
	15	573.02	.92	.80	284	262	263	48	46	82	85	2.2	5.5
3	20	577.08	.87	.78	285	262	263	48	48	82	86	2.1	5.5
	25	~~[illegible]~~ 581.07	.87	.78	285	262	263	49	48	82	87	2.1	5.5
4	30	584.99	.85	.77	285	262	262	49	47	82	87	2.0	5.5
	35	588.86	.85	.77	286	262	263	49	47	82	87	2.0	5.5
5	40	592.76	.77	.74	285	262	262	48	45	82	87	1.85	5
	45	596.55	.77	.74	285	262	262	49	45	82	87	1.85	5
6	50	600.16	.71	.71	285	262	262	49	45	82	87	1.7	5
	55	603.73	.68	.69	286	261	263	50	45	82	88	1.6	5
7	60	607.24	.75	.73	286	261	263	50	44	82	87	1.8	5
	65	610.92	.75	.73	286	261	263	50	44	82	87	1.8	5
8	70	614.58	.78	.74	285	261	263	49	44	82	87	1.9	5
	75	618.34	.78	.74	285	260	263	50	44	82	87	1.9	5
9	80	622.08	.78	.74	285	261	263	50	45	83	88	1.9	5
	85	~~624~~ 625.83	.77	.74	286	265	264	50	45	83	88	1.9	5
10	90	629.56	.75	.73	285	260	264	50	45	83	88	1.8	5
	95	633.23	.75	.73	283	259	263	50	44	83	87	1.8	5
11	100	636.89	.46	.57	283	260	263	50	45	83	88	1.1	4

Traverse:		
Start Time: 10:43	Initial Leak Check: .008 cfm@ 14 "Hg	
Finish Time:	Final Leak Check: cfm@ "Hg	

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

Project No.: 22160

Operator :

Field Data Sheet

Date: Dec. 1 2022	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot 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	639.89	.49	.59	284	258	262	50	41	82	86	1.2	4
12	110	642.87	.62	.66	283	258	261	50	41	82	86	1.5	5
	115	646.30	.64	.67	~~288~~ 283	258	260	49	43	82	86	1.5	5
	120	649.68											

Traverse:			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 12:43	Final Leak Check: .004	cfm@ 14	"Hg

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

Project No.: 22160

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	2 Semi-Volatile Organic Compounds
Test Date	December 1 2022
Test Location	APC Outlet No. 1
Operator	TT

Project No.:	22160
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 2
Impinger Box No.:	

Pitot Factor	.853	
DGMCF	1.010	
Barometric Pressure	30.01	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	.2521	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	663.2	g
WCBDA	13.0	g

Combustion Gas Concentration

Oxygen	9.28	%
Carbon Dioxide	10.59	%
Carbon Monoxide	6.3	ppm

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

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Dec. 1 2022	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	650.24	.86	.76	283	250	249	71	42	79	80	2.0	5
	5	654.18	.92	.80	282	252	252	53	38	79	79	2.1	5
2	10	658.13	.87	.78	283	253	258	50	39	79	80	2.0	5
	15	662.01	.90	.79	283	253	258	48	40	79	81	2.1	5
3	20	665.97	.84	.76	284	255	260	48	41	80	83	2	5
	25	669.82	.85	.77	284	256	261	48	41	81	84	2	5
4	30	673.69	.74	.72	285	257	262	48	43	81	86	1.8	5
	35	677.38	.74	.72	284	257	262	48	41	81	86	1.75	5
5	40	681.03	.70	.70	284	258	262	48	41	81	86	1.7	5
	45	684.57	.70	.70	285	258	262	48	41	82	87	1.7	5
6	50	688.12	.66	.68	285	261	262	47	40	81	87	1.6	5
	55	691.55	.70	.70	285	257	262	47	40	82	87	1.7	5
7	60	695.12	.76	.73	285	257	262	47	41	82	87	1.8	5
	65	698.82	.76	.73	285	258	263	47	41	82	87	1.8	5
8	70	702.53	.85	.77	286	258	263	46	41	82	87	2.0	5
	75	706.42	.80	.75	285	256	262	45	41	81	87	1.9	5.5
9	80	710.18	.80	.75	285	257	262	46	41	82	87	1.9	5.5
	85	713.95	.80	.75	286	257	263	47	42	82	88	1.9	5.5
10	90	717.78	.79	.75	285	256	261	46	41	81	87	1.9	5.5
	95	721.52	.77	.74	284	256	262	46	41	82	87	1.8	5
11	100	725.20	.58	.64	284	256	262	46	41	82	88	1.5	5

Traverse:		
Start Time: 13:39	Initial Leak Check: .005 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	

Project No.: 22160

Operator :

Field Data Sheet

Date: Dec 1 2022	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	728.57	.62	.66	283	256	263	47	40	83	88	1.55	4.5
12	110	731.99	.50	.59	284	255	262	46	40	82	88	1.2	4.5
	115	735.05	.56	.63	284	255	262	47	40	82	87	1.3	4
	120	738.18											

Traverse:					
Start Time: –	Initial Leak Check:	–	cfm@	–	"Hg
Finish Time: 15:39	Final Leak Check:	.006	cfm@	15	"Hg

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

Project No.: 22160
Operator :

Field Data Sheet

Date: Dec. 1 2012	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	738.62	.90	.79	289	255	262	60	39	82	85	2.1	5.5
	5	742.55	.95	.82	283	260	265	45	43	83	85	2.4	6.3
2	10	746.67	.92	.80	283	261	262	44	43	82	86	2.3	6.3
	15	750.80	.92	.80	284	258	263	44	44	83	87	2.3	6.3
3	20	755.00	.90	.80	284	257	262	43	44	83	87	2.1	6.2
	25	759.10	.90	.80	284	257	263	43	43	83	87	2.1	6.2
4	30	763.18	.85	.77	284	257	263	43	42	83	88	2	6
	35	767.12	.85	.77	284	257	263	43	42	83	88	2	6
5	40	771.04	.78	.74	284	257	262	44	41	83	88	2	6
	45	774.88	.78	.74	283	257	262	44	41	83	88	1.8	5.7
6	50	778.65	.68	.69	283	257	260	44	40	83	88	1.7	5.3
	55	782.26	.68	.69	283	257	260	44	40	83	88	1.7	5.3
7	60	785.84	.74	.72	283	256	262	45	40	84	89	1.7	5.3
	65	789.43	.74	.72	283	256	262	45	40	84	89	1.7	5.3
8	70	793.00	.77	.74	283	256	263	45	40	84	89	1.8	5.5
	75	796.67	.76	.74	283	257	264	46	40	85	90	1.8	5.5
9	80	800.34	.78	.74	284	257	264	46	41	85	89	1.9	5.5
	85	804.08	.78	.74	284	257	262	46	41	85	89	1.9	5.5
10	90	807.85	.75	.73	283	256	263	46	41	84	89	1.75	5.5
	95	811.52	.75	.73	284	256	264	47	42	85	90	1.75	5.5
11	100	815.21	.68	.70	284	256	264	47	42	85	90	1.6	5.3

Traverse: 2			
Start Time: 15:48	Initial Leak Check: .006	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

Project No.: 22160

Operator : CB

Field Data Sheet

Date: DEC.1 /22	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	818.58	.68	.70	284	256	264	47	41	85	90	1.6	5.3
12	110	822.09	.61	.66	283	256	264	47	41	85	90	1.5	5.2
	115	825.44	.61	.66	283	255	263	48	41	85	89	1.5	5.2
	120	828.76											

Traverse: 2				
Start Time: —	Initial Leak Check: —	cfm@	—	"Hg
Finish Time: 17:48	Final Leak Check: .004	cfm@	15	"Hg

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

Project No.: 22160

Operator : CB.

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 3	Semi-Volatile Organic Compounds	
Test Date	DECEMBER 2, 2022	
Test Location	APC Outlet No. 1	
Operator	CB	

Project No.:	22160	
Page	1 of 5	
Probe No.:		
Meter Box No.:	TEAM 4	
Impinger Box No.:	10	

Pitot Factor	0.853	
DGMCF	1.017	
Barometric Pressure	30.01	"Hg
Static Pressure	-10.3	"H2O
Nozzle Size	0.2521	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	694.8	g
WCBDA	13.0	g

Combustion Gas Concentration

Oxygen	8.59	%
Carbon Dioxide	11.25	%
Carbon Monoxide	8.6	ppm

Site Diagram

Measuring Device		MII Numbers
Probe / Pitot	S7	B03768
Trendicator		TEAM ~~A~~4
Control Box		CoE 20092
Incline Manometer		CoE 20092
Comb.Gas.Analyzer		COVANTA
Micromanometer		CoE 20126
Barometer		
Calipers		

Nozzle Measurements

1 __________
2 SEE
3 TEST #1
4 __________

Average:

Notes:

Field Data Sheet

Date: DEC, 2/22	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	87.01	.84	.76	278	252	256	74	74	79	78	2	6
	5	90.61	.84	.76	280	255	258	47	51	81	86	2.1	6.9
2	10	94.38	.84	.76	280	255	257	49	46	81	82	2.1	7
	15	98.08	.84	.76	280	255	257	50	46	81	85	2.1	7
3	20	101.78	.79	.74	282	255	258	50	48	82	87	2.1	7
	25	105.51	.79	.74	282	255	258	51	48	82	89	2.1	7
4	30	109.23	.75	.72	282	256	256	51	48	82	90	2	7
	35	112.84	.75	.72	282	256	258	52	48	83	92	2	7
5	40	116.48	.66	.68	283	256	251	52	47	83	92	1.8	6.8
	45	119.98	.66	.68	283	256	251	49	46	84	94	1.8	6.8
6	50	123.48	.64	.67	283	256	253	48	46	84	94	1.8	6.8
	55	126.95	.64	.67	283	256	254	47	46	85	95	1.8	6.8
7	60	130.43	.72	.71	283	256	254	47	46	85	95	1.8	6.8
	65	133.94	.72	.71	284	256	257	47	46	85	95	1.8	6.8
8	70	137.40	.75	.72	284	256	259	47	47	85	96	2.0	6.8
	75	141.05	.75	.72	285	255	258	47	49	86	95	2.0	7
9	80	144.73	.73	.72	285	255	256	48	48	86	95	2.0	7
	85	148.34	.73	.72	285	256	251	48	48	86	95	2.0	7
10	90	151.97	.73	.72	284	255	256	49	48	86	96	2.0	7
	95	155.58	.72	.71	284	255	257	49	47	86	96	2.0	7
11	100	159.17	.63	.67	284	255	254	49	48	86	96	1.8	6.9

Traverse: 1 (NE)					
Start Time: 09:34	Initial Leak Check:	.003	cfm@	14	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg

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

Project No.: 22160

Operator : CB

Field Data Sheet

Date: DEC. 2 /22	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 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	162.67	.63	.67	284	254	259	50	48	86	96	1.75	5.8
12	110	166.12	.62	.66	284	255	259	50	47	86	96	1.7	6.5
	115	169.52	.61	.65	284	255	258	50	48	86	96	1.7	6.5
	120	172.88											

Traverse: 1		
Start Time: —	Initial Leak Check: — cfm@ — "Hg	
Finish Time: 11:34	Final Leak Check: .003 cfm@ 14 "Hg	

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

Project No.: 22160

Operator : C. BELORE

Field Data Sheet

Date: DEC. 2 /22	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter 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	173.21	.90	.79	282	254	257	64	46	85	88	2.3	8
	5	177.18	.89	.78	285	254	258	49	50	85	90	2.3	8
2	10	181.19	.88	.79	285	255	252	49	49	85	90	2.3	8
	15	185.20	.88	.79	285	255	257	50	47	85	90	2.3	8
3	20	189.22	.84	.77	285	255	254	50	48	84	91	2.2	7.6
	25	193.08	.84	.77	284	256	253	51	46	84	91	2.2	7.6
4	30	196.93	.78	.74	285	256	256	51	47	84	92	2	7.3
	35	200.62	.78	.74	285	256	250	51	46	84	92	2	7.3
5	40	204.31	.70	.70	285	255	251	51	46	84	93	1.8	7
	45	207.83	.70	.70	285	255	250	52	45	84	94	1.8	7
6	50	211.34	.66	.68	285	255	251	52	45	84	94	1.7	6.7
	55	214.66	.66	.68	285	255	253	52	45	84	94	1.7	6.7
7	60	218.04	.73	.72	286	255	253	52	47 ~~46~~	85	95	1.9	7
	65	221.60	.73	.72	286	255	257	53	46	84	94	1.9	7
8	70	225.20	.76	.73	286	255	258	53	46	85	94	2	7.3
	75	228.93	.76	.73	286	255	254	53	46	85	94	2	7.3
9	80	232.66	.78	.74	286	254	252	53	46	85	93	2.1	7.5
	85	236.42	.77	.74	285	255	251	53	46	85	93	2.1	7.5
10	90	240.21	.75	.73	284	255	255	53	46	85	93	2	7.5
	95	243.91	.75	.73	285	254	251	54	47	85	93	2	7.5
11	100	247.61	.75	.73	284	255	251	54	49	85	93	2	7.5

Traverse: 2 (NW)			
Start Time: 11:41	Initial Leak Check: .003	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

Project No.: 22160

Operator : C. BELURE

Field Data Sheet

Date: DEC. 2/22	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
	105	251.26	.75	.73	284	254	257	54	48	85	93	2	7.5
12	110	254.94	.62	.66	284	254	255	55	47	85	94	1.6	7.
	115	258.27	.63	.66	284	254	258	55	46	85	94	1.6	7.
	120	261.66											

Traverse: 2 (NW)				
Start Time: —	Initial Leak Check:	— cfm@	—	"Hg
Finish Time: 13:41	Final Leak Check:	.002 cfm@	10	"Hg

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

Project No.: 22160

Operator : C. BELORE

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date December 1, 2022	
Test Location	APC Outlet No. 2
Operator BP	

Project No.:	22160	
Page	1 of 5	
Probe No.:		
Meter Box No.: TEAM 1		
Impinger Box No.: 15		

Pitot Factor	0.847	
DGMCF	0.973	
Barometric Pressure	29.89	"Hg
Static Pressure	-12.5	"H2O
Nozzle Size	.2510	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	647.5	g
WCBDA	16.3	g

Combustion Gas Concentration

Oxygen	9.40	%
Carbon Dioxide	10.25	%
Carbon Monoxide	9.6	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot 58	B03769
Trendicator	TEAM 1
Control Box	COE20094
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	22136

#2	Nozzle Measurements
1	.2505
2	.2515
3	.2510
4	.2510
Average:	.2510

Notes:

Field Data Sheet

Date: Dec 1, 2022	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	4.82	.75	.72	284	272	265	59	47	70	68	1.6	4
	5	8.31	.80	.75	284	261	269	50	40	70	69	1.6	4
2	10	11.88	.89	.79	284	262	270	48	41	70	68	1.7	4
	15	15.68	.82	.76	284	263	270	48	42	70	68	1.9	5
3	20	19.47	.89	.79	284	263	268	48	42	71	69	1.8	5
	25	23.29	.86	.78	283	263	268	48	43	71	69	1.9	5
4	30	27.09	.87	.78	283	262	264	48	43	72	70	1.9	5
	35	30.92	.86	.78	283	264	270	47	42	73	69	1.9	5
5	40	34.78	.83	.77	283	265	270	48	43	75	70	1.9	5
	45	38.64	.83	.77	282	264	680	48	43	72	69	1.9	5
6	50	42.49	.81	.76	283	263	268	49	44	73	70	1.9	5
	55	46.31	.79	.75	283	263	268	49	44	73	70	1.9	5
7	60	50.06	.71	.71	282	264	268	50	41	74	70	1.8	5
	65	53.56	.70	.70	282	265	269	51	39	74	71	1.5	4.5
8	70	57.04	.83	.77	283	265	268	52	39	78	71	1.6	4.5
	75	60.79	.81	.76	283	266	270	53	40	75	71	1.8	5
9	80	64.55	.94	.82	283	265	270	53	40	74	71	1.8	5
	85	68.51	.92	.81	283	266	~~269~~ 269	53	41	78	72	2.0	5
10	90	72.47	.99	.84	282	268	268	55	41	78	71	2.0	5
	95	76.58	.97	.83	283	268	268	55	41	74	72	2.2	5.5
11	100	80.74	1.05	.87	283	265	264	55	40	75	72	2.2	5.5

Traverse: ~~1~~ NW 2			
Start Time: 8:38	Initial Leak Check: .005	cfm@ 11	"Hg
Finish Time: 10:39	Final Leak Check: .015	cfm@ 15	"Hg

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

Project No.: 22160

Operator : RP

Field Data Sheet

Date: Dec 1, 2022	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	84.94	1.05	.86	284	268	271	56	41	78	72	2.1	5.6
12	110	89.14	1.05	.87	284	266	271	56	41	74	72	2.2	5.6
	115	93.33	1.1	.87	282	268	270	56	41	79	72	2.2	5.9
	120	97.52											

Traverse: + (UW) 2			
Start Time: 8:38	Initial Leak Check: .004	cfm@ 15	"Hg
Finish Time: 10:39	Final Leak Check: 0.015	cfm@ 15	"Hg

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

Project No.: 22160

Operator : BP

Field Data Sheet

Date: Dec 1 2022	Plant: Covanta DYEC	Test No.: 1	SVOC
	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	98.19	.87	.79	283	274	261	70	48	74	71	1.8	5
*	5	101.93	.86	.78	283	260	276	60	85	73	71	1.7	5
2	10	105.55	.85	.78	282	264	275	81	44	74	71	1.7	5
	15	109.34	.92	.81	282	265	272	60	40	73	71	1.9	5
3	20	113.23	.96	.82	284	268	269	58	39	75	72	2.0	5
	25	117.24	.94	.82	285	264	270	57	39	76	71	2.1	5.5
4	30	121.27	.90	.80	284	264	270	57	39	79	72	2.1	5.5
	35	125.29	.88	.79	284	262	270	57	39	74	72	2.1	5.5
5	40	129.26	.89	.79	284	263	271	57	38	75	72	2.0	5
	45	133.22	.89	.80	285	263	271	58	39	74	72	2.0	5.1
6	50	137.17	.86	.78	287	263	271	58	40	75	72	2.0	5.1
	55	141.04	.86	.78	287	264	270	57	39	77	72	1.9	5
7	60	144.88	.80	.75	287	265	270	58	40	77	72	1.9	5
	65	148.64	.77	.74	287	264	270	59	40	75	73	~~1.9~~ 1.8	5
8	70	152.28	.84	.77	288	266	270	59	39	77	73	1.7	5
	75	156.05	.85	.78	288	264	270	56	39	75	73	1.8	5
9	80	159.81	.93	.81	288	267	270	53	39	78	73	1.8	5
	85	163.79	.92	.81	289	265	269	51	41	76	73	2.0	5.5
10	90	167.74	1.0	.84	289	266	270	51	40	75	73	2.0	5.5
	95	~~171.80~~ 171.80	.99	.84	289	265	270	52	42	76	73	2.1	6
11	100	175.88	1.0	.84	289	267	269	52	40	78	73	2.1	6

Traverse: (NW) 1			
Start Time: 11:04	Initial Leak Check: 0.012	cfm@ 15	"Hg
Finish Time: 13:04	Final Leak Check: .017	cfm@ 16	"Hg

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

* kink in water line for the trap

Project No.: 22160

Operator : BP

-12.5

Field Data Sheet

Date: Dec 1, 2022	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 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	180.01	1.0	.80	288	267	270	52	41	76	73	2.1	6
12	110	184.06	.98	.83	288	266	264	52	41	77	73	2.1	6
	115	188.17	.94	.84	288	265	270	52	43	76	73	2.1	6
	120	192.25											

Traverse: ⇐ (NW) 1			
Start Time: 11:04	Initial Leak Check: ~~.017~~	cfm@ ~~16~~	"Hg
Finish Time: 13:04	Final Leak Check: .017	cfm@ 16	"Hg

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

Project No.: 22160

Operator : BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date December 1, 2022	
Test Location	APC Outlet No. 2
Operator BP	

Project No.:	22160
Page	1 of 5
Probe No.:	
Meter Box No.:	TEAM 1
Impinger Box No.:	2

Pitot Factor	.847	
DGMCF	.973	
Barometric Pressure	30.00	"Hg
Static Pressure	-12.7	"H2O
Nozzle Size	.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	661.3	g
WCBDA	16.1	g

Combustion Gas Concentration

Oxygen	9.44	%
Carbon Dioxide	10.39	%
Carbon Monoxide	10.2	ppm

Measuring Device	MII Numbers
Probe / Pitot S8	B03264
Trendicator	TEAM 1
Control Box	CoE 20094
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

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

#2 Nozzle Measurements	
1	.2505
2	.2515
3	.2510
4	.2510
Average:	.2510

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: Dec 1, 2022	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 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	~~93.08~~ 93.03	.94	.82	~~268~~ 284	~~267~~	253	72	44	78	73	2.0	4.4
	5	96.93	.95	.82	286	261	259	60	44	74	73	2	5
2	10	100.88	.99	.84	288	264	263	55	44	74	72	2.2	6
	15	104.92	.99	.84	288	264	264	53	46	74	72	2.2	6
3	20	109.12	.95	.82	288	264	266	52	46	74	72	2.1	5.8
	25	113.12	.96	.82	288	264	266	52	46	74	72	2.1	5.8
4	30	117.17	.90	.80	288	264	266	52	46	74	72	2	5.5
	35	121.12	.90	.80	288	264	266	54	44	75	72	2	5.5
5	40	125.06	.80	.75	288	264	266	54	44	75	72	1.9	5
	45	128.89	.81	.76	288	264	267	54	45	75	72	1.9	5
6	50	132.69	.71	.71	288	266	268	55	45	75	73	1.6	5
	55	136.26	.71	.71	288	260	253	55	44	75	73	1.6	5
7	60	139.80	.78	.74	288	250	256	55	44	75	72	1.8	5
	65	143.45	.80	.75	291	267	263	53	46	76	73	1.8	5
8	70	147.19	.88	.79	290	268	263	51	47	76	74	1.8	~~4.5~~ 5
	75	151.04	.87	.78	291	271	262	51	46	78	73	1.9	5.5
9	80	154.91	.88	.79	290	269	262	51	46	78	74	1.9	5.5
	85	158.78	.88	.79	290	269	261	51	46	79	74	1.9	5.5
10	90	162.68	.86	.78	291	267	261	51	46	77	73	2.0	5.5
	95	166.54	.87	.78	291	267	261	51	46	77	~~47~~ 75	1.9	5.1
11	100	170.38	.70	.70	290	265	262	52	47	77	74	1.9	~~5.1~~ 5.1

Traverse: # (FW) 2			
Start Time: 13:49	Initial Leak Check: .012	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

Project No.: 22160

Operator : BP

Field Data Sheet

Date: Dec 1, 2022	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 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 *
	105	173.88	.77	.74	290	265	261	53	46	~~80~~ 77	74	1.5	4.9
12	110	177.43	.78	.74	290	268	262	53	48	77	74	1.6	5.0
	115	181.13	.73	.72	291	268	261	53	49	77	74	1.7	5
	120	184.68											

Traverse: 2			
Start Time: 13:49	Initial Leak Check: .012	cfm@ 15	"Hg
Finish Time: 15:49	Final Leak Check: .008	cfm@ 15	"Hg

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

Project No.: 22160

Operator: BP

Field Data Sheet

Date: Dec 1, 2022	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 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	85.27	.97	.83	~~280~~ 283	277	258	69	45	76	73	2.0	6
	5	89.25	.99	.84	281	270	264	44	45	76	73	2.0	6
2	10	93.30	1.05	.87	281	274	262	46	45	76	73	2.1	6
	15	97.48	1.05	.87	281	271	262	47	46	77	74	2.2	6.1
3	20	101.70	.99	.84	280	273	261	46	46	78	74	2.3	6.1
	25	105.78	.97	.84	281	271	261	46	45	76	74	2.1	6
4	30	109.89	.92	.81	281	274	261	46	45	79	74	2.1	6
	35	113.93	.93	.82	281	271	261	47	46	76	74	2.1	6
5	40	117.96	.85	.78	281	273	262	47	~~47~~	81	75	2.1	6
	45	121.84	.85	.78	280	271	261	48	50	81	74	1.9	5.8
6	50	125.69	.77	.74	281	268	261	48	45	77	74	1.9	5.8
	55	129.48	.77	.74	281	269	261	48	45	77	75	1.8	5.5
7	60	133.16	.83	.77	282	272	261	49	47	77	74	1.7	5.1
	65	136.93	.84	.78	282	269	261	49	46	78	75	1.8	5.9
8	70	140.79	.86	.79	284	269	261	49	48	78	75	1.9	5.9
	75	144.64	.88	.79	284	268	261	49	48	79	75	1.9	5.9
9	80	148.61	.86	.78	286	267	261	50	47	78	75	2.0	6
	85	152.53	.90	.80	287	270	261	51	52	79	75	2.0	6
10	90	156.47	.92	.81	287	268	262	48	47	79	75	2.0	6
	95	160.53	.92	.81	287	264	261	48	47	79	74	2.1	6.1
11	100	164.58	.79	.75	287	265	261	47	47	78	75	2.1	6.1

Traverse: ℄ (FW)		
Start Time: 16:02	Initial Leak Check: .005 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

Project No.: 22160

Operator : RP

Field Data Sheet

Date: Dec 1, 2022	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	168.30	.80	.76	286	265	260	47	46	79	75	1.7	5.5
12	110	171.99	.68	.70	286	264	260	48	46	78	75	1.7	5.5
	115	175.50	.69	.70	287	265	261	48	46	78	74	1.5	5
	120	178.99											

Traverse: P					
Start Time: 16:02	Initial Leak Check:	.005	cfm@	15	"Hg
Finish Time: 18:02	Final Leak Check:	.014	cfm@	15	"Hg

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

Project No.: 22160

Operator : BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date December 2, 2022	
Test Location	APC Outlet No. 2
Operator BP	

Project No.:	22160
Page	1 of 5
Probe No.:	
Meter Box No.:	TEAM 1
Impinger Box No.:	4

Pitot Factor	.847	
DGMCF	.973	
Barometric Pressure	30.03	"Hg
Static Pressure	- 11.3	"H2O
Nozzle Size	.2510	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	669.7	g
WCBDA	13.8	g

Combustion Gas Concentration

Oxygen	9.25	%
Carbon Dioxide	10.49	%
Carbon Monoxide	7.0	ppm

Measuring Device	MII Numbers
Probe / Pitot 38	B03769
Trendicator	TEAM 1
Control Box	COE20014
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	22136

Nozzle Measurements	
1	.2505
2	.2515
3	.2510
4	.2510
Average:	.2510

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: Dec 2, 2022	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	79.77	.90	.81	280	278	262	73	49	80	78	2	5
	5	83.73	.99	.85	283	276	264	53	48	82	78	2	5
2	10	87.87	1.0	.85	283	273	266	51	50	81	78	2.2	6
	15	92.06	1.05	.88	282	276	265	52	53	82	79	2.2	6
3	20	96.30	.95	~~.83~~ .83	283	276	264	51	52	81	79	~~2.2~~ 2.3	6
	25	~~91.80~~ 100.6	.94	.83	283	276	265	51	51	83	79	2.1	6
4	30	104.55	.90	.81	284	277	265	51	53	84	80	2.1	6
	35	108.62	.88	.80	283	277	266	51	51	85	80	2.1	6
5	40	112.64	.78	.76	283	275	265	50	50	83	80	2.1	5.9
	45	116.34	.78	.76	283	272	264	50	50	83	80	1.7	5
6	50	120.13	.70	.72	283	275	266	49	51	85	80	1.8	5
	55	123.71	.71	.72	282	276	266	49	49	85	80	1.6	5
7	60	127.35	.75	.74	283	273	265	49	51	84	81	1.8	5
	65	131.19	.73	.73	282	274	265	51	49	87	81	1.9	5.5
8	70	134.96	.76	.75	283	274	264	50	47	86	81	1.8	5
	75	138.78	.79	.76	282	272	264	50	48	85	82	1.7	5
9	80	142.63	.82	.78	282	273	265	51	49	85	81	2.0	5.5
	85	146.62	.81	.78	283	271	266	51	51	87	82	2.0	6
10	90	150.58	.79	.76	282	272	265	52	49	85	81	2.0	6
	95	154.52	.81	.77	281	270	265	53	50	85	82	~~2~~ 2.0	6
11	100	158.42	.78	.76	281	270	265	50	50	86	83	1.9	5.9

Traverse: 2 (FW)				
Start Time: 8:26	Initial Leak Check:	.008	cfm@ 15	"Hg
Finish Time: 10:26	Final Leak Check:	.004	cfm@ 15	"Hg

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

Project No.: 22160

Operator : BP

Field Data Sheet

Date: Dec 2, 2022	Plant: Covanta DYEC	Test No.: 3	SVOC	
	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	162.31	.68	.71	282	271	265	44	50	86	82	1.9	5.9
12	110	166.03	.57	.65	281	273	263	48	51	86	82	1.7	5
	115	169.47	.56	.64	282	~~268~~ 268	265	44	49	86	83	1.5	4.9
	120	172.79											

Traverse: 2				
Start Time: 8:26	Initial Leak Check:	.008	cfm@ 15	"Hg
Finish Time: 10:26	Final Leak Check:	.004	cfm@ 15	"Hg

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

Project No.: 22160

Operator : BP

Field Data Sheet

Date: Dec 2, 2022	Plant: Covanta DYEC	Test No.: 3	SVOC	
	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	73.15	.92	.83	280	278	263	66	50	84	82	2.2	6.5
	5	77.33	.96	.84	283	273	267	51	51	85	82	2.2	6.5
2	10	81.62	.97	.85	284	276	267	49	51	86	83	2.3	6.5
	15	85.91	.96	.84.	283	276	265	49	50	86	83	2.3	6.5
3	20	90.18	.93	.83	283	276	265	50	50	86	83	2.3	6.5
	25	94.42	.92	.83	284	273	266	51	52	86	83	2.2	6.5
4	30	98.64	.86	.79	284	272	265	51	49	87	83	2.2	6.5
	35	102.69	.86	.80	284	275	266	50	49	87	83	2.1	6
5	40	106.77	.76	.75	283	273	265	49	48	86	83	2.1	6
	45	110.67	.77	.76.	283	273	266	47	47	86	83	1.9	5.5
6	50	114.48	.72	.73	283	274	265	47	46	85	83	1.8	5.5
	55	118.27	.72	.73	283	272	265	47	48	85	83	1.8	5.5
7	60	121.98	.80	.77	284	273	266	47	46	85	82	1.7	5.1
	65	125.96	.79	.76	283	270	266	47	48	85	82	2.0	6
8	70	129.83	.81	.77	284	273	266	47	47	86	82	1.9	5.9
	75	133.77	.80	.77.	283	264	266	48	48	85	82	2.0	6
9	80	137.68	.85	.74	285	272	266	48	48	85	82	2.0	6
	85	141.69	.83	.78	284	264	266	48	48	85	82	2.1	6
10	90	145.73	.84	.79	284	273	266	48	46	84	82	2.1	6
	95	149.69	.82	.78	283	272	267	49	47	85	82	2.0	6
11	100	153.66	.65	.69	283	270	266	50	49	85	82	2.0	6

Traverse: 1 (FW)			
Start Time: 10:36.	Initial Leak Check: .008	cfm@ 15	"Hg
Finish Time: 12:36	Final Leak Check: .01	cfm@ 15	"Hg

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

Project No.: 22160

Operator : BP

Field Data Sheet

Date: Dec 2, 2022	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 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	157.30	.65	.69	282	270	266	49	46	86	81	1.6	5.1
12	110	160.80	.42	.56	282	265	266	50	47	85	81	1.6	5.1
	115	~~163.81~~ 163.81	.42	.56	282	271	265	51	45	85	82	1.2	4.5
	120	166.83											

Traverse: 1			
Start Time: 10:36	Initial Leak Check: .008	cfm@ 15	"Hg
Finish Time: 12:36	Final Leak Check: .01	cfm@ 15	"Hg

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

Project No.: 22160

Operator : BP

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	November 29, 2016	
Test Location	APC Outlet No. 1	
Operator	CB, B.P.	

Project No.:	22160	
Page	1 of 2	
Probe No.:	6	
Meter Box No.:	TEAM 1	
Impinger Box No.:	—	

Pitot Factor	0.853	
DGMCF	0.973	
Barometric Pressure	29.92	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	0.2521	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

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	162.4	g
WCBDA	12.3	g

Combustion Gas Concentration

Oxygen	9.07	%
Carbon Dioxide	10.83	%
Carbon Monoxide	8.0	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot S7	
Trendicator	TEAM 1
Control Box	CAR 20094
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	22136

#4 Nozzle Measurements

1	.2520
2	.2520
3	.2525
4	.2520
Average:	.2521

Notes:

Field Data Sheet

Date: Nov. 29/22	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	* M26A Clock Time	* Dry Gas Meter ft^3	* Pitot 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	0	5.21	.78	.77	288	270	270	68	79	84	83	1.65	2
	5	8.76	.75	.76	286	270	270	68	179	84	83	1.65	2
	10	11.98	.72	.74	286	269	270	58	228	84	83	1.9	2.5
	15	15.61	.77	.77	286	269	269	57	232	84	83	2	3.5
	20	19.55	.78	.77	287	269	270	58	233	84	83	2	3.5
	25	23.57	.78	.77	287	269	269	59	234	84	83	2	3.5
	30	27.47	.77	.77	288	268	269	62	236	85	84	2	3.5
	35	31.43	.78	.77	288	269	269	64	236	84	83	2	3.5
	40	35.38	.77	.77	288	269	270	60	236	85	84	2	3.5
	45	39.32	.75	.76	288	269	270	54	236	86	84	2	3.5
	50	43.28	.74	.75	287	269	269	51	236	86	84	2	3.5
	55	47.18	.73	.75	287	268	268	48	234	85	84	1.9	3.5
	60	51.03											

Traverse: D			
Start Time: 08:54	Initial Leak Check: .01	cfm@ 15	"Hg
Finish Time: 09:54	Final Leak Check: .005	cfm@ 23	"Hg

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

Project No.: 22160

Operator : C. BELORE B.P.

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.:	2	M26A
Test Date	November 29, 2022	
Test Location	APC Outlet No. 1	
Operator	BP	CB

Project No.:	22160	
Page	1 of 2	
Probe No.:	6	
Meter Box No.:	TEAM 1	
Impinger Box No.:		

Pitot Factor	0.853	
DGMCF	0.973	
Barometric Pressure	29.91	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	0.2521	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

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	165.4	g
WCBDA	12.6	g

Combustion Gas Concentration

Oxygen	9.39	%
Carbon Dioxide	10.46	%
Carbon Monoxide	6.3	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot 57	
Trendicator	TEAM 1
Control Box	CDE 20094
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	22136

Nozzle Measurements

1 SEE

2

3 TEST #1

4

Average:

Notes:

Field Data Sheet

Date: Nov. 29 /22	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 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
4	0	~~51.55~~ 51.82	.83	.80	283	267	265	78	119	86	84	2.1	2
	5	55.93	.81	.79	286	268	266	49	225	86	84	2.1	2
	10	~~59.~~ 60.05	.81	.79	287	267	266	47	229	85	84	2.1	2
	15	64.12	.82	.79	286	267	266	48	230	86	84	2.1	2
	20	68.17	.85	.81	287	267	265	47	230	86	84	2.1	2
	25	72.19	.82	.79	287	268	265	48	230	86	85	2.1	2
	30	76.24	.82	.80	287	267	266	50	230	86	85	2.1	2
	35	80.27	.80	.79	287	266	265	51	230	86	85	2	2
	40	84.29	.81	.79	287	267	266	52	230	87	85	2	2
	45	88.31	.80	.79	287	267	266	50	208	87	85	2	3
	50	92.33	.78	.78	287	267	265	47	213	86	85	2	3
	55	96.35	.77	.77	286	266	266	48	215	88	85	2	3
	60	100.33											

Traverse: 1				
Start Time: 10:40	Initial Leak Check:	.008	cfm@ 22	"Hg
Finish Time: 11:40	Final Leak Check:	.01	cfm@ 21	"Hg

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

Project No.: 22160

Operator : CB BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date November 29, 2022	
Test Location	APC Outlet No. 1
Operator BP	

Project No.:	22160
Page	1 of 2
Probe No.:	6
Meter Box No.:	Team 1
Impinger Box No.:	12

Pitot Factor	0.853	
DGMCF	0.973	
Barometric Pressure	29.88	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	0.2521	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

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	178.5	g
WCBDA	9.6	g

Combustion Gas Concentration

Oxygen	9.10	%
Carbon Dioxide	10.72	%
Carbon Monoxide	7.1	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot 57	
Trendicator	Team 1
Control Box	CoE20094
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	22136

#4	Nozzle Measurements
1	.2520
2	.2520
3	.2525
4	.2520
Average:	.2521

Notes:

Field Data Sheet

Date: Nov 29, 2022	Plant: Covanta DYEC	Test No.: 3	M26A
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1

Point	* M26A Clock Time	* Dry Gas Meter ft^3	* Pitot Δ P "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/~~Trap~~ °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure Δ H "H_2O	* Pump Vacuum "Hg Gauge
4	0	0.92	0.81	.79	285	265	265	76	88	88	86	2	3
	5	4.89	.81	.79	286	268	266	50	214	87	86	2	3
	10	8.87	.81	.79	286	267	266	45	215	87	86	2	3.5
	15	12.85	.80	.79	286	267	266	45	214	87	86	2	3.5
	20	16.82	.79	.78	~~288~~ 285	267	265	46	213	88	86	2	3.5
	25	20.79	.81	.79	285	267	266	46	218	87	86	1.9	3.5
	30	24.74	.81	.79	286	267	266	47	221	88	87	2	3.5
	35	28.69	.80	.79	286	267	265	47	223	88	86	2	3.5
	40	32.67	.80	.79	286	267	265	48	222	89	87	2	3.5
	45	36.62	.79	.78	286	267	266	48	221	89	87	2	3.5
	50	40.57	.79	.78	286	267	265	48	222	89	87	1.9	3.5
	55	44.52	.80	.79	286	267	265	48	223	89	87	2	3.5
	60	48.51											

Traverse: 1				
Start Time: 12:52	Initial Leak Check:	0.009	cfm@ 21	"Hg
Finish Time: 13:52	Final Leak Check:	0.010	cfm@ 20	"Hg

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

Project No.: 22160

Operator : BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	M26A
Test Date November 30, 2022	
Test Location	APC Outlet No. 2
Operator BP	

Project No.:	22160
Page	1 of 2
Probe No.:	6
Meter Box No.:	TEAM 1
Impinger Box No.:	12

Pitot Factor	0.853	
DGMCF	0.973	
Barometric Pressure	29.26	"Hg
Static Pressure	-11.5	"H2O
Nozzle Size	0.2521	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

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	179.4	g
WCBDA	11.5	g

Combustion Gas Concentration

Oxygen	9.01	%
Carbon Dioxide	10.34	%
Carbon Monoxide	11.3	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot S7	
Trendicator	TEAM 1
Control Box	COE20094
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	22136

#4	Nozzle Measurements
1	.2520
2	.2520
3	.2525
4	.2520
Average:	.2521

Notes:

Field Data Sheet

Date: NOV 30, 2022	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
	*	*	*		*			*		*	*	*	*
4	0	49.775	.82	.82	262	266	264	50	85	93	91	2.1	3
	5	53.96	.82	.82	277	267	265	43	216	92	91	2.2	3
	10	58.19	.83	.81	278	266	265	44	220	92	91	2.2	3
	15	62.42	.87	.83	279	266	265	47	222	92	91	2.1	3
	20	66.62	.89	.84	280	266	265	48	223	92	91	2.1	3
	25	70.88	.85	.82	280	266	265	50	223	92	92	2.2	3
	30	75.14	.86	.83	281	266	265	50	213	92	91	2.2	3
	35	79.38	.87	.79	282	265	264	47	222	92	91	2.2	3
	40	83.51	.89	.84	282	265	264	46	223	92	91	2.0	3
	45	87.65	.89	.84	283	265	264	48	223	93	92	2.1	3
	50	91.93	.85	.82	283	265	265	48	224	93	92	2.2	3
	55	96.19	.85	.82	283	266	265	48	224	93	92	2.2	3
	60	100.48											

Traverse: 2	
Start Time: 8:40	Initial Leak Check: ~~0.007~~ .005 cfm@ ~~18.5~~ 20"Hg
Finish Time: 9:40	Final Leak Check: .005 cfm@ 17 "Hg

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

Project No.: 22160

Operator : BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	November 30, 2022
Test Location	APC Outlet No. 2
Operator	BP

Project No.:	22160
Page	1 of 2
Probe No.:	6
Meter Box No.:	TEAM 1
Impinger Box No.:	12 & 14

Pitot Factor	0.853	
DGMCF	0.973	
Barometric Pressure	29.15	"Hg
Static Pressure	-11.5	"H2O
Nozzle Size	0.2521	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

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	176.3	g
WCBDA	13.5	g

Combustion Gas Concentration

Oxygen	9.19	%
Carbon Dioxide	10.21	%
Carbon Monoxide	7.4	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot S7	
Trendicator	TEAM 1
Control Box	COE 20094
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	22136

#4	Nozzle Measurements
1	.2520
2	.2520
3	.2525
4	.2520
Average:	.2521

Notes:

Field Data Sheet

Date: NOV 30, 2022	Plant: Covanta DYEC	Test No.: 2 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
4	0	1.3	.94	.85	265	264	238	86	118	92	91	2.3	3.5
	5	5.64	.98	.87	285	267	264	60	218	92	91	2.3	3.5
*	10	~~9.95~~ 9.68	.87	.83	285	263	264	81	150	90	90	2.2	3.5
	15	~~14.06~~ 13.79	.85	.82	286	270	270	56	236	91	90	2.2	3.5
	20	~~18.33~~ 18.06	.87	.83	284	269	267	58	212	90	90	2.2	3.5
	25	~~22.63~~ 22.36	.87	.83	284	269	268	56	211	90	89	2.2	3.5
	30	~~26.88~~ 26.61	.86	.82	284	270	269	54	241	92	89	2.2	3.5
	35	~~31.08~~ 30.81	.89	.84	284	270	270	56	243	92	89	2.1	3.5
	40	~~35.29~~ 35.02	.85	.82	284	270	271	56	243	90	89	2.1	3.5
	45	~~39.55~~ 39.28	.88	.83	284	269	271	56	243	90	89	2.2	3.5
	50	~~43.80~~ 43.53	.86	.82	284	269	270	57	244	90	88	2.2	3.5
	55	~~48.03~~ 47.76	.86	.82	283	270	264	57	243	90	88	2.2	3.5
	60	52.00											

Traverse: 1	.006		
Start Time: 10:26	Initial Leak Check: ~~.006~~	cfm@ 17	"Hg
Finish Time: 12:03	Final Leak Check: .006	cfm@ 13	"Hg

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

Lost power at 10:36 DGM: 9.43. LEAK CHECK TO 9.70 - .27 dif.
Resumed testing at: 11:12

Project No.: 22160
Operator : BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	November 30, 2022
Test Location	APC Outlet No. 2
Operator	BP

Project No.:	22160
Page	1 of 2
Probe No.:	6
Meter Box No.:	TEAM1
Impinger Box No.:	14

Pitot Factor	0.853	
DGMCF	0.973	
Barometric Pressure	29.21	"Hg
Static Pressure	-11.5	"H2O
Nozzle Size	0.2521	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	177.4	g
WCBDA	12.2	g

Combustion Gas Concentration

Oxygen	8.96	%
Carbon Dioxide	10.56	%
Carbon Monoxide	7.2	ppm

Measuring Device	MII Numbers
Probe / Pitot 57	
Trendicator	TEAM 1
Control Box	CoE20094
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	22136

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

#4	Nozzle Measurements
1	.2520
2	.2520
3	.2525
4	.2520
Average:	.2521

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: Nov 30, 2022	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
4	0	52.67	.90	.85	264	267	269	82	66	88	87	2.2	3
	5	56.97	.88	.84	282	269	271	51	212	88	87	2.2	3
	10	61.27	.88	.83	282	268	270	50	245	87	86	2.2	3
	15	65.52	.91	.84	282	268	269	52	244	87	86	2.2	3
	20	69.85	.91	.84	283	269	270	54	245	89	86	2.3	3.1
	25	74.16	.92	.85	283	268	270	55	244	87	86	2.3	3.1
	30	78.45	.92	.85	284	269	269	53	241	87	86	2.2	3.1
	35	82.74	.93	.85	283	267	269	52	236	90	86	2.2	3.1
	40	87.01	.92	.85	284	~~68~~ 268	269	51	140	88	85	2.2	3.1
	45	91.27	.88	.83	284	268	269	52	211	90	86	2.2	3.1
	50	95.46	.86	.82	283	268	268	52	241	87	86	2.2	3.1
	55	99.77	.84	.81	282	268	269	54	241	87	85	2.2	3.1
	60	103.92											

Traverse: 1				
Start Time: 12:29	Initial Leak Check:	0.005	cfm@ 13	"Hg
Finish Time: 1:29	Final Leak Check:	.005	cfm@ 12	"Hg

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

Project No.: 22160

Operator : BP

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	0.979	8.33	30.40	22.07	29.83	1.00	23.8	21.68	0.0217
2	0.979	31.01	53.35	22.34	29.85	1.00	25.4	21.84	0.0218
3	0.979	53.68	75.60	21.92	29.90	1.00	26.1	21.42	0.0214
4	0.979	76.07	97.00	20.93	29.91	1.00	27.0	20.40	0.0204

* 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	0.987	3.00	23.90	20.90	29.83	1.00	23.3	20.73	0.0207
2	0.987	24.40	42.50	18.10	29.85	1.00	25.6	17.83	0.0178
3	0.987	43.70	67.00	23.30	29.90	1.00	25.8	22.98	0.0230
4	0.987	68.00	89.60	21.60	29.91	1.00	26.2	21.28	0.0213

* 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: 0.979	Operator: JG.
Date: DECEMBER 1, 2022	Barometric Pressure: "Hg	Project No: 22160
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 9A 9B

L2739113-62

PBAR = 29.83

Test 1 Start Time:	~~0832~~	Initial Leak Check	NDL	@	23	"Hg	Sample ID: 1A 1B
Test 1 End Time:	~~08~~ 0912	Final Leak Check	NDL	@	23	"Hg	Lab ID: L2739113-54

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	8.33	133	143	11	20	1.0	4.5
5	11.58	142	143	8	22	1.0	4.5
10	14.65	141	142	8	22	1.0	4.5
15	17.22	141	142	9	24	1.0	4.5
20	20.00	140	141	8	24	1.0	4.5
25	22.50	140	141	8	25	1.0	4.5
30	25.25	140	141	8	25	1.0	4.5
35	27.75	142	141	8	26	1.0	4.5
40	30.40	142	141	8	26	1.0	4.5

PBAR = 29.85

Test 2 Start Time:	0916	Initial Leak Check	NDL	@	23	"Hg	Sample ID: 2A 2B
Test 2 End Time:	0956	Final Leak Check	NDL	@	23	"Hg	Lab ID: L2739113-55

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	31.01	142	140	9	25	1.0	4.5
5	33.60	142	140	8	25	1.0	4.5
10	36.20	140	141	7	24	1.0	4.5
15	39.02	142	140	8	25	1.0	4.5
20	41.90	142	140	7	26	1.0	4.5
25	44.70	140	139	8	26	1.0	4.5
30	47.40	141	139	8	26	1.0	4.5
35	50.00	141	139	8	26	1.0	4.5
40	53.35	141	139	8	26	1.0	4.5

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC		
Plant Location: Courtice, ON	Test Condition: /	Control Box ID: M 05498
Test location: APC Outlet No. 1	DGMCF: 0.979	Operator: JG.
Date: December 1, 2022	Barometric Pressure: "Hg	Project No: 22160
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 9A 9B

L2739113 - 62

PBAR = 29.90

Test 3 Start Time: 10:00		Initial Leak Check NDL @ 23 "Hg				Sample ID: 3A, 3B	
Test 3 End Time: 10:40		Final Leak Check NDL @ 23 "Hg				Lab ID: L2739113-56	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	53.68	140	141	8	26	1.0	4.0.
5	56.45	140	140	9	26	1.0	4.0
10	59.20	140	140	8	26	1.0	4.0
15	61.82	140	140	8	26	1.0	4.0
20	64.64	142	140	8	26.	1.0	4.0
25	67.25	140	141	7	26	1.0	4.0.
30	70.00	141	140	8	27	1.0	4.0
35	72.80	140.	140	9	26	1.0	4.0
40	75.6	140	140	9	26	1.0	4.0

PBAR = 29.91

Test 4 Start Time: 10 45		Initial Leak Check NDL @ 23 "Hg				Sample ID: 4A, 4B	
Test 4 End Time: 11 25		Final Leak Check @ "Hg				Lab ID: L2739113-57	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	76.07	140	140	8	26	1.0	4.0
5	79.05	143	140	9	27	1.0	4.0
10	82.05	143.	140	9	27	1.0	4.0
15	85.0 ~~88.5~~	141	140	9	28	1.0	4.0.
20	87.5	143	140	9	27	1.0	4.0.
25	88.95	143	140	9	27	1.0	4.0
30	91.25	140	141	10	27	1.0	4.0
35	94.95	140.	141	10	27	1.0	4.0
40	97.	140	141	10	27	1.0	4.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: Vost 5
Test location: APC Outlet No. 2	DGMCF: 0.987		Operator: DM
Date: Dec 1/22	Barometric Pressure:	"Hg	Project No: 22160
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak		Field Blank Pair ID:

PBAR = 29.83

Test 1 Start Time: 827		Initial Leak Check NDL @ 14 "Hg				Sample ID: 5A/5B	
Test 1 End Time: 907		Final Leak Check NDL @ 12.5 "Hg				Lab ID: L2739113-58	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	3.0	125	140	12	22	1	1.5
5	5.5	126	140	11	23	1	1.5
10	8.0	126	140	12	23	1	2
15	10.6	126	140	11	23	1	2
20	13.3	126	140	11	23	1	2
25	15.8	125	139	11	23	1	2
30	18.6	125	140	11	23	1	2
35	21.1	125	140	11	~~23~~ 24	1	2
40	23.9	125	141	11	~~23~~ 26	1	2

PBAR = 29.85

Test 2 Start Time: 913		Initial Leak Check NDL @ 14.5 "Hg				Sample ID: 6A/6B	
Test 2 End Time: ~~943~~ 953		Final Leak Check NDL @ 15 "Hg				Lab ID: L2739113-59	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	24.4	125	140	13	27	1	3
5	26.8	126	141	13	25	1	2
10	28.6	125	139	13	25	1	2.5
15	31.4	125	140	13	25	1	2.5
20	33.9	126	139	15	25	1	2.5
25	35.6	126	139	15	25	1	2.5
30	37.5	126	138	15	26	1	2.5
35	39.5	126	139	15	26	1	2.5
40	42.5	126	139	15	26	1	2.5

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC		
Plant Location: Courtice, ON	Test Condition:	Control Box ID: VOST 5
Test location: APC Outlet No. 2	DGMCF: 0.987	Operator: [illegible]
Date: DEC 1/22	Barometric Pressure: "Hg	Project No: 22160
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 13A/13B

L2739113-66

PBAR = 29.90

Test 3 Start Time:	1001	Initial Leak Check	NDL @ 14 "Hg			Sample ID:	7A/7B
Test 3 End Time:	1041	Final Leak Check	NDL @ 14 "Hg			Lab ID:	L2739113-61

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	43.7	126	139	12	26	1	2
5	46.9	126	140	12	29	1	2
10	56.0	127	139	12	26	1	2
15	52.5	126	139	12	26	1	2
20	58.0 (56.0)	126	136	12	26	1	2
25	~~58.5~~ 58.5	126	136	12	26	1	2
30	61.5	126	136	12	26	1	2
35	64.4	126	136	12	26	1	2
40	67.0	126	137	12	26	1	2

PBAR = 29.91

Test 4 Start Time:	1050	Initial Leak Check	NDL @ 14 "Hg			Sample ID:	8A/8B
Test 4 End Time:	1130	Final Leak Check	NDL @ 13 "Hg			Lab ID:	L2739113-61

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	68.0	126	140	12	26	1	2
5	71.0	126	140	12	26	1	2
10	73.5	126	140	12	26	1	2
15	76.0	127	140	12	26	1	2
20	78.6	126	139	12	26	1	2
25	81.8	127	140	12	26	1	2
30	84.7	126	139	11	26	1	2
35	86.8	126	140	11	27	1	2
40	89.6	127	140	11	27	1	2

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	0.979	98.65	132.15	33.50	29.93	1.00	27.9	32.58	0.0326
2	0.979	32.52	64.80	32.28	29.94	1.00	27.5	31.43	0.0314
3	0.979	65.50	98.00	32.50	30.00	1.00	27.4	31.73	0.0317

* 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	0.987	90.00	121.40	31.40	29.94	1.00	25.9	30.99	0.0310
2	0.987	22.00	51.80	29.80	29.97	1.00	27.0	29.34	0.0293
3	0.987	52.20	84.10	31.90	30.00	1.00	27.0	31.44	0.0314

* 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:	DECEMBER 1, 2022
Project No.:	22160

Measuring Device	MII Number
Control Module	Mo 5498
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	98.65	140	140		10	36	1.0	4.0
5	101.00	142	140		12	26	1.0	4.0
10	103.70	141	141		10	26	1.0	4.0
15	106.35	143	141		9	27	1.0	4.0
20	109.00	143	140		8	27	1.0	4.0
25	111.96	142	141		8	27	1.0	4.0
30	114.85	141	140		8	28	1.0	4.0
35	~~118~~ 117.8	141	140		8	27	1.0	4.0
40	120.75	143	140		8	28	1.0	4.0
45	123.65	143	140		8	27	1.0	4.0
50	126.65	143	141		8	27	1.0	4.0
55	129.38	142	141		8	28	1.0	4.0
60	132.15	142	141		8	28	1.0	4.0

Start Time:	1145	
Finish Time:	1245	
Initial Leak Check:	<.01	Lpm @ 23 " Hg
Final Leak Check:	<.01	Lpm @ 23 " Hg

DGMCF:	0.979
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 1
Date:	December 1, 2022
Project No.:	22160

Measuring Device	MII Number
Control Module	M 05498
Barometer	Env Canada

Barometric Pressure: 29.94 "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	32.52	140	141		17	26	1.0	4.0
5	37.84	142	142		18	27	1.0	4.0
10	39.3	141	141		18	27	1.0	4.0
15	40.9	140	141		18	22	1.0	4.0
20	43.8	143	141		18	28	1.0	4.0
25	46.36	142	141		18	27	1.0	4.0
30	49.23	142	141		18	28	1.0	4.0
35	51.65	141	140		18	28	1.0	4.0
40	54.40	143	141		18	28	1.0	4.0
45	57.0	143	141		18	28	1.0	4.0
50	59.5	142	141		18	28	1.0	4.0
55	62.2	141	141		18	28	1.0	4.0
60	64.8	141	141		18	28	1.0	4.0

Start Time:	12:57		
Finish Time:	13:57		
Initial Leak Check:	0.01	Lpm @ 23	" Hg
Final Leak Check:		Lpm @	" Hg

DGMCF:	0.979
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.:	3
Test location:	APC Outlet No._______
Date:	December 1, 2022
Project No.:	22160

Measuring Device	MII Number
Control Module	Mo 5498
Barometer	Env Canada

Barometric Pressure: 30.0 "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	65.8	140	141		18	25	1.0	4.0
5	68.0	141	140		19	26	1.0	4.0
10	71.0	142	141		19	27	1.0	4.0
15	73.65	142	141		19	27	1.0	4.0
20	76.3	141	141		19	27	1.0	4.0
25	78.8	140	141		18	27	1.0	4.0
30	81.45	143	141		19	28	1.0	4.0
35	83.90	143	141		19	27	1.0	4.0
40	86.88	142	141		19	28	1.0	4.0
45	89.58	141	141		19	28	1.0	4.0
50	92.30	142	142		19	28	1.0	4.0
55	95.20	141	141		19	28	1.0	4.0
60	98.0	141	141		19	28	1.0	4.0

Start Time:	1418		
Finish Time:	1518		
Initial Leak Check:	<.01	Lpm @ 17	" Hg
Final Leak Check:	<.01	Lpm @	" Hg

DGMCF:	0.977
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: Jay [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:	Dec 1/22
Project No.:	22160

Measuring Device	MII Number
Control Module	COE 20018
Barometer	Env Canada

Barometric Pressure: 29.94 "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	90.0	122	142		12	25		
5	92.8	123	140		11	25		
10	95.4	122	141		12	25		
15	98.0	123	141		11	25		
20	100.6	123	140		11	25		
25	103.2	123	141		11	26		
30	106.0	123	141		11	26		
35	108.5	122	140		11	26		
40	111.0	123	140		11	26		
45	113.5	124	141		11	27		
50	116.2	125	140		12	27		
55	118.8	125	140		11	27		
60	121.4	126	139		11	27		

Start Time:	1211		
Finish Time:	1311		
Initial Leak Check:	<.01	Lpm @	12 " Hg
Final Leak Check:	<.01	Lpm @	11 " Hg

DGMCF:	0.987
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments: ALD-5

: sample @ ~0.5 lpm for 60 minutes.

Operator:

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 2
Date:	DEC 1/22
Project No.:	22160

Measuring Device	MII Number
Control Module	CUE 20018
Barometer	Env Canada

Barometric Pressure: 29.97 "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	22.0	124	142		12	27		
5	24.4	125	141		11	27		
10	27.0	125	141		11	27		
15	29.5	125	141		11	27		
20	32.0	125	141		11	27		
25	34.5	125	140		11	27		
30	37.0	126	140		12	27		
35	39.3	126	140		12	27		
40	41.9	127	141		12	27		
45	44.3	126	140		11	27		
50	46.8	127	141		11	27		
55	49.3	126	140		11	27		
60	51.9	126	141		11	27		

Start Time:	1319
Finish Time:	1419
Initial Leak Check:	<.01 Lpm @ 11 " Hg
Final Leak Check:	<.01 Lpm @ 12 " Hg

DGMCF:	0.987
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.:	3
Test location:	APC Outlet No. 2
Date:	DEC 1 /22
Project No.:	22160

Measuring Device	MII Number
Control Module	COE 20018
Barometer	Env Canada

Barometric Pressure: 30.00 "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	52.2	127	141		12	27	1	1
5	54.7	126	140		11	27	1	1
10	57.6	126	140		11	27	1	1
15	60.1	126	141		11	27	1	1
20	62.6	127	141		11	27	1	1
25	65.1	126	140		11	27	1	1
30	67.6	126	140		12	27	1	1
35	70.1	127	140		13	27	1	1
40	73.1	126	140		11	27	1	1
45	76.2	126	141		11	27	1	1
50	79.0	126	140		11	27	1	1
55	81.5	126	141		11	27	1	1
60	84.1	126	141		12	27	1	1

Start Time:	1423
Finish Time:	1523
Initial Leak Check:	<.01 Lpm @ 12 " Hg
Final Leak Check:	<.01 Lpm @ 13 " Hg

DGMCF:	0.987
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: DM

APPENDIX 10

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

L2742185

ORTECH Consulting Inc. - Sample Log

Acid Gases

Covanta

Client: Covanta
Job/Report Number: 22160
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22160-J2878

	ORTECH Sample ID 22-22158-M26A-	Sample Date	Location	Sample Description	Media	Initial Volume(ml)	Final Volume(ml)	Sample Analysis
1	1	29-Nov-22	APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	482.0	HCl, HF & Ammonia
2	2		APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	485.7	HCl, HF & Ammonia
3	3	↓	APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	483.3	HCl, HF & Ammonia
4	4	30-Nov-22	APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	502.0	HCl, HF & Ammonia
5	5		APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	479.2	HCl, HF & Ammonia
6	6	↓	APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	477.4	HCl, HF & Ammonia
7	Blank 1	29-Nov-22	APC # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	306.0	HCl, HF & Ammonia
8	Blank 2	30-Nov-22	APC # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	309.0	HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By: [signature] Date: DEC 1/22

Relinquished To: Date:

14 °C

1-Dec-22
13:15

L2742194

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

Client: Covanta
Job/Report Number: 22160
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22160-J2878

	ORTECH Sample ID 22-22160-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
1	1	NOV 30/22	1	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
2	2				PM 2.5 cyclone Rinse	Acetone	Particulate
3	3				PM 2.5 exit & connectors	Acetone	Particulate
4	4				Back up filter	filter	Particulate
5	5				Impinger Soln & rinse	Water	Particulate
	6				Secondary Filter	Filter	Particulate*
	7				Impinger Rinse	Acetone & Hexane	Particulate
6	8	NOV 30/22	2	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
7	9				PM 2.5 cyclone Rinse	Acetone	Particulate
8	10				PM 2.5 exit & connectors	Acetone	Particulate
9	11				Back up filter	filter	Particulate
10	12				Impinger Soln & rinse	Water	Particulate
	13				Secondary Filter	Filter	Particulate*
	14				Impinger Rinse	Acetone & Hexane	Particulate
11	15	NOV 30/22	3	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
12	16				PM 2.5 cyclone Rinse	Acetone	Particulate
13	17				PM 2.5 exit & connectors	Acetone	Particulate
14	18				Back up filter	filter	Particulate
15	19				Impinger Soln & rinse	Water	Particulate
	20				Secondary Filter	Filter	Particulate*
	21				Impinger Rinse	Acetone & Hexane	Particulate
16	22	NOV 29/22	1	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
17	23				PM 2.5 cyclone Rinse	Acetone	Particulate
18	24				PM 2.5 exit & connectors	Acetone	Particulate
19	25				Back up filter	filter	Particulate
20	26				Impinger Soln & rinse	Water	Particulate
	27				Secondary Filter	Filter	Particulate*
	28				Impinger Rinse	Acetone & Hexane	Particulate
21	29	NOV 29/22	2	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
22	30				PM 2.5 cyclone Rinse	Acetone	Particulate
23	31				PM 2.5 exit & connectors	Acetone	Particulate
24	32				Back up filter	Filter	Particulate
25	33				Impinger Soln & rinse	Water	Particulate
	34				Secondary Filter	Filter	Particulate*
	35				Impinger Rinse	Acetone & Hexane	Particulate

1 Dec 20
13:15
14°C

L2742194

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

Client: Covanta
Job/Report Number: 22160
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22160-J2878

	ORTECH Sample ID 22-22160-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
26	36	Nov 29/22	3	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
27	37				PM 2.5 cyclone Rinse	Acetone	Particulate
28	38				PM 2.5 exit & connectors	Acetone	Particulate
29	39				Back up filter	Filter	Particulate
30	40				Impinger Soln & rinse	Water	Particulate
	41				Secondary Filter	Filter	Particulate*
	42				Impinger Rinse	Acetone & Hexane	Particulate
31	43		Blank	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
32	44				PM 2.5 cyclone Rinse	Acetone	Particulate
33	45				PM 2.5 exit & connectors	Acetone	Particulate
34	46				Back up filter	filter	Particulate
35	47				Impinger Soln & rinse	Water	Particulate
	48				Secondary Filter	Filter	Particulate*
	49				Impinger Rinse	Acetone & Hexane	Particulate
36	50		Blank	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
37	51				PM 2.5 cyclone Rinse	Acetone	Particulate
38	52				PM 2.5 exit & connectors	Acetone	Particulate
39	53				Back up filter	Filter	Particulate
40	54				Impinger Soln & rinse	Water	Particulate
	55				Secondary Filter	Filter	Particulate*
	56				Impinger Rinse	Acetone & Hexane	Particulate

Note: *To be included in condensible particulate analysis as per US EPA Method 202.

Relinquished To: ______________________ Date: __________

Relinquished By: [signature] Date: Dec 1/22

1 Dec -22

13:15 14°C

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

L2742206

Client: Covanta
Project Number: 22160
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22160-J2878

	ORTECH Sample ID 22-22160-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
1	1	Nov 29/22	#1 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
	2				Probe Rinse Nitric	0.1N Nitric	Metals
	3				Filter	Particulate	Particulate & Metals
	4				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	5				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	6				Impinger 5-6 Rinse	8N HCl	Mercury
2	7	Nov 29/22	#1 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
	8				Probe Rinse Nitric	0.1N Nitric	Metals
	9				Filter	Particulate	Particulate & Metals
	10				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	11				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	12				Impinger 5-6 Rinse	8N HCl	Mercury
3	13	Nov 29/22	#1 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
	14				Probe Rinse Nitric	0.1N Nitric	Metals
	15				Filter	Particulate	Particulate & Metals
	16				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	17				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	18				Impinger 5-6 Rinse	8N HCl	Mercury
4	19	Nov 30/22	Blank 1	Blank 1	Probe Rinse Acetone	Acetone	Particulate & Metals
	20				Probe Rinse Nitric	0.1N Nitric	Metals
	21				Filter	Particulate	Particulate & Metals
	22				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	23				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	24				Impinger 5-6 Rinse	8N HCl	Mercury

1-Dec-22

13:15 14°C

L2742206

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

Client: Covanta
Project Number: 22160
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22160-J2878

	ORTECH Sample ID 22-22160-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
5	25	NOV 30/22	#2 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
	26				Probe Rinse Nitric	0.1N Nitric	Metals
	27				Filter	Particulate	Particulate & Metals
	28				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	29				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	30				Impinger 5-6 Rinse	8N HCl	Mercury
6	31	NOV 30/22	#2 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
	32				Probe Rinse Nitric	0.1N Nitric	Metals
	33				Filter	Particulate	Particulate & Metals
	34				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	35				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	36				Impinger 5-6 Rinse	8N HCl	Mercury
7	43	NOV 30/22	Blank 2	Blank 2	Probe Rinse Acetone	Acetone	Particulate & Metals
	44				Probe Rinse Nitric	0.1N Nitric	Metals
	45				Filter	Particulate	Particulate & Metals
	46				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	47				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	48				Impinger 5-6 Rinse	8N HCl	Mercury

Relinquished By: [signature] Date: DEC 1/22

Relinquished To: Date:

TEST 3 UNIT 2 to follow with

SVOC, VOST & ALDEHYDE SAMPLES

1 Dec 22

13:15 14 °C

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

Client: Covanta
Job/Report Number: 22160
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: 22160-J2878

ORTECH Sample ID 22-22160 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
1		Test 1 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
2		Test 1 Filter		Particulate	SVOC
3		Test 1 XAD-II Trap		N.A.	SVOC
4		Test 1 Impinger Solution		Ethylene Glycol	SVOC
5		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
6		Test 2 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
7		Test 2 Filter		Particulate	SVOC
8		Test 2 XAD-II Trap		N.A.	SVOC
9		Test 2 Impinger Solution		Ethylene Glycol	SVOC
10		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
11		Test 3 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
12		Test 3 Filter		Particulate	SVOC
13		Test 3 XAD-II Trap		N.A.	SVOC
14		Test 3 Impinger Solution		Ethylene Glycol	SVOC
15		Test 3 Impinger Rinse		Hexane/Acetone	SVOC
16		Blank 1 Probe Rinse	Blank	Hexane/Acetone	SVOC
17		Blank 1 Filter		Particulate	SVOC
18		Blank 1 XAD-II Trap		N.A.	SVOC
19		Blank 1 Impinger Solution		Ethylene Glycol	SVOC
20		Blank 1 Impinger Rinse		Hexane/Acetone	SVOC

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

Relinquished To: ____________________ Date: __________

Relinquished By: ____________________ Date: __________

ORTECH Consulting Inc. - Sample Log

Semi-Volatile Organics Samples

Covanta

Client: Covanta
Job/Report Number: 22160
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: 22160-J2878

ORTECH Sample ID 22-22160 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
21		Test 1 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
22		Test 1 Filter		Particulate	SVOC
23		Test 1 XAD-II Trap		N.A.	SVOC
24		Test 1 Impinger Solution		Ethylene Glycol	SVOC
25		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
26		Test 2 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
27		Test 2 Filter		Particulate	SVOC
28		Test 2 XAD-II Trap		N.A.	SVOC
29		Test 2 Impinger Solution		Ethylene Glycol	SVOC
30		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
31		Test 3 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
32		Test 3 Filter		Particulate	SVOC
33		Test 3 XAD-II Trap		N.A.	SVOC
34		Test 3 Impinger Solution		Ethylene Glycol	SVOC
35		Test 3 Impinger Rinse		Hexane/Acetone	SVOC
36		Blank 2 Probe Rinse	Blank	Hexane/Acetone	SVOC
37		Blank 2 Filter		Particulate	SVOC
38		Blank 2 XAD-II Trap		N.A.	SVOC
39		Blank 2 Impinger Solution		Ethylene Glycol	SVOC
40		Blank 2 Impinger Rinse		Hexane/Acetone	SVOC

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

Relinquished To: ______________________ Date: ____________

Relinquished By: ______________________ Date: ____________

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

Client: Covanata DYEC
Job/Report Number: 22160
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22160-J2878

Test Number	Test Location	ORTECH Sample ID 22-22~~158~~160-	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle (g)	Initial Weight Sample Bottle + BHA (g)	Final Weight of BHA Sample Bottle (g)	Weight of Sample Bottle BHA & H2O (g)	Weight of Sample Bottle BHA & H2O & Hexane (g)
1	APC Outlet #1	ALD-1	Dec 1, 2022	ALD-1	109.4	161.7	166.0	178.2	183.0
2	APC Outlet #1	ALD-2		ALD-2	110.4	159.8	161.6	171.3	183.0
3	APC Outlet #1	ALD-3		ALD-3	109.8	157.5	157.8	172.0	183.2
Blank 1	APC Outlet #1	Blank 1		ALD-4	109.5	161.6	161.6	178.9	183.3
1	APC Outlet #2	ALD-5		ALD-5	109.4	160.3	162.0	174.7	187.1
2	APC Outlet #2	ALD-6		ALD-6	108.7	171.5	172.0	187.3	201.9
3	APC Outlet #2	ALD-7		ALD-7	109.3	156.4	157.5	173.5	186.5
Blank 2	APC Outlet #2	Blank 2		ALD-8	109.9	157.7	157.8	~~173.5~~	~~186.5~~
				ALD 9	109.8	161.1		177.2	192.9
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				ALD 10	109.7	157.8			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: Jay Gl Date: Dec 2, 2022

Relinquished to: Date:

2-Dec-22

12.9°C 12:38

ORTECH Consulting Inc. - Sample Log
VOCs

Client: Covanta
Project Number: 22160
Received By: C Belore
Job Assigned To: ALS
Quote / PO : 22160-J2878

Test Location	Test Number	ORTECH Sample ID 22-22160-VOST-	Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	1A 1B	December 1, 2022	Tenax and Tenax/Charcoal	VOCs
	2	2A 2B		Tenax and Tenax/Charcoal	VOCs
	3	3A 3B		Tenax and Tenax/Charcoal	VOCs
	4	4A 4B		Tenax and Tenax/Charcoal	archive
	Field Blank	9A 9B		Tenax and Tenax/Charcoal	VOCs
# 2 APC Outlet	1	5A 5B	December 1, 2022	Tenax and Tenax/Charcoal	VOCs
	2	6A 6B		Tenax and Tenax/Charcoal	VOCs
	3	7A 7B		Tenax and Tenax/Charcoal	archive
	4	8A 8B		Tenax and Tenax/Charcoal	VOCs
	Field Blank	13A 13B.		Tenax and Tenax/Charcoal	VOCs
	Trip Blank	15A 15B.		Tenax and Tenax/Charcoal	VOCs

Refer to letter dated November 1, 2022 for lists of analytes.

Custody Relinquished by: [signature] Date: Dec 2, 2022

Custody Received by: Date:

2-Dec-22
13:40

15.7°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.: 22160
Date: NOV 29/22
Test No.: 1
Test Location: 4N-T1

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	283.0
After Act. Rinse:	373.1
Total TS1:	90.1

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.0
After 0.1N HNO_3 Rinse:	538.8
Total TS2:	255.8

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 029712

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:	595.9
	Final Wt:	804.0
1	Gain:	208.1
	Colour:	Clean

	Impinger #2 HNO_3/H_2O_2	
	Empty Wt:	683.2
	Initial Wt:	783.1
	Final Wt:	981.0
2	Gain:	197.9
	Colour:	clean

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	672.3
	Initial Wt:	791.7
	Final Wt:	882.2
3	Gain:	90.5
	Colour:	clean

	Impinger #4 Empty	
	Empty Wt:	605.0
	Final Wt:	612.6
4	Gain:	7.6
	Colour:	clean

CONTAINER TS4 WEIGHTS	
Empty Wt:	409.0
w/ Imp. 1-4 Soln:	1126.4
After HNO_3 Rinse:	1233.3
Total TS4:	324.3

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

	Impinger #5 $KMnO_4/H_2SO_4$	
	Empty Wt:	643.0
	Initial Wt:	757.0
	Final Wt:	761.8
5	Gain:	4.8
	Colour:	Purple

	Impinger # 6 $KMnO_4/H_2SO_4$	
	Empty Wt:	649.0
	Initial Wt:	754.8
	Final Wt:	756.3
6	Gain:	1.5
	Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	409.3
With Imp. 5&6 Soln:	630.9
After $KMnO_4$ Rinse:	747.5
After100g H_2O Rinse:	847.5
Total TS5-A:	438.2

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.3
With 150 mL DI H_2O:	431.3
After HCl Rinse:	471.6
After DI H_2O Rinse:	591.7
Total TS5-B:	308.4

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	993.6
	Final Wt:	1017.5
7	Gain:	23.9

Impinger Box ID: 3

22-22160-PM

SAMPLE IDENTIFICATION	~~21-22081-PM~~
TS1 (Probe Rinse-Acetone)	1
TS2 (Probe Rinse-0.1N HNO_3)	2
TS3 (Filter)	3
TS4 (Impinger 1-4 Sol'n-HNO_3)	4
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	5
TS5-B (Impinger 5,6 Rinse-HCl)	6

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

CWTR = 1 to 6: 610.4
WCBDA= 7: 23.9

Train Loaded By: DT/BF
Train Recovered By:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	22160
Date:	Nov 29/22
Test No.:	2
Test Location:	Unit 1

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.0
After Act. Rinse:	392.0
Total TS1:	112.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.0
After 0.1N HNO_3 Rinse:	425.6
Total TS2:	144.6

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: Q29713

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	White

Seal and label container TS3

22-22160-PM-

SAMPLE IDENTIFICATION	~~21-22081-PM~~
TS1 (Probe Rinse-Acetone)	7
TS2 (Probe Rinse-0.1N HNO_3)	8
TS3 (Filter)	9
TS4 (Impinger 1-4 Sol'n-HNO_3)	10
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	11
TS5-B (Impinger 5,6 Rinse-HCl)	12

Train Loaded By: BT
Train Recovered By: BT

Impingers 1, 2, 3, and 4

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	601.5
	Final Wt:	889.0
1	Gain:	287.5
	Colour:	CLEAR

	Impinger #2 HNO_3/H_2O_2	
	Empty Wt:	654.6
	Initial Wt:	761.3
	Final Wt:	947.6
2	Gain:	186.3
	Colour:	CLEAR

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	667.3
	Initial Wt:	774.0
	Final Wt:	815.5
3	Gain:	41.5
	Colour:	CLEAR

	Impinger #4 Empty	
	Empty Wt:	594.0
	Final Wt:	596.0
4	Gain:	2.0
	Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	409.0
w/ Imp. 1-4 Soln:	1133.2
After HNO_3 Rinse:	1273.8
Total TS4:	864.8

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

	Impinger #5 $KMnO_4/H_2SO_4$	
	Empty Wt:	641.3
	Initial Wt:	757.1
	Final Wt:	762.2
5	Gain:	5.1
	Colour:	Purple

	Impinger # 6 $KMnO_4/H_2SO_4$	
	Empty Wt:	629.5
	Initial Wt:	738.3
	Final Wt:	745.0
6	Gain:	6.7
	Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	408.5
With Imp. 5&6 Soln:	637.2
After $KMnO_4$ Rinse:	748.0
After100g H_2O Rinse:	848.0
Total TS5-A:	439.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.8
With 150 mL DI H_2O:	432.8
After HCl Rinse:	514.7
After DI H_2O Rinse:	683.8
Total TS5-B:	401.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

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

CWTR = 1 to 6:	529.1
WCBDA= 7:	24.0

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	969.7
	Final Wt:	993.7
7	Gain:	24.0

Impinger Box ID: 16

ORTECH Consulting Inc.

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 29/22
Test No.: 3
Test Location: UNIT 1

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	283.0
After Act. Rinse:	365.6
Total TS1:	82.6

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.0
After 0.1N HNO_3 Rinse:	392.2
Total TS2:	110.2

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: Q28347

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:	595.7
Final Wt:	794.6
1 Gain:	198.9
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	683.0
Initial Wt:	787.0
Final Wt:	~~794.6~~ 993.3
2 Gain:	206.3
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	671.8
Initial Wt:	782.0
Final Wt:	880.0
3 Gain:	98.0
Colour:	clear

Impinger #4 Empty	
Empty Wt:	604.0
Final Wt:	613.3
4 Gain:	9.3
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	409.2
w/ Imp. 1-4 Soln:	1128.5
After HNO_3 Rinse:	1250.6
Total TS4:	841.4

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	643.2
Initial Wt:	760.0
Final Wt:	771.5
5 Gain:	11.5
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	650.3
Initial Wt:	758.0
Final Wt:	764.0
6 Gain:	6.0
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	409.5
With Imp. 5&6 Soln:	647.9
After $KMnO_4$ Rinse:	760.8
After100g H_2O Rinse:	867.5
Total TS5-A:	458.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.0
With 150 mL DI H_2O:	433.0
After HCl Rinse:	474.6
After DI H_2O Rinse:	655.6
Total TS5-B:	372.6

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	936.8
Final Wt:	964.0
7 Gain:	27.2

Impinger Box ID: 3

22-22160-PM-

SAMPLE IDENTIFICATION	~~21-22081-PM~~
TS1 (Probe Rinse-Acetone)	13
TS2 (Probe Rinse-0.1N HNO_3)	14
TS3 (Filter)	15
TS4 (Impinger 1-4 Sol'n-HNO_3)	16
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	17
TS5-B (Impinger 5,6 Rinse-HCl)	18

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

CWTR = 1 to 6: 530.0

WCBDA= 7: 27.2

Train Loaded By: DY
Train Recovered By: ST

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 30/22
Test No.: 1
Test Location: UNIT 2

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	351.8
Total TS1:	69.8

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.0
After 0.1N HNO_3 Rinse:	407.2
Total TS2:	125.2

MARK FLUID LEVEL
SEAL AND LABEL TS2

SAMPLE IDENTIFICATION	~~21-22081-PM-~~ 22-22160-PM-
TS1 (Probe Rinse-Acetone)	25
TS2 (Probe Rinse-0.1N HNO_3)	26
TS3 (Filter)	27
TS4 (Impinger 1-4 Sol'n-HNO_3)	28
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	29
TS5-B (Impinger 5,6 Rinse-HCl)	30

Train Loaded By:
Train Recovered By: DT

Filter

Filter ID: Q29704

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:	603.0
Final Wt:	886.8
1 Gain:	283.8
Colour:	CLEAR

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	654.5
Initial Wt:	755.4
Final Wt:	951.3
2 Gain:	195.9
Colour:	CLEAR

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	667.5
Initial Wt:	778.8
Final Wt:	830.5
3 Gain:	51.7
Colour:	CLEAR

Impinger #4 Empty	
Empty Wt:	593.7
Final Wt:	599.8
4 Gain:	6.1
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	409.3
w/ Imp. 1-4 Soln:	1152.5
After HNO_3 Rinse:	1258.0
Total TS4:	848.7

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	641.0
Initial Wt:	755.0
Final Wt:	759.7
5 Gain:	4.7
Colour:	PURPLE

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	629.5
Initial Wt:	741.2
Final Wt:	743.3
6 Gain:	2.1
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	409.5
With Imp. 5&6 Soln:	639.5
After $KMnO_4$ Rinse:	753.0
After100g H_2O Rinse:	852.0
Total TS5-A:	442.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.0
With 150 mL DI H_2O:	434.8
After HCl Rinse:	437.8
After DI H_2O Rinse:	653.8
Total TS5-B:	370.8

MARK FLUID LEVEL
SEAL & LABEL TS5-B

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

CWTR = 1 to 6: 544.3 ✓

WCBDA= 7: 22.5

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	993.5
Final Wt:	1016.0
7 Gain:	~~18~~ 22.5

Impinger Box ID: 16

ORTECH Consulting Inc.

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	22160
Date:	NOV 30/22
Test No.:	2
Test Location:	UNIT 2

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.5
After Act. Rinse:	406.8
Total TS1:	

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.0
After 0.1N HNO_3 Rinse:	462.5
Total TS2:	

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 829707

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	22-22160-PM- ~~21-22081-PM-~~
TS1 (Probe Rinse-Acetone)	31
TS2 (Probe Rinse-0.1N HNO_3)	32
TS3 (Filter)	33
TS4 (Impinger 1-4 Sol'n-HNO_3)	34
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	35
TS5-B (Impinger 5,6 Rinse-HCl)	36

Train Loaded By:

Train Recovered By: DT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	596.0
Final Wt:	855.0
1 Gain:	259.0
Colour:	CLEAR

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	683.7
Initial Wt:	793.7
Final Wt:	1000.0
2 Gain:	206.3
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	672.0
Initial Wt:	774.2
Final Wt:	814.5
3 Gain:	40.3
Colour:	

Impinger #4 Empty	
Empty Wt:	604.5
Final Wt:	608.5
4 Gain:	4.0
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	408.5
w/ Imp. 1-4 Soln:	1124.3
After HNO_3 Rinse:	1226.8
Total TS4:	818.3

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	643.5
Initial Wt:	760.8
Final Wt:	762.8
5 Gain:	2.0
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	649.3
Initial Wt:	753.5
Final Wt:	753.8
6 Gain:	0.3
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	409.0
With Imp. 5&6 Soln:	728.0
After $KMnO_4$ Rinse:	744.6
After100g H_2O Rinse:	845.0
Total TS5-A:	436.0

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	280.0
With 150 mL DI H_2O:	432.5
After HCl Rinse:	475.0
After DI H_2O Rinse:	632.0
Total TS5-B:	352.0

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle

TS3- Petri Dish

TS4- 1000 ml Amber Glass Bottle

TS5-A - 1000 ml Amber Glass Bottle

TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	511.9
WCBDA= 7:	26.0

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	957.8
Final Wt:	983.8
7 Gain:	26.0

Impinger Box ID: 3

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: DEC 1/22
Test No.: 3
Test Location: UNIT 2

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	284.0
After Act. Rinse:	380.5
Total TS1:	96.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.0
After 0.1N HNO_3 Rinse:	463.0
Total TS2:	180.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 229709

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

22-22160-PM-

SAMPLE IDENTIFICATION	~~21-22081-PM-~~
TS1 (Probe Rinse-Acetone)	37
TS2 (Probe Rinse-0.1N HNO_3)	38
TS3 (Filter)	39
TS4 (Impinger 1-4 Sol'n-HNO_3)	40
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	41
TS5-B (Impinger 5,6 Rinse-HCl)	42

Train Loaded By:
Train Recovered By: BT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	603.3
Final Wt:	862.0
1 Gain:	258.7
Colour:	CLEAR

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	655.0
Initial Wt:	763.5
Final Wt:	910.9
2 Gain:	147.4
Colour:	CLEAR

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	667.7
Initial Wt:	773.8
Final Wt:	861.2
3 Gain:	87.4
Colour:	CLEAR

Impinger #4 Empty	
Empty Wt:	594.0
Final Wt:	597.3
4 Gain:	3.3
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	409.0
w/ Imp. 1-4 Soln:	1111.5
After HNO_3 Rinse:	1225.0
Total TS4:	816.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	641.8
Initial Wt:	759.3
Final Wt:	761.9
5 Gain:	2.6
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	630.2
Initial Wt:	736.4
Final Wt:	737.4
6 Gain:	1.0
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	409.0
With Imp. 5&6 Soln:	630.0
After $KMnO_4$ Rinse:	741.0
After100g H_2O Rinse:	844.5
Total TS5-A:	435.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.0
With 150 mL DI H_2O:	433.0
After HCl Rinse:	500.0
After DI H_2O Rinse:	689.5
Total TS5-B:	406.5

MARK FLUID LEVEL
SEAL & LABEL TS5-B

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

CWTR = 1 to 6: 500.4 ✓

WCBDA= 7: 23.3

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	933.5
Final Wt:	956.8
7 Gain:	23.3

Impinger Box ID: 16

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 30/22
Test No.:
Test Location: BLANK 1

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.4
After Act. Rinse:	451.0
Total TS1:	170.6

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	280.3
After 0.1N HNO_3 Rinse:	481.8
Total TS2:	201.5

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: QZ 8946

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

22-22160-PM-

SAMPLE IDENTIFICATION	~~21-22081-PM-~~
TS1 (Probe Rinse-Acetone)	19
TS2 (Probe Rinse-0.1N HNO_3)	20
TS3 (Filter)	21
TS4 (Impinger 1-4 Sol'n-HNO_3)	22
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	23
TS5-B (Impinger 5,6 Rinse-HCl)	24

Train Loaded By:
Train Recovered By: DT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Empty	
Empty Wt:	
Final Wt:	
4 Gain:	
Colour:	

CONTAINER TS4 WEIGHTS	
Empty Wt:	409.0
w/ Imp. 1-4 Soln:	632.6
After HNO_3 Rinse:	722.8
Total TS4:	313.8

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
5 Gain:	
Colour:	

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	408.5
With Imp. 5&6 Soln:	631.7
After $KMnO_4$ Rinse:	750.0
After100g H_2O Rinse:	850.5
Total TS5-A:	442.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	279.5
With 150 mL DI H_2O:	430.0
After HCl Rinse:	472.5
After DI H_2O Rinse:	606.5
Total TS5-B:	327.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

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

CWTR = 1 to 6:

WCBDA= 7:

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 30/22
Test No.:
Test Location: BLANK 2

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	283.5
After Act. Rinse:	464.5
Total TS1:	181.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.7
After 0.1N HNO_3 Rinse:	491.7
Total TS2:	210.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: Q79524

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:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Empty	
Empty Wt:	
Final Wt:	
4 Gain:	
Colour:	

CONTAINER TS4 WEIGHTS	
Empty Wt:	408.5
w/ Imp. 1-4 Soln:	622.3
After HNO_3 Rinse:	722.0
Total TS4:	313.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
5 Gain:	
Colour:	

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	409.5
With Imp. 5&6 Soln:	603.0
After $KMnO_4$ Rinse:	738.7
After100g H_2O Rinse:	841.0
Total TS5-A:	431.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.0
With 150 mL DI H_2O:	433.0
After HCl Rinse:	475.3
After DI H_2O Rinse:	588.7
Total TS5-B:	305.7

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

22-22160-PM-

SAMPLE IDENTIFICATION	~~21-22081-PM-~~
TS1 (Probe Rinse-Acetone)	43
TS2 (Probe Rinse-0.1N HNO_3)	44
TS3 (Filter)	45
TS4 (Impinger 1-4 Sol'n-HNO_3)	46
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	47
TS5-B (Impinger 5,6 Rinse-HCl)	48

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

CWTR = 1 to 6:	
WCBDA= 7:	

Train Loaded By:
Train Recovered By: DT

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
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2742206		Mississauga, ON L5J 2Y4
Date of Report	15-Dec-22		Canada
Date of Sample Receipt	1-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 5 (LL5 12-DEC-2022)

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(7 THRU 12) TEST#2 APC OUTLET #1**	**22-22160-PM-(13 THRU 18) TEST#3 APC OUTLET #1**	**22-22160-PM-(19 THRU 24) BLANK#1 APC OUTLET #1**	**22-22160-PM-(25 THRU 30) TEST#1 APC OUTLET #2**
ALS Sample ID		L2742206-1	L2742206-2	L2742206-3	L2742206-4	L2742206-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		29-Nov-22	29-Nov-22	29-Nov-22	30-Nov-22	30-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
PM via Gravimetric Analysis	**LOR**					
Method 5	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	<0.1	<0.1	0.2 J	1.1	<0.1
Acetone Particulate Matter	0.4	1.6	0.8	0.9	<0.1	0.8
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	88.8	107	81.8	170	72.1

ALS Environmental

Sample Analysis Summary Report

Sample Name		22-22160-PM-(31 THRU 36) TEST#2 APC OUTLET #2		22-22160-PM-(43 THRU 48) BLANK#2 APC OUTLET #2		22-22160-PM-(37 THRU 42) TEST#3 APC OUTLET #2		MB	
ALS Sample ID		L2742206-6		L2742206-7		L2742206-8		L2742206-MB	
Matrix		Stack		Stack		Stack		n/a	
Analysis type		Sample		Sample		Sample		Sample	
Sampling Date/Time		30-Nov-22		30-Nov-22		1-Dec-22		n/a	
Date of Receipt		1-Dec-22		1-Dec-22		2-Dec-22		n/a	
PM via Gravimetric Analysis	**LOR**								
Method 5	**mg**	**mg**		**mg**		**mg**		**mg**	
Filter Particulate Matter	0.8	0.1	J	<0.1		0.2	J	0.1	J
Acetone Particulate Matter	0.4	0.9		<0.1		0.7		<0.1	
	g	**g**		**g**		**g**		**g**	
Acetone Mass	0.02	127		181		93.8		31.3	

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#:	L2742194		Mississauga, ON L5J 2Y4
Date of Report	22-Dec-22		Canada
Date of Sample Receipt	1-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 201a (LL5 20-DEC-2022)
Sample Particulate Analysis via Gravimetric USEPA Method 202 (LL5 20-DEC-2022)

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		22-22160-M201A-1 TEST#1 APC OUTLET #1	22-22160-M201A-2 TEST#1 APC OUTLET #1	22-22160-M201A-3 TEST#1 APC OUTLET #1	22-22160-M201A-4 TEST#1 APC OUTLET #1	22-22160-M201A-(5-7) TEST#1 APC OUTLET #1
ALS Sample ID		L2742194-1	L2742194-2	L2742194-3	L2742194-4	L2742194-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Nov-22	30-Nov-22	30-Nov-22	30-Nov-22	30-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
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	0.5	0.7	0.2 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	31.5	49.1	22.2	-	-
PM via Gravimetric Analysis Method 202	LOR mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	1.0
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.6
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	241

ALS Environmental

Sample Analysis Summary Report

Sample Name		22-22160-M201A-8 TEST#2 APC OUTLET #1	22-22160-M201A-9 TEST#2 APC OUTLET #1	22-22160-M201A-10 TEST#2 APC OUTLET #1	22-22160-M201A-11 TEST#2 APC OUTLET #1	22-22160-M201A-(12-14) TEST#2 APC OUTLET #1
ALS Sample ID		L2742194-6	L2742194-7	L2742194-8	L2742194-9	L2742194-10
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Nov-22	30-Nov-22	30-Nov-22	30-Nov-22	30-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
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	<0.1	<0.1	<0.1	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	15.5	22.7	14.5	-	-
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	2.0
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.9
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	244

ALS Environmental

Sample Analysis Summary Report

Sample Name		**22-22160-M201A-15 TEST#3 APC OUTLET #1**		**22-22160-M201A-16 TEST#3 APC OUTLET #1**	**22-22160-M201A-17 TEST#3 APC OUTLET #1**	**22-22160-M201A-18 TEST#3 APC OUTLET #1**	**22-22160-M201A-(19-21) TEST#3 APC OUTLET #1**
ALS Sample ID		L2742194-11		L2742194-12	L2742194-13	L2742194-14	L2742194-15
Matrix		Stack		Stack	Stack	Stack	Stack
Analysis type		Sample		Sample	Sample	Sample	Sample
Sampling Date/Time		30-Nov-22		30-Nov-22	30-Nov-22	30-Nov-22	30-Nov-22
Date of Receipt		1-Dec-22		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
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	0.2	J	<0.1	0.5	-	-
	g	**g**		**g**	**g**	**g**	**g**
Acetone Mass	0.02	23.0		25.5	11.7	-	-
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**		**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-		-	-	-	2.3
Non-Extractable Condensable Particulates	0.4	-		-	-	-	2.9
	g	**g**		**g**	**g**	**g**	**g**
Water Mass	0.02	-		-	-	-	254

ALS Environmental

Sample Analysis Summary Report

Sample Name		22-22160-M201A-22 TEST#1 APC OUTLET #2	22-22160-M201A-23 TEST#1 APC OUTLET #2	22-22160-M201A-24 TEST#1 APC OUTLET #2	22-22160-M201A-25 TEST#1 APC OUTLET #2	22-22160-M201A-(26-28) TEST#1 APC OUTLET #2
ALS Sample ID		L2742194-16	L2742194-17	L2742194-18	L2742194-19	L2742194-20
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
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	0.8	0.3 J	<0.1	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	22.8	16.0	5.8	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.9
Non-Extractable Condensable Particulates	0.4	-	-	-	-	1.5
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	235

ALS Environmental

Sample Analysis Summary Report

Sample Name		**22-22160-M201A-29 TEST#2 APC OUTLET #2**	**22-22160-M201A-30 TEST#2 APC OUTLET #2**	**22-22160-M201A-31 TEST#2 APC OUTLET #2**	**22-22160-M201A-32 TEST#2 APC OUTLET #2**	**22-22160-M201A-(33-35) TEST#2 APC OUTLET #2**
ALS Sample ID		L2742194-21	L2742194-22	L2742194-23	L2742194-24	L2742194-25
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
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	0.7	0.3 J	0.1 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	42.5	24.5	28.4	-	-
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.5
Non-Extractable Condensable Particulates	0.4	-	-	-	-	2.7
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	230

ALS Environmental

Sample Analysis Summary Report

Sample Name		**22-22160-M201A-36 TEST#3 APC OUTLET #2**	**22-22160-M201A-37 TEST#3 APC OUTLET #2**	**22-22160-M201A-38 TEST#3 APC OUTLET #2**	**22-22160-M201A-39 TEST#3 APC OUTLET #2**	**22-22160-M201A-(40-42) TEST#3 APC OUTLET #2**
ALS Sample ID		L2742194-26	L2742194-27	L2742194-28	L2742194-29	L2742194-30
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
PM via Gravimetric Analysis Method 201a	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	0.2 J	-
Acetone Particulate Matter	0.4	0.5	<0.1	<0.1	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	35.6	33.2	23.7	-	-
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	2.2
Non-Extractable Condensable Particulates	0.4	-	-	-	-	2.7
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	230

ALS Environmental

Sample Analysis Summary Report

Sample Name		22-22160-M201A-43 BLANK#1 APC OUTLET #1	22-22160-M201A-44 BLANK#1 APC OUTLET #1	22-22160-M201A-45 BLANK#1 APC OUTLET #1	22-22160-M201A-46 BLANK#1 APC OUTLET #1	22-22160-M201A-(47-49) BLANK#1 APC OUTLET #1
ALS Sample ID		L2742194-31	L2742194-32	L2742194-33	L2742194-34	L2742194-35
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Nov-22	30-Nov-22	30-Nov-22	30-Nov-22	30-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
PM via Gravimetric Analysis Method 201a	LOR mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	0.3 J	-
Acetone Particulate Matter	0.4	<0.1	0.1 J	0.1 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	24.7	19.6	24.4	-	-
PM via Gravimetric Analysis Method 202	LOR mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	0.8
Non-Extractable Condensable Particulates	0.4	-	-	-	-	0.2 J
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	143

ALS Environmental

Sample Analysis Summary Report

Sample Name		**22-22160-M201A-50 BLANK#2 APC OUTLET #2**		**22-22160-M201A-51 BLANK#2 APC OUTLET #2**		**22-22160-M201A-52 BLANK#2 APC OUTLET #2**	**22-22160-M201A-53 BLANK#2 APC OUTLET #2**	**22-22160-M201A-(54-56) BLANK#2 APC OUTLET #2**	
ALS Sample ID		L2742194-36		L2742194-37		L2742194-38	L2742194-39	L2742194-40	
Matrix		Stack		Stack		Stack	Stack	Stack	
Analysis type		Sample		Sample		Sample	Sample	Sample	
Sampling Date/Time		29-Nov-22		29-Nov-22		29-Nov-22	29-Nov-22	29-Nov-22	
Date of Receipt		1-Dec-22		1-Dec-22		1-Dec-22	1-Dec-22	1-Dec-22	
PM via Gravimetric Analysis	**LOR**								
Method 201a	**mg**	**mg**		**mg**		**mg**	**mg**	**mg**	
Filter Particulate Matter	0.8	-		-		-	0.5	-	
Acetone Particulate Matter	0.4	0.3	J	<0.1	J	<0.1	-	-	
	g	**g**		**g**		**g**	**g**	**g**	
Acetone Mass	0.02	34.8		23.7		19.2	-	-	
PM via Gravimetric Analysis	**LOR**								
Method 202	**mg**	**mg**		**mg**		**mg**	**mg**	**mg**	
Extractable Condensable Particulates	0.4	-		-		-	-	0.4	J
Non-Extractable Condensable Particulates	0.4	-		-		-	-	1.8	
	g	**g**		**g**		**g**	**g**	**g**	
Water Mass	0.02	-		-		-	-	135	

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Sample Analysis Summary Report

Sample Name		MB1		MB2
ALS Sample ID		L2742194-MB		L2742194-MB
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	31.6		31.6
PM via Gravimetric Analysis	**LOR**			
Method 202	**mg**	**mg**		**mg**
Extractable Condensable Particulates	0.4	0.3	J	-
Non-Extractable Condensable Particulates	0.4	0.3	J	-
	g	**g**		**g**
Water Mass	0.02	101		-

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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#:	L2742185		Mississauga, ON L5J 2Y4
Date of Report	12-Dec-22		Canada
Date of Sample Receipt	1-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS:

F as HF Anion Analyzed via Ion Chromatography USEPA Method 26/26A (GN 2-Dec-22)
Cl as HCl Anion Analyzed via Ion Chromatography USEPA Method 26/26A (GN 2-Dec-22)
Ammonia, Total (as NH_3) via Ion Chromatography USEPA Method CTM-027 (GN 2-Dec-22)

LOR = Limit of Reporting
MB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: 90-110%)
MS = Matrix Spike Sample (limits: 90-110%, NH_3: 85-115%)
RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)

Certified by: L. Wrona

Lynne Wrona
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	**22-22160-M26A-1 APC OUTLET#1**	**22-22160-M26A-2 APC OUTLET#1**	**22-22160-M26A-3 APC OUTLET#1**	**22-22160-M26A-4 APC OUTLET#2**	**22-22160-M26A-5 APC OUTLET#2**
ALS Sample ID	L2742185-1	L2742185-2	L2742185-3	L2742185-4	L2742185-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	29-Nov-22	29-Nov-22	29-Nov-22	30-Nov-22	30-Nov-22
Date of Receipt	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.165	<0.165	<0.165	<0.171	<0.165
Analysis 1	<0.165	<0.165	<0.165	<0.171	<0.165
Analysis 2	<0.165	<0.165	<0.165	<0.171	<0.165
Total Cl^- as HCl (ave)	5.29	4.34	3.57	4.36	6.20
Analysis 1	5.28	4.34	3.57	4.36	6.19
Analysis 2	5.30	4.34	3.56	4.37	6.20
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**mg**	**mg**
Total Ammonia as NH_3	1.57	1.71	1.73	1.61	1.18

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Sample Analysis Summary Report

Sample Name	**22-22160-M26A-6 APC OUTLET#2**	**22-22160-M26A-BLANK1 APC OUTLET#1**	**22-22160-M26A-BLANK2 APC OUTLET#2**
ALS Sample ID	L2742185-6	L2742185-7	L2742185-8
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	30-Nov-22	29-Nov-22	30-Nov-22
Date of Receipt	1-Dec-22	1-Dec-22	1-Dec-22
Ion Chromatography Analysis			
USEPA Method 26/26A	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.163	<0.105	<0.107
Analysis 1	<0.163	<0.105	<0.107
Analysis 2	<0.163	<0.105	<0.107
Total Cl^- as HCl (ave)	5.01	<0.154	<0.157
Analysis 1	5.01	<0.154	<0.157
Analysis 2	5.01	<0.154	<0.157
Ion Chromatography Analysis			
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**
Total Ammonia as NH_3	1.22	<0.283	<0.288

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Sample QC Summary Report

Sample Name	MB	LCS	LCS
ALS Sample ID	MB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	n/a	n/a	n/a
Date of Receipt	n/a	n/a	n/a
Ion Chromatography Analysis			
USEPA Method 26/26A	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	<0.00165	0.0557	104%
Analysis 1	<0.00165	0.0559	
Analysis 2	<0.00165	0.0556	
Total Cl^- as HCl (ave)	<0.00241	0.0822	104%
Analysis 1	<0.00241	0.0823	
Analysis 2	<0.00241	0.0821	
Ion Chromatography Analysis			
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	<0.00472	0.0506	107%

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Sample QC Summary Report

Sample Name	22-22160-M26A-1 APC OUTLET#1	22-22160-M26A-1 APC OUTLET#1	22-22160-M26A-1 APC OUTLET#1	22-22160-M26A-1 APC OUTLET#1
ALS Sample ID	L2742185-1	L2742185-1DUP	L2742185-1MS	L2742185-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22
Date of Receipt	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
Ion Chromatography Analysis				
USEPA Method 26/26A	**mg**	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	<0.165	<0.165	5.36	102%
Analysis 1	<0.165	<0.165	5.35	
Analysis 2	<0.165	<0.165	5.36	
Total Cl^- as HCl (ave)	5.29	5.30	13.4	105%
Analysis 1	5.28	5.30	13.4	
Analysis 2	5.30	5.30	13.4	
Ion Chromatography Analysis				
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	1.57	1.55	6.16	101%

ALS Environmental
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Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2742206		
Date of Report	16-Dec-22		
Date of Sample Receipt	2-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS:

Sample Preparation via USEPA Method 29 (KC11 14-Dec-2022)
Mercury Analysis via CVAA using Method USEPA 7470A (KC11 15-Dec-2022)

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
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(7 THRU 12) TEST#2 APC OUTLET #1**	**22-22160-PM-(13 THRU 18) TEST#3 APC OUTLET #1**	**22-22160-PM-(19 THRU 24) BLANK#1 APC OUTLET #1**	**22-22160-PM-(25 THRU 30) TEST#1 APC OUTLET #2**
ALS Sample ID		L2742206-1	L2742206-2	L2742206-3	L2742206-4	L2742206-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		29-Nov-22	29-Nov-22	29-Nov-22	30-Nov-22	30-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
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	<0.405	<0.425	<0.4125	<0.15	<0.415
Analytical Fraction 3B	0.025	<0.0225	<0.0225	<0.0225	<0.0225	<0.0225
Analytical Fraction 3C	0.25	<0.25	<0.25	<0.25	<0.25	<0.25

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Sample Analysis Summary Report

Sample Name		22-22160-PM-(31 THRU 36) TEST#2 APC OUTLET #2	22-22160-PM-(43 THRU 48) BLANK#2 APC OUTLET #2	22-22160-PM-(37 THRU 42) TEST#3 APC OUTLET #2
ALS Sample ID		L2742206-6	L2742206-7	L2742206-8
Matrix		Stack	Stack	Stack
Analysis type		Sample	Sample	Sample
Sampling Date/Time		30-Nov-22	30-Nov-22	1-Dec-22
Date of Receipt		1-Dec-22	1-Dec-22	2-Dec-22
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	<0.4	<0.15	<0.4
Analytical Fraction 3B	0.025	<0.0225	<0.0225	<0.0225
Analytical Fraction 3C	0.25	<0.25	<0.25	<0.25

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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	0.298	99%	0.291	97%
Analytical Fraction 2B	0.050	<0.05	0.949	95%	0.931	93%
Analytical Fraction 3B	0.025	<0.025	0.467	93%	0.464	93%
Analytical Fraction 3C	0.25	<0.25	4.77	96%	4.83	97%

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Sample QC Summary Report

Sample Name		**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**
ALS Sample ID		L2742206-1	L2742206-1DUP	L2742206-1MS	L2742206-1MS	L2742206-1MSD	L2742206-1MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date/Time		29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
Mercury via CVAA	**LOR**						
Method 29	**ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Analytical Fraction 1B	0.015	<0.015	<0.015	0.286	95%	0.285	94%
Analytical Fraction 2B	0.050	<0.405	<0.405	7.82	95%	7.54	91%
Analytical Fraction 3B	0.025	<0.0225	<0.0225	0.400	89%	0.402	89%
Analytical Fraction 3C	0.250	<0.25	<0.25	4.80	95%	4.87	96%

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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#:	L2742206		Mississauga, ON L5J 2Y4
Date of Report	22-Dec-22		Canada
Date of Sample Receipt	1-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS:

Metals analysed via ICP-MS Method USEPA 6020B (SA 16-Dec-22)
Sample Preparation via USEPA Method 29 (KC11 14-Dec-11)

ANALYST COMMENTS:

Cr, Cu, Mo, and Ni observed in the method blank (MB) at varying levels above their LORs. These analytes were not observed in the reagent blank (RB), indicating they likely represent the contribution of the filter matrix itself. Sample data within a factor of 5x these levels are expected to be biased. **PE 22-Dec-22**

LCB = Laboratory Control Blank
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(7 THRU 12) TEST#2 APC OUTLET #1**	**22-22160-PM-(13 THRU 18) TEST#3 APC OUTLET #1**	**22-22160-PM-(19 THRU 24) BLANK#1 APC OUTLET #1**	**22-22160-PM-(25 THRU 30) TEST#1 APC OUTLET #2**	**22-22160-PM-(31 THRU 36) TEST#2 APC OUTLET #2**
ALS Sample ID		L2742206-1	L2742206-2	L2742206-3	L2742206-4	L2742206-5	L2742206-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		29-Nov-22	29-Nov-22	29-Nov-22	30-Nov-22	30-Nov-22	30-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Front Half HF Fraction 1A							
Antimony	0.2	<	<	<	<	<	<
Arsenic	1	<	<	<	<	<	<
Barium	5	6.68	5.98	6.68	6.41	<	5.11
Beryllium	0.2	<	<	<	<	<	<
Cadmium	0.1	0.141	0.510	0.153	<	0.120	0.114
Chromium	1	4.61	4.85	2.76	2.27	2.93	2.78
Cobalt	0.2	<	0.573	<	<	<	<
Copper	1	7.59	7.29	8.59	7.68	7.58	6.60
Lead	0.5	0.606	0.717	0.654	<	0.630	<
Molybdenum	0.2	35.2	35.0	25.1	23.7	33.9	34.2
Nickel	0.2	8.62	4.25	3.43	2.72	4.14	4.70
Selenium	2	<	<	<	<	<	<
Silver	0.2	<	<	<	<	<	<
Thallium	0.2	<	<	<	<	<	<
Vanadium	1	<	<	<	<	<	<
Zinc	6	13.2	13.9	11.5	6.14	13.5	10.2
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	<	<	<	<
Arsenic	0.2	<	<	<	<	<	<
Barium	0.5	0.782	0.848	0.771	<	0.545	0.635
Beryllium	0.1	<	<	<	<	<	<
Cadmium	0.05	<	<	0.0540	<	<	<
Chromium	0.15	0.758	2.61	1.98	0.650	1.07	0.437
Cobalt	0.1	0.123	0.113	<	<	<	<
Copper	0.3	7.67	1.98	1.56	0.578	1.97	2.38
Lead	0.05	0.324	0.471	0.317	0.345	0.191	0.227
Molybdenum	0.1	<	<	0.102	<	<	<
Nickel	0.1	0.947	2.39	1.58	0.327	1.31	0.501
Selenium	1	<	<	<	<	<	<
Silver	0.1	<	<	<	<	<	<
Thallium	0.05	<	<	<	<	<	<
Vanadium	0.1	0.125	0.177	0.129	<	<	<
Zinc	3	6.79	6.05	11.0	<	4.94	6.09

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Sample Analysis Summary Report

Sample Name		**22-22160-PM-(43 THRU 48) BLANK#2 APC OUTLET #2**	**22-22160-PM-(37 THRU 42) TEST#3 APC OUTLET #2**	**MB**
ALS Sample ID		L2742206-7	L2742206-8	L2742206-MB
Matrix		Stack	Stack	n/a
Analysis Type		Sample	Sample	Sample
Sampling Date		30-Nov-22	1-Dec-22	n/a
Date of Receipt		1-Dec-22	2-Dec-22	n/a
Multi-Metals via ICP-MS	**LOR**			
	ug	**ug**	**ug**	**ug**
Front Half HF Fraction 1A				
Antimony	0.2	<	0.231	<
Arsenic	1	<	<	<
Barium	5	<	5.56	<
Beryllium	0.2	<	<	<
Cadmium	0.1	<	0.150	<
Chromium	1	2.21	3.25	3.14
Cobalt	0.2	<	<	<
Copper	1	6.80	7.41	5.45
Lead	0.5	<	0.594	<
Molybdenum	0.2	32.8	35.4	36.5
Nickel	0.2	1.07	3.05	1.17
Selenium	2	<	<	<
Silver	0.2	<	<	<
Thallium	0.2	<	<	<
Vanadium	1	<	<	<
Zinc	6	<	13.8	<
Back Half (HNO3 / H2O2) Fraction 2A				
Antimony	0.1	0.254	<	-
Arsenic	0.2	<	<	-
Barium	0.5	0.507	0.662	-
Beryllium	0.1	<	<	-
Cadmium	0.05	<	<	-
Chromium	0.15	0.471	1.33	-
Cobalt	0.1	<	<	-
Copper	0.3	1.47	2.02	-
Lead	0.05	0.200	0.426	-
Molybdenum	0.1	<	<	-
Nickel	0.1	0.339	1.14	-
Selenium	1	<	<	-
Silver	0.1	<	<	-
Thallium	0.05	<	<	-
Vanadium	0.1	<	<	-
Zinc	3	<	10.4	-

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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	<	11.6	96	11.4	94
Arsenic	1	<	61.0	102	61.2	102
Barium	5	<	63.8	106	62.1	104
Beryllium	0.2	<	63.3	105	63.6	106
Cadmium	0.1	<	29.6	99	29.8	99
Chromium	1	<	63.3	105	62.5	104
Cobalt	0.2	<	62.4	104	62.0	103
Copper	1	<	63.9	106	64.3	107
Lead	0.5	<	58.6	98	59.3	99
Molybdenum	0.2	<	30.3	100	30.1	100
Nickel	0.2	<	63.0	105	62.6	104
Selenium	2	<	60.3	100	59.3	99
Silver	0.2	<	30.6	102	30.3	101
Thallium	0.2	<	58.8	98	58.1	97
Vanadium	1	<	62.6	104	62.3	104
Zinc	6	<	123	102	126	105
Back Half (HNO3 / H2O2) Fraction 2A						
Antimony	0.1	<	5.22	87	5.85	97
Arsenic	0.2	<	30.3	101	33.0	110
Barium	0.5	<	30.1	100	33.2	111
Beryllium	0.1	<	29.6	99	32.9	110
Cadmium	0.05	<	14.6	97	15.8	105
Chromium	0.15	<	32.5	108	35.4	118
Cobalt	0.1	<	31.9	106	34.6	115
Copper	0.3	<	32.4	108	35.3	118
Lead	0.05	<	27.5	92	30.0	100
Molybdenum	0.1	<	14.1	94	15.8	105
Nickel	0.1	<	32.3	107	35.2	117
Selenium	1	<	27.0	90	28.0	93
Silver	0.1	<	14.1	94	15.7	104
Thallium	0.05	<	27.2	91	30.1	100
Vanadium	0.1	<	32.0	107	34.7	116
Zinc	3	<	61.3	102	67.9	113

ALS Environmental

Sample QC Summary Report

Sample Name		**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**	**22-22160-PM-(1 THRU 6) TEST#1 APC OUTLET #1**
ALS Sample ID		L2742206-1	L2742206-1	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		29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22	29-Nov-22
Date of Receipt		1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22	1-Dec-22
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A							
Antimony	0.2	<	<	23.3	96	23.0	95
Arsenic	1	<	<	123	103	124	103
Barium	5	6.68	6.75	126	99	125	99
Beryllium	0.2	<	<	126	105	126	105
Cadmium	0.1	0.141	0.141	58.7	98	59.0	98
Chromium	1	4.61	4.41	128	103	130	104
Cobalt	0.2	<	<	121	101	122	102
Copper	1	7.59	7.60	128	100	129	101
Lead	0.5	0.606	0.600	110	91	111	92
Molybdenum	0.2	35.2	34.9	96.6	102	95.7	101
Nickel	0.2	8.62	8.78	129	100	130	101
Selenium	2	<	<	106	88	110	92
Silver	0.2	<	<	57.5	96	56.7	95
Thallium	0.2	<	<	107	89	109	91
Vanadium	1	<	<	126	105	126	105
Zinc	6	13.2	13.7	257	101	259	102
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	11.0	91	10.9	91
Arsenic	0.2	<	<	63.9	106	62.0	103
Barium	0.5	0.782	0.762	63.6	105	62.1	102
Beryllium	0.1	<	<	65.7	110	62.7	105
Cadmium	0.05	<	<	29.7	99	29.7	99
Chromium	0.15	0.758	0.809	69.0	114	67.6	111
Cobalt	0.1	0.123	0.102	67.0	112	66.2	110
Copper	0.3	7.67	5.74	73.3	109	72.5	108
Lead	0.05	0.324	0.321	57.4	95	56.6	94
Molybdenum	0.1	<	<	29.9	100	29.8	99
Nickel	0.1	0.947	0.914	68.2	112	68.0	112
Selenium	1	<	<	53.0	88	53.9	89
Silver	0.1	<	<	29.2	97	29.2	97
Thallium	0.05	<	<	58.3	97	57.1	95
Vanadium	0.1	0.125	<	67.8	113	66.5	111
Zinc	3	6.79	6.66	136	108	131	104

APPENDIX 13

Particle Size Distribution Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 30/22

Test No.: 1
Test Location: UNIT 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

Back-Up Filter

Filter ID: QZ9627

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1	Knock Out
Empty Wt:	516.5
Final Wt:	697.3
1 Gain:	180.8
Colour:	CLEAR

Impinger #2	Empty
Empty Wt:	649.5
Final Wt:	649.5
2 Gain:	—
Colour:	—

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	556.9
Initial Wt:	654.9
Final Wt:	649.6
3 Gain:	-5.3
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	1002.1
Final Wt:	1013.1
4 Gain:	11.0
% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no goin purge is not required.*

Purge On: 11:10
Purge Off: 12:10

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

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:	175.5
WCBDA=4:	11.0

SAMPLE IDENTIFICATION	22-22160-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: DT/BU
Train Recovered By: BU/DT

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ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NV 30/22

Test No.: 2
Test Location: UNIT 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

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

Mark Fluid Level and
Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top

CONTAINER TS3

Mark Fluid Level and
Seal and label container TS3

Back-Up Filter

Filter ID: 229629

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	490.5
	Final Wt:	654.8
1	Gain:	164.3
	Colour:	CLEAR

	Impinger #2 Empty	
	Empty Wt:	647.5
	Final Wt:	649.5
2	Gain:	—
	Colour:	—

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	647.0
	Initial Wt:	741.9
	Final Wt:	740.7
3	Gain:	-1.2
	Colour:	CLEAR

	Impinger #4 Silica Gel	
	Initial Wt:	965.7
	Final Wt:	975.0
4	Gain:	9.3
	% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no goin purge is not required.*

Purge On:	14:50
Purge Off:	15:50

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

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

7

CWTR=1+2+3:	163.1
WCBDA=4:	9.3

SAMPLE IDENTIFICATION	22-22160-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: DU
Train Recovered By: DT/DU

ORTECH Consulting Inc.

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 30/22

Test No.: 3
Test Location: UNIT 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

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

Mark Fluid Level and
Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top

CONTAINER TS3

Mark Fluid Level and
Seal and label container TS3

Back-Up Filter

Filter ID: 229630

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	516.5
	Final Wt:	677.5
1	Gain:	161.0
	Colour:	CLEAR

	Impinger #2 Empty	
	Empty Wt:	649.5
	Final Wt:	649.5
2	Gain:	—
	Colour:	—

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	556.9
	Initial Wt:	649.6
	Final Wt:	648.6
3	Gain:	-1.0
	Colour:	CLEAR

	Impinger #4 Silica Gel	
	Initial Wt:	1013.1
	Final Wt:	1022.6
4	Gain:	9.5
	% 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: 17:15
Purge Off: 18:15

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

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

11

CWTR=1+2+3:	160.0
WCBDA=4:	9.5

SAMPLE IDENTIFICATION	22-22160-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_2$0 and rinse)	19
TS6 (Secondary Filter)	20
TS7 (Acetone / Hexane rinse)	21

Train Loaded By: AU/DT
Train Recovered By: DT/AU

ORTECH Consulting Inc.

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 29/22

Test No.: 1
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3

Back-Up Filter

Filter ID: QZ9624

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	490.7
	Final Wt:	639.5
1	Gain:	148.8
	Colour:	CLEAR

	Impinger #2 Empty	
	Empty Wt:	649.8
	Final Wt:	649.5
2	Gain:	-0.3
	Colour:	—

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	641.0
	Initial Wt:	746.2
	Final Wt:	743.7
3	Gain:	-2.5
	Colour:	CLEAR

	Impinger #4 Silica Gel	
	Initial Wt:	944.3
	Final Wt:	954.3
4	Gain:	10.0
	% Spent:	—

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	11:45
Purge Off:	12:45

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

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:	146.0
WCBDA=4:	10.0

SAMPLE IDENTIFICATION	22-22160-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: DT/DU

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 29/22

Test No.: 2
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

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

Mark Fluid Level and
Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top

CONTAINER TS3

Mark Fluid Level and
Seal and label container TS3

Back-Up Filter

Filter ID: QZ 9626

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	516.4
Final Wt:	662.4
1 Gain:	146.0
Colour:	CLEAR

Impinger #2 Empty	
Empty Wt:	649.9
Final Wt:	649.5
2 Gain:	-0.4
Colour:	—

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	556.9
Initial Wt:	656.6
Final Wt:	654.9
3 Gain:	-1.7
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	994.8
Final Wt:	1002.1
4 Gain:	7.3
% 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: 15:35
Purge Off: 16:35

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

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:	143.9
WCBDA=4:	7.3

SAMPLE IDENTIFICATION	22-22160-M201A-
TS1 (Part. > 10)	~~28~~ 29
TS2 (Part. > 2.5)	~~31~~ 30
TS3 (Part. < 2.5)	~~32~~ 31
TS4 (Back Up Filter, <2.5)	~~33~~ 32
TS5 (Imp 2 $H_2$0 and rinse)	~~34~~ ~~34~~ 33
TS6 (Secondary Filter)	~~35~~ 34
TS7 (Acetone / Hexane rinse)	35

Train Loaded By: DU
Train Recovered By: DT/DU

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ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 29/22

Test No.: 3
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem
CONTAINER TS1
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
Mark Fluid Level and Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top
CONTAINER TS3
Mark Fluid Level and Seal and label container TS3

Back-Up Filter

Filter ID: QZ 9625

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1	Knock Out
Empty Wt:	490.7
Final Wt:	654.2
1 Gain:	163.5
Colour:	CLEAR

Impinger #2	Empty
Empty Wt:	649.5
Final Wt:	649.5
2 Gain:	0
Colour:	—

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	647.0
Initial Wt:	743.7
Final Wt:	741.9
3 Gain:	-1.8
Colour:	CLEAR

Impinger #4	Silica Gel
Initial Wt:	954.3
Final Wt:	965.7
4 Gain:	11.4
% 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:	18:30
Purge Off:	19:30

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

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:	161.7
WCBDA=4:	11.4

SAMPLE IDENTIFICATION	22-22160-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: JT/BU
Train Recovered By: BU/DT

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ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 30/22

Test No.: BLANK
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3

Back-Up Filter

Filter ID: QZ9288

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	
	Final Wt:	
1	Gain:	
	Colour:	

	Impinger #2 Empty	
	Empty Wt:	
	Final Wt:	
2	Gain:	
	Colour:	

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
3	Gain:	
	Colour:	

	Impinger #4 Silica Gel	
	Initial Wt:	
	Final Wt:	
4	Gain:	
	% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)

** if there is no gain purge is not required.*

Purge On:	
Purge Off:	

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

CONTAINER TS5

Mark Fluid Level and Seal and Label Container

CONTAINER TS6

Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3:	
WCBDA=4:	

SAMPLE IDENTIFICATION	22-22160-M201A-
TS1 (Part. > 10)	43
TS2 (Part. > 2.5)	44
TS3 (Part. < 2.5)	45
TS4 (Back Up Filter, <2.5)	46
TS5 (Imp 2 $H_2$0 and rinse)	47
TS6 (Secondary Filter)	48
TS7 (Acetone / Hexane rinse)	49

Train Loaded By: DJ
Train Recovered By:

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22160
Date: NOV 10 / 22

Test No.: BLANK 2
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3

Back-Up Filter

Filter ID: RZ9623

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 Empty	
Empty Wt:	
Final Wt:	
2 Gain:	
Colour:	

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	
% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	
Purge Off:	

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3:	
WCBDA=4:	

SAMPLE IDENTIFICATION	22-22160-M201A-
TS1 (Part. > 10)	S0
TS2 (Part. > 2.5)	S1
TS3 (Part. < 2.5)	S2
TS4 (Back Up Filter, <2.5)	S3
TS5 (Imp 2 H_2O and rinse)	S4
TS6 (Secondary Filter)	S5
TS7 (Acetone / Hexane rinse)	S6

Train Loaded By: DT
Train Recovered By:

APPENDIX 14

SVOC Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22160
Sample Batch No.: 22-22160-SVOC-

Test No.: 1
Test Date: DEC1/22
Test Location: UNIT 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:	408.0
After Acetone/ Hexane Rinse:	662.0
Total TS1:	254.0

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

CONTAINER TS3

Initial Wt:	367.0
Final Wt:	372.2
Gain:	5.2
Colour:	WHITE

1

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 4

Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	529.5
Final Wt:	1095.5
Gain:	566.0
Colour:	CLEAR

2

Impinger #2 Ethylene Glycol	
Empty Wt:	656.5
Initial Wt:	757.8
Final Wt:	861.8
Gain:	104.0
Colour:	CLEAR

3

Impinger #3 Empty	
Empty Wt:	556.8
Final Wt:	556.8
Gain:	0
Colour:	—

4

Container TS4 Weights	
Empty Wt:	406.0
With Imp Soln:	1167.5
After ~100g H_2O Rinse:	1277.5
Total TS4:	871.5

Sample ID 5

Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	406.0
After Acetone/ Hexane Rinse:	602.5
Total TS5:	196.5

5

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	963.7
Final Wt:	977.1
Gain:	13.4
% Spent:	

Impinger Box ID: 13

CWTR = 1 + 2 + 3 + 4:	675.2 ✓
WCBDA=5:	~~14.4~~ 13.4

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	5
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	212170
Hexane Batch No.:	106335
Acetone Batch No.:	106906

Train Loaded By: DT
Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22160
Sample Batch No.: 22-22160-SVOC-

Test No.: 2
Test Date: DEC 1/22
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:	407.0
After Acetone/ Hexane Rinse:	580.0
Total TS1:	173.0

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 7
Filter
CONTAINER TS2

Colour:	WHITE

FOLD IN FOIL
SEAL AND LABEL CONTAINER TS2

Sample ID 8
XAD-II Trap
CONTAINER TS3

1

Initial Wt:	391.0
Final Wt:	394.0
Gain:	3.0
Colour:	WHITE

SEAL TRAP
WRAP IN FOIL
LABEL AS CONTAINER TS3

Sample ID 9
Impingers 1, 2 & 3
CONTAINER TS4

2

Impinger #1 Empty	
Empty Wt:	502.3
Final Wt:	1091.3
Gain:	589.0
Colour:	CLEAR

3

Impinger #2 Ethylene Glycol	
Empty Wt:	654.6
Initial Wt:	753.0
Final Wt:	824.2
Gain:	71.2
Colour:	CLEAR

4

Impinger #3 Empty	
Empty Wt:	544.5
Final Wt:	544.5
Gain:	—
Colour:	—

Container TS4 Weights	
Empty Wt:	408.0
With Imp Soln:	1154.0
After ~100g H_2O Rinse:	1257.0
Total TS4:	849.0

Sample ID 10
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS5

Empty Wt:	406.0
After Acetone/ Hexane Rinse:	595.1
Total TS5:	189.1

Impinger 4
Silica Gel
CONTAINER TS6 (Impinger)

5

Initial Wt:	944.5
Final Wt:	957.5
Gain:	13.0
% Spent:	

Impinger Box ID: 6

CWTR = 1 + 2 + 3 + 4:	663.2
WCBDA=5:	13.0

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	8
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	212170
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: BP
Train Recovered By: DT

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22160
Sample Batch No.: 22-22160-SVOC-

Test No.: 3
Test Date: DEC 2/22
Test Location: UNIT 1

Sample ID 11

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	408.0
After Acetone/ Hexane Rinse:	722.3
Total TS1:	314.3

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 12

Filter

CONTAINER TS2

Colour:	WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 13

XAD-II Trap

CONTAINER TS3

Initial Wt:	356.0
Final Wt:	361.8
1 Gain:	5.8
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 14

Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	611.9
Final Wt:	1144.5
2 Gain:	532.6
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	534.2
Initial Wt:	633.3
Final Wt:	789.7
3 Gain:	156.4
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	529.9
Final Wt:	529.9
4 Gain:	—
Colour:	—

Container TS4 Weights	
Empty Wt:	409.5
With Imp Soln:	1188.0
After ~100g H_2O Rinse:	1297.5
Total TS4:	888.0

Sample ID 15

Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	408.4
After Acetone/ Hexane Rinse:	640.7
Total TS5:	232.3

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	981.8
Final Wt:	994.8
5 Gain:	13.0
% Spent:	

Impinger Box ID: 10

CWTR = 1 + 2 + 3 + 4:	694.8
WCBDA=5:	13.0

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	9
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	212170
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: BT
Train Recovered By: BT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22160
Sample Batch No.: 22-22160-SVOC-

Test No.: 1
Test Date: DEC 1/22
Test Location: UNIT 2

Sample ID 21 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	408.5
After Acetone/ Hexane Rinse:	608.5
Total TS1:	200.0

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 22 — Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 23 — XAD-II Trap

CONTAINER TS3

Initial Wt:	396.5
Final Wt:	402.8
1 Gain:	6.3
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 24 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	603.7
Final Wt:	1131.8
2 Gain:	528.1
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	660.8
Initial Wt:	772.7
Final Wt:	885.5
3 Gain:	112.8
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	564.8
Final Wt:	565.1
4 Gain:	0.3
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	408.0
With Imp Soln:	1152.8
After ~100g H_2O Rinse:	1282.0
Total TS4:	874.0

Sample ID 25 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	407.5
After Acetone/ Hexane Rinse:	575.5
Total TS5:	168.0

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	968.7
Final Wt:	985.0
5 Gain:	16.3
% Spent:	

Impinger Box ID: 15

CWTR = 1 + 2 + 3 + 4:	647.5
WCBDA=5:	16.3

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	4
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	212170
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: BP
Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22160
Sample Batch No.: 22-22160-SVOC-

Test No.: 2
Test Date: DEC1/22
Test Location: UN IT 2

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:	408.0
After Acetone/ Hexane Rinse:	583.5
Total TS1:	175.5

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:	350.8
Final Wt:	356.1
1 Gain:	5.3
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:	630.0
Final Wt:	1150.0
2 Gain:	520.0
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	535.5
Initial Wt:	644.4
Final Wt:	780.4
3 Gain:	136.0
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	654.2
Final Wt:	654.2
4 Gain:	0
Colour:	—

Container TS4 Weights	
Empty Wt:	406.5
With Imp Soln:	1159.7
After ~100g H_2O Rinse:	1261.5
Total TS4:	855.0

Sample ID 30
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS5

Empty Wt:	408.0
After Acetone/ Hexane Rinse:	576.0
Total TS5:	168.0

Impinger 4 Silica Gel
CONTAINER TS6 (Impinger)

Initial Wt:	952.7
Final Wt:	968.8
5 Gain:	16.1
% Spent:	

Impinger Box ID: 2

CWTR = 1 + 2 + 3 + 4: 661.3 ✓

WCBDA=5: 16.1

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	12
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	212170
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22160
Sample Batch No.: 22-22160-SVOC-

Test No.: 3
Test Date: DEC 2/22
Test Location: UNIT 2

Sample ID 31

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	409.0
After Acetone/ Hexane Rinse:	585.8
Total TS1:	176.8

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 32

Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 33

XAD-II Trap

CONTAINER TS3

Initial Wt:	354.0
Final Wt:	359.4
1 Gain:	5.4
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 34

Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	531.4
Final Wt:	1116.2
2 Gain:	584.8
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	538.9
Initial Wt:	~~695~~ 659.5
Final Wt:	739.0
3 Gain:	79.5
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	547.9
Final Wt:	547.9
4 Gain:	—
Colour:	—

Container TS4 Weights	
Empty Wt:	408.6
With Imp Soln:	1178.4
After ~100g H_2O Rinse:	1280.0
Total TS4:	871.4

Sample ID 35

Back-Half Rinses
Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	409.3
After Acetone/ Hexane Rinse:	614.7
Total TSS:	205.4

Impinger 4
Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	995.6
Final Wt:	1009.4
5 Gain:	13.8
% Spent:	

Impinger Box ID: 4

CWTR = 1 + 2 + 3 + 4:	669.7 ✓
WCBDA=5:	13.8

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	7
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	212170
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: BP
Train Recovered By: BT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22160
Sample Batch No.: 22-22160-SVOC-

Test No.: BLANK 1
Test Date: DEC 2/22
Test Location:

Sample ID 16 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	408.2
After Acetone/ Hexane Rinse:	615.0
Total TS1:	206.8

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 17 — Filter — CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 18 — XAD-II Trap — CONTAINER TS3

Initial Wt:	538.4
Final Wt:	538.4
1 Gain:	—
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 19 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	531.5
Final Wt:	531.5
2 Gain:	—
Colour:	—

Impinger #2 Ethylene Glycol	
Empty Wt:	539.0
Initial Wt:	639.5
Final Wt:	639.5
3 Gain:	—
Colour:	—

Impinger #3 Empty	
Empty Wt:	542.0
Final Wt:	542.0
4 Gain:	—
Colour:	—

Container TS4 Weights	
Empty Wt:	406.0
With Imp Soln:	504.2
After ~100g H_2O Rinse:	618.6
Total TS4:	212.6

Sample ID 20 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	407.0
After Acetone/ Hexane Rinse:	602.0
Total TS5:	195.0

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	
Final Wt:	
5 Gain:	
% Spent:	

Impinger Box ID:

CWTR = 1 + 2 + 3 + 4:	
WCBDA=5:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	10
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22160
Sample Batch No.:	22-22160-SVOC-

Test No.:	BLANK 2
Test Date:	DEC 2 /22
Test Location:	

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:	409.5
After Acetone/ Hexane Rinse:	599.2
Total TS1:	189.7

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 37

Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER T52

Sample ID 38

XAD-II Trap

CONTAINER TS3

Initial Wt:	406.2
Final Wt:	406.2
Gain:	—
Colour:	WHITE

1

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 39

Impingers 1, 2 & 3

CONTAINER TS4

2

Impinger #1 Empty	
Empty Wt:	612.0
Final Wt:	612.0
Gain:	—
Colour:	—

3

Impinger #2 Ethylene Glycol	
Empty Wt:	533.4
Initial Wt:	633.3
Final Wt:	633.3
Gain:	—
Colour:	—

4

Impinger #3 Empty	
Empty Wt:	532.0
Final Wt:	532.0
Gain:	—
Colour:	—

Container TS4 Weights	
Empty Wt:	408.2
With Imp Soln:	503.5
After ~100g H_2O Rinse:	612.6
Total TS4:	204.4

Sample ID 40

Back-Half Rinses
Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	409.7
After Acetone/ Hexane Rinse:	616.4
Total TS5:	206.7

Impinger 4
Silica Gel

CONTAINER TS6 (Impinger)

5

Initial Wt:	
Final Wt:	
Gain:	
% Spent:	

Impinger Box ID:

CWTR = 1 + 2 + 3 + 4:	
WCBDA=5:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	11
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

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
ALS WO#:	L2742305		Mississauga, ON
Date of Report	24-Jan-23		L5J 2Y4
Date of Sample Receipt	2-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **PCDD/F by EPA M23**

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

ALS Life Sciences

Sample Analysis summary Report

Sample Name	22-22160-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1	22-22160-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1	22-22160-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1	22-22160-SVOC-(16 THRU 20) BLANK#1	22-22160-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2	22-22160-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2
ALS Sample ID	L2742305-1	L2742305-2	L2742305-3	L2742305-4	L2742305-5	L2742305-6
Sample Size	1	1	1	1	1	1
Sample size units	sample	sample	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	1-Dec-22	1-Dec-22	2-Dec-22	2-Dec-22	1-Dec-22	1-Dec-22
Extraction Date	15-Dec-22	15-Dec-22	15-Dec-22	15-Dec-22	15-Dec-22	15-Dec-22
Target Analytes	pg	pg	pg	pg	pg	pg
2,3,7,8-TCDD	<1.9	<2.3	<2.7	<7.4	<2.2	<17
1,2,3,7,8-PeCDD	6.51	<6.5	<3.2	<8.2	<4.0	<15
1,2,3,4,7,8-HxCDD	<13	12.1	<10	<7.8	<3.2	<22
1,2,3,6,7,8-HxCDD	25.0	<27	<27	<7.5	10.3	<21
1,2,3,7,8,9-HxCDD	<11	<8.1	15.3	<7.7	5.34	<21
1,2,3,4,6,7,8-HpCDD	328	296	318	<16	<79	99.5
OCDD	800	803	750	<23	163	240
2,3,7,8-TCDF	<3.0	2.80	<3.7	<10	<2.5	<14
1,2,3,7,8-PeCDF	5.07	<5.0	<5.5	<4.7	3.27	<9.0
2,3,4,7,8-PeCDF	<8.8	<6.5	<8.7	<4.3	<4.6	<8.4
1,2,3,4,7,8-HxCDF	<7.6	6.69	<3.7	<3.5	4.82	<16
1,2,3,6,7,8-HxCDF	8.08	<7.5	<7.5	<3.3	<5.8	<16
2,3,4,6,7,8-HxCDF	15.7	11.4	<10	<3.4	7.30	<16
1,2,3,7,8,9-HxCDF	<7.7	<4.2	<6.2	<4.1	5.72	32.4
1,2,3,4,6,7,8-HpCDF	<44	51.6	54.9	<7.0	19.0	18.9
1,2,3,4,7,8,9-HpCDF	6.53	7.16	<4.5	<8.5	<2.6	<16
OCDF	65.9	84.3	64.4	<15	<32	<44
Field Spike Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
37Cl4-2,3,7,8-TCDD	105	106	104	105	103	101
13C12-1,2,3,4,7,8-HxCDD	100	97	95	112	101	92
13C12-2,3,4,7,8-PeCDF	98	100	102	111	101	103
13C12-1,2,3,4,7,8-HxCDF	97	98	93	68	95	91
13C12-1,2,3,4,7,8,9-HpCDF	86	91	94	89	93	103
Extraction Standards						
13C12-2,3,7,8-TCDD	74	57	34	18	42	34
13C12-1,2,3,7,8-PeCDD	62	65	35	21	43	36
13C12-1,2,3,6,7,8-HxCDD	93	95	45	23	56	41
13C12-1,2,3,4,6,7,8-HpCDD	58	61	30	17	35	32
13C12-OCDD	38	38	18	13	21	23
13C12-2,3,7,8-TCDF	79	67	34	18	41	33
13C12-1,2,3,7,8-PeCDF	68	68	36	20	44	38
13C12-1,2,3,6,7,8-HxCDF	106	104	50	32	63	41
13C12-1,2,3,4,6,7,8-HpCDF	67	69	32	21	41	32
Cleanup Standard						
13C12-1,2,3,7,8,9-HxCDF	80	68	42	20	52	41
Homologue Group Totals	pg	pg	pg	pg	pg	pg
Total-TCDD	96.2	187	107	<7.4	64.1	46.9
Total-PeCDD	235	194	155	<8.2	127	<15
Total-HxCDD	509	504	477	<7.8	202	<22
Total-HpCDD	767	296	740	<16	107	195
Total-TCDF	17.3	70.7	4.75	<10	25.1	<14
Total-PeCDF	61.2	74.1	71.8	<4.7	28.7	<9.0
Total-HxCDF	49.7	67.0	31.4	<4.1	29.8	32.4
Total-HpCDF	6.53	71.2	54.9	<8.5	32.8	18.9
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)	15.1	7.11	5.50	0.00	3.69	4.50
Mid Point PCDD/F TEQ (WHO 2005)	24.2	21.5	19.5	11.0	10.0	28.3
Upper Bound PCDD/F TEQ (WHO 2005)	24.4	22.7	21.0	22.1	13.2	52.1

ALS Life Sciences

Sample Analysis summary Report

Sample Name	22-22160-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2	22-22160-SVOC-(36 THRU 40) BLANK#2
ALS Sample ID	L2742305-7	L2742305-8
Sample Size	1	1
Sample size units	sample	sample
Percent Moisture	n/a	n/a
Sample Matrix	Stack	Stack
Sampling Date	2-Dec-22	2-Dec-22
Extraction Date	15-Dec-22	15-Dec-22
Target Analytes	**pg**	**pg**
2,3,7,8-TCDD	<1.7	<1.1
1,2,3,7,8-PeCDD	3.66	<0.93
1,2,3,4,7,8-HxCDD	<4.3	<1.1
1,2,3,6,7,8-HxCDD	<9.6	<1.0
1,2,3,7,8,9-HxCDD	<4.4	<1.0
1,2,3,4,6,7,8-HpCDD	95.6	<2.4
OCDD	148	7.23
2,3,7,8-TCDF	2.68	<1.1
1,2,3,7,8-PeCDF	4.52	<1.8
2,3,4,7,8-PeCDF	<5.0	<0.85
1,2,3,4,7,8-HxCDF	3.77	<0.66
1,2,3,6,7,8-HxCDF	4.40	<0.63
2,3,4,6,7,8-HxCDF	6.23	<0.65
1,2,3,7,8,9-HxCDF	<4.0	<2.5
1,2,3,4,6,7,8-HpCDF	<14	<0.85
1,2,3,4,7,8,9-HpCDF	<4.9	<1.0
OCDF	19.4	2.40
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	110	108
13C12-1,2,3,4,7,8-HxCDD	101	99
13C12-2,3,4,7,8-PeCDF	107	107
13C12-1,2,3,4,7,8-HxCDF	101	93
13C12-1,2,3,4,7,8,9-HpCDF	89	101
Extraction Standards		
13C12-2,3,7,8-TCDD	57	56
13C12-1,2,3,7,8-PeCDD	48	68
13C12-1,2,3,6,7,8-HxCDD	70	75
13C12-1,2,3,4,6,7,8-HpCDD	43	62
13C12-OCDD	25	53
13C12-2,3,7,8-TCDF	57	55
13C12-1,2,3,7,8-PeCDF	52	64
13C12-1,2,3,6,7,8-HxCDF	77	77
13C12-1,2,3,4,6,7,8-HpCDF	51	65
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	58	69
Homologue Group Totals	**pg**	**pg**
Total-TCDD	34.4	<1.1
Total-PeCDD	30.4	<0.93
Total-HxCDD	188	<1.1
Total-HpCDD	202	<1.4
Total-TCDF	19.2	<1.1
Total-PeCDF	15.3	<0.91
Total-HxCDF	36.5	<0.78
Total-HpCDF	<4.9	<1.0
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	6.51	0.00289
Mid Point PCDD/F TEQ (WHO 2005)	11.3	1.84
Upper Bound PCDD/F TEQ (WHO 2005)	12.1	3.25

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG3775107-1	WG3775107-2
Sample Size	1	1
Sample size units	sample	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	15-Dec-22	15-Dec-22
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<1.5	94
1,2,3,7,8-PeCDD	<2.0	111
1,2,3,4,7,8-HxCDD	<2.2	98
1,2,3,6,7,8-HxCDD	<2.1	103
1,2,3,7,8,9-HxCDD	<2.1	94
1,2,3,4,6,7,8-HpCDD	<4.4	95
OCDD	18.5	96
2,3,7,8-TCDF	<1.4	100
1,2,3,7,8-PeCDF	2.18	107
2,3,4,7,8-PeCDF	<1.1	101
1,2,3,4,7,8-HxCDF	<1.5	93
1,2,3,6,7,8-HxCDF	<1.4	107
2,3,4,6,7,8-HxCDF	<1.5	90
1,2,3,7,8,9-HxCDF	3.41	88
1,2,3,4,6,7,8-HpCDF	<2.6	105
1,2,3,4,7,8,9-HpCDF	<3.0	94
OCDF	<15	114
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	NS	NS
13C12-1,2,3,4,7,8-HxCDD	NS	NS
13C12-2,3,4,7,8-PeCDF	NS	NS
13C12-1,2,3,4,7,8-HxCDF	NS	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS
Extraction Standards		
13C12-2,3,7,8-TCDD	43	65
13C12-1,2,3,7,8-PeCDD	41	74
13C12-1,2,3,6,7,8-HxCDD	50	77
13C12-1,2,3,4,6,7,8-HpCDD	31	61
13C12-OCDD	18	41
13C12-2,3,7,8-TCDF	41	67
13C12-1,2,3,7,8-PeCDF	41	73
13C12-1,2,3,6,7,8-HxCDF	54	82
13C12-1,2,3,4,6,7,8-HpCDF	35	65
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	44	66
Homologue Group Totals	**pg**	
Total-TCDD	<1.5	
Total-PeCDD	<2.0	
Total-HxCDD	<2.2	
Total-HpCDD	<4.4	
Total-TCDF	<1.4	
Total-PeCDF	2.18	
Total-HxCDF	3.41	
Total-HpCDF	<3.0	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.412	
Mid Point PCDD/F TEQ (WHO 2005)	3.00	
Upper Bound PCDD/F TEQ (WHO 2005)	5.57	

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Sample Analysis Report

Sample Name	**22-22160-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	1-Dec-22	
ALS Sample ID	L2742305-1	Extraction Date	15-Dec-22	Approved:
Analysis Method	EPA M23	Sample Size	1 sample	*K.NGUYEN*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	20-Jan-2023

Run Information	**Run 1**
Filename	7-230107A08
Run Date	07-Jan-23 13:53
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 ZB-DX-1098142

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	28.45	<1.9	1.6	J,R	1.9	30
1,2,3,7,8-PeCDD	1	31.55	6.51	2.1	M,J		150
1,2,3,4,7,8-HxCDD	0.1	33.78	<13	5.8	J,R	13	150
1,2,3,6,7,8-HxCDD	0.1	33.85	25.0	5.6	J		150
1,2,3,7,8,9-HxCDD	0.1	34.04	<11	5.7	J,R	11	150
1,2,3,4,6,7,8-HpCDD	0.01	36.32	328	6.0			150
OCDD	0.0003	39.18	800	12			300
2,3,7,8-TCDF	0.1	NotFnd	<3.0	3.0	U		30
1,2,3,7,8-PeCDF	0.03	30.81	5.07	1.9	J,B		150
2,3,4,7,8-PeCDF	0.3	31.45	<8.8	1.8	J,R	8.8	150
1,2,3,4,7,8-HxCDF	0.1	33.20	<7.6	1.6	J,R	7.6	150
1,2,3,6,7,8-HxCDF	0.1	33.30	8.08	1.5	J		150
2,3,4,6,7,8-HxCDF	0.1	33.73	15.7	1.5	J		150
1,2,3,7,8,9-HxCDF	0.1	34.42	<7.7	1.8	J,R	7.7	150
1,2,3,4,6,7,8-HpCDF	0.01	35.40	<44	2.8	J,R	44	150
1,2,3,4,7,8,9-HpCDF	0.01	36.95	6.53	3.4	M,J		150
OCDF	0.0003	39.51	65.9	9.6	M,J		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.46	105	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.77	100	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.42	98	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.19	97	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.94	86	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.45	74	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.53	62	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.84	93	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.32	58	25-130
13C12-OCDD	24000	39.17	38	25-130
13C12-2,3,7,8-TCDF	12000	27.88	79	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.80	68	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.28	106	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.39	67	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.40	80	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	2	96.2	1.6	30
Total-PeCDD	5	235	2.1	150
Total-HxCDD	4	509	5.8	150
Total-HpCDD	2	767	6.0	150
Total-TCDF	3	17.3	3.0	30
Total-PeCDF	5	61.2	1.9	150
Total-HxCDF	5	49.7	1.8	150
Total-HpCDF	1	6.53	3.4	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	15.1
Mid Point PCDD/F TEQ (WHO 2005)	24.2
Upper Bound PCDD/F TEQ (WHO 2005)	24.4

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

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Sample Analysis Report

Sample Name	**22-22160-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-22	
ALS Sample ID	L2742305-2	Extraction Date	15-Dec-22	Approved:
Analysis Method	EPA M23	Sample Size	1 sample	*K.NGUYEN*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	20-Jan-2023

Run Information	**Run 1**
Filename	7-230107A09
Run Date	07-Jan-23 14:38
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 ZB-DX-1098142

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.3	2.3	U		30
1,2,3,7,8-PeCDD	1	31.54	<6.5	2.2	J,R	6.5	150
1,2,3,4,7,8-HxCDD	0.1	33.78	12.1	2.8	J		150
1,2,3,6,7,8-HxCDD	0.1	33.85	<27	2.7	J,R	27	150
1,2,3,7,8,9-HxCDD	0.1	34.04	<8.1	2.8	J,R	8.1	150
1,2,3,4,6,7,8-HpCDD	0.01	36.32	296	4.8			150
OCDD	0.0003	39.18	803	16			300
2,3,7,8-TCDF	0.1	27.89	2.80	2.3	J		30
1,2,3,7,8-PeCDF	0.03	30.81	<5.0	2.3	J,R	5.0	150
2,3,4,7,8-PeCDF	0.3	31.43	<6.5	2.1	J,R	6.5	150
1,2,3,4,7,8-HxCDF	0.1	33.19	6.69	2.6	J		150
1,2,3,6,7,8-HxCDF	0.1	33.29	<7.5	2.5	M,J,R	7.5	150
2,3,4,6,7,8-HxCDF	0.1	33.72	11.4	2.6	J		150
1,2,3,7,8,9-HxCDF	0.1	34.41	<4.2	3.1	J,R	4.2	150
1,2,3,4,6,7,8-HpCDF	0.01	35.39	51.6	2.9	J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.94	7.16	3.5	J		150
OCDF	0.0003	39.52	84.3	7.1	J		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.46	106	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.77	97	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.42	100	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.19	98	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.94	91	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.45	57	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.53	65	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.84	95	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.31	61	25-130
13C12-OCDD	24000	39.17	38	25-130
13C12-2,3,7,8-TCDF	12000	27.88	67	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.80	68	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.28	104	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.38	69	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.40	68	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	5	187	2.3	30
Total-PeCDD	3	194	2.2	150
Total-HxCDD	5	504	2.8	150
Total-HpCDD	1	296	4.8	150
Total-TCDF	7	70.7	2.3	30
Total-PeCDF	5	74.1	2.3	150
Total-HxCDF	5	67.0	3.1	150
Total-HpCDF	3	71.2	3.5	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	7.11
Mid Point PCDD/F TEQ (WHO 2005)	21.5
Upper Bound PCDD/F TEQ (WHO 2005)	22.7

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.
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

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Sample Analysis Report

Sample Name	**22-22160-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	2-Dec-22	
ALS Sample ID	L2742305-3	Extraction Date	15-Dec-22	Approved:
Analysis Method	EPA M23	Sample Size	1 sample	*K.NGUYEN*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	20-Jan-2023

Run Information	**Run 1**
Filename	7-230107A10
Run Date	07-Jan-23 15:22
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 ZB-DX-1098142

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.7	2.7	U		30
1,2,3,7,8-PeCDD	1	31.55	<3.2	2.2	J,R	3.2	150
1,2,3,4,7,8-HxCDD	0.1	33.78	<10	5.1	J,R	10	150
1,2,3,6,7,8-HxCDD	0.1	33.86	<27	4.9	M,J,R	27	150
1,2,3,7,8,9-HxCDD	0.1	34.04	15.3	5.0	J		150
1,2,3,4,6,7,8-HpCDD	0.01	36.33	318	6.7			150
OCDD	0.0003	39.18	750	13			300
2,3,7,8-TCDF	0.1	NotFnd	<3.7	3.7	U		30
1,2,3,7,8-PeCDF	0.03	30.81	<5.5	2.5	J,R	5.5	150
2,3,4,7,8-PeCDF	0.3	31.45	<8.7	2.3	J,R	8.7	150
1,2,3,4,7,8-HxCDF	0.1	33.20	<3.7	2.2	1.	3.7	150
1,2,3,6,7,8-HxCDF	0.1	33.28	<7.5	2.1	1.	7.5	150
2,3,4,6,7,8-HxCDF	0.1	33.74	<10	2.1	J,R	10	150
1,2,3,7,8,9-HxCDF	0.1	34.41	<6.2	2.6	J,R	6.2	150
1,2,3,4,6,7,8-HpCDF	0.01	35.39	54.9	3.7	J		150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<4.5	4.5	U		150
OCDF	0.0003	39.51	64.4	9.3	M,J		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.46	104	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.77	95	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.42	102	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.19	93	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.94	94	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.45	34	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.53	35	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.84	45	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.32	30	25-130
13C12-OCDD	24000	39.17	18	25-130
13C12-2,3,7,8-TCDF	12000	27.88	34	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.80	36	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.28	50	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.39	32	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.40	42	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	2	107	2.7	30
Total-PeCDD	2	155	2.2	150
Total-HxCDD	4	477	5.1	150
Total-HpCDD	2	740	6.7	150
Total-TCDF	1	4.75	3.7	30
Total-PeCDF	6	71.8	2.5	150
Total-HxCDF	2	31.4	2.6	150
Total-HpCDF	1	54.9	4.5	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	5.50
Mid Point PCDD/F TEQ (WHO 2005)	19.5
Upper Bound PCDD/F TEQ (WHO 2005)	21.0

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.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
1.	This result is an EMPC

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Sample Analysis Report

Sample Name	**22-22160-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	2-Dec-22	
ALS Sample ID	L2742305-4	Extraction Date	15-Dec-22	Approved:
Analysis Method	EPA M23	Sample Size	1 sample	*K.NGUYEN*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	20-Jan-2023

Run Information	**Run 1**
Filename	7-230112A08
Run Date	12-Jan-23 18:29
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 ZB-DX-1098142

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<7.4	7.4	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<8.2	8.2	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<7.8	7.8	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<7.5	7.5	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<7.7	7.7	U		150
1,2,3,4,6,7,8-HpCDD	0.01	NotFnd	<16	16	U		150
OCDD	0.0003	NotFnd	<23	23	U		300
2,3,7,8-TCDF	0.1	NotFnd	<10	10	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<4.7	4.7	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<4.3	4.3	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<3.5	3.5	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<3.3	3.3	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<3.4	3.4	U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<4.1	4.1	U		150
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<7.0	7.0	U		150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<8.5	8.5	U		150
OCDF	0.0003	39.52	<15	15	M,U	9.2	300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.45	105	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.77	112	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.42	111	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.19	68	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.94	89	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.43	18	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.53	21	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.84	23	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.32	17	25-130
13C12-OCDD	24000	39.17	13	25-130
13C12-2,3,7,8-TCDF	12000	27.88	18	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.79	20	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.29	32	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.39	21	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.40	20	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<7.4	7.4	U	30
Total-PeCDD	0	<8.2	8.2	U	150
Total-HxCDD	0	<7.8	7.8	U	150
Total-HpCDD	0	<16	16	U	150
Total-TCDF	0	<10	10	U	30
Total-PeCDF	0	<4.7	4.7	U	150
Total-HxCDF	0	<4.1	4.1	U	150
Total-HpCDF	0	<8.5	8.5	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	11.0
Upper Bound PCDD/F TEQ (WHO 2005)	22.1

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.
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	22-22160-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-5	Extraction Date	15-Dec-22
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
K.NGUYEN
--e-signature--
20-Jan-2023

Run Information	**Run 1**
Filename	7-230107A12
Run Date	07-Jan-23 16:52
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 ZB-DX-1098142

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<2.2	2.2	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<4.0	4.0	U		150
1,2,3,4,7,8-HxCDD	0.1	33.77	<3.2	3.2	J,R	3.2	150
1,2,3,6,7,8-HxCDD	0.1	33.85	10.3	3.0	J		150
1,2,3,7,8,9-HxCDD	0.1	34.05	5.34	3.1	M,J		150
1,2,3,4,6,7,8-HpCDD	0.01	36.33	<79	5.0	M,J,R	79	150
OCDD	0.0003	39.17	163	10	J,B		300
2,3,7,8-TCDF	0.1	NotFnd	<2.5	2.5	U		30
1,2,3,7,8-PeCDF	0.03	30.80	3.27	1.5	J,B		150
2,3,4,7,8-PeCDF	0.3	31.45	<4.6	1.4	M,J,R	4.6	150
1,2,3,4,7,8-HxCDF	0.1	33.23	4.82	1.8	J		150
1,2,3,6,7,8-HxCDF	0.1	33.29	<5.8	1.8	J,R	5.8	150
2,3,4,6,7,8-HxCDF	0.1	33.72	7.30	1.8	J		150
1,2,3,7,8,9-HxCDF	0.1	34.40	5.72	2.2	M,J,B		150
1,2,3,4,6,7,8-HpCDF	0.01	35.40	19.0	2.1	J		150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<2.6	2.6	U		150
OCDF	0.0003	39.51	<32	7.6	M,J,R	32	300

Field Spike Standards	pg		% Rec	Limits
37Cl4-2,3,7,8-TCDD	1200	28.45	103	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.76	101	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.42	101	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.18	95	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.93	93	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.43	42	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.53	43	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.84	56	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.31	35	25-130
13C12-OCDD	24000	39.17	21	25-130
13C12-2,3,7,8-TCDF	12000	27.88	41	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.79	44	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.28	63	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.38	41	25-130
Cleanup Standard	pg			
13C12-1,2,3,7,8,9-HxCDF	12000	34.40	52	40-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	2	64.1	2.2	30
Total-PeCDD	4	127	4.0	150
Total-HxCDD	4	202	3.2	150
Total-HpCDD	1	107	5.0	150
Total-TCDF	4	25.1	2.5	30
Total-PeCDF	4	28.7	1.5	150
Total-HxCDF	4	29.8	2.2	150
Total-HpCDF	3	32.8	2.6	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	3.69
Mid Point PCDD/F TEQ (WHO 2005)	10.0
Upper Bound PCDD/F TEQ (WHO 2005)	13.2

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2**	Sampling Date	1-Dec-22		
ALS Sample ID	L2742305-6	Extraction Date	15-Dec-22		Approved:
Analysis Method	EPA M23	Sample Size	1	sample	*K.NGUYEN*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		20-Jan-2023

Run Information	**Run 1**
Filename	7-230119B22
Run Date	20-Jan-23 06:44
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 ZB-DX-1098142

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<17	17	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<15	15	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<22	22	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<21	21	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<21	21	U		150
1,2,3,4,6,7,8-HpCDD	0.01	36.35	99.5	27	J		150
OCDD	0.0003	39.24	240	65	M,J		300
2,3,7,8-TCDF	0.1	NotFnd	<14	14	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<9.0	9.0	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<8.4	8.4	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<16	16	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<16	16	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<16	16	U		150
1,2,3,7,8,9-HxCDF	0.1	34.44	32.4	19	M,J,B		150
1,2,3,4,6,7,8-HpCDF	0.01	35.42	18.9	13	M,J		150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<16	16	U		150
OCDF	0.0003	NotFnd	<44	44	U		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.46	101	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.79	92	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.43	103	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.21	91	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.97	103	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.45	34	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.55	36	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.86	41	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.35	32	25-130
13C12-OCDD	24000	39.21	23	25-130
13C12-2,3,7,8-TCDF	12000	27.88	33	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.81	38	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.30	41	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.41	32	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	72000	34.42	41	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	1	46.9	17		30
Total-PeCDD	0	<15	15	U	150
Total-HxCDD	0	<22	22	U	150
Total-HpCDD	2	195	27		150
Total-TCDF	0	<14	14	U	30
Total-PeCDF	0	<9.0	9.0	U	150
Total-HxCDF	1	32.4	19		150
Total-HpCDF	1	18.9	16		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	4.50
Mid Point PCDD/F TEQ (WHO 2005)	28.3
Upper Bound PCDD/F TEQ (WHO 2005)	52.1

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
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	**22-22160-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-7	Extraction Date	15-Dec-22
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
K.NGUYEN
--e-signature--
20-Jan-2023

Run Information	**Run 1**
Filename	7-230107A14
Run Date	07-Jan-23 18:21
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 ZB-DX-1098142

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.7	1.7	U		30
1,2,3,7,8-PeCDD	1	31.55	3.66	1.3	M,J		150
1,2,3,4,7,8-HxCDD	0.1	33.77	<4.3	3.4	J,R	4.3	150
1,2,3,6,7,8-HxCDD	0.1	33.86	<9.6	3.3	J,R	9.6	150
1,2,3,7,8,9-HxCDD	0.1	34.05	<4.4	3.4	J,R	4.4	150
1,2,3,4,6,7,8-HpCDD	0.01	36.33	95.6	4.8	J		150
OCDD	0.0003	39.17	148	11	J,B		300
2,3,7,8-TCDF	0.1	27.91	2.68	2.3	J		30
1,2,3,7,8-PeCDF	0.03	30.80	4.52	2.0	J,B		150
2,3,4,7,8-PeCDF	0.3	31.43	<5.0	1.9	J,R	5.0	150
1,2,3,4,7,8-HxCDF	0.1	33.20	3.77	1.6	J		150
1,2,3,6,7,8-HxCDF	0.1	33.29	4.40	1.5	M,J		150
2,3,4,6,7,8-HxCDF	0.1	33.72	6.23	1.6	M,J		150
1,2,3,7,8,9-HxCDF	0.1	34.42	<4.0	1.9	M,J,R	4.0	150
1,2,3,4,6,7,8-HpCDF	0.01	35.38	<14	4.0	J,R	14	150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<4.9	4.9	U		150
OCDF	0.0003	39.53	19.4	8.1	J		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.46	110	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.77	101	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.42	107	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.18	101	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.93	89	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.43	57	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.53	48	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.84	70	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.31	43	25-130
13C12-OCDD	24000	39.17	25	25-130
13C12-2,3,7,8-TCDF	12000	27.88	57	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.79	52	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.28	77	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.38	51	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.40	58	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	3	34.4	1.7		30
Total-PeCDD	3	30.4	1.3		150
Total-HxCDD	2	188	3.4		150
Total-HpCDD	2	202	4.8		150
Total-TCDF	3	19.2	2.3		30
Total-PeCDF	3	15.3	2.0		150
Total-HxCDF	6	36.5	1.9		150
Total-HpCDF	0	<4.9	4.9	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	6.51
Mid Point PCDD/F TEQ (WHO 2005)	11.3
Upper Bound PCDD/F TEQ (WHO 2005)	12.1

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	**22-22160-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-8	Extraction Date	15-Dec-22
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
K.NGUYEN
--e-signature--
20-Jan-2023

Run Information	**Run 1**
Filename	7-230107A15
Run Date	07-Jan-23 19:06
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 ZB-DX-1098142

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		30
1,2,3,7,8-PeCDD	1	NotFnd	<0.93	0.93	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.1	1.1	U		150
1,2,3,6,7,8-HxCDD	0.1	33.85	<1.0	1.0	M,J,R	1.0	150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<1.0	1.0	U		150
1,2,3,4,6,7,8-HpCDD	0.01	36.33	<2.4	1.4	M,J,R	2.4	150
OCDD	0.0003	39.17	7.23	2.4	M,J,B		300
2,3,7,8-TCDF	0.1	NotFnd	<1.1	1.1	U		30
1,2,3,7,8-PeCDF	0.03	30.79	<1.8	0.91	M,J,R	1.8	150
2,3,4,7,8-PeCDF	0.3	NotFnd	<0.85	0.85	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<0.66	0.66	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<0.63	0.63	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.65	0.65	U		150
1,2,3,7,8,9-HxCDF	0.1	34.40	<2.5	0.78	M,J,R	2.5	150
1,2,3,4,6,7,8-HpCDF	0.01	35.38	<0.85	0.85	M,U	0.53	150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<1.0	1.0	U		150
OCDF	0.0003	39.54	2.40	2.4	J		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.45	108	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.76	99	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.41	107	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.18	93	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.93	101	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.43	56	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.53	68	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	36.31	62	25-130
13C12-OCDD	24000	39.16	53	25-130
13C12-2,3,7,8-TCDF	12000	27.88	55	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.79	64	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.28	77	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.38	65	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.39	69	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<1.1	1.1	U	30
Total-PeCDD	0	<0.93	0.93	U	150
Total-HxCDD	0	<1.1	1.1	U	150
Total-HpCDD	0	<1.4	1.4	U	150
Total-TCDF	0	<1.1	1.1	U	30
Total-PeCDF	0	<0.91	0.91	U	150
Total-HxCDF	0	<0.78	0.78	U	150
Total-HpCDF	0	<1.0	1.0	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00289
Mid Point PCDD/F TEQ (WHO 2005)	1.84
Upper Bound PCDD/F TEQ (WHO 2005)	3.25

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	WG3775107-1	Extraction Date	15-Dec-22	Approved:
Analysis Method	EPA M23	Sample Size	1 sample	*K.NGUYEN*
Analysis Type	Blank	Percent Moisture	n/a	--e-signature--
Sample Matrix	QC	Split Ratio	6	20-Jan-2023

Run Information	**Run 1**
Filename	7-230107A06
Run Date	07-Jan-23 12:24
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 ZB-DX-1098142

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<1.5	1.5	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<2.0	2.0	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<2.2	2.2	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<2.1	2.1	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<2.1	2.1	U		150
1,2,3,4,6,7,8-HpCDD	0.01	36.33	<4.4	4.4	M,U	4.0	150
OCDD	0.0003	39.17	18.5	12	M,J		300
2,3,7,8-TCDF	0.1	NotFnd	<1.4	1.4	U		30
1,2,3,7,8-PeCDF	0.03	30.81	2.18	1.2	J		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.1	1.1	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<1.5	1.5	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<1.4	1.4	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<1.5	1.5	U		150
1,2,3,7,8,9-HxCDF	0.1	34.43	3.41	1.8	J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.41	<2.6	2.5	M,J,R	2.6	150
1,2,3,4,7,8,9-HpCDF	0.01	36.96	<3.0	3.0	U	2.4	150
OCDF	0.0003	39.51	<15	9.9	M,J,R	15	300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	0		NS				
13C12-1,2,3,4,7,8-HxCDD	0		NS				
13C12-2,3,4,7,8-PeCDF	0		NS				
13C12-1,2,3,4,7,8-HxCDF	0		NS				
13C12-1,2,3,4,7,8,9-HpCDF	0		NS				
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.45	43	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.54	41	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.85	50	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.32	31	25-130			
13C12-OCDD	24000	39.17	18	25-130			
13C12-2,3,7,8-TCDF	12000	27.89	41	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.80	41	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.29	54	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.39	35	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.41	44	40-130			

Homologue Group Totals	# peaks	Conc. pg	EDL pg		LQL
Total-TCDD	0	<1.5	1.5	U	30
Total-PeCDD	0	<2.0	2.0	U	150
Total-HxCDD	0	<2.2	2.2	U	150
Total-HpCDD	0	<4.4	4.4	U	150
Total-TCDF	0	<1.4	1.4	U	30
Total-PeCDF	1	2.18	1.2		150
Total-HxCDF	1	3.41	1.8		150
Total-HpCDF	0	<3.0	3.0	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.412
Mid Point PCDD/F TEQ (WHO 2005)	3.00
Upper Bound PCDD/F TEQ (WHO 2005)	5.57

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this compound was not added.
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	WG3775107-2	Extraction Date	15-Dec-22	Approved:
Analysis Method	EPA M23	Sample Size	1 n/a	*K.NGUYEN*
Analysis Type	LCS	Percent Moisture	n/a	--e-signature--
Sample Matrix	QC	Split Ratio	6	20-Jan-2023

Run Information	**Run 1**
Filename	7-230107A02
Run Date	07-Jan-23 09:25
Final Volume	10 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS 7 ZB-DX-1098142

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1200	28.45	94	70-130	
1,2,3,7,8-PeCDD	6000	31.54	111	70-130	
1,2,3,4,7,8-HxCDD	6000	33.77	98	70-130	
1,2,3,6,7,8-HxCDD	6000	33.84	103	70-130	
1,2,3,7,8,9-HxCDD	6000	34.04	94	70-130	
1,2,3,4,6,7,8-HpCDD	6000	36.31	95	70-130	
OCDD	12000	39.17	96	70-130	
2,3,7,8-TCDF	1200	27.89	100	70-130	
1,2,3,7,8-PeCDF	6000	30.80	107	70-130	
2,3,4,7,8-PeCDF	6000	31.42	101	70-130	
1,2,3,4,7,8-HxCDF	6000	33.19	93	70-130	
1,2,3,6,7,8-HxCDF	6000	33.28	107	70-130	
2,3,4,6,7,8-HxCDF	6000	33.71	90	70-130	
1,2,3,7,8,9-HxCDF	6000	34.40	88	70-130	
1,2,3,4,6,7,8-HpCDF	6000	35.39	105	70-130	
1,2,3,4,7,8,9-HpCDF	6000	36.94	94	70-130	
OCDF	12000	39.51	114	70-130	

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	0		NS	
13C12-1,2,3,4,7,8-HxCDD	0		NS	
13C12-2,3,4,7,8-PeCDF	0		NS	
13C12-1,2,3,4,7,8-HxCDF	0		NS	
13C12-1,2,3,4,7,8,9-HpCDF	0		NS	

Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.43	65	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.52	74	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.83	77	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.31	61	25-130
13C12-OCDD	24000	39.15	41	25-130
13C12-2,3,7,8-TCDF	12000	27.88	67	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.79	73	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.27	82	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.37	65	25-130

Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.39	66	40-130

NS Indicates that this compound was not added.

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#:	L2742305		Mississauga, ON
Date of Report	24-Jan-23		L5J 2Y4
Date of Sample Receipt	2-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **PCB Congeners by EPA 1668C**

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	22-22160-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1	22-22160-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1	22-22160-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1	22-22160-SVOC-(16 THRU 20) BLANK#1	22-22160-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2	22-22160-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2
ALS Sample ID	L2742305-1	L2742305-2	L2742305-3	L2742305-4	L2742305-5	L2742305-6
Sample Size	1	1	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	1-Dec-22	1-Dec-22	2-Dec-22	2-Dec-22	1-Dec-22	1-Dec-22
Extraction Date	15-Dec-22	15-Dec-22	15-Dec-22	15-Dec-22	15-Dec-22	15-Dec-22
Target Analytes	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
PCB-081	<18	<8.9	<10	<4.7	<8.4	<6.0
PCB-077	86.0	83.4	43.7	<5.0	93.7	184
PCB-123	<21	23.6	<11	<7.6	<10	<34
PCB-118	1270	1240	669	20.7	659	2000
PCB-114	<29	42.0	<11	<7.5	<16	<50
PCB-105	360	463	220	<7.4	213	630
PCB-126	<26	<11	<12	<8.0	<11	<7.7
PCB-167	<13	16.0	8.69	<2.9	12.8	19.4
PCB-156/157	<36	46.6	<23	<4.5	<29	<43
PCB-169	<8.5	<6.3	<9.5	<3.1	<4.3	<3.2
PCB-189	<12	<4.0	<5.3	<3.1	<4.2	<3.1
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-081	24	46	24	42	34	36
13C12-PCB-077	24	47	24	43	34	36
13C12-PCB-123	27	49	24	46	36	40
13C12-PCB-118	27	53	27	52	41	43
13C12-PCB-114	27	49	25	47	38	40
13C12-PCB-105	27	49	25	48	37	40
13C12-PCB-126	25	50	26	49	37	39
13C12-PCB-167	26	48	25	50	37	47
13C12-PCB-156/157	26	48	25	49	37	46
13C12-PCB-169	28	55	28	55	40	49
13C12-PCB-189	30	54	27	53	39	48
Field Spike Standards						
13C12-PCB-031	116	123	110	140	110	118
13C12-PCB-095	67	63	64	76	72	73
13C12-PCB-153	90	90	85	114	91	89
Cleanup Standards						
13C12-PCB-028	23	39	22	42	34	31
13C12-PCB-111	26	48	25	58	38	44
13C12-PCB-178	27	49	26	64	39	50
Toxic Equivalency - (WHO 2005)	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
Lower Bound PCB TEQ	0.0575	0.0633	0.0313	0.000621	0.0359	0.0979
Mid Point PCB TEQ	1.49	0.804	0.919	0.449	0.653	0.922
Upper Bound PCB TEQ	2.92	1.36	1.52	0.897	1.27	0.970

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Sample Analysis Summary Report

Sample Name	22-22160-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2	22-22160-SVOC-(36 THRU 40) BLANK#2
ALS Sample ID	L2742305-7	L2742305-8
Sample Size	1	1
Sample size units	Sample	Sample
Percent Moisture	n/a	n/a
Sample Matrix	Stack	Stack
Sampling Date	2-Dec-22	2-Dec-22
Extraction Date	15-Dec-22	15-Dec-22
Target Analytes	**pg**	**pg**
PCB-081	<13	<5.9
PCB-077	<42	<6.4
PCB-123	<21	<10
PCB-118	785	<17
PCB-114	<19	<9.6
PCB-105	265	<10
PCB-126	<23	<11
PCB-167	9.67	<4.3
PCB-156/157	32.7	<6.8
PCB-169	<8.4	<4.8
PCB-189	<9.8	<4.2
Extraction Standards	**% Rec**	**% Rec**
13C12-PCB-081	22	20
13C12-PCB-077	22	20
13C12-PCB-123	24	22
13C12-PCB-118	26	24
13C12-PCB-114	25	22
13C12-PCB-105	25	22
13C12-PCB-126	24	22
13C12-PCB-167	27	25
13C12-PCB-156/157	27	24
13C12-PCB-169	29	26
13C12-PCB-189	29	27
Field Spike Standards		
13C12-PCB-031	128	111
13C12-PCB-095	75	72
13C12-PCB-153	96	88
Cleanup Standards		
13C12-PCB-028	25	21
13C12-PCB-111	29	24
13C12-PCB-178	31	25
Toxic Equivalency - (WHO 2005)	**pg**	**pg**
Lower Bound PCB TEQ	0.0328	0.00
Mid Point PCB TEQ	1.32	0.624
Upper Bound PCB TEQ	2.59	1.25

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Quality Control Summary Report

Sample Name	**Method Blank**
ALS Sample ID	WG3775107-1
Sample Size	1
Sample size units	Sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	15-Dec-22

Target Analytes	**pg**
PCB-081	<8.7
PCB-077	<9.1
PCB-123	<15
PCB-118	<14
PCB-114	<14
PCB-105	<14
PCB-126	<17
PCB-167	<4.9
PCB-156/157	<7.5
PCB-169	<5.3
PCB-189	<6.8
Extraction Standards	**% Rec**
13C12-PCB-081	29
13C12-PCB-077	31
13C12-PCB-123	34
13C12-PCB-118	35
13C12-PCB-114	34
13C12-PCB-105	35
13C12-PCB-126	36
13C12-PCB-167	37
13C12-PCB-156/157	37
13C12-PCB-169	41
13C12-PCB-189	42
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	25
13C12-PCB-111	31
13C12-PCB-178	35

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.932
Upper Bound PCB TEQ	1.86

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Sample Analysis Summary Report

Sample Name	**Laboratory Control Sample**
ALS Sample ID	WG3775107-2
Sample Size	1
Sample size units	n/a
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	15-Dec-22

Target Analytes	**% Rec**
PCB-081	86
PCB-077	84
PCB-123	86
PCB-118	84
PCB-114	86
PCB-105	82
PCB-126	82
PCB-167	89
PCB-156/157	87
PCB-169	88
PCB-189	88
Extraction Standards	**% Rec**
13C12-PCB-081	37
13C12-PCB-077	39
13C12-PCB-123	39
13C12-PCB-118	40
13C12-PCB-114	39
13C12-PCB-105	41
13C12-PCB-126	42
13C12-PCB-167	41
13C12-PCB-156/157	40
13C12-PCB-169	45
13C12-PCB-189	43
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	31
13C12-PCB-111	32
13C12-PCB-178	35

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Sample Analysis Report

Sample Name	**22-22160-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	1-Dec-22	
ALS Sample ID	L2742305-1	Extraction Date	15-Dec-22	
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--
23-Jan-2023

Run Information	**Run 1**
Filename	9-230121A17
Run Date	21-Jan-23 21:54
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 SPBOCTYL273027-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<18	18	U		150
PCB-077	0.0001	22.21	86.0	21	J		150
PCB-123	0.00003	NotFnd	<21	21	U		150
PCB-118	0.00003	23.33	1270	19	M		150
PCB-114	0.00003	23.64	<29	22	J,R	29	150
PCB-105	0.00003	24.01	360	22			150
PCB-126	0.1	NotFnd	<26	26	U		150
PCB-167	0.00003	26.45	<13	7.6	J,R	13	150
PCB-156/157	0.00003	27.09	<36	12	J,R	36	300
PCB-169	0.03	NotFnd	<8.5	8.5	U		150
PCB-189	0.00003	NotFnd	<12	12	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.89	24	10-145
13C12-PCB-077	12000	22.20	24	10-145
13C12-PCB-123	12000	23.15	27	10-145
13C12-PCB-118	12000	23.32	27	10-145
13C12-PCB-114	12000	23.62	27	10-145
13C12-PCB-105	12000	24.00	27	10-145
13C12-PCB-126	12000	25.58	25	10-145
13C12-PCB-167	12000	26.44	26	10-145
13C12-PCB-156/157	24000	27.09	26	10-145
13C12-PCB-169	12000	28.75	28	10-145
13C12-PCB-189	12000	30.00	30	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.89	116	70-130
13C12-PCB-095	12000	19.20	67	70-130
13C12-PCB-153	12000	24.23	90	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.07	23	5-145
13C12-PCB-111	12000	22.07	26	10-145
13C12-PCB-178	12000	25.11	27	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0575
Mid Point PCB TEQ	1.49
Upper Bound PCB TEQ	2.92

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	**22-22160-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-2	Extraction Date	15-Dec-22
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--
23-Jan-2023

Run Information	**Run 1**
Filename	9-230121A18
Run Date	21-Jan-23 22:36
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 SPBOCTYL273027-01

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	21.90	<8.9	8.9	M,U	4.5	150
PCB-077	0.0001	22.22	83.4	9.1	J		150
PCB-123	0.00003	23.15	23.6	10	M,J		150
PCB-118	0.00003	23.35	1240	8.3			150
PCB-114	0.00003	23.65	42.0	9.7	J		150
PCB-105	0.00003	24.01	463	9.7			150
PCB-126	0.1	NotFnd	<11	11	U		150
PCB-167	0.00003	26.48	16.0	4.7	J		150
PCB-156/157	0.00003	27.09	46.6	7.3	J		300
PCB-169	0.03	28.76	<6.3	4.7	J,R	6.3	150
PCB-189	0.00003	NotFnd	<4.0	4.0	U		150

Extraction Standards	pg	Time	% Rec	Limits
13C12-PCB-081	12000	21.89	46	10-145
13C12-PCB-077	12000	22.20	47	10-145
13C12-PCB-123	12000	23.16	49	10-145
13C12-PCB-118	12000	23.33	53	10-145
13C12-PCB-114	12000	23.64	49	10-145
13C12-PCB-105	12000	24.00	49	10-145
13C12-PCB-126	12000	25.58	50	10-145
13C12-PCB-167	12000	26.45	48	10-145
13C12-PCB-156/157	24000	27.10	48	10-145
13C12-PCB-169	12000	28.75	55	10-145
13C12-PCB-189	12000	30.01	54	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.90	123	70-130
13C12-PCB-095	12000	19.21	63	70-130
13C12-PCB-153	12000	24.24	90	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.07	39	5-145
13C12-PCB-111	12000	22.08	48	10-145
13C12-PCB-178	12000	25.12	49	10-145

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.0633
Mid Point PCB TEQ	0.804
Upper Bound PCB TEQ	1.36

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	**22-22160-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	2-Dec-22	
ALS Sample ID	L2742305-3	Extraction Date	15-Dec-22	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	23-Jan-2023

Run Information	**Run 1**
Filename	9-230121A19
Run Date	21-Jan-23 23:18
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 SPBOCTYL273027-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<10	10	U		150
PCB-077	0.0001	22.22	43.7	11	J		150
PCB-123	0.00003	NotFnd	<11	11	U		150
PCB-118	0.00003	23.35	669	9.3	M		150
PCB-114	0.00003	23.64	<11	11	U	7.8	150
PCB-105	0.00003	24.01	220	11			150
PCB-126	0.1	NotFnd	<12	12	U		150
PCB-167	0.00003	26.48	8.69	5.3	M,J		150
PCB-156/157	0.00003	27.10	<23	8.3	J,R	23	300
PCB-169	0.03	28.76	<9.5	5.6	J,R	9.5	150
PCB-189	0.00003	NotFnd	<5.3	5.3	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.89	24	10-145
13C12-PCB-077	12000	22.21	24	10-145
13C12-PCB-123	12000	23.16	24	10-145
13C12-PCB-118	12000	23.33	27	10-145
13C12-PCB-114	12000	23.64	25	10-145
13C12-PCB-105	12000	24.00	25	10-145
13C12-PCB-126	12000	25.58	26	10-145
13C12-PCB-167	12000	26.45	25	10-145
13C12-PCB-156/157	24000	27.10	25	10-145
13C12-PCB-169	12000	28.75	28	10-145
13C12-PCB-189	12000	30.01	27	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.90	110	70-130
13C12-PCB-095	12000	19.21	64	70-130
13C12-PCB-153	12000	24.24	85	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.07	22	5-145
13C12-PCB-111	12000	22.08	25	10-145
13C12-PCB-178	12000	25.12	26	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0313
Mid Point PCB TEQ	0.919
Upper Bound PCB TEQ	1.52

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	22-22160-SVOC-(16 THRU 20) BLANK#1	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-4	Extraction Date	15-Dec-22
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--
23-Jan-2023

Run Information	Run 1
Filename	9-230121A20
Run Date	22-Jan-23 00:01
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 SPBOCTYL273027-01

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	NotFnd	<4.7	4.7	U		150
PCB-077	0.0001	NotFnd	<5.0	5.0	U		150
PCB-123	0.00003	NotFnd	<7.6	7.6	U		150
PCB-118	0.00003	23.35	20.7	6.3	J		150
PCB-114	0.00003	NotFnd	<7.5	7.5	U		150
PCB-105	0.00003	NotFnd	<7.4	7.4	U		150
PCB-126	0.1	NotFnd	<8.0	8.0	U		150
PCB-167	0.00003	NotFnd	<2.9	2.9	U		150
PCB-156/157	0.00003	NotFnd	<4.5	4.5	U		300
PCB-169	0.03	NotFnd	<3.1	3.1	U		150
PCB-189	0.00003	NotFnd	<3.1	3.1	U		150

Extraction Standards	pg	Time	% Rec	Limits
13C12-PCB-081	12000	21.89	42	10-145
13C12-PCB-077	12000	22.20	43	10-145
13C12-PCB-123	12000	23.15	46	10-145
13C12-PCB-118	12000	23.32	52	10-145
13C12-PCB-114	12000	23.62	47	10-145
13C12-PCB-105	12000	24.00	48	10-145
13C12-PCB-126	12000	25.58	49	10-145
13C12-PCB-167	12000	26.44	50	10-145
13C12-PCB-156/157	24000	27.09	49	10-145
13C12-PCB-169	12000	28.75	55	10-145
13C12-PCB-189	12000	30.00	53	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.89	140	70-130
13C12-PCB-095	12000	19.20	76	70-130
13C12-PCB-153	12000	24.23	114	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.07	42	5-145
13C12-PCB-111	12000	22.07	58	10-145
13C12-PCB-178	12000	25.11	64	10-145

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.000621
Mid Point PCB TEQ	0.449
Upper Bound PCB TEQ	0.897

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.

EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-5	Extraction Date	15-Dec-22
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--
23-Jan-2023

Run Information	**Run 1**
Filename	9-230121A21
Run Date	22-Jan-23 00:43
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 SPBOCTYL273027-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<8.4	8.4	U		150
PCB-077	0.0001	22.20	93.7	9.3	J		150
PCB-123	0.00003	23.15	<10	9.8	M,J,R	10	150
PCB-118	0.00003	23.33	659	8.1			150
PCB-114	0.00003	23.65	<16	9.5	J,R	16	150
PCB-105	0.00003	24.01	213	9.7			150
PCB-126	0.1	25.57	<11	11	M,U	7.3	150
PCB-167	0.00003	26.45	12.8	4.1	J		150
PCB-156/157	0.00003	27.09	<29	6.0	J,R	29	300
PCB-169	0.03	NotFnd	<4.3	4.3	U		150
PCB-189	0.00003	NotFnd	<4.2	4.2	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.89	34	10-145
13C12-PCB-077	12000	22.20	34	10-145
13C12-PCB-123	12000	23.15	36	10-145
13C12-PCB-118	12000	23.32	41	10-145
13C12-PCB-114	12000	23.62	38	10-145
13C12-PCB-105	12000	24.00	37	10-145
13C12-PCB-126	12000	25.58	37	10-145
13C12-PCB-167	12000	26.44	37	10-145
13C12-PCB-156/157	24000	27.09	37	10-145
13C12-PCB-169	12000	28.75	40	10-145
13C12-PCB-189	12000	30.00	39	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.89	110	70-130
13C12-PCB-095	12000	19.20	72	70-130
13C12-PCB-153	12000	24.23	91	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.06	34	5-145
13C12-PCB-111	12000	22.07	38	10-145
13C12-PCB-178	12000	25.11	39	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0359
Mid Point PCB TEQ	0.653
Upper Bound PCB TEQ	1.27

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	22-22160-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-6	Extraction Date	15-Dec-22
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--
23-Jan-2023

Run Information	**Run 1**
Filename	9-230121A24
Run Date	22-Jan-23 02:50
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 SPBOCTYL273027-01

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	21.88	<6.0	5.9	M,J,R	6.0	150
PCB-077	0.0001	22.20	184	6.4			150
PCB-123	0.00003	23.14	<34	6.5	M,J,R	34	150
PCB-118	0.00003	23.33	2000	5.5			150
PCB-114	0.00003	23.62	<50	6.2	J,R	50	150
PCB-105	0.00003	24.00	630	6.4			150
PCB-126	0.1	25.58	<7.7	7.0	J,R	7.7	150
PCB-167	0.00003	26.45	19.4	2.9	J		150
PCB-156/157	0.00003	27.08	<43	4.6	J,R	43	300
PCB-169	0.03	NotFnd	<3.2	3.2	U		150
PCB-189	0.00003	NotFnd	<3.1	3.1	U		150

Extraction Standards	pg	Time	% Rec	Limits
13C12-PCB-081	12000	21.88	36	10-145
13C12-PCB-077	12000	22.19	36	10-145
13C12-PCB-123	12000	23.15	40	10-145
13C12-PCB-118	12000	23.32	43	10-145
13C12-PCB-114	12000	23.62	40	10-145
13C12-PCB-105	12000	23.99	40	10-145
13C12-PCB-126	12000	25.57	39	10-145
13C12-PCB-167	12000	26.44	47	10-145
13C12-PCB-156/157	24000	27.09	46	10-145
13C12-PCB-169	12000	28.74	49	10-145
13C12-PCB-189	12000	30.00	48	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.89	118	70-130
13C12-PCB-095	12000	19.20	73	70-130
13C12-PCB-153	12000	24.23	69	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.06	31	5-145
13C12-PCB-111	12000	22.07	44	10-145
13C12-PCB-178	12000	25.11	50	10-145

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.0979
Mid Point PCB TEQ	0.922
Upper Bound PCB TEQ	0.970

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	**22-22160-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-7	Extraction Date	15-Dec-22
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--
23-Jan-2023

Run Information	**Run 1**
Filename	9-230121A22
Run Date	22-Jan-23 01:25
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 SPBOCTYL273027-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<13	13	U		150
PCB-077	0.0001	22.24	<42	14	J,R	42	150
PCB-123	0.00003	NotFnd	<21	21	U		150
PCB-118	0.00003	23.33	785	18			150
PCB-114	0.00003	NotFnd	<19	19	U		150
PCB-105	0.00003	24.01	265	20			150
PCB-126	0.1	NotFnd	<23	23	U		150
PCB-167	0.00003	26.46	9.67	7.7	J		150
PCB-156/157	0.00003	27.09	32.7	12	J		300
PCB-169	0.03	NotFnd	<8.4	8.4	U		150
PCB-189	0.00003	NotFnd	<9.8	9.8	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.90	22	10-145
13C12-PCB-077	12000	22.20	22	10-145
13C12-PCB-123	12000	23.15	24	10-145
13C12-PCB-118	12000	23.33	26	10-145
13C12-PCB-114	12000	23.64	25	10-145
13C12-PCB-105	12000	24.00	25	10-145
13C12-PCB-126	12000	25.58	24	10-145
13C12-PCB-167	12000	26.45	27	10-145
13C12-PCB-156/157	24000	27.10	27	10-145
13C12-PCB-169	12000	28.75	29	10-145
13C12-PCB-189	12000	30.00	29	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.90	128	70-130
13C12-PCB-095	12000	19.20	75	70-130
13C12-PCB-153	12000	24.23	96	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.07	25	5-145
13C12-PCB-111	12000	22.08	29	10-145
13C12-PCB-178	12000	25.12	31	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0328
Mid Point PCB TEQ	1.32
Upper Bound PCB TEQ	2.59

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

ALS Life Sciences

Sample Analysis Report

Sample Name	22-22160-SVOC-(36 THRU 40) BLANK#2	Sampling Date	2-Dec-22		Approved:
ALS Sample ID	L2742305-8	Extraction Date	15-Dec-22		*E. Sabljic*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		23-Jan-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	Run 1
Filename	9-230121A23
Run Date	22-Jan-23 02:08
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 SPBOCTYL273027-01

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	NotFnd	<5.9	5.9	U		150
PCB-077	0.0001	NotFnd	<6.4	6.4	U		150
PCB-123	0.00003	NotFnd	<10	10	U		150
PCB-118	0.00003	23.33	<17	8.4	J,R	17	150
PCB-114	0.00003	NotFnd	<9.6	9.6	U		150
PCB-105	0.00003	NotFnd	<10	10	U		150
PCB-126	0.1	NotFnd	<11	11	U		150
PCB-167	0.00003	NotFnd	<4.3	4.3	U		150
PCB-156/157	0.00003	NotFnd	<6.8	6.8	U		300
PCB-169	0.03	NotFnd	<4.8	4.8	U		150
PCB-189	0.00003	NotFnd	<4.2	4.2	U		150

Extraction Standards	pg	Time	% Rec	Limits
13C12-PCB-081	12000	21.89	20	10-145
13C12-PCB-077	12000	22.19	20	10-145
13C12-PCB-123	12000	23.15	22	10-145
13C12-PCB-118	12000	23.32	24	10-145
13C12-PCB-114	12000	23.62	22	10-145
13C12-PCB-105	12000	23.99	22	10-145
13C12-PCB-126	12000	25.57	22	10-145
13C12-PCB-167	12000	26.44	25	10-145
13C12-PCB-156/157	24000	27.09	24	10-145
13C12-PCB-169	12000	28.74	26	10-145
13C12-PCB-189	12000	30.00	27	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.89	111	70-130
13C12-PCB-095	12000	19.20	72	70-130
13C12-PCB-153	12000	24.23	88	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.06	21	5-145
13C12-PCB-111	12000	22.07	24	10-145
13C12-PCB-178	12000	25.11	25	10-145

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.624
Upper Bound PCB TEQ	1.25

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

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3775107-1	Extraction Date	15-Dec-22
Analysis Method	EPA 1668C	Sample Size	1 Sample
Analysis Type	Blank	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	6

Approved:
E. Sabljic
--e-signature--
23-Jan-2023

Run Information	**Run 1**
Filename	9-230121A16
Run Date	21-Jan-23 21:11
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-9 SPBOCTYL273027-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<8.7	8.7	U		150
PCB-077	0.0001	NotFnd	<9.1	9.1	U		150
PCB-123	0.00003	NotFnd	<15	15	U		150
PCB-118	0.00003	NotFnd	<14	14	U		150
PCB-114	0.00003	NotFnd	<14	14	U		150
PCB-105	0.00003	NotFnd	<14	14	U		150
PCB-126	0.1	NotFnd	<17	17	U		150
PCB-167	0.00003	NotFnd	<4.9	4.9	U		150
PCB-156/157	0.00003	NotFnd	<7.5	7.5	U		300
PCB-169	0.03	NotFnd	<5.3	5.3	U		150
PCB-189	0.00003	NotFnd	<6.8	6.8	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.90	29	10-145	
13C12-PCB-077	12000	22.21	31	10-145	
13C12-PCB-123	12000	23.15	34	10-145	
13C12-PCB-118	12000	23.33	35	10-145	
13C12-PCB-114	12000	23.64	34	10-145	
13C12-PCB-105	12000	24.00	35	10-145	
13C12-PCB-126	12000	25.58	36	10-145	
13C12-PCB-167	12000	26.45	37	10-145	
13C12-PCB-156/157	24000	27.10	37	10-145	
13C12-PCB-169	12000	28.75	41	10-145	R
13C12-PCB-189	12000	30.00	42	10-145	

Field Spike Standards				
13C12-PCB-031			NS	
13C12-PCB-095			NS	
13C12-PCB-153			NS	

Cleanup Standards				
13C12-PCB-028	12000	16.07	25	5-145
13C12-PCB-111	12000	22.08	31	10-145
13C12-PCB-178	12000	25.12	35	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.932
Upper Bound PCB TEQ	1.86

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.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
NS	Indicates that this compound was not added.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3775107-2	Extraction Date	15-Dec-22
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--
23-Jan-2023

Run Information	**Run 1**
Filename	9-230121A13
Run Date	21-Jan-23 19:04
Final Volume	25 ul
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-9 SPBOCTYL273027-01

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
PCB-081	6000	21.90	86	60-135	
PCB-077	6000	22.22	84	60-135	
PCB-123	6000	23.18	86	60-135	
PCB-118	6000	23.35	84	60-135	
PCB-114	6000	23.65	86	60-135	
PCB-105	6000	24.01	82	60-135	
PCB-126	6000	25.59	82	60-135	
PCB-167	6000	26.46	89	60-135	
PCB-156/157	12000	27.12	87	60-135	
PCB-169	6000	28.76	88	60-135	
PCB-189	6000	30.03	88	60-135	
Extraction Standards		**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.90	37	40-145	
13C12-PCB-077	12000	22.21	39	40-145	
13C12-PCB-123	12000	23.16	39	40-145	
13C12-PCB-118	12000	23.33	40	40-145	
13C12-PCB-114	12000	23.64	39	40-145	
13C12-PCB-105	12000	24.00	41	40-145	
13C12-PCB-126	12000	25.58	42	40-145	
13C12-PCB-167	12000	26.45	41	40-145	
13C12-PCB-156/157	24000	27.10	40	40-145	
13C12-PCB-169	12000	28.75	45	40-145	
13C12-PCB-189	12000	30.01	43	40-145	
Field Spike Standards					
13C12-PCB-031			NS		
13C12-PCB-095			NS		
13C12-PCB-153			NS		
Cleanup Standards					
13C12-PCB-028	12000	16.08	31	15-145	
13C12-PCB-111	12000	22.08	32	40-145	
13C12-PCB-178	12000	25.12	35	40-145	

NS Indicates that this compound was not added.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2742305		Mississauga, ON, L5J 2Y4
Date of Report	24-Jan-23		Canada
Date of Sample Receipt	2-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **CB by LRGC/MS - Isotope dilution**

Chlorobenzene data is not available from these SVOC trains since chlorobenzene-13C6 extraction standard was not recovered.

Certified by:

Ron McLeod, Ph.D.
Technical Director

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		22-22160-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1		22-22160-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1		22-22160-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1		22-22160-SVOC-(16 THRU 20) BLANK#1	
ALS Sample ID	WG3775107-1		L2742305-1		L2742305-2		L2742305-3		L2742305-4	
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		1-Dec-22		1-Dec-22		2-Dec-22		2-Dec-22	
Extraction Date	15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
1,3-Dichlorobenzene	<12	U	89.9		135		120		<12	U
1,4-Dichlorobenzene	<12	U	299	M	253	M	199	M	<12	U
1,2-Dichlorobenzene	<12	U	117		158	M	118	M	<12	U
1,3,5-Trichlorobenzene	<12	U	14.2	M	<12	U	12.2		<12	U
1,2,4-Trichlorobenzene	<12	U	38.9		53.5		35.8		<12	U
1,2,3-Trichlorobenzene	<12	U	12		12.5		<12	U	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12	U	12.6		18.4		12.7		<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		122		135		114		109	
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
13C6-1,4-Dichlorobenzene	29		7		10		17		8	
13C6-1,2,3-Trichlorobenzene	66		33		32		57		41	
13C6-1,2,3,4-Tetrachlorobenzene	71		39		37		63		50	
13C6-Pentachlorobenzene	81		45		41		72		62	
13C6-Hexachlorobenzene	86		49		45		78		71	

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.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	22-22160-SVOC- (21 THRU 25) TEST#1 APC OUTLET#2		22-22160-SVOC- (26 THRU 30) TEST#2 APC OUTLET#2		22-22160-SVOC- (31 THRU 35) TEST#3 APC OUTLET#2		22-22160-SVOC- (36 THRU 40) BLANK#2		Laboratory Control Sample		Laboratory Control Sample	
ALS Sample ID	L2742305-5		L2742305-6		L2742305-7		L2742305-8		WG3775107-2		WG3775107-5	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	Stack		Stack		Stack		Stack		QC		QC	
Sampling Date	1-Dec-22		1-Dec-22		2-Dec-22		2-Dec-22		n/a		n/a	
Extraction Date	15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**		**% Recovery**	
1,3-Dichlorobenzene	199		153		167		<12	U	87		91	M
1,4-Dichlorobenzene	290	M	257	M	280	M	<12	U	107	M	110	M
1,2-Dichlorobenzene	208		159	M	176	M	<12	U	122		110	M
1,3,5-Trichlorobenzene	20.1		15.7		14.1		<12	U	91		83	
1,2,4-Trichlorobenzene	62.6		55.3		44.5		<12	U	89		143	M
1,2,3-Trichlorobenzene	18	M	15.9		12.7	M	<12	U	98		90	
1,2,3,5/1,2,4,5-Tetrachlorobenzene	20.3		18.5		14		<12	U	100		96	
1,2,3,4-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	102		100	
Pentachlorobenzene	<12	U	<12	U	<12	U	<12	U	103		123	
Hexachlorobenzene	<12	U	<12	U	<12	U	<12	U	94		130	
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	146		122		118		127		NS		NS	
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
13C6-1,4-Dichlorobenzene	20		19		22		12		13		5	
13C6-1,2,3-Trichlorobenzene	41		44		51		43		37		20	
13C6-1,2,3,4-Tetrachlorobenzene	42		46		52		49		40		22	
13C6-Pentachlorobenzene	46		48		58		55		45		21	
13C6-Hexachlorobenzene	49		50		64		60		49		20	

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

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**		Sampling Date	n/a
ALS Sample ID	WG3775107-1		Extraction Date	15-Dec-22
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--
12-Jan-2023

Run Information	**Run 1**
Filename	23011023.D
Run Date	1/10/2023 21:04
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		NotFnd	<12	U
1,4-Dichlorobenzene		NotFnd	<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
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.80	29	
13C6-1,2,3-Trichlorobenzene	300	9.18	66	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	71	
13C6-Pentachlorobenzene	300	12.22	81	
13C6-Hexachlorobenzene	300	13.86	86	

U Indicates that this compound was not detected above the MDL.
NS Indicates that this compound was not spiked in

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-1	Extraction Date	15-Dec-22
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--
12-Jan-2023

Run Information	**Run 1**
Filename	23011027.D
Run Date	1/10/2023 22:27
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		6.73	89.9	
1,4-Dichlorobenzene		6.81	299	M
1,2-Dichlorobenzene		7.10	117	
1,3,5-Trichlorobenzene		8.26	14.2	M
1,2,4-Trichlorobenzene		8.78	38.9	
1,2,3-Trichlorobenzene		9.19	12	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.39	12.6	
1,2,3,4-Tetrachlorobenzene		10.90	<12	U
Pentachlorobenzene		12.23	<12	U
Hexachlorobenzene		13.86	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	300	10.19	122	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.80	7	
13C6-1,2,3-Trichlorobenzene	300	9.18	33	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	39	
13C6-Pentachlorobenzene	300	12.22	45	
13C6-Hexachlorobenzene	300	13.86	49	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-2	Extraction Date	15-Dec-22
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--
12-Jan-2023

Run Information	**Run 1**
Filename	23011028.D
Run Date	1/10/2023 22:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		6.73	135	
1,4-Dichlorobenzene		6.80	253	M
1,2-Dichlorobenzene		7.11	158	M
1,3,5-Trichlorobenzene		8.26	<12	U
1,2,4-Trichlorobenzene		8.78	53.5	
1,2,3-Trichlorobenzene		9.19	12.5	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.40	18.4	
1,2,3,4-Tetrachlorobenzene		10.89	<12	U
Pentachlorobenzene		12.23	<12	U
Hexachlorobenzene		13.86	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	300	10.19	135	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.80	10	
13C6-1,2,3-Trichlorobenzene	300	9.18	32	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	37	
13C6-Pentachlorobenzene	300	12.22	41	
13C6-Hexachlorobenzene	300	13.86	45	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-3	Extraction Date	15-Dec-22
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--
12-Jan-2023

Run Information	**Run 1**
Filename	23011029.D
Run Date	1/10/2023 23:08
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		6.72	120	
1,4-Dichlorobenzene		6.80	199 M	
1,2-Dichlorobenzene		7.09	118 M	
1,3,5-Trichlorobenzene		8.26	12.2	
1,2,4-Trichlorobenzene		8.78	35.8	
1,2,3-Trichlorobenzene		9.18	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.39	12.7	
1,2,3,4-Tetrachlorobenzene		10.89	<12	U
Pentachlorobenzene		12.23	<12	U
Hexachlorobenzene		13.86	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	300	10.19	114	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.80	17	
13C6-1,2,3-Trichlorobenzene	300	9.18	57	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	63	
13C6-Pentachlorobenzene	300	12.22	72	
13C6-Hexachlorobenzene	300	13.86	78	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-4	Extraction Date	15-Dec-22
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--
12-Jan-2023

Run Information	**Run 1**
Filename	23011025.D
Run Date	1/10/2023 21:45
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		NotFnd	<12	U
1,4-Dichlorobenzene		NotFnd	<12	U
1,2-Dichlorobenzene		NotFnd	<12	U
1,3,5-Trichlorobenzene		NotFnd	<12	U
1,2,4-Trichlorobenzene		8.79	<12	U
1,2,3-Trichlorobenzene		9.13	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.40	<12	U
1,2,3,4-Tetrachlorobenzene		10.80	<12	U
Pentachlorobenzene		11.78	<12	U
Hexachlorobenzene		13.86	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	300	10.19	109	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.80	8	
13C6-1,2,3-Trichlorobenzene	300	9.19	41	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	50	
13C6-Pentachlorobenzene	300	12.22	62	
13C6-Hexachlorobenzene	300	13.86	71	

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-5	Extraction Date	15-Dec-22
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--
12-Jan-2023

Run Information	**Run 1**
Filename	23011030.D
Run Date	1/10/2023 23:29
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		6.72	199	
1,4-Dichlorobenzene		6.80	290	M
1,2-Dichlorobenzene		7.10	208	
1,3,5-Trichlorobenzene		8.27	20.1	
1,2,4-Trichlorobenzene		8.78	62.6	
1,2,3-Trichlorobenzene		9.19	18	M
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.39	20.3	
1,2,3,4-Tetrachlorobenzene		10.89	<12	U
Pentachlorobenzene		12.23	<12	U
Hexachlorobenzene		13.85	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	300	10.19	146	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.80	20	
13C6-1,2,3-Trichlorobenzene	300	9.19	41	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	42	
13C6-Pentachlorobenzene	300	12.22	46	
13C6-Hexachlorobenzene	300	13.86	49	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-6	Extraction Date	15-Dec-22
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--
12-Jan-2023

Run Information	**Run 1**
Filename	23011031.D
Run Date	1/10/2023 23:49
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		6.72	153	
1,4-Dichlorobenzene		6.80	257	M
1,2-Dichlorobenzene		7.10	159	M
1,3,5-Trichlorobenzene		8.27	15.7	
1,2,4-Trichlorobenzene		8.78	55.3	
1,2,3-Trichlorobenzene		9.18	15.9	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.39	18.5	
1,2,3,4-Tetrachlorobenzene		10.90	<12	U
Pentachlorobenzene		12.23	<12	U
Hexachlorobenzene		13.86	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	300	10.19	122	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.80	19	
13C6-1,2,3-Trichlorobenzene	300	9.18	44	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	46	
13C6-Pentachlorobenzene	300	12.22	48	
13C6-Hexachlorobenzene	300	13.86	50	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-7	Extraction Date	15-Dec-22
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--
12-Jan-2023

Run Information	**Run 1**
Filename	23011032.D
Run Date	1/11/2023 0:10
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		6.72	167	
1,4-Dichlorobenzene		6.80	280	M
1,2-Dichlorobenzene		7.10	176	M
1,3,5-Trichlorobenzene		8.26	14.1	
1,2,4-Trichlorobenzene		8.78	44.5	
1,2,3-Trichlorobenzene		9.19	12.7	M
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.39	14	
1,2,3,4-Tetrachlorobenzene		10.89	<12	U
Pentachlorobenzene		12.22	<12	U
Hexachlorobenzene		13.86	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	300	10.19	118	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.80	22	
13C6-1,2,3-Trichlorobenzene	300	9.19	51	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	52	
13C6-Pentachlorobenzene	300	12.22	58	
13C6-Hexachlorobenzene	300	13.86	64	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-8	Extraction Date	15-Dec-22
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--
12-Jan-2023

Run Information	**Run 1**
Filename	23011026.D
Run Date	1/10/2023 22:06
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		NotFnd	<12	U
1,4-Dichlorobenzene		NotFnd	<12	U
1,2-Dichlorobenzene		NotFnd	<12	U
1,3,5-Trichlorobenzene		NotFnd	<12	U
1,2,4-Trichlorobenzene		8.78	<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	300	10.19	127	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.81	12	
13C6-1,2,3-Trichlorobenzene	300	9.18	43	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	49	
13C6-Pentachlorobenzene	300	12.22	55	
13C6-Hexachlorobenzene	300	13.86	60	

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3775107-2	Extraction Date	15-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
12-Jan-2023

Run Information	**Run 1**
Filename	23011021.D
Run Date	1/10/2023 20:22
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
1,3-Dichlorobenzene	600	6.72	87	
1,4-Dichlorobenzene	600	6.80	107	M
1,2-Dichlorobenzene	600	7.10	122	
1,3,5-Trichlorobenzene	600	8.26	91	
1,2,4-Trichlorobenzene	600	8.78	89	
1,2,3-Trichlorobenzene	600	9.19	98	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	1200	10.40	100	
1,2,3,4-Tetrachlorobenzene	600	10.89	102	
Pentachlorobenzene	600	12.22	103	
Hexachlorobenzene	600	13.86	94	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.80	13	
13C6-1,2,3-Trichlorobenzene	300	9.19	37	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	40	
13C6-Pentachlorobenzene	300	12.22	45	
13C6-Hexachlorobenzene	300	13.86	49	

M Indicates that a peak has been manually integrated.

NS Indicates that this compound was not spiked in

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**		Sampling Date	n/a
ALS Sample ID	WG3775107-5		Extraction Date	15-Dec-22
Analysis Method	SIM GC/MS			
Analysis Type	LCS			
Sample Matrix	QC			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Andrew Reid
--e-signature--
12-Jan-2023

Run Information	**Run 1**
Filename	23011020.D
Run Date	1/10/2023 20:02
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
1,3-Dichlorobenzene	120	6.77	91	M
1,4-Dichlorobenzene	120	6.81	110	M
1,2-Dichlorobenzene	120	7.09	110	M
1,3,5-Trichlorobenzene	120	8.26	83	
1,2,4-Trichlorobenzene	120	8.78	143	M
1,2,3-Trichlorobenzene	120	9.19	90	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	240	10.40	96	
1,2,3,4-Tetrachlorobenzene	120	10.89	100	
Pentachlorobenzene	120	12.22	123	
Hexachlorobenzene	120	13.86	130	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-1,4-Dichlorobenzene	300	6.80	5	
13C6-1,2,3-Trichlorobenzene	300	9.19	20	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.89	22	
13C6-Pentachlorobenzene	300	12.22	21	
13C6-Hexachlorobenzene	300	13.86	20	

M Indicates that a peak has been manually integrated.

NS Indicates that this compound was not spiked in

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2742305		Mississauga, ON, L5J 2Y4
Date of Report	30-Jan-23		Canada
Date of Sample Receipt	2-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Media Blank		22-22160-SVOC- (1 THRU 5) TEST#1 APC OUTLET#1		22-22160-SVOC- (6 THRU 10) TEST#2 APC OUTLET#1		22-22160-SVOC- (11 THRU 15) TEST#3 APC OUTLET#1		22-22160-SVOC- (16 THRU 20) BLANK#1	
ALS Sample ID	WG3775107-1		L2742305-1		L2742305-2		L2742305-3		L2742305-4	
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		1-Dec-22		1-Dec-22		2-Dec-22		2-Dec-22	
Extraction Date	15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22	
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)	80		23		26		59		28	
13C6-2,4-Dichlorophenol (ES)	65		27		34		78		49	
13C6-2,4,5-Trichlorophenol (ES)	61		24		30		88		75	
13C6-2,3,4,5-Tetrachlorophenol (ES)	53		33		39		110		64	
13C6-Pentachlorophenol (ES)	54		45		51		114		78	

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Summary Report

Sample Name	22-22160-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2	22-22160-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2	22-22160-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2	22-22160-SVOC-(36 THRU 40) BLANK#2	Laboratory Control Sample (1200ng Spiked)	Laboratory Control Sample (120ng spiked)
ALS Sample ID	L2742305-5	L2742305-6	L2742305-7	L2742305-8	WG3775107-2	WG3775107-5
Sample Size	1	1	1	1	1	1
Sample units	sample	sample	sample	sample	sample	sample
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	Stack	Stack	Stack	Stack	QC	QC
Sampling Date	1-Dec-22	1-Dec-22	2-Dec-22	2-Dec-22	n/a	n/a
Extraction Date	15-Dec-22	15-Dec-22	15-Dec-22	15-Dec-22	15-Dec-22	15-Dec-22
Target Analytes	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**	**% Recovery**	**% Recovery**
2-Chlorophenol	<60 U	<60 U	<60 U	<60 U	105	99
3-Chlorophenol	<60 U	<60 U	<60 U	<60 U		
4-Chlorophenol	<60 U	<60 U	<60 U	<60 U		
2,6-Dichlorophenol	<60 U	<60 U	<60 U	<60 U	93	94
2,4/2,5-Dichlorophenol	<60 U	<60 U	<60 U	<60 U	98	88
3,5-Dichlorophenol	<60 U	<60 U	<60 U	<60 U		
2,3-Dichlorophenol	<60 U	<60 U	<60 U	<60 U	67 M	80 M
3,4-Dichlorophenol	<60 U	<60 U	<60 U	<60 U		
2,4,6-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	79	85
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	101	99
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	101 M	90 M
2,3,4,5-Tetrachlorophenol	<60 U	<60 U	<60 U	<60 U	87	93
Pentachlorophenol	<60 U	<60 U	<60 U	<60 U	102 M	105 M
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C6-4-Chlorophenol (ES)	29	25	18	43	93	75
13C6-2,4-Dichlorophenol (ES)	46	34	30	56	108	82
13C6-2,4,5-Trichlorophenol (ES)	75	48	21	58	61	74
13C6-2,3,4,5-Tetrachlorophenol (ES)	56	24	21	104	67	83
13C6-Pentachlorophenol (ES)	40	15	14	127	47	94

U Indicates that this compound was not detected above the LOR.
M Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Report

Sample Name	**Media Blank**		Sampling Date	n/a
ALS Sample ID	WG3775107-1		Extraction Date	15-Dec-22
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--
25-Jan-2023

Run Information	**Run 1**
Filename	23011206.D
Run Date	1/12/2023 17:21
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1389162H

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	8.41	80		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.58	65		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.04	61		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	53		20-150
13C6-Pentachlorophenol (ES)	1200	13.62	54		20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**22-22160-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-1	Extraction Date	15-Dec-22
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--
25-Jan-2023

Run Information	**Run 1**
Filename	23011208.D
Run Date	1/12/2023 18:12
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1389162H

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	8.42	23		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.58	27		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.04	24		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	33		20-150
13C6-Pentachlorophenol (ES)	1200	13.62	45		20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**22-22160-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-2	Extraction Date	15-Dec-22
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--
25-Jan-2023

Run Information	**Run 1**
Filename	23011209.D
Run Date	1/12/2023 18:37
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1389162H

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	8.41	26		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.58	34		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.04	30		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	39		20-150
13C6-Pentachlorophenol (ES)	1200	13.62	51		20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**22-22160-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-3	Extraction Date	15-Dec-22
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--
25-Jan-2023

Run Information	**Run 1**
Filename	23011210.D
Run Date	1/12/2023 19:03
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1389162H

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	8.41	59		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.58	78		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.04	88		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	110		20-150
13C6-Pentachlorophenol (ES)	1200	13.62	114		20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**22-22160-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-4	Extraction Date	15-Dec-22
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--
25-Jan-2023

Run Information	**Run 1**
Filename	23011211.D
Run Date	1/12/2023 19:28
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1389162H

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	8.46	28	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.60	49	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.05	75	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	64	20-150
13C6-Pentachlorophenol (ES)	1200	13.18	78	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**22-22160-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-5	Extraction Date	15-Dec-22
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--
25-Jan-2023

Run Information	**Run 1**
Filename	23011212.D
Run Date	1/12/2023 19:54
Final Volume	1 mL
Dilution Factor	1
Analysis Units	n/a
Instrument	MSD-2
Column	HP-5MS US1389162H

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	8.41	29		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.58	46		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.04	75		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	56		20-150
13C6-Pentachlorophenol (ES)	1200	13.62	40		20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**22-22160-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-6	Extraction Date	15-Dec-22
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--
25-Jan-2023

Run Information	**Run 1**
Filename	23011213.D
Run Date	1/12/2023 20:20
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1389162H

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	8.42	25	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.58	34	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.04	48	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	24	20-150
13C6-Pentachlorophenol (ES)	1200	13.18	15	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**22-22160-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-7	Extraction Date	15-Dec-22
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--
25-Jan-2023

Run Information	**Run 1**
Filename	23011214.D
Run Date	1/12/2023 20:44
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1389162H

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	8.41	18		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.58	30		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.04	21		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	21		20-150
13C6-Pentachlorophenol (ES)	1200	13.18	14		20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**22-22160-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-8	Extraction Date	15-Dec-22
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--
25-Jan-2023

Run Information	**Run 1**
Filename	23011215.D
Run Date	1/12/2023 21:09
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1389162H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	
2-Chlorophenol		NotFnd	<60	U	
3-Chlorophenol		NotFnd	<60	U	
4-Chlorophenol		NotFnd	<60	U	
2,6-Dichlorophenol		NotFnd	<60	U	
2,4/2,5-Dichlorophenol		NotFnd	<60	U	
3,5-Dichlorophenol		NotFnd	<60	U	
2,3-Dichlorophenol		NotFnd	<60	U	
3,4-Dichlorophenol		NotFnd	<60	U	
2,4,6-Trichlorophenol		NotFnd	<60	U	
2,3,6-Trichlorophenol		NotFnd	<60	U	
2,3,5-Trichlorophenol		NotFnd	<60	U	
2,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,4-Trichlorophenol		NotFnd	<60	U	
3,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<60	U	
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U	
Pentachlorophenol		NotFnd	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.44	43		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.59	56		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.05	58		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	104		20-150
13C6-Pentachlorophenol (ES)	1200	13.18	127		20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3775107-2	Extraction Date	15-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
25-Jan-2023

Run Information	**Run 1**
Filename	23011204.D
Run Date	1/12/2023 16:55
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS US1389162H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	1200	8.07	105		211-124
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	1200	9.38	93		10-110
2,4/2,5-Dichlorophenol	1200	9.58	98		35-98
3,5-Dichlorophenol					
2,3-Dichlorophenol	1200	9.91	67		63-141
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	1200	10.51	79		10-102
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	1200	11.04	101		45-95
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	2400	11.48	101		30-109
2,3,4,5-Tetrachlorophenol	1200	12.65	87		44-103
Pentachlorophenol	1200	13.18	102		32-121
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.41	93		50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.58	108		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.04	61		50-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	67		50-150
13C6-Pentachlorophenol (ES)	1200	13.18	47		50-150

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3775107-5	Extraction Date	15-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
25-Jan-2023

Run Information	**Run 1**
Filename	23011203.D
Run Date	1/12/2023 16:30
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS US1389162H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	120	8.07	99		212-124
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	120	9.38	94		10-110
2,4/2,5-Dichlorophenol	120	9.58	88		35-98
3,5-Dichlorophenol					
2,3-Dichlorophenol	120	9.91	80		63-141
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	120	10.51	85		10-102
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	120	11.04	99		45-95
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	240	11.48	90		30-109
2,3,4,5-Tetrachlorophenol	120	12.65	93		44-103
Pentachlorophenol	120	13.18	105		32-121
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.41	75		50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.58	82		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.04	74		50-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.65	83		50-150
13C6-Pentachlorophenol (ES)	1200	13.18	94		50-150

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#:	L2742305		
Date of Report	1-Feb-23		
Date of Sample Receipt	2-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 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		22-22160-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1		22-22160-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1		22-22160-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1		22-22160-SVOC-(16 THRU 20) BLANK#1	
ALS Sample ID	WG3775107-1		L2742305-1		L2742305-2		L2742305-3		L2742305-4	
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		1-Dec-22		1-Dec-22		2-Dec-22		2-Dec-22	
Extraction Date	15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22	
Target Analytes	ng		ng		ng		ng		ng	
Naphthalene	186	M,	352	B	1300	B	146	B	133	B
2-Methylnaphthalene	<12	U	38.7		323		26.5		<12	U
1-Methylnaphthalene	<12	U	25.1		156		16.6		<12	U
Acenaphthylene	<12	U	<12	U	14.8		<12	U	<12	U
Acenaphthene	<12	U	17.3		38.3		15.3		<12	U
Fluorene	<12	U	19.5		19.2		<12	U	<12	U
Phenanthrene	<12	U	127		135		54.1		<12	U
Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Fluoranthene	<12	U	84.7		91.8		15.5		<12	U
Pyrene	<12	U	212		195		17.4		<12	U
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Chrysene	<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)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(e)Pyrene	<12	U	38.9		34.1	M	<12	U	<12	U
Benzo(a)Pyrene	<12	U	<12	U	21.6		<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	14.8		<12	U	<12	U
Dibenzo(a,h)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(g,h,i)Perylene	<12	U	39.0		109		<12	U	<12	U
Additional Analytes										
Tetralin	75.5		135	M,B	134	B	140	B	118	B
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U
Biphenyl	<12	U	21.9	M,	41.6	M	13.1	M	<12	U
o-Terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U
1-Methylphenanthrene	440		33.3	B	37.9	B	27.1	B	316	B
9-Methylphenanthrene	<12	U	<12	U	18.7		<12	U	<12	U
2-methylanthracene	<12	U	29.4		47.0		20.8		<12	U
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U	<12	U
m-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U
p-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	59.1		<12	U
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U	<60	U
Picene	<60	U	<60	U	<60	U	<60	U	<60	U
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U	<60	U
Coronene	<60	U	<60	U	103		<60	U	<60	U
Field Sampling Standards	% Rec		% Rec		% Rec		% Rec		% Rec	
1-Methylnaphthalene-D10	n/a		90.2		94.8		81.3		76.0	
Fluorene D10	n/a		161.5		143.5		109.1		105.4	
Terphenyl D14(Surr.)	n/a		114.3		109.2		101.7		97.7	
Extraction Standards	% Rec		% Rec		% Rec		% Rec		% Rec	
Naphthalene D8	110.5	M	103.8		109.0		139.5		111.9	
2-Methylnaphthalene-D10	103.2	M	124.2		108.6		138.1		134.0	
Acenaphthylene D8	75.7	M	86.6		73.5		95.1		85.2	
Phenanthrene D10	125.9	M	107.6		98.9		124.1		149.7	
Anthracene-D10	99.7	M	80.0		72.5		83.1		119.1	
Fluoranthene D10	99.7	M	98.8		92.7		109.4		115.4	
Benz(a)Anthracene-D12	73.5	M,R	72.7		69.2		79.3		75.3	
Chrysene D12	82.6	M	76.9		73.7		84.4		79.5	
Benzo(b)Fluoranthene-D12	101.0	M	103.4		92.3		107.3		113.3	
Benzo(k)Fluoranthene-D12	87.1	M	81.7		74.2		87.7		93.0	
Benzo(a)Pyrene D12	96.9	M,R	105.1		103.8		129.7		133.4	
Perylene D12	98.0	M	76.8		72.8		91.2		95.2	
Indeno(1,2,3,cd)Pyrene-D12	104.0	M	74.3		72.6		82.7		101.1	
Dibenz(a,h)Anthracene-D14	83.6	M	64.3		63.3		71.8		87.2	
Benzo(g,h,i)Perylene D12	99.6	M	76.9		74.2		83.1		110.5	

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.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	22-22160-SVOC- (21 THRU 25) TEST#1 APC OUTLET#2		22-22160-SVOC- (26 THRU 30) TEST#2 APC OUTLET#2		22-22160-SVOC- (31 THRU 35) TEST#3 APC OUTLET#2		22-22160-SVOC- (36 THRU 40) BLANK#2		Laboratory Control Sample	
ALS Sample ID	L2742305-5		L2742305-6		L2742305-7		L2742305-8		WG3775107-2	
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	1-Dec-22		1-Dec-22		2-Dec-22		2-Dec-22		n/a	
Extraction Date	15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22		15-Dec-22	
Target Analytos	**ng**		**ng**		**ng**		**ng**		**%**	
Naphthalene	157	B	232	B	343	B	<12	U	128.9	M,,B
2-Methylnaphthalene	18.8		37.8		43.4		<12	U	109.9	M
1-Methylnaphthalene	12.5		24.8		25.1		<12	U	115.3	M
Acenaphthylene	<12	U	<12	U	<12	U	<12	U	104.8	M
Acenaphthene	<12	U	19.9		20.2		<12	U	131.1	M
Fluorene	<12	U	35.3		12.9		<12	U	121.1	M
Phenanthrene	49.7		150		88.4		<12	U	116.9	M
Anthracene	<12	U	<12	U	<12	U	<12	U	100.9	M
Fluoranthene	19.7		43.0		48.4		<12	U	106.6	M
Pyrene	35.3	M,	71.0		105		<12	U	106.4	M
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	90.0	M
Chrysene	<12	U	<12	U	<12	U	<12	U	99.9	M
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	87.6	M
Benzo(k)Fluoranthene	<12	U	<12	U	<12	U	<12	U	112.7	M
Benzo(e)Pyrene	<12	U	<12	U	<12	U	<12	U	111.7	M
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	114.4	M
Perylene	<12	U	<12	U	<12	U	<12	U	85.9	M
Indeno(1,2,3-cd)Pyrene	<12	U	22.5		<12	U	<12	U	82.8	M
Dibenzo(a,h)Anthracene	<12	U	<12	U	<12	U	<12	U	97.0	M
Benzo(g,h,i)Perylene	<12	U	177		63.4		<12	U	88.1	M
Additional Analytes										
Tetralin	166	B	244	B	171	B	172	M,B	n/a	
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	n/a	
Biphenyl	18.8	M	20.3	M,	33.1	M	<12	U	n/a	
o-Terphenyl	<12	U	<12	U	<12	U	<12	U	n/a	
1-Methylphenanthrene	27.4	B	61.4	B	<12	U	354	B	n/a	
9-Methylphenanthrene	<12	U	15.7		<12	U	106	R	n/a	
2-methylanthracene	49.9	M,	49.1		28.6		274	R	n/a	
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U	n/a	
m-terphenyl	<12	U	<12	U	<12	U	<12	U	n/a	
p-terphenyl	<12	U	<12	U	<12	U	<12	U	n/a	
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	n/a	
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	n/a	
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	67.3	R	n/a	
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U	n/a	
Picene	<60	U	<60	U	<60	U	<60	U	n/a	
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U	n/a	
Coronene	<60	U	162		85.7		<60	U	n/a	
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	86.6		83.6		100.8		114.0		n/a	
Fluorene D10	118.1		184.5		137.3		116.0		n/a	
Terphenyl D14(Surr.)	105.1		101.7		108.0		106.4		n/a	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	120.9		102.1		95.7		101.3	M	90.0	M
2-Methylnaphthalene-D10	118.0		120.7		97.4		120.1	M	108.5	M
Acenaphthylene D8	85.0		85.0		72.4		72.0	M	65.5	M
Phenanthrene D10	95.4		100.3		77.0		114.4	M,	107.9	M
Anthracene-D10	79.3		82.2		65.1		101.8	M,	91.5	M
Fluoranthene D10	99.3		98.2		89.3		98.7	M	83.6	M
Benz(a)Anthracene-D12	84.1		75.8		81.9		75.6	M,	64.2	M,
Chrysene D12	84.3		75.7		79.2		85.3	M	73.2	M
Benzo(b)Fluoranthene-D12	89.1		98.0		95.3		104.0	M	91.3	M
Benzo(k)Fluoranthene-D12	73.8		80.4		77.0		92.0	M	80.7	M
Benzo(a)Pyrene D12	134.3		119.8		126.3		99.5	M	90.8	M,
Perylene D12	87.9		83.8		85.3		93.2	M	93.7	M
Indeno(1,2,3,cd)Pyrene-D12	80.2		78.4		82.4		82.4	M	81.9	M
Dibenz(a,h)Anthracene-D14	67.4		67.7		68.5		71.5	M	77.8	M
Benzo(g,h,i)Perylene D12	75.8		78.3		78.1		83.9	M	89.0	M

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.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**		Sampling Date	n/a
ALS Sample ID	WG3775107-1		Extraction Date	15-Dec-22
Analysis Method	PAH by CARB 429			
Analysis Type	blank			
Sample Matrix	QC			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3775107

Approved:
Nick Schrobilgen
--e-signature--
01-Feb-2023

Run Information	**Run 1**
Filename	23012409.D
Run Date	1/24/2023 20:34
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MS US2543815H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.69	186 M	
2-Methylnaphthalene	3.25	<12	U
1-Methylnaphthalene	3.36	<12	U
Acenaphthylene	4.60	<12	U
Acenaphthene	NotFnd	<12	U
Fluorene	NotFnd	<12	U
Phenanthrene	NotFnd	<12	U
Anthracene	NotFnd	<12	U
Fluoranthene	NotFnd	<12	U
Pyrene	NotFnd	<12	U
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene	NotFnd	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)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)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	2.57	75.5	
2-Chloronaphthalene	3.78	<12	U
Biphenyl	3.76	<12	U
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	9.24	440	
9-Methylphenanthrene	NotFnd	<12	U
2-methylanthracene	NotFnd	<12	U
9,10-dimethylanthracene	11.98	<12	U
m-terphenyl	12.08	<12	U
p-terphenyl	12.56	<12	U
Benzo(a)fluorene	12.84	<12	U
Benzo(b)fluorene	13.05	<12	U
7,12-Dimethylbenzo(a)anthracene	19.02	<12	U
3-Methylcholanthrene	20.93	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	28.07	<60	U
Coronene	28.87	<60	U

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.67	110.5 M	50-150
2-Methylnaphthalene-D10	600	3.22	103.2 M	50-150
Acenaphthylene D8	600	4.32	75.7 M	50-150
Phenanthrene D10	600	7.62	125.9 M	50-150
Anthracene-D10	600	7.75	99.7 M	50-150
Fluoranthene D10	600	10.99	99.7 M	50-150
Benz(a)Anthracene-D12	600	15.50	73.5 M	50-150
Chrysene D12	600	15.61	82.6 M	50-150
Benzo(b)Fluoranthene-D12	600	18.82	101.0 M	50-150
Benzo(k)Fluoranthene-D12	600	18.92	87.1 M	50-150
Benzo(a)Pyrene D12	600	19.70	96.9 M	50-150
Perylene D12	600	19.93	98.0 M	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.17	104.0 M	50-150
Dibenz(a,h)Anthracene-D14	600	23.34	83.6 M	50-150
Benzo(g,h,i)Perylene D12	600	24.08	99.6 M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	22-22160-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-1	Extraction Date	15-Dec-22
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3775107

Approved:
Nick Schrobilgen
--e-signature--
01-Feb-2023

Run Information	**Run 1**
Filename	23012413.D
Run Date	1/24/2023 23:09
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MS US2543815H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.69	352	B
2-Methylnaphthalene	3.25	38.7	
1-Methylnaphthalene	3.36	25.1	
Acenaphthylene	4.34	<12	U
Acenaphthene	4.63	17.3	
Fluorene	5.51	19.5	
Phenanthrene	7.68	127	
Anthracene	7.80	<12	U
Fluoranthene	11.04	84.7	
Pyrene	11.68	212	
Benzo(a)Anthracene	15.56	<12	U
Chrysene	15.68	<12	U
Benzo(b)Fluoranthene	18.92	<12	U
Benzo(k)Fluoranthene	18.92	<12	U
Benzo(e)Pyrene	19.63	38.9	
Benzo(a)Pyrene	19.75	<12	U
Perylene	20.00	<12	U
Indeno(1,2,3-cd)Pyrene	23.26	<12	U
Dibenzo(a,h)Anthracene	23.42	<12	U
Benzo(g,h,i)Perylene	24.18	39.0	
Additional Analytes			
Tetralin	2.57	135 M	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.75	21.9 M	
o-Terphenyl	8.95	<12	U
1-Methylphenanthrene	9.23	33.3	B
9-Methylphenanthrene	9.33	<12	U
2-methylanthracene	9.39	29.4	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.08	<12	U
p-terphenyl	12.55	<12	U
Benzo(a)fluorene	12.86	<12	U
Benzo(b)fluorene	13.00	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	20.94	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	28.06	<60	U
Coronene	28.90	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.32	90.2	
Fluorene D10	600	5.48	161.5	
Terphenyl D14(Surr.)	600	12.49	114.3	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	103.8	50-150
2-Methylnaphthalene-D10	600	3.22	124.2	50-150
Acenaphthylene D8	600	4.32	86.6	50-150
Phenanthrene D10	600	7.62	107.6	50-150
Anthracene-D10	600	7.75	80.0	50-150
Fluoranthene D10	600	10.99	98.8	50-150
Benz(a)Anthracene-D12	600	15.50	72.7	50-150
Chrysene D12	600	15.61	76.9	50-150
Benzo(b)Fluoranthene-D12	600	18.82	103.4	50-150
Benzo(k)Fluoranthene-D12	600	18.91	81.7	50-150
Benzo(a)Pyrene D12	600	19.70	105.1	50-150
Perylene D12	600	19.93	76.8	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.18	74.3	50-150
Dibenz(a,h)Anthracene-D14	600	23.34	64.3	50-150
Benzo(g,h,i)Perylene D12	600	24.09	76.9	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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-2	Extraction Date	15-Dec-22
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3775107

Approved:
Nick Schrobilgen
--e-signature--
01-Feb-2023

Run Information	**Run 1**
Filename	23012414.D
Run Date	1/24/2023 23:48
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MS US2543815H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.69	1300	B
2-Methylnaphthalene	3.24	323	
1-Methylnaphthalene	3.35	156	
Acenaphthylene	4.34	14.8	
Acenaphthene	4.63	38.3	
Fluorene	5.52	19.2	
Phenanthrene	7.68	135	
Anthracene	7.80	<12	U
Fluoranthene	11.04	91.8	
Pyrene	11.68	195	
Benzo(a)Anthracene	15.58	<12	U
Chrysene	15.68	<12	U
Benzo(b)Fluoranthene	18.88	<12	U
Benzo(k)Fluoranthene	18.95	<12	U
Benzo(e)Pyrene	19.63	34.1 M	
Benzo(a)Pyrene	19.76	21.6	
Perylene	19.99	<12	U
Indeno(1,2,3-cd)Pyrene	23.26	14.8	
Dibenzo(a,h)Anthracene	23.44	<12	U
Benzo(g,h,i)Perylene	24.19	109	
Additional Analytes			
Tetralin	2.57	134	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.76	41.6 M	
o-Terphenyl	8.94	<12	U
1-Methylphenanthrene	9.24	37.9	B
9-Methylphenanthrene	9.33	18.7	
2-methylanthracene	9.39	47.0	
9,10-dimethylanthracene	11.91	<12	U
m-terphenyl	12.08	<12	U
p-terphenyl	12.55	<12	U
Benzo(a)fluorene	12.83	<12	U
Benzo(b)fluorene	13.04	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	20.93	<60	U
Picene	23.95	<60	U
Dibenzo(a,e)pyrene	28.03	<60	U
Coronene	28.90	103	

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.32	94.8	
Fluorene D10	600	5.47	143.5	
Terphenyl D14(Surr.)	600	12.49	109.2	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.67	109.0	50-150
2-Methylnaphthalene-D10	600	3.22	108.6	50-150
Acenaphthylene D8	600	4.32	73.5	50-150
Phenanthrene D10	600	7.62	98.9	50-150
Anthracene-D10	600	7.75	72.5	50-150
Fluoranthene D10	600	10.99	92.7	50-150
Benz(a)Anthracene-D12	600	15.50	69.2	50-150
Chrysene D12	600	15.61	73.7	50-150
Benzo(b)Fluoranthene-D12	600	18.82	92.3	50-150
Benzo(k)Fluoranthene-D12	600	18.91	74.2	50-150
Benzo(a)Pyrene D12	600	19.70	103.8	50-150
Perylene D12	600	19.93	72.8	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.18	72.6	50-150
Dibenz(a,h)Anthracene-D14	600	23.34	63.3	50-150
Benzo(g,h,i)Perylene D12	600	24.09	74.2	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-3	Extraction Date	15-Dec-22
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3775107

Approved:
Nick Schrobilgen
--e-signature--
01-Feb-2023

Run Information	**Run 1**
Filename	23012415.D
Run Date	1/25/2023 0:26
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MS US2543815H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.69	146	B
2-Methylnaphthalene	3.24	26.5	
1-Methylnaphthalene	3.35	16.6	
Acenaphthylene	4.34	<12	U
Acenaphthene	4.63	15.3	
Fluorene	5.52	<12	U
Phenanthrene	7.68	54.1	
Anthracene	7.80	<12	U
Fluoranthene	11.04	15.5	
Pyrene	11.68	17.4	
Benzo(a)Anthracene	15.56	<12	U
Chrysene	15.68	<12	U
Benzo(b)Fluoranthene	18.93	<12	U
Benzo(k)Fluoranthene	18.93	<12	U
Benzo(e)Pyrene	19.63	<12	U
Benzo(a)Pyrene	19.75	<12	U
Perylene	20.02	<12	U
Indeno(1,2,3-cd)Pyrene	23.26	<12	U
Dibenzo(a,h)Anthracene	23.41	<12	U
Benzo(g,h,i)Perylene	24.15	<12	U
Additional Analytes			
Tetralin	2.57	140	B
2-Chloronaphthalene	3.79	<12	U
Biphenyl	3.76	13.1	M
o-Terphenyl	8.95	<12	U
1-Methylphenanthrene	9.24	27.1	B
9-Methylphenanthrene	9.33	<12	U
2-methylanthracene	9.39	20.8	
9,10-dimethylanthracene	11.94	<12	U
m-terphenyl	12.07	<12	U
p-terphenyl	12.55	<12	U
Benzo(a)fluorene	12.85	<12	U
Benzo(b)fluorene	13.03	<12	U
7,12-Dimethylbenzo(a)anthracene	18.90	59.1	
3-Methylcholanthrene	20.88	<60	U
Picene	23.92	<60	U
Dibenzo(a,e)pyrene	28.05	<60	U
Coronene	28.93	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**	**Limits**
1-Methylnaphthalene-D10	600	3.32	81.3	
Fluorene D10	600	5.47	109.1	
Terphenyl D14(Surr.)	600	12.49	101.7	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	139.5	50-150
2-Methylnaphthalene-D10	600	3.22	138.1	50-150
Acenaphthylene D8	600	4.32	95.1	50-150
Phenanthrene D10	600	7.63	124.1	50-150
Anthracene-D10	600	7.75	83.1	50-150
Fluoranthene D10	600	10.99	109.4	50-150
Benz(a)Anthracene-D12	600	15.50	79.3	50-150
Chrysene D12	600	15.61	84.4	50-150
Benzo(b)Fluoranthene-D12	600	18.82	107.3	50-150
Benzo(k)Fluoranthene-D12	600	18.91	87.7	50-150
Benzo(a)Pyrene D12	600	19.70	129.7	50-150
Perylene D12	600	19.94	91.2	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.18	82.7	50-150
Dibenz(a,h)Anthracene-D14	600	23.34	71.8	50-150
Benzo(g,h,i)Perylene D12	600	24.09	83.1	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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-4	Extraction Date	15-Dec-22
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3775107

Approved:
Nick Schrobilgen
--e-signature--
01-Feb-2023

Run Information	**Run 1**
Filename	23012411.D
Run Date	1/24/2023 21:51
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MS US2543815H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**	
Naphthalene	2.69	133		B
2-Methylnaphthalene	3.25	<12	U	
1-Methylnaphthalene	3.35	<12	U	
Acenaphthylene	4.35	<12	U	
Acenaphthene	NotFnd	<12	U	
Fluorene	NotFnd	<12	U	
Phenanthrene	7.68	<12	U	
Anthracene	7.79	<12	U	
Fluoranthene	11.03	<12	U	
Pyrene	11.68	<12	U	
Benzo(a)Anthracene	15.61	<12	U	
Chrysene	15.74	<12	U	
Benzo(b)Fluoranthene	18.88	<12	U	
Benzo(k)Fluoranthene	18.95	<12	U	
Benzo(e)Pyrene	19.54	<12	U	
Benzo(a)Pyrene	19.76	<12	U	
Perylene	20.03	<12	U	
Indeno(1,2,3-cd)Pyrene	23.26	<12	U	
Dibenzo(a,h)Anthracene	23.44	<12	U	
Benzo(g,h,i)Perylene	24.19	<12	U	
Additional Analytes				
Tetralin	2.57	118		B
2-Chloronaphthalene	3.78	<12	U	
Biphenyl	NotFnd	<12	U	
o-Terphenyl	NotFnd	<12	U	
1-Methylphenanthrene	9.24	316		B
9-Methylphenanthrene	NotFnd	<12	U	
2-methylanthracene	NotFnd	<12	U	
9,10-dimethylanthracene	NotFnd	<12	U	
m-terphenyl	12.08	<12	U	
p-terphenyl	12.55	<12	U	
Benzo(a)fluorene	NotFnd	<12	U	
Benzo(b)fluorene	13.10	<12	U	
7,12-Dimethylbenzo(a)anthracene	19.02	<12	U	
3-Methylcholanthrene	NotFnd	<60	U	
Picene	NotFnd	<60	U	
Dibenzo(a,e)pyrene	28.09	<60	U	
Coronene	28.89	<60	U	

Field Sampling Standards	**ng spiked**		**% Rec**	**Limits**
1-Methylnaphthalene-D10	600	3.32	76	
Fluorene D10	600	5.47	105.4	
Terphenyl D14(Surr.)	600	12.49	97.7	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	111.9	50-150
2-Methylnaphthalene-D10	600	3.21	134.0	50-150
Acenaphthylene D8	600	4.32	85.2	50-150
Phenanthrene D10	600	7.62	149.7	50-150
Anthracene-D10	600	7.75	119.1	50-150
Fluoranthene D10	600	10.99	115.4	50-150
Benz(a)Anthracene-D12	600	15.50	75.3	50-150
Chrysene D12	600	15.61	79.5	50-150
Benzo(b)Fluoranthene-D12	600	18.82	113.3	50-150
Benzo(k)Fluoranthene-D12	600	18.91	93.0	50-150
Benzo(a)Pyrene D12	600	19.70	133.4	50-150
Perylene D12	600	19.94	95.2	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.18	101.1	50-150
Dibenz(a,h)Anthracene-D14	600	23.34	87.2	50-150
Benzo(g,h,i)Perylene D12	600	24.09	110.5	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.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**22-22160-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-5	Extraction Date	15-Dec-22
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3775107

Approved:
Nick Schrobilgen
--e-signature--
01-Feb-2023

Run Information	**Run 1**
Filename	23012416.D
Run Date	1/25/2023 1:05
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MS US2543815H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**	
Naphthalene	2.68	157		B
2-Methylnaphthalene	3.24	18.8		
1-Methylnaphthalene	3.35	12.5		
Acenaphthylene	4.34	<12	U	
Acenaphthene	4.63	<12	U	
Fluorene	5.52	<12	U	
Phenanthrene	7.68	49.7		
Anthracene	7.80	<12	U	
Fluoranthene	11.04	19.7		
Pyrene	11.68	35.3 M		
Benzo(a)Anthracene	15.56	<12	U	
Chrysene	15.68	<12	U	
Benzo(b)Fluoranthene	18.93	<12	U	
Benzo(k)Fluoranthene	18.93	<12	U	
Benzo(e)Pyrene	19.55	<12	U	
Benzo(a)Pyrene	19.76	<12	U	
Perylene	20.00	<12	U	
Indeno(1,2,3-cd)Pyrene	23.25	<12	U	
Dibenzo(a,h)Anthracene	23.43	<12	U	
Benzo(g,h,i)Perylene	24.18	<12	U	
Additional Analytes				
Tetralin	2.57	166		B
2-Chloronaphthalene	NotFnd	<12	U	
Biphenyl	3.75	18.8 M		
o-Terphenyl	NotFnd	<12	U	
1-Methylphenanthrene	9.24	27.4		B
9-Methylphenanthrene	NotFnd	<12	U	
2-methylanthracene	9.38	49.9 M		
9,10-dimethylanthracene	11.93	<12	U	
m-terphenyl	12.08	<12	U	
p-terphenyl	12.55	<12	U	
Benzo(a)fluorene	12.85	<12	U	
Benzo(b)fluorene	13.05	<12	U	
7,12-Dimethylbenzo(a)anthracene	19.09	<12	U	
3-Methylcholanthrene	20.95	<60	U	
Picene	NotFnd	<60	U	
Dibenzo(a,e)pyrene	NotFnd	<60	U	
Coronene	28.91	<60	U	

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.32	86.6	
Fluorene D10	600	5.47	118.1	
Terphenyl D14(Surr.)	600	12.49	105.1	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.67	120.9	50-150
2-Methylnaphthalene-D10	600	3.21	118.0	50-150
Acenaphthylene D8	600	4.32	85.0	50-150
Phenanthrene D10	600	7.62	95.4	50-150
Anthracene-D10	600	7.75	79.3	50-150
Fluoranthene D10	600	10.99	99.3	50-150
Benz(a)Anthracene-D12	600	15.50	84.1	50-150
Chrysene D12	600	15.61	84.3	50-150
Benzo(b)Fluoranthene-D12	600	18.82	89.1	50-150
Benzo(k)Fluoranthene-D12	600	18.91	73.8	50-150
Benzo(a)Pyrene D12	600	19.70	134.3	50-150
Perylene D12	600	19.93	87.9	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.18	80.2	50-150
Dibenz(a,h)Anthracene-D14	600	23.34	67.4	50-150
Benzo(g,h,i)Perylene D12	600	24.09	75.8	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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2**	Sampling Date	1-Dec-22
ALS Sample ID	L2742305-6	Extraction Date	15-Dec-22
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3775107

Approved:
Nick Schrobilgen
--e-signature--
01-Feb-2023

Run Information	**Run 1**
Filename	23012417.D
Run Date	1/25/2023 1:44
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MS US2543815H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**	
Naphthalene	2.69	232		B
2-Methylnaphthalene	3.24	37.8		
1-Methylnaphthalene	3.36	24.8		
Acenaphthylene	4.34	<12	U	
Acenaphthene	4.63	19.9		
Fluorene	5.52	35.3		
Phenanthrene	7.68	150		
Anthracene	7.80	<12	U	
Fluoranthene	11.04	43.0		
Pyrene	11.68	71.0		
Benzo(a)Anthracene	15.56	<12	U	
Chrysene	15.68	<12	U	
Benzo(b)Fluoranthene	18.89	<12	U	
Benzo(k)Fluoranthene	18.94	<12	U	
Benzo(e)Pyrene	19.56	<12	U	
Benzo(a)Pyrene	19.76	<12	U	
Perylene	20.01	<12	U	
Indeno(1,2,3-cd)Pyrene	23.26	22.5		
Dibenzo(a,h)Anthracene	23.49	<12	U	
Benzo(g,h,i)Perylene	24.19	177		
Additional Analytes				
Tetralin	2.57	244		B
2-Chloronaphthalene	NotFnd	<12	U	
Biphenyl	3.75	20.3 M		
o-Terphenyl	8.95	<12	U	
1-Methylphenanthrene	9.24	61.4		B
9-Methylphenanthrene	9.33	15.7		
2-methylanthracene	9.39	49.1		
9,10-dimethylanthracene	NotFnd	<12	U	
m-terphenyl	12.08	<12	U	
p-terphenyl	NotFnd	<12	U	
Benzo(a)fluorene	12.86	<12	U	
Benzo(b)fluorene	13.05	<12	U	
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U	
3-Methylcholanthrene	NotFnd	<60	U	
Picene	23.94	<60	U	
Dibenzo(a,e)pyrene	28.03	<60	U	
Coronene	28.90	162		

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.32	83.6	
Fluorene D10	600	5.48	184.5	
Terphenyl D14(Surr.)	600	12.49	101.7	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.67	102.1	50-150
2-Methylnaphthalene-D10	600	3.21	120.7	50-150
Acenaphthylene D8	600	4.32	85.0	50-150
Phenanthrene D10	600	7.63	100.3	50-150
Anthracene-D10	600	7.75	82.2	50-150
Fluoranthene D10	600	10.99	98.2	50-150
Benz(a)Anthracene-D12	600	15.50	75.8	50-150
Chrysene D12	600	15.61	75.7	50-150
Benzo(b)Fluoranthene-D12	600	18.82	98.0	50-150
Benzo(k)Fluoranthene-D12	600	18.91	80.4	50-150
Benzo(a)Pyrene D12	600	19.70	119.8	50-150
Perylene D12	600	19.93	83.8	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.18	78.4	50-150
Dibenz(a,h)Anthracene-D14	600	23.34	67.7	50-150
Benzo(g,h,i)Perylene D12	600	24.09	78.3	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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-7	Extraction Date	15-Dec-22
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3775107

Approved:
Nick Schrobilgen
--e-signature--
01-Feb-2023

Run Information	**Run 1**
Filename	23012418.D
Run Date	1/25/2023 2:22
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MS US2543815H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.69	343	B
2-Methylnaphthalene	3.24	43.4	
1-Methylnaphthalene	3.35	25.1	
Acenaphthylene	4.34	<12	U
Acenaphthene	4.63	20.2	
Fluorene	5.52	12.9	
Phenanthrene	7.68	88.4	
Anthracene	7.79	<12	U
Fluoranthene	11.04	48.4	
Pyrene	11.68	105	
Benzo(a)Anthracene	15.56	<12	U
Chrysene	15.68	<12	U
Benzo(b)Fluoranthene	18.89	<12	U
Benzo(k)Fluoranthene	18.94	<12	U
Benzo(e)Pyrene	19.63	<12	U
Benzo(a)Pyrene	19.76	<12	U
Perylene	20.02	<12	U
Indeno(1,2,3-cd)Pyrene	23.26	<12	U
Dibenzo(a,h)Anthracene	23.45	<12	U
Benzo(g,h,i)Perylene	24.18	63.4	
Additional Analytes			
Tetralin	2.57	171	B
2-Chloronaphthalene	3.78	<12	U
Biphenyl	3.75	33.1	M
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.33	<12	U
2-methylanthracene	9.39	28.6	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.08	<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	20.89	<60	U
Picene	23.95	<60	U
Dibenzo(a,e)pyrene	28.03	<60	U
Coronene	28.90	85.7	

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.32	100.8	
Fluorene D10	600	5.47	137.3	
Terphenyl D14(Surr.)	600	12.49	108	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	95.7	50-150
2-Methylnaphthalene-D10	600	3.22	97.4	50-150
Acenaphthylene D8	600	4.32	72.4	50-150
Phenanthrene D10	600	7.62	77.0	50-150
Anthracene-D10	600	7.75	65.1	50-150
Fluoranthene D10	600	10.99	89.3	50-150
Benz(a)Anthracene-D12	600	15.50	81.9	50-150
Chrysene D12	600	15.61	79.2	50-150
Benzo(b)Fluoranthene-D12	600	18.82	95.3	50-150
Benzo(k)Fluoranthene-D12	600	18.91	77.0	50-150
Benzo(a)Pyrene D12	600	19.70	126.3	50-150
Perylene D12	600	19.93	85.3	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.18	82.4	50-150
Dibenz(a,h)Anthracene-D14	600	23.34	68.5	50-150
Benzo(g,h,i)Perylene D12	600	24.09	78.1	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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	2-Dec-22
ALS Sample ID	L2742305-8	Extraction Date	15-Dec-22
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3775107

Approved:
Nick Schrobilgen
--e-signature--
01-Feb-2023

Run Information	**Run 1**
Filename	23012412.D
Run Date	1/24/2023 22:30
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng
Instrument	MSD-5
Column	HP5MS US2543815H

Target Analytes	**Ret. Time**	**Concentration ng**	**Flags**
Naphthalene	2.80	<12	U
2-Methylnaphthalene	NotFnd	<12	U
1-Methylnaphthalene	NotFnd	<12	U
Acenaphthylene	NotFnd	<12	U
Acenaphthene	NotFnd	<12	U
Fluorene	NotFnd	<12	U
Phenanthrene	7.67	<12	U
Anthracene	NotFnd	<12	U
Fluoranthene	NotFnd	<12	U
Pyrene	NotFnd	<12	U
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene	NotFnd	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)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)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	2.57	172 M	B
2-Chloronaphthalene	3.78	<12	U
Biphenyl	3.76	<12	U
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	9.24	354	B
9-Methylphenanthrene	9.24	106	
2-methylanthracene	9.24	274	
9,10-dimethylanthracene	11.89	<12	U
m-terphenyl	12.07	<12	U
p-terphenyl	12.55	<12	U
Benzo(a)fluorene	12.83	<12	U
Benzo(b)fluorene	13.07	<12	U
7,12-Dimethylbenzo(a)anthracene	18.90	67.3	
3-Methylcholanthrene	20.96	<60	U
Picene	23.94	<60	U
Dibenzo(a,e)pyrene	28.07	<60	U
Coronene	28.88	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**	**Limits**
1-Methylnaphthalene-D10	600	3.32	114	
Fluorene D10	600	5.47	116	
Terphenyl D14(Surr.)	600	12.49	106.4	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	101.3 M	50-150
2-Methylnaphthalene-D10	600	3.22	120.1 M	50-150
Acenaphthylene D8	600	4.33	72.0 M	50-150
Phenanthrene D10	600	7.62	114.4 M	50-150
Anthracene-D10	600	7.74	101.8 M	50-150
Fluoranthene D10	600	10.99	98.7 M	50-150
Benz(a)Anthracene-D12	600	15.50	75.6 M	50-150
Chrysene D12	600	15.62	85.3 M	50-150
Benzo(b)Fluoranthene-D12	600	18.82	104.0 M	50-150
Benzo(k)Fluoranthene-D12	600	18.92	92.0 M	50-150
Benzo(a)Pyrene D12	600	19.70	99.5 M	50-150
Perylene D12	600	19.94	93.2 M	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.18	82.4 M	50-150
Dibenz(a,h)Anthracene-D14	600	23.34	71.5 M	50-150
Benzo(g,h,i)Perylene D12	600	24.09	83.9 M	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.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3775107-2	Extraction Date	15-Dec-22
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	WG3775107

Approved:
Nick Schrobilgen
--e-signature--
01-Feb-2023

Run Information	**Run 1**
Filename	23012407.D
Run Date	1/24/2023 19:17
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP5MS US2543815H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	2.69	128.9 M		50-150
2-Methylnaphthalene	600	3.25	109.9 M		50-150
1-Methylnaphthalene	600	3.36	115.3 M		50-150
Acenaphthylene	600	4.34	104.8 M		50-150
Acenaphthene	600	4.63	131.1 M		50-150
Fluorene	600	5.53	121.1 M		50-150
Phenanthrene	600	7.68	116.9 M		50-150
Anthracene	600	7.79	100.9 M		50-150
Fluoranthene	600	11.04	106.6 M		50-150
Pyrene	600	11.69	106.4 M		50-150
Benzo(a)Anthracene	600	15.56	90 M		50-150
Chrysene	600	15.69	99.9 M		50-150
Benzo(b)Fluoranthene	600	18.89	87.6 M		50-150
Benzo(k)Fluoranthene	600	18.97	112.7 M		50-150
Benzo(e)Pyrene	600	19.63	111.7 M		50-150
Benzo(a)Pyrene	600	19.76	114.4 M		50-150
Perylene	600	19.99	85.9 M		50-150
Indeno(1,2,3-cd)Pyrene	600	23.26	82.8 M		50-150
Dibenzo(a,h)Anthracene	600	23.45	97 M		50-150
Benzo(g,h,i)Perylene	600	24.18	88.1 M		50-150

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.67	90.0 M	30-150
2-Methylnaphthalene-D10	600	3.22	108.5 M	30-150
Acenaphthylene D8	600	4.33	65.5 M	30-150
Phenanthrene D10	600	7.63	107.9 M	50-150
Anthracene-D10	600	7.75	91.5 M	50-150
Fluoranthene D10	600	10.99	83.6 M	50-150
Benz(a)Anthracene-D12	600	15.50	64.2 M	50-150
Chrysene D12	600	15.61	73.2 M	50-150
Benzo(b)Fluoranthene-D12	600	18.82	91.3 M	50-150
Benzo(k)Fluoranthene-D12	600	18.92	80.7 M	50-150
Benzo(a)Pyrene D12	600	19.70	90.8 M	30-150
Perylene D12	600	19.93	93.7 M	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.17	81.9 M	50-150
Dibenz(a,h)Anthracene-D14	600	23.35	77.8 M	50-150
Benzo(g,h,i)Perylene D12	600	24.10	89.0 M	50-150

M Indicates that a peak has been manually integrated.

APPENDIX 16

Acid Gas Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22160
Date:	NOV 29/22
Test No.:	1
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:	686.3
Initial Wt:	789.3
Final Wt:	907.0
1 Gain:	117.7
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	543.0
Initial Wt:	647.7
Final Wt:	687.9
2 Gain:	40.2
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	613.1
Final Wt:	617.6
3 Gain:	4.5
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.0
With Imp. 1,2,3 Soln:	644.0
After Rinse:	764.0
Total TS3:	482.0

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	1013.5
Final Wt:	1025.8
4 Gain:	12.3

Box ID: 12

CWTR = 1+2+3:	162.4 ✓
WCBDA= 4:	12.3

SAMPLE ID: 22-22160-M26A- 1

Train Loaded By: DT

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22160
Date:	NOV 29/22
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:	657.5
Initial Wt:	757.5
Final Wt:	890.5
1 Gain:	133.0
Colour:	CLEAR

Impinger #2 0.1 N H_2SO4	
Empty Wt:	648.5
Initial Wt:	749.0
Final Wt:	777.4
2 Gain:	28.4
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	504.0
Final Wt:	508.0
3 Gain:	4.0
Colour:	CLEAR

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.5
With Imp. 1,2,3 Soln:	652.5
After Rinse:	767.2
Total TS3:	485.7

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	912.8
Final Wt:	925.4
4 Gain:	12.6

Box ID:

CWTR = 1+2+3:	165.4

WCBDA= 4:	12.6

SAMPLE ID: 22-22160-M26A- 2

Train Loaded By: DY

Train Recovered By:

ORTECH

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22160
Date:	NOV29/22
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:	686.3
	Initial Wt:	787.6
	Final Wt:	932.6
1	Gain:	145.0
	Colour:	CLEAR

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	543.0
	Initial Wt:	644.2
	Final Wt:	671.0
2	Gain:	26.8
	Colour:	CLEAR

	Impinger #3 EMPTY	
	Empty Wt:	613.0
	Final Wt:	619.7
3	Gain:	6.7
	Colour:	Clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	284.0
With Imp. 1,2,3 Soln:	660.5
After Rinse:	767.3
Total TS3:	483.3

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	~~102~~ 1025.8
	Final Wt:	1035.4
4	Gain:	~~10.~~ 9.6

Box ID:

CWTR = 1+2+3:	178.5
WCBDA= 4:	9.6

SAMPLE ID: 22-22160-M26A-	3

Train Loaded By: DJ

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22160
Date:	Nov 30/22
Test No.:	1
Test Location:	UNIT 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	657.5
	Initial Wt:	754.4
	Final Wt:	901.0
1	Gain:	146.6
	Colour:	CLEAR

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	648.5
	Initial Wt:	752.8
	Final Wt:	781.0
2	Gain:	28.2
	Colour:	CLEAR

	Impinger #3 EMPTY	
	Empty Wt:	504.0
	Final Wt:	508.6
3	Gain:	4.6
	Colour:	CLEAR

CONTAINER TS3 WEIGHTS	
Empty Wt:	279.5
With Imp. 1,2,3 Soln:	664.8
After Rinse:	781.5
Total TS3:	502.0

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	925.4
	Final Wt:	936.9
4	Gain:	11.5

Box ID:

CWTR = 1+2+3:	179.4

WCBDA= 4:	11.5

SAMPLE ID: 22-22160-M26A-	4

Train Loaded By: DT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22160
Date:	NOV 30/22
Test No.:	2
Test Location:	UNIT 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

Impinger #1 0.1 N H_2SO4	
Empty Wt:	685.0
Initial Wt:	787.0
Final Wt:	923.7
1 Gain:	136.7
Colour:	clear

Impinger #4 Silica Gel	
Initial Wt:	956.0
Final Wt:	969.5
4 Gain:	13.5

RED LABEL

Impinger #2 0.1 N H_2SO4	
Empty Wt:	543.5
Initial Wt:	645.7
Final Wt:	680.3
2 Gain:	34.6
Colour:	clear

Box ID:

Impinger #3 EMPTY	
Empty Wt:	613.3
Final Wt:	618.3
3 Gain:	5.0
Colour:	clear

CWTR = 1+2+3:	176.3

WCBDA= 4:	13.5

CONTAINER TS3 WEIGHTS	
Empty Wt:	278.8
With Imp. 1,2,3 Soln:	651.5
After Rinse:	758.0
Total TS3:	479.2

SAMPLE ID: 22-22160-M26A- 5

Train Loaded By: DT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22160
Date:	Nov 30/22
Test No.:	3
Test Location:	UNIT 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	657.5
	Initial Wt:	756.0
	Final Wt:	898.2
1	**Gain:**	142.2
	Colour:	clear

	Impinger #4 Silica Gel	
	Initial Wt:	936.9
	Final Wt:	949.1
4	**Gain:**	12.2

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	~~648.5~~ 644.0
	Initial Wt:	744.7
	Final Wt:	776.7
2	**Gain:**	32
	Colour:	

Box ID:

	Impinger #3 EMPTY	
	Empty Wt:	503.0
	Final Wt:	506.2
3	**Gain:**	3.2
	Colour:	clear

CWTR = 1+2+3:	177.4 ✓
WCBDA= 4:	12.2

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.6
With Imp. 1,2,3 Soln:	659.3
After Rinse:	760.0
Total TS3:	477.4

SAMPLE ID: 22-22160-M26A- 6

Train Loaded By: DT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22160

Date: NG/29/22

Test No.: BLANK 1

Test Location:

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

CONTAINER TS3 WEIGHTS	
Empty Wt:	284.0
With Imp. 1,2,3 Soln:	484.5
After Rinse:	590.0
Total TS3:	306.0

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

Box ID:

CWTR = 1+2+3:	
WCBDA= 4:	

SAMPLE ID: 22-22160-M26A- BLANK 1

Train Loaded By:

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22160

Date: NOV 30/22

Test No.: BLANK 2

Test Location:

Filter is used but not recovered as sample

Impingers 1, 2, 3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
1	Gain:	
	Colour:	

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
2	Gain:	
	Colour:	

	Impinger #3 EMPTY	
	Empty Wt:	
	Final Wt:	
3	Gain:	
	Colour:	

CONTAINER TS3 WEIGHTS	
Empty Wt:	280.3
With Imp. 1,2,3 Soln:	488.8
After Rinse:	589.3
Total TS3:	309.0

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	
	Final Wt:	
4	Gain:	

Box ID:

CWTR = 1+2+3:
WCBDA= 4:

SAMPLE ID: 22-22160-M26A- BLANK 2

Train Loaded By: DT

Train Recovered By:

APPENDIX 17

VOST Analytical Report
(3 pages)

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 Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2742304 r1		
Date of Report Revision	25-Jan-23		
Date of Sample Receipt	1-Nov-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260C**
REVISED REPORT: to include data for chlorobenzene

Ketone data by VOST analyses are estimated values only

The samples were received in good condition at 15.7 degrees C., which is above the recommended storage and transportation temperature.

For three of the samples, the recovery of d14-hexane was marginally above the method control limit. However, the surrogate and field standard recoveries are not biased, except as noted below. Sample data are not expected to be biased.

For the sample 22-22160-VOST-9A/B FIELD BLANK APC OUTLET#1, the recovery of the d10-ethylbenzene is elevated.

Certified by:

Ron McLeod
Technical Director

ALS Environmental

Sample Analysis Summary Report

Sample Name	22-22160-VOST-1A/B TEST#1 APC OUTLET#1		22-22160-VOST-2A/B TEST#2 APC OUTLET#1		22-22160-VOST-3A/B TEST#3 APC OUTLET#1		22-22160-VOST-9A/B FIELD BLANK APC OUTLET#1		22-22160-VOST-5A/B TEST#1 APC OUTLET#2		22-22160-VOST-6A/B TEST#2 APC OUTLET#2	
ALS Sample ID	L2742304-1		L2742304-2		L2742304-3		L2742304-5		L2742304-6		L2742304-7	
Sample units	sample		sample		sample		sample		sample		sample	
Matrix	VOST		VOST		VOST		VOST		VOST		VOST	
Sampling Date	1-Dec-22		1-Dec-22		1-Dec-22		1-Dec-22		1-Dec-22		1-Dec-22	
Extraction Date	13-Dec-22		13-Dec-22		13-Dec-22		13-Dec-22		13-Dec-22		13-Dec-22	
Target Analytes	**ug/sample**		**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	<0.02	U
Vinyl Chloride	<0.02	U	<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	<0.09	U
Trichlorofluoromethane	<0.02	U	<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	<0.01	U
Acetone	0.128		<0.1	U	0.164		<0.1	U	<0.1	U	0.323	
Methylene Chloride	1.44		0.273		1.65		2.28		0.294		0.364	
trans,1,2-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
2-Butanone	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	0.02	
Chloroform	0.024		0.022		0.027		<0.01	U	0.035		0.026	
1,1,1-Trichloroethane	<0.01	U	<0.01	U	<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	<0.01	U	<0.01	U
Benzene	<0.05	U	<0.05	U	<0.05	U	<0.05	U	<0.05	U	0.062	
1,2-Dichloroethane	<0.01	U	<0.01	U	<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	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Bromodichloromethane	<0.01	U	0.013		0.012		<0.01	U	0.011		0.014	
Toluene	1.66		0.385		3.53	E	0.882		1.56		0.93	
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<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	0.011		0.011	
Chlorodibromomethane	<0.01	U	<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	<0.02	U
Chlorobenzene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Ethylbenzene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
M&P-Xylene	<0.03	U	<0.03	U	<0.03	U	<0.03	U	<0.03	U	<0.03	U
O-Xylene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Styrene	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U	<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	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
1,3-Butadiene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Field Standard	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	96.4		113.1		87.8		155.3		60.6		94.7	
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	100.7		86		105.4	M	100.4	M	96.3	M	83.5	M
d8-Toluene(SURR)	95.2		103.8		100.6		102.7		99.6		95.8	
4-Bromofluorobenzene(SURR)	90		80.6		79.8		87.7		91.2		81.6	
Internal Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d14-Hexane	97.6		105.7		99.1		72.9		92.3		234	H
d6-Benzene	83		100.2		90		68.1		80.1		109.4	
d5-Chlorobenzene	108.2		99.1		116.8		70.5		101.2		125.9	

U Indicates that this compound was not detected above the RL.
M Indicates that a peak has been manually integrated.

H Indicates this value is above the control limit.
E Indicates Estimated value. Instrument response exceeds instrument calibration range of 1.0 ug.

ALS Environmental

Sample Analysis Summary Report

Sample Name	22-22160-VOST-8A/B TEST#4 APC OUTLET#2		22-22160-VOST-13A/B FIELD BLANK APC OUTLET#2		22-22160-VOST-15A/B TRIP BLANK	
ALS Sample ID	L2742304-9		L2742304-10		L2742304-11	
Sample units	sample		sample		sample	
Matrix	VOST		VOST		VOST	
Sampling Date	1-Dec-22		1-Dec-22		1-Dec-22	
Extraction Date	13-Dec-22		13-Dec-22		13-Dec-22	
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	0.102		<0.1	U	<0.1	U
Methylene Chloride	0.164	M	0.702		1.19	
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	0.034		<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	0.057		<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	0.014		<0.01	U	<0.01	U
Toluene	0.573		0.14		<0.05	U
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<0.02	U
Tetrachloroethene	0.032		<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
Chlorobenzene	<0.01	U	<0.01	U	<0.01	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	<0.01	U	<0.01	U	<0.01	U
1,3-Butadiene	<0.01	U	<0.01	U	<0.01	U
Field Standard	**% Rec**		**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	97.3		116.4		108.4	
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	100		104.7	M	95.9	M
d8-Toluene(SURR)	102.2		101.7		100.7	
4-Bromofluorobenzene(SURR)	85		88.6		85.9	
Internal Standards	**% Rec**		**% Rec**		**% Rec**	
d14-Hexane	200.2	H	186.6		201.5	H
d6-Benzene	95.4		85.6		93.4	
d5-Chlorobenzene	108.3		89.6		104.7	

U Indicates that this compound was not detected above the RL.
M Indicates that a peak has been manually integrated.

H Indicates this value is above the control limit.

APPENDIX 18

Aldehydes Recovery Data Sheet
(1 page)

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

Client: Covanata DYEC
Job/Report Number: 22160
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22160-J2878

Test Number	Test Location	ORTECH Sample ID 22-22~~158~~160-	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle (g)	Initial Weight Sample Bottle + BHA (g)	Final Weight of BHA Sample Bottle (g)	Weight of Sample Bottle BHA & H2O (g)	Weight of Sample Bottle BHA & H2O & Hexane (g)
1	APC Outlet #1	ALD-1	Dec 1, 2022	ALD-1	109.4	161.7	166.0	178.2	183.0
2	APC Outlet #1	ALD-2		ALD-2	110.4	159.8	161.6	171.3	183.0
3	APC Outlet #1	ALD-3		ALD-3	109.8	157.5	157.8	172.0	183.2
Blank 1	APC Outlet #1	Blank 1		ALD-4	109.5	161.6	161.6	178.9	183.3
1	APC Outlet #2	ALD-5		ALD-5	109.4	160.3	162.0	174.7	187.1
2	APC Outlet #2	ALD-6		ALD-6	108.7	171.5	172.0	187.3	201.9
3	APC Outlet #2	ALD-7		ALD-7	109.3	156.4	157.5	173.5	186.5
Blank 2	APC Outlet #2	Blank 2		ALD-8	109.9	157.7	157.8	~~173.5~~	~~186.5~~
				ALD 9	109.8	161.1		177.2	192.9
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				ALD 10	109.7	157.8			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: ______________________ Date: ______________

Relinquished to: ______________________ Date: ______________

APPENDIX 19

Aldehydes Analytical Report
(14 pages)

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2742301		Mississauga, ON L5J 2Y4
Date of Report	30-Dec-22		Canada
Date of Sample Receipt	2-Dec-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **Aldehydes as benzyloxime derivatives by SIM GC/MS**

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		22-22160-ALD-1 TEST#1 APC OUTLET #1		22-22160-ALD-2 TEST#2 APC OUTLET #1		22-22160-ALD-3 TEST#3 APC OUTLET #1		22-22160-ALD-4 BLANK#1 APC OUTLET #1		22-22160-ALD-5 TEST#1 APC OUTLET #2	
ALS Sample ID	WG3775113-1		L2742301-1		L2742301-2		L2742301-3		L2742301-4		L2742301-5	
Sample Size	1		1		1		1		1		1	
Sample units	Sample		Train		Train		Train		Train		Train	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		Stack	
Sampling Date	n/a		1-Dec-22		1-Dec-22		1-Dec-22		1-Dec-22		1-Dec-22	
Extraction Date	14-Dec-22		14-Dec-22		14-Dec-22		14-Dec-22		14-Dec-22		14-Dec-22	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Formaldehyde	0.16		0.34		0.28		0.26		0.20		0.31	
Acetaldehyde	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
Acrolein	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U

U Indicates that this compound was not detected above the LOD.

ALS Environmental

Sample Analysis Summary Report

Sample Name	22-22160-ALD-6 TEST#2 APC OUTLET #2		22-22160-ALD-7 TEST#3 APC OUTLET #2		22-22160-ALD-8 BLANK#2 APC OUTLET #2		Laboratory Control Sample (10ug spike)	Laboratory Control Sample (2ug spikel)
ALS Sample ID	L2742301-6		L2742301-7		L2742301-8		WG3775113-2	WG3775113-4
Sample Size	1		1		1		1	1
Sample units	Train		Train		Train		n/a	n/a
Moisture Content	n/a		n/a		n/a		n/a	n/a
Matrix	Stack		Stack		Stack		QC	QC
Sampling Date	1-Dec-22		1-Dec-22		1-Dec-22		n/a	n/a
Extraction Date	14-Dec-22		14-Dec-22		14-Dec-22		14-Dec-22	14-Dec-22
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**% Rec**	**% Rec**
Formaldehyde	0.39		0.32		0.23		76	127
Acetaldehyde	<0.1	U	<0.1	U	<0.1	U	87	88
Acrolein	<0.1	U	<0.1	U	<0.1	U	41	23

U Indicates that this compound was not detected above the LOD.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**		Sampling Date	n/a
ALS Sample ID	WG3775113-1		Extraction Date	14-Dec-22
Analysis Method	SIM GC/MS			
Analysis Type	blank			
Sample Matrix	QC			
Sample Size	1	Sample		
Percent Moisture	n/a			
Split Ratio	5			

Approved:
Andrew Reid
--e-signature--
27-Dec-2022

Run Information	**Run 1**	
Filename	22122242.D	
Run Date	12/23/2022 20:55	
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	9.23	0.16		
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.16
Acetaldehyde	<0.1
Acrolein	<0.1

U   Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-ALD-1 TEST#1 APC OUTLET #1**		Sampling Date	1-Dec-22
ALS Sample ID	L2742301-1		Extraction Date	14-Dec-22
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--
27-Dec-2022

Run Information	**Run 1**	
Filename	22122245.D	
Run Date	12/23/2022 22:54	
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	9.22	0.34	B	
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		**ug/sample**		
Formaldehyde		0.34	B	
Acetaldehyde		<0.1		
Acrolein		<0.1		

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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-ALD-2 TEST#2 APC OUTLET #1**	Sampling Date	1-Dec-22
ALS Sample ID	L2742301-2	Extraction Date	14-Dec-22
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--
27-Dec-2022

Run Information	**Run 1**
Filename	22122246.D
Run Date	12/23/2022 23:34
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	9.22	0.28	B	
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**	
Formaldehyde	0.28	B
Acetaldehyde	<0.1	
Acrolein	<0.1	

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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-ALD-3 TEST#3 APC OUTLET #1**		Sampling Date	1-Dec-22
ALS Sample ID	L2742301-3		Extraction Date	14-Dec-22
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--
27-Dec-2022

Run Information	**Run 1**	
Filename	22122247.D	
Run Date	12/24/2022 0:14	
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	9.22	0.26	B	
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		**ug/sample**		
Formaldehyde		0.26	B	
Acetaldehyde		<0.1		
Acrolein		<0.1		

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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-ALD-4 BLANK#1 APC OUTLET #1**		Sampling Date	1-Dec-22
ALS Sample ID	L2742301-4		Extraction Date	14-Dec-22
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--
27-Dec-2022

Run Information	**Run 1**	
Filename	22122243.D	
Run Date	12/23/2022 21:35	
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	9.22	0.2	B	
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		**ug/sample**		
Formaldehyde		0.2	B	
Acetaldehyde		<0.1		
Acrolein		<0.1		

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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-ALD-5 TEST#1 APC OUTLET #2**		Sampling Date	1-Dec-22
ALS Sample ID	L2742301-5		Extraction Date	14-Dec-22
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--
27-Dec-2022

Run Information	**Run 1**	
Filename	22122248.D	
Run Date	12/24/2022 0:53	
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	9.22	0.31	B	
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		**ug/sample**		
Formaldehyde		0.31	B	
Acetaldehyde		<0.1		
Acrolein		<0.1		

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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-ALD-6 TEST#2 APC OUTLET #2**	Sampling Date	1-Dec-22
ALS Sample ID	L2742301-6	Extraction Date	14-Dec-22
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--
27-Dec-2022

Run Information	**Run 1**
Filename	22122249.D
Run Date	12/24/2022 1:33
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	9.22	0.39	B	
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**	
Formaldehyde	0.39	B
Acetaldehyde	<0.1	
Acrolein	<0.1	

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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-ALD-7 TEST#3 APC OUTLET #2**	Sampling Date	1-Dec-22
ALS Sample ID	L2742301-7	Extraction Date	14-Dec-22
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--
27-Dec-2022

Run Information	**Run 1**
Filename	22122250.D
Run Date	12/24/2022 2:13
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	9.22	0.32	B	
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		**ug/sample**		
Formaldehyde		0.32	B	
Acetaldehyde		<0.1		
Acrolein		<0.1		

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.

ALS Life Sciences

Sample Analysis Report

Sample Name	**22-22160-ALD-8 BLANK#2 APC OUTLET #2**	Sampling Date	1-Dec-22
ALS Sample ID	L2742301-8	Extraction Date	14-Dec-22
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--
27-Dec-2022

Run Information	**Run 1**
Filename	22122244.D
Run Date	12/23/2022 22:15
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	9.22	0.23	B	
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**	
Formaldehyde	0.23	B
Acetaldehyde	<0.1	
Acrolein	<0.1	

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.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3775113-2	Extraction Date	14-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
27-Dec-2022

Run Information	**Run 1**
Filename	22122240.D
Run Date	12/23/2022 19:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	10	9.20	76		
Acetaldehyde (B)	10	14.22	42		
Acetaldehyde (A)	10	14.59	45		
Acrolein (A)	10	18.79	22		
Acrolein (B)	10	19.90	19		
Total Aldehydes					
Formaldehyde			76		50-150
Acetaldehyde			87		50-150
Acrolein			41		50-150

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (Low Level)**	Sampling Date	n/a
ALS Sample ID	WG3775113-4	Extraction Date	14-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
27-Dec-2022

Run Information	**Run 1**
Filename	22122239.D
Run Date	12/23/2022 18:56
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	2	9.22	127		
Acetaldehyde (B)	2	14.24	47		
Acetaldehyde (A)	2	14.60	41		
Acrolein (A)	2	18.81	11		
Acrolein (B)	2	19.91	12		
Total Aldehydes					
Formaldehyde			127		50-150
Acetaldehyde			88		50-150
Acrolein			23		50-150

APPENDIX 20

SVOC and VOST Proof Data
(10 pages)

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#:	L2739113		Mississauga, ON, L5J 2Y4
Date of Report	24-Nov-22		Canada
Date of Sample Receipt	2-Nov-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **CB by LRGC/MS - Isotope dilution**

Monochlorobenzene was not recovered and has not been reported.

Di- through hexachlorobenzene have not been detected in the proof
Glassware is approved for the collection of samples for these targets.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	**Method Blank**		**GLASSWARE PROOF**	
ALS Sample ID	WG3771777-1		L2739113-52	
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	8-Nov-22		8-Nov-22	
Target Analytes	**ng/sample**		**ng/sample**	
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**	
13C6-1,4-Dichlorobenzene	76		70	
13C6-1,2,3-Trichlorobenzene	102		95	
13C6-1,2,3,4-Tetrachlorobenzene	111		106	
13C6-Pentachlorobenzene	118		117	
13C6-Hexachlorobenzene	127		127	

U — Indicates that this compound was not detected above the LOD.

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2739113		Mississauga, ON L5J 2Y4
Date of Report	24-Nov-22		Canada
Date of Sample Receipt	2-Nov-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Target analytes have not been detected in the proof
Glassware is approved for the collection of samples for chlorophenols.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3771777-1		L2739113-52	
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	8-Nov-22		8-Nov-22	
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
Extraction Standards	**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	97		103	
13C6-2,4-Dichlorophenol (ES)	96		93	
13C6-2,4,5-Trichlorophenol (ES)	59		63	
13C6-2,3,4,5-Tetrachlorophenol (ES)	54		59	
13C6-Pentachlorophenol (ES)	43		52	

U Indicates that this compound was not detected above the LOR.

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#:	L2739113		Mississauga ON L5J 2Y4
Date of Report	14-Nov-22		Canada
Date of Sample Receipt	2-Nov-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **PCDD/F and PCB Congeners by GC/MS/MS**

Reporting units of pg/g are equivalent to ng/Kg
Reporting units of ng/g are equivalent to µg/Kg

Low levels of select targets were detected in the proof and blank.
Glassware is approved for the collection of samples for the analysis of the reported targets.

Co-elutions may cause a high bias to selected PCDD/PCDF or PCB analytical results. Secondary column confirmations to uniquely define the toxic congeners for PCB targets or for PCDD/F targets is recommended where it is of value to resolve such sources of potential high bias

Certified by: SKennedy

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank	GLASSWARE PROOF
ALS Sample ID	WG3771777-1	L2739113-52
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	8-Nov-22	8-Nov-22
Polychlorinated Dibenzo(p)dioxins	**pg/sample**	**pg/sample**
2,3,7,8-TCDD	<1.6	<3.9
1,2,3,7,8-PeCDD	<4.9	<3.5
1,2,3,4,7,8-HxCDD	<8.8	<4.8
1,2,3,6,7,8-HxCDD	<9.7	<3.8
1,2,3,7,8,9-HxCDD	<11	<3.7
1,2,3,4,6,7,8-HpCDD	<12	<6.8
OCDD	<11	<7.9
Polychlorinated Dibenzofurans		
2,3,7,8-TCDF	<2.2	<2.9
1,2,3,7,8-PeCDF	<4.8	<11
2,3,4,7,8-PeCDF	<4.6	<9.7
1,2,3,4,7,8-HxCDF	<4.5	<2.7
1,2,3,6,7,8-HxCDF	<4.7	<3.3
2,3,4,6,7,8-HxCDF	<4.3	<2.8
1,2,3,7,8,9-HxCDF	<4.3	<4.6
1,2,3,4,6,7,8-HpCDF	<3.5	<2.7
1,2,3,4,7,8,9-HpCDF	<7.8	<2.7
OCDF	<7.2	<6.7
Dioxin-like Polychlorinated Biphenyls		
PCB-81	<3.0	<3.6
PCB-77	<3.0	<7.4
PCB-123	<4.4	<6.6
PCB-118	<3.7	20.9
PCB-114	<3.4	<7.2
PCB-105	<4.8	<9.5
PCB-126	<3.8	<9.5
PCB-167	<2.7	<16
PCB-156	<4.6	<7.1
PCB-157	<3.3	<7.6
PCB-169	<5.8	<4.4
PCB-189	<4.2	<4.9
Toxic Equivalency (WHO 2005)	**pg/sample**	**pg/sample**
Lower Bound TEQ - PCDD/F	0.00	0.00
Upper Bound TEQ - PCDD/F	13.2	13.6
Lower Bound TEQ - PCB	0.00	0.000627
Upper Bound TEQ - PCB	0.556	1.09
Lower Bound TEQ - Total	0.00	0.000627
Upper Bound TEQ - Total	13.8	14.7
Marker Polychlorinated Biphenyls	**ng/sample**	**ng/sample**
PCB-28	0.0038	0.0343
PCB-52	<0.0026	0.0427
PCB-101	<0.0028	0.0399
PCB-153	<0.0035	<0.012
PCB-138	<0.0070	0.0158
PCB-180	<0.0077	<0.0053
Upper Bound Sum of Marker PCBs	0.0311	0.171

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#:	L2739113		Mississauga, ON, L5J 2Y4
Date of Report	24-Nov-22		Canada
Date of Sample Receipt	2-Nov-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Low levels of select targets were detected in the proof and blank.
Glassware is approved for the collection of samples for PAH analysis.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3771777-1		L2739113-52	
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	8-Nov-22		8-Nov-22	
Target Analytes	**ng/sample**		**ng/sample**	
Naphthalene	44.1	R	60.5	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	<10	U	<10	U
Phenanthrene	<10	U	<10	U
Anthracene	<10	U	<10	U
Fluoranthene	<10	U	<10	U
Pyrene	<10	U	<10	U
Benzo(a)Anthracene	<10	U	<10	U
Chrysene/Triphenylene	<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/a,c)Anthracene	<10	U	<10	U
Benzo(g,h,i)Perylene	<10	U	12.4	
Additional Analytes				
Tetralin	<10	U	<10	U
2-Chloronaphthalene	<10	U	<10	U
Biphenyl	14.2	R	<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
7,12-Dimethylbenzo(a)anthracene	<10	U	<10	U
3-Methylcholanthrene	<50	U	<50	U
Picene	<50	U	<50	U
Dibenzo(a,e)pyrene	<50	U	<50	U
Coronene	<50	U	<50	U
Extraction Standards	**% Rec**		**% Rec**	
Naphthalene D8	40.2		35.7	
2-Methylnaphthalene-D10	49.0		44.7	
Acenaphthylene D8	61.5		59.0	
Phenanthrene D10	49.3	R	51.0	
Anthracene-D10	65.0		62.7	
Fluoranthene D10	63.6		65.0	
Benz(a)Anthracene-D12	52.1		64.6	
Chrysene D12	42.7		44.8	
Benzo(b)Fluoranthene-D12	54.1		56.4	
Benzo(k)Fluoranthene-D12	46.1		46.2	
Benzo(a)Pyrene D12	64.8		76.6	
Perylene D12	69.3		79.1	
Indeno(1,2,3,cd)Pyrene-D12	70.6		86.1	
Dibenz(a,h)Anthracene-D14	79.0		89.2	
Benzo(g,h,i)Perylene D12	70.6		70.1	

U Indicates that this compound was not detected above the LOD.

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 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
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road Mississauga, ON, L5J 2Y4 Canada
ALS WO#:	L2739113		
Date of Report	25-Nov-22		
Date of Sample Receipt	24-Nov-22	**Client Contact:**	Chris Belore
		Client Project ID:	22160 Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260C**

Ketone data by VOST analyses are estimated values only

Target analytes were not detected in the proof.
The media are approved for the collection of samples for the analysis of VOCs via SW846 Method 5041A/8260C

Certified by: Kennedy

Steve Kennedy
Technical Supervisor

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		VOST Proof	
ALS Sample ID	WG3773980-1		L2739113-70	
Sample units	sample		sample	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	24-Nov-22		24-Nov-22	
Target Analytes	**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U
Trichlorofluoromethane	<0.02	U	<0.02	U
1,1-Dichloroethene	<0.01	U	<0.01	U
Acetone	<0.1	U	<0.1	U
Methylene Chloride	<0.1	U	<0.1	U
trans,1,2-Dichloroethene	<0.01	U	<0.01	U
2-Butanone	<0.01	U	<0.01	U
Chloroform	<0.01	U	<0.01	U
1,1,1-Trichloroethane	<0.01	U	<0.01	U
Carbon Tetrachloride	<0.01	U	<0.01	U
Benzene	<0.05	U	<0.05	U
1,2-Dichloroethane	<0.01	U	<0.01	U
Trichloroethene	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U
Bromodichloromethane	<0.01	U	<0.01	U
Toluene	<0.05	U	<0.05	U
1,1,2-Trichloroethane	<0.02	U	<0.02	U
Tetrachloroethene	<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U
Ethylbenzene	<0.01	U	<0.01	U
M&P-Xylene	<0.03	U	<0.03	U
O-Xylene	<0.01	U	<0.01	U
Styrene	<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U
Isopropylbenzene	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.01	U	<0.01	U
Field Standard	**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	70.3		145.2	
Surrogate Standards	**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	85.2	M	95.0	M
d8-Toluene(SURR)	95.4		106.4	
4-Bromofluorobenzene(SURR)	75.9		76.2	
Internal Standards	**% Rec**		**% Rec**	
d14-Hexane	101.4		81.7	
d6-Benzene	101.3		77.0	
d5-Chlorobenzene	102.8		73.3	

U Indicates that this compound was not detected above the RL.
M Indicates that a peak has been manually integrated.

APPENDIX 21

ORTECH Equipment Calibration Data
(29 pages)

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.002 C		
High	90.3 A2	90.53 B2			
Mid	51.9 A4	50.71 B4		52.0 D4	-2.5 E4
Low	30.6 A3	29.73 B3		30.7 D3	-3.0 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	0.05	0.6	-0.55
Mid	29.73	30.1	-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	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.002 C		
High	90.3 A2	90.53 B2			
Mid	51.9 A4	50.71 B4		52.0 D4	-2.5 E4
Low	30.6 A3	29.73 B3		30.7 D3	-3.0 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	0.6
Mid	30.1	30.9	-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	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.002 C		
High	90.3 A2	90.53 B2			
Mid	51.9 A4	50.71 B4		52.0 D4	-2.5 E4
Low	30.6 A3	29.73 B3		30.7 D3	-3.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	30.9	30.0	0.9

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	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.001 C		
High	90.3 A2	90.4 B2			
Mid	51.9 A4	50.81 B4		51.9 D4	-2.2 E4
Low	30.6 A3	29.85 B3		30.6 D3	-2.5 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.05	0.4	-0.35
Mid	29.85	30.6	-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	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.001 C		
High	90.3 A2	90.4 B2			
Mid	51.9 A4	50.81 B4		51.9 D4	-2.2 E4
Low	30.6 A3	29.85 B3		30.6 D3	-2.5 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.4	0	0.4
Mid	30.6	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	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.001 C		
High	90.3 A2	90.4 B2			
Mid	51.9 A4	50.81 B4		51.9 D4	-2.2 E4
Low	30.6 A3	29.85 B3		30.6 D3	-2.5 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	30.7	30.8	-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	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.002 C		
High	90.3 A2	90.53 B2			
Mid	51.9 A4	50.71 B4		52.0 D4	-2.5 E4
Low	30.6 A3	30.6 B3		30.7 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	0.05	0.3	-0.25
Mid	30.6	30.1	0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.002 C		
High	90.3 A2	90.53 B2			
Mid	51.9 A4	50.71 B4		52.0 D4	-2.5 E4
Low	30.6 A3	30.6 B3		30.7 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	0.3	0	0.3
Mid	30.1	30.0	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	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.002 C		
High	90.3 A2	90.53 B2			
Mid	51.9 A4	50.71 B4		52.0 D4	-2.5 E4
Low	30.6 A3	30.6 B3		30.7 D3	-0.2 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	30.1	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		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.001 C		
High	90.3 A2	90.4 B2			
Mid	51.9 A4	50.81 B4		51.9 D4	-2.2 E4
Low	30.6 A3	30.6 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	0.4	-0.4
Mid	30.6	30.4	0.2

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.001 C		
High	90.3 A2	90.4 B2			
Mid	51.9 A4	50.81 B4		51.9 D4	-2.2 E4
Low	30.6 A3	30.6 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	0.4	0.4	0
Mid	30.4	29.8	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	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22160	Date:	November 29, 2022
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	0.05 B1	1.001 C		
High	90.3 A2	90.4 B2			
Mid	51.9 A4	50.81 B4		51.9 D4	-2.2 E4
Low	30.6 A3	30.6 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	0.4	0.8	-0.4
Mid	29.8	31.0	-1.2

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 8, 2022
Probe/Pitot ID	S7
MII Number	B03768
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd \cdot \sqrt{\frac{Pstd}{Ps}}$$

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	7.60	0.140	0.190	0.856	0.0036
(0.25")	9.30	0.210	0.290	0.849	0.0039
	11.30	0.310	0.430	0.847	0.0057
	13.62	0.450	0.610	0.857	0.0041
	15.46	0.580	0.790	0.855	0.0020
			Mean	0.853	0.0038

Without Nozzle	7.60	0.140	0.190	0.856	0.0020
	9.30	0.210	0.290	0.849	0.0054
	11.30	0.310	0.430	0.847	0.0073
	13.77	0.460	0.620	0.859	0.0049
	15.26	0.565	0.760	0.860	0.0058
			Mean	0.854	0.0051

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 8, 2022
Probe/Pitot ID	S8
MII Number	B03769
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.18	0.125	0.175	0.843	0.0039
(0.25")	8.85	0.190	0.260	0.853	0.0058
	10.65	0.275	0.380	0.849	0.0017
	13.00	0.410	0.570	0.846	0.0009
	14.78	0.530	0.740	0.844	0.0027
			Mean	0.847	0.0030

Without Nozzle	7.32	0.130	0.180	0.848	0.0049
	8.85	0.190	0.260	0.853	0.0001
	10.93	0.290	0.400	0.850	0.0033
	13.00	0.410	0.560	0.854	0.0009
	14.64	0.520	0.700	0.860	0.0071
			Mean	0.853	0.0033

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 8, 2022
Probe/Pitot ID	SP6
MII Number	COE20098
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.46	0.135	0.190	0.841	0.0058
(0.25")	9.30	0.210	0.290	0.849	0.0022
	11.48	0.320	0.440	0.851	0.0040
	13.62	0.450	0.620	0.850	0.0032
	15.05	0.550	0.770	0.843	0.0036
			Mean	0.847	0.0038

Without Nozzle	7.46	0.135	0.190	0.841	0.0052
	9.19	0.205	0.285	0.846	0.0000
	11.48	0.320	0.440	0.851	0.0047
	13.47	0.440	0.610	0.847	0.0012
	15.19	0.560	0.780	0.845	0.0008
			Mean	0.846	0.0024

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 8, 2022
Probe/Pitot ID	PM 10 2.5
MII Number	COE 20132
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd \quad * \quad \sqrt{\frac{Pstd}{Ps}}$$

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	7.03	0.120	0.165	0.851	0.0035
	8.85	0.190	0.260	0.853	0.0014
	10.74	0.280	0.380	0.856	0.0021
	12.68	0.390	0.530	0.856	0.0015
	14.35	0.500	0.680	0.856	0.0012
			Mean	0.854	0.0020

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 2
Meter MII Number	COE 20092
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.47	in Hg
Theoretical Critical Vacuum	13.9	in Hg
System Leak Check	NDL @ 16"Hg	
Calibration Date	June 7, 2022	
Calibration Technician	Blair McIntyre	
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
10.0	0.28	19.300	22.355	71.5	73.5	UR-40	0.2352	73.4	73.4	20.5
10.0	0.55	22.355	26.640	73.5	73.5	UR-48	0.3308	73.4	73.4	19.5
10.0	1.10	26.640	32.500	73.5	74.5	UR-55	0.4520	73.4	73.4	18.0
10.0	1.90	41.250	48.850	74.5	75.0	UR-63	0.5874	73.4	73.4	16.5
10.0	3.60	48.850	59.200	75.0	76.5	UR-73	0.8107	73.4	73.4	14.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
2.986	0.299	3.001	0.300	1.005	-0.005	0.300	1.749	-0.063
4.183	0.418	4.221	0.422	1.009	-0.001	0.422	1.736	-0.075
5.723	0.572	5.768	0.577	1.008	-0.003	0.577	1.860	0.048
7.426	0.743	7.495	0.750	1.009	-0.001	0.750	1.902	0.091
10.137	1.014	10.345	1.034	1.020	0.010	1.034	1.892	0.080
			DGMCF	1.010			1.812	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 20092
Date	June 7, 2022
Calibrated By	Blair McIntyre
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	201		-0.5
250	251		-0.4
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0
700	700		0.0
800	800		0.0
900	900		0.0
1000	1000		0.0
1100	1100		0.0
1200	1200		0.0
1250	1250		0.0

$$\% \text{ Difference} = \frac{(\text{calibrator - after adjustment reading})}{\text{calibrator}} \times 100$$

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	June 7, 2022	Calibrated By	Blair McIntyre
Manometer Number	Team 2	Signature	
Manometer MII Number	COE 20092	Reviewed/Accepted By	
Calibrated Against	Omega		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_20	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.300		0.304	1.3
0-1.0	0.600		0.601	0.2
	0.900		0.905	0.6
	3.00		3.04	1.3
1.0-10.0	5.90		5.96	1.0
	9.00		9.03	0.3

$$\text{Percent Difference} = \frac{\text{(Ref. Manometer - Instrument Reading)}}{\text{Ref. Manometer}} \times 100$$

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

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 4
Meter MII Number	COE 20090
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.62	in Hg
Theoretical Critical Vacuum	14.0	in Hg
System Leak Check	NLD @ 16"Hg	
Calibration Date	June 3, 2022	
Calibration Technician	BM	
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
10.0	0.30	16.190	19.250	76.0	79.0	UR-40	0.2352	71.6	71.6	15.0
10.0	0.58	6.285	10.570	76.0	76.0	UR-48	0.3308	71.6	71.6	16.0
10.0	1.20	19.250	25.160	78.0	78.0	UR-55	0.4520	71.6	71.6	19.0
10.0	1.90	25.160	32.775	78.0	78.5	UR-63	0.5874	71.6	71.6	17.5
10.0	3.50	32.775	43.130	78.5	80.0	UR-73	0.8107	71.6	71.6	14.5

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	
2.978	0.298	3.022	0.302	1.015	-0.002	0.302	1.848	-0.035
4.185	0.418	4.250	0.425	1.016	-0.001	0.425	1.806	-0.077
5.759	0.576	5.807	0.581	1.008	-0.008	0.581	2.002	0.119
7.430	0.743	7.546	0.755	1.016	-0.001	0.755	1.877	-0.007
10.125	1.012	10.415	1.041	1.029	0.012	1.041	1.815	-0.068
			DGMCF	1.017			1.883	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	June 3, 2022
Calibrated By	BM
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	32	0.0
70	69	69	1.4
100	98	99	1.0
200	200	201	-0.5
250	251	251	-0.4
300	300	301	-0.3
400	399	399	0.3
500	498	498	0.4
600	599	599	0.2
700	700	700	0.0
800	800	800	0.0
900	900	900	0.0
1000	1000	1000	0.0
1100	1101	1100	0.0
1200	1201	1200	0.0
1250	1250	1250	0.0

$$\% \text{ Difference} = \frac{(\text{calibrator - after adjustment reading})}{\text{calibrator}} \times 100$$

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	June 3, 2022	Calibrated By	Blair McIntyre
Manometer Number	Team 4	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	omega		
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 %
	0.300		0.310	3.2
0-1.0	0.600		0.600	0.0
	0.900		0.900	0.0
	3.00		3.00	0.0
1.0-10.0	6.00		6.01	0.2
	9.00		9.02	0.2

$$\text{Percent Difference} = \frac{\text{(Ref. Manometer - Instrument Reading)}}{\text{Ref. Manometer}} \times 100$$

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

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 1
Meter MII Number	COE 20094
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.53	in Hg
Theoretical Critical Vacuum	13.9	in Hg
System Leak Check	NDL @ 16.5"Hg	
Calibration Date	June 7, 2022	
Calibration Technician	Blair McIntyre	
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
10.0	0.29	0.735	3.900	71.5	71.5	UR-40	0.2352	72.5	72.5	22.0
10.0	0.58	3.900	8.320	71.5	72.5	UR-48	0.3308	72.5	72.5	20.5
10.0	1.20	8.320	14.390	72.5	72.5	UR-55	0.4520	72.5	72.5	19.0
10.0	2.00	14.390	22.255	72.5	72.5	UR-63	0.5874	72.5	72.5	17.0
10.0	3.70	22.280	33.040	72.5	73.5	UR-73	0.8107	72.5	72.5	14.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
3.105	0.311	3.010	0.301	0.969	-0.004	0.301	1.801	-0.107
4.336	0.434	4.233	0.423	0.976	0.003	0.423	1.821	-0.087
5.958	0.596	5.784	0.578	0.971	-0.002	0.578	2.018	0.110
7.735	0.774	7.517	0.752	0.972	-0.001	0.752	1.991	0.084
10.617	1.062	10.374	1.037	0.977	0.004	1.037	1.934	0.026
			DGMCF	0.973			1.907	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	**June 7, 2022**
Calibrated By	**Blair McIntyre**
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	69		1.4
100	99		1.0
200	201		-0.5
250	252		-0.8
300	302		-0.7
400	401		-0.3
500	500		0.0
600	601		-0.2
700	700		0.0
800	800		0.0
900	900		0.0
1000	1001		-0.1
1100	1102		-0.2
1200	1202		-0.2
1250	1251		-0.1

% 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	June 7, 2022	Calibrated By	Blair McIntyre
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 %
	0.300		0.310	3.2
0-1.0	0.600		0.600	0.0
	0.900		0.910	1.1
	3.00		3.00	0.0
1.0-10.0	6.00		6.02	0.3
	9.00		9.01	0.1

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

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	M05498
Date	November 15, 2022
Barometric Pressure	29.85
System Leak Check	NDL @ 22.5 ' Hg

MII NUMBERS	
DGM	M05498
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Brayden Pacheco
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{V_{std}\ ft^3}{V_{dgm}\ ft^3} \quad \frac{T_{dgm}\ {}^{o}F+460}{T_{std}\ {}^{o}F+460} \quad \frac{P_{bar}\ (\text{"Hg})}{(P_{bar}\ \text{"Hg}+DGMPressure/13.6)}$$

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
57.90	50.70	7.20	0.339	20.0	9780.00	9789.80	0.346	22.0	1.0	22.0	0.983	20	0.5
58.40	52.00	6.40	0.301	20.0	9789.80	9798.60	0.311	24.0	1.0	24.0	0.980	20	0.4
60.30	54.10	6.20	0.292	20.0	9798.60	9807.20	0.304	25.0	1.0	25.0	0.974	20	0.4

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 0.979

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03-J005
Trendicator Type	Nutech
MII	M05498
Date	November 15, 2022
Calibrated By	Brayden Pacheco
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	Tredicator Display Value		Percent Difference (%)
	Before Adjustment (°C)	After Adjustment (°C)	
0	0		0.0
20	20		0.0
50	50		0.0
100	101		-1.0
150	151		-0.7
200	200		0.0
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 5
Date	November 15, 2022
Barometric Pressure	29.88
System Leak Check	NDL @ 22.5 "Hg

MII NUMBERS	
DGM	COE 20018
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Brayden Pacheco
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
61.00	54.60	6.40	0.301	20.0	5493.65	5502.45	0.311	26.0	1.0	26.0	0.986	20	0.4
60.40	54.00	6.40	0.301	20.0	5484.90	5493.65	0.309	25.0	1.0	25.0	0.988	20	0.4
61.70	55.30	6.40	0.301	20.0	5476.10	5484.90	0.311	26.0	1.0	26.0	0.986	20	0.4

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 0.987

ORTECH
Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Jenco 765**
MII	**COE 20018**
Date	**November 15, 2022**
Calibrated By	**Brayden Pacheco**
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	**Tredicator Display Value**		**Percent Difference**
	Before Adjustment (°C)	**After Adjustment (°C)**	**(%)**
0	0		0.0
20	20		0.0
50	50		0.0
100	100		0.0
150	150		0.0
200	199		0.5
300	299		0.3
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)

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 - Partculate & Metals
Date:	November 29 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.34 mm
DRY REF GAS VOLUME SAMPLED	3.796 m^3
AVGERGE ISOKINETICITY	100.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.4 °C
AVERAGE GAS MOISTURE BY VOLUME	16.1 %
AVERAGE GAS VELOCITY	18.76 m/s
BAROMETRIC PRESSURE (Station)	101.321 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	98.656 Kpa
OXYGEN CONCENTRATION	9.21 %
CARBON DIOXIDE CONCENTRATION	10.67 %
CARBON MONOXIDE CONCENTRATION	6.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.71 m^3/s
DRY REF GAS FLOWRATE	16.29 Rm^3/s
DRY ADJ GAS FLOWRATE	19.23 Rm^3/s
WET REF GAS FLOWRATE	19.41 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.6 mg
	-FILTER	0.1 mg
	-TOTAL	1.7 mg
DRY REF GAS VOLUME SAMPLED		3.796 m^3
PARTICULATE CONC. - ACTUAL		0.263 mg/m^3
PARTICULATE CONC. - DRY REF		0.448 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.379 mg/m^3
PARTICULATE CONC. - WET REF		0.376 mg/m^3
PARTICULATE EMISSION RATE		0.007293 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 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	1.6
Barometric Pressure	29.92 "Hg	**CWTR (g)**	510.4
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	23.9
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 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%	9.21
CO2%	10.67
COppm	6.8

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	51.58	0.95	282	74	83	83	0.82	4.0		20.40	
	2.5	52.85	0.98	286	72	83	82	2.3	6.0		20.77	**63.4**
	5	54.70	0.98	286	69	83	83	2.3	6.0		20.77	**91.5**
2	7.5	56.77	0.98	287	67	83	83	2.3	6.0		20.78	**102.3**
	10	58.78	0.9	287	66	83	83	2.3	6.0		19.92	**99.4**
	12.5	60.83	0.89	287	66	83	85	2.1	5.5		19.81	**105.8**
3	15	62.72	0.85	287	62	83	86	2.1	5.5		19.36	**97.9**
	17.5	64.65	0.84	287	59	83	87	2.1	5.5		19.24	**102.2**
	20	66.58	0.92	286	55	83	89	2.3	6.0		20.12	**102.7**
4	22.5	68.61	0.9	286	56	83	90	2.3	6.0		19.90	**103.0**
	25	70.65	0.92	287	56	84	91	2.2	6.0		20.14	**104.6**
	27.5	72.65	0.95	287	56	84	93	2.2	6.0		20.46	**101.2**
5	30	74.69	0.8	288	54	84	93	2	5.5		18.79	**101.4**
	32.5	76.51	0.75	288	52	84	93	2	5.5		18.19	**98.6**
	35	78.39	0.76	288	51	85	94	2	5.5		18.32	**105.2**
6	37.5	80.27	0.67	288	50	85	95	1.7	5.0		17.20	**104.4**
	40	81.98	0.66	288	50	85	95	1.7	5.0		17.07	**100.9**
	42.5	83.70	0.67	288	50	85	95	1.7	5.0		17.20	**102.3**
7	45	85.42	0.78	288	49	85	96	2	5.5		18.56	**101.5**
	47.5	87.30	0.75	288	48	86	98	2	5.5		18.19	**102.8**
	50	89.17	0.75	288	47	86	98	2	5.5		18.19	**104.0**
8	52.5	91.05	0.78	287	46	86	98	2	5.5		18.54	**104.6**
	55	92.93	0.79	287	46	86	98	2	5.5		18.66	**102.5**
	57.5	94.82	0.78	288	46	87	99	2	5.5		18.56	**102.4**
9	60	96.67	0.78	287	46	87	99	2	5.5		18.54	**100.7**
	62.5	98.53	0.78	287	47	87	99	2	5.5		18.54	**101.2**
	65	100.37	0.75	286	47	87	99	2	5.5		18.17	**100.1**
10	67.5	102.23	0.7	286	47	87	99	1.9	5.5		17.55	**103.1**
	70	104.05	0.7	286	47	87	99	1.8	5.5		17.55	**104.4**
	72.5	105.83	0.72	286	47	87	99	1.8	5.5		17.80	**102.1**
11	75	107.62	0.65	286	47	87	99	1.7	5.0		16.92	**101.2**

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	1.6
Barometric Pressure	29.92 "Hg	**CWTR (g)**	510.4
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	23.9
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 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%	9.21
CO2%	10.67
COppm	6.8

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 %
	77.5	109.34	0.65	286	47	88	99	1.7	5.0		16.92	**102.4**
	80	110.70	0.65	286	47	88	99	1.8	5.5		16.92	**80.9**
12	82.5	112.13	0.67	286	47	88	99	2.2	6.0		17.17	**85.1**
	85	114.80	0.67	286	47	88	99	1.7	5.0		17.17	**156.6**
	87.5	116.63	0.66	286	48	88	100	1.7	5.0		17.05	**107.2**
	90	118.37								0.46		**102.6**
1	0	118.83	0.9	280	54	88	91	2.2	6.0		19.82	
	2.5	120.86	0.9	286	48	87	92	2	5.5		19.90	**103.0**
	5	122.65	0.95	287	47	87	93	2.3	6.0		20.46	**91.2**
2	7.5	124.65	0.95	287	46	87	94	2.3	6.0		20.46	**99.2**
	10	126.69	0.95	287	45	87	94	2.3	6.0		20.46	**101.1**
	12.5	128.72	0.95	287	45	87	95	2.3	6.0		20.46	**100.6**
3	15	130.79	0.9	287	45	87	96	2.1	6.0		19.92	**102.5**
	17.5	132.75	0.9	287	46	87	96	2.1	6.0		19.92	**99.6**
	20	134.71	0.9	287	46	87	97	2.1	6.0		19.92	**99.6**
4	22.5	136.60	0.88	287	46	88	98	2.1	6.0		19.70	**95.9**
	25	138.60	0.87	287	46	88	98	2.1	6.0		19.58	**102.5**
	27.5	140.47	0.87	287	46	88	98	2.1	6.0		19.58	**96.4**
5	30	142.36	0.84	287	46	88	99	2.1	6.0		19.24	**97.4**
	32.5	144.25	0.83	287	46	88	99	2.1	6.0		19.13	**99.0**
	35	146.14	0.83	288	47	88	99	2.1	6.0		19.14	**99.6**
6	37.5	148.05	0.75	288	47	88	99	1.85	5.6		18.19	**100.7**
	40	149.90	0.73	288	47	88	100	1.8	5.5		17.95	**102.6**
	42.5	151.67	0.73	288	47	88	100	1.8	5.5		17.95	**99.4**
7	45	153.44	0.78	287	47	89	100	2	6.0		18.54	**99.4**
	47.5	155.29	0.78	288	47	89	100	2	6.0		18.56	**100.4**
	50	157.18	0.78	288	47	89	100	2	6.0		18.56	**102.6**
8	52.5	159.02	0.78	287	47	89	100	2	6.0		18.54	**99.9**
	55	160.91	0.79	287	47	89	100	2	6.0		18.66	**102.5**
	57.5	162.79	0.79	287	47	89	100	2	6.0		18.66	**101.4**
9	60	164.69	0.78	287	47	89	100	2	6.0		18.54	**102.4**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	1.6
Barometric Pressure	29.92 "Hg	**CWTR (g)**	510.4
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	23.9
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 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%	9.21
CO2%	10.67
COppm	6.8

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	166.58	0.78	286	47	89	100	2	6.0		18.53	**102.5**
	65	168.48	0.78	286	47	89	100	2	6.0		18.53	**103.0**
10	67.5	170.38	0.83	285	47	89	100	2.1	6.0		19.10	**103.0**
	70	172.29	0.82	285	47	89	100	2.1	6.0		18.99	**100.4**
	72.5	174.21	0.82	285	47	89	100	2.1	6.0		18.99	**101.5**
11	75	176.12	0.75	285	47	89	100	1.9	6.0		18.16	**101.0**
	77.5	177.96	0.75	285	47	89	100	1.9	6.0		18.16	**101.7**
	80	179.80	0.74	285	47	89	100	1.9	6.0		18.04	**101.7**
12	82.5	181.64	0.65	284	47	89	100	1.6	5.5		16.89	**102.3**
	85	183.33	0.65	284	48	89	100	1.6	5.5		16.89	**100.1**
	87.5	184.97	0.65	284	48	90	101	1.6	5.5		16.89	**97.2**
	90	186.66										**100.0**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - Particulate & Metals
Date:	November 29 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.34 mm
DRY REF GAS VOLUME SAMPLED	3.811 m^3
AVGERGE ISOKINETICITY	101.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.2 °C
AVERAGE GAS MOISTURE BY VOLUME	16.5 %
AVERAGE GAS VELOCITY	18.78 m/s
BAROMETRIC PRESSURE (Station)	101.118 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	98.453 Kpa
OXYGEN CONCENTRATION	9.16 %
CARBON DIOXIDE CONCENTRATION	10.67 %
CARBON MONOXIDE CONCENTRATION	7.7 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.75 m^3/s
DRY REF GAS FLOWRATE	16.24 Rm^3/s
DRY ADJ GAS FLOWRATE	19.26 Rm^3/s
WET REF GAS FLOWRATE	19.45 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.8 mg
	-FILTER	0.1 mg
	-TOTAL	0.9 mg
DRY REF GAS VOLUME SAMPLED		3.811 m^3
PARTICULATE CONC. - ACTUAL		0.138 mg/m^3
PARTICULATE CONC. - DRY REF		0.236 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.199 mg/m^3
PARTICULATE CONC. - WET REF		0.197 mg/m^3
PARTICULATE EMISSION RATE		0.003834 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:	November 29 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	0.8
Barometric Pressure	29.86 "Hg	**CWTR (g)**	529.1
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	24
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.56 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%	9.16
CO2%	10.67
COppm	7.7

Measured H2O
16.5 %

				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	87.69	0.95	287	69	87	87	2.2	5.5		20.50	
	2.5	89.68	0.95	286	59	87	87	2.2	5.5		20.49	99.5
	5	91.69	0.94	287	53	87	88	2.2	5.5		20.40	**100.5**
2	7.5	93.70	0.94	286	49	88	90	2.2	5.5		20.38	**101.0**
	10	95.71	0.94	286	47	88	91	2.2	5.5		20.38	**100.6**
	12.5	97.72	0.94	286	47	88	93	2.2	5.5		20.38	**100.5**
3	15	99.73	0.87	287	47	88	94	2.1	5.5		19.62	**100.4**
	17.5	101.69	0.88	286	47	88	95	2.1	5.5		19.72	**101.7**
	20	103.64	0.89	286	47	88	96	2.2	5.5		19.83	**100.4**
4	22.5	105.63	0.84	286	47	88	97	2.1	5.5		19.27	**101.8**
	25	107.53	0.84	286	47	88	97	2.1	5.5		19.27	**100.0**
	27.5	109.47	0.84	286	47	89	99	2.1	5.5		19.27	**102.1**
5	30	111.43	0.8	286	47	89	100	2	5.5		18.80	**102.8**
	32.5	113.31	0.8	286	47	89	100	2	5.5		18.80	**101.0**
	35	115.14	0.8	286	47	89	101	2	5.5		18.80	**98.3**
6	37.5	117.02	0.74	286	47	90	101	1.9	5.3		18.08	**100.9**
	40	118.82	0.74	286	47	90	101	1.9	5.3		18.08	**100.3**
	42.5	120.64	0.74	286	47	90	102	1.9	5.3		18.08	**101.4**
7	45	122.44	0.76	286	47	90	102	1.9	5.3		18.33	**100.2**
	47.5	124.28	0.76	286	47	90	102	1.9	5.3		18.33	**101.1**
	50	126.11	0.76	286	47	90	102	1.9	5.3		18.33	**100.5**
8	52.5	127.98	0.79	286	47	91	103	2	5.5		18.69	**102.7**
	55	129.88	0.79	286	46	91	103	2	5.5		18.69	**102.2**
	57.5	131.77	0.79	286	46	91	103	2	5.5		18.69	**101.7**
9	60	133.70	0.81	286	46	91	103	2	5.5		18.92	**103.8**
	62.5	135.62	0.81	286	46	91	103	2	5.5		18.92	**102.0**
	65	137.52	0.81	286	46	91	103	2	5.5		18.92	**101.0**
10	67.5	139.43	0.81	286	47	91	103	2	5.5		18.92	**101.5**
	70	141.33	0.8	286	47	91	103	2	5.5		18.80	**101.0**
	72.5	143.24	0.8	285	47	92	103	2	5.5		18.79	**102.1**
11	75	145.14	0.78	285	47	91	103	1.95	5.5		18.55	**101.4**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	0.8
Barometric Pressure	29.86 "Hg	**CWTR (g)**	529.1
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	24
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.56 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%	9.16
CO2%	10.67
COppm	7.7

Measured H2O
16.5 %

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 %
	77.5	146.96	0.79	285	47	91	103	1.95	5.5		18.67	**98.5**
	80	148.90	0.8	285	47	92	103	1.95	5.5		18.79	**104.3**
12	82.5	150.75	0.73	285	47	92	104	1.8	5.3		17.95	**98.7**
	85	152.57	0.73	285	47	92	104	1.8	5.3		17.95	**101.6**
	87.5	154.34	0.7	285	47	92	104	1.8	5.3		17.58	**98.8**
	90	156.15								0.56		**103.1**
1	0	156.71	0.88	286	58	92	96	2.2	5.5		19.72	
	2.5	158.73	0.88	285	45	92	98	2.2	5.5		19.71	**103.6**
	5	160.74	0.88	284	42	92	98	2.2	5.5		19.69	**102.8**
2	7.5	162.72	0.9	284	42	92	99	2.2	5.5		19.92	**101.2**
	10	164.71	0.9	284	41	92	100	2.2	5.5		19.92	**100.5**
	12.5	166.72	0.9	284	41	92	100	2.2	5.5		19.92	**101.4**
3	15	168.71	0.88	284	41	92	101	2.2	5.5		19.69	**100.4**
	17.5	170.70	0.88	284	41	92	101	2.2	5.5		19.69	**101.4**
	20	172.69	0.89	284	42	92	102	2.2	5.5		19.81	**101.4**
4	22.5	174.68	0.82	284	42	92	102	2	5.5		19.01	**100.8**
	25	176.58	0.82	284	42	92	103	2.1	5.5		19.01	**100.2**
	27.5	178.53	0.82	284	43	92	103	2.1	5.5		19.01	**102.8**
5	30	180.44	0.7	284	43	92	103	1.8	5.0		17.57	**100.7**
	32.5	182.25	0.7	284	43	92	103	1.8	5.0		17.57	**103.2**
	35	184.06	0.7	284	43	92	104	1.8	5.0		17.57	**103.2**
6	37.5	185.88	0.66	284	44	92	104	1.6	5.0		17.06	**103.6**
	40	187.60	0.66	284	44	92	104	1.6	5.0		17.06	**100.8**
	42.5	189.30	0.67	284	44	92	104	1.7	5.0		17.18	**99.7**
7	45	191.05	0.8	284	44	93	105	2.1	5.5		18.78	**101.8**
	47.5	192.98	0.8	284	45	93	105	2.1	5.5		18.78	**102.7**
	50	194.94	0.78	284	45	93	104	2.1	5.5		18.54	**104.3**
8	52.5	196.88	0.78	285	45	93	104	2.1	5.5		18.55	**104.6**
	55	198.78	0.77	284	45	93	104	2	5.5		18.42	**102.6**
	57.5	200.67	0.77	284	46	93	104	2	5.5		18.42	**102.6**
9	60	202.56	0.78	285	46	93	104	2	5.5		18.55	**102.6**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	0.8
Barometric Pressure	29.86 "Hg	**CWTR (g)**	529.1
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	24
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.56 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%	9.16
CO2%	10.67
COppm	7.7

Measured H2O
16.5 %

				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 %
	62.5	204.44	0.78	284	46	93	104	2	5.5		18.54	**101.5**
	65	206.32	0.79	285	47	93	104	2	5.5		18.67	**101.4**
10	67.5	208.19	0.77	285	47	93	104	2	5.5		18.43	**100.3**
	70	210.07	0.76	283	47	93	104	2	5.5		18.29	**102.1**
	72.5	211.94	0.79	283	47	93	104	2	5.5		18.65	**102.1**
11	75	213.81	0.83	283	47	93	104	2	5.5		19.11	**100.1**
	77.5	215.69	0.76	276	47	93	104	2	5.5		18.20	**98.2**
	80	217.58	0.75	276	48	93	104	2	5.5		18.08	**102.7**
12	82.5	219.46	0.66	276	48	93	104	2	5.5		16.96	**102.8**
	85	221.30	0.66	276	48	93	104	1.8	5.5		16.96	**107.3**
	87.5	223.08	0.67	276	48	93	104	1.6	5.5		17.09	**103.7**
	90	224.80										**99.4**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - Particulate & Metals
Date:	November 29 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.34 mm
DRY REF GAS VOLUME SAMPLED	3.789 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	138.9 °C
AVERAGE GAS MOISTURE BY VOLUME	16.7 %
AVERAGE GAS VELOCITY	18.85 m/s
BAROMETRIC PRESSURE (Station)	100.881 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	98.216 Kpa
OXYGEN CONCENTRATION	9.19 %
CARBON DIOXIDE CONCENTRATION	10.48 %
CARBON MONOXIDE CONCENTRATION	10.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.85 m^3/s
DRY REF GAS FLOWRATE	16.28 Rm^3/s
DRY ADJ GAS FLOWRATE	19.25 Rm^3/s
WET REF GAS FLOWRATE	19.54 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.9 mg
	-FILTER	0.2 mg
	-TOTAL	1.1 mg
DRY REF GAS VOLUME SAMPLED		3.789 m^3
PARTICULATE CONC. - ACTUAL		0.170 mg/m^3
PARTICULATE CONC. - DRY REF		0.290 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.245 mg/m^3
PARTICULATE CONC. - WET REF		0.242 mg/m^3
PARTICULATE EMISSION RATE		0.004724 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, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.2
DGMCF	1.017	**Probe (mg)**	0.9
Barometric Pressure	29.79 "Hg	**CWTR (g)**	530
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	27.2
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 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%	9.19
CO2%	10.48
COppm	10.0

Measured H2O
16.7 %

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	26.56	0.9	286	87	90	90	2.1	5.5		19.98	
	2.5	28.50	0.99	287	74	91	91	2.2	5.5		20.97	**99.1**
	5	30.47	0.96	288	67	91	92	2.4	5.5		20.67	**95.8**
2	7.5	32.44	0.97	288	65	91	93	2.2	5.5		20.77	**97.4**
	10	34.47	0.99	288	63	91	94	2.3	5.5		20.99	**99.7**
	12.5	36.51	0.95	289	62	91	95	2.4	6.0		20.57	**99.1**
3	15	38.55	0.94	288	60	91	97	2.3	6.0		20.45	**101.1**
	17.5	40.59	0.92	288	59	91	98	2.3	6.0		20.23	**101.4**
	20	42.64	0.94	288	58	91	99	2.3	6.0		20.45	**102.9**
4	22.5	44.68	0.88	288	58	91	99	2.3	6.0		19.79	**101.2**
	25	46.64	0.87	287	57	92	100	2.2	6.0		19.66	**100.5**
	27.5	48.59	0.87	287	57	92	101	2.2	6.0		19.66	**100.3**
5	30	50.53	0.86	287	57	92	101	2.1	6.0		19.55	**99.7**
	32.5	52.49	0.8	287	57	92	102	2.2	6.0		18.85	**101.3**
	35	54.39	0.8	286	57	92	102	2.1	6.0		18.84	**101.7**
6	37.5	56.32	0.72	286	57	92	103	1.8	5.7		17.87	**103.2**
	40	58.11	0.72	286	57	93	103	1.8	5.7		17.87	**100.8**
	42.5	59.90	0.73	287	58	93	104	1.8	5.7		18.01	**100.7**
7	45	61.70	0.8	287	58	93	104	2.1	6.0		18.85	**100.5**
	47.5	63.60	0.8	287	58	93	104	2.1	6.0		18.85	**101.4**
	50	65.51	0.8	287	58	93	104	2.1	6.0		18.85	**102.0**
8	52.5	67.38	0.81	287	58	93	104	2.1	6.0		18.97	**99.8**
	55	69.35	0.81	287	58	93	104	2.1	6.0		18.97	**104.5**
	57.5	71.30	0.81	287	58	93	104	2.1	6.0		18.97	**103.5**
9	60	73.22	0.85	286	58	93	104	2.2	6.0		19.42	**101.9**
	62.5	75.21	0.83	286	58	93	104	2.1	6.0		19.19	**103.0**
	65	77.13	0.83	286	57	93	104	2.1	6.0		19.19	**100.6**
10	67.5	79.08	0.82	286	57	93	104	2.1	6.0		19.08	**102.1**
	70	80.98	0.81	283	57	94	104	2.1	6.0		18.92	**100.1**
	72.5	82.91	0.81	283	57	94	104	2.1	6.0		18.92	**102.0**
11	75	84.83	0.74	283	57	94	104	2.1	6.0		18.08	**101.5**

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.2
DGMCF	1.017	**Probe (mg)**	0.9
Barometric Pressure	29.79 "Hg	**CWTR (g)**	530
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	27.2
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 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%	9.19
CO2%	10.48
COppm	10.0

Measured H2O
16.7 %

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 %
	77.5	86.65	0.75	283	57	94	105	1.9	6.0		18.21	**100.7**
	80	88.50	0.75	283	57	94	104	1.9	6.0		18.21	**101.5**
12	82.5	90.36	0.66	283	57	94	105	1.7	5.7		17.08	**102.1**
	85	92.08	0.64	283	57	94	105	1.7	5.7		16.82	**100.5**
	87.5	93.80	0.64	283	57	94	105	1.7	5.7		16.82	**102.1**
	90	95.55								0.46		**103.9**
1	0	96.01	0.9	283	65	93	98	2.1	6.0		19.94	
	2.5	98.23	0.93	284	51	93	99	2.2	6.0		20.29	**112.0**
	5	100.20	0.97	284	50	93	100	2	6.0		20.72	**97.8**
2	7.5	102.10	0.98	284	50	93	100	2.3	6.0		20.83	**92.2**
	10	104.08	0.99	284	48	93	101	2.5	6.3		20.93	**95.7**
	12.5	106.10	0.99	286	48	93	101	2.5	6.3		20.96	**97.1**
3	15	108.20	0.94	286	48	93	101	2.3	6.3		20.42	**101.1**
	17.5	110.27	0.95	286	48	93	102	2.3	6.3		20.53	**102.2**
	20	112.32	0.95	286	48	93	102	2.3	6.3		20.53	**100.6**
4	22.5	114.35	0.95	287	48	93	102	2.3	6.3		20.55	**99.6**
	25	116.40	0.94	288	47	93	102	2.3	6.3		20.45	**100.7**
	27.5	118.44	0.94	288	47	93	102	2.3	6.3		20.45	**100.8**
5	30	120.48	0.8	289	47	93	103	2.3	6.0		18.88	**100.8**
	32.5	122.40	0.77	289	48	93	103	2.1	6.0		18.52	**102.8**
	35	124.27	0.73	289	48	93	103	2	6.0		18.03	**102.0**
6	37.5	126.14	0.68	289	48	93	104	2	6.0		17.41	**104.7**
	40	127.91	0.67	288	48	93	104	1.8	5.9		17.27	**102.6**
	42.5	129.63	0.64	288	48	93	104	1.7	5.9		16.87	**100.3**
7	45	131.35	0.72	287	49	93	105	1.7	5.9		17.89	**102.6**
	47.5	133.07	0.71	287	49	93	105	1.7	5.7		17.76	**96.6**
	50	134.84	0.71	286	49	93	105	1.8	6.0		17.75	**100.1**
8	52.5	136.64	0.73	286	49	94	105	1.8	6.0		18.00	**101.8**
	55	138.44	0.74	286	49	94	105	1.8	6.0		18.12	**100.3**
	57.5	140.24	0.73	285	49	94	105	1.8	6.0		17.99	**99.6**
9	60	142.05	0.75	284	49	94	105	1.9	6.0		18.22	**100.8**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.2
DGMCF	1.017	**Probe (mg)**	0.9
Barometric Pressure	29.79 "Hg	**CWTR (g)**	530
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	27.2
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 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%	9.19
CO2%	10.48
COppm	10.0

Measured H2O
16.7 %

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 %
	62.5	143.87	0.74	283	50	94	105	1.9	6.0		18.08	**99.9**
	65	145.68	0.77	283	50	94	105	1.8	5.9		18.45	**100.0**
10	67.5	147.51	0.78	282	50	94	105	1.9	6.0		18.55	**99.1**
	70	149.37	0.75	281	50	94	105	2	6.0		18.18	**100.0**
	72.5	151.24	0.75	281	50	94	105	2	6.0		18.18	**102.5**
11	75	153.12	0.62	243	50	94	105	2	6.0		16.10	**103.0**
	77.5	154.80	0.62	238	51	94	105	1.6	5.5		16.04	**98.6**
	80	156.48	0.63	237	51	94	105	1.6	5.5		16.16	**98.2**
12	82.5	158.22	0.64	238	51	94	105	1.7	5.9		16.30	**100.8**
	85	159.96	0.65	237	51	94	105	1.7	5.9		16.42	**100.1**
	87.5	161.70	0.66	237	51	94	105	1.7	5.9		16.54	**99.3**
	90	163.47										**100.2**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - Particulate & Metals
Date:	November 30 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.34 mm
DRY REF GAS VOLUME SAMPLED	3.936 m^3
AVGERGE ISOKINETICITY	100.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.7 °C
AVERAGE GAS MOISTURE BY VOLUME	16.4 %
AVERAGE GAS VELOCITY	20.04 m/s
BAROMETRIC PRESSURE (Station)	98.916 Kpa
STATIC PRESSURE	-2.863 Kpa
ABSOLUTE GAS PRESSURE	96.053 Kpa
OXYGEN CONCENTRATION	9.08 %
CARBON DIOXIDE CONCENTRATION	10.30 %
CARBON MONOXIDE CONCENTRATION	8.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	29.60 m^3/s
DRY REF GAS FLOWRATE	16.94 Rm^3/s
DRY ADJ GAS FLOWRATE	20.23 Rm^3/s
WET REF GAS FLOWRATE	20.27 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.8 mg
	-FILTER	0.1 mg
	-TOTAL	0.9 mg
DRY REF GAS VOLUME SAMPLED		3.936 m^3
PARTICULATE CONC. - ACTUAL		0.131 mg/m^3
PARTICULATE CONC. - DRY REF		0.229 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.192 mg/m^3
PARTICULATE CONC. - WET REF		0.191 mg/m^3
PARTICULATE EMISSION RATE		0.003875 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, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 30 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	0.8
Barometric Pressure	29.21 "Hg	**CWTR (g)**	544.3
Static Pressure	-11.500 "H_2O	**WCBDA (g)**	22.5
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.64 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%	9.08
CO2%	10.30
COppm	8.8

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	64.15	0.99	277	81	92	92	2.4	5.5		21.06	
	2.5	66.40	0.99	278	57	91	90	2.4	5.5		21.08	**107.3**
	5	68.65	0.98	279	52	91	90	2.3	5.5		20.99	**107.7**
2	7.5	70.73	0.98	279	51	91	91	2.3	5.5		20.99	**100.1**
	10	72.79	0.98	280	50	91	92	2.3	5.5		21.00	**99.1**
	12.5	74.90	0.98	280	50	91	94	2.3	5.5		21.00	**101.4**
3	15	76.96	0.98	280	51	91	94	2.3	5.5		21.00	**98.8**
	17.5	79.02	0.98	281	51	91	96	2.3	5.5		21.01	**98.8**
	20	81.09	0.98	281	52	91	97	2.3	5.5		21.01	**99.2**
4	22.5	83.16	0.95	281	53	92	98	2.2	5.5		20.69	**99.1**
	25	85.20	0.96	281	52	92	99	2.2	5.5		20.80	**99.0**
	27.5	87.25	0.95	282	51	92	99	2.2	5.5		20.70	**98.9**
5	30	89.29	0.85	282	51	92	100	2.1	5.0		19.58	**99.0**
	32.5	91.24	0.85	283	52	92	101	2.1	5.0		19.60	**99.9**
	35	93.20	0.86	283	52	92	101	2.1	5.0		19.71	**100.4**
6	37.5	95.15	0.82	283	52	92	101	2	5.0		19.25	**99.3**
	40	97.04	0.82	284	52	93	102	2	5.0		19.26	**98.6**
	42.5	98.94	0.81	284	52	93	102	2	5.0		19.14	**99.0**
7	45	100.84	0.9	284	52	93	103	2.2	5.5		20.18	**99.6**
	47.5	102.85	0.89	284	52	93	103	2.2	5.5		20.07	**99.9**
	50	104.85	0.88	284	52	93	103	2.2	5.5		19.95	**100.0**
8	52.5	106.83	0.88	284	52	93	103	2.2	5.5		19.95	**99.5**
	55	108.88	0.89	284	52	93	103	2.2	5.5		20.07	**103.0**
	57.5	110.90	0.89	284	52	94	103	2.2	5.5		20.07	**101.0**
9	60	112.91	0.91	284	52	94	103	2.2	5.5		20.29	**100.4**
	62.5	114.95	0.91	285	52	94	103	2.2	5.5		20.30	**100.7**
	65	116.98	0.91	285	52	94	103	2.2	5.5		20.30	**100.3**
10	67.5	119.01	0.9	284	53	94	103	2.2	5.5		20.18	**100.3**
	70	121.08	0.91	284	53	94	103	2.2	5.5		20.29	**102.8**
	72.5	123.08	0.91	284	53	94	103	2.2	5.5		20.29	**98.8**
11	75	125.11	0.8	284	53	94	103	2	5.0		19.02	**100.2**

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 30 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	0.8
Barometric Pressure	29.21 "Hg	**CWTR (g)**	544.3
Static Pressure	-11.500 "H_2O	**WCBDA (g)**	22.5
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.64 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%	9.08
CO2%	10.30
COppm	8.8

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	127.03	0.8	284	53	94	103	2	5.0		19.02	**101.1**
	80	128.95	0.8	284	53	94	103	2	5.0		19.02	**101.1**
12	82.5	130.83	0.8	284	53	94	103	2	5.0		19.02	**99.0**
	85	132.71	0.8	284	54	94	103	2	5.0		19.02	**99.0**
	87.5	134.61	0.8	284	54	94	103	2	5.0		19.02	**100.0**
	90	136.51								0.64		**100.0**
1	0	137.15	1	284	54	93	95	2.4	6.0		21.27	
	2.5	139.22	1	285	55	93	96	2.4	6.0		21.28	**98.4**
	5	141.35	1	286	52	93	97	2.4	6.0		21.30	**101.2**
2	7.5	143.48	1	285	51	93	98	2.4	6.0		21.28	**101.2**
	10	145.60	1	286	51	93	99	2.4	6.0		21.30	**100.5**
	12.5	147.72	1	286	51	93	99	2.4	6.0		21.30	**100.5**
3	15	149.83	1	286	52	93	100	2.4	6.0		21.30	**100.0**
	17.5	151.94	1	286	52	93	100	2.4	6.0		21.30	**99.9**
	20	154.08	1	286	52	93	101	2.4	6.0		21.30	**101.4**
4	22.5	156.21	0.96	285	52	93	101	2.3	6.0		20.85	**100.8**
	25	158.29	0.99	285	52	93	101	2.3	6.0		21.18	**100.4**
	27.5	160.37	0.96	285	52	93	101	2.3	6.0		20.85	**98.8**
5	30	162.47	0.89	285	53	93	101	2.2	6.0		20.08	**101.3**
	32.5	164.50	0.87	284	53	93	102	2.2	6.0		19.84	**101.7**
	35	166.52	0.87	284	53	93	102	2.2	6.0		19.84	**102.2**
6	37.5	168.56	0.74	284	54	93	102	1.8	5.5		18.30	**103.2**
	40	170.37	0.75	285	54	93	102	1.8	5.5		18.43	**99.2**
	42.5	172.22	0.75	285	54	93	103	1.8	5.5		18.43	**100.8**
7	45	174.07	0.81	285	54	93	103	2	5.5		19.16	**100.7**
	47.5	176.01	0.82	285	54	93	103	2	5.5		19.27	**101.6**
	50	177.90	0.82	285	53	93	103	2	5.5		19.27	**98.4**
8	52.5	179.82	0.85	285	52	94	103	2.1	5.5		19.62	**100.0**
	55	181.75	0.85	285	52	94	103	2.1	5.5		19.62	**98.7**
	57.5	183.70	0.84	284	52	94	103	2.1	5.5		19.49	**99.7**
9	60	185.72	0.86	284	51	93	102	2.1	5.5		19.72	**103.8**

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 30 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	0.8
Barometric Pressure	29.21 "Hg	**CWTR (g)**	544.3
Static Pressure	-11.500 "H_2O	**WCBDA (g)**	22.5
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.64 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%	9.08
CO2%	10.30
COppm	8.8

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	187.71	0.86	284	51	93	103	2.1	5.5		19.72	**101.2**
	65	189.69	0.86	284	50	94	103	2.1	5.5		19.72	**100.6**
10	67.5	191.67	0.86	283	50	94	102	2.1	5.5		19.71	**100.6**
	70	193.62	0.93	283	50	94	102	2.3	6.0		20.50	**99.1**
	72.5	195.71	0.92	283	50	93	102	2.3	6.0		20.39	**102.1**
11	75	197.77	0.82	283	50	93	102	2	5.5		19.25	**101.3**
	77.5	199.70	0.82	283	50	93	102	2	5.5		19.25	**100.5**
	80	201.62	0.82	283	50	93	101	2	5.5		19.25	**99.9**
12	82.5	203.55	0.75	283	50	93	101	1.8	5.5		18.41	**100.6**
	85	205.38	0.75	283	51	93	102	1.8	5.5		18.41	**99.6**
	87.5	207.20	0.75	283	51	93	102	1.8	5.5		18.41	**99.0**
	90	209.03										**99.6**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - Particulate & Metals
Date:	November 30 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.34 mm
DRY REF GAS VOLUME SAMPLED	3.842 m^3
AVGERGE ISOKINETICITY	98.1 %
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	16.0 %
AVERAGE GAS VELOCITY	19.96 m/s
BAROMETRIC PRESSURE (Station)	98.916 Kpa
STATIC PRESSURE	-3.063 Kpa
ABSOLUTE GAS PRESSURE	95.854 Kpa
OXYGEN CONCENTRATION	9.05 %
CARBON DIOXIDE CONCENTRATION	10.42 %
CARBON MONOXIDE CONCENTRATION	6.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	29.49 m^3/s
DRY REF GAS FLOWRATE	16.94 Rm^3/s
DRY ADJ GAS FLOWRATE	20.27 Rm^3/s
WET REF GAS FLOWRATE	20.17 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.9 mg
	-FILTER	0.1 mg
	-TOTAL	1 mg
DRY REF GAS VOLUME SAMPLED		3.842 m^3
PARTICULATE CONC. - ACTUAL		0.149 mg/m^3
PARTICULATE CONC. - DRY REF		0.260 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.217 mg/m^3
PARTICULATE CONC. - WET REF		0.219 mg/m^3
PARTICULATE EMISSION RATE		0.004408 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, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 30 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	0.9
Barometric Pressure	29.21 "Hg	**CWTR (g)**	511.9
Static Pressure	-12.300 "H_2O	**WCBDA (g)**	26
Nozzle	0.2498 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%	9.05
CO2%	10.42
COppm	6.8

Measured H2O
16.0 %

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	9.80	1	284	54	89	89	2.4	6.0		21.27	
	2.5	11.86	1	281	55	90	88	2.4	6.0		21.23	**98.5**
	5	13.96	1	282	51	89	88	2.4	6.0		21.24	**100.2**
2	7.5	16.04	1	282	49	89	89	2.4	6.0		21.24	**99.4**
	10	18.10	1	282	48	89	89	2.4	6.0		21.24	**98.4**
	12.5	20.16	1	282	48	89	91	2.4	6.0		21.24	**98.4**
3	15	22.20	1	282	48	89	92	2.4	6.0		21.24	**97.3**
	17.5	24.23	1	283	48	89	93	2.4	6.0		21.25	**96.7**
	20	26.28	1	283	48	89	94	2.4	6.0		21.25	**97.6**
4	22.5	28.33	0.99	283	48	89	95	2.4	6.0		21.15	**97.5**
	25	30.36	0.99	283	48	89	96	2.4	6.0		21.15	**97.0**
	27.5	32.41	0.99	283	48	89	96	2.4	6.0		21.15	**97.9**
5	30	34.47	0.85	284	47	89	96	2	5.5		19.61	**98.3**
	32.5	36.39	0.85	284	47	89	96	2	5.5		19.61	**98.9**
	35	38.30	0.85	284	47	89	96	2	5.5		19.61	**98.4**
6	37.5	40.24	0.89	284	47	89	97	2.2	6.0		20.06	**99.9**
	40	42.11	0.89	284	47	89	97	2.2	6.0		20.06	**94.1**
	42.5	44.06	0.89	284	47	98	97	2.2	6.0		20.06	**98.1**
7	45	46.05	0.83	284	47	89	98	2.1	5.7		19.38	**99.3**
	47.5	47.95	0.83	284	47	89	98	2.1	5.7		19.38	**98.9**
	50	49.86	0.82	284	47	89	98	2.1	5.7		19.26	**99.4**
8	52.5	51.77	0.85	283	47	89	98	2.1	5.7		19.60	**100.0**
	55	53.70	0.85	283	47	89	98	2.1	5.7		19.60	**99.2**
	57.5	55.59	0.85	283	47	89	98	2.1	5.7		19.60	**97.1**
9	60	57.51	0.91	283	48	89	98	2.2	6.0		20.28	**98.7**
	62.5	59.54	0.9	283	48	89	98	2.2	6.0		20.16	**100.8**
	65	61.55	0.9	283	48	89	97	2.2	6.0		20.16	**100.4**
10	67.5	63.58	0.87	283	48	89	97	2.1	5.8		19.82	**101.5**
	70	65.53	0.87	283	49	89	97	2.1	5.8		19.82	**99.1**
	72.5	67.43	0.87	283	49	88	97	2.1	5.8		19.82	**96.6**
11	75	69.34	0.8	283	49	88	97	1.9	5.6		19.01	**97.2**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 30 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	0.9
Barometric Pressure	29.21 "Hg	**CWTR (g)**	511.9
Static Pressure	-12.300 "H_2O	**WCBDA (g)**	26
Nozzle	0.2498 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%	9.05
CO2%	10.42
COppm	6.8

Measured H2O
16.0 %

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 %
	77.5	71.17	0.8	283	49	88	97	1.9	5.6		19.01	**97.1**
	80	72.99	0.81	283	49	88	97	1.9	5.6		19.13	**96.5**
12	82.5	74.84	0.6	283	49	88	97	1.4	5.0		16.46	**97.5**
	85	76.46	0.59	283	49	88	97	1.4	5.0		16.33	**99.1**
	87.5	78.05	0.6	283	50	88	98	1.4	5.0		16.46	**98.1**
	90	79.64								0.38		**97.2**
1	0	80.02	0.98	286	60	87	91	2.3	6.0		21.08	
	2.5	82.02	0.98	286	50	87	92	2.3	6.0		21.08	**96.7**
	5	84.10	1	287	50	87	92	2.3	6.0		21.31	**100.5**
2	7.5	86.12	1	287	50	87	92	2.3	6.0		21.31	**96.7**
	10	88.18	1	287	51	87	93	2.3	6.0		21.31	**98.6**
	12.5	90.24	1	288	51	87	93	2.3	6.0		21.33	**98.5**
3	15	92.31	1	287	52	87	94	2.3	6.0		21.31	**99.1**
	17.5	94.35	1	287	52	87	94	2.3	6.0		21.31	**97.5**
	20	96.44	0.99	284	52	87	93	2.3	6.0		21.16	**99.9**
4	22.5	98.52	0.89	283	52	86	93	2.1	5.9		20.05	**99.8**
	25	100.44	0.91	283	52	86	93	2.1	5.9		20.28	**97.1**
	27.5	102.35	0.92	282	52	86	94	2.2	6.0		20.37	**95.5**
5	30	104.31	0.86	283	52	86	94	2	5.9		19.71	**97.4**
	32.5	106.21	0.86	283	52	86	94	2	5.9		19.71	**97.7**
	35	108.08	0.87	283	53	86	94	2.1	6.0		19.82	**96.1**
6	37.5	110.00	0.79	283	53	86	94	1.9	5.9		18.89	**98.1**
	40	111.83	0.8	283	52	85	94	1.9	5.9		19.01	**98.1**
	42.5	113.65	0.81	282	52	85	94	1.9	5.9		19.12	**97.0**
7	45	115.49	0.87	282	51	85	94	1.9	5.9		19.81	**97.4**
	47.5	117.36	0.86	282	51	85	94	2	5.9		19.70	**95.6**
	50	119.26	0.86	282	51	85	94	2.1	6.0		19.70	**97.7**
8	52.5	121.16	0.87	282	51	85	94	2.1	6.0		19.81	**97.7**
	55	123.07	0.88	282	51	84	93	2.1	6.0		19.92	**97.6**
	57.5	124.98	0.87	282	51	84	93	2.1	6.0		19.81	**97.3**
9	60	126.88	0.89	282	51	84	93	2.1	6.0		20.04	**97.3**

Plant: Covanta DYEC
Test No.: 2 - Particulate & Metals
Date: November 30 2022

Plant Location: Courtice, ON
Test Location: APC Outlet No. 2
Operator: RW

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	0.9
Barometric Pressure	29.21 "Hg	**CWTR (g)**	511.9
Static Pressure	-12.300 "H_2O	**WCBDA (g)**	26
Nozzle	0.2498 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%	9.05
CO2%	10.42
COppm	6.8

Measured H2O
16.0 %

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 %
	62.5	128.78	0.89	281	52	84	93	2.1	6.0		20.02	**96.2**
	65	130.72	0.87	281	52	84	93	2.1	6.0		19.80	**98.2**
10	67.5	132.65	0.89	279	52	84	93	2.1	6.0		20.00	**98.8**
	70	134.59	0.92	280	52	84	93	2.1	6.0		20.35	**98.0**
	72.5	136.58	0.9	280	53	84	92	2.2	6.1		20.12	**99.0**
11	75	138.58	0.82	280	53	84	92	2.2	6.1		19.21	**100.7**
	77.5	140.45	0.8	280	54	84	92	2	5.9		18.97	**98.6**
	80	142.28	0.81	280	54	84	92	2	5.9		19.09	**97.7**
12	82.5	144.12	0.76	280	55	83	92	2	5.9		18.49	**97.6**
	85	145.90	0.77	280	55	83	92	1.8	5.9		18.61	**97.6**
	87.5	147.69	0.77	280	55	83	92	1.9	5.9		18.61	**97.4**
	90	149.47										**96.9**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - Particulate & Metals
Date:	December 1 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847	
DGM CORRECTION FACTOR	1.017	
NOZZLE DIAMETER	6.34	mm
DRY REF GAS VOLUME SAMPLED	3.926	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	139.6	^oC
AVERAGE GAS MOISTURE BY VOLUME	15.4	%
AVERAGE GAS VELOCITY	19.65	m/s
BAROMETRIC PRESSURE (Station)	101.185	Kpa
STATIC PRESSURE	-3.112	Kpa
ABSOLUTE GAS PRESSURE	98.073	Kpa
OXYGEN CONCENTRATION	9.41	%
CARBON DIOXIDE CONCENTRATION	10.23	%
CARBON MONOXIDE CONCENTRATION	9.4	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	29.03	m^3/s
DRY REF GAS FLOWRATE	17.18	Rm^3/s
DRY ADJ GAS FLOWRATE	19.94	Rm^3/s
WET REF GAS FLOWRATE	20.30	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.7	mg
	-FILTER	0.2	mg
	-TOTAL	0.9	mg
DRY REF GAS VOLUME SAMPLED		3.926	m^3
PARTICULATE CONC. - ACTUAL		0.136	mg/m^3
PARTICULATE CONC. - DRY REF		0.229	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.198	mg/m^3
PARTICULATE CONC. - WET REF		0.194	mg/m^3
PARTICULATE EMISSION RATE		0.003939	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:	December 1 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.2
DGMCF	1.017	**Probe (mg)**	0.7
Barometric Pressure	29.88 "Hg	**CWTR (g)**	500.4
Static Pressure	-12.500 "H_2O	**WCBDA (g)**	23.3
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 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%	9.41
CO2%	10.23
COppm	9.4

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	50.28	1	284	58	69	69	2.3	6.0		21.00	
	2.5	52.33	1	283	51	69	68	2.3	6.0		20.99	**102.2**
	5	54.30	1	284	59	69	68	2.3	6.0		21.00	**98.2**
2	7.5	56.29	1	284	46	69	70	2.3	6.0		21.00	**99.3**
	10	58.28	1	284	45	69	71	2.3	6.0		21.00	**99.1**
	12.5	60.27	1	284	45	69	72	2.3	6.0		21.00	**99.0**
3	15	62.24	1	284	44	69	73	2.3	6.0		21.00	**97.9**
	17.5	64.23	1	284	45	70	75	2.3	6.0		21.00	**98.8**
	20	66.21	1	284	45	70	76	2.3	6.0		21.00	**98.1**
4	22.5	68.19	0.98	284	45	70	77	2.2	6.0		20.79	**98.0**
	25	70.17	0.96	283	44	70	78	2.2	6.0		20.56	**98.9**
	27.5	72.11	0.95	283	44	70	79	2.2	6.0		20.46	**97.7**
5	30	74.06	0.83	283	44	71	80	1.9	6.0		19.12	**98.6**
	32.5	75.90	0.84	282	44	71	80	1.9	6.0		19.22	**99.3**
	35	77.73	0.84	283	45	71	81	1.9	6.0		19.24	**98.1**
6	37.5	79.56	0.8	282	45	72	82	1.8	6.0		18.76	**98.1**
	40	81.35	0.8	282	44	72	82	1.8	6.0		18.76	**98.0**
	42.5	83.14	0.8	283	43	72	83	1.8	6.0		18.77	**98.0**
7	45	84.93	0.8	282	43	72	83	1.8	6.0		18.76	**98.0**
	47.5	86.73	0.82	282	42	73	84	1.9	6.0		18.99	**98.5**
	50	88.56	0.82	282	42	73	84	1.9	6.0		18.99	**98.7**
8	52.5	90.38	0.87	282	42	73	84	2	6.0		19.56	**98.2**
	55	92.26	0.87	282	41	73	84	2	6.0		19.56	**98.5**
	57.5	94.15	0.85	282	42	73	84	2	6.0		19.34	**99.0**
9	60	96.03	0.89	282	42	74	84	2.1	6.0		19.79	**99.7**
	62.5	98.00	0.88	282	42	74	84	2.1	6.0		19.68	**102.0**
	65	99.89	0.85	282	42	74	84	2.1	6.0		19.34	**98.4**
10	67.5	101.77	0.86	281	42	74	84	2.1	6.0		19.44	**99.6**
	70	103.65	0.85	281	42	74	84	2.1	6.0		19.32	**99.0**
	72.5	105.52	0.85	281	42	74	85	2.1	6.0		19.32	**99.0**
11	75	107.40	0.82	280	43	74	85	2	6.0		18.97	**99.4**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	December 1 2022	**Operator:**	RW

Pitot Factor	0.847	**Filter (mg)**	0.2
DGMCF	1.017	**Probe (mg)**	0.7
Barometric Pressure	29.88 "Hg	**CWTR (g)**	500.4
Static Pressure	-12.500 "H_2O	**WCBDA (g)**	23.3
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 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%	9.41
CO2%	10.23
COppm	9.4

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	109.27	0.83	276	43	75	85	2	6.0		19.03	**100.6**
	80	111.09	0.83	276	43	75	85	2	6.0		19.03	**97.0**
12	82.5	112.91	0.83	280	43	75	85	2	6.0		19.08	**97.0**
	85	114.77	0.83	280	43	75	85	2	6.0		19.08	**99.4**
	87.5	116.63	0.83	280	43	75	86	2	6.0		19.08	**99.4**
	90	118.46								0.46		**97.7**
1	0	118.92	1	284	65	72	72	2.3	6.0		21.00	
	2.5	120.91	1	282	47	72	72	2.3	6.0		20.97	**98.7**
	5	122.94	1	283	44	72	72	2.3	6.0		20.99	**100.5**
2	7.5	124.94	1	284	43	72	73	2.3	6.0		21.00	**99.1**
	10	126.92	1	284	43	72	74	2.3	6.0		21.00	**98.1**
	12.5	128.90	1	284	43	72	76	2.3	6.0		21.00	**98.0**
3	15	130.88	1	284	43	72	77	2.3	6.0		21.00	**97.8**
	17.5	132.87	0.98	284	43	72	78	2.2	6.0		20.79	**98.2**
	20	134.80	1	284	43	72	79	2.3	6.0		21.00	**96.1**
4	22.5	136.86	0.94	284	43	73	80	2.1	6.0		20.36	**101.5**
	25	138.77	0.94	284	43	73	81	2.1	6.0		20.36	**96.8**
	27.5	140.70	0.93	284	43	73	82	2.1	6.0		20.25	**97.7**
5	30	142.64	0.85	284	43	73	83	2.1	6.0		19.36	**98.7**
	32.5	144.58	0.85	284	43	74	83	1.9	6.0		19.36	**103.1**
	35	146.42	0.85	284	44	74	84	2	6.0		19.36	**97.7**
6	37.5	148.28	0.75	284	44	74	84	1.8	6.0		18.19	**98.6**
	40	150.05	0.73	284	44	74	85	1.8	6.0		17.94	**99.9**
	42.5	151.80	0.72	284	44	75	81	1.8	6.0		17.82	**100.0**
7	45	153.54	0.8	284	44	75	86	1.9	6.0		18.79	**100.4**
	47.5	155.37	0.8	283	44	75	86	1.9	6.0		18.77	**99.7**
	50	157.19	0.8	283	45	75	86	1.9	6.0		18.77	**99.1**
8	52.5	159.02	0.8	284	45	75	86	1.9	6.0		18.79	**99.7**
	55	160.84	0.85	285	45	75	86	2	6.0		19.38	**99.2**
	57.5	162.69	0.85	285	45	75	86	2	6.0		19.38	**97.9**
9	60	164.54	0.85	286	45	76	86	2	6.0		19.39	**97.9**

Plant: Covanta DYEC
Test No.: 3 - Particulate & Metals
Date: December 1 2022

Plant Location: Courtice, ON
Test Location: APC Outlet No. 2
Operator: RW

Pitot Factor	0.847	**Filter (mg)**	0.2
DGMCF	1.017	**Probe (mg)**	0.7
Barometric Pressure	29.88 "Hg	**CWTR (g)**	500.4
Static Pressure	-12.500 "H_2O	**WCBDA (g)**	23.3
Nozzle	0.2498 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 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%	9.41
CO2%	10.23
COppm	9.4

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	166.41	0.85	286	45	76	86	2	6.0		19.39	**98.9**
	65	168.23	0.85	286	45	76	86	2	6.0		19.39	**96.3**
10	67.5	170.07	0.87	286	46	76	86	2.1	6.0		19.62	**97.4**
	70	171.93	0.87	286	46	76	86	2.1	6.0		19.62	**97.3**
	72.5	173.84	0.88	286	46	76	86	2.1	6.0		19.73	**99.9**
11	75	175.75	0.88	286	46	76	87	2.1	6.0		19.73	**99.3**
	77.5	177.65	0.75	286	46	76	86	1.8	6.0		18.21	**98.7**
	80	179.43	0.76	286	46	76	86	1.8	6.0		18.33	**100.2**
12	82.5	181.21	0.75	286	47	76	86	1.8	6.0		18.21	**99.6**
	85	182.97	0.75	286	47	76	87	1.8	6.0		18.21	**99.1**
	87.5	184.74	0.75	286	47	77	87	1.8	6.0		18.21	**99.6**
	90	186.51										**99.5**

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APPENDIX 23

Particle Size Distribution Test Emission Calculations
(12 pages)

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 30, 2022
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 1

Project No.: 22160
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	1.01
Pitot Factor	0.854
Barometric Pressure (" Hg)	29.24
Static Pressure ("H_2O)	-10.70
Oxygen Content (%)	8.64
Carbon Dioxide Content (%)	10.83
Carbon Monoxide Content (PPM)	22.2
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}	0.62 ft^3/min	17.5 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.3 Rft^3*	1.199 Rm^3*
Average Cyclone I Cut Diameter		9.84 µm
Average Cyclone IV Cut Diameter		2.22 µm
Average Isokineticity		93.9 %
Stack Gas Physical Parameters		
B_{ws}	17.5 % v/v	
Average m	217.4 (dimensionless)	
M_d	30.08 lbs/lbs mole	
M_w	27.97 lbs/lbs mole	
Average T_s	278 °F	137 °C
Average U_s	63.3 ft/s	19.3 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	60506 ACFM	28.6 m^3/s
Wet Reference Q_s	41873 SCFM*	19.8 Rm^3/s*
Dry Reference Q_s	34564 SCFM*	16.3 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	**Emission Rate**
Total Part. (a)	1.25 mg/Rm^3*	0.0204 g/s
Total Part. (b)	5.09 mg/Rm^3*	0.083 g/s
PM_{10} Part. (b)	4.67 mg/Rm^3*	0.076 g/s
$PM_{2.5}$ Part. (b)	4.09 mg/Rm^3*	0.067 g/s
Cond. Part.	3.84 mg/Rm^3*	0.063 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	**Impinger 1**	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**
initial volume or weight (ml or mg)	516.5	649.5	654.9	1002.1	
final volume or weight (ml or mg)	697.3	649.5	649.6	1013.1	
gain in volume or weight (ml or mg)	180.8	0.0	-5.3	11.0	0.0
				TOTAL	**186.5**

Particulate Weight Gains	**>10mm**	**<10mm, >2.5mm**	**<2.5mm**	**back-up filter**	**cond. part.**
particulate weight gains (mg)	0.5	0.7	0.2	<0.1	4.6

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: November 30, 2022	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22160
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 (%)
2	1	0.00	10.8	37.30	0.90	0.35	278	95	95	0.38	4.0	66.6	9.75	2.18	91.1
	2	10.8	10.6	41.34	0.89	0.35	277	95	95	0.38	4.0	66.2	9.66	2.14	92.7
	3	21.4	10.2	45.34	0.85	0.35	273	95	95	0.38	4.0	64.5	9.74	2.17	93.3
	4	31.6	10.0	49.17	0.80	0.35	273	96	98	0.38	4.0	62.6	9.77	2.19	95.7
	5	41.6	9.6	52.90	0.74	0.35	280	97	99	0.38	4.0	60.5	9.76	2.19	100.3
	6	51.2	9.0	56.50	0.73	0.35	280	97	99	0.38	4.0	60.1	9.81	2.20	100.4
		60.2		59.87											
1	1	0.00	10.8	59.87	0.89	0.35	278	98	100	0.38	4.0	66.2	9.92	2.25	89.3
	2	10.8	10.3	63.84	0.98	0.35	279	98	100	0.38	4.0	69.5	9.90	2.24	85.4
	3	21.1	10.3	67.64	0.85	0.35	279	98	101	0.38	4.0	64.8	10.00	2.28	90.4
	4	31.4	10.1	71.39	0.78	0.35	279	98	100	0.38	4.0	62.0	9.99	2.28	94.5
	5	41.5	9.3	75.07	0.69	0.35	279	98	100	0.38	4.0	58.3	10.06	2.30	99.6
	6	50.9	8.9	78.43	0.69	0.35	280	99	101	0.38	4.0	58.4	9.74	2.18	104.3
		59.8		81.79											
Averages					**0.82**		**278**	**98**		**0.38**		**63.3**	**9.84**	**2.22**	**93.9**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 30, 2022
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 1

Project No.: 22160
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	1.01
Pitot Factor	0.854
Barometric Pressure (" Hg)	29.14
Static Pressure ("H_2O)	-10.70
Oxygen Content (%)	8.74
Carbon Dioxide Content (%)	10.75
Carbon Monoxide Content (PPM)	11
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.9 l/min*
Cyclone Qs_{actual}	0.61 ft^3/min	17.2 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.8 Rft^3*	1.183 Rm^3*
Average Cyclone I Cut Diameter		10.01 µm
Average Cyclone IV Cut Diameter		2.28 µm
Average Isokineticity		91.9 %
Stack Gas Physical Parameters		
B_{ws}	16.5 % v/v	
Average m	218.7 (dimensionless)	
M_d	30.07 lbs/lbs mole	
M_w	28.07 lbs/lbs mole	
Average T_s	280 °F	138 °C
Average U_s	63.8 ft/s	19.4 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	60949 ACFM	28.8 m^3/s
Wet Reference Q_s	41932 SCFM*	19.8 Rm^3/s*
Dry Reference Q_s	34999 SCFM*	16.5 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	**Emission Rate**
Total Part. (a)	0.34 mg/Rm^3*	0.0056 g/s
Total Part. (b)	5.33 mg/Rm^3*	0.088 g/s
PM_{10} Part. (b)	5.24 mg/Rm^3*	0.087 g/s
$PM_{2.5}$ Part. (b)	5.16 mg/Rm^3*	0.085 g/s
Cond. Part.	4.99 mg/Rm^3*	0.082 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	490.5	649.5	741.9	965.7	
final volume or weight (ml or mg)	654.8	649.5	740.7	975.0	
gain in volume or weight (ml or mg)	164.3	0.0	-1.2	9.3	0.0
				TOTAL	**172.4**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.1	<0.1	<0.1	<0.1	5.9

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: November 30, 2022	Plant: DYEC	Test No.: 2	Project No.: 22160
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	10.5	81.92	0.88	0.35	279	97	97	0.38	4.5	65.9	9.93	2.25	90.1
	2	10.5	11.0	85.80	0.87	0.35	279	95	95	0.38	4.5	65.5	10.03	2.29	89.3
	3	21.4	10.2	89.80	0.80	0.35	280	95	95	0.38	4.5	62.9	9.76	2.19	96.8
	4	31.7	9.8	93.67	0.75	0.35	279	95	96	0.38	4.5	60.8	10.11	2.32	95.1
	5	41.5	9.2	97.20	0.76	0.35	280	96	97	0.38	4.5	61.3	10.17	2.35	93.8
	6	50.7	9.2	100.50	0.73	0.35	280	96	97	0.38	4.5	60.0	9.94	2.26	98.9
		59.9		103.91											
2	1	0.00	10.5	103.91	0.95	0.35	279	96	96	0.38	4.5	68.5	10.12	2.33	84.4
	2	10.5	10.5	107.70	0.95	0.35	279	94	96	0.38	4.5	68.5	9.96	2.26	86.3
	3	21.0	10.2	111.55	0.95	0.35	279	94	96	0.38	4.5	68.5	10.16	2.34	84.0
	4	31.2	9.9	115.21	0.81	0.35	281	95	96	0.38	4.5	63.3	9.89	2.24	94.6
	5	41.1	9.5	118.90	0.75	0.35	280	95	96	0.38	4.5	60.9	9.93	2.25	97.7
	6	50.7	9.5	122.43	0.71	0.35	281	94	95	0.38	4.5	59.3	10.16	2.34	97.3
		60.1		125.82											
Averages					**0.83**		**280**	**96**		**0.38**		**63.8**	**10.01**	**2.28**	**91.9**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 30, 2022
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 1

Project No.: 22160
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	1.01
Pitot Factor	0.854
Barometric Pressure (" Hg)	29.31
Static Pressure ("H_2O)	-10.70
Oxygen Content (%)	8.97
Carbon Dioxide Content (%)	10.56
Carbon Monoxide Content (PPM)	16
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.36 Rft^3/min*	10.2 l/min*
Cyclone Qs_{actual}	0.62 ft^3/min	17.5 l/min
Stack Gas Sampling Parameters		
V_{ms}	43.1 Rft^3*	1.222 Rm^3*
Average Cyclone I Cut Diameter		9.89 µm
Average Cyclone IV Cut Diameter		2.25 µm
Average Isokineticity		92.2 %
Stack Gas Physical Parameters		
B_{ws}	15.9 % v/v	
Average m	219.4 (dimensionless)	
M_d	30.05 lbs/lbs mole	
M_w	28.14 lbs/lbs mole	
Average T_s	280 °F	138 °C
Average U_s	64.3 ft/s	19.6 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	61489 ACFM	29.0 m^3/s
Wet Reference Q_s	42528 SCFM*	20.1 Rm^3/s*
Dry Reference Q_s	35780 SCFM*	16.9 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	**Emission Rate**
Total Part. (a)	0.74 mg/Rm^3*	0.0124 g/s
Total Part. (b)	4.99 mg/Rm^3*	0.084 g/s
PM_{10} Part. (b)	4.83 mg/Rm^3*	0.082 g/s
$PM_{2.5}$ Part. (b)	4.75 mg/Rm^3*	0.080 g/s
Cond. Part.	4.26 mg/Rm^3*	0.072 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	516.5	649.5	649.6	1013.1	
final volume or weight (ml or mg)	677.5	649.5	648.6	1022.6	
gain in volume or weight (ml or mg)	161.0	0.0	-1.0	9.5	0.0
				TOTAL	**169.5**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.2	<0.1	0.5	<0.1	5.2

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: November 30, 2022	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22160
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 1	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.7	25.92	0.95	0.35	281	90	90	0.38	4.0	68.3	9.96	2.26	86.8
	2	10.7	10.7	29.87	0.95	0.35	280	88	88	0.38	4.0	68.2	9.88	2.23	87.8
	3	21.5	10.7	33.85	0.88	0.35	279	87	87	0.38	4.0	65.6	9.87	2.22	91.3
	4	32.2	9.9	37.83	0.83	0.35	280	87	88	0.38	4.0	63.8	9.94	2.25	93.1
	5	42.1	9.5	41.47	0.77	0.35	280	87	88	0.38	4.0	61.4	9.95	2.25	96.6
	6	51.7	9.3	44.97	0.69	0.35	279	86	88	0.38	4.0	58.1	9.89	2.23	102.8
		61.0		48.40											
2	1	0.00	10.3	48.40	0.95	0.35	280	86	88	0.38	4.0	68.2	10.25	2.38	83.3
	2	10.3	10.3	52.03	0.95	0.35	281	86	87	0.38	4.0	68.3	9.92	2.24	87.4
	3	20.6	9.9	55.81	0.84	0.35	280	86	87	0.38	4.0	64.1	9.93	2.24	92.7
	4	30.5	9.5	59.43	0.79	0.35	281	86	87	0.38	4.0	62.3	9.94	2.25	95.6
	5	40.0	9.6	62.93	0.78	0.35	280	86	87	0.38	4.0	61.8	9.88	2.23	96.8
	6	49.6	9.4	66.48	0.78	0.35	281	86	87	0.38	4.0	61.9	9.23	1.98	106.7
		59.0		70.31											
Averages					**0.85**		**280**	**87**		**0.38**		**64.3**	**9.89**	**2.25**	**92.2**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 29, 2022
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 2

Project No.: 22160
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	1.01
Pitot Factor	0.854
Barometric Pressure (" Hg)	29.92
Static Pressure ("H_2O)	-11.20
Oxygen Content (%)	9.67
Carbon Dioxide Content (%)	10.06
Carbon Monoxide Content (PPM)	14.1
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	16.8 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.6 Rft^3*	1.206 Rm^3*
Average Cyclone I Cut Diameter		10.19 µm
Average Cyclone IV Cut Diameter		2.33 µm
Average Isokineticity		86.9 %
Stack Gas Physical Parameters		
B_{ws}	15.0 % v/v	
Average m	221.0 (dimensionless)	
M_d	30.00 lbs/lbs mole	
M_w	28.20 lbs/lbs mole	
Average T_s	282 °F	139 °C
Average U_s	66.0 ft/s	20.1 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	63067 ACFM	29.8 m^3/s
Wet Reference Q_s	44386 SCFM*	20.9 Rm^3/s*
Dry Reference Q_s	37748 SCFM*	17.8 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.08 mg/Rm^3*	0.0192 g/s
Total Part. (b)	3.90 mg/Rm^3*	0.069 g/s
PM_{10} Part. (b)	3.23 mg/Rm^3*	0.058 g/s
$PM_{2.5}$ Part. (b)	2.99 mg/Rm^3*	0.053 g/s
Cond. Part.	2.82 mg/Rm^3*	0.050 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	490.7	649.8	746.2	944.3	
final volume or weight (ml or mg)	639.5	649.5	743.7	954.3	
gain in volume or weight (ml or mg)	148.8	-0.3	-2.5	10.0	0.0
				TOTAL	**156.0**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.8	0.3	<0.1	<0.1	3.4

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 29, 2022	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22160
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 (%)
2	1	0.00	10.5	4.48	1.00	0.35	279	85	85	0.38	4.5	69.2	10.24	2.35	82.0
	2	10.5	10.4	8.20	1.00	0.35	280	86	86	0.38	4.5	69.2	9.93	2.23	85.7
	3	20.9	10.3	12.05	0.92	0.35	281	86	88	0.38	4.5	66.4	10.25	2.36	85.6
	4	31.2	10.1	15.70	0.90	0.35	282	87	89	0.38	4.5	65.8	10.02	2.27	89.4
	5	41.3	9.6	19.39	0.84	0.35	282	87	90	0.38	4.5	63.5	10.13	2.31	91.2
	6	50.9	9.1	22.85	0.77	0.35	283	88	91	0.38	4.5	60.9	10.25	2.36	93.8
		60.0		26.10											
1	1	0.00	10.2	26.10	0.98	0.35	283	89	92	0.38	4.5	68.7	10.20	2.34	83.7
	2	10.2	10.2	29.76	0.96	0.35	283	89	91	0.38	4.5	68.0	10.39	2.42	82.3
	3	20.4	10.2	33.32	0.93	0.35	283	89	90	0.38	4.5	66.9	10.25	2.36	85.3
	4	30.6	10.1	36.97	0.89	0.35	283	89	91	0.38	4.5	65.4	10.09	2.30	89.2
	5	40.7	9.9	40.64	0.86	0.35	283	89	92	0.38	4.5	64.3	10.28	2.37	88.3
	6	50.6	9.4	44.15	0.84	0.35	282	89	92	0.38	4.5	63.5	10.27	2.37	89.4
		60.0		47.51											
Averages					**0.91**		**282**	**89**		**0.38**		**66.0**	**10.19**	**2.33**	**86.9**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 29, 2022
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 2

Project No.: 22160
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	1.01
Pitot Factor	0.854
Barometric Pressure (" Hg)	29.86
Static Pressure ("H_2O)	-11.20
Oxygen Content (%)	9.96
Carbon Dioxide Content (%)	9.78
Carbon Monoxide Content (PPM)	11.2
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}	0.59 ft^3/min	16.8 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.8 Rft^3*	1.211 Rm^3*
Average Cyclone I Cut Diameter		10.20 µm
Average Cyclone IV Cut Diameter		2.34 µm
Average Isokineticity		94.0 %
Stack Gas Physical Parameters		
B_{ws}	14.5 % v/v	
Average m	221.3 (dimensionless)	
M_d	29.96 lbs/lbs mole	
M_w	28.23 lbs/lbs mole	
Average T_s	281 °F	138 °C
Average U_s	61.1 ft/s	18.6 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	58402 ACFM	27.6 m^3/s
Wet Reference Q_s	41065 SCFM*	19.4 Rm^3/s*
Dry Reference Q_s	35107 SCFM*	16.6 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	**Emission Rate**
Total Part. (a)	0.99 mg/Rm^3*	0.0164 g/s
Total Part. (b)	4.46 mg/Rm^3*	0.074 g/s
PM_{10} Part. (b)	3.88 mg/Rm^3*	0.064 g/s
$PM_{2.5}$ Part. (b)	3.63 mg/Rm^3*	0.060 g/s
Cond. Part.	3.47 mg/Rm^3*	0.057 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	516.4	649.9	656.6	994.8	
final volume or weight (ml or mg)	662.4	649.5	654.9	1002.1	
gain in volume or weight (ml or mg)	146.0	-0.4	-1.7	7.3	0.0
				TOTAL	**151.2**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.7	0.3	0.1	<0.1	4.2

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: November 29, 2022	Plant: DYEC	Test No.: 2	Project No.: 22160
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 (%)
2	1	0.00	10.5	47.66	0.94	0.35	282	89	89	0.38	4.0	67.2	10.02	2.27	87.7
	2	10.5	10.5	51.55	0.91	0.35	280	89	89	0.38	4.0	66.1	10.26	2.36	86.0
	3	21.0	10.1	55.31	0.72	0.35	280	89	91	0.38	4.0	58.8	10.11	2.30	98.8
	4	31.1	10.0	59.00	0.72	0.35	281	90	92	0.38	4.0	58.8	10.12	2.31	98.7
	5	41.1	9.6	62.65	0.66	0.35	280	90	93	0.38	4.0	56.3	10.18	2.33	102.1
	6	50.7	9.2	66.15	0.63	0.35	280	91	93	0.38	4.0	55.0	10.04	2.27	106.6
		59.9		69.57											
1	1	0.00	10.4	69.57	0.88	0.35	279	91	93	0.38	4.0	64.9	10.24	2.35	87.6
	2	10.4	10.3	73.32	0.84	0.35	287	94	96	0.38	4.0	63.8	10.36	2.41	88.9
	3	20.7	10.1	77.00	0.82	0.35	285	92	92	0.38	4.0	62.9	10.49	2.46	88.3
	4	30.8	9.9	80.54	0.79	0.35	279	92	93	0.38	4.0	61.5	10.46	2.44	89.7
	5	40.7	9.7	84.01	0.77	0.35	280	93	95	0.38	4.0	60.8	9.81	2.18	99.7
	6	50.5	9.6	87.76	0.68	0.35	281	94	93	0.38	4.0	57.2	10.33	2.39	98.6
		60.1		91.20											
Averages					**0.78**		**281**	**92**		**0.38**		**61.1**	**10.20**	**2.34**	**94.0**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 29, 2022
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 2

Project No.: 22160
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	1.01
Pitot Factor	0.854
Barometric Pressure (" Hg)	29.81
Static Pressure ("H_2O)	-11.20
Oxygen Content (%)	9.29
Carbon Dioxide Content (%)	10.26
Carbon Monoxide Content (PPM)	12.5
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}	0.61 ft^3/min	17.2 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.7 Rft^3*	1.209 Rm^3*
Average Cyclone I Cut Diameter		10.02 µm
Average Cyclone IV Cut Diameter		2.28 µm
Average Isokineticity		90.5 %
Stack Gas Physical Parameters		
B_{ws}	16.3 % v/v	
Average m	220.8 (dimensionless)	
M_d	30.01 lbs/lbs mole	
M_w	28.06 lbs/lbs mole	
Average T_s	285 °F	141 °C
Average U_s	64.9 ft/s	19.8 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	62073 ACFM	29.3 m^3/s
Wet Reference Q_s	43327 SCFM*	20.4 Rm^3/s*
Dry Reference Q_s	36267 SCFM*	17.1 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.74 mg/Rm^3*	0.0127 g/s
Total Part. (b)	4.80 mg/Rm^3*	0.082 g/s
PM_{10} Part. (b)	4.39 mg/Rm^3*	0.075 g/s
$PM_{2.5}$ Part. (b)	4.30 mg/Rm^3*	0.074 g/s
Cond. Part.	4.05 mg/Rm^3*	0.069 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	490.7	649.5	743.7	954.3	
final volume or weight (ml or mg)	654.2	649.5	741.9	965.7	
gain in volume or weight (ml or mg)	163.5	0.0	-1.8	11.4	0.0
				TOTAL	173.1

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.5	<0.1	<0.1	0.2	4.9

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 29, 2022	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22160
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 (%)
2	1	0.00	11.0	91.25	1.00	0.35	281	93	94	0.38	4.5	69.6	10.10	2.31	83.2
	2	11.0	10.8	95.20	1.00	0.35	286	93	94	0.38	4.5	69.8	10.30	2.39	81.4
	3	21.8	9.6	98.99	0.92	0.35	287	94	96	0.38	4.5	67.0	10.32	2.40	84.6
	4	31.4	9.6	102.36	0.88	0.35	286	94	96	0.38	4.5	65.5	10.32	2.40	86.5
	5	41.1	9.2	105.73	0.81	0.35	287	95	97	0.38	4.5	62.9	9.62	2.12	99.6
	6	50.3	9.0	109.30	0.77	0.35	286	96	98	0.38	4.5	61.3	9.81	2.19	99.3
		59.3		112.70											
1	1	0.00	10.6	112.70	0.95	0.35	285	95	97	0.38	4.5	68.0	10.30	2.39	83.3
	2	10.6	10.4	116.44	0.90	0.35	285	95	97	0.38	4.5	66.2	9.91	2.23	90.4
	3	21.0	10.3	120.30	0.88	0.35	286	96	98	0.38	4.5	65.5	9.77	2.18	93.4
	4	31.3	10.1	124.20	0.82	0.35	286	96	98	0.38	4.5	63.2	9.82	2.20	96.1
	5	41.4	10.0	128.00	0.77	0.35	285	96	98	0.38	4.5	61.2	9.89	2.23	98.0
	6	51.4	9.4	131.71	0.72	0.35	284	96	99	0.38	4.5	59.2	10.10	2.31	98.4
		60.7		135.10											
Averages					**0.87**		**285**	**96**		**0.38**		**64.9**	**10.02**	**2.28**	**90.5**

APPENDIX 24

Acid Gases Test Emission Calculations
(13 pages)

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	1 - M26A
Date:	November 29, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.853
DGM CORRECTION FACTOR	0.973
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	1.253 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	141.4 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	18.41 m/s
BAROMETRIC PRESSURE (Station)	101.321 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	98.656 Kpa
OXYGEN CONCENTRATION	9.07 %
CARBON DIOXIDE CONCENTRATION	10.83 %
CARBON MONOXIDE CONCENTRATION	8.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.21 m^3/s
DRY REF GAS FLOWRATE	16.01 Rm^3/s
DRY ADJ GAS FLOWRATE	19.14 Rm^3/s
WET REF GAS FLOWRATE	19.06 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.253 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 Location:	APC Outlet No. 1
Test No.:	1 - M26A
Date:	November 29, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.853
DGM CORRECTION FACTOR	0.973
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	1.253 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	141.4 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	18.41 m/s
BAROMETRIC PRESSURE (Station)	101.321 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	98.656 Kpa
OXYGEN CONCENTRATION	9.07 %
CARBON DIOXIDE CONCENTRATION	10.83 %
CARBON MONOXIDE CONCENTRATION	8.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.21 m^3/s
DRY REF GAS FLOWRATE	16.01 Rm^3/s
DRY ADJ GAS FLOWRATE	19.14 Rm^3/s
WET REF GAS FLOWRATE	19.06 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.253 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No. 1
Date:	November 29, 2022	**Operator:**	cb/bp

Pitot Factor	0.853	**Filter (mg)**	0		
DGMCF	0.973	**Probe (mg)**	0		
Barometric Pressure	29.92 "Hg	**CWTR (g)**	162.4		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	12.3		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	9.07
CO2%	10.83
COppm	8.0

Measured H2O
15.9 %

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 %
4	0	5.21	0.78	280	68	84	83	1.9	3.0		18.58	
	5	8.76	0.75	286	68	84	83	1.65	2.0		18.29	**91.1**
	10	11.98	0.72	286	58	84	83	1.9	2.5		17.92	**84.6**
	15	15.61	0.77	286	57	84	83	2	3.5		18.53	**97.4**
	20	19.55	0.78	287	58	84	83	2	3.5		18.66	**102.2**
	25	23.53	0.78	287	59	84	83	2	3.5		18.66	**102.7**
	30	27.47	0.77	288	62	85	84	2	3.5		18.56	**101.6**
	35	31.43	0.78	288	64	84	83	2	3.5		18.68	**102.7**
	40	35.38	0.77	288	60	85	84	2	3.5		18.56	**102.0**
	45	39.32	0.75	288	54	86	84	2	3.5		18.31	**102.2**
	50	43.28	0.74	287	51	86	84	2	3.5		18.18	**103.9**
	55	47.18	0.73	287	48	85	84	1.9	3.5		18.06	**103.0**
	60	51.03										**102.4**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	2 - M26A
Date:	November 29, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.853
DGM CORRECTION FACTOR	0.973
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	1.323 m^3
AVGERGE ISOKINETICITY	101.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.5 %
AVERAGE GAS VELOCITY	19.01 m/s
BAROMETRIC PRESSURE (Station)	101.287 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	98.623 Kpa
OXYGEN CONCENTRATION	9.39 %
CARBON DIOXIDE CONCENTRATION	10.46 %
CARBON MONOXIDE CONCENTRATION	6.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.08 m^3/s
DRY REF GAS FLOWRATE	16.62 Rm^3/s
DRY ADJ GAS FLOWRATE	19.32 Rm^3/s
WET REF GAS FLOWRATE	19.67 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.323 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:	November 29, 2022	**Operator:**	cb/bp

Pitot Factor	0.853	**Filter (mg)**	0		
DGMCF	0.973	**Probe (mg)**	0		
Barometric Pressure	29.91 "Hg	**CWTR (g)**	165.4		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	12.6		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	9.39
CO2%	10.46
COppm	6.3

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 %
4	0	51.82	0.83	283	78	86	84	2.1	2.0		19.20	
	5	55.93	0.81	286	49	86	84	2.1	2.0		19.00	**101.7**
	10	60.05	0.81	287	47	85	84	2.1	2.0		19.02	**103.4**
	15	64.12	0.82	286	48	86	84	2.1	2.0		19.12	**102.3**
	20	68.17	0.85	287	47	86	84	2.1	2.0		19.48	**101.0**
	25	72.19	0.82	287	48	86	85	2.1	2.0		19.13	**98.5**
	30	76.24	0.82	287	50	86	85	2.1	2.0		19.13	**101.0**
	35	80.27	0.8	287	51	86	85	2	2.0		18.90	**100.5**
	40	84.29	0.81	287	52	87	85	2	2.0		19.02	**101.5**
	45	88.31	0.8	287	50	87	85	2	3.0		18.90	**100.7**
	50	92.33	0.78	287	47	86	85	2	3.0		18.66	**101.4**
	55	96.35	0.77	286	48	88	85	2	3.0		18.53	**102.7**
	60	100.33										**102.1**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	3 - M26A
Date:	November 29, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.853
DGM CORRECTION FACTOR	0.973
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	1.292 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	141.0 °C
AVERAGE GAS MOISTURE BY VOLUME	16.5 %
AVERAGE GAS VELOCITY	18.95 m/s
BAROMETRIC PRESSURE (Station)	101.185 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	98.521 Kpa
OXYGEN CONCENTRATION	9.1 %
CARBON DIOXIDE CONCENTRATION	10.72 %
CARBON MONOXIDE CONCENTRATION	7.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.99 m^3/s
DRY REF GAS FLOWRATE	16.36 Rm^3/s
DRY ADJ GAS FLOWRATE	19.50 Rm^3/s
WET REF GAS FLOWRATE	19.60 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.292 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:	November 29, 2022	**Operator:**	bp

Pitot Factor	0.853	**Filter (mg)**	0
DGMCF	0.973	**Probe (mg)**	0
Barometric Pressure	29.88 "Hg	**CWTR (g)**	178.5
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	9.6
Nozzle	0.2521 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	1

Combustion Gases	
O2%	9.1
CO2%	10.72
COppm	7.1

Measured H2O
16.5 %

				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 %
4	0	0.92	0.81	285	76	88	86	2	3.0		19.04	
	5	4.89	0.81	286	50	87	86	2	3.0		19.05	**100.2**
	10	8.87	0.81	286	45	87	86	2	3.5		19.05	**100.6**
	15	12.85	0.8	286	45	87	86	2	3.5		18.93	**100.6**
	20	16.82	0.79	285	46	88	86	2	3.5		18.80	**101.0**
	25	20.79	0.81	285	46	87	86	1.9	3.5		19.04	**101.5**
	30	24.74	0.81	286	47	88	87	2	3.5		19.05	**99.8**
	35	28.69	0.8	286	47	88	86	2	3.5		18.93	**99.7**
	40	32.67	0.8	286	48	89	87	2	3.5		18.93	**101.1**
	45	36.62	0.79	286	48	89	87	2	3.5		18.81	**100.2**
	50	40.57	0.79	286	48	89	87	1.9	3.5		18.81	**100.8**
	55	44.52	0.8	286	48	89	87	2	3.5		18.93	**100.8**
	60	48.51										**101.2**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	1 - M26A
Date:	November 30, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.853
DGM CORRECTION FACTOR	0.973
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	1.338 m^3
AVGERGE ISOKINETICITY	101.1 %
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	137.3 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	19.75 m/s
BAROMETRIC PRESSURE (Station)	99.086 Kpa
STATIC PRESSURE	-2.863 Kpa
ABSOLUTE GAS PRESSURE	96.222 Kpa
OXYGEN CONCENTRATION	9.01 %
CARBON DIOXIDE CONCENTRATION	10.34 %
CARBON MONOXIDE CONCENTRATION	11.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	29.18 m^3/s
DRY REF GAS FLOWRATE	16.85 Rm^3/s
DRY ADJ GAS FLOWRATE	20.24 Rm^3/s
WET REF GAS FLOWRATE	20.13 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.338 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:	November 30, 2022	**Operator:**	bp

Pitot Factor	0.853	**Filter (mg)**	0
DGMCF	0.973	**Probe (mg)**	0
Barometric Pressure	29.26 "Hg	**CWTR (g)**	179.4
Static Pressure	-11.500 "H_2O	**WCBDA (g)**	11.5
Nozzle	0.2521 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	1

Combustion Gases	
O2%	9.01
CO2%	10.34
COppm	11.3

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 %
4	0	49.78	0.82	262	50	93	91	2.1	3.0		19.09	
	5	53.96	0.82	277	43	92	91	2.2	3.0		19.28	**101.1**
	10	58.19	0.83	278	44	92	91	2.2	3.0		19.41	**103.4**
	15	62.42	0.87	279	47	92	91	2.1	3.0		19.89	**102.8**
	20	66.62	0.89	280	48	92	91	2.1	3.0		20.13	**99.8**
	25	70.88	0.85	280	50	92	92	2.2	3.0		19.67	**100.1**
	30	75.14	0.86	281	50	92	91	2.2	3.0		19.80	**102.4**
	35	79.38	0.87	282	47	92	91	2.2	3.0		19.93	**101.5**
	40	83.51	0.89	282	46	92	91	2	3.0		20.16	**98.3**
	45	87.65	0.89	283	48	93	92	2.1	3.0		20.17	**97.4**
	50	91.93	0.85	283	48	93	92	2.2	3.0		19.71	**100.6**
	55	96.19	0.85	283	48	93	92	2.2	3.0		19.71	**102.5**
	60	100.48										**103.2**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	2 - M26A
Date:	November 30, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.853
DGM CORRECTION FACTOR	0.973
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	1.337 m^3
AVGERGE ISOKINETICITY	100.2 %
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	140.1 °C
AVERAGE GAS MOISTURE BY VOLUME	16.2 %
AVERAGE GAS VELOCITY	20.13 m/s
BAROMETRIC PRESSURE (Station)	98.713 Kpa
STATIC PRESSURE	-2.863 Kpa
ABSOLUTE GAS PRESSURE	95.850 Kpa
OXYGEN CONCENTRATION	9.19 %
CARBON DIOXIDE CONCENTRATION	10.21 %
CARBON MONOXIDE CONCENTRATION	7.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	29.74 m^3/s
DRY REF GAS FLOWRATE	17.01 Rm^3/s
DRY ADJ GAS FLOWRATE	20.12 Rm^3/s
WET REF GAS FLOWRATE	20.30 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.337 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:	November 30, 2022	**Operator:**	bp

Pitot Factor	0.853	**Filter (mg)**	0
DGMCF	0.973	**Probe (mg)**	0
Barometric Pressure	29.15 "Hg	**CWTR (g)**	176.3
Static Pressure	-11.500 "H_2O	**WCBDA (g)**	13.5
Nozzle	0.2521 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	1

Combustion Gases	
O2%	9.19
CO2%	10.21
COppm	7.4

Measured H2O
16.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	0	1.30	0.94	283	86	92	91	2.3	3.5		20.77	
	5	5.64	0.98	285	60	92	91	2.3	3.5		21.24	**99.2**
	10	9.68	0.87	285	81	90	90	2.2	3.5		20.01	**90.6**
	15	13.79	0.85	286	56	91	90	2.2	3.5		19.79	**98.1**
	20	18.06	0.87	284	58	90	90	2.2	3.5		20.00	**103.1**
	25	22.36	0.87	284	56	90	89	2.2	3.5		20.00	**102.5**
	30	26.61	0.86	284	54	92	89	2.2	3.5		19.88	**101.4**
	35	30.81	0.89	284	56	92	89	2.1	3.5		20.22	**100.6**
	40	35.02	0.85	284	56	90	89	2.1	3.5		19.76	**99.1**
	45	39.28	0.88	284	56	90	89	2.2	3.5		20.11	**102.8**
	50	43.53	0.86	284	57	90	88	2.2	3.5		19.88	**100.9**
	55	47.76	0.86	283	57	90	88	2.2	3.5		19.87	**101.6**
	60	52.00										**101.8**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	3 - M26A
Date:	November 30, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.853
DGM CORRECTION FACTOR	0.973
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	1.362 m^3
AVGERGE ISOKINETICITY	100.7 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	138.5 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	20.20 m/s
BAROMETRIC PRESSURE (Station)	98.916 Kpa
STATIC PRESSURE	-2.863 Kpa
ABSOLUTE GAS PRESSURE	96.053 Kpa
OXYGEN CONCENTRATION	8.96 %
CARBON DIOXIDE CONCENTRATION	10.56 %
CARBON MONOXIDE CONCENTRATION	7.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	29.85 m^3/s
DRY REF GAS FLOWRATE	17.23 Rm^3/s
DRY ADJ GAS FLOWRATE	20.78 Rm^3/s
WET REF GAS FLOWRATE	20.50 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.362 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:	November 30, 2022	**Operator:**	bp

Pitot Factor	0.853	**Filter (mg)**	0
DGMCF	0.973	**Probe (mg)**	0
Barometric Pressure	29.21 "Hg	**CWTR (g)**	177.4
Static Pressure	-11.500 "H_2O	**WCBDA (g)**	12.2
Nozzle	0.2521 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft³
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	1

Combustion Gases	
O2%	8.96
CO2%	10.56
COppm	7.2

Measured H2O
15.9 %

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 %
4	0	52.67	0.9	264	82	88	87	2.2	3.0		20.02	
	5	56.97	0.88	282	51	88	87	2.2	3.0		20.04	**99.8**
	10	61.27	0.88	282	50	87	86	2.2	3.0		20.04	**102.2**
	15	65.52	0.91	282	52	87	86	2.2	3.0		20.38	**101.2**
	20	69.85	0.91	283	54	89	86	2.3	3.1		20.39	**101.4**
	25	74.16	0.92	283	55	87	86	2.3	3.1		20.50	**100.8**
	30	78.48	0.92	284	53	87	86	2.2	3.1		20.51	**100.7**
	35	82.74	0.93	283	52	90	86	2.2	3.1		20.61	**99.3**
	40	87.01	0.92	284	51	88	85	2.2	3.1		20.51	**98.7**
	45	91.27	0.88	284	52	90	86	2.2	3.1		20.06	**99.3**
	50	95.46	0.86	283	52	87	86	2.2	3.1		19.82	**99.6**
	55	99.77	0.84	282	54	87	85	2.2	3.1		19.58	**103.9**
	60	103.92										**101.2**

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:	December 1, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.853
DGM CORRECTION FACTOR	1.01
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	5.077 m^3
AVGERGE ISOKINETICITY	99.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.5 °C
AVERAGE GAS MOISTURE BY VOLUME	15.6 %
AVERAGE GAS VELOCITY	18.48 m/s
BAROMETRIC PRESSURE (Station)	101.185 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	98.521 Kpa
OXYGEN CONCENTRATION	9.12 %
CARBON DIOXIDE CONCENTRATION	10.72 %
CARBON MONOXIDE CONCENTRATION	6.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.30 m^3/s
DRY REF GAS FLOWRATE	16.19 Rm^3/s
DRY ADJ GAS FLOWRATE	19.26 Rm^3/s
WET REF GAS FLOWRATE	19.18 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.077 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:	December 1, 2022	**Operator:**	TT

Pitot Factor	0.853	**Filter (mg)**	0
DGMCF	1.01	**Probe (mg)**	0
Barometric Pressure	29.88 "Hg	**CWTR (g)**	675.2
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	13.4
Nozzle	0.2521 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.59 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%	9.12
CO2%	10.72
COppm	6.6

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	470.83	0.95	279	55	71	72	2.3	5.5		20.49	
	5	475.43	0.95	284	42	71	72	2.3	5.5		20.56	**113.1**
2	10	479.45	0.95	284	41	71	75	2.3	5.5		20.56	**99.2**
	15	483.51	0.92	284	42	72	75	2.1	5.5		20.23	**99.9**
3	20	487.46	0.87	283	42	72	75	2	5.5		19.66	**98.6**
	25	491.30	0.87	283	42	72	78	2	5.5		19.66	**98.5**
4	30	495.17	0.76	282	42	73	79	1.8	5.0		18.36	**99.0**
	35	498.82	0.76	282	42	73	79	1.8	5.0		18.36	**99.6**
5	40	502.46	0.72	283	44	75	82	1.7	5.0		17.89	**99.3**
	45	506.06	0.72	283	44	76	82	1.7	5.0		17.89	**100.5**
6	50	509.64	0.7	282	43	75	82	1.65	4.5		17.62	**99.8**
	55	513.16	0.68	282	43	75	82	1.65	4.5		17.37	**99.5**
7	60	516.62	0.74	281	43	76	83	1.8	4.5		18.11	**99.3**
	65	520.29	0.73	281	44	77	83	1.7	4.5		17.98	**100.7**
8	70	523.86	0.76	281	44	77	83	1.8	4.5		18.35	**98.5**
	75	527.50	0.78	281	44	77	84	1.9	5.0		18.59	**98.5**
9	80	531.23	0.78	281	44	78	84	1.9	5.0		18.59	**99.6**
	85	534.97	0.78	282	45	79	85	1.9	5.0		18.60	**99.7**
10	90	538.71	0.77	281	45	79	85	1.8	5.0		18.47	**99.6**
	95	542.41	0.8	282	46	80	86	1.9	5.0		18.84	**99.1**
11	100	546.15	0.71	282	46	79	85	1.7	5.0		17.75	**98.2**
	105	549.74	0.75	281	46	80	86	1.8	5.0		18.23	**100.2**
12	110	553.38	0.65	281	46	80	85	1.7	5.0		16.97	**98.6**
	115	556.85	0.64	281	46	81	87	1.7	5.0		16.84	**101.0**
	120	560.55								0.59		**108.3**
1	0	561.14	0.9	281	58	80	82	2.1	5.5		19.97	
	5	565.10	0.9	282	47	80	82	2.1	5.5		19.98	**98.3**
2	10	569.10	0.91	284	48	82	84	2.1	5.5		20.12	**99.4**
	15	573.02	0.92	284	48	82	85	2.2	5.5		20.23	**96.7**
3	20	577.08	0.87	285	48	82	86	2.1	5.5		19.69	**99.5**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	December 1, 2022	**Operator:**	TT

Pitot Factor	0.853	**Filter (mg)**	0
DGMCF	1.01	**Probe (mg)**	0
Barometric Pressure	29.88 "Hg	**CWTR (g)**	675.2
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	13.4
Nozzle	0.2521 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.59 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%	9.12
CO2%	10.72
COppm	6.6

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 %
	25	581.07	0.87	285	49	82	87	2.1	5.5		19.69	**100.5**
4	30	584.99	0.85	285	49	82	87	2	5.5		19.46	**98.6**
	35	588.86	0.85	286	49	82	87	2	5.5		19.47	**98.5**
5	40	592.76	0.77	285	48	82	87	1.85	5.0		18.52	**99.3**
	45	596.55	0.77	285	49	82	87	1.85	5.0		18.52	**101.3**
6	50	600.16	0.71	285	49	82	87	1.7	5.0		17.78	**96.5**
	55	603.73	0.68	286	50	82	88	1.6	5.0		17.42	**99.4**
7	60	607.24	0.75	286	50	82	87	1.8	5.0		18.29	**99.8**
	65	610.92	0.75	286	50	82	87	1.8	5.0		18.29	**99.7**
8	70	614.58	0.78	285	49	82	87	1.9	5.0		18.64	**99.2**
	75	618.34	0.78	285	50	82	87	1.9	5.0		18.64	**99.9**
9	80	622.08	0.78	285	50	83	88	1.9	5.0		18.64	**99.4**
	85	625.83	0.77	286	50	83	88	1.9	5.0		18.53	**99.4**
10	90	629.56	0.75	285	50	83	88	1.8	5.0		18.28	**99.6**
	95	633.23	0.75	283	50	83	87	1.8	5.0		18.25	**99.2**
11	100	636.89	0.46	283	50	83	88	1.1	4.0		14.30	**98.9**
	105	639.89	0.49	284	50	82	86	1.2	4.0		14.76	**103.2**
12	110	642.87	0.62	283	50	82	86	1.5	5.0		16.60	**99.7**
	115	646.30	0.64	283	49	82	86	1.5	5.0		16.86	**102.1**
	120	649.68										**99.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - SVOC
Date:	December 1, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.853
DGM CORRECTION FACTOR	1.01
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	5.062 m^3
AVGERGE ISOKINETICITY	99.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.0 °C
AVERAGE GAS MOISTURE BY VOLUME	15.4 %
AVERAGE GAS VELOCITY	18.39 m/s
BAROMETRIC PRESSURE (Station)	101.626 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	98.961 Kpa
OXYGEN CONCENTRATION	9.28 %
CARBON DIOXIDE CONCENTRATION	10.59 %
CARBON MONOXIDE CONCENTRATION	6.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.17 m^3/s
DRY REF GAS FLOWRATE	16.20 Rm^3/s
DRY ADJ GAS FLOWRATE	19.02 Rm^3/s
WET REF GAS FLOWRATE	19.15 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.062 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:	December 1, 2022	**Operator:**	TT

Pitot Factor	0.853	**Filter (mg)**	0
DGMCF	1.01	**Probe (mg)**	0
Barometric Pressure	30.01 "Hg	**CWTR (g)**	663.2
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	13
Nozzle	0.2521 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.44 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%	9.28
CO2%	10.59
COppm	6.3

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	650.24	0.86	283	71	79	80	2	5.0		19.50	
	5	654.18	0.92	282	53	79	79	2.1	5.0		20.15	**100.5**
2	10	658.13	0.87	283	50	79	80	2	5.0		19.61	**97.4**
	15	662.01	0.9	283	48	79	81	2.1	5.0		19.95	**98.4**
3	20	665.97	0.84	284	48	80	83	2	5.0		19.28	**98.7**
	25	669.82	0.85	284	48	81	84	2	5.0		19.40	**99.1**
4	30	673.69	0.74	285	48	81	86	1.8	5.0		18.11	**98.8**
	35	677.38	0.74	284	48	81	86	1.75	5.0		18.10	**100.8**
5	40	681.03	0.7	284	48	81	86	1.7	5.0		17.60	**99.6**
	45	684.57	0.7	285	48	82	87	1.7	5.0		17.62	**99.3**
6	50	688.12	0.66	285	47	81	87	1.6	5.0		17.11	**99.5**
	55	691.55	0.7	285	47	82	87	1.7	5.0		17.62	**99.1**
7	60	695.12	0.76	285	47	82	87	1.8	5.0		18.36	**100.1**
	65	698.82	0.76	285	47	82	87	1.8	5.0		18.36	**99.5**
8	70	702.53	0.85	286	46	82	87	2	5.0		19.42	**99.8**
	75	706.42	0.8	285	45	81	87	1.9	5.5		18.83	**99.1**
9	80	710.18	0.8	285	46	82	87	1.9	5.5		18.83	**98.7**
	85	713.95	0.8	286	47	82	88	1.9	5.5		18.84	**98.9**
10	90	717.78	0.79	285	46	81	87	1.9	5.5		18.71	**100.4**
	95	721.52	0.77	284	46	82	87	1.8	5.0		18.46	**98.8**
11	100	725.20	0.58	284	46	82	88	1.5	5.0		16.02	**98.3**
	105	728.57	0.62	283	47	83	88	1.55	4.5		16.56	**103.5**
12	110	731.99	0.5	284	46	82	88	1.2	4.5		14.88	**101.5**
	115	735.05	0.56	284	47	82	87	1.3	4.0		15.75	**101.2**
	120	738.18								0.44		**97.9**
1	0	738.62	0.9	284	60	82	85	2.1	5.5		19.96	
	5	742.55	0.95	283	45	83	85	2.4	6.3		20.49	**97.3**
2	10	746.67	0.92	283	44	82	86	2.3	6.3		20.17	**99.2**
	15	750.80	0.92	284	44	83	87	2.3	6.3		20.18	**101.1**
3	20	755.00	0.9	284	43	83	87	2.1	6.2		19.96	**102.7**

ORTECH Consulting Inc.

Plant: Covanta DYEC
Test No.: 2 - SVOC
Date: December 1, 2022

Plant Location: Courtice, ON
Test Location: APC Outlet No. 1
Operator: TT

Pitot Factor	0.853		**Filter (mg)**	0
DGMCF	1.01		**Probe (mg)**	0
Barometric Pressure	30.01	"Hg	**CWTR (g)**	663.2
Static Pressure	-10.700	"H_2O	**WCBDA (g)**	13
Nozzle	0.2521	inches		
Stack Diameter	4.500	ft	**Leak Check Volume**	0.44 ft³
Length	0.000	ft	**Reading Interval**	5 minutes
Width	0.000	ft	**Number of Ports**	2
			Number of points / Port	12

Combustion Gases	
O2%	9.28
CO2%	10.59
COppm	6.3

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	759.10	0.9	284	43	83	87	2.1	6.2		19.96	**101.3**
4	30	763.18	0.85	284	43	83	88	2	6.0		19.40	**100.8**
	35	767.12	0.85	284	43	83	88	2	6.0		19.40	**100.0**
5	40	771.01	0.78	284	44	83	88	2	6.0		18.58	**98.8**
	45	774.88	0.78	283	44	83	88	1.8	5.7		18.57	**102.6**
6	50	778.65	0.68	283	44	83	88	1.7	5.3		17.34	**99.8**
	55	782.26	0.68	283	44	83	88	1.7	5.3		17.34	**102.3**
7	60	785.84	0.74	283	45	84	89	1.7	5.3		18.09	**101.5**
	65	789.43	0.74	283	45	84	89	1.7	5.3		18.09	**97.4**
8	70	793.00	0.77	283	45	84	89	1.8	5.5		18.45	**96.8**
	75	796.67	0.76	285	46	85	90	1.8	5.5		18.36	**97.6**
9	80	800.34	0.78	284	46	85	89	1.9	5.5		18.58	**98.2**
	85	804.08	0.78	284	46	85	89	1.9	5.5		18.58	**98.8**
10	90	807.85	0.75	283	46	84	89	1.75	5.5		18.21	**99.6**
	95	811.52	0.75	284	47	85	90	1.75	5.5		18.22	**98.9**
11	100	815.21	0.68	284	47	85	90	1.6	5.3		17.35	**99.3**
	105	818.58	0.68	284	47	85	90	1.6	5.3		17.35	**95.2**
12	110	822.09	0.61	283	47	85	90	1.5	5.2		16.42	**99.2**
	115	825.44	0.61	283	48	85	89	1.5	5.2		16.42	**99.8**
	120	828.76										**99.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - SVOC
Date:	December 2, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.853
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	4.959 m^3
AVGERGE ISOKINETICITY	99.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.9 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	18.12 m/s
BAROMETRIC PRESSURE (Station)	101.626 Kpa
STATIC PRESSURE	-2.565 Kpa
ABSOLUTE GAS PRESSURE	99.061 Kpa
OXYGEN CONCENTRATION	8.59 %
CARBON DIOXIDE CONCENTRATION	11.25 %
CARBON MONOXIDE CONCENTRATION	8.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.77 m^3/s
DRY REF GAS FLOWRATE	15.82 Rm^3/s
DRY ADJ GAS FLOWRATE	19.67 Rm^3/s
WET REF GAS FLOWRATE	18.89 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.959 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:	December 2, 2022	**Operator:**	cb

Pitot Factor	0.853	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.01 "Hg	**CWTR (g)**	694.8
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	13
Nozzle	0.2521 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.33 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%	8.59
CO2%	11.25
COppm	8.6

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	87.01	0.84	278	74	79	78	2	6.0		19.21	
	5	90.61	0.84	280	47	81	80	2.1	6.9		19.24	**94.3**
2	10	94.38	0.84	280	49	81	82	2.1	7.0		19.24	**98.5**
	15	98.08	0.84	280	50	81	85	2.1	7.0		19.24	**96.5**
3	20	101.78	0.79	282	50	82	87	2.1	7.0		18.68	**96.2**
	25	105.51	0.79	282	51	82	89	2.1	7.0		18.68	**99.9**
4	30	109.23	0.75	282	51	82	90	2	7.0		18.20	**99.5**
	35	112.84	0.75	282	52	83	92	2	7.0		18.20	**98.9**
5	40	116.48	0.66	283	52	83	92	1.8	6.8		17.09	**99.5**
	45	119.98	0.66	283	49	84	94	1.8	6.8		17.09	**102.0**
6	50	123.48	0.64	283	48	84	94	1.8	6.8		16.83	**101.7**
	55	126.95	0.64	283	47	85	95	1.8	6.8		16.83	**102.4**
7	60	130.43	0.72	283	47	85	95	1.8	6.8		17.85	**102.5**
	65	133.94	0.72	284	47	85	95	1.8	6.8		17.86	**97.5**
8	70	137.40	0.75	284	47	85	96	2	7.0		18.23	**96.2**
	75	141.05	0.75	285	47	86	95	2	7.0		18.24	**99.3**
9	80	144.73	0.73	285	48	86	95	2	7.0		17.99	**100.2**
	85	148.34	0.73	285	48	86	95	2	7.0		17.99	**99.7**
10	90	151.97	0.73	284	49	86	96	2	7.0		17.98	**100.2**
	95	155.58	0.72	284	49	86	96	2	7.0		17.86	**99.5**
11	100	159.17	0.63	284	49	86	96	1.8	6.9		16.70	**99.6**
	105	162.67	0.63	284	50	86	96	1.75	6.8		16.70	**103.8**
12	110	166.12	0.62	284	50	86	96	1.7	6.5		16.57	**102.3**
	115	169.52	0.61	284	50	86	96	1.7	6.5		16.44	**101.6**
	120	172.88								0.33		**101.2**
1	0	173.21	0.9	282	64	85	88	2.3	8.0		19.94	
	5	177.18	0.89	285	49	85	90	2.3	8.0		19.87	**99.3**
2	10	181.19	0.88	285	49	85	90	2.3	8.0		19.76	**100.9**
	15	185.20	0.88	285	50	85	90	2.3	8.0		19.76	**101.5**
3	20	189.22	0.84	285	50	84	91	2.2	7.6		19.30	**101.7**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	December 2, 2022	**Operator:**	cb

Pitot Factor	0.853	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.01 "Hg	**CWTR (g)**	694.8
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	13
Nozzle	0.2521 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.33 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%	8.59
CO2%	11.25
COppm	8.6

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	193.08	0.84	284	51	84	91	2.2	7.6		19.29	**99.9**
4	30	196.93	0.78	285	51	84	92	2	7.3		18.60	**99.6**
	35	200.62	0.78	285	51	84	92	2	7.3		18.60	**99.0**
5	40	204.31	0.7	285	51	84	93	1.8	7.0		17.62	**99.0**
	45	207.83	0.7	285	52	84	94	1.8	7.0		17.62	**99.6**
6	50	211.34	0.66	285	52	84	94	1.7	6.7		17.11	**99.2**
	55	214.66	0.66	285	52	84	94	1.7	6.7		17.11	**96.6**
7	60	218.04	0.73	286	52	85	95	1.9	7.0		18.01	**98.3**
	65	221.60	0.73	286	53	84	94	1.9	7.0		18.01	**98.4**
8	70	225.20	0.76	286	53	85	94	2	7.3		18.37	**99.7**
	75	228.93	0.76	286	53	85	94	2	7.3		18.37	**101.2**
9	80	232.66	0.78	286	53	85	93	2.1	7.5		18.61	**101.2**
	85	236.42	0.77	285	53	85	93	2.1	7.5		18.48	**100.8**
10	90	240.21	0.75	284	53	85	93	2	7.5		18.23	**102.2**
	95	243.91	0.75	285	54	85	93	2	7.5		18.24	**101.0**
11	100	247.61	0.75	284	54	85	93	2	7.5		18.23	**101.1**
	105	251.26	0.75	284	54	85	93	2	7.5		18.23	**99.6**
12	110	254.94	0.62	284	55	85	94	1.6	7.0		16.57	**100.4**
	115	258.27	0.63	284	55	85	94	1.6	7.0		16.70	**99.8**
	120	261.66										**100.8**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - SVOC
Date:	December 1, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	0.973
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	5.207 m^3
AVGERGE ISOKINETICITY	96.1 %
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	140.3 °C
AVERAGE GAS MOISTURE BY VOLUME	14.8 %
AVERAGE GAS VELOCITY	19.80 m/s
BAROMETRIC PRESSURE (Station)	101.219 Kpa
STATIC PRESSURE	-3.112 Kpa
ABSOLUTE GAS PRESSURE	98.107 Kpa
OXYGEN CONCENTRATION	9.4 %
CARBON DIOXIDE CONCENTRATION	10.25 %
CARBON MONOXIDE CONCENTRATION	9.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	29.26 m^3/s
DRY REF GAS FLOWRATE	17.41 Rm^3/s
DRY ADJ GAS FLOWRATE	20.22 Rm^3/s
WET REF GAS FLOWRATE	20.43 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.207 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. 2
Date:	December 1, 2022	**Operator:**	bp

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	0.973	**Probe (mg)**	0
Barometric Pressure	29.89 "Hg	**CWTR (g)**	647.5
Static Pressure	-12.500 "H_2O	**WCBDA (g)**	16.3
Nozzle	0.251 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.67 ft³
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	9.4
CO2%	10.25
COppm	9.6

Measured H2O
14.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	4.82	0.75	284	59	70	68	1.6	4.0		18.16	
	5	8.31	0.8	284	50	70	69	1.6	4.0		18.76	**94.5**
2	10	11.88	0.89	284	48	70	68	1.7	4.0		19.79	**93.5**
	15	15.68	0.82	284	48	70	68	1.9	5.0		18.99	**94.5**
3	20	19.47	0.89	284	48	71	69	1.8	5.0		19.79	**98.2**
	25	23.29	0.86	283	48	71	69	1.9	5.0		19.44	**94.8**
4	30	27.09	0.87	283	48	72	70	1.9	5.0		19.55	**95.9**
	35	30.92	0.86	283	47	73	69	1.9	5.0		19.44	**96.0**
5	40	34.78	0.83	283	48	75	70	1.9	5.0		19.09	**97.3**
	45	38.64	0.83	282	48	72	69	1.9	5.0		19.08	**98.7**
6	50	42.49	0.81	283	49	73	70	1.9	5.0		18.86	**98.8**
	55	46.31	0.79	283	49	73	70	1.9	5.0		18.63	**99.1**
7	60	50.06	0.71	282	50	74	70	1.8	5.0		17.65	**98.5**
	65	53.56	0.7	282	51	74	71	1.5	4.5		17.52	**96.8**
8	70	57.04	0.83	283	52	78	71	1.6	4.5		19.09	**96.8**
	75	60.79	0.81	283	53	75	71	1.8	5.0		18.86	**95.5**
9	80	64.55	0.94	283	53	74	71	1.8	5.0		20.32	**97.2**
	85	68.51	0.92	283	53	78	72	2	5.0		20.10	**95.2**
10	90	72.47	0.99	282	55	78	71	2	5.0		20.84	**95.8**
	95	76.58	0.97	283	55	79	72	2.2	5.5		20.64	**95.9**
11	100	80.74	1.05	283	55	75	72	2.2	5.5		21.48	**97.9**
	105	84.94	1.05	284	56	78	72	2.1	5.6		21.49	**95.4**
12	110	89.14	1.05	284	56	74	72	2.1	5.6		21.49	**95.2**
	115	93.33	1.1	282	56	79	72	2.2	5.9		21.97	**95.3**
	120	97.52								0.67		**92.6**
1	0	98.19	0.87	283	70	74	71	1.8	5.0		19.55	
	5	101.93	0.86	283	60	73	71	1.7	5.0		19.44	**93.4**
2	10	105.55	0.85	282	61	74	71	1.7	5.0		19.31	**91.0**
	15	109.34	0.92	282	60	73	71	1.9	5.0		20.09	**95.7**
3	20	113.23	0.96	284	58	75	72	2	5.0		20.55	**94.5**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	December 1, 2022	**Operator:**	bp

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	0.973	**Probe (mg)**	0
Barometric Pressure	29.89 "Hg	**CWTR (g)**	647.5
Static Pressure	-12.500 "H_2O	**WCBDA (g)**	16.3
Nozzle	0.251 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.67 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%	9.4
CO2%	10.25
COppm	9.6

Measured H2O
14.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	117.24	0.94	285	57	76	71	2.1	5.5		20.35	**95.3**
4	30	121.27	0.9	284	57	79	72	2.1	5.5		19.90	**96.9**
	35	125.29	0.88	284	57	74	72	2.1	5.5		19.67	**98.3**
5	40	129.26	0.89	284	57	75	72	2	5.0		19.79	**98.6**
	45	133.22	0.89	285	58	74	72	2	5.1		19.80	**97.7**
6	50	137.17	0.86	287	58	75	72	2	5.1		19.49	**97.6**
	55	141.04	0.86	287	57	77	72	1.9	5.0		19.49	**97.3**
7	60	144.88	0.8	287	58	77	72	1.9	5.0		18.80	**96.4**
	65	148.64	0.77	287	59	75	73	1.8	5.0		18.44	**97.9**
8	70	152.28	0.84	288	59	77	73	1.7	5.0		19.27	**96.6**
	75	156.05	0.85	288	56	75	73	1.8	5.0		19.39	**95.7**
9	80	159.81	0.93	288	53	78	73	1.8	5.0		20.28	**95.1**
	85	163.79	0.92	289	51	76	73	2	5.5		20.18	**95.9**
10	90	167.74	1	289	51	75	73	2	5.5		21.04	**96.0**
	95	171.80	0.99	289	52	76	73	2.1	6.0		20.94	**94.7**
11	100	175.88	1	289	52	78	73	2.1	6.0		21.04	**95.6**
	105	180.01	1	288	52	76	73	2.1	6.0		21.03	**96.1**
12	110	184.06	0.98	288	52	77	73	2.1	6.0		20.82	**94.4**
	115	188.17	0.99	288	52	76	73	2.1	6.0		20.92	**96.7**
	120	192.25										**95.6**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - SVOC
Date:	December 1, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	0.973
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	5.169 m^3
AVGERGE ISOKINETICITY	97.2 %
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	141.1 °C
AVERAGE GAS MOISTURE BY VOLUME	15.1 %
AVERAGE GAS VELOCITY	19.46 m/s
BAROMETRIC PRESSURE (Station)	101.659 Kpa
STATIC PRESSURE	-3.112 Kpa
ABSOLUTE GAS PRESSURE	98.547 Kpa
OXYGEN CONCENTRATION	9.44 %
CARBON DIOXIDE CONCENTRATION	10.29 %
CARBON MONOXIDE CONCENTRATION	10.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.76 m^3/s
DRY REF GAS FLOWRATE	17.08 Rm^3/s
DRY ADJ GAS FLOWRATE	19.77 Rm^3/s
WET REF GAS FLOWRATE	20.13 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.169 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, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	December 1, 2022	**Operator:**	bp

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	0.973	**Probe (mg)**	0
Barometric Pressure	30.02 "Hg	**CWTR (g)**	661.3
Static Pressure	-12.500 "H_2O	**WCBDA (g)**	16.1
Nozzle	0.251 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.59 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%	9.44
CO2%	10.29
COppm	10.2

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	93.03	0.94	284	72	78	73	2	4.9		20.30	
	5	96.93	0.95	286	60	74	73	2	5.0		20.44	**93.8**
2	10	100.82	0.99	288	55	74	72	2.2	6.0		20.89	**93.6**
	15	104.92	0.99	288	53	74	72	2.2	6.0		20.89	**96.9**
3	20	109.12	0.95	288	52	74	72	2.1	5.8		20.46	**99.2**
	25	113.12	0.96	288	52	74	72	2.1	5.8		20.57	**96.4**
4	30	117.17	0.9	288	52	74	72	2	5.5		19.92	**97.1**
	35	121.12	0.9	288	54	75	72	2	5.5		19.92	**97.8**
5	40	125.06	0.8	288	54	75	72	1.9	5.0		18.78	**97.5**
	45	128.89	0.81	288	54	75	73	1.9	5.0		18.90	**100.5**
6	50	132.69	0.71	288	55	75	73	1.6	5.0		17.69	**99.0**
	55	136.26	0.71	288	55	75	73	1.6	5.0		17.69	**99.3**
7	60	139.80	0.78	288	55	75	72	1.8	5.0		18.54	**98.4**
	65	143.45	0.8	291	53	76	73	1.8	5.0		18.82	**97.0**
8	70	147.19	0.88	290	51	76	74	1.8	5.0		19.72	**98.1**
	75	151.04	0.87	291	51	78	73	1.9	5.5		19.62	**96.2**
9	80	154.91	0.88	290	51	78	74	1.9	5.5		19.72	**97.2**
	85	158.78	0.88	290	51	79	74	1.9	5.5		19.72	**96.5**
10	90	162.68	0.86	291	51	77	73	2	5.5		19.51	**97.2**
	95	166.54	0.87	291	51	77	75	1.9	5.1		19.62	**97.6**
11	100	170.38	0.7	290	52	77	74	1.9	5.1		17.59	**96.4**
	105	173.88	0.77	290	53	77	74	1.5	4.9		18.45	**97.9**
12	110	177.43	0.78	290	53	77	74	1.6	5.0		18.57	**94.6**
	115	181.13	0.73	291	53	77	74	1.7	5.0		17.97	**98.0**
	120	184.68								0.59		**97.3**
1	0	185.27	0.97	283	69	76	73	2	6.0		20.61	
	5	189.25	0.99	281	44	76	73	2	6.0		20.79	**94.4**
2	10	193.30	1.05	281	46	76	73	2.1	6.0		21.41	**94.9**
	15	197.48	1.05	281	47	77	74	2.2	6.1		21.41	**95.2**
3	20	201.70	0.99	280	46	78	74	2.3	6.1		20.78	**95.9**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	December 1, 2022	**Operator:**	bp

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	0.973	**Probe (mg)**	0
Barometric Pressure	30.02 "Hg	**CWTR (g)**	661.3
Static Pressure	-12.500 "H_2O	**WCBDA (g)**	16.1
Nozzle	0.251 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.59 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%	9.44
CO2%	10.29
COppm	10.2

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	205.78	0.97	281	46	76	74	2.1	6.0		20.58	**95.4**
4	30	209.89	0.92	281	46	79	74	2.1	6.0		20.04	**97.2**
	35	213.93	0.93	281	47	76	74	2.1	6.0		20.15	**97.9**
5	40	217.96	0.85	281	47	81	75	2.1	6.0		19.27	**97.4**
	45	221.84	0.85	280	48	81	74	1.9	5.8		19.25	**97.5**
6	50	225.69	0.77	281	48	77	74	1.9	5.8		18.34	**96.7**
	55	229.48	0.77	281	48	77	75	1.8	5.5		18.34	**100.5**
7	60	233.16	0.83	282	49	77	74	1.7	5.1		19.05	**97.5**
	65	236.93	0.84	282	49	78	75	1.8	5.9		19.16	**96.3**
8	70	240.79	0.86	284	49	78	75	1.9	5.9		19.42	**97.9**
	75	244.64	0.88	284	49	79	75	1.9	5.9		19.64	**96.6**
9	80	248.61	0.86	286	50	78	75	2	6.0		19.44	**98.4**
	85	252.53	0.9	287	51	79	75	2	6.0		19.90	**98.5**
10	90	256.47	0.92	287	48	79	75	2	6.0		20.12	**96.8**
	95	260.53	0.92	287	48	79	74	2.1	6.1		20.12	**98.6**
11	100	264.58	0.79	287	47	78	75	2.1	6.1		18.65	**98.5**
	105	268.30	0.8	286	47	79	75	1.7	5.5		18.75	**97.7**
12	110	271.99	0.68	286	48	78	75	1.7	5.5		17.29	**96.0**
	115	275.50	0.69	287	48	78	74	1.5	5.0		17.43	**99.2**
	120	278.99										**98.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - SVOC
Date:	December 2, 2022

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	0.973
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	5.133 m^3
AVGERGE ISOKINETICITY	100.5 %
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	139.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.3 %
AVERAGE GAS VELOCITY	18.62 m/s
BAROMETRIC PRESSURE (Station)	101.693 Kpa
STATIC PRESSURE	-2.814 Kpa
ABSOLUTE GAS PRESSURE	98.880 Kpa
OXYGEN CONCENTRATION	9.25 %
CARBON DIOXIDE CONCENTRATION	10.49 %
CARBON MONOXIDE CONCENTRATION	7.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.52 m^3/s
DRY REF GAS FLOWRATE	16.43 Rm^3/s
DRY ADJ GAS FLOWRATE	19.34 Rm^3/s
WET REF GAS FLOWRATE	19.41 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.133 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. 2
Date:	December 2, 2022	**Operator:**	bp

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	0.973	**Probe (mg)**	0
Barometric Pressure	30.03 "Hg	**CWTR (g)**	669.7
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	13.8
Nozzle	0.251 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.36 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%	9.25
CO2%	10.49
COppm	7.0

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	79.77	0.9	280	73	80	78	2	5.0		19.78	
	5	83.73	0.99	283	53	82	78	2	5.0		20.79	**96.6**
2	10	87.82	1	283	51	81	78	2.2	6.0		20.89	**95.1**
	15	92.09	1.05	282	52	82	79	2.2	6.0		21.39	**98.9**
3	20	96.30	0.95	283	51	81	79	2.3	6.0		20.36	**95.0**
	25	100.60	0.94	283	51	83	79	2.1	6.0		20.25	**102.1**
4	30	104.55	0.9	284	51	84	80	2.1	6.0		19.83	**94.1**
	35	108.62	0.88	283	51	85	80	2.1	6.0		19.60	**99.0**
5	40	112.64	0.78	283	50	83	80	2.1	5.9		18.45	**98.7**
	45	116.34	0.78	283	50	83	80	1.7	5.0		18.45	**96.7**
6	50	120.13	0.7	283	49	85	80	1.8	5.0		17.48	**98.9**
	55	123.71	0.71	282	49	85	80	1.6	5.0		17.59	**98.5**
7	60	127.35	0.75	283	49	84	81	1.8	5.0		18.09	**99.3**
	65	131.19	0.73	282	51	87	81	1.9	5.5		17.84	**102.1**
8	70	134.96	0.76	283	50	86	81	1.8	5.0		18.21	**101.2**
	75	138.78	0.79	282	50	85	82	1.7	5.0		18.56	**100.7**
9	80	142.63	0.82	282	51	85	81	2	5.5		18.90	**99.4**
	85	146.62	0.81	283	51	87	82	2	6.0		18.80	**101.3**
10	90	150.58	0.79	282	52	85	81	2	6.0		18.56	**101.0**
	95	154.52	0.81	281	53	85	82	2	6.0		18.78	**101.9**
11	100	158.42	0.78	282	50	86	83	1.9	5.9		18.44	**99.5**
	105	162.31	0.68	282	49	86	82	1.9	5.9		17.22	**101.0**
12	110	166.03	0.57	281	48	86	82	1.7	5.0		15.75	**103.5**
	115	169.47	0.56	282	49	86	83	1.5	4.9		15.62	**104.4**
	120	172.79								0.36		**101.6**
1	0	173.15	0.92	280	66	84	82	2.2	6.5		20.00	
	5	177.33	0.96	283	51	85	82	2.2	6.5		20.47	**100.1**
2	10	181.62	0.97	284	49	86	83	2.3	6.5		20.59	**100.7**
	15	185.91	0.96	283	49	86	83	2.3	6.5		20.47	**100.1**
3	20	190.18	0.93	283	50	86	83	2.3	6.5		20.15	**100.1**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	December 2, 2022	**Operator:**	bp

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	0.973	**Probe (mg)**	0
Barometric Pressure	30.03 "Hg	**CWTR (g)**	669.7
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	13.8
Nozzle	0.251 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.36 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%	9.25
CO2%	10.49
COppm	7.0

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	194.42	0.92	284	51	86	83	2.2	6.5		20.05	**101.0**
4	30	198.64	0.85	284	51	87	83	2.2	6.5		19.27	**101.1**
	35	202.69	0.86	284	50	87	83	2.1	6.0		19.39	**100.8**
5	40	206.77	0.76	283	49	86	83	2.1	6.0		18.21	**100.9**
	45	210.67	0.77	283	47	86	83	1.9	5.5		18.33	**102.7**
6	50	214.48	0.72	283	47	85	83	1.8	5.5		17.73	**99.6**
	55	218.27	0.72	283	47	85	83	1.8	5.5		17.73	**102.5**
7	60	221.98	0.8	284	47	85	82	1.7	5.1		18.70	**100.4**
	65	225.96	0.79	283	47	85	82	2	6.0		18.57	**102.3**
8	70	229.83	0.81	284	47	86	82	1.9	5.9		18.81	**100.1**
	75	233.77	0.8	283	48	85	82	2	6.0		18.69	**100.6**
9	80	237.68	0.85	285	48	85	82	2	6.0		19.29	**100.5**
	85	241.69	0.83	284	48	85	82	2	6.0		19.05	**100.1**
10	90	245.73	0.84	284	48	84	82	2.1	6.0		19.16	**102.0**
	95	249.69	0.82	283	49	85	82	2	6.0		18.92	**99.5**
11	100	253.66	0.65	283	50	85	82	2	6.0		16.84	**100.8**
	105	257.30	0.65	282	49	86	81	1.6	5.1		16.83	**103.8**
12	110	260.80	0.42	282	50	85	81	1.6	5.1		13.53	**99.6**
	115	263.81	0.42	282	51	85	82	1.2	4.5		13.53	**106.7**
	120	266.83										**106.8**

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
November 29, 2022

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
09:40	0.0	
09:41	0.0	
09:42	0.0	
09:43	0.0	
09:44	0.0	
09:45	0.0	
09:46	0.0	
09:47	0.0	
09:48	0.0	
09:49	0.0	0.0
09:50	0.0	0.0
09:51	0.0	0.0
09:52	0.0	0.0
09:53	0.0	0.0
09:54	0.0	0.0
09:55	0.0	0.0
09:56	0.0	0.0
09:57	0.0	0.0
09:58	0.0	0.0
09:59	0.0	0.0
10:00	0.0	0.0
10:01	0.0	0.0
10:02	0.0	0.0
10:03	0.0	0.0
10:04	0.0	0.0
10:05	0.0	0.0
10:06	0.0	0.0
10:07	0.0	0.0
10:08	0.0	0.0
10:09	0.0	0.0
10:10	0.0	0.0
10:11	0.0	0.0
10:12	0.0	0.0
10:13	0.0	0.0
10:14	0.0	0.0
10:15	0.0	0.0
10:16	0.0	0.0
10:17	0.0	0.0
10:18	0.2	0.0
10:19	0.3	0.0
10:20	0.3	0.1
10:21	0.3	0.1
10:22	0.2	0.1
10:23	0.3	0.2
10:24	0.3	0.2
10:25	0.2	0.2
10:26	0.2	0.2
10:27	0.2	0.3
10:28	0.3	0.3
10:29	0.3	0.3
10:30	0.3	0.3
10:31	0.3	0.3
10:32	0.3	0.3
10:33	0.2	0.3
10:34	0.2	0.3
10:35	0.3	0.3
10:36	0.3	0.3
10:37	0.3	0.3
10:38	0.2	0.3
10:39	0.2	0.3
10:40	0.1	0.2
Min	0.0	0.0
Max	0.3	0.3
Avg	0.1	0.1

Test No. 2
November 29, 2022

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
10:55	0.0	
10:56	0.0	
10:57	0.0	
10:58	0.0	
10:59	0.0	
11:00	0.0	
11:01	0.0	
11:02	0.0	
11:03	0.0	
11:04	0.0	0.0
11:05	0.0	0.0
11:06	0.0	0.0
11:07	0.0	0.0
11:08	0.0	0.0
11:09	0.0	0.0
11:10	0.0	0.0
11:11	0.0	0.0
11:12	0.0	0.0
11:13	0.0	0.0
11:14	0.0	0.0
11:15	0.0	0.0
11:16	0.0	0.0
11:17	0.0	0.0
11:18	0.0	0.0
11:19	0.0	0.0
11:20	0.0	0.0
11:21	0.0	0.0
11:22	0.0	0.0
11:23	0.0	0.0
11:24	0.0	0.0
11:25	0.0	0.0
11:26	0.0	0.0
11:27	0.0	0.0
11:28	0.0	0.0
11:29	0.0	0.0
11:30	0.0	0.0
11:31	0.0	0.0
11:32	0.0	0.0
11:33	0.0	0.0
11:34	0.0	0.0
11:35	0.0	0.0
11:36	0.0	0.0
11:37	0.0	0.0
11:38	0.0	0.0
11:39	0.0	0.0
11:40	0.0	0.0
11:41	0.0	0.0
11:42	0.0	0.0
11:43	0.0	0.0
11:44	0.0	0.0
11:45	0.0	0.0
11:46	0.0	0.0
11:47	0.0	0.0
11:48	0.0	0.0
11:49	0.0	0.0
11:50	0.0	0.0
11:51	0.0	0.0
11:52	0.0	0.0
11:53	0.0	0.0
11:54	0.0	0.0
11:55	0.0	0.0
Min	0.0	0.0
Max	0.0	0.0
Avg	0.0	0.0

Test No. 3
November 29, 2022

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
12:05	0.1	
12:06	0.0	
12:07	0.0	
12:08	0.1	
12:09	0.1	
12:10	0.1	
12:11	0.1	
12:12	0.1	
12:13	0.1	
12:14	0.1	0.1
12:15	0.1	0.1
12:16	0.1	0.1
12:17	0.1	0.1
12:18	0.2	0.1
12:19	0.2	0.1
12:20	0.2	0.1
12:21	0.2	0.1
12:22	0.2	0.1
12:23	0.2	0.1
12:24	0.2	0.2
12:25	0.2	0.2
12:26	0.2	0.2
12:27	0.2	0.2
12:28	0.2	0.2
12:29	0.2	0.2
12:30	0.1	0.2
12:31	0.1	0.2
12:32	0.1	0.2
12:33	0.1	0.2
12:34	0.1	0.2
12:35	0.1	0.2
12:36	0.0	0.1
12:37	0.1	0.1
12:38	0.0	0.1
12:39	0.1	0.1
12:40	0.0	0.1
12:41	0.2	0.1
12:42	0.3	0.1
12:43	0.3	0.1
12:44	0.4	0.2
12:45	0.4	0.2
12:46	0.4	0.2
12:47	0.4	0.3
12:48	0.5	0.3
12:49	0.6	0.4
12:50	0.6	0.4
12:51	0.5	0.4
12:52	0.5	0.5
12:53	0.6	0.5
12:54	0.5	0.5
12:55	0.6	0.5
12:56	0.6	0.5
12:57	0.4	0.5
12:58	0.4	0.5
12:59	0.4	0.5
13:00	0.4	0.5
13:01	0.3	0.5
13:02	0.4	0.5
13:03	0.4	0.4
13:04	0.3	0.4
13:05	0.3	0.4
Min	0.0	0.1
Max	0.6	0.5
Avg	0.2	0.3

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 1 APC Outlet

	Test No. 1 November 29, 2022			Test No. 2 November 29, 2022			Test No. 3 November 29, 2022	
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
09:40	1.6		10:55	0.0		12:05	0.0	
09:41	0.9		10:56	1.3		12:06	1.3	
09:42	1.8		10:57	1.3		12:07	1.8	
09:43	1.6		10:58	0.4		12:08	2.1	
09:44	0.0		10:59	0.0		12:09	2.4	
09:45	0.0		11:00	0.0		12:10	0.0	
09:46	0.0		11:01	0.0		12:11	0.0	
09:47	0.0		11:02	0.0		12:12	0.0	
09:48	0.0		11:03	0.0		12:13	0.0	
09:49	0.0	0.6	11:04	0.0	0.3	12:14	0.0	0.8
09:50	0.2	0.4	11:05	0.0	0.3	12:15	0.0	0.8
09:51	0.0	0.4	11:06	0.0	0.2	12:16	0.0	0.6
09:52	0.0	0.2	11:07	0.0	0.0	12:17	0.0	0.4
09:53	0.0	0.0	11:08	0.0	0.0	12:18	0.0	0.2
09:54	0.0	0.0	11:09	0.0	0.0	12:19	0.0	0.0
09:55	0.0	0.0	11:10	0.0	0.0	12:20	0.0	0.0
09:56	0.0	0.0	11:11	0.0	0.0	12:21	0.0	0.0
09:57	0.0	0.0	11:12	0.0	0.0	12:22	0.0	0.0
09:58	0.0	0.0	11:13	0.0	0.0	12:23	0.0	0.0
09:59	0.0	0.0	11:14	0.0	0.0	12:24	0.0	0.0
10:00	0.0	0.0	11:15	0.0	0.0	12:25	0.0	0.0
10:01	0.0	0.0	11:16	0.0	0.0	12:26	0.0	0.0
10:02	0.0	0.0	11:17	0.0	0.0	12:27	0.4	0.0
10:03	0.2	0.0	11:18	0.0	0.0	12:28	0.4	0.1
10:04	0.1	0.0	11:19	0.0	0.0	12:29	0.3	0.1
10:05	0.1	0.0	11:20	0.0	0.0	12:30	0.0	0.1
10:06	0.0	0.0	11:21	0.0	0.0	12:31	0.0	0.1
10:07	0.0	0.0	11:22	0.0	0.0	12:32	0.0	0.1
10:08	0.0	0.0	11:23	0.0	0.0	12:33	0.0	0.1
10:09	0.0	0.0	11:24	0.0	0.0	12:34	0.0	0.1
10:10	0.0	0.0	11:25	0.0	0.0	12:35	0.0	0.1
10:11	0.0	0.0	11:26	0.0	0.0	12:36	0.0	0.1
10:12	0.0	0.0	11:27	0.0	0.0	12:37	0.0	0.1
10:13	0.0	0.0	11:28	0.0	0.0	12:38	0.0	0.0
10:14	0.0	0.0	11:29	0.0	0.0	12:39	0.0	0.0
10:15	0.0	0.0	11:30	0.0	0.0	12:40	0.0	0.0
10:16	0.0	0.0	11:31	0.0	0.0	12:41	0.0	0.0
10:17	0.0	0.0	11:32	0.0	0.0	12:42	0.0	0.0
10:18	0.1	0.0	11:33	0.0	0.0	12:43	0.0	0.0
10:19	0.0	0.0	11:34	0.5	0.1	12:44	0.0	0.0
10:20	0.0	0.0	11:35	0.7	0.1	12:45	0.0	0.0
10:21	0.0	0.0	11:36	0.6	0.2	12:46	0.0	0.0
10:22	0.0	0.0	11:37	0.3	0.2	12:47	0.0	0.0
10:23	0.0	0.0	11:38	0.0	0.2	12:48	0.0	0.0
10:24	0.0	0.0	11:39	0.0	0.2	12:49	0.0	0.0
10:25	0.0	0.0	11:40	0.1	0.2	12:50	0.1	0.0
10:26	0.0	0.0	11:41	0.0	0.2	12:51	0.6	0.1
10:27	0.0	0.0	11:42	0.7	0.3	12:52	1.0	0.2
10:28	0.0	0.0	11:43	0.0	0.3	12:53	0.4	0.2
10:29	0.0	0.0	11:44	0.0	0.2	12:54	0.0	0.2
10:30	0.0	0.0	11:45	0.0	0.2	12:55	0.0	0.2
10:31	0.7	0.1	11:46	0.0	0.1	12:56	0.0	0.2
10:32	0.6	0.1	11:47	0.2	0.1	12:57	0.0	0.2
10:33	0.9	0.2	11:48	0.0	0.1	12:58	0.0	0.2
10:34	0.4	0.3	11:49	0.0	0.1	12:59	0.0	0.2
10:35	0.0	0.3	11:50	0.0	0.1	13:00	0.0	0.2
10:36	0.0	0.3	11:51	0.0	0.1	13:01	0.0	0.1
10:37	0.0	0.3	11:52	0.0	0.0	13:02	0.0	0.0
10:38	0.0	0.3	11:53	0.0	0.0	13:03	0.0	0.0
10:39	0.0	0.3	11:54	0.0	0.0	13:04	0.0	0.0
10:40	0.0	0.3	11:55	0.0	0.0	13:05	0.0	0.0
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	1.8	0.6	Max	1.3	0.3	Max	2.4	0.8
Avg	0.2	0.1	Avg	0.1	0.1	Avg	0.2	0.1

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet

	Test No. 1 November 9, 2020			Test No. 2 November 9, 2020			Test No. 3 November 9, 2020	
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
14:30	0.3		15:40	8.6		16:50	0.1	
14:31	0.3		15:41	0.8		16:51	0.0	
14:32	0.3		15:42	0.0		16:52	0.0	
14:33	0.2		15:43	0.0		16:53	0.0	
14:34	0.2		15:44	0.0		16:54	0.0	
14:35	0.3		15:45	0.0		16:55	0.0	
14:36	0.4		15:46	0.0		16:56	0.0	
14:37	0.3		15:47	0.0		16:57	0.0	
14:38	0.3		15:48	0.0		16:58	0.0	
14:39	0.3	0.3	15:49	0.0	0.9	16:59	0.0	0.0
14:40	0.3	0.3	15:50	0.0	0.1	17:00	0.0	0.0
14:41	0.3	0.3	15:51	0.0	0.0	17:01	0.0	0.0
14:42	0.4	0.3	15:52	0.0	0.0	17:02	0.0	0.0
14:43	0.4	0.3	15:53	0.0	0.0	17:03	0.0	0.0
14:44	0.3	0.3	15:54	0.0	0.0	17:04	0.0	0.0
14:45	0.2	0.3	15:55	0.0	0.0	17:05	0.0	0.0
14:46	0.1	0.3	15:56	0.0	0.0	17:06	0.0	0.0
14:47	0.1	0.3	15:57	0.0	0.0	17:07	0.2	0.0
14:48	0.2	0.2	15:58	0.0	0.0	17:08	0.5	0.1
14:49	0.1	0.2	15:59	0.0	0.0	17:09	0.9	0.2
14:50	0.0	0.2	16:00	0.0	0.0	17:10	0.9	0.3
14:51	0.1	0.2	16:01	0.0	0.0	17:11	0.7	0.3
14:52	0.0	0.1	16:02	0.0	0.0	17:12	0.9	0.4
14:53	0.0	0.1	16:03	0.0	0.0	17:13	1.1	0.5
14:54	0.0	0.1	16:04	0.0	0.0	17:14	1.4	0.7
14:55	0.1	0.1	16:05	0.0	0.0	17:15	1.2	0.8
14:56	0.1	0.1	16:06	0.0	0.0	17:16	1.4	0.9
14:57	0.1	0.1	16:07	0.0	0.0	17:17	0.6	1.0
14:58	0.1	0.1	16:08	0.0	0.0	17:18	1.3	1.0
14:59	0.1	0.1	16:09	0.0	0.0	17:19	0.0	1.0
15:00	0.1	0.1	16:10	0.0	0.0	17:20	0.0	0.9
15:01	0.0	0.1	16:11	0.0	0.0	17:21	3.3	1.1
15:02	0.0	0.1	16:12	0.0	0.0	17:22	0.0	1.0
15:03	0.1	0.1	16:13	0.0	0.0	17:23	0.0	0.9
15:04	0.1	0.1	16:14	0.0	0.0	17:24	0.0	0.8
15:05	0.1	0.1	16:15	0.0	0.0	17:25	0.0	0.7
15:06	0.1	0.1	16:16	0.0	0.0	17:26	0.0	0.5
15:07	0.0	0.1	16:17	0.0	0.0	17:27	0.0	0.5
15:08	0.1	0.1	16:18	0.0	0.0	17:28	0.2	0.4
15:09	0.0	0.1	16:19	0.0	0.0	17:29	0.4	0.4
15:10	0.0	0.1	16:20	0.0	0.0	17:30	0.8	0.5
15:11	0.0	0.1	16:21	0.0	0.0	17:31	1.0	0.2
15:12	0.0	0.1	16:22	0.0	0.0	17:32	1.6	0.4
15:13	0.0	0.0	16:23	0.0	0.0	17:33	2.5	0.7
15:14	0.1	0.0	16:24	0.0	0.0	17:34	1.1	0.8
15:15	0.0	0.0	16:25	0.0	0.0	17:35	1.9	1.0
15:16	0.0	0.0	16:26	0.0	0.0	17:36	2.6	1.2
15:17	0.0	0.0	16:27	0.0	0.0	17:37	0.9	1.3
15:18	0.0	0.0	16:28	0.0	0.0	17:38	4.4	1.7
15:19	0.0	0.0	16:29	0.0	0.0	17:39	3.3	2.0
15:20	0.0	0.0	16:30	0.0	0.0	17:40	1.0	2.0
15:21	0.0	0.0	16:31	0.0	0.0	17:41	0.4	2.0
15:22	0.0	0.0	16:32	0.0	0.0	17:42	0.9	1.9
15:23	0.0	0.0	16:33	0.0	0.0	17:43	0.4	1.7
15:24	0.1	0.0	16:34	0.0	0.0	17:44	0.7	1.6
15:25	0.1	0.0	16:35	0.0	0.0	17:45	0.8	1.5
15:26	0.0	0.0	16:36	0.2	0.0	17:46	1.0	1.4
15:27	0.0	0.0	16:37	0.2	0.0	17:47	1.0	1.4
15:28	0.0	0.0	16:38	0.3	0.1	17:48	0.6	1.0
15:29	0.0	0.0	16:39	0.8	0.2	17:49	0.6	0.7
15:30	0.0	0.0	16:40	1.8	0.3	17:50	0.9	0.7

Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	0.4	0.3	Max	8.6	0.9	Max	4.4	2.0
Avg	0.1	0.1	Avg	0.2	0.0	Avg	0.7	0.8

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 APC Outlet

Test No. 1
November 29, 2022

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
14:30	0.0	
14:31	0.0	
14:32	0.0	
14:33	0.0	
14:34	0.0	
14:35	0.0	
14:36	0.0	
14:37	0.2	
14:38	0.1	
14:39	0.1	0.0
14:40	0.0	0.0
14:41	0.2	0.1
14:42	0.0	0.1
14:43	0.0	0.1
14:44	0.0	0.1
14:45	0.0	0.1
14:46	0.0	0.1
14:47	0.0	0.0
14:48	0.0	0.0
14:49	0.0	0.0
14:50	0.0	0.0
14:51	0.0	0.0
14:52	0.0	0.0
14:53	0.0	0.0
14:54	0.0	0.0
14:55	0.0	0.0
14:56	0.0	0.0
14:57	0.0	0.0
14:58	0.0	0.0
14:59	0.0	0.0
15:00	0.0	0.0
15:01	0.3	0.0
15:02	0.1	0.0
15:03	0.0	0.0
15:04	0.0	0.0
15:05	0.0	0.0
15:06	0.0	0.0
15:07	0.0	0.0
15:08	0.0	0.0
15:09	0.0	0.0
15:10	0.0	0.0
15:11	0.0	0.0
15:12	0.0	0.0
15:13	0.0	0.0
15:14	0.0	0.0
15:15	0.0	0.0
15:16	0.0	0.0
15:17	0.0	0.0
15:18	0.0	0.0
15:19	0.0	0.0
15:20	0.0	0.0
15:21	0.0	0.0
15:22	0.0	0.0
15:23	0.0	0.0
15:24	0.0	0.0
15:25	0.0	0.0
15:26	0.0	0.0
15:27	0.0	0.0
15:28	0.0	0.0
15:29	0.0	0.0
15:30	0.0	0.0
Min	0.0	0.0
Max	0.3	0.1
Avg	0.0	0.0

Test No. 2
November 29, 2022

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
15:40	0.0	
15:41	0.6	
15:42	0.6	
15:43	0.7	
15:44	0.6	
15:45	0.4	
15:46	0.2	
15:47	0.2	
15:48	0.4	
15:49	0.4	0.4
15:50	0.1	0.4
15:51	0.0	0.4
15:52	0.0	0.3
15:53	0.0	0.2
15:54	0.0	0.2
15:55	0.0	0.1
15:56	0.0	0.1
15:57	0.0	0.1
15:58	0.0	0.1
15:59	0.0	0.0
16:00	0.0	0.0
16:01	0.0	0.0
16:02	0.0	0.0
16:03	0.0	0.0
16:04	0.0	0.0
16:05	0.0	0.0
16:06	0.0	0.0
16:07	0.0	0.0
16:08	0.0	0.0
16:09	0.0	0.0
16:10	0.0	0.0
16:11	0.0	0.0
16:12	0.0	0.0
16:13	0.0	0.0
16:14	0.0	0.0
16:15	0.0	0.0
16:16	0.0	0.0
16:17	0.0	0.0
16:18	0.0	0.0
16:19	0.0	0.0
16:20	0.0	0.0
16:21	0.0	0.0
16:22	0.0	0.0
16:23	0.0	0.0
16:24	0.0	0.0
16:25	0.0	0.0
16:26	0.0	0.0
16:27	0.0	0.0
16:28	0.0	0.0
16:29	0.0	0.0
16:30	0.0	0.0
16:31	0.0	0.0
16:32	0.0	0.0
16:33	0.0	0.0
16:34	0.0	0.0
16:35	0.0	0.0
16:36	0.0	0.0
16:37	0.0	0.0
16:38	0.1	0.0
16:39	0.0	0.0
16:40	0.0	0.0
Min	0.0	0.0
Max	0.7	0.4
Avg	0.1	0.0

Test No. 3
November 29, 2022

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
16:50	0.0	
16:51	0.0	
16:52	0.0	
16:53	0.0	
16:54	0.0	
16:55	0.0	
16:56	0.0	
16:57	0.0	
16:58	0.0	
16:59	0.0	0.0
17:00	0.0	0.0
17:01	0.0	0.0
17:02	0.0	0.0
17:03	0.0	0.0
17:04	0.0	0.0
17:05	0.0	0.0
17:06	0.0	0.0
17:07	0.2	0.0
17:08	1.0	0.1
17:09	0.4	0.2
17:10	0.4	0.2
17:11	0.3	0.2
17:12	0.3	0.3
17:13	0.2	0.3
17:14	0.2	0.3
17:15	0.1	0.3
17:16	0.0	0.3
17:17	0.1	0.3
17:18	0.2	0.2
17:19	0.1	0.2
17:20	0.1	0.2
17:21	0.0	0.1
17:22	0.1	0.1
17:23	0.0	0.1
17:24	0.0	0.1
17:25	0.0	0.1
17:26	0.0	0.1
17:27	0.0	0.1
17:28	0.0	0.0
17:29	0.0	0.0
17:30	0.0	0.0
17:31	0.0	0.0
17:32	0.0	0.0
17:33	0.0	0.0
17:34	0.0	0.0
17:35	0.0	0.0
17:36	0.0	0.0
17:37	0.0	0.0
17:38	0.0	0.0
17:39	0.0	0.0
17:40	0.0	0.0
17:41	0.0	0.0
17:42	0.0	0.0
17:43	0.0	0.0
17:44	0.0	0.0
17:45	0.0	0.0
17:46	0.0	0.0
17:47	0.0	0.0
17:48	0.0	0.0
17:49	0.0	0.0
17:50	0.0	0.0
Min	0.0	0.0
Max	1.0	0.3
Avg	0.1	0.1

APPENDIX 27

Dispersion Modelling Results
for the November/December 2022 Testing Program
(19 pages)

TECHNICAL MEMORANDUM

DATE March 1, 2023 **Project No.** 22515701

TO Lydia Kwan
Covanta Durham York Renewable Energy LP

CC Poornitha Suresh

FROM Katherine Armstrong **EMAIL Katherine.Armstrong@wsp.com**

CALPUFF MODELLING FOR NOVEMBER/DECEMBER 2022 COMPLIANCE SOURCE TESTING AT DURHAM YORK ENERGY CENTRE

1.0 INTRODUCTION

Covanta Durham York Renewable Energy LP (Covanta) operates the Durham York Energy Centre (DYEC) under the multi-media Environmental Compliance Approval (ECA) 7306-8FDKNX, as amended. The 2011 ECA application was supported with an Emission Summary and Dispersion Modelling (ESDM) Report prepared by Golder Associates Ltd (now operating as WSP Canada Inc. (WSP)) using the CALPUFF dispersion model version 6.263, with results compared to Ministry of Environment, Conservation and Parks (MECP) Point of Impingement (POI) standards listed in Schedule 3 of Ontario Regulation (O.Reg.) 419/05 as of 2011.

In 2020, MECP requested that the CALPUFF modelling for DYEC be updated to use more recent meteorological data and an updated version of the CALPUFF dispersion model. Following consultation with MECP, including their provisional review and approval of the new meteorological files and updated CALPUFF modelling input files, formal approval was requested in August 2021 under Sections 7 (1) and 13 (1) of O.Reg. 419/05 for use of a specified dispersion model (CALPUFF version 7.2.1) and site-specific meteorological data for the 2014-2018 data period. Formal approval was received in December, 2021.

Condition 7, Testing, Monitoring and Auditing, of the ECA requires annual source testing to be completed at the DYEC for over 100 contaminants as well as assessing the impact of the contaminants. According to the ECA Schedule "E" Source Testing Procedures, a source testing report is required that includes the following:

> *8. (7) the results of dispersion calculations in accordance with the O.Reg. 419/05, indicating the maximum concentration of the test contaminants, at the point of impingement.*
>
> *8. (8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the test contaminants.*

This memorandum summarizes the dispersion calculations/modelling results for the Compliance November/ December 2022 source testing program with the aid of the updated CALPUFF model and other input data sets as used in the 2011 ESDM Report and 2007 Environmental Assessment (EA) and compares the results to O.Reg. 419/05 Schedule 3 limits as last updated April 2018.

2.0 EMISSION RATES

Compliance source testing was completed by Ortech Environmental in November/ December 2022 for each of the two combustion train units and results were provided to WSP on a mass per time basis. Three tests were completed for each unit and averaged. The average emission rates for each unit were then summed together to provide the total stack emission rate of each contaminant to be modelled. Where source testing results indicated that the measured concentration is below the detection limit, the full detection limit was used as the emission rate for conservatism.

Emission rates for which source testing data was available were converted to grams per second (g/s) and are provided in an updated Site-wide Emission Inventory included in Appendix A. This emission inventory includes emissions from silo filling and diesel generator testing taken from the ESDM report, in addition to source test emissions from the main stack.

In response to clarifications provided by the MECP of December 9, 2016, two different emission rates were calculated for Total Particulate Matter:

1. Filterable fraction emission rate only; and
2. Total Particulate Matter (Sum of condensable and filterable fractions).

As source testing for the condensable fraction of total particulate matter is not required pursuant to Schedule “D”: of the ECA, the condensable content of PM_{10} was used.

3.0 MODELLING

In response to an MECP request in 2020, the CALPUFF modelling software and CALMET meteorological data have been updated. The MECP provided formal approval of the meteorological data and modelling input files in December 2021. The following models and pre- and post-processors were used in the assessment:

- CALMET diagnostic meteorological model (v. 6.5.0, level 150223);
- CALPUFF dispersion model (v. 7.2.1, level 150618);
- CALPOST post processor (v. 7.1.0, Level 141010);
- BPIP building downwash pre-processor (v. 04274);
- POSTUTIL post processor (v.7.0.0, Level 150207).

These model versions are updates from those used in the original 2011 ESDM report. Formal approval for their use has been requested under s7(1) and s13(1) of O.Reg. 419/05 and is waiting approval. Dispersion Modelling inputs are described in the following subsections.

3.1 Model Domain

The Model domain used in this assessment was modified slightly from the 2007 Environmental Assessment (EA) and ESDM Report. It extends 40 km by 40 km and is centred approximately 5 km north of the Site. This domain covers more than the air quality study area but will ensure that plumes are tracked beyond the furthest receptor locations to ensure the worst-case ground level concentrations are considered at all receptors.

3.2 Meteorology, Land Use and Terrain Data

The meteorology and terrain data used in this assessment were updated from those used in the 2007 Environmental Assessment (EA) and 2011 ESDM Report.

Meteorological data was updated using observation data from surface stations and large-scale mesoscale meteorological data from the Weather Research and Forecasting (WRF) model between 2014 – 2018, inclusive. The CALMET output files were submitted to MECP for review and approval prior to use in the modelling.

Terrain data was downloaded from the MECP's database of regional terrain data for modelling (MECP, 2017b) and processed using the CALPUFF pre-processor, TERREL.

3.3 Receptors

The receptors used in this assessment are similar to the receptors used in the 2011 ESDM Report but receptors at the edge of the domain were modified slightly to reflect the change in domain size. They include gridded ground level receptors to meet the requirements of O.Reg. 419/05 in addition to 400 discrete receptors to represent locations of interest, which were reviewed and updated in 2021. They include hospitals, nursing homes, schools, daycares, Senior citizen centres, the nearest residential receptors, specific watersheds and water bodies and parks.

3.4 Building Downwash

The buildings used in this assessment to represent building downwash are the same as the buildings used in the ESDM Report. Building wake effects were considered in this assessment using the U.S. EPA's Building Profile Input Program (BPIP-ISC). The inputs into this pre-processor include the coordinates and heights of the buildings and stacks. The output data from BPIP is used in the building wake effect calculations. No changes were made to the BPIP input or output file for this assessment.

3.5 Deposition

CALPUFF has the capability to account for wet and dry deposition of substances that would reduce ground level concentrations at POIs. However, the deposition algorithm has not been implemented for conservatism and to maintain consistency with the ESDM report and the previous EA for maximum POI predictions.

3.6 Thermal Internal Boundary Layer

CALPUFF contains an option to account for sub-grid coastal influences on plume dispersion such as the development of a thermal internal boundary layer (TIBL). Given the proximity of the proposed Facility to Lake Ontario (approximately 500 m) and the grid size (250 m), variations in coastline location within the grid cells near the proposed facility were accounted for in the dispersion modelling. To achieve this, a digitized sub-grid coastline, extending to the boundaries of the air quality study area was included as an additional input. This is consistent with the approach used in the ESDM report.

3.7 Averaging Times and Conversions

CALPUFF can predict 1-hour average values. Many of the relevant Schedule 3 standards are based on a 24-hour averaging time, which is also provided by CALPUFF. Several of the modelled contaminants have averaging periods less than 1 hour. For these contaminants, the 1-hour average concentration was converted using the conversion factors listed in Table 4-1 of Air Dispersion Modelling Guidance for Ontario (ADMGO). For example, the hourly concentrations can be converted to a 10-min average by multiplying the hour value by 1.65. This is consistent with the approach used in the ESDM report.

In 2016, a number of O.Reg 419/05 standards were updated or modified to include annual average Point of Impingement (POI) limits. CALPUFF can predict annual average values, therefore the CALPOST input file was modified to provide this output in addition to outputs for the 1 hour, 24 hour and 30-day averaging periods already provided.

3.8 Chemical Transformation

For the purposes of assessing project contributions to Secondary Particulate Matter (SPM) formation, chemical transformation was considered in the CALPUFF modelling of particulate matter. To model the chemical transformation of emitted NO, NO_2 and SO_2 into HNO_3, NO_3 and SO_4, CALPUFFs RIVAD/ARM3 mechanism was used. Monthly background ozone concentrations are required to generate SPM as well as setting the MCHEM Flag to 3 for particulate matter model runs. The monthly background ozone data used are consistent with the 2007 EA, as requested by MECP, and is summarised below in Table 1.

Table 1: Background Ozone Concentrations used for Chemical Transformation Modelling(1)

Month	Ozone Concentrations (ppb)
January	13.70
February	18.50
March	24.22
April	11.09
May	32.29
June	33.63
July	16.32
August	21.33
September	12.63
October	15.39
November	17.10
December	20.91

1 – Ozone levels from Courtice Road Station (2007-2008)

Chemical transformations were only modelled to calculate additional concentrations of particulate matter that is created as part of secondary transformations. Reported concentrations of NO_2 and SO_2 do not include the effects of depletion due to chemical transformation. The flag MCHEM is set to 0 for model runs used to produce concentrations of all other contaminants. This is consistent with the approach used in the 2011 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 were reviewed in consultation with MECP but are generally consistent with those used in the ESDM Report. In the ESDM report, Exhibit 9 indicated that Puff splitting was used, however this was a typographical error and this option was not actually used in the modelling. To maintain consistency with the ESDM report, puff splitting was not modelled for this assessment.

Table 2: CALPUFF Options and Flags

Flag	Value used in 2011 ESDM Report	Value Used in this Assessment	Comments
MGAUSS	1	1	Vertical distribution used in the near field
MCTADJ	3	3	Terrain adjustment method (3 used for partial plume path adjustment)
MCTSG	0	0	Subgrid-Scale complex terrain flag
MSLUG	0	0	Near-field puffs modelled as elongated
MTRANS	1	1	Transitional Plume Rise modelled
MTIP	1	1	Stack-tip downwash
MBDW	2	2	Method used to simulate building downwash 1 = ISC method; 2 = PRIME method
MSHEAR	0	0	Vertical wind shear modelled above stack top
MSPLIT	0*	0	Puff splitting allowed 0 = No; 1 = Yes ** NB: Value of "1" reported in ESDM Report but value of "0" actually used in ESDM Report modelling*
MCHEM	3 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	3 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	Chemical Transformation Scheme 0 = chemical transformation not modeled 3 = transformation rates computed internally (RIVAD/ARM3 Scheme)
MAQCHEM	0	0	Aqueous phase transformation flag (only used if MCHEM =1 or 3)
MWET	0	0	Wet removal modelled 0 = NO; 1 = Yes

Flag	Value used in 2011 ESDM Report	Value Used in this Assessment	Comments
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.)
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 shoreline
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)	56.79 (UPDATED)	24.25 (UPDATED)	412.06 (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]	47.65	34.65	28.88	1.23	0.17	0.06
Dispersion Factor with meteorological anomaly removal [µg/m³ per g/s]	17.20	12.51	10.42	1.17	0.17	0.06

The average emission rate for each contaminant presented in Appendix A was multiplied by the applicable dispersion factor above to calculate the maximum point of impingement concentration for emissions from the main stack. The modelled POI concentrations were compared to the 2018 Schedule 3 standards listed in O.Reg. 419/05 and in the case of $PM_{2.5}$ and PM_{10}, the Ontario Ambient Air Quality Criteria (AAQC).

The MECP updated the list of standards and guidelines for facilities to assess their emissions against, namely the Air Contaminants Benchmark (ACB) List, dated April 2018, which includes standards and guidelines (Benchmark 1) and screening levels (Benchmark 2). The ACB List is required to be used to assess point of impingement (POI) concentrations of contaminants released into the air.

Contaminants released by the Facility that do not have Benchmark 1 standards or guidelines in the ACB List are considered to be 'Contaminants with No MECP POI Limits'. Where applicable, predicted POI concentrations of Contaminants with No MECP POI Limits were screened against the Benchmark 2 screening levels in the ACB List or the de minimus limit.

The modelled concentrations of all compounds assessed were below their relevant MECP standards. The Emission Summary Table has been updated and is included in Appendix B. It has been modified to include reference to the new ACB List and to meet the requirements of the updated MECP guidance document "Procedure for preparing an Emission Summary and Dispersion Modelling Report" (PIBs 3614e04.1, March 2018). Results are presented both with and without meteorological anomaly removal but only the results with meteorological anomaly removal are presented as a percentage of the relevant limit.

The contaminant with the highest predicted concentration relative to O.Reg. 419/05 standard is Nitrogen Oxides at 11% of the relevant limit.

5.0 SUMMARY OF MODELLING UPDATES

The dispersion modelling for the DYEC was updated to reflect data obtained from Compliance November/December 2022 source testing. A summary of the changes made to the modelling are provided in Table 5, below.

Table 5: ECA Concordance Table

Modelling Inputs	Changes from 2011 ESDM Report
Emission Rates	Updated to use November/December 2022 Source Testing Data. List of contaminants assessed expanded to include all contaminants for which source testing data was performed.
Model and Model Version	Updated model versions in consultation with MECP (See section 3.0)
Meteorology and Terrain data	Updated meteorological and terrain data prepared in consultation with MECP (See Section 3.2)
Receptors	Minor modifications made to receptors located on outskirts of modelling grid to reflect updated domain (See Section 3.3)
Building Downwash	No Change
Deposition	No Change
Chemical Transformations	No Change
Thermal Internal Boundary Layer	No Change
Averaging Times and Conversions	CALPOST input file was modified to generate annual averaging to account for new O.Reg. 419/05 standards introduced in 2016 that include annual averaging periods.
Dispersion Modelling Options	No Change
Background Air Quality Concentrations	Ozone background data used in secondary particulate modelling consistent with the EA.
Emission Summary Table	Updated to include new O.Reg. 419/05 standards introduced after the ECA was approved and contaminants that were not included in the ESDM report but for which source testing data was available.

6.0 CONCLUSIONS

This assessment was completed to document compliance with Condition 8(7) and 8(8) of Schedule E of the ECA for the DYEC. The results of this assessment demonstrate that the Facility is operating in compliance with the POI limits listed in s.20 of O. Reg. 419/05.

7.0 CLOSURE

We trust this memorandum meets your needs at this time. Should you have any questions please contact the undersigned.

WSP Canada Inc.

Poornitha Suresh

K. Armstrong

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Team Lead/Air Quality Modelling and Approvals

PS/KSA/ng

https://golderassociates.sharepoint.com/sites/158498/project files/6 deliverables/fall 2022/final/22515701-tm-rev0 covanta updated modelling memo 1mar2023.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 - Fall 2022 Source Testing Conditions	56.79	138.9	1.7	87.6	(680538, 4860346)	1 – Methylnaphthalene	90-12-0	2.78746E-07	1,24, annual	ST	Above-Average	100%
							1,2,3,4-tetrachlorobenzene	634-66-2	7.76886E-08	1,24, annual	ST	Above-Average	100%
							1,2,3-trichlorobenzene	87-61-6	8.99515E-08	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	120-82-1	3.14571E-07	1,24, annual	ST	Above-Average	100%
							1,2,4,5-Tetrachlorobenzene	95-94-3	1.04441E-07	1,24, annual	ST	Above-Average	100%
							1,2-Dichlorobenzene	95-50-1	1.01278E-06	1,24, annual	ST	Above-Average	100%
							1,2-Dichloroethane	107-06-2	1.62597E-05	1,24, annual	ST	Above-Average	100%
							1,2-Dichloropropane	78-87-5	1.62597E-05	1,24, annual	ST	Above-Average	100%
							1,3,5-trichlorobenzene	108-70-3	9.55801E-08	1,24, annual	ST	Above-Average	100%
							1,3-Butadiene	106-99-0	1.62597E-05	1,24, annual	ST	Above-Average	100%
							1,3-Dichlorobenzene	541-73-1	9.35315E-07	1,24, annual	ST	Above-Average	100%
							1,4-Dichlorobenzene	106-46-7	1.70389E-06	1,24, annual	ST	Above-Average	100%
							1-Methylphenanthrene	832-69-9	2.15639E-07	1,24, annual	ST	Above-Average	100%
							2 – methylnaphthalene	91-57-6	5.22719E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,5-tetrachlorophenol	4901-51-3	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,6-Tetrachlorophenol	58-90-2	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2,3,4-trichlorophenol	15950-66-0	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2,3,5,6-tetrachlorophenol	935-95-5	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2,3,5-trichlorophenol	933-78-8	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2,3,6-trichlorophenol	933-75-5	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2,3-dichlorophenol	576-24-9	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2,4,5-trichlorophenol	95-95-4	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2,4,6-Trichlorophenol	88-06-2	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2,4-Dichlorophenol	120-83-2	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2,6-dichlorophenol	87-65-0	3.88443E-07	1,24, annual	ST	Above-Average	100%
							2-Butanone	78-93-3	1.9512E-05	1,24, annual	ST	Above-Average	100%
							2-Chloronaphthalene	91-58-7	7.76886E-08	1,24, annual	ST	Above-Average	100%
							2-Methylanthracene	613-12-7	2.43685E-07	1,24, annual	ST	Above-Average	100%
							2-monochlorophenol	95-57-8	3.88443E-07	1,24, annual	ST	Above-Average	100%
							3,4,5-trichlorophenol	609-19-8	3.88443E-07	1,24, annual	ST	Above-Average	100%
							3,4-dichlorophenol	95-77-2	3.88443E-07	1,24, annual	ST	Above-Average	100%
							3,5-dichlorophenol	591-35-5	3.88443E-07	1,24, annual	ST	Above-Average	100%
							3-Methylcholanthrene	56-49-5	3.88443E-07	1,24, annual	ST	Above-Average	100%
							3-monochlorophenol	108-43-0	3.88443E-07	1,24, annual	ST	Above-Average	100%
							4-monochlorophenol	106-48-9	3.88443E-07	1,24, annual	ST	Above-Average	100%
							7,12-Dimethylbenzo(a)anthracene	57-97-6	1.27711E-07	1,24, annual	ST	Above-Average	100%
							9,10-Dimethylanthracene	781-43-1	7.76886E-08	1,24, annual	ST	Above-Average	100%
							9-Methylphenanthrene	883-20-5	8.89161E-08	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 [%]
							Acenaphthene	83-32-9	1.32331E-07	1,24, annual	ST	Above-Average	8%
							Acenaphthylene	208-96-8	8.06756E-08	1,24, annual	ST	Above-Average	3%
							Acetaldehyde	75-07-0	0.000107	1,24, annual	ST	Above-Average	93%
							Acetone	67-64-1	0.000258778	1,24, annual	ST	Above-Average	100%
							Acrolein	107-02-8	0.000107	1,24, annual	ST	Above-Average	98%
							Ammonia	7664-41-7	0.0379	1,24, annual	ST	Above-Average	100%
							Anthracene	120-12-7	7.76886E-08	1,24, annual	ST	Above-Average	16%
							Antimony	7440-36-0	1.48354E-06	1,24, annual	ST	Above-Average	100%
							Arsenic	7440-38-2	1.72802E-06	1,24, annual	ST	Above-Average	100%
							Barium	7440-39-3	4.933E-05	1,24, annual	ST	Above-Average	100%
							Benzene	71-43-2	8.71094E-05	1,24, annual	ST	Above-Average	26%
							Benzo(a)anthracene	56-55-3	7.76886E-08	1,24, annual	ST	Above-Average	28%
							Benzo(a)fluorene	238-84-6	7.76886E-08	1,24, annual	ST	Above-Average	100%
							Benzo(a)pyrene	50-32-8	8.79296E-08	1,24, annual	ST	Above-Average	51%
							Benzo(b)fluoranthene	205-99-2	7.76886E-08	1,24, annual	ST	Above-Average	18%
							Benzo(b)fluorene	243-17-4	7.76886E-08	1,24, annual	ST	Above-Average	100%
							Benzo(e)pyrene	192-97-2	1.29876E-07	1,24, annual	ST	Above-Average	100%
							Benzo(g,h,i)perylene	191-24-2	4.46575E-07	1,24, annual	ST	Above-Average	100%
							Benzo(k)fluoranthene	207-08-9	7.76886E-08	1,24, annual	ST	Above-Average	52%
							Beryllium	7440-41-7	1.72802E-06	1,24, annual	ST	Above-Average	100%
							Biphenyl	92-51-3	1.60162E-07	1,24, annual	ST	Above-Average	100%
							Bromodichloromethane	75-27-4	2.01767E-05	1,24, annual	ST	Above-Average	100%
							Bromoform	75-25-2	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Bromomethane	74-83-9	0.000146337	1,24, annual	ST	Above-Average	100%
							Cadmium	7440-43-9	1.77925E-06	1,24, annual	ST	Above-Average	100%
							Carbon Monoxide	630-08-0	0.35487	1,24, annual	ST	Above-Average	58%
							Carbon tetrachloride	56-23-5	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Chlorobenzene	108-90-7	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Chloroform	67-66-3	4.57387E-05	1,24, annual	ST	Above-Average	100%
							Chromium (hexavalent)	18540-29-9	4.21811E-05	1,24, annual	ST	Above-Average	100%
							Chrysene	218-01-9	7.76886E-08	1,24, annual	ST	Above-Average	13%
							Cobalt	7440-48-4	1.87066E-06	1,24, annual	ST	Above-Average	100%
							Copper	7440-50-8	9.01384E-05	1,24, annual	ST	Above-Average	100%
							Coronene	191-07-1	5.74163E-07	1,24, annual	ST	Above-Average	100%
							Cumene (Isopropylbenzene)	98-82-8	3.25194E-05	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,c)anthracene	215-58-7	7.76886E-08	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,e)pyrene	192-65-4	3.88443E-07	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,h)anthracene	53-70-3	7.76886E-08	1,24, annual	ST	Above-Average	41%
							Dibromochloromethane	124-48-1	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Dichlorodifluoromethane	75-71-8	3.25194E-05	1,24, annual	ST	Above-Average	100%
							Dichloroethene, 1,1 -	75-34-3	1.62597E-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 [%]
							Dichloromethane	75-09-2	0.001087957	1,24, annual	ST	Above-Average	100%
							Dioxins, Furans and Dioxin- like PCBs	N/A	0.00017 µg TEQ/s	1,24, annual	ST	Above-Average	100%
							Ethylbenzene	100-41-4	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Ethylene Dibromide	106-93-4	3.25194E-05	1,24, annual	ST	Above-Average	100%
							Fluoranthene	206-44-0	3.25387E-07	1,24, annual	ST	Above-Average	20%
							Fluorides	7664-39-3	0.00417	1,24, annual	ST	Above-Average	100%
							Fluorene	86-73-7	1.19999E-07	1,24, annual	ST	Above-Average	3%
							Formaldehyde	50-00-0	0.00034	1,24, annual	ST	Above-Average	93%
							Hexachlorobenzene	118-74-1	7.76886E-08	1,24, annual	ST	Above-Average	100%
							Hydrogen Chloride	7647-01-0	0.1211	1,24, annual	ST	Above-Average	100%
							Indeno(1,2,3 – cd)pyrene	193-39-5	9.22542E-08	1,24, annual	ST	Above-Average	40%
							Lead	7439-92-1	7.4043E-06	1,24, annual	ST	Above-Average	100%
							M&P-Xylene	179601-23-1	4.87791E-05	1,24, annual	ST	Above-Average	100%
							Mercury	7439-97-6	3.54867E-06	1,24, annual	ST	Above-Average	100%
							Mesitylene (1,3,5-Trimethylbenzene)	108-67-8	3.25194E-05	1,24, annual	ST	Above-Average	100%
							Molybdenum	7439-98-7	0.000286476	1,24, annual	ST	Above-Average	100%
							m-Terphenyl	92-06-8	7.76886E-08	1,24, annual	ST	Above-Average	100%
							Naphthalene	91-20-3	2.71227E-06	1,24, annual	ST	Above-Average	6%
							Nickel	7440-02-0	5.18314E-05	1,24, annual	ST	Above-Average	100%
							Nitrogen Oxides	10102-44-0	4.3963	1,24, annual	ST	Above-Average	44%
							Nitrogen Oxides	10102-44-0	4.3963	1,24, annual	ST	Above-Average	44%
							O-terphenyl	84-15-1	7.76886E-08	1,24, annual	ST	Above-Average	100%
							O-Xylene	95-47-6	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Pentachlorobenzene	608-93-5	7.76886E-08	1,24, annual	ST	Above-Average	100%
							Pentachlorophenol	87-86-5	3.88443E-07	1,24, annual	ST	Above-Average	100%
							Perylene	198-55-0	7.76886E-08	1,24, annual	ST	Above-Average	100%
							Phenanthrene	85-01-8	6.51466E-07	1,24, annual	ST	Above-Average	5%
							Picene	213-46-7	3.88443E-07	1,24, annual	ST	Above-Average	100%
							PM10 (Condensable and Filterable)	N/A	0.14705	1,24, annual	ST	Above-Average	100%
							PM10 (Filterable Only)	N/A	0.01578	1,24, annual	ST	Above-Average	100%
							PM2.5 (Condensable and Filterable)	N/A	0.13963	1,24, annual	ST	Above-Average	100%
							PM2.5 (Filterable Only)	N/A	0.00837	1,24, annual	ST	Above-Average	100%
							Polychlorinated Biphenyls (PCB)	N/A	0.000168938	1,24, annual	ST	Above-Average	100%
							p-Terphenyl	92-94-4	7.76886E-08	1,24, annual	ST	Above-Average	100%
							Pyrene	129-00-0	6.81427E-07	1,24, annual	ST	Above-Average	36%
							Selenium	7782-49-2	8.64009E-06	1,24, annual	ST	Above-Average	100%
							Silver	7440-22-4	1.72802E-06	1,24, annual	ST	Above-Average	100%
							Styrene	100-42-5	3.25194E-05	1,24, annual	ST	Above-Average	100%
							Sulphur Dioxide	7446-09-5	0.01973	1,24, annual	ST	Above-Average	51%
							Tetrachloroethene	127-18-4	2.28616E-05	1,24, annual	ST	Above-Average	100%
							Tetralin	119-64-2	1.07131E-06	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 [%]
							Thallium	7440-28-0	1.72802E-06	1,24, annual	ST	Above-Average	100%
							Toluene	108-88-3	0.0022913	1,24, annual	ST	Above-Average	96%
							Total Chromium (and compounds)	7440-47-3	4.21811E-05	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Condensable and Filterable)	N/A	0.14062	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Filterable Only)	N/A	0.00935	1,24, annual	ST	Above-Average	100%
							trans,1,2-Dichloroethene	156-60-5	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethane, 1,1,1 -	71-55-6	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethene	79-01-6	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethylene, 1,1,2 -	79-01-6	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Trichlorofluoromethane	75-69-4	3.25194E-05	1,24, annual	ST	Above-Average	100%
							Trichlorotrifluoroethane	76-13-1	1.62597E-05	1,24, annual	ST	Above-Average	100%
							Vanadium	7440-62-2	1.05048E-06	1,24, annual	ST	Above-Average	100%
							Vinyl chloride	75-01-4	3.25194E-05	1,24, annual	ST	Above-Average	100%
							Xylenes, m-, p- and o-	1330-20-7	6.50387E-05	1,24, annual	ST	Above-Average	51%
							Zinc	7440-66-6	0.000174763	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 [%]
2	Silo Filling	0.31	Ambient	0.10	5.4864	(680551,4860359)	Total Particulate Matter	N/A	0.010712869	1	EC	Above-Average	14%
							PM_{10}	N/A	0.010712869	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	0.010712869	1	EC	Above-Average	17%
		0.31	Ambient	0.10	4.8768	(680513,4860332)	Total Particulate Matter	N/A	0.010712869	1	EC	Above-Average	14%
							PM_{10}	N/A	0.010712869	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	0.010712869	1	EC	Above-Average	17%
		0.31	Ambient	0.10	3.9624	(680517,4860333)	Total Particulate Matter	N/A	0.010712869	1	EC	Above-Average	14%
							PM_{10}	N/A	0.010712869	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	0.010712869	1	EC	Above-Average	17%
		0.31	Ambient	0.10	12.4	(680537,4860391)	Total Particulate Matter	N/A	0.010712869	1	EC	Above-Average	14%
							PM_{10}	N/A	0.010712869	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	0.010712869	1	EC	Above-Average	17%
3	Stand-by generator	1.16	265.85	0.2	3	(680475,4860419)	Carbon Monoxide	630-08-0	0.255603102	½	EF	Marginal	42%
							Nitrogen Oxides	10102-44-0	1.115358991	½	EF	Marginal	11%
							Sulphur Dioxide	7446-09-5	0.018798446	½	EF	Above-Average	49%
							Total Particulate Matter	N/A	0.032531304	½	EF	Above-Average	43%
							Filterable TSP	N/A	0.02031086	½	EF	Above-Average	100%
							PM_{10}	N/A	0.018771165	½	EF	Above-Average	30%
							$PM_{2.5}$	N/A	0.018771165	½	EF	Above-Average	30%
							Sulphuric Acid	7664-93-9	0.000287851	½	EC	Above-Average	100%
							Benzene	71-43-2	0.000254213	½	EF	Marginal	74%
							Toluene	108-88-3	9.20541E-05	½	EF	Marginal	4%
							Xylenes, m-, p- and o-	1330-20-7	6.32257E-05	½	EF	Marginal	49%
							Propylene	115-07-1	0.000913989	½	EF	Marginal	100%
							Formaldehyde	50-00-0	2.58472E-05	½	EF	Marginal	7%
							Acetaldehyde	75-07-0	8.25538E-06	½	EF	Marginal	7%
							Acrolein	107-02-8	2.58144E-06	½	EF	Marginal	2%
							Naphthalene	91-20-3	4.25873E-05	½	EF	Marginal	94%
							Acenaphthylene	208-96-8	3.0237E-06	½	EF	Marginal	97%
							Acenaphthene	83-32-9	1.53314E-06	½	EF	Marginal	92%
							Fluorene	86-73-7	4.19321E-06	½	EF	Marginal	97%
							Phenanthrene	85-01-8	1.33659E-05	½	EF	Marginal	95%
							Anthracene	120-12-7	4.02941E-07	½	EF	Marginal	84%
							Fluoranthene	206-44-0	1.32021E-06	½	EF	Marginal	80%
							Pyrene	129-00-0	1.21538E-06	½	EF	Marginal	64%
							Benzo(a)anthracene	56-55-3	2.03764E-07	½	EF	Marginal	72%
							Chrysene	218-01-9	5.0122E-07	½	EF	Marginal	87%
							Benzo(b)fluoranthene	205-99-2	3.6363E-07	½	EF	Marginal	82%
							Benzo(k)fluoranthene	207-08-9	7.14156E-08	½	EF	Marginal	48%
							Benzo(a)pyrene	50-32-8	8.41918E-08	½	EF	Marginal	49%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.35624E-07	½	EF	Marginal	60%
							Dibenzo(a,h)anthracene	53-70-3	1.13348E-07	½	EF	Marginal	59%
							Benzo(ghi)perylene	191-24-2	1.82143E-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	2.79E-07	Calpuff	3.41E-07	3.25E-07	24-hour	35.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
1,2,4 – Trichlorobenzene	120-82-1	3.15E-07	Calpuff	3.85E-07	3.67E-07	24-hour	400	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
1,2,4,5-Tetrachlorobenzene	95-94-3	1.04E-07	Calpuff	1.28E-07	1.22E-07	24-hour	1	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
1,2-Dichlorobenzene	95-50-1	1.01E-06	Calpuff	2.92E-05	1.06E-05	1-hour	30500	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
2 – methylnaphthalene	91-57-6	5.23E-07	Calpuff	6.40E-07	6.10E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
2,3,4,6-Tetrachlorophenol	58-90-2	3.88E-07	Calpuff	4.76E-07	4.53E-07	24-hour	0.75	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
2,4,6-Trichlorophenol	88-06-2	3.88E-07	Calpuff	4.76E-07	4.53E-07	24-hour	1.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
2,4-Dichlorophenol	120-83-2	3.88E-07	Calpuff	4.76E-07	4.53E-07	24-hour	33.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
3-Methylcholanthrene	56-49-5	3.88E-07	Calpuff	4.76E-07	4.53E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
7,12-Dimethylbenzo(a)anthracene	57-97-6	1.28E-07	Calpuff	1.56E-07	1.49E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acenaphthene	83-32-9	1.32E-07	Calpuff	1.62E-07	1.54E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acenaphthylene	208-96-8	8.07E-08	Calpuff	9.88E-08	9.41E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acetaldehyde	75-07-0	1.07E-04	Calpuff	1.31E-04	1.25E-04	24-hour	500	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acetaldehyde	75-07-0	1.07E-04	Calpuff	1.31E-04	1.25E-04	24-hour	5000	—	Sch. 6	URT	—	<1%	—	—
Acrolein	107-02-8	1.07E-04	Calpuff	1.31E-04	1.25E-04	24-hour	0.4	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acrolein	107-02-8	1.07E-04	Calpuff	3.09E-03	1.12E-03	1-hour	4.5	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acrolein	107-02-8	1.07E-04	Calpuff	1.31E-04	1.25E-04	24-hour	4	Health	Sch. 6	URT	—	<1%	—	Apr-18
Ammonia	7664-41-7	3.79E-02	Calpuff	4.64E-02	4.42E-02	24-hour	100	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Ammonia	7664-41-7	3.79E-02	Calpuff	4.64E-02	4.42E-02	24-hour	1000	Health	Sch. 6	URT	—	<1%	—	Apr-18
Anthracene	120-12-7	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Antimony	7440-36-0	1.48E-06	Calpuff	1.82E-06	1.73E-06	24-hour	25	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Arsenic	7440-38-2	1.73E-06	Calpuff	2.12E-06	2.02E-06	24-hour	0.3	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Barium	7440-39-3	4.93E-05	Calpuff	6.04E-05	5.76E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Benzene	71-43-2	8.71E-05	Calpuff	4.92E-06	4.92E-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	8.71E-05	Calpuff	1.07E-04	1.02E-04	24-hour	100	Health	Sch. 6	URT/DAV	B1	<1%	—	—
Benzene	71-43-2	8.71E-05	Calpuff	4.92E-06	4.92E-06	Annual	4.5	Health	—	AAV	—	<1%	—	Apr-18
Benzo(a)anthracene	56-55-3	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(a)fluorene	238-84-6	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(a)pyrene	50-32-8	8.79E-08	Calpuff	4.97E-09	4.97E-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	8.79E-08	Calpuff	1.08E-07	1.03E-07	24-hour	0.005	Health	Sch. 6	URT	—	<1%	—	Apr-18
Benzo(a)pyrene	50-32-8	8.79E-08	Calpuff	4.97E-09	4.97E-09	Annual	0.0001	Health	—	AAV	—	<1%	—	Apr-18
Benzo(b)fluoranthene	205-99-2	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(b)fluorene	243-17-4	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(e)pyrene	192-97-2	1.30E-07	Calpuff	1.59E-07	1.52E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(g,h,i)perylene	191-24-2	4.47E-07	Calpuff	5.47E-07	5.21E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(k)fluoranthene	207-08-9	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Beryllium	7440-41-7	1.73E-06	Calpuff	2.12E-06	2.02E-06	24-hour	0.01	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Biphenyl	92-51-3	1.60E-07	Calpuff	1.96E-07	1.87E-07	24-hour	175	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
Bromodichloromethane	75-27-4	2.02E-05	Calpuff	2.47E-05	2.35E-05	24-hour	350	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
Bromoform	75-25-2	1.63E-05	Calpuff	1.99E-05	1.90E-05	24-hour	55	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Bromomethane	74-83-9	1.46E-04	Calpuff	1.79E-04	1.71E-04	24-hour	1350	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Cadmium	7440-43-9	1.78E-06	Calpuff	2.18E-06	2.08E-06	24-hour	0.025	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Cadmium	7440-43-9	1.78E-06	Calpuff	2.18E-06	2.08E-06	24-hour	0.25	Health	Sch. 6	URT	—	<1%	—	Apr-18
Carbon Monoxide	630-08-0	3.55E-01	Calpuff	1.23E+01	4.44E+00	1/2-hour	6000	Health	Sch. 3	Standard	B1	<1%	Note 9	Apr-18
Carbon tetrachloride	56-23-5	1.63E-05	Calpuff	1.99E-05	1.90E-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	1.99E-05	1.90E-05	24-hour	24	Health	Sch. 6	URT	—	<1%	—	Apr-18
Chlorobenzene	108-90-7	1.63E-05	Calpuff	4.70E-04	1.69E-04	1-hour	3500	Health	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Chlorobenzene	108-90-7	1.63E-05	Calpuff	7.75E-04	2.80E-04	10-minute	4500	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Chloroform	67-66-3	4.57E-05	Calpuff	5.60E-05	5.34E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Chloroform	67-66-3	4.57E-05	Calpuff	5.60E-05	5.34E-05	24-hour	100	Health	Sch. 6	URT	—	<1%	—	Apr-18
Chromium (hexavalent)	18540-29-9	4.22E-05	Calpuff	2.38E-06	2.38E-06	Annual	0.00014	Health	Sch. 3	Standard	B1	2%	Notes 11, 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Chromium (hexavalent)	18540-29-9	4.22E-05	Calpuff	5.17E-05	4.92E-05	24-hour	0.07	Health	Sch. 6	URT	—	<1%	—	—
Chrysene	218-01-9	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Cobalt	7440-48-4	1.87E-06	Calpuff	2.29E-06	2.18E-06	24-hour	0.1	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Copper	7440-50-8	9.01E-05	Calpuff	1.10E-04	1.05E-04	24-hour	50	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Dibenzo(a,c)anthracene	215-58-7	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Dibenzo(a,h)anthracene	53-70-3	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Dichlorodifluoromethane	75-71-8	3.25E-05	Calpuff	3.98E-05	3.79E-05	24-hour	500000	Health	Sch. 3	Guideline	B1	<1%	Note 10	Apr-18
Dichloroethene, 1,1 -	75-34-3	1.63E-05	Calpuff	1.99E-05	1.90E-05	24-hour	165	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Dichloroethene, 1,1 -	75-34-3	1.63E-05	Calpuff	1.99E-05	1.90E-05	24-hour	1650	Health	Sch. 6	URT	—	<1%	—	Apr-18
Dichloromethane	75-09-2	1.09E-03	Calpuff	1.33E-03	1.27E-03	24-hour	220	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Dichloromethane	75-09-2	1.09E-03	Calpuff	1.33E-03	1.27E-03	24-hour	22000	Health	Sch. 6	URT	—	<1%	—	Apr-18
Dioxins, Furans and Dioxin- like PCBs	N/A	0.00017 µg TEQ/s	Calpuff	0.00021 pg TEQ/m³	0.0002 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	1.63E-05	Calpuff	1.99E-05	1.90E-05	24-hour	1000	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Ethylbenzene	100-41-4	1.63E-05	Calpuff	7.75E-04	2.80E-04	10-minute	1900	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Ethylbenzene	100-41-4	1.63E-05	Calpuff	1.99E-05	1.90E-05	24-hour	14000	Not Applicable	Sch. 6	URT	—	<1%	—	Apr-18
Ethylene Dibromide	106-93-4	3.25E-05	Calpuff	3.98E-05	3.79E-05	24-hour	3	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Fluoranthene	206-44-0	3.25E-07	Calpuff	3.99E-07	3.80E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Fluorides	7664-39-3	4.17E-03	Calpuff	5.11E-03	4.87E-03	24-hour	0.86	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.17E-03	Calpuff	7.10E-04	7.10E-04	30-day	0.34	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.17E-03	Calpuff	5.11E-03	4.87E-03	24-hour	1.74	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.17E-03	Calpuff	7.10E-04	7.10E-04	30-day	0.69	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.17E-03	Calpuff	5.11E-03	4.87E-03	24-hour	3.44	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.17E-03	Calpuff	7.10E-04	7.10E-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
Fluorene	86-73-7	1.20E-07	Calpuff	1.47E-07	1.40E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Formaldehyde	50-00-0	3.40E-04	Calpuff	4.16E-04	3.97E-04	24-hour	65	Odour & Irritation	Sch. 3	Standard	B1	<1%	—	Apr-18
Hexachlorobenzene	118-74-1	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.011	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Hydrogen Chloride	7647-01-0	1.21E-01	Calpuff	1.48E-01	1.41E-01	24-hour	20	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Hydrogen Chloride	7647-01-0	1.21E-01	Calpuff	1.48E-01	1.41E-01	24-hour	200	Health	Sch. 6	URT	—	<1%	—	Apr-18
Indeno(1,2,3 – cd)pyrene	193-39-5	9.23E-08	Calpuff	1.13E-07	1.08E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Lead	7439-92-1	7.40E-06	Calpuff	9.07E-06	8.64E-06	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	7.40E-06	Calpuff	1.26E-06	1.26E-06	30-day	0.2	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	7.40E-06	Calpuff	9.07E-06	8.64E-06	24-hour	2	Health	Sch. 6	URT	—	<1%	Note 2URT - Note 4, Table 4	Apr-18
Mercury	7439-97-6	3.55E-06	Calpuff	4.35E-06	4.14E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Molybdenum	7439-98-7	2.86E-04	Calpuff	3.51E-04	3.34E-04	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Naphthalene	91-20-3	2.71E-06	Calpuff	3.32E-06	3.16E-06	24-hour	22.5	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Naphthalene	91-20-3	2.71E-06	Calpuff	1.29E-04	4.66E-05	10-minute	50	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Nickel	7440-02-0	5.18E-05	Calpuff	2.93E-06	2.93E-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	5.18E-05	Calpuff	6.35E-05	6.05E-05	24-hour	2	Health	Sch. 6	URT	—	<1%	—	Apr-18
Nickel	7440-02-0	5.18E-05	Calpuff	2.93E-06	2.93E-06	Annual	0.4	Health	—	AAV	—	<1%	—	Apr-18
Nitrogen Oxides	10102-44-0	4.40E+00	Calpuff	5.38E+00	5.13E+00	24-hour	200	Health	Sch. 3	Standard	B1	3%	Notes 2, 17	Apr-18
Nitrogen Oxides	10102-44-0	4.40E+00	Calpuff	1.27E+02	4.58E+01	1-hour	400	Health	Sch. 3	Standard	B1	11%	Notes 2, 17	Apr-18
O-terphenyl	84-15-1	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	—
PM_{10} (Condensable and Filterable)	N/A	1.47E-01	Calpuff	2.87E-01	2.11E-01	24-hour	50	—	—	AAQC	—	<1%	—	—
PM_{10} (Filterable Only)	N/A	1.58E-02	Calpuff	2.41E-01	1.68E-01	24-hour	50	—	—	AAQC	—	<1%	—	—
$PM_{2.5}$ (Condensable and Filterable)	N/A	1.40E-01	Calpuff	2.83E-01	2.05E-01	24-hour	27	—	—	AAQC	—	<1%	—	—
$PM_{2.5}$ (Filterable Only)	N/A	8.37E-03	Calpuff	2.34E-01	1.67E-01	24-hour	27	—	—	AAQC	—	<1%	—	—
Pentachlorobenzene	608-93-5	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	80	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Pentachlorophenol	87-86-5	3.88E-07	Calpuff	4.76E-07	4.53E-07	24-hour	20	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Perylene	198-55-0	7.77E-08	Calpuff	9.51E-08	9.06E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Phenanthrene	85-01-8	6.51E-07	Calpuff	7.98E-07	7.60E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Pyrene	129-00-0	6.81E-07	Calpuff	8.35E-07	7.95E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Selenium	7782-49-2	8.64E-06	Calpuff	1.06E-05	1.01E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Silver	7440-22-4	1.73E-06	Calpuff	2.12E-06	2.02E-06	24-hour	1	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Sulphur Dioxide	7446-09-5	1.97E-02	Calpuff	2.42E-02	2.30E-02	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	1.97E-02	Calpuff	5.70E-01	2.06E-01	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	2.29E-05	Calpuff	2.80E-05	2.67E-05	24-hour	360	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Tetrachloroethene	127-18-4	2.29E-05	Calpuff	2.80E-05	2.67E-05	24-hour	3600	Health	Sch. 6	URT	—	<1%	—	—
Tetralin	119-64-2	1.07E-06	Calpuff	1.31E-06	1.25E-06	24-hour	151.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Thallium	7440-28-0	1.73E-06	Calpuff	2.12E-06	2.02E-06	24-hour	0.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Toluene	108-88-3	2.29E-03	Calpuff	2.81E-03	2.67E-03	24-hour	2000	Not Applicable	Sch. 3	Guideline	B1	<1%	To be updated - Note 5	Apr-18
Total Chromium (and compounds)	7440-47-3	4.22E-05	Calpuff	5.17E-05	4.92E-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	4.22E-05	Calpuff	5.17E-05	4.92E-05	24-hour	5	Health	Sch. 6	URT	—	<1%	—	Apr-18
Total Particulate Matter (Condensable and Filterable)	N/A	1.41E-01	Calpuff	2.84E-01	2.05E-01	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Total Particulate Matter (Filterable only)	N/A	9.35E-03	Calpuff	2.36E-01	1.67E-01	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Trichloroethane, 1,1,1 -	71-55-6	1.63E-05	Calpuff	1.99E-05	1.90E-05	24-hour	115000	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Trichloroethene	79-01-6	1.63E-05	Calpuff	1.99E-05	1.90E-05	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	1.63E-05	Calpuff	1.99E-05	1.90E-05	24-hour	12	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	1.63E-05	Calpuff	1.99E-05	1.90E-05	24-hour	1200	Health	Sch. 6	URT	—	<1%	—	Apr-18
Trichlorofluoromethane	75-69-4	3.25E-05	Calpuff	3.98E-05	3.79E-05	24-hour	6000	Health	Sch. 3	Guideline	B1	<1%	Note 10	Apr-18
Vanadium	7440-62-2	1.05E-06	Calpuff	1.29E-06	1.23E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Vinyl chloride	75-01-4	3.25E-05	Calpuff	3.98E-05	3.79E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Vinyl chloride	75-01-4	3.25E-05	Calpuff	3.98E-05	3.79E-05	24-hour	100	Health	Sch. 6	URT	—	<1%	—	Apr-18
Xylenes, m-, p- and o-	1330-20-7	6.50E-05	Calpuff	7.97E-05	7.59E-05	24-hour	730	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3, 22	Apr-18
Xylenes, m-, p- and o-	1330-20-7	6.50E-05	Calpuff	3.10E-03	1.12E-03	10-minute	3000	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3, 22	Apr-18
Xylenes, m-, p- and o-	1330-20-7	6.50E-05	Calpuff	7.97E-05	7.59E-05	24-hour	7300	Not Applicable	Sch. 6	URT	—	<1%	—	Apr-18
Zinc	7440-66-6	1.75E-04	Calpuff	2.14E-04	2.04E-04	24-hour	120	Particulate	Sch. 3	Standard	B1	<1%	—	Apr-18

Made by: PS
Checked by: KSA

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
29-Nov-22	8:00	9.26	7		0		116		1		1	8
29-Nov-22	9:00	9.09	7		0		111		1		1	8
29-Nov-22	10:00	9.13	6		0		112		1		1	8
29-Nov-22	11:00	9.32	5	6.3	0		107		1		1	8
29-Nov-22	12:00	9.17	7	6.3	0		108		0		1	8
29-Nov-22	13:00	9.10	7	6.3	0		113		0		1	8
29-Nov-22	14:00	9.31	8	6.8	0		107		0		1	8
29-Nov-22	15:00	9.21	8	7.5	0		119		0		1	8
29-Nov-22	16:00	8.91	10	8.3	0		105		0		1	8
29-Nov-22	17:00	9.22	7	8.3	0		116		0		1	8
29-Nov-22	18:00	9.63	13	9.5	0		111		0		1	9
29-Nov-22	19:00	8.94	8	9.5	0		109		0		1	8
29-Nov-22	20:00	8.87	10	9.5	0		111		0		1	8
29-Nov-22	21:00	9.48	9	10.0	0		101		0		1	9
29-Nov-22	22:00	9.62	17	11.0	1		121		1		1	9
29-Nov-22	23:00	9.47	12	12.0	5		104		1		1	9
30-Nov-22	0:00	9.10	7	11.3	2		114		1		1	8
30-Nov-22	1:00	9.16	9	11.3	4		114		1		1	8
30-Nov-22	2:00	9.21	7	8.8	0		111		2		1	8
30-Nov-22	3:00	8.88	7	7.5	0		114		1		1	8
30-Nov-22	4:00	9.33	6	7.3	0		120		1		1	8
30-Nov-22	5:00	8.78	8	7.0	0		118		1		1	8
30-Nov-22	6:00	8.96	14	8.8	5		117		0		1	8
30-Nov-22	7:00	9.44	12	10.0	0	0.7	113	112	2	0.6	1	8
30-Nov-22	8:00	9.16	12	11.5	0	0.7	104	112	1	0.6	1	8
30-Nov-22	9:00	8.66	22	15.0	0	0.7	119	112	0	0.6	1	8
30-Nov-22	10:00	8.53	20	16.5	0	0.7	107	112	0	0.5	1	8
30-Nov-22	11:00	8.54	14	17.0	0	0.7	104	112	0	0.5	1	8
30-Nov-22	12:00	8.51	12	17.0	0	0.7	114	112	0	0.5	1	8
30-Nov-22	13:00	9.03	8	13.5	0	0.7	116	112	0	0.5	1	8
30-Nov-22	14:00	9.02	10	11.0	0	0.7	104	112	0	0.5	1	8
30-Nov-22	15:00	8.94	15	11.3	0	0.7	113	112	0	0.5	1	8
30-Nov-22	16:00	9.03	16	12.3	0	0.7	107	112	0	0.5	1	8
30-Nov-22	17:00	9.22	14	13.8	0	0.7	109	111	0	0.5	1	9
30-Nov-22	18:00	9.47	9	13.5	0	0.7	113	112	0	0.5	1	9
30-Nov-22	19:00	9.72	15	13.5	0	0.7	112	112	0	0.5	1	9
30-Nov-22	20:00	9.54	17	13.8	0	0.7	106	111	0	0.5	1	9
30-Nov-22	21:00	9.29	12	13.3	0	0.7	117	112	0	0.5	1	8
30-Nov-22	22:00	9.24	9	13.3	0	0.7	114	112	0	0.5	1	8
30-Nov-22	23:00	9.56	9	11.8	0	0.5	109	112	0	0.4	1	8
1-Dec-22	0:00	9.20	10	10.0	0	0.4	112	112	0	0.4	1	8
1-Dec-22	1:00	9.08	9	9.3	0	0.2	109	112	0	0.3	0	8
1-Dec-22	2:00	9.25	9	9.3	0	0.2	115	112	1	0.3	0	8
1-Dec-22	3:00	9.18	7	8.8	13	0.8	116	112	0	0.3	0	8
1-Dec-22	4:00	9.13	7	8.0	0	0.8	133	113	0	0.2	0	8
1-Dec-22	5:00	9.28	7	7.5	0	0.8	98	112	0	0.2	0	8
1-Dec-22	6:00	9.13	7	7.0	0	0.5	123	112	2	0.3	0	8
1-Dec-22	7:00	8.99	7	7.0	0	0.5	120	112	1	0.2	0	8
1-Dec-22	8:00	9.55	6	6.8	0	0.5	104	112	1	0.2	0	8
1-Dec-22	9:00	9.13	6	6.5	0	0.5	110	112	1	0.3	0	8
1-Dec-22	10:00	8.98	7	6.5	0	0.5	113	112	1	0.3	0	8
1-Dec-22	11:00	9.13	6	6.3	0	0.5	102	112	1	0.3	0	8
1-Dec-22	12:00	9.23	6	6.3	2	0.6	116	112	1	0.4	0	8
1-Dec-22	13:00	9.05	6	6.3	0	0.6	101	112	1	0.4	0	8
1-Dec-22	14:00	9.27	5	5.8	0	0.6	115	112	1	0.5	0	8
1-Dec-22	15:00	9.46	7	6.0	0	0.6	113	112	1	0.5	0	9
1-Dec-22	16:00	9.41	6	6.0	0	0.6	106	112	1	0.5	0	8
1-Dec-22	17:00	8.94	6	6.0	0	0.6	109	112	0	0.5	0	8
1-Dec-22	18:00	9.32	9	7.0	0	0.6	109	112	0	0.5	0	9
1-Dec-22	19:00	8.90	7	7.0	0	0.6	111	112	0	0.5	0	8
1-Dec-22	20:00	9.28	8	7.5	0	0.6	109	112	0	0.5	0	8
1-Dec-22	21:00	9.29	9	8.3	0	0.6	113	112	0	0.5	0	8
1-Dec-22	22:00	9.27	8	8.0	0	0.6	111	112	0	0.5	0	8
1-Dec-22	23:00	9.27	7	8.0	0	0.6	110	112	0	0.5	0	8
2-Dec-22	0:00	9.13	6	7.5	0	0.6	107	111	0	0.5	0	8
2-Dec-22	1:00	9.18	7	7.0	0	0.6	113	112	0	0.5	0	8
2-Dec-22	2:00	9.24	7	6.8	0	0.6	110	111	1	0.5	0	8
2-Dec-22	3:00	9.26	7	6.8	0	0.1	113	111	0	0.5	0	8
2-Dec-22	4:00	9.10	6	6.8	0	0.1	128	111	0	0.5	0	8
2-Dec-22	5:00	9.01	10	7.5	0	0.1	108	111	0	0.5	0	8
2-Dec-22	6:00	9.76	8	7.8	0	0.1	120	111	1	0.5	0	9
2-Dec-22	7:00	9.21	8	8.0	0	0.1	112	111	1	0.5	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		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
2-Dec-22	8:00	8.90	8	8.5	0	0.1	106	111	0	0.5	0	8
2-Dec-22	9:00	8.75	8	8.0	0	0.1	117	111	0	0.4	0	8
2-Dec-22	10:00	8.46	8	8.0	0	0.1	113	111	0	0.4	0	8
2-Dec-22	11:00	8.80	8	8.0	0	0.1	107	112	0	0.3	0	8
2-Dec-22	12:00	8.65	8	8.0	0	0.0	105	111	0	0.3	0	8
2-Dec-22	13:00	8.80	8	8.0	0	0.0	110	111	0	0.3	0	8
	Min	8.46	5	5.8	0	0	98	111	0	0.2	0	8
	Max	9.76	22	17.0	13	0.8	133	113	2	0.6	1	9
	Avg	9.14	9	9.1	0.4	0.5	112	112	0	0.4	0	8
	Std Dev	0.27	3.4	2.8	1.7	0.2	5.97	0.3	0.6	0.1	0	0.4

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
29-Nov-22	8:00	9.99	10		4		112		5		0	9
29-Nov-22	9:00	9.57	14		0		108		4		0	9
29-Nov-22	10:00	9.67	15		0		111		4		0	9
29-Nov-22	11:00	9.68	14	13.3	0		114		3		0	9
29-Nov-22	12:00	10.11	11	13.5	1		111		4		0	9
29-Nov-22	13:00	10.19	10	12.5	0		116		3		0	9
29-Nov-22	14:00	9.66	16	12.8	0		103		3		0	9
29-Nov-22	15:00	9.29	9	11.5	0		117		3		0	8
29-Nov-22	16:00	9.23	12	11.8	0		113		3		0	8
29-Nov-22	17:00	9.35	13	12.5	0		106		3		0	8
29-Nov-22	18:00	9.21	8	10.5	0		115		4		0	8
29-Nov-22	19:00	9.12	8	10.3	0		110		4		0	8
29-Nov-22	20:00	9.22	10	9.8	0		111		4		0	8
29-Nov-22	21:00	9.56	17	10.8	2		108		3		0	9
29-Nov-22	22:00	9.62	11	11.5	2		104		4		0	9
29-Nov-22	23:00	9.15	7	11.3	0		109		3		0	8
30-Nov-22	0:00	9.27	7	10.5	4		114		4		0	8
30-Nov-22	1:00	9.56	10	8.8	7		103		5		0	9
30-Nov-22	2:00	9.58	9	8.3	0		112		4		0	9
30-Nov-22	3:00	9.50	9	8.8	2		114		3		0	9
30-Nov-22	4:00	9.71	10	9.5	0		109		3		0	9
30-Nov-22	5:00	9.57	15	10.8	0		120		4		0	8
30-Nov-22	6:00	9.51	15	12.3	5		119		5		0	9
30-Nov-22	7:00	9.59	13	13.3	0	1.1	99	111	4	3.7	0	9
30-Nov-22	8:00	9.18	10	13.3	0	1.0	108	111	3	3.6	0	8
30-Nov-22	9:00	8.93	10	12.0	0	1.0	114	111	3	3.6	0	8
30-Nov-22	10:00	9.18	8	10.3	8	1.3	108	111	5	3.6	0	8
30-Nov-22	11:00	9.12	6	8.5	2	1.4	119	111	5	3.7	0	8
30-Nov-22	12:00	8.98	7	7.8	0	1.3	115	111	4	3.7	1	8
30-Nov-22	13:00	8.93	8	7.3	1	1.4	110	111	4	3.8	0	8
30-Nov-22	14:00	9.16	5	6.5	0	1.4	114	111	4	3.8	0	8
30-Nov-22	15:00	9.20	5	6.3	0	1.4	114	111	4	3.8	0	8
30-Nov-22	16:00	9.34	6	6.0	1	1.4	100	111	5	3.9	1	8
30-Nov-22	17:00	9.56	8	6.0	0	1.4	113	111	5	4.0	0	9
30-Nov-22	18:00	9.42	11	7.5	0	1.4	106	111	4	4.0	0	9
30-Nov-22	19:00	9.91	11	9.0	0	1.4	114	111	4	4.0	0	9
30-Nov-22	20:00	9.89	14	11.0	0	1.4	112	111	4	4.0	0	9
30-Nov-22	21:00	9.59	9	11.3	0	1.3	111	111	4	4.0	0	9
30-Nov-22	22:00	9.65	9	10.8	0	1.3	109	111	4	4.0	0	9
30-Nov-22	23:00	9.51	8	10.0	0	1.3	114	111	4	4.1	0	8
1-Dec-22	0:00	9.35	9	8.8	0	1.1	109	111	4	4.1	0	8
1-Dec-22	1:00	9.36	10	9.0	0	0.8	110	111	4	4.0	0	8
1-Dec-22	2:00	9.27	7	8.5	0	0.8	109	111	4	4.0	0	8
1-Dec-22	3:00	9.79	8	8.5	0	0.7	125	112	5	4.1	0	9
1-Dec-22	4:00	9.45	7	8.0	0	0.7	116	112	5	4.2	0	8
1-Dec-22	5:00	9.27	7	7.3	4	0.9	115	112	5	4.3	0	9
1-Dec-22	6:00	9.40	7	7.3	0	0.7	115	112	4	4.2	0	8
1-Dec-22	7:00	9.32	9	7.5	0	0.7	111	112	4	4.2	0	8
1-Dec-22	8:00	9.33	8	7.8	0	0.7	110	112	3	4.2	0	8
1-Dec-22	9:00	9.32	7	7.8	0	0.7	108	112	3	4.2	0	8
1-Dec-22	10:00	9.36	11	8.8	0	0.3	115	112	3	4.1	0	8
1-Dec-22	11:00	9.57	10	9.0	1	0.3	106	112	3	4.0	0	9
1-Dec-22	12:00	9.40	9	9.3	0	0.3	112	112	4	4.0	0	8
1-Dec-22	13:00	9.37	13	10.8	0	0.3	104	111	4	4.0	0	8
1-Dec-22	14:00	9.11	9	10.3	0	0.3	114	111	3	4.0	0	8
1-Dec-22	15:00	9.69	10	10.3	0	0.3	114	111	4	4.0	0	9
1-Dec-22	16:00	9.51	9	10.3	0	0.2	114	112	3	3.9	0	9
1-Dec-22	17:00	9.36	10	9.5	0	0.2	105	112	3	3.8	0	8
1-Dec-22	18:00	9.66	11	10.0	0	0.2	112	112	3	3.8	0	9
1-Dec-22	19:00	9.46	8	9.5	0	0.2	114	112	3	3.8	0	9
1-Dec-22	20:00	9.75	7	9.0	0	0.2	106	112	3	3.7	0	9
1-Dec-22	21:00	9.88	11	9.3	0	0.2	108	111	4	3.7	0	9
1-Dec-22	22:00	9.63	9	8.8	1	0.3	110	112	4	3.7	0	9
1-Dec-22	23:00	9.84	8	8.8	0	0.3	111	111	3	3.7	0	9
2-Dec-22	0:00	9.61	8	9.0	0	0.3	112	112	3	3.6	0	9
2-Dec-22	1:00	9.74	9	8.5	0	0.3	108	111	4	3.6	0	9
2-Dec-22	2:00	9.85	11	9.0	0	0.3	113	112	3	3.6	0	9
2-Dec-22	3:00	9.77	8	9.0	0	0.3	121	111	3	3.5	0	9
2-Dec-22	4:00	9.63	8	9.0	0	0.3	114	111	4	3.5	0	9
2-Dec-22	5:00	9.56	8	8.8	0	0.1	97	111	4	3.4	0	9
2-Dec-22	6:00	9.67	9	8.3	0	0.1	102	110	4	3.4	0	9
2-Dec-22	7:00	9.49	9	8.5	0	0.1	114	110	3	3.4	0	9

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

		BH Outlet										Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
2-Dec-22	8:00	9.35	8	8.5	0	0.1	101	110	3	3.4	0	8
2-Dec-22	9:00	9.47	7	8.3	0	0.1	113	110	3	3.4	0	9
2-Dec-22	10:00	9.16	6	7.5	0	0.1	113	110	3	3.4	0	8
2-Dec-22	11:00	9.08	9	7.5	0	0.0	108	110	3	3.4	0	8
2-Dec-22	12:00	9.01	7	7.3	0	0.0	105	110	3	3.3	0	8
2-Dec-22	13:00	9.04	8	7.5	0	0.0	111	110	4	3.3	0	8
	Min	8.93	5	6.0	0	0	97	110	3	3.3	0	8
	Max	10.19	17	13.5	8	1.4	125	112	5	4.3	1	9
	Avg	9.47	9	9.4	0.6	0.6	111	111	4	3.8	0	9
	Std Dev	0.27	2.5	1.8	1.5	0.5	5.04	0.7	0.7	0.3	0	0.5

Note: All times are Eastern Standard Time