Report No. | 22235

ORTECH
a Kontrol Technologies Company

Report:

Covanta Durham York Renewable Energy Limited Partnership
Durham York Energy Centre 2023 Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX

Date: December 19, 2023



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Revision History

Version	Date	Summary Changes/Purpose of Revision
1	December 19, 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 September 19 and October 4, 2023. 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". 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
2023 Voluntary	April 2023	22230
2023 Compliance	September/October 2023	22235

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 August 2023, 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 (September 19 to September 22, 2023 for Boiler No. 1, and September 20 to September 21 and October 3 to October 4, 2023 for Boiler No. 2) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on September 19 and September 20, 2023 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)*	-	-	-	386	-
Average Combustion Zone Temp. (°C)*	-	-	-	1308	-
Steam (tonnes/day)*	-	-	-	792	-
MSW Combusted (tonnes/day)*	-	-	-	211	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	733	-
Carbon Injection (kg/day)*	-	-	-	128	-
Lime Injection (kg/day)*	-	-	-	3778	-
Filterable Particulate (mg/Rm^3) (1)	0.34	0.78	0.58	0.57	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.44	2.52	<3.88	<3.28	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.16	2.45	<3.69	<3.10	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	0.52	0.47	0.37	0.45	-
Cadmium (µg/Rm^3) (1)	0.025	2.39	0.076	0.83	7
Lead (µg/Rm^3) (1)	0.49	0.58	0.60	0.56	50
Mercury (µg/Rm^3) (1)	<0.090	<0.085	<0.092	<0.089	15
Antimony (µg/Rm^3) (1)	<0.041	0.063	0.095	<0.066	-
Arsenic (µg/Rm^3) (1)	<0.041	<0.041	<0.043	<0.042	-
Barium (µg/Rm^3) (1)	0.33	1.58	0.38	0.77	-
Beryllium (µg/Rm^3) (1)	<0.041	<0.041	<0.043	<0.042	-
Chromium (µg/Rm^3) (1)	1.55	1.77	1.35	1.56	-
Cobalt (µg/Rm^3) (1)	0.055	0.025	<0.043	<0.041	-
Copper (µg/Rm^3) (1)	1.96	2.19	2.06	2.07	-
Molybdenum (µg/Rm^3) (1)	6.74	6.99	6.76	6.83	-
Nickel (µg/Rm^3) (1)	0.94	0.92	1.28	1.05	-
Selenium (µg/Rm^3) (1)	<0.20	0.71	<0.21	<0.37	-
Silver (µg/Rm^3) (1)	<0.041	<0.041	<0.043	<0.042	-
Thallium (µg/Rm^3) (1)	<0.041	<0.041	<0.043	<0.042	-
Vanadium (µg/Rm^3) (1)	<0.020	0.033	0.036	<0.030	-
Zinc (µg/Rm^3) (1)	4.78	6.81	6.86	6.15	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<11.2	<11.9	<9.66	<10.9	60
Total Chlorobenzenes (ng/Rm^3) (1)	<242	<216	<258	<239	-
Total Chlorophenols (ng/Rm^3) (1)	<317	<325	<329	<324	-
Total PAHs (ng/Rm^3) (1)	<197	<344	<201	<247	-
VOCs (µg/Rm^3) (1)	<37.8	<28.5	<27.9	<31.4	-
Aldehydes (µg/Rm^3) (1)	465	347	420	411	-
Total VOCs (µg/Rm^3) (1) (4)	<503	<376	<448	<442	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.7	0.5	0.4	0.5	50

* based on process data provided by Covanta

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

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

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

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

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

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	360	-
Average Combustion Zone Temp. (°C)*	-	-	-	1280	-
Steam (tonnes/day)*	-	-	-	798	-
MSW Combusted (tonnes/day)*	-	-	-	210	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	504	-
Carbon Injection (kg/day)*	-	-	-	127	-
Lime Injection (kg/day)*	-	-	-	3827	-
Filterable Particulate (mg/Rm^3) (1)	0.41	0.50	<0.37	<0.43	9
PM_{10} with Condensable (mg/Rm^3) (1)	<4.86	<3.56	<3.31	<3.91	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<4.59	<3.43	<3.25	<3.76	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.10	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	0.52	0.53	0.49	0.51	-
Cadmium (µg/Rm^3) (1)	0.80	0.021	0.28	0.37	7
Lead (µg/Rm^3) (1)	0.31	0.24	0.21	0.25	50
Mercury (µg/Rm^3) (1)	<0.075	<0.085	<0.089	<0.083	15
Antimony (µg/Rm^3) (1)	<0.043	<0.042	0.062	<0.049	-
Arsenic (µg/Rm^3) (1)	<0.043	<0.042	<0.043	<0.043	-
Barium (µg/Rm^3) (1)	1.49	1.25	1.31	1.35	-
Beryllium (µg/Rm^3) (1)	<0.043	<0.042	<0.043	<0.043	-
Chromium (µg/Rm^3) (1)	0.86	0.84	1.20	0.97	-
Cobalt (µg/Rm^3) (1)	<0.022	<0.021	<0.022	<0.021	-
Copper (µg/Rm^3) (1)	1.63	1.58	1.68	1.63	-
Molybdenum (µg/Rm^3) (1)	7.81	7.23	7.60	7.55	-
Nickel (µg/Rm^3) (1)	0.43	0.53	0.83	0.60	-
Selenium (µg/Rm^3) (1)	0.32	<0.21	0.23	<0.25	-
Silver (µg/Rm^3) (1)	<0.043	<0.042	<0.043	<0.043	-
Thallium (µg/Rm^3) (1)	<0.043	<0.042	<0.043	<0.043	-
Vanadium (µg/Rm^3) (1)	0.031	0.033	0.032	0.032	-
Zinc (µg/Rm^3) (1)	3.78	3.84	3.98	3.87	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<2.92	<2.35	<8.01	<4.43	60
Total Chlorobenzenes (ng/Rm^3) (1)	<238	<265	<290	<264	-
Total Chlorophenols (ng/Rm^3) (1)	NQ	NQ	NQ	NQ	-
Total PAHs (ng/Rm^3) (5)	<192	<617	<481	<430	-
VOCs (µg/Rm^3) (1)	<66.2	<56.1	<50.8	<57.7	-
Aldehydes (µg/Rm^3) (1)	<738	<461	<544	<581	-
Total VOCs (µg/Rm^3) (1) (4)	<804	<517	<595	<639	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.8	0.3	0	0.4	50

* based on process data provided by Covanta

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

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

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

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

(5) Total chlorophenols were not quantifiable (NQ) due to spike recovery loses during the extraction of the samples by the analytical laboratory.

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)	3.5	8.1	13.5	40
	Hydrogen Chloride (mg/Rm^3) (2)	0.7	1.0	1.5	9
	Nitrogen Oxides (mg/Rm^3) (2)	108	109	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0	0	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	6.3	9.9	14.3	40
	Hydrogen Chloride (mg/Rm^3) (2)	3.0	3.1	3.3	9
	Nitrogen Oxides (mg/Rm^3) (2)	110	111	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.03	0.1	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 766 tonnes of steam per day for each Boiler (approximately 94.9% 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 September 19 and October 4, 2023. 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". 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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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
2023 Voluntary	April 2023	22230
2023 Compliance	September/October 2023	22235

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 August 8, 2023, indicating acceptance of the proposed sampling strategy. A copy of the Amended Environmental Compliance Approval, including amendment notices, is also provided in Appendix 3.

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 August 2023, 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 (September 19 to September 22, 2023 for Boiler No. 1, and September 20 to September 21 and October 3 to October 4, 2023 for Boiler No. 2) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on September 19 and September 20, 2023 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. 3 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, impinger outlet and dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

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

4.8 Combustion Gases

In August 2023, 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 September 19, 2023 at 08:00 to September 22, 2023 at 12:00, was used to assess against the in-stack emission limit stated in the ECA for Boiler No. 1. The data measured by the DYEC CEMS, from September 20, 2023 at 08:00 to September 21, 2023 at 16:00 and October 3, 2023 at 08:00 to October 4, 2023 at 12:00, was used to assess against the in-stack emission limit stated in the ECA for Boiler No. 2.

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 September 19 and September 20, 2023. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA.

5. SAMPLE RECOVERY AND ANALYSIS

All sample analysis was performed by ALS Canada Ltd. except for the volatile organic compounds for Boiler No. 2. These samples were analyzed by Bureau Vertias due to instrument issues at ALS (refer to Section 6.5.5 for more details). 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 reports are 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.

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

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

6.3 Emission Testing QA/QC Results

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

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

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

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

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 6.2% 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 87-110%. 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 88-101%. The acceptable limit is 70-130% of the true value.

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

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

Barium, chromium, copper, lead, molybdenum, nickel, vanadium 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 95-96% within the acceptable limit of 90-110% of the true value, except for Fraction 1B. The recovery for Fraction 1B was 76% (86% in the duplicate), however mercury was not detected in this fraction in any of the test samples.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. All of the recovery results were between 87-97%, within the acceptable limit of 85-115% of the true value.

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

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

6.5.2 Acid Gas Sample Analysis QA/QC

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

- All of the hydrogen chloride and hydrogen fluoride analyses were conducted in duplicate. One duplicate sample analysis was also performed for ammonia. The relative percent difference was less than 3.0%, 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, 106% for hydrogen fluoride and 106% 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 96% for hydrogen chloride, 97% 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. The formaldehyde and acetaldehyde data are biased high due to contamination in the BHA media sent to the field. The values reported by the analytical laboratory are not blank corrected but represent maximum possible values. The true concentrations are well below the values reported. The blank spike recoveries for formaldehyde and acetaldehyde are not available due to the high levels of background bias.

The method blank for acrolein is contaminated and not representative of the field samples. Note that the field blank and the BHA reagent blank, show levels of acrolein very similar to the levels in the field samples. 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 (10 µg and 2 µg). The acrolein recovery was 52% and 188% for the 10µg sample, and 15% and 66% for the 2µg sample. The low recoveries may indicate a low bias in the sample data.

Acrolein, formaldehyde and acetaldehyde were detected in quantities similar to the test samples in the BHA solution blank, method blank and blank trains. The test sample data may be biased high 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 90-112% 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 reports for chlorobenzenes, the recoveries of some of the labelled standards were below typical values in some of the test samples, as well as the method blank and the laboratory control sample (LCS). However, the target analyte recoveries are all in control for the LCS and no bias to sample results is expected. The 13C6-chlorobenzene spike was not adequately recovered for the Boiler No. 1 field blank and as a result chlorobenzene has not been reported for this sample.

Per the analytical reports for chlorophenols, the recoveries of some of the labelled extraction standards were below the method control limits, however none of the targets were detected in the samples. The detection limits reported are double the detection limits typically reported by the analytical laboratory (<120 ng vs <60 ng). The emission data is elevated as a result for those compounds reported. For the Boiler No. 2 samples, only mono-chlorphenols were reported by the analytical laboratory. Di- to penta-chlorophenol data could not be reported on the Boiler No. 2 samples due to an absence of recovery on the corresponding extraction standards. The absence of recoveries was confirmed by analysis of a second portion of the combined extract. It was also confirmed that secondary Soxhlet extraction of the solids using toluene did not extract these chlorophenols since a combined DCM and toluene extract also showed the same absence of recoveries.

Low extraction biases on chlorophenols has been observed in the past without acidification of the solids but never to this extreme. There is an absence of an explanation for the different extraction behavior on Boiler No. 2 samples relative to the Boiler No. 1 samples.

Per the analytical reports for PAHs, the recoveries of select labelled extraction standards were below the method control limit, however the reported results are not expected to be biased.

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.

Acetone, benzene, methylene chloride, 2-butanone 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 test sample were between 50 - 135.3%, except for D10-Ethylbenzene for Test No. 2 on Boiler No. 2.

Per the VOST analytical reports, the internal standard and surrogate standards do not appear to have been completely applied to the sample tube for Boiler No. 1 Test No. 3. As a result, the values have been calculated via external calibration and surrogate recoveries have not been reported. The field standard recovery is within the range of typical values, but approximately 30% lower than the other samples. Data for this sample may be considered estimated and could be biased 30% low.

The VOC analysis for Boiler No. 2 was delayed due to instrument issues at the analytical laboratories. The samples for Boiler No. 1 were analyzed by ALS. However, at some point between the Boiler No. 1 testing and Boiler No. 2 testing the ALS instrumentation used for VOC analysis broke down. ALS was unable to provide a timeline for the repair, so ORTECH requested the samples be sent to Bureau Veritas (BV) in Mississauga for analysis. Unfortunately, before the samples could be analyzed the BV instrument also broke down. ORTECH investigated other labs in North America that could analyze the samples and there is only one other lab that does this type of analysis, in the US, but they were unable to accept the samples. BV Labs were able to repair their instrumentation and analyze the samples. While the Boiler No. 2 samples exceeded the standard hold time stated in the test method, the surrogate recoveries generally met the acceptability criteria and the results are consistent with previous testing programs at DYEC.

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 (September 19 to September 22, 2023 for Boiler No. 1, and September 20 to September 21 and October 3 to October 4, 2023 for Boiler No. 2) by the DYEC CEMS. Total hydrocarbon concentrations were also measured at the BH Outlet and Quench Inlet by ORTECH on September 19 and September 20, 2023.

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)	143	143
Moisture by Volume (%)	17.2	17.4
Velocity (m/s)	18.1	17.9
Static Pressure (kPa)	-2.72	-2.75
Absolute Pressure (kPa)	98.5	98.6
Carbon Dioxide by Volume (%)**	10.8	10.7
Oxygen by Volume (%)**	8.21	8.27

* 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)	26.7	26.5
Dry Reference Flowrate (Rm^3/s)**	15.4	15.2
Dry Adjusted Flowrate (Rm^3/s)***	19.8	19.4
Wet Reference Flowrate (Rm^3/s)**	18.6	18.5

* 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)	0.41	<0.32
Dry Reference Conc. (mg/Rm^3)*	0.73	<0.55
Dry Adjusted Conc. (mg/Rm^3)**	0.57	<0.43
Wet Reference Conc. (mg/Rm^3)*	0.60	<0.46
Emission Rate (mg/s)	11.5	<8.39

* 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 (0.57 mg/Rm^3, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (<0.43 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 1.2 mg and 0.8 mg, respectively. The amount of particulate detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 2 BH Outlet was 0.5 mg and 0.7 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)	<0.56	<0.65	<0.43	<0.54
Dry Reference Conc. (mg/Rm^3)*	<0.96	<1.12	<0.74	<0.92
Dry Adjusted Conc. (mg/Rm^3)**	<0.76	<0.89	<0.58	<0.74
Wet Reference Conc. (mg/Rm^3)*	<0.80	<0.93	<0.61	<0.77
Emission Rate (mg/s)	<14.3	<16.9	<10.9	<14.0

* 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)	1.34	1.71	0.53	0.49
Dry Reference Conc. (mg/Rm^3)*	2.30	2.94	0.91	0.84
Dry Adjusted Conc. (mg/Rm^3)**	1.81	2.35	0.71	0.67
Wet Reference Conc. (mg/Rm^3)*	1.91	2.44	0.75	0.69
Emission Rate (mg/s)	34.4	44.3	13.7	12.5

* 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 1.8 mg for the inorganic fraction and 0.7 mg for the organic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 2.2 mg for the inorganic fraction and 0.5 mg for the organic fraction. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the condensable particulate emission data.

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

PM_{10} and $PM_{2.5}$ + Condensable Emission Parameter	PM_{10} + Condensable		$PM_{2.5}$ + Condensable	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<2.42	<2.85	<2.29	<2.73
Dry Reference Conc. (mg/Rm^3)*	<4.17	<4.90	<3.94	<4.70
Dry Adjusted Conc. (mg/Rm^3)**	<3.28	<3.91	<3.10	<3.76
Wet Reference Conc. (mg/Rm^3)*	<3.47	<4.06	<3.28	<3.90
Emission Rate (mg/s)	<62.4	<73.7	<59.0	<70.8

* at 25°C and 1 atmosphere

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

7.5 Acid Gases

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

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

Acid Gases Emission Parameter	Hydrogen Chloride		Hydrogen Fluoride		Ammonia	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (mg/m^3)	3.00	2.06	<0.077	<0.080	0.33	0.39
Dry Reference Conc. (mg/Rm^3)*	5.31	3.55	<0.14	<0.14	0.58	0.67
Dry Adjusted Conc. (mg/Rm^3)**	4.18	2.71	<0.11	<0.11	0.45	0.51
Wet Reference Conc. (mg/Rm^3)*	4.37	2.95	<0.11	<0.11	0.47	0.56
Emission Rate (mg/s)	86.1	53.5	<2.20	<2.08	9.35	10.1
Dry Adjusted Conc. (ppm)**	2.80	1.82	<0.13	<0.13	0.65	0.74

* at 25°C and 1 atmosphere

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

Hydrogen chloride was detected in the blank samples in quantities slightly greater than the detection limit. 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. The data measured by the DYEC CEMS, from September 19, 2023 at 08:00 to September 22, 2023 at 12:00, was used to assess against the in-stack emission limit stated in the ECA for Boiler No. 1. The data measured by the DYEC CEMS, from September 20, 2023 at 08:00 to September 21, 2023 at 16:00 and October 3, 2023 at 08:00 to October 4, 2023 at 12:00, was used to assess against the in-stack emission limit stated in the ECA for Boiler No. 2. 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)	-	9.26	9.56
	Carbon Monoxide (mg/Rm^3, 4-hr)*	≤ 40	13.5	14.3
	Sulphur Dioxide (mg/Rm^3, 24-hr)*	≤ 35	0	0.1
	Nitrogen Oxides (mg/Rm^3, 24-hr)*	≤ 121	111	111
	Hydrogen Chloride (mg/Rm^3, 24-hr)*	≤ 9	1.5	3.3
	Total Hydrocarbons (mg/Rm^3, 1-hr)*	-	1	16
Quench Inlet	Oxygen (%, 1-hr)	≥ 6	7 (minimum)	7 (minimum)

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

Total hydrocarbon concentration data was measured by ORTECH on September 19 and September 20, 2023 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)*	-	0.3	1.6
	Total Hydrocarbons (10-minute)**	-	0.2	1.6
Quench Inlet	Total Hydrocarbons (1-minute)*	-	0.5	0.4
	Total Hydrocarbons (10-minute)**	50	0.5	0.4

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

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

7.7 Metal Emission Data

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

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

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

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

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

The average cadmium emission data is summarized below:

Cadmium Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	0.61	0.28
Dry Reference Conc. (µg/Rm^3)*	1.07	0.48
Dry Adjusted Conc. (µg/Rm^3)**	0.83	0.37
Wet Reference Conc. (µg/Rm^3)*	0.88	0.40
Emission Rate (mg/s)	0.017	0.0072

* at 25°C and 1 atmosphere

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

The average lead emission data is summarized below:

Lead Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	0.41	0.19
Dry Reference Conc. (µg/Rm^3)*	0.71	0.33
Dry Adjusted Conc. (µg/Rm^3)**	0.56	0.25
Wet Reference Conc. (µg/Rm^3)*	0.59	0.27
Emission Rate (mg/s)	0.011	0.0050

* 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)	<0.065	<0.062
Dry Reference Conc. (µg/Rm^3)*	<0.11	<0.11
Dry Adjusted Conc. (µg/Rm^3)**	<0.089	<0.083
Wet Reference Conc. (µg/Rm^3)*	<0.093	<0.090
Emission Rate (mg/s)	<0.0018	<0.0016

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

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

7.9 Semi-Volatile Organic Emission Data

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

7.9.1 Dioxins and Furans Emission Data

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

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

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

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

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

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

Dioxin Congener Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	0.63	0.14
Dry Reference Conc. (ng/Rm^3)*	1.09	0.25
Dry Adjusted Conc. (ng/Rm^3)**	0.84	0.20
Wet Reference Conc. (ng/Rm^3)*	0.90	0.21
Emission Rate (ng/s)	16.7	3.92

* 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)	0.16	0.13
Dry Reference Conc. (ng/Rm^3)*	0.28	0.23
Dry Adjusted Conc. (ng/Rm^3)**	0.22	0.18
Wet Reference Conc. (ng/Rm^3)*	0.23	0.19
Emission Rate (ng/s)	4.35	3.47

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

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

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

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

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

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

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

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

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

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

Total Dioxin and Furan Isomer and PBCs Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (pg TEQ/m^3)	7.56	2.96
Dry Reference Conc. (pg TEQ/Rm^3)*	13.1	5.21
Dry Adjusted Conc. (pg TEQ/Rm^3)**	10.1	4.10
Wet Reference Conc. (pg TEQ/Rm^3)*	10.8	4.27
Emission Rate (ng TEQ/s)	0.20	0.080

* 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)*	<10.9	<4.43

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

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

7.9.2 Chlorobenzene and Chlorophenol Emission Data

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

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

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

The average total chlorobenzene emission data is presented below:

Chlorobenzenes Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<179	<191
Dry Reference Conc. (ng/Rm^3)*	<310	<336
Dry Adjusted Conc. (ng/Rm^3)**	<239	<264
Wet Reference Conc. (ng/Rm^3)*	<256	<276
Emission Rate (µg/s)	<4.76	<5.21

* at 25°C and 1 atmosphere

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

Blank sampling train and laboratory blank analytical results for 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 detection limits reported are double the detection limits typically reported by the analytical laboratory (<120 ng vs <60 ng). The emission data is elevated as a result. For the Boiler No. 2 samples, only mono-chlorphenols were reported by the analytical laboratory. Di- to penta-chlorophenol data could not be reported on the Boiler No. 2 samples due to an absence of recovery on the corresponding extraction standards.

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)	<244	NQ
Dry Reference Conc. (ng/Rm^3)*	<421	NQ
Dry Adjusted Conc. (ng/Rm^3)**	<324	NQ
Wet Reference Conc. (ng/Rm^3)*	<347	NQ
Emission Rate (µg/s)	<6.47	NQ

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
NQ - Not Quantifiable due to spike recovery loses during the extraction of the samples by the analytical laboratory.

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)	<186	<312
Dry Reference Conc. (ng/Rm^3)*	<321	<548
Dry Adjusted Conc. (ng/Rm^3)**	<247	<430
Wet Reference Conc. (ng/Rm^3)*	<265	<450
Emission Rate (µg/s)	<4.94	<8.46

* 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. There were significant levels of PAHs in the Boiler No. 2 blank train. 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.

The formaldehyde and acetaldehyde data are biased high due to contamination in the BHA media provided by the analytical laboratory. The values reported by the analytical laboratory are not blank corrected and represent maximum possible values. The true concentrations are well below the values reported.

The method blank for acrolein was contaminated and not representative of the field samples. Note that the field blank and the BHA reagent blank, show levels of acrolein very similar to the levels in the field samples.

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)	115	190	189	230	3.60	<1.67
Dry Reference Conc. (µg/Rm^3)*	199	334	327	404	6.24	<2.92
Dry Adjusted Conc. (µg/Rm^3)**	154	262	252	317	4.81	<2.29
Wet Reference Conc. (µg/Rm^3)*	164	275	269	333	5.14	<2.41
Emission Rate (mg/s)	3.09	5.23	5.07	6.28	0.097	<0.046

* at 25°C and 1 atmosphere

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

Acetaldehyde, formaldehyde and acrolein detected in both blank samples and the method blank in quantities significantly greater than the detection limit and in quantities similar to or greater than 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. 3 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.

Acetone, benzene, methylene chloride, 2-butanone 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)	<23.4	<41.8
Dry Reference Conc. (µg/Rm^3)*	<40.7	<73.5
Dry Adjusted Conc. (µg/Rm^3)**	<31.4	<57.7
Wet Reference Conc. (µg/Rm^3)*	<33.4	<60.4
Emission Rate (mg/s)	<0.63	<1.15

* 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)*	<573	<814
Dry Adjusted Conc. (µg/Rm^3)**	<442	<639
Emission Rate (mg/s)	<8.89	<12.7

* 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 September/October 2023 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.

The acrolein, acetaldehyde and formaldehyde emission data was not blank corrected for the contamination in the test reagent provided by the analytical laboratory; this is a conservative assumption that overestimates the emissions from the facility. The uncorrected emission data was assessed against appropriate standards and was <1% of the standard with meteorological anomaly removal.

The chlorophenol detection limits reported for Unit No. 1 were double the detection limits typically reported by the analytical laboratory (<120 ng vs <60 ng), which results in elevated emission data for those compounds reported. For the Boiler No. 2 samples, only mono-chlorphenols were reported by the analytical laboratory. Di- to penta-chlorophenol data could not be reported on the Boiler No. 2 samples due to an absence of recovery on the corresponding extraction standards. Historically, chlorophenols have not been detected in quantities greater than the analytical detection limit in either unit. The emission data from Unit No. 1 was doubled to account for the missing Unit No. 2 chlorophenol data and was assessed against appropriate standards 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 September 19 to September 22, 2023 for Boiler No. 1, and September 20 to September 21 and October 3 to October 4, 2023 for Boiler No. 2. A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limit stated in the ECA.

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

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

ORTECH a Kontrol Technologies Company

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

Test Date	Total Power Output* (MWh/d)	Aux. Fuel Combusted** (m^3/d)		Avg. Combustion Zone Temp. (°C)		Steam (tonnes/d)		MSW Combusted*** (tonnes/d)		NO_X Reagent Inj. Rate (liters/d)		Carbon Inj. Rate (kg/d)		Lime Inj. Rate (kg/d)	
		Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
19-Sep-23	387	0	0	1338	-	766	-	217	-	713	-	128	-	3658	-
20-Sep-23	386	0	0	1301	1272	799	797	206	209	661	488	128	127	3818	3827
21-Sep-23	387	0	0	1286	1287	802	798	211	210	776	519	128	127	3823	3828
22-Sep-23	385	0	0	1305	-	802	-	210	-	781	-	128	-	3812	-
03-Oct-23	309	-	0	-	1337	-	799	-	211	-	542	-	126	-	3826
04-Oct-23	358	-	0	-	1347	-	798	-	217	-	480	-	126	-	3846
Average	369	0	0	1308	1280	792	798	211	210	733	504	128	127	3778	3827

* 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 766 tonnes of steam per day for each Boiler (approximately 94.9% 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 August 2023, 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 (September 19 to September 22, 2023 for Boiler No. 1, and September 20 to September 21 and October 3 to October 4, 2023 for Boiler No. 2) 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 September 19 and September 20, 2023 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)*	-	-	-	386	-
Average Combustion Zone Temp. (°C)*	-	-	-	1308	-
Steam (tonnes/day)*	-	-	-	792	-
MSW Combusted (tonnes/day)*	-	-	-	211	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	733	-
Carbon Injection (kg/day)*	-	-	-	128	-
Lime Injection (kg/day)*	-	-	-	3778	-
Filterable Particulate (mg/Rm^3) (1)	0.34	0.78	0.58	0.57	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.44	2.52	<3.88	<3.28	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.16	2.45	<3.69	<3.10	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	0.52	0.47	0.37	0.45	-
Cadmium (µg/Rm^3) (1)	0.025	2.39	0.076	0.83	7
Lead (µg/Rm^3) (1)	0.49	0.58	0.60	0.56	50
Mercury (µg/Rm^3) (1)	<0.090	<0.085	<0.092	<0.089	15
Antimony (µg/Rm^3) (1)	<0.041	0.063	0.095	<0.066	-
Arsenic (µg/Rm^3) (1)	<0.041	<0.041	<0.043	<0.042	-
Barium (µg/Rm^3) (1)	0.33	1.58	0.38	0.77	-
Beryllium (µg/Rm^3) (1)	<0.041	<0.041	<0.043	<0.042	-
Chromium (µg/Rm^3) (1)	1.55	1.77	1.35	1.56	-
Cobalt (µg/Rm^3) (1)	0.055	0.025	<0.043	<0.041	-
Copper (µg/Rm^3) (1)	1.96	2.19	2.06	2.07	-
Molybdenum (µg/Rm^3) (1)	6.74	6.99	6.76	6.83	-
Nickel (µg/Rm^3) (1)	0.94	0.92	1.28	1.05	-
Selenium (µg/Rm^3) (1)	<0.20	0.71	<0.21	<0.37	-
Silver (µg/Rm^3) (1)	<0.041	<0.041	<0.043	<0.042	-
Thallium (µg/Rm^3) (1)	<0.041	<0.041	<0.043	<0.042	-
Vanadium (µg/Rm^3) (1)	<0.020	0.033	0.036	<0.030	-
Zinc (µg/Rm^3) (1)	4.78	6.81	6.86	6.15	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<11.2	<11.9	<9.66	<10.9	60
Total Chlorobenzenes (ng/Rm^3) (1)	<242	<216	<258	<239	-
Total Chlorophenols (ng/Rm^3) (1)	<317	<325	<329	<324	-
Total PAHs (ng/Rm^3) (1)	<197	<344	<201	<247	-
VOCs (µg/Rm^3) (1)	<37.8	<28.5	<27.9	<31.4	-
Aldehydes (µg/Rm^3) (1)	465	347	420	411	-
Total VOCs (µg/Rm^3) (1) (4)	<503	<376	<448	<442	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.7	0.5	0.4	0.5	50

* based on process data provided by Covanta

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

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

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

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

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

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	360	-
Average Combustion Zone Temp. (°C)*	-	-	-	1280	-
Steam (tonnes/day)*	-	-	-	798	-
MSW Combusted (tonnes/day)*	-	-	-	210	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	504	-
Carbon Injection (kg/day)*	-	-	-	127	-
Lime Injection (kg/day)*	-	-	-	3827	-
Filterable Particulate (mg/Rm^3) (1)	0.41	0.50	<0.37	<0.43	9
PM_{10} with Condensable (mg/Rm^3) (1)	<4.86	<3.56	<3.31	<3.91	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<4.59	<3.43	<3.25	<3.76	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.10	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	0.52	0.53	0.49	0.51	-
Cadmium (µg/Rm^3) (1)	0.80	0.021	0.28	0.37	7
Lead (µg/Rm^3) (1)	0.31	0.24	0.21	0.25	50
Mercury (µg/Rm^3) (1)	<0.075	<0.085	<0.089	<0.083	15
Antimony (µg/Rm^3) (1)	<0.043	<0.042	0.062	<0.049	-
Arsenic (µg/Rm^3) (1)	<0.043	<0.042	<0.043	<0.043	-
Barium (µg/Rm^3) (1)	1.49	1.25	1.31	1.35	-
Beryllium (µg/Rm^3) (1)	<0.043	<0.042	<0.043	<0.043	-
Chromium (µg/Rm^3) (1)	0.86	0.84	1.20	0.97	-
Cobalt (µg/Rm^3) (1)	<0.022	<0.021	<0.022	<0.021	-
Copper (µg/Rm^3) (1)	1.63	1.58	1.68	1.63	-
Molybdenum (µg/Rm^3) (1)	7.81	7.23	7.60	7.55	-
Nickel (µg/Rm^3) (1)	0.43	0.53	0.83	0.60	-
Selenium (µg/Rm^3) (1)	0.32	<0.21	0.23	<0.25	-
Silver (µg/Rm^3) (1)	<0.043	<0.042	<0.043	<0.043	-
Thallium (µg/Rm^3) (1)	<0.043	<0.042	<0.043	<0.043	-
Vanadium (µg/Rm^3) (1)	0.031	0.033	0.032	0.032	-
Zinc (µg/Rm^3) (1)	3.78	3.84	3.98	3.87	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<2.92	<2.35	<8.01	<4.43	60
Total Chlorobenzenes (ng/Rm^3) (1)	<238	<265	<290	<264	-
Total Chlorophenols (ng/Rm^3) (1)	NQ	NQ	NQ	NQ	-
Total PAHs (ng/Rm^3) (5)	<192	<617	<481	<430	-
VOCs (µg/Rm^3) (1)	<66.2	<56.1	<50.8	<57.7	-
Aldehydes (µg/Rm^3) (1)	<738	<461	<544	<581	-
Total VOCs (µg/Rm^3) (1) (4)	<804	<517	<595	<639	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.8	0.3	0	0.4	50

* based on process data provided by Covanta

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

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

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

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

(5) Total chlorophenols were not quantifiable (NQ) due to spike recovery loses during the extraction of the samples by the analytical laboratory.

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)	3.5	8.1	13.5	40
	Hydrogen Chloride (mg/Rm^3) (2)	0.7	1.0	1.5	9
	Nitrogen Oxides (mg/Rm^3) (2)	108	109	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0	0	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	6.3	9.9	14.3	40
	Hydrogen Chloride (mg/Rm^3) (2)	3.0	3.1	3.3	9
	Nitrogen Oxides (mg/Rm^3) (2)	110	111	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.03	0.1	35

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

APPENDIX 1

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

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

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	September 19, 2023	8:17	11:29	180
2	September 19, 2023	12:09	15:19	180
3	September 19, 2023	15:23	18:32	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	September 20, 2023	9:03	11:06	120
2	September 20, 2023	13:54	15:59	120
3	September 20, 2023	16:53	18:55	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	September 19, 2023	8:18	9:18	60
2	September 19, 2023	10:01	11:01	60
3	September 19, 2023	11:17	12:17	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	September 21, 2023	8:07	12:14	240
2	September 21, 2023	12:31	16:40	240
3	September 22, 2023	7:52	11:59	240

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

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

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	September 21, 2023	11:20	12:20	60
2	September 21, 2023	12:34	13:34	60
3	September 21, 2023	13:37	14:37	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	September 21, 2023	8:06	8:46	40
2	September 21, 2023	8:52	9:32	40
3	September 21, 2023	9:37	10:17	40
4	September 21, 2023	10:22	11:02	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period		Sampling Time
			Start	Finish	min
BH Outlet	1	September 19, 2023	10:40	11:40	60
BH Outlet	2	September 19, 2023	11:53	12:53	60
BH Outlet	3	September 19, 2023	14:45	15:45	60
Quench Inlet	1	September 19, 2023	10:40	11:40	60
Quench Inlet	2	September 19, 2023	11:53	12:53	60
Quench Inlet	3	September 19, 2023	14:45	15:45	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	0.848	0.992	6.38	3.883	103.0
2	0.848	0.992	6.38	3.768	102.6
3	0.843	1.049	6.35	3.694	101.1

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	0.844	0.963	4.51	1.174	105.7
2	0.844	0.963	4.51	1.175	96.1
3	0.844	0.963	4.51	1.175	99.3

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.843	1.049	6.35	1.237	101.3
2	0.843	1.049	6.35	1.277	103.1
3	0.843	1.049	6.35	1.249	102.4

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	0.992	6.38	4.955	102.5
2	0.843	1.049	6.35	4.834	101.1
3	0.843	1.049	6.35	4.748	101.8

* Dry at 25°C and 1 atmosphere

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

Particulate and Metals Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	144	18.0	19.4	-2.93	97.6	10.8	8.29
2	143	17.5	18.7	-2.93	97.7	10.73	8.17
3	141	17.0	18.5	-2.93	97.7	10.5	8.32
Average	143	17.5	18.9	-2.93	97.7	10.66	8.26

Particle Size Distribution Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	141	16.3	16.5	-2.54	98.7	10.5	8.63
2	144	15.8	18.0	-2.54	98.7	10.8	8.18
3	143	17.7	17.8	-2.54	98.6	10.9	8.10
Average	143	16.6	17.4	-2.54	98.7	10.7	8.30

Acid Gases Trains **

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	142	18.0	18.8	-2.93	97.6	10.6	8.50
2	143	18.4	19.3	-2.93	97.6	10.8	8.19
3	143	17.8	18.8	-2.93	97.6	10.4	8.60
Average	143	18.1	19.0	-2.93	97.6	10.6	8.43

Semi-Volatile Organics Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	144	17.6	18.3	-2.68	99.1	11.0	8.10
2	142	17.6	18.1	-2.68	99.0	10.9	8.07
3	142	17.1	17.5	-2.68	99.2	11.0	8.02
Average	143	17.4	18.0	-2.68	99.1	10.9	8.06

* 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	28.7	16.2	20.6	19.7
2	27.6	15.7	20.2	19.1
3	27.4	15.8	20.0	19.0
Average	27.9	15.9	20.3	19.3

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	24.4	14.3	17.7	17.1
2	26.6	15.6	20.0	18.5
3	26.4	15.1	19.5	18.4
Average	25.8	15.0	19.1	18.0

Acid Gases Trains ***

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.8	15.8	19.8	19.3
2	28.5	16.0	20.6	19.7
3	27.8	15.8	19.6	19.2
Average	28.0	15.9	20.0	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	27.0	15.5	20.1	18.9
2	26.8	15.5	20.1	18.8
3	25.9	15.1	19.7	18.2
Average	26.6	15.4	19.9	18.6

* At 25°C and 1 atmosphere

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

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

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

Test No.	Particulate Collected			Dry Gas Volume Sampled	Actual	Particulate Concentration Dry Reference	Dry Adjusted	Wet Reference	Particulate Emission Rate
	Probe Rinse	Main Filter	Total						
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	1.5	0.2	1.7	3.883	0.25	0.44	0.34	0.36	7.08
2	3.6	0.2	3.8	3.768	0.58	1.01	0.78	0.83	15.9
3	1.9	0.8	2.7	3.694	0.42	0.73	0.58	0.61	11.5
Average					0.41	0.73	0.57	0.60	11.5
Blank	0.8	1.2	2.0						

* 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	<1.20	1.174	<0.60	<1.02	<0.82	<0.85	<14.6
2	0.30	1.175	0.15	0.26	0.20	0.22	3.98
3	<1.10	1.175	<0.54	<0.94	<0.72	<0.77	<14.1
Average			<0.43	<0.74	<0.58	<0.61	<10.9
Blank	0.60						

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	<1.60	1.174	<0.80	<1.36	<1.10	<1.14	<19.5
2	0.40	1.175	0.20	0.34	0.26	0.29	5.31
3	<1.40	1.175	<0.68	<1.19	<0.92	<0.98	<18.0
Average			<0.56	<0.96	<0.76	<0.80	<14.3
Blank	0.80						

* 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				Emission Rate mg/s
			Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	
1	2.7	1.174	1.35	2.30	1.86	1.92	32.9
2	2.4	1.175	1.20	2.04	1.59	1.72	31.9
3	3.0	1.175	1.46	2.55	1.97	2.10	38.6
Average			1.34	2.30	1.81	1.91	34.4
Blank	1.8						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Organic Condensable Particulate Concentration				Emission Rate mg/s
			Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	
1	0.70	1.174	0.35	0.60	0.48	0.50	8.53
2	1.00	1.175	0.50	0.85	0.66	0.72	13.3
3	1.50	1.175	0.73	1.28	0.99	1.05	19.3
Average			0.53	0.91	0.71	0.75	13.7
Blank	0.70						

* At 25 °C and 1 atmosphere

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

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

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Chloride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	6.90	1.237	3.15	5.58	4.39	4.59	90.4
2	6.90	1.277	3.05	5.40	4.25	4.44	87.5
3	6.19	1.249	2.80	4.96	3.90	4.08	80.3
Average			3.00	5.31	4.18	4.37	86.1
Blank	0.235						

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	1.237	<0.078	<0.14	<0.11	<0.11	<2.24
2	<0.171	1.277	<0.076	<0.13	<0.11	<0.11	<2.17
3	<0.168	1.249	<0.076	<0.13	<0.11	<0.11	<2.18
Average			<0.077	<0.14	<0.11	<0.11	<2.20
Blank	<0.105						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Ammonia Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	0.815	1.237	0.37	0.66	0.52	0.54	10.7
2	0.767	1.277	0.34	0.60	0.47	0.49	9.73
3	0.589	1.249	0.27	0.47	0.37	0.39	7.64
Average			0.33	0.58	0.45	0.47	9.35
Blank	<0.142						

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 September 19 to September 22, 2023

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.73	8.23	9.26
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	3	8	20
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	3.5	8.1	13.5
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0	0
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0	0
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	94	109	121
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	108	109	111
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	0	1	3
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	0.7	1.0	1.5
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	1	1
Quench Inlet	Oxygen (%, 1 hr Avg)	7	8	9

Data measured by the ORTECH CEMS on September 19, 2023

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	3.8
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.5	7.8
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	4.2
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.3	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.7	1.5
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.5	1.8
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.4	9.7
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.53	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0.2	0.7	1.2
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.5	1.1
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.4	2.7
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		0.5	

* Reference conditions, dry basis adjusted to 11% oxygen

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

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	1.62	1.62
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.12	<0.05	0.12
Chromium	4.82	2.84	7.66
Cobalt	<0.2	0.27	0.27
Copper	6.86	2.81	9.67
Lead	0.63	1.81	2.44
Mercury *	<0.015	<0.45	<0.45
Molybdenum	33.3	<0.1	33.3
Nickel	2.40	2.25	4.65
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	12.4	11.2	23.6
Total			<85.9

* Includes the permanganate impingers

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	0.30	<0.1	0.30
Arsenic	<1	<0.2	<0.20
Barium	6.34	1.33	7.67
Beryllium	<0.2	<0.1	<0.20
Cadmium	11.5	0.072	11.6
Chromium	7.50	1.06	8.56
Cobalt	<0.2	0.12	0.12
Copper	8.23	2.39	10.6
Lead	0.80	2.04	2.84
Mercury *	<0.015	<0.41	<0.41
Molybdenum	33.8	0.10	33.9
Nickel	3.51	0.96	4.47
Selenium	<2	3.43	3.43
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.16	0.16
Zinc	19.6	13.4	33.0
Total			<118

* Includes the permanganate impingers

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	0.44	<0.1	0.44
Arsenic	<1	<0.2	<0.20
Barium	<5	1.80	1.80
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.25	0.10	0.35
Chromium	4.49	1.82	6.31
Cobalt	<0.2	<0.1	<0.20
Copper	6.23	3.41	9.64
Lead	0.61	2.18	2.79
Mercury *	<0.015	<0.43	<0.43
Molybdenum	31.5	0.11	31.6
Nickel	2.49	3.49	5.98
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.17	0.17
Zinc	15.0	17.1	32.1
Total			<93.6

* Includes the permanganate impingers

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

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

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.029	<0.052	<0.041	<0.042	<0.00083
Arsenic	<0.20	<0.029	<0.052	<0.041	<0.042	<0.00083
Barium	1.62	0.24	0.42	0.33	0.34	0.0068
Beryllium	<0.20	<0.029	<0.052	<0.041	<0.042	<0.00083
Cadmium	0.12	0.018	0.032	0.025	0.026	0.00051
Chromium	7.66	1.11	1.97	1.55	1.62	0.032
Cobalt	0.27	0.040	0.070	0.055	0.058	0.0011
Copper	9.67	1.41	2.49	1.96	2.05	0.040
Lead	2.44	0.36	0.63	0.49	0.52	0.010
Mercury	<0.45	<0.065	<0.11	<0.090	<0.094	<0.0019
Molybdenum	33.3	4.84	8.58	6.74	7.05	0.14
Nickel	4.65	0.68	1.20	0.94	0.98	0.019
Selenium	<1.00	<0.15	<0.26	<0.20	<0.21	<0.0042
Silver	<0.20	<0.029	<0.052	<0.041	<0.042	<0.00083
Thallium	<0.20	<0.029	<0.052	<0.041	<0.042	<0.00083
Vanadium	<0.10	<0.015	<0.026	<0.020	<0.021	<0.00042
Zinc	23.6	3.43	6.08	4.78	5.00	0.098
Total	<85.9	<12.5	<22.1	<17.4	<18.2	<0.36

Dry Gas Volume Sampled (Rm^3*) :	3.883
Actual Flowrate (m^3/s) :	28.7
Dry Reference Flowrate (Rm^3/s*) :	16.2
Dry Adjusted Flowrate (Rm^3/s**) :	20.6
Wet Reference Flowrate (Rm^3/s*) :	19.7

* At 25°C and 1 atmosphere

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

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

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	0.30	0.046	0.080	0.063	0.066	0.0013
Arsenic	<0.20	<0.030	<0.053	<0.041	<0.044	<0.00083
Barium	7.67	1.16	2.04	1.58	1.67	0.032
Beryllium	<0.20	<0.030	<0.053	<0.041	<0.044	<0.00083
Cadmium	11.6	1.75	3.07	2.39	2.52	0.048
Chromium	8.56	1.29	2.27	1.77	1.87	0.036
Cobalt	0.12	0.018	0.032	0.025	0.026	0.00050
Copper	10.6	1.60	2.82	2.19	2.32	0.044
Lead	2.84	0.43	0.75	0.58	0.62	0.012
Mercury	<0.41	<0.062	<0.11	<0.085	<0.089	<0.0017
Molybdenum	33.9	5.12	9.00	6.99	7.40	0.14
Nickel	4.47	0.68	1.19	0.92	0.98	0.019
Selenium	3.43	0.52	0.91	0.71	0.75	0.014
Silver	<0.20	<0.030	<0.053	<0.041	<0.044	<0.00083
Thallium	<0.20	<0.030	<0.053	<0.041	<0.044	<0.00083
Vanadium	0.16	0.024	0.042	0.033	0.035	0.00066
Zinc	33.0	4.98	8.76	6.81	7.20	0.14
Total	<118	<17.8	<31.3	<24.3	<25.7	<0.49

Dry Gas Volume Sampled (Rm^3*) :	3.768
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	20.2
Wet Reference Flowrate (Rm^3/s*) :	19.1

* At 25°C and 1 atmosphere

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

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

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	0.44	0.069	0.12	0.095	0.10	0.0019
Arsenic	<0.20	<0.031	<0.054	<0.043	<0.045	<0.00086
Barium	1.80	0.28	0.49	0.38	0.41	0.0077
Beryllium	<0.20	<0.031	<0.054	<0.043	<0.045	<0.00086
Cadmium	0.35	0.055	0.096	0.076	0.080	0.0015
Chromium	6.31	0.99	1.71	1.35	1.42	0.027
Cobalt	<0.20	<0.031	<0.054	<0.043	<0.045	<0.00086
Copper	9.64	1.50	2.61	2.06	2.17	0.041
Lead	2.79	0.44	0.76	0.60	0.63	0.012
Mercury	<0.43	<0.067	<0.12	<0.092	<0.097	<0.0018
Molybdenum	31.6	4.93	8.56	6.76	7.12	0.14
Nickel	5.98	0.93	1.62	1.28	1.35	0.026
Selenium	<1.00	<0.16	<0.27	<0.21	<0.23	<0.0043
Silver	<0.20	<0.031	<0.054	<0.043	<0.045	<0.00086
Thallium	<0.20	<0.031	<0.054	<0.043	<0.045	<0.00086
Vanadium	0.17	0.027	0.046	0.036	0.038	0.00073
Zinc	32.1	5.01	8.69	6.86	7.23	0.14
Total	<93.6	<14.6	<25.3	<20.0	<21.1	<0.40

Dry Gas Volume Sampled (Rm^3*) :	3.694
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.0

* At 25°C and 1 atmosphere

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

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

Metal	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	<0.029	0.046	0.069	<0.048	42.1
Arsenic	<0.029	<0.030	<0.031	<0.030	3.6
Barium	0.24	1.16	0.28	0.56	93.2
Beryllium	<0.029	<0.030	<0.031	<0.030	3.6
Cadmium	0.018	1.75	0.055	0.61	163
Chromium	1.11	1.29	0.99	1.13	13.7
Cobalt	0.040	0.018	<0.031	<0.030	37.0
Copper	1.41	1.60	1.50	1.50	6.6
Lead	0.36	0.43	0.44	0.41	11.0
Mercury	<0.065	<0.062	<0.067	<0.065	4.1
Molybdenum	4.84	5.12	4.93	4.96	2.8
Nickel	0.68	0.68	0.93	0.76	19.5
Selenium	<0.15	0.52	<0.16	<0.27	77.6
Silver	<0.029	<0.030	<0.031	<0.030	3.6
Thallium	<0.029	<0.030	<0.031	<0.030	3.6
Vanadium	<0.015	0.024	0.027	<0.022	29.2
Zinc	3.43	4.98	5.01	4.47	20.2
Total	<12.5	<17.8	<14.6	<15.0	17.8

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

Metal	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.052	0.080	0.12	<0.084	41.0
Arsenic	<0.052	<0.053	<0.054	<0.053	2.5
Barium	0.42	2.04	0.49	0.98	93.3
Beryllium	<0.052	<0.053	<0.054	<0.053	2.5
Cadmium	0.032	3.07	0.096	1.07	163
Chromium	1.97	2.27	1.71	1.98	14.2
Cobalt	0.070	0.032	<0.054	<0.052	37.4
Copper	2.49	2.82	2.61	2.64	6.3
Lead	0.63	0.75	0.76	0.71	10.1
Mercury	<0.11	<0.11	<0.12	<0.11	3.5
Molybdenum	8.58	9.00	8.56	8.71	2.9
Nickel	1.20	1.19	1.62	1.33	18.5
Selenium	<0.26	0.91	<0.27	<0.48	77.8
Silver	<0.052	<0.053	<0.054	<0.053	2.5
Thallium	<0.052	<0.053	<0.054	<0.053	2.5
Vanadium	<0.026	0.042	0.046	<0.038	28.3
Zinc	6.08	8.76	8.69	7.84	19.5
Total	<22.1	<31.3	<25.3	<26.2	17.7

* 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	<0.041	0.063	0.095	<0.066	41.5
Arsenic	<0.041	<0.041	<0.043	<0.042	2.8
Barium	0.33	1.58	0.38	0.77	92.6
Beryllium	<0.041	<0.041	<0.043	<0.042	2.8
Cadmium	0.025	2.39	0.076	0.83	163
Chromium	1.55	1.77	1.35	1.56	13.4
Cobalt	0.055	0.025	<0.043	<0.041	37.8
Copper	1.96	2.19	2.06	2.07	5.6
Lead	0.49	0.58	0.60	0.56	10.0
Mercury	<0.090	<0.085	<0.092	<0.089	4.3
Molybdenum	6.74	6.99	6.76	6.83	2.0
Nickel	0.94	0.92	1.28	1.05	19.1
Selenium	<0.20	0.71	<0.21	<0.37	77.0
Silver	<0.041	<0.041	<0.043	<0.042	2.8
Thallium	<0.041	<0.041	<0.043	<0.042	2.8
Vanadium	<0.020	0.033	0.036	<0.030	28.4
Zinc	4.78	6.81	6.86	6.15	19.3
Total	<17.4	<24.3	<20.0	<20.6	17.0

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

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

Metal	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.042	0.066	0.10	<0.069	41.7
Arsenic	<0.042	<0.044	<0.045	<0.044	3.1
Barium	0.34	1.67	0.41	0.81	93.0
Beryllium	<0.042	<0.044	<0.045	<0.044	3.1
Cadmium	0.026	2.52	0.080	0.88	163
Chromium	1.62	1.87	1.42	1.64	13.7
Cobalt	0.058	0.026	<0.045	<0.043	37.3
Copper	2.05	2.32	2.17	2.18	6.2
Lead	0.52	0.62	0.63	0.59	10.5
Mercury	<0.094	<0.089	<0.097	<0.093	4.0
Molybdenum	7.05	7.40	7.12	7.19	2.5
Nickel	0.98	0.98	1.35	1.10	19.2
Selenium	<0.21	0.75	<0.23	<0.40	77.4
Silver	<0.042	<0.044	<0.045	<0.044	3.1
Thallium	<0.042	<0.044	<0.045	<0.044	3.1
Vanadium	<0.021	0.035	0.038	<0.031	28.7
Zinc	5.00	7.20	7.23	6.47	19.7
Total	<18.2	<25.7	<21.1	<21.7	17.5

* At 25°C and 1 atmosphere

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

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	<0.00083	0.0013	0.0019	<0.0013	40.2
Arsenic	<0.00083	<0.00083	<0.00086	<0.00084	1.5
Barium	0.0068	0.032	0.0077	0.015	92.3
Beryllium	<0.00083	<0.00083	<0.00086	<0.00084	1.5
Cadmium	0.00051	0.048	0.0015	0.017	163
Chromium	0.032	0.036	0.027	0.032	13.8
Cobalt	0.0011	0.00050	<0.00086	<0.00083	38.8
Copper	0.040	0.044	0.041	0.042	4.9
Lead	0.010	0.012	0.012	0.011	8.6
Mercury	<0.0019	<0.0017	<0.0018	<0.0018	4.5
Molybdenum	0.14	0.14	0.14	0.14	2.2
Nickel	0.019	0.019	0.026	0.021	17.9
Selenium	<0.0042	0.014	<0.0043	<0.0076	76.7
Silver	<0.00083	<0.00083	<0.00086	<0.00084	1.5
Thallium	<0.00083	<0.00083	<0.00086	<0.00084	1.5
Vanadium	<0.00042	0.00066	0.00073	<0.00060	27.1
Zinc	0.098	0.14	0.14	0.12	18.1
Total	<0.36	<0.49	<0.40	<0.42	16.3

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

Metal	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.048	<0.084	<0.066	<0.069	<0.0013
Arsenic	<0.030	<0.053	<0.042	<0.044	<0.00084
Barium	0.56	0.98	0.77	0.81	0.015
Beryllium	<0.030	<0.053	<0.042	<0.044	<0.00084
Cadmium	0.61	1.07	0.83	0.88	0.017
Chromium	1.13	1.98	1.56	1.64	0.032
Cobalt	<0.030	<0.052	<0.041	<0.043	<0.00083
Copper	1.50	2.64	2.07	2.18	0.042
Lead	0.41	0.71	0.56	0.59	0.011
Mercury	<0.065	<0.11	<0.089	<0.093	<0.0018
Molybdenum	4.96	8.71	6.83	7.19	0.14
Nickel	0.76	1.33	1.05	1.10	0.021
Selenium	<0.27	<0.48	<0.37	<0.40	<0.0076
Silver	<0.030	<0.053	<0.042	<0.044	<0.00084
Thallium	<0.030	<0.053	<0.042	<0.044	<0.00084
Vanadium	<0.022	<0.038	<0.030	<0.031	<0.00060
Zinc	4.47	7.84	6.15	6.47	0.12
Total	<15.0	<26.2	<20.6	<21.7	<0.42

* At 25°C and 1 atmosphere

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	47.9	0.80	48.7
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	3.47	0.47	3.94
Cobalt	<0.2	<0.1	<0.20
Copper	2.25	1.71	3.96
Lead	<0.5	0.73	0.73
Mercury *	<0.015	<0.16	<0.16
Molybdenum	18.3	<0.1	18.3
Nickel	1.09	0.29	1.38
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.14	0.14
Zinc	33.7	<3	33.7
Total			<113

* Includes the permanganate impingers.

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

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

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	111	0.013	0.022	0.017	0.018	0.35
Pentachlorodibenzo-p-dioxins	419	0.049	0.085	0.065	0.069	1.31
Hexachlorodibenzo-p-dioxins	1910	0.22	0.39	0.30	0.32	5.97
Heptachlorodibenzo-p-dioxins	2150	0.25	0.43	0.33	0.36	6.73
Octachlorodibenzo-p-dioxin	799	0.093	0.16	0.12	0.13	2.50
Total	5389	0.62	1.09	0.84	0.89	16.9

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	37.5	0.0043	0.0076	0.0058	0.0062	0.12
Pentachlorodibenzofurans	179	0.021	0.036	0.028	0.030	0.56
Hexachlorodibenzofurans	509	0.059	0.10	0.079	0.084	1.59
Heptachlorodibenzofurans	540	0.063	0.11	0.084	0.089	1.69
Octachlorodibenzofuran	181	0.021	0.037	0.028	0.030	0.57
Total	1447	0.17	0.29	0.23	0.24	4.52

Dry Gas Volume Sampled (Rm^3*) :	4.955
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	119	0.014	0.025	0.019	0.020	0.38
Pentachlorodibenzo-p-dioxins	518	0.062	0.11	0.083	0.088	1.66
Hexachlorodibenzo-p-dioxins	1840	0.22	0.38	0.29	0.31	5.90
Heptachlorodibenzo-p-dioxins	2200	0.26	0.46	0.35	0.38	7.05
Octachlorodibenzo-p-dioxin	807	0.097	0.17	0.13	0.14	2.59
Total	5484	0.66	1.13	0.87	0.94	17.6

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	260	0.031	0.054	0.041	0.044	0.83
Pentachlorodibenzofurans	198	0.024	0.041	0.032	0.034	0.63
Hexachlorodibenzofurans	514	0.061	0.11	0.082	0.088	1.65
Heptachlorodibenzofurans	358	0.043	0.074	0.057	0.061	1.15
Octachlorodibenzofuran	196	0.023	0.041	0.031	0.033	0.63
Total	1526	0.18	0.32	0.24	0.26	4.89

Dry Gas Volume Sampled (Rm^3*) :	4.834
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	84.3	0.010	0.018	0.014	0.015	0.27
Pentachlorodibenzo-p-dioxins	411	0.050	0.087	0.066	0.072	1.31
Hexachlorodibenzo-p-dioxins	1700	0.21	0.36	0.27	0.30	5.41
Heptachlorodibenzo-p-dioxins	2000	0.25	0.42	0.32	0.35	6.36
Octachlorodibenzo-p-dioxin	765	0.094	0.16	0.12	0.13	2.43
Total	4960	0.61	1.04	0.80	0.87	15.8

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	4.33	0.00053	0.00091	0.00070	0.00076	0.014
Pentachlorodibenzofurans	80.3	0.0099	0.017	0.013	0.014	0.26
Hexachlorodibenzofurans	492	0.060	0.10	0.079	0.086	1.56
Heptachlorodibenzofurans	384	0.047	0.081	0.062	0.067	1.22
Octachlorodibenzofuran	181	0.022	0.038	0.029	0.032	0.58
Total	1142	0.14	0.24	0.18	0.20	3.63

Dry Gas Volume Sampled (Rm^3*) :	4.748
Actual Flowrate (m^3/s) :	25.9
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	18.2

* At 25°C and 1 atmosphere

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

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

Dioxins

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.013	0.014	0.010	0.012	15.8
Pentachlorodibenzo-p-dioxins	0.049	0.062	0.050	0.054	13.5
Hexachlorodibenzo-p-dioxins	0.22	0.22	0.21	0.22	3.2
Heptachlorodibenzo-p-dioxins	0.25	0.26	0.25	0.25	3.7
Octachlorodibenzo-p-dioxin	0.093	0.097	0.094	0.094	2.1
Total	0.62	0.66	0.61	0.63	3.8

Furans

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.0043	0.031	0.00053	0.012	139
Pentachlorodibenzofurans	0.021	0.024	0.0099	0.018	40.2
Hexachlorodibenzofurans	0.059	0.061	0.060	0.060	2.1
Heptachlorodibenzofurans	0.063	0.043	0.047	0.051	20.4
Octachlorodibenzofuran	0.021	0.023	0.022	0.022	5.6
Total	0.17	0.18	0.14	0.16	13.2

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

Dioxins

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.022	0.025	0.018	0.022	16.2
Pentachlorodibenzo-p-dioxins	0.085	0.11	0.087	0.093	13.5
Hexachlorodibenzo-p-dioxins	0.39	0.38	0.36	0.37	3.9
Heptachlorodibenzo-p-dioxins	0.43	0.46	0.42	0.44	3.9
Octachlorodibenzo-p-dioxin	0.16	0.17	0.16	0.16	2.0
Total	1.09	1.13	1.04	1.09	4.1

Furans

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0076	0.054	0.00091	0.021	139
Pentachlorodibenzofurans	0.036	0.041	0.017	0.031	40.6
Hexachlorodibenzofurans	0.10	0.11	0.10	0.10	1.8
Heptachlorodibenzofurans	0.11	0.074	0.081	0.088	21.0
Octachlorodibenzofuran	0.037	0.041	0.038	0.038	5.3
Total	0.29	0.32	0.24	0.28	13.6

* 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				Coefficient of Variation
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.017	0.019	0.014	0.017	16.5
Pentachlorodibenzo-p-dioxins	0.065	0.083	0.066	0.071	13.7
Hexachlorodibenzo-p-dioxins	0.30	0.29	0.27	0.29	4.2
Heptachlorodibenzo-p-dioxins	0.33	0.35	0.32	0.34	4.2
Octachlorodibenzo-p-dioxin	0.12	0.13	0.12	0.13	2.2
Total	0.84	0.87	0.80	0.84	4.4

Furans

Congener Group	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	%
Tetrachlorodibenzofurans	0.0058	0.041	0.00070	0.016	139
Pentachlorodibenzofurans	0.028	0.032	0.013	0.024	40.8
Hexachlorodibenzofurans	0.079	0.082	0.079	0.080	1.9
Heptachlorodibenzofurans	0.084	0.057	0.062	0.068	21.2
Octachlorodibenzofuran	0.028	0.031	0.029	0.030	5.3
Total	0.23	0.24	0.18	0.22	13.9

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

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

Dioxins

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.018	0.020	0.015	0.018	15.9
Pentachlorodibenzo-p-dioxins	0.069	0.088	0.072	0.077	13.5
Hexachlorodibenzo-p-dioxins	0.32	0.31	0.30	0.31	3.4
Heptachlorodibenzo-p-dioxins	0.36	0.38	0.35	0.36	3.7
Octachlorodibenzo-p-dioxin	0.13	0.14	0.13	0.13	2.1
Total	0.89	0.94	0.87	0.90	3.9

Furans

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0062	0.044	0.00076	0.017	139
Pentachlorodibenzofurans	0.030	0.034	0.014	0.026	40.3
Hexachlorodibenzofurans	0.084	0.088	0.086	0.086	2.0
Heptachlorodibenzofurans	0.089	0.061	0.067	0.073	20.6
Octachlorodibenzofuran	0.030	0.033	0.032	0.032	5.5
Total	0.24	0.26	0.20	0.23	13.3

* 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	0.35	0.38	0.27	0.33	17.5
Pentachlorodibenzo-p-dioxins	1.31	1.66	1.31	1.43	14.3
Hexachlorodibenzo-p-dioxins	5.97	5.90	5.41	5.76	5.4
Heptachlorodibenzo-p-dioxins	6.73	7.05	6.36	6.71	5.2
Octachlorodibenzo-p-dioxin	2.50	2.59	2.43	2.51	3.1
Total	16.9	17.6	15.8	16.7	5.4

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	0.12	0.83	0.014	0.32	139
Pentachlorodibenzofurans	0.56	0.63	0.26	0.48	41.6
Hexachlorodibenzofurans	1.59	1.65	1.56	1.60	2.7
Heptachlorodibenzofurans	1.69	1.15	1.22	1.35	21.7
Octachlorodibenzofuran	0.57	0.63	0.58	0.59	5.7
Total	4.52	4.89	3.63	4.35	14.9

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

Dioxins

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	0.012	0.022	0.017	0.018	0.33
Pentachlorodibenzo-p-dioxins	0.054	0.093	0.071	0.077	1.43
Hexachlorodibenzo-p-dioxins	0.22	0.37	0.29	0.31	5.76
Heptachlorodibenzo-p-dioxins	0.25	0.44	0.34	0.36	6.71
Octachlorodibenzo-p-dioxin	0.094	0.16	0.13	0.13	2.51
Total	0.63	1.09	0.84	0.90	16.7

Furans

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	0.012	0.021	0.016	0.017	0.32
Pentachlorodibenzofurans	0.018	0.031	0.024	0.026	0.48
Hexachlorodibenzofurans	0.060	0.10	0.080	0.086	1.60
Heptachlorodibenzofurans	0.051	0.088	0.068	0.073	1.35
Octachlorodibenzofuran	0.022	0.038	0.030	0.032	0.59
Total	0.16	0.28	0.22	0.23	4.35

* 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	<2.6	<1.9
Pentachlorodibenzo-p-dioxins	<2.2	<2.0
Hexachlorodibenzo-p-dioxins	<2.1	<1.4
Heptachlorodibenzo-p-dioxins	<2.4	<1.7
Octachlorodibenzo-p-dioxin	<8.9	6.55
Total	<18.2	<13.6

Furans

Congener Group	Blank Train pg	Method Blank pg
Tetrachlorodibenzofurans	<1.9	<1.6
Pentachlorodibenzofurans	<1.7	<1.5
Hexachlorodibenzofurans	<1.7	<1.1
Heptachlorodibenzofurans	<2.1	<1.7
Octachlorodibenzofuran	<4.3	8.34
Total	<11.7	<14.2

"<" 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	<2.2	<0.25	<0.44	<0.34	<0.36	<0.0069
12378-pentachlorodibenzo-p-dioxin	<7.9	<0.92	<1.59	<1.23	<1.31	<0.025
123478-hexachlorodibenzo-p-dioxin	49.8	5.77	10.1	7.75	8.24	0.16
123678-hexachlorodibenzo-p-dioxin	112	13.0	22.6	17.4	18.5	0.35
123789-hexachlorodibenzo-p-dioxin	40.8	4.73	8.23	6.35	6.75	0.13
1234678-heptachlorodibenzo-p-dioxin	1000	116	202	156	166	3.13
Octachlorodibenzo-p-dioxin	799	92.6	161	124	132	2.50
2378-tetrachlorodibenzofuran	<3.0	<0.35	<0.61	<0.47	<0.50	<0.0094
12378-pentachlorodibenzofuran	<8.4	<0.97	<1.70	<1.31	<1.39	<0.026
23478-pentachlorodibenzofuran	24.0	2.78	4.84	3.74	3.97	0.075
123478-hexachlorodibenzofuran	<33.0	<3.82	<6.66	<5.14	<5.46	<0.10
123678-hexachlorodibenzofuran	47.4	5.49	9.57	7.38	7.85	0.15
234678-hexachlorodibenzofuran	85.5	9.91	17.3	13.3	14.2	0.27
123789-hexachlorodibenzofuran	<18.0	<2.09	<3.63	<2.80	<2.98	<0.056
1234678-heptachlorodibenzofuran	275	31.9	55.5	42.8	45.5	0.86
1234789-heptachlorodibenzofuran	52.5	6.08	10.6	8.17	8.69	0.16
Octachlorodibenzofuran	181	21.0	36.5	28.2	30.0	0.57
PCB 81	<6.4	<0.74	<1.29	<1.00	<1.06	<0.020
PCB 77	91.8	10.6	18.5	14.3	15.2	0.29
PCB 123	39.1	4.53	7.89	6.09	6.47	0.12
PCB 118	2490	288	503	388	412	7.79
PCB 114	64.0	7.41	12.9	9.96	10.6	0.20
PCB 105	601	69.6	121	93.5	99.5	1.88
PCB 126	<8.0	<0.93	<1.61	<1.25	<1.32	<0.025
PCB 167	20.2	2.34	4.08	3.14	3.34	0.063
PCB 156/157	60.8	7.04	12	9.46	10.1	0.19
PCB 169	<8.0	<0.93	<1.61	<1.25	<1.32	<0.025
PCB 189	<16	<1.85	<3.23	<2.49	<2.65	<0.050
Total Dioxins & Furans Only	<2740	<317	<553	<426	<453	<8.57
Total PCBs Only	<3405	<395	<687	<530	<564	<10.7
Total Dioxins & Furans and PCBs	<6145	<712	<1240	<956	<1017	<19.2

Dry Gas Volume Sampled (Rm³*) :	4.955
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<2.8	<0.34	<0.58	<0.45	<0.48	<0.0090
12378-pentachlorodibenzo-p-dioxin	9.08	1.09	1.88	1.45	1.55	0.029
123478-hexachlorodibenzo-p-dioxin	54.3	6.50	11.2	8.66	9.26	0.17
123678-hexachlorodibenzo-p-dioxin	107	12.8	22.1	17.1	18.2	0.34
123789-hexachlorodibenzo-p-dioxin	43.2	5.17	8.94	6.89	7.37	0.14
1234678-heptachlorodibenzo-p-dioxin	1020	122	211	163	174	3.27
Octachlorodibenzo-p-dioxin	807	96.6	167	129	138	2.59
2378-tetrachlorodibenzofuran	<12	<1.44	<2.48	<1.91	<2.05	<0.038
12378-pentachlorodibenzofuran	10.7	1.28	2.21	1.71	1.82	0.034
23478-pentachlorodibenzofuran	24.6	2.94	5.09	3.92	4.20	0.079
123478-hexachlorodibenzofuran	<30	<3.59	<6.21	<4.79	<5.12	<0.096
123678-hexachlorodibenzofuran	46.8	5.60	9.68	7.47	7.98	0.15
234678-hexachlorodibenzofuran	86.0	10.3	17.8	13.7	14.7	0.28
123789-hexachlorodibenzofuran	22.0	2.63	4.55	3.51	3.75	0.071
1234678-heptachlorodibenzofuran	264	31.6	54.6	42.1	45.0	0.85
1234789-heptachlorodibenzofuran	<51	<6.10	<10.6	<8.14	<8.70	<0.16
Octachlorodibenzofuran	196	23.5	40.5	31.3	33.4	0.63
PCB 81	<28	<3.35	<5.79	<4.47	<4.78	<0.090
PCB 77	629	75.3	130	100	107	2.02
PCB 123	350	41.9	72.4	55.8	59.7	1.12
PCB 118	23800	2848	4923	3797	4059	76.3
PCB 114	593	70.9	123	94.6	101	1.90
PCB 105	6640	794	1374	1059	1132	21.3
PCB 126	32.1	3.84	6.64	5.12	5.47	0.10
PCB 167	134	16.0	27.7	21.4	22.9	0.43
PCB 156/157	356	42.6	73.6	56.8	60.7	1.14
PCB 169	15.8	1.89	3.27	2.52	2.69	0.051
PCB 189	<16	<1.91	<3.31	<2.55	<2.73	<0.051
Total Dioxins & Furans Only	<2786	<333	<576	<445	<475	<8.93
Total PCBs Only	<32594	<3900	<6743	<5200	<5559	<105
Total Dioxins & Furans and PCBs	<35380	<4233	<7319	<5644	<6034	<113

Dry Gas Volume Sampled (Rm³*) :	4.834
Actual Flowrate (m³/s) :	26.8
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<2.0	<0.25	<0.42	<0.32	<0.35	<0.0064
12378-pentachlorodibenzo-p-dioxin	<5.9	<0.72	<1.24	<0.95	<1.03	<0.019
123478-hexachlorodibenzo-p-dioxin	38.8	4.76	8.17	6.26	6.78	0.12
123678-hexachlorodibenzo-p-dioxin	94.6	11.6	19.9	15.3	16.5	0.30
123789-hexachlorodibenzo-p-dioxin	36.7	4.51	7.73	5.92	6.41	0.12
1234678-heptachlorodibenzo-p-dioxin	913	112	192	147	160	2.90
Octachlorodibenzo-p-dioxin	765	93.9	161	123	134	2.43
2378-tetrachlorodibenzofuran	<3.7	<0.45	<0.78	<0.60	<0.65	<0.012
12378-pentachlorodibenzofuran	<4.9	<0.60	<1.03	<0.79	<0.86	<0.016
23478-pentachlorodibenzofuran	<15	<1.84	<3.16	<2.42	<2.62	<0.048
123478-hexachlorodibenzofuran	27.3	3.35	5.75	4.41	4.77	0.087
123678-hexachlorodibenzofuran	38.6	4.74	8.13	6.23	6.75	0.12
234678-hexachlorodibenzofuran	79.0	9.70	16.6	12.8	13.8	0.25
123789-hexachlorodibenzofuran	22.1	2.71	4.65	3.57	3.86	0.070
1234678-heptachlorodibenzofuran	246	30.2	51.8	39.7	43.0	0.78
1234789-heptachlorodibenzofuran	53.1	6.52	11.2	8.57	9.28	0.17
Octachlorodibenzofuran	181	22.2	38.1	29.2	31.6	0.58
PCB 81	<6.2	<0.76	<1.31	<1.00	<1.08	<0.020
PCB 77	72.0	8.84	15.2	11.6	12.6	0.23
PCB 123	<19	<2.33	<4.00	<3.07	<3.32	<0.060
PCB 118	1930	237	406	312	337	6.14
PCB 114	<44	<5.40	<9.27	<7.10	<7.69	<0.14
PCB 105	586	72.0	123	94.6	102	1.86
PCB 126	<5.7	<0.70	<1.20	<0.92	<1.00	<0.018
PCB 167	<19	<2.33	<4.00	<3.07	<3.32	<0.060
PCB 156/157	60.1	7.38	12.7	9.70	10.5	0.19
PCB 169	<8.1	<0.99	<1.71	<1.31	<1.42	<0.026
PCB 189	14.9	1.83	3.14	2.41	2.60	0.047
Total Dioxins & Furans Only	<2527	<310	<532	<408	<442	<8.04
Total PCBs Only	<2765	<340	<582	<446	<483	<8.79
Total Dioxins & Furans and PCBs	<5292	<650	<1115	<854	<925	<16.8

Dry Gas Volume Sampled (Rm³*) :	4.748
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.7
Wet Reference Flowrate (Rm³/s*) :	18.2

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.25	<0.34	<0.25	<0.28	17.7
12378-pentachlorodibenzo-p-dioxin	<0.92	1.09	<0.72	<0.91	19.9
123478-hexachlorodibenzo-p-dioxin	5.77	6.50	4.76	5.68	15.3
123678-hexachlorodibenzo-p-dioxin	13.0	12.8	11.6	12.5	5.9
123789-hexachlorodibenzo-p-dioxin	4.73	5.17	4.51	4.80	7.0
1234678-heptachlorodibenzo-p-dioxin	116	122	112	117	4.3
Octachlorodibenzo-p-dioxin	92.6	96.6	93.9	94.4	2.1
2378-tetrachlorodibenzofuran	<0.35	<1.44	<0.45	<0.75	80.4
12378-pentachlorodibenzofuran	<0.97	1.28	<0.60	<0.95	35.7
23478-pentachlorodibenzofuran	2.78	2.94	<1.84	<2.52	23.6
123478-hexachlorodibenzofuran	<3.82	<3.59	3.35	<3.59	6.6
123678-hexachlorodibenzofuran	5.49	5.60	4.74	5.28	8.9
234678-hexachlorodibenzofuran	9.91	10.3	9.70	9.97	3.0
123789-hexachlorodibenzofuran	<2.09	2.63	2.71	<2.48	13.8
1234678-heptachlorodibenzofuran	31.9	31.6	30.2	31.2	2.8
1234789-heptachlorodibenzofuran	6.08	<6.10	6.52	6.23	4.0
Octachlorodibenzofuran	21.0	23.5	22.2	22.2	5.6
PCB 81	<0.74	<3.35	<0.76	<1.62	92.8
PCB 77	10.6	75.3	8.84	31.6	120
PCB 123	4.53	41.9	<2.33	<16.2	137
PCB 118	288	2848	237	1124	133
PCB 114	7.41	70.9	<5.40	<27.9	133
PCB 105	69.6	794	72.0	312	134
PCB 126	<0.93	3.84	<0.70	<1.82	96.1
PCB 167	2.34	16.0	<2.33	<6.90	115
PCB 156/157	7.04	42.6	7.38	19.0	107
PCB 169	<0.93	1.89	<0.99	<1.27	42.3
PCB 189	<1.85	<1.91	1.83	<1.87	2.3
Total Dioxins & Furans Only	<317	<333	<310	<320	3.7
Total PCBs Only	<395	<3900	<340	<1545	132
Total Dioxins & Furans and PCBs	<712	<4233	<650	<1865	110

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

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

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.44	<0.58	<0.42	<0.48	17.7
12378-pentachlorodibenzo-p-dioxin	<1.59	1.88	<1.24	<1.57	20.3
123478-hexachlorodibenzo-p-dioxin	10.05	11.2	8.17	9.82	15.7
123678-hexachlorodibenzo-p-dioxin	22.6	22.1	19.9	21.6	6.6
123789-hexachlorodibenzo-p-dioxin	8.23	8.94	7.73	8.30	7.3
1234678-heptachlorodibenzo-p-dioxin	202	211	192	202	4.6
Octachlorodibenzo-p-dioxin	161	167	161	163	2.0
2378-tetrachlorodibenzofuran	<0.61	<2.48	<0.78	<1.29	80.5
12378-pentachlorodibenzofuran	<1.70	2.21	<1.03	<1.65	36.0
23478-pentachlorodibenzofuran	4.84	5.09	<3.16	<4.36	24.1
123478-hexachlorodibenzofuran	<6.66	<6.21	5.75	<6.21	7.3
123678-hexachlorodibenzofuran	9.57	9.68	8.13	9.13	9.5
234678-hexachlorodibenzofuran	17.3	17.8	16.6	17.2	3.3
123789-hexachlorodibenzofuran	<3.63	4.55	4.65	<4.28	13.1
1234678-heptachlorodibenzofuran	55.5	54.6	51.8	54.0	3.6
1234789-heptachlorodibenzofuran	10.6	<10.6	11.2	10.8	3.3
Octachlorodibenzofuran	36.5	40.5	38.1	38.4	5.3
PCB 81	<1.29	<5.79	<1.31	<2.80	92.8
PCB 77	18.5	130	15.2	54.6	120
PCB 123	7.89	72.4	<4.00	<28.1	137
PCB 118	503	4923	406	1944	133
PCB 114	12.9	123	<9.27	<48.3	133
PCB 105	121	1374	123	539	134
PCB 126	<1.61	6.64	<1.20	<3.15	96.1
PCB 167	4.08	27.7	<4.00	<11.9	115
PCB 156/157	12	73.6	12.7	32.9	108
PCB 169	<1.61	3.27	<1.71	<2.20	42.3
PCB 189	<3.23	<3.31	3.14	<3.23	2.7
Total Dioxins & Furans Only	<553	<576	<532	<554	4.0
Total PCBs Only	<687	<6743	<582	<2671	132
Total Dioxins & Furans and PCBs	<1240	<7319	<1115	<3225	110

* At 25°C and 1 atmosphere

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

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

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.34	<0.45	<0.32	<0.37	18.0
12378-pentachlorodibenzo-p-dioxin	<1.23	1.45	<0.95	<1.21	20.5
123478-hexachlorodibenzo-p-dioxin	7.75	8.66	6.26	7.56	16.0
123678-hexachlorodibenzo-p-dioxin	17.4	17.1	15.3	16.6	7.0
123789-hexachlorodibenzo-p-dioxin	6.35	6.89	5.92	6.39	7.6
1234678-heptachlorodibenzo-p-dioxin	156	163	147	155	4.9
Octachlorodibenzo-p-dioxin	124	129	123	126	2.2
2378-tetrachlorodibenzofuran	<0.47	<1.91	<0.60	<0.99	80.6
12378-pentachlorodibenzofuran	<1.31	1.71	<0.79	<1.27	36.2
23478-pentachlorodibenzofuran	3.74	3.92	<2.42	<3.36	24.4
123478-hexachlorodibenzofuran	<5.14	<4.79	4.41	<4.78	7.6
123678-hexachlorodibenzofuran	7.38	7.47	6.23	7.02	9.8
234678-hexachlorodibenzofuran	13.3	13.7	12.8	13.3	3.7
123789-hexachlorodibenzofuran	<2.80	3.51	3.57	<3.29	13.0
1234678-heptachlorodibenzofuran	42.8	42.1	39.7	41.5	3.9
1234789-heptachlorodibenzofuran	8.17	<8.14	8.57	8.29	2.9
Octachlorodibenzofuran	28.2	31.3	29.2	29.6	5.3
PCB 81	<1.00	<4.47	<1.00	<2.15	92.9
PCB 77	14.3	100	11.6	42.1	120
PCB 123	6.09	55.8	<3.07	<21.7	137
PCB 118	388	3797	312	1499	133
PCB 114	9.96	94.6	<7.10	<37.2	134
PCB 105	93.5	1059	94.6	416	134
PCB 126	<1.25	5.12	<0.92	<2.43	96.2
PCB 167	3.14	21.4	<3.07	<9.20	115
PCB 156/157	9.46	56.8	9.70	25.3	108
PCB 169	<1.25	2.52	<1.31	<1.69	42.5
PCB 189	<2.49	<2.55	2.41	<2.48	3.0
Total Dioxins & Furans Only	<426	<445	<408	<426	4.3
Total PCBs Only	<530	<5200	<446	<2059	132
Total Dioxins & Furans and PCBs	<956	<5644	<854	<2485	110

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

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

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

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.36	<0.48	<0.35	<0.40	17.7
12378-pentachlorodibenzo-p-dioxin	<1.31	1.55	<1.03	<1.30	20.0
123478-hexachlorodibenzo-p-dioxin	8.24	9.26	6.78	8.09	15.4
123678-hexachlorodibenzo-p-dioxin	18.5	18.2	16.5	17.8	6.1
123789-hexachlorodibenzo-p-dioxin	6.75	7.37	6.41	6.84	7.1
1234678-heptachlorodibenzo-p-dioxin	166	174	160	166	4.4
Octachlorodibenzo-p-dioxin	132	138	134	135	2.1
2378-tetrachlorodibenzofuran	<0.50	<2.05	<0.65	<1.06	80.4
12378-pentachlorodibenzofuran	<1.39	1.82	<0.86	<1.36	35.8
23478-pentachlorodibenzofuran	3.97	4.20	<2.62	<3.60	23.7
123478-hexachlorodibenzofuran	<5.46	<5.12	4.77	<5.12	6.8
123678-hexachlorodibenzofuran	7.85	7.98	6.75	7.52	9.0
234678-hexachlorodibenzofuran	14.2	14.7	13.8	14.2	3.1
123789-hexachlorodibenzofuran	<2.98	3.75	3.86	<3.53	13.6
1234678-heptachlorodibenzofuran	45.5	45.0	43.0	44.5	3.0
1234789-heptachlorodibenzofuran	8.69	<8.70	9.28	8.89	3.8
Octachlorodibenzofuran	30.0	33.4	31.6	31.7	5.5
PCB 81	<1.06	<4.78	<1.08	<2.31	92.7
PCB 77	15.2	107	12.6	45.0	120
PCB 123	6.47	59.7	<3.32	<23.2	137
PCB 118	412	4059	337	1603	133
PCB 114	10.6	101	<7.69	<39.8	133
PCB 105	99.5	1132	102	445	134
PCB 126	<1.32	5.47	<1.00	<2.60	96.1
PCB 167	3.34	22.9	<3.32	<9.84	115
PCB 156/157	10.1	60.7	10.5	27.1	107
PCB 169	<1.32	2.69	<1.42	<1.81	42.3
PCB 189	<2.65	<2.73	2.60	<2.66	2.4
Total Dioxins & Furans Only	<453	<475	<442	<457	3.7
Total PCBs Only	<564	<5559	<483	<2202	132
Total Dioxins & Furans and PCBs	<1017	<6034	<925	<2659	110

* At 25°C and 1 atmosphere

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

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

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.0069	<0.0090	<0.0064	<0.0074	18.7
12378-pentachlorodibenzo-p-dioxin	<0.025	0.029	<0.019	<0.024	21.5
123478-hexachlorodibenzo-p-dioxin	0.16	0.17	0.12	0.15	17.0
123678-hexachlorodibenzo-p-dioxin	0.35	0.34	0.30	0.33	8.1
123789-hexachlorodibenzo-p-dioxin	0.13	0.14	0.12	0.13	8.5
1234678-heptachlorodibenzo-p-dioxin	3.13	3.27	2.90	3.10	6.0
Octachlorodibenzo-p-dioxin	2.50	2.59	2.43	2.51	3.1
2378-tetrachlorodibenzofuran	<0.0094	<0.038	<0.012	<0.020	81.3
12378-pentachlorodibenzofuran	<0.026	0.034	<0.016	<0.025	37.0
23478-pentachlorodibenzofuran	0.075	0.079	<0.048	<0.067	25.3
123478-hexachlorodibenzofuran	<0.10	<0.096	0.087	<0.095	8.6
123678-hexachlorodibenzofuran	0.15	0.15	0.12	0.14	10.9
234678-hexachlorodibenzofuran	0.27	0.28	0.25	0.26	4.7
123789-hexachlorodibenzofuran	<0.056	0.071	0.070	<0.066	12.4
1234678-heptachlorodibenzofuran	0.86	0.85	0.78	0.83	5.0
1234789-heptachlorodibenzofuran	0.16	<0.16	0.17	0.17	1.8
Octachlorodibenzofuran	0.57	0.63	0.58	0.59	5.7
PCB 81	<0.020	<0.090	<0.020	<0.043	93.5
PCB 77	0.29	2.02	0.23	0.84	120
PCB 123	0.12	1.12	<0.060	<0.43	137
PCB 118	7.79	76.3	6.14	30.1	133
PCB 114	0.20	1.90	<0.14	<0.75	134
PCB 105	1.88	21.3	1.86	8.34	134
PCB 126	<0.025	0.10	<0.018	<0.049	96.7
PCB 167	0.063	0.43	<0.060	<0.18	115
PCB 156/157	0.19	1.14	0.19	0.51	108
PCB 169	<0.025	0.051	<0.026	<0.034	43.2
PCB 189	<0.050	<0.051	0.047	<0.050	4.0
Total Dioxins & Furans Only	<8.57	<8.93	<8.04	<8.51	5.3
Total PCBs Only	<10.7	<105	<8.79	<41.3	132
Total Dioxins & Furans and PCBs	<19.2	<113	<16.8	<49.8	111

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

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

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.28	<0.48	<0.37	<0.40	<0.0074
12378-pentachlorodibenzo-p-dioxin	<0.91	<1.57	<1.21	<1.30	<0.024
123478-hexachlorodibenzo-p-dioxin	5.68	9.82	7.56	8.09	0.15
123678-hexachlorodibenzo-p-dioxin	12.5	21.6	16.6	17.8	0.33
123789-hexachlorodibenzo-p-dioxin	4.80	8.30	6.39	6.84	0.13
1234678-heptachlorodibenzo-p-dioxin	117	202	155	166	3.10
Octachlorodibenzo-p-dioxin	94.4	163	126	135	2.51
2378-tetrachlorodibenzofuran	<0.75	<1.29	<0.99	<1.06	<0.020
12378-pentachlorodibenzofuran	<0.95	<1.65	<1.27	<1.36	<0.025
23478-pentachlorodibenzofuran	<2.52	<4.36	<3.36	<3.60	<0.067
123478-hexachlorodibenzofuran	<3.59	<6.21	<4.78	<5.12	<0.095
123678-hexachlorodibenzofuran	5.28	9.13	7.02	7.52	0.14
234678-hexachlorodibenzofuran	9.97	17.2	13.3	14.2	0.26
123789-hexachlorodibenzofuran	<2.48	<4.28	<3.29	<3.53	<0.066
1234678-heptachlorodibenzofuran	31.2	54.0	41.5	44.5	0.83
1234789-heptachlorodibenzofuran	6.23	10.8	8.29	8.89	0.17
Octachlorodibenzofuran	22.2	38.4	29.6	31.7	0.59
PCB 81	<1.62	<2.80	<2.15	<2.31	<0.043
PCB 77	31.6	54.6	42.1	45.0	0.84
PCB 123	<16.2	<28.1	<21.7	<23.2	<0.43
PCB 118	1124	1944	1499	1603	30.1
PCB 114	<27.9	<48.3	<37.2	<39.8	<0.75
PCB 105	312	539	416	445	8.34
PCB 126	<1.82	<3.15	<2.43	<2.60	<0.049
PCB 167	<6.90	<11.9	<9.20	<9.84	<0.18
PCB 156/157	19.0	32.9	25.3	27.1	0.51
PCB 169	<1.27	<2.20	<1.69	<1.81	<0.034
PCB 189	<1.87	<3.23	<2.48	<2.66	<0.050
Total Dioxins & Furans Only	<320	<554	<426	<457	<8.51
Total PCBs Only	<1545	<2671	<2059	<2202	<41.3
Total Dioxins & Furans and PCBs	<1865	<3225	<2485	<2659	<49.8

* At 25°C and 1 atmosphere

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

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

TABLE 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	<2.6	<1.9
12378-pentachlorodibenzo-p-dioxin	<2.2	<4.1
123478-hexachlorodibenzo-p-dioxin	<2.1	<1.4
123678-hexachlorodibenzo-p-dioxin	<1.9	<1.3
123789-hexachlorodibenzo-p-dioxin	<1.9	<1.3
1234678-heptachlorodibenzo-p-dioxin	<2.4	1.67
Octachlorodibenzo-p-dioxin	<8.9	6.55
2378-tetrachlorodibenzofuran	<1.9	<1.6
12378-pentachlorodibenzofuran	<1.7	<1.6
23478-pentachlorodibenzofuran	<1.5	<1.4
123478-hexachlorodibenzofuran	<1.4	<1.0
123678-hexachlorodibenzofuran	<1.3	<0.90
234678-hexachlorodibenzofuran	<1.4	<0.95
123789-hexachlorodibenzofuran	<1.7	<1.1
1234678-heptachlorodibenzofuran	<1.7	<1.4
1234789-heptachlorodibenzofuran	<2.1	<1.7
Octachlorodibenzofuran	<4.3	8.34
PCB 81	<5.2	<2.8
PCB 77	<5.2	<2.8
PCB 123	<3.6	<2.3
PCB 118	<9.0	<9.3
PCB 114	<3.6	<2.2
PCB 105	<3.2	<2.1
PCB 126	<3.1	<2.0
PCB 167	<2.5	<1.4
PCB 156/157	<3.4	12.2
PCB 169	<2.5	<1.4
PCB 189	<2.8	<1.3
Total Dioxins & Furans Only	<41.0	<38
Total PCBs Only	<44.1	<39.8
Total Dioxins & Furans and PCBs	<85	<78

"<" 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	<0.25	<0.34	<0.25	<0.28
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.92	1.09	<0.72	<0.91
123478-hexachlorodibenzo-p-dioxin	0.10000	0.58	0.65	0.48	0.57
123678-hexachlorodibenzo-p-dioxin	0.10000	1.30	1.28	1.16	1.25
123789-hexachlorodibenzo-p-dioxin	0.10000	0.47	0.52	0.45	0.48
1234678-heptachlorodibenzo-p-dioxin	0.01000	1.16	1.22	1.12	1.17
Octachlorodibenzo-p-dioxin	0.00030	0.028	0.029	0.028	0.028
2378-tetrachlorodibenzofuran	0.10000	<0.035	<0.14	<0.045	<0.075
12378-pentachlorodibenzofuran	0.03000	<0.029	0.038	<0.018	<0.029
23478-pentachlorodibenzofuran	0.30000	0.83	0.88	<0.55	<0.76
123478-hexachlorodibenzofuran	0.10000	<0.38	<0.36	0.34	<0.36
123678-hexachlorodibenzofuran	0.10000	0.55	0.56	0.47	0.53
234678-hexachlorodibenzofuran	0.10000	0.99	1.03	0.97	1.00
123789-hexachlorodibenzofuran	0.10000	<0.21	0.26	0.27	<0.25
1234678-heptachlorodibenzofuran	0.01000	0.32	0.32	0.30	0.31
1234789-heptachlorodibenzofuran	0.01000	0.061	<0.061	0.065	0.062
Octachlorodibenzofuran	0.00030	0.0063	0.0070	0.0067	0.0067
PCB 81	0.00030	<0.00022	<0.0010	<0.00023	<0.00049
PCB 77	0.00010	0.0011	0.0075	0.00088	0.0032
PCB 123	0.00003	0.00014	0.0013	<0.000070	<0.00049
PCB 118	0.00003	0.0087	0.085	0.0071	0.034
PCB 114	0.00003	0.00022	0.0021	<0.00016	<0.00084
PCB 105	0.00003	0.0021	0.024	0.0022	0.0094
PCB 126	0.10000	<0.093	0.38	<0.070	<0.18
PCB 167	0.00003	0.000070	0.00048	<0.000070	<0.00021
PCB 156/157	0.00003	0.00021	0.0013	0.00022	0.00057
PCB 169	0.03000	<0.028	0.057	<0.030	<0.038
PCB 189	0.00003	<0.000056	<0.000057	0.000055	<0.000056
Total Dioxins & Furans Only		<8.12	<8.78	<7.25	<8.05
Total PCBs Only		<0.13	<0.56	<0.11	<0.27
Total Dioxins & Furans and PCBs		<8.25	<9.34	<7.36	<8.32

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	<0.44	<0.58	<0.42	<0.48
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.59	1.88	<1.24	<1.57
123478-hexachlorodibenzo-p-dioxin	0.10000	1.01	1.12	0.82	0.98
123678-hexachlorodibenzo-p-dioxin	0.10000	2.26	2.21	1.99	2.16
123789-hexachlorodibenzo-p-dioxin	0.10000	0.82	0.89	0.77	0.83
1234678-heptachlorodibenzo-p-dioxin	0.01000	2.02	2.11	1.92	2.02
Octachlorodibenzo-p-dioxin	0.00030	0.048	0.050	0.048	0.049
2378-tetrachlorodibenzofuran	0.10000	<0.061	<0.25	<0.078	<0.13
12378-pentachlorodibenzofuran	0.03000	<0.051	0.066	<0.031	<0.049
23478-pentachlorodibenzofuran	0.30000	1.45	1.53	<0.95	<1.31
123478-hexachlorodibenzofuran	0.10000	<0.67	<0.62	0.57	<0.62
123678-hexachlorodibenzofuran	0.10000	0.96	0.97	0.81	0.91
234678-hexachlorodibenzofuran	0.10000	1.73	1.78	1.66	1.72
123789-hexachlorodibenzofuran	0.10000	<0.36	0.46	0.47	<0.43
1234678-heptachlorodibenzofuran	0.01000	0.55	0.55	0.52	0.54
1234789-heptachlorodibenzofuran	0.01000	0.11	<0.11	0.11	0.11
Octachlorodibenzofuran	0.00030	0.011	0.012	0.011	0.012
PCB 81	0.00030	<0.00039	<0.0017	<0.00039	<0.00084
PCB 77	0.00010	0.0019	0.013	0.0015	0.0055
PCB 123	0.00003	0.00024	0.0022	<0.00012	<0.00084
PCB 118	0.00003	0.015	0.15	0.012	0.058
PCB 114	0.00003	0.00039	0.0037	<0.00028	<0.0014
PCB 105	0.00003	0.0036	0.041	0.0037	0.016
PCB 126	0.10000	<0.16	0.66	<0.12	<0.32
PCB 167	0.00003	0.00012	0.00083	<0.00012	<0.00036
PCB 156/157	0.00003	0.00037	0.0022	0.00038	0.00099
PCB 169	0.03000	<0.048	0.098	<0.051	<0.066
PCB 189	0.00003	<0.000097	<0.000099	0.000094	<0.000097
Total Dioxins & Furans Only		<14.1	<15.2	<12.4	<13.9
Total PCBs Only		<0.23	<0.97	<0.19	<0.47
Total Dioxins & Furans and PCBs		<14.4	<16.2	<12.6	<14.4

* 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	<0.34	<0.45	<0.32	<0.37
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.23	1.45	<0.95	<1.21
123478-hexachlorodibenzo-p-dioxin	0.10000	0.78	0.87	0.63	0.76
123678-hexachlorodibenzo-p-dioxin	0.10000	1.74	1.71	1.53	1.66
123789-hexachlorodibenzo-p-dioxin	0.10000	0.63	0.69	0.59	0.64
1234678-heptachlorodibenzo-p-dioxin	0.01000	1.56	1.63	1.47	1.55
Octachlorodibenzo-p-dioxin	0.00030	0.037	0.039	0.037	0.038
2378-tetrachlorodibenzofuran	0.10000	<0.047	<0.19	<0.060	<0.099
12378-pentachlorodibenzofuran	0.03000	<0.039	0.051	<0.024	<0.038
23478-pentachlorodibenzofuran	0.30000	1.12	1.18	<0.73	<1.01
123478-hexachlorodibenzofuran	0.10000	<0.51	<0.48	0.44	<0.48
123678-hexachlorodibenzofuran	0.10000	0.74	0.75	0.62	0.70
234678-hexachlorodibenzofuran	0.10000	1.33	1.37	1.28	1.33
123789-hexachlorodibenzofuran	0.10000	<0.28	0.35	0.36	<0.33
1234678-heptachlorodibenzofuran	0.01000	0.43	0.42	0.40	0.42
1234789-heptachlorodibenzofuran	0.01000	0.082	<0.081	0.086	0.083
Octachlorodibenzofuran	0.00030	0.0085	0.0094	0.0088	0.0089
PCB 81	0.00030	<0.00030	<0.0013	<0.00030	<0.00065
PCB 77	0.00010	0.0014	0.010	0.0012	0.0042
PCB 123	0.00003	0.00018	0.0017	<0.000092	<0.00065
PCB 118	0.00003	0.012	0.11	0.0093	0.045
PCB 114	0.00003	0.00030	0.0028	<0.00021	<0.0011
PCB 105	0.00003	0.0028	0.032	0.0028	0.012
PCB 126	0.10000	<0.12	0.51	<0.092	<0.24
PCB 167	0.00003	0.000094	0.00064	<0.000092	<0.00028
PCB 156/157	0.00003	0.00028	0.0017	0.00029	0.00076
PCB 169	0.03000	<0.037	0.076	<0.039	<0.051
PCB 189	0.00003	<0.000075	<0.000077	0.000072	<0.000074
Total Dioxins & Furans Only		<10.9	<11.7	<9.53	<10.7
Total PCBs Only		<0.18	<0.75	<0.15	<0.36
Total Dioxins & Furans and PCBs		<11.1	<12.5	<9.68	<11.1

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

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

Note: "<" 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	0.17	0.22	0.16	0.19
12378-pentachlorodibenzo-p-dioxin	1.00000	0.61	1.45	0.48	0.85
123478-hexachlorodibenzo-p-dioxin	0.10000	0.78	0.87	0.63	0.76
123678-hexachlorodibenzo-p-dioxin	0.10000	1.74	1.71	1.53	1.66
123789-hexachlorodibenzo-p-dioxin	0.10000	0.63	0.69	0.59	0.64
1234678-heptachlorodibenzo-p-dioxin	0.01000	1.56	1.63	1.47	1.55
Octachlorodibenzo-p-dioxin	0.00030	0.037	0.039	0.037	0.038
2378-tetrachlorodibenzofuran	0.10000	0.023	0.096	0.030	0.050
12378-pentachlorodibenzofuran	0.03000	0.020	0.051	0.012	0.028
23478-pentachlorodibenzofuran	0.30000	1.12	1.18	0.36	0.89
123478-hexachlorodibenzofuran	0.10000	0.26	0.24	0.44	0.31
123678-hexachlorodibenzofuran	0.10000	0.74	0.75	0.62	0.70
234678-hexachlorodibenzofuran	0.10000	1.33	1.37	1.28	1.33
123789-hexachlorodibenzofuran	0.10000	0.14	0.35	0.36	0.28
1234678-heptachlorodibenzofuran	0.01000	0.43	0.42	0.40	0.42
1234789-heptachlorodibenzofuran	0.01000	0.082	0.041	0.086	0.069
Octachlorodibenzofuran	0.00030	0.0085	0.0094	0.0088	0.0089
PCB 81	0.00030	0.00015	0.00067	0.00015	0.00032
PCB 77	0.00010	0.0014	0.010	0.0012	0.0042
PCB 123	0.00003	0.00018	0.0017	0.000046	0.00063
PCB 118	0.00003	0.012	0.11	0.0093	0.045
PCB 114	0.00003	0.00030	0.0028	0.00011	0.0011
PCB 105	0.00003	0.0028	0.032	0.0028	0.012
PCB 126	0.10000	0.062	0.51	0.046	0.21
PCB 167	0.00003	0.000094	0.00064	0.000046	0.00026
PCB 156/157	0.00003	0.00028	0.0017	0.00029	0.00076
PCB 169	0.03000	0.019	0.076	0.020	0.038
PCB 189	0.00003	0.000037	0.000038	0.000072	0.000049
Total Dioxins & Furans Only		9.68	11.1	8.49	9.76
Total PCBs Only		0.098	0.75	0.080	0.31
Total Dioxins & Furans and PCBs		9.78	11.9	8.57	10.1

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

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

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

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

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00	<0.34	<0.45	<0.32	<0.37
12378-pentachlorodibenzo-p-dioxin	0.50	<0.61	0.72	<0.48	<0.61
123478-hexachlorodibenzo-p-dioxin	0.10	0.78	0.87	0.63	0.76
123678-hexachlorodibenzo-p-dioxin	0.10	1.74	1.71	1.53	1.66
123789-hexachlorodibenzo-p-dioxin	0.10	0.63	0.69	0.59	0.64
1234678-heptachlorodibenzo-p-dioxin	0.010	1.56	1.63	1.47	1.55
Octachlorodibenzo-p-dioxin	0.0010	0.12	0.13	0.12	0.13
2378-tetrachlorodibenzofuran	0.10	<0.047	<0.19	<0.060	<0.099
12378-pentachlorodibenzofuran	0.050	<0.065	0.085	<0.040	<0.063
23478-pentachlorodibenzofuran	0.50	1.87	1.96	<1.21	<1.68
123478-hexachlorodibenzofuran	0.10	<0.51	<0.48	0.44	<0.48
123678-hexachlorodibenzofuran	0.10	0.74	0.75	0.62	0.70
234678-hexachlorodibenzofuran	0.10	1.33	1.37	1.28	1.33
123789-hexachlorodibenzofuran	0.10	<0.28	0.35	0.36	<0.33
1234678-heptachlorodibenzofuran	0.010	0.43	0.42	0.40	0.42
1234789-heptachlorodibenzofuran	0.010	0.082	<0.081	0.086	0.083
Octachlorodibenzofuran	0.0010	0.028	0.031	0.029	0.030
Total Dioxins & Furans		<11.2	<11.9	<9.66	<10.9
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	<0.36	<0.48	<0.35	<0.40
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.31	1.55	<1.03	<1.30
123478-hexachlorodibenzo-p-dioxin	0.10000	0.82	0.93	0.68	0.81
123678-hexachlorodibenzo-p-dioxin	0.10000	1.85	1.82	1.65	1.78
123789-hexachlorodibenzo-p-dioxin	0.10000	0.68	0.74	0.64	0.68
1234678-heptachlorodibenzo-p-dioxin	0.01000	1.66	1.74	1.60	1.66
Octachlorodibenzo-p-dioxin	0.00030	0.040	0.041	0.040	0.040
2378-tetrachlorodibenzofuran	0.10000	<0.050	<0.20	<0.065	<0.11
12378-pentachlorodibenzofuran	0.03000	<0.042	0.055	<0.026	<0.041
23478-pentachlorodibenzofuran	0.30000	1.19	1.26	<0.79	<1.08
123478-hexachlorodibenzofuran	0.10000	<0.55	<0.51	0.48	<0.51
123678-hexachlorodibenzofuran	0.10000	0.78	0.80	0.67	0.75
234678-hexachlorodibenzofuran	0.10000	1.42	1.47	1.38	1.42
123789-hexachlorodibenzofuran	0.10000	<0.30	0.38	0.39	<0.35
1234678-heptachlorodibenzofuran	0.01000	0.46	0.45	0.43	0.45
1234789-heptachlorodibenzofuran	0.01000	0.087	<0.087	0.093	0.089
Octachlorodibenzofuran	0.00030	0.0090	0.010	0.0095	0.0095
PCB 81	0.00030	<0.00032	<0.0014	<0.00033	<0.00069
PCB 77	0.00010	0.0015	0.011	0.0013	0.0045
PCB 123	0.00003	0.00019	0.0018	<0.00010	<0.00069
PCB 118	0.00003	0.012	0.12	0.010	0.048
PCB 114	0.00003	0.00032	0.0030	<0.00023	<0.0012
PCB 105	0.00003	0.0030	0.034	0.0031	0.013
PCB 126	0.10000	<0.13	0.55	<0.10	<0.26
PCB 167	0.00003	0.00010	0.00069	<0.00010	<0.00030
PCB 156/157	0.00003	0.00030	0.0018	0.00032	0.00081
PCB 169	0.03000	<0.040	0.081	<0.042	<0.054
PCB 189	0.00003	<0.000079	<0.000082	0.000078	<0.000080
Total Dioxins & Furans Only		<11.6	<12.5	<10.3	<11.5
Total PCBs Only		<0.19	<0.80	<0.16	<0.38
Total Dioxins & Furans and PCBs		<11.8	<13.3	<10.5	<11.9

* 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	<0.0069	<0.0090	<0.0064	<0.0074
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.025	0.029	<0.019	<0.024
123478-hexachlorodibenzo-p-dioxin	0.10000	0.016	0.017	0.012	0.015
123678-hexachlorodibenzo-p-dioxin	0.10000	0.035	0.034	0.030	0.033
123789-hexachlorodibenzo-p-dioxin	0.10000	0.013	0.014	0.012	0.013
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.031	0.033	0.029	0.031
Octachlorodibenzo-p-dioxin	0.00030	0.00075	0.00078	0.00073	0.00075
2378-tetrachlorodibenzofuran	0.10000	<0.00094	<0.0038	<0.0012	<0.0020
12378-pentachlorodibenzofuran	0.03000	<0.00079	0.0010	<0.00047	<0.00076
23478-pentachlorodibenzofuran	0.30000	0.023	0.024	<0.014	<0.020
123478-hexachlorodibenzofuran	0.10000	<0.010	<0.0096	0.0087	<0.0095
123678-hexachlorodibenzofuran	0.10000	0.015	0.015	0.012	0.014
234678-hexachlorodibenzofuran	0.10000	0.027	0.028	0.025	0.026
123789-hexachlorodibenzofuran	0.10000	<0.0056	0.0071	0.0070	<0.0066
1234678-heptachlorodibenzofuran	0.01000	0.0086	0.0085	0.0078	0.0083
1234789-heptachlorodibenzofuran	0.01000	0.0016	<0.0016	0.0017	0.0017
Octachlorodibenzofuran	0.00030	0.00017	0.00019	0.00017	0.00018
PCB 81	0.00030	<0.0000060	<0.000027	<0.0000059	<0.000013
PCB 77	0.00010	0.000029	0.00020	0.000023	0.000084
PCB 123	0.00003	0.0000037	0.000034	<0.0000018	<0.000013
PCB 118	0.00003	0.00023	0.0023	0.00018	0.00090
PCB 114	0.00003	0.0000060	0.000057	<0.0000042	<0.000022
PCB 105	0.00003	0.000056	0.00064	0.000056	0.00025
PCB 126	0.10000	<0.0025	0.010	<0.0018	<0.0049
PCB 167	0.00003	0.0000019	0.000013	<0.0000018	<0.0000055
PCB 156/157	0.00003	0.0000057	0.000034	0.0000057	0.000015
PCB 169	0.03000	<0.00075	0.0015	<0.00077	<0.0010
PCB 189	0.00003	<0.0000015	<0.0000015	0.0000014	<0.0000015
Total Dioxins & Furans Only		<0.22	<0.24	<0.19	<0.21
Total PCBs Only		<0.0036	<0.015	<0.0029	<0.0072
Total Dioxins & Furans and PCBs		<0.22	<0.25	<0.19	<0.22

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/m^3	Dry Reference Concentration pg TEQ/Rm^3*	Dry Adjusted Concentration pg TEQ/Rm^3**	Wet Reference Concentration pg TEQ/Rm^3*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.28	<0.48	<0.37	<0.40	<0.0074
12378-pentachlorodibenzo-p-dioxin	<0.91	<1.57	<1.21	<1.30	<0.024
123478-hexachlorodibenzo-p-dioxin	0.57	0.98	0.76	0.81	0.015
123678-hexachlorodibenzo-p-dioxin	1.25	2.16	1.66	1.78	0.033
123789-hexachlorodibenzo-p-dioxin	0.48	0.83	0.64	0.68	0.013
1234678-heptachlorodibenzo-p-dioxin	1.17	2.02	1.55	1.66	0.031
Octachlorodibenzo-p-dioxin	0.028	0.049	0.038	0.040	0.00075
2378-tetrachlorodibenzofuran	<0.075	<0.13	<0.099	<0.11	<0.0020
12378-pentachlorodibenzofuran	<0.029	<0.049	<0.038	<0.041	<0.00076
23478-pentachlorodibenzofuran	<0.76	<1.31	<1.01	<1.08	<0.020
123478-hexachlorodibenzofuran	<0.36	<0.62	<0.48	<0.51	<0.0095
123678-hexachlorodibenzofuran	0.53	0.91	0.70	0.75	0.014
234678-hexachlorodibenzofuran	1.00	1.72	1.33	1.42	0.026
123789-hexachlorodibenzofuran	<0.25	<0.43	<0.33	<0.35	<0.0066
1234678-heptachlorodibenzofuran	0.31	0.54	0.42	0.45	0.0083
1234789-heptachlorodibenzofuran	0.062	0.11	0.083	0.089	0.0017
Octachlorodibenzofuran	0.0067	0.012	0.0089	0.0095	0.00018
PCB 81	<0.00049	<0.00084	<0.00065	<0.00069	<0.000013
PCB 77	0.0032	0.0055	0.0042	0.0045	0.000084
PCB 123	<0.00049	<0.00084	<0.00065	<0.00069	<0.000013
PCB 118	0.034	0.058	0.045	0.048	0.00090
PCB 114	<0.00084	<0.0014	<0.0011	<0.0012	<0.000022
PCB 105	0.0094	0.016	0.012	0.013	0.00025
PCB 126	<0.18	<0.32	<0.24	<0.26	<0.0049
PCB 167	<0.00021	<0.00036	<0.00028	<0.00030	<0.0000055
PCB 156/157	0.00057	0.00099	0.00076	0.00081	0.000015
PCB 169	<0.038	<0.066	<0.051	<0.054	<0.0010
PCB 189	<0.000056	<0.000097	<0.000074	<0.000080	<0.0000015
Total Dioxins & Furans Only	<8.05	<13.9	<10.7	<11.5	<0.21
Total PCBs Only	<0.27	<0.47	<0.36	<0.38	<0.0072
Total Dioxins & Furans and PCBs	<8.32	<14.4	<11.1	<11.9	<0.22

* 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	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg TEQ/m³	pg TEQ/Rm³*	pg TEQ/Rm³**	pg TEQ/Rm³*	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.14	0.24	0.19	0.20	0.0037
12378-pentachlorodibenzo-p-dioxin	0.64	1.10	0.85	0.91	0.017
123478-hexachlorodibenzo-p-dioxin	0.57	0.98	0.76	0.81	0.015
123678-hexachlorodibenzo-p-dioxin	1.25	2.16	1.66	1.78	0.033
123789-hexachlorodibenzo-p-dioxin	0.48	0.83	0.64	0.68	0.013
1234678-heptachlorodibenzo-p-dioxin	1.17	2.02	1.55	1.66	0.031
Octachlorodibenzo-p-dioxin	0.028	0.049	0.038	0.040	0.00075
2378-tetrachlorodibenzofuran	0.037	0.064	0.050	0.053	0.00099
12378-pentachlorodibenzofuran	0.021	0.036	0.028	0.029	0.00055
23478-pentachlorodibenzofuran	0.66	1.15	0.89	0.95	0.018
123478-hexachlorodibenzofuran	0.24	0.41	0.31	0.34	0.0062
123678-hexachlorodibenzofuran	0.53	0.91	0.70	0.75	0.014
234678-hexachlorodibenzofuran	1.00	1.72	1.33	1.42	0.026
123789-hexachlorodibenzofuran	0.21	0.37	0.28	0.30	0.0056
1234678-heptachlorodibenzofuran	0.31	0.54	0.42	0.45	0.0083
1234789-heptachlorodibenzofuran	0.052	0.090	0.069	0.074	0.0014
Octachlorodibenzofuran	0.0067	0.012	0.0089	0.0095	0.00018
PCB 81	0.00024	0.00042	0.00032	0.00035	0.0000065
PCB 77	0.0032	0.0055	0.0042	0.0045	0.000084
PCB 123	0.00048	0.00082	0.00063	0.00068	0.000013
PCB 118	0.034	0.058	0.045	0.048	0.00090
PCB 114	0.00081	0.0014	0.0011	0.0012	0.000022
PCB 105	0.0094	0.016	0.012	0.013	0.00025
PCB 126	0.16	0.27	0.21	0.22	0.0042
PCB 167	0.00020	0.00034	0.00026	0.00028	0.0000052
PCB 156/157	0.00057	0.00099	0.00076	0.00081	0.000015
PCB 169	0.029	0.049	0.038	0.041	0.00076
PCB 189	0.000037	0.000064	0.000049	0.000053	0.00000098
Total Dioxins & Furans Only	7.33	12.7	9.76	10.5	0.19
Total PCBs Only	0.23	0.40	0.31	0.33	0.0062
Total Dioxins & Furans and PCBs	7.56	13.1	10.1	10.8	0.20

* 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	1160	134	234	181	192	3.63
1,3-Dichlorobenzene	111	12.9	22.4	17.3	18.4	0.35
1,4-Dichlorobenzene	121	14.0	24.4	18.8	20.0	0.38
1,2-Dichlorobenzene	60.6	7.02	12.2	9.43	10.0	0.19
Total Dichlorobenzene	293	33.9	59.1	45.5	48.4	0.92
1,3,5-trichlorobenzene	13.7	1.59	2.76	2.13	2.27	0.043
1,2,4-trichlorobenzene	24.8	2.87	5.01	3.86	4.10	0.078
1,2,3-trichlorobenzene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Total Trichlorobenzene	<50.5	<5.85	<10.2	<7.86	<8.36	<0.16
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	13.0	1.51	2.62	2.02	2.15	0.041
1,2,3,4-tetrachlorobenzene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Total Tetrachlorobenzene	<25.0	<2.90	<5.05	<3.89	<4.14	<0.078
Pentachlorobenzene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Hexachlorobenzene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Total Chlorobenzenes	<1552	<180	<313	<242	<257	<4.86

Dry Gas Volume Sampled (Rm^3*) :	4.955
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	990	118	205	158	169	3.17
1,3-Dichlorobenzene	89.5	10.7	18.5	14.3	15.3	0.29
1,4-Dichlorobenzene	80.9	9.68	16.7	12.9	13.8	0.26
1,2-Dichlorobenzene	90.6	10.8	18.7	14.5	15.5	0.29
Total Dichlorobenzene	261	31.2	54.0	41.6	44.5	0.84
1,3,5-trichlorobenzene	13.8	1.65	2.85	2.20	2.35	0.044
1,2,4-trichlorobenzene	27.8	3.33	5.75	4.43	4.74	0.089
1,2,3-trichlorobenzene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Total Trichlorobenzene	<53.6	<6.41	<11.1	<8.55	<9.14	<0.17
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	12.5	1.50	2.59	1.99	2.13	0.040
1,2,3,4-tetrachlorobenzene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Total Tetrachlorobenzene	<24.5	<2.93	<5.07	<3.91	<4.18	<0.079
Pentachlorobenzene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Hexachlorobenzene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Total Chlorobenzenes	<1353	<162	<280	<216	<231	<4.34

Dry Gas Volume Sampled (Rm^3*) :	4.834
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1190	146	251	192	208	3.78
1,3-Dichlorobenzene	115	14.1	24.2	18.6	20.1	0.37
1,4-Dichlorobenzene	135	16.6	28.4	21.8	23.6	0.43
1,2-Dichlorobenzene	63.4	7.78	13.4	10.2	11.1	0.20
Total Dichlorobenzene	313	38.5	66.0	50.6	54.8	1.00
1,3,5-trichlorobenzene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
1,2,4-trichlorobenzene	25.3	3.11	5.33	4.08	4.42	0.080
1,2,3-trichlorobenzene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Total Trichlorobenzene	<49.3	<6.05	<10.4	<7.96	<8.61	<0.16
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.47	<2.53	<1.94	<2.10	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Total Tetrachlorobenzene	<24.0	<2.95	<5.05	<3.87	<4.19	<0.076
Pentachlorobenzene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Hexachlorobenzene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Total Chlorobenzenes	<1601	<197	<337	<258	<280	<5.09

Dry Gas Volume Sampled (Rm^3*) :	4.748
Actual Flowrate (m^3/s) :	25.9
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	18.2

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	134	118	146	133	10.4
1,3-Dichlorobenzene	12.9	10.7	14.1	12.6	13.7
1,4-Dichlorobenzene	14.0	9.68	16.6	13.4	26.0
1,2-Dichlorobenzene	7.02	10.8	7.78	8.55	23.6
Total Dichlorobenzene	33.9	31.2	38.5	34.5	10.6
1,3,5-trichlorobenzene	1.59	1.65	<1.47	<1.57	5.7
1,2,4-trichlorobenzene	2.87	3.33	3.11	3.10	7.3
1,2,3-trichlorobenzene	<1.39	<1.44	<1.47	<1.43	2.9
Total Trichlorobenzene	<5.85	<6.41	<6.05	<6.11	4.7
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	1.51	1.50	<1.47	<1.49	1.1
1,2,3,4-tetrachlorobenzene	<1.39	<1.44	<1.47	<1.43	2.9
Total Tetrachlorobenzene	<2.90	<2.93	<2.95	<2.92	0.9
Pentachlorobenzene	<1.39	<1.44	<1.47	<1.43	2.9
Hexachlorobenzene	<1.39	<1.44	<1.47	<1.43	2.9
Total Chlorobenzenes	<180	<162	<197	<179	9.7

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

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	234	205	251	230	10.1
1,3-Dichlorobenzene	22.4	18.5	24.2	21.7	13.4
1,4-Dichlorobenzene	24.4	16.7	28.4	23.2	25.6
1,2-Dichlorobenzene	12.2	18.7	13.4	14.8	23.6
Total Dichlorobenzene	59.1	54.0	66.0	59.7	10.1
1,3,5-trichlorobenzene	2.76	2.85	<2.53	<2.72	6.2
1,2,4-trichlorobenzene	5.01	5.75	5.33	5.36	7.0
1,2,3-trichlorobenzene	<2.42	<2.48	<2.53	<2.48	2.1
Total Trichlorobenzene	<10.2	<11.1	<10.4	<10.6	4.5
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.62	2.59	<2.53	<2.58	1.9
1,2,3,4-tetrachlorobenzene	<2.42	<2.48	<2.53	<2.48	2.1
Total Tetrachlorobenzene	<5.05	<5.07	<5.05	<5.06	0.2
Pentachlorobenzene	<2.42	<2.48	<2.53	<2.48	2.1
Hexachlorobenzene	<2.42	<2.48	<2.53	<2.48	2.1
Total Chlorobenzenes	<313	<280	<337	<310	9.3

* At 25°C and 1 atmosphere

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

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	%
Monochlorobenzene	181	158	192	177	9.8
1,3-Dichlorobenzene	17.3	14.3	18.6	16.7	13.2
1,4-Dichlorobenzene	18.8	12.9	21.8	17.8	25.4
1,2-Dichlorobenzene	9.43	14.5	10.2	11.4	23.7
Total Dichlorobenzene	45.5	41.6	50.6	45.9	9.8
1,3,5-trichlorobenzene	2.13	2.20	<1.94	<2.09	6.6
1,2,4-trichlorobenzene	3.86	4.43	4.08	4.13	7.0
1,2,3-trichlorobenzene	<1.87	<1.91	<1.94	<1.91	1.9
Total Trichlorobenzene	<7.86	<8.55	<7.96	<8.12	4.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.02	1.99	<1.94	<1.98	2.2
1,2,3,4-tetrachlorobenzene	<1.87	<1.91	<1.94	<1.91	1.9
Total Tetrachlorobenzene	<3.89	<3.91	<3.87	<3.89	0.4
Pentachlorobenzene	<1.87	<1.91	<1.94	<1.91	1.9
Hexachlorobenzene	<1.87	<1.91	<1.94	<1.91	1.9
Total Chlorobenzenes	<242	<216	<258	<239	9.0

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

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

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	192	169	208	190	10.4
1,3-Dichlorobenzene	18.4	15.3	20.1	17.9	13.7
1,4-Dichlorobenzene	20.0	13.8	23.6	19.1	25.9
1,2-Dichlorobenzene	10.0	15.5	11.1	12.2	23.6
Total Dichlorobenzene	48.4	44.5	54.8	49.2	10.5
1,3,5-trichlorobenzene	2.27	2.35	<2.10	<2.24	5.8
1,2,4-trichlorobenzene	4.10	4.74	4.42	4.42	7.2
1,2,3-trichlorobenzene	<1.99	<2.05	<2.10	<2.04	2.7
Total Trichlorobenzene	<8.36	<9.14	<8.61	<8.70	4.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.15	2.13	<2.10	<2.13	1.3
1,2,3,4-tetrachlorobenzene	<1.99	<2.05	<2.10	<2.04	2.7
Total Tetrachlorobenzene	<4.14	<4.18	<4.19	<4.17	0.7
Pentachlorobenzene	<1.99	<2.05	<2.10	<2.04	2.7
Hexachlorobenzene	<1.99	<2.05	<2.10	<2.04	2.7
Total Chlorobenzenes	<257	<231	<280	<256	9.6

* 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				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
Monochlorobenzene	3.63	3.17	3.78	3.53	9.0
1,3-Dichlorobenzene	0.35	0.29	0.37	0.33	12.4
1,4-Dichlorobenzene	0.38	0.26	0.43	0.36	24.5
1,2-Dichlorobenzene	0.19	0.29	0.20	0.23	24.3
Total Dichlorobenzene	0.92	0.84	1.00	0.92	8.7
1,3,5-trichlorobenzene	0.043	0.044	<0.038	<0.042	7.6
1,2,4-trichlorobenzene	0.078	0.089	0.080	0.082	7.3
1,2,3-trichlorobenzene	<0.038	<0.038	<0.038	<0.038	1.3
Total Trichlorobenzene	<0.16	<0.17	<0.16	<0.16	5.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.041	0.040	<0.038	<0.040	3.3
1,2,3,4-tetrachlorobenzene	<0.038	<0.038	<0.038	<0.038	1.3
Total Tetrachlorobenzene	<0.078	<0.079	<0.076	<0.078	1.5
Pentachlorobenzene	<0.038	<0.038	<0.038	<0.038	1.3
Hexachlorobenzene	<0.038	<0.038	<0.038	<0.038	1.3
Total Chlorobenzenes	<4.86	<4.34	<5.09	<4.76	8.1

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	133	230	177	190	3.53
1,3-Dichlorobenzene	12.6	21.7	16.7	17.9	0.33
1,4-Dichlorobenzene	13.4	23.2	17.8	19.1	0.36
1,2-Dichlorobenzene	8.55	14.8	11.4	12.2	0.23
Total Dichlorobenzene	34.5	59.7	45.9	49.2	0.92
1,3,5-trichlorobenzene	<1.57	<2.72	<2.09	<2.24	<0.042
1,2,4-trichlorobenzene	3.10	5.36	4.13	4.42	0.082
1,2,3-trichlorobenzene	<1.43	<2.48	<1.91	<2.04	<0.038
Total Trichlorobenzene	<6.11	<10.6	<8.12	<8.70	<0.16
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.49	<2.58	<1.98	<2.13	<0.040
1,2,3,4-tetrachlorobenzene	<1.43	<2.48	<1.91	<2.04	<0.038
Total Tetrachlorobenzene	<2.92	<5.06	<3.89	<4.17	<0.078
Pentachlorobenzene	<1.43	<2.48	<1.91	<2.04	<0.038
Hexachlorobenzene	<1.43	<2.48	<1.91	<2.04	<0.038
Total Chlorobenzenes	<179	<310	<239	<256	<4.76

* 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	<12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	22.9	25.2
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<46.9	<49.2
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	<131	<145

"<" 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	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	<120	<13.9	<24.2	<18.7	<19.9	<0.38
3-monochlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
4-monochlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
Total Monochlorophenols	<360	<41.7	<72.7	<56.0	<59.6	<1.13
2,6-dichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
2,4 & 2,5-dichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
3,5-dichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
2,3-dichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
3,4-dichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
Total Dichlorophenols	<600	<69.5	<121	<93.4	<99.3	<1.88
2,4,6-trichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
2,3,6-trichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
2,3,5-trichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
2,4,5-trichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
2,3,4-trichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
3,4,5-trichlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
Total Trichlorophenols	<720	<83.4	<145	<112	<119	<2.25
2,3,5,6/2,3,4,6-tetrachlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
2,3,4,5-tetrachlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
Total Tetrachlorophenols	<240	<27.8	<48.4	<37.4	<39.7	<0.75
Pentachlorophenol	<120	<13.9	<24.2	<18.7	<19.9	<0.38
Total Chlorophenols	<2040	<236	<412	<317	<338	<6.38

Dry Gas Volume Sampled (Rm³*) :	4.955
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
3-monochlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
4-monochlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
Total Monochlorophenols	<360	<43.1	<74.5	<57.4	<61.4	<1.15
2,6-dichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
2,4 & 2,5-dichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
3,5-dichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
2,3-dichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
3,4-dichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
Total Dichlorophenols	<600	<71.8	<124	<95.7	<102	<1.92
2,4,6-trichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
2,3,6-trichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
2,3,5-trichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
2,4,5-trichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
2,3,4-trichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
3,4,5-trichlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
Total Trichlorophenols	<720	<86.1	<149	<115	<123	<2.31
2,3,5,6/2,3,4,6-tetrachlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
2,3,4,5-tetrachlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
Total Tetrachlorophenols	<240	<28.7	<49.6	<38.3	<40.9	<0.77
Pentachlorophenol	<120	<14.4	<24.8	<19.1	<20.5	<0.38
Total Chlorophenols	<2040	<244	<422	<325	<348	<6.54

Dry Gas Volume Sampled (Rm^3*) :	4.834
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
3-monochlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
4-monochlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
Total Monochlorophenols	<360	<44.2	<75.8	<58.1	<62.9	<1.14
2,6-dichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
2,4 & 2,5-dichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
3,5-dichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
2,3-dichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
3,4-dichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
Total Dichlorophenols	<600	<73.7	<126	<96.9	<105	<1.91
2,4,6-trichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
2,3,6-trichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
2,3,5-trichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
2,4,5-trichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
2,3,4-trichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
3,4,5-trichlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
Total Trichlorophenols	<720	<88.4	<152	<116	<126	<2.29
2,3,5,6/2,3,4,6-tetrachlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
2,3,4,5-tetrachlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
Total Tetrachlorophenols	<240	<29.5	<50.5	<38.7	<41.9	<0.76
Pentachlorophenol	<120	<14.7	<25.3	<19.4	<21.0	<0.38
Total Chlorophenols	<2040	<250	<430	<329	<356	<6.49

Dry Gas Volume Sampled (Rm³*) :	4.748
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.7
Wet Reference Flowrate (Rm³/s*) :	18.2

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
3-monochlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
4-monochlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
Total Monochlorophenols	<41.7	<43.1	<44.2	<43.0	2.9
2,6-dichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
2,4 & 2,5-dichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
3,5-dichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
2,3-dichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
3,4-dichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
Total Dichlorophenols	<69.5	<71.8	<73.7	<71.7	2.9
2,4,6-trichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
2,3,6-trichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
2,3,5-trichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
2,4,5-trichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
2,3,4-trichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
3,4,5-trichlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
Total Trichlorophenols	<83.4	<86.1	<88.4	<86.0	2.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
2,3,4,5-tetrachlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
Total Tetrachlorophenols	<27.8	<28.7	<29.5	<28.7	2.9
Pentachlorophenol	<13.9	<14.4	<14.7	<14.3	2.9
Total Chlorophenols	<236	<244	<250	<244	2.9

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				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
3-monochlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
4-monochlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
Total Monochlorophenols	<72.7	<74.5	<75.8	<74.3	2.1
2,6-dichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
2,4 & 2,5-dichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
3,5-dichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
2,3-dichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
3,4-dichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
Total Dichlorophenols	<121	<124	<126	<124	2.1
2,4,6-trichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
2,3,6-trichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
2,3,5-trichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
2,4,5-trichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
2,3,4-trichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
3,4,5-trichlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
Total Trichlorophenols	<145	<149	<152	<149	2.1
2,3,5,6/2,3,4,6-tetrachlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
2,3,4,5-tetrachlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
Total Tetrachlorophenols	<48.4	<49.6	<50.5	<49.5	2.1
Pentachlorophenol	<24.2	<24.8	<25.3	<24.8	2.1
Total Chlorophenols	<412	<422	<430	<421	2.1

* At 25°C and 1 atmosphere

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

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
3-monochlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
4-monochlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
Total Monochlorophenols	<56.0	<57.4	<58.1	<57.2	1.9
2,6-dichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
2,4 & 2,5-dichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
3,5-dichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
2,3-dichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
3,4-dichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
Total Dichlorophenols	<93.4	<95.7	<96.9	<95.3	1.9
2,4,6-trichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
2,3,6-trichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
2,3,5-trichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
2,4,5-trichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
2,3,4-trichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
3,4,5-trichlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
Total Trichlorophenols	<112	<115	<116	<114	1.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
2,3,4,5-tetrachlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
Total Tetrachlorophenols	<37.4	<38.3	<38.7	<38.1	1.9
Pentachlorophenol	<18.7	<19.1	<19.4	<19.1	1.9
Total Chlorophenols	<317	<325	<329	<324	1.9

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

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

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
3-monochlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
4-monochlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
Total Monochlorophenols	<59.6	<61.4	<62.9	<61.3	2.7
2,6-dichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
2,4 & 2,5-dichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
3,5-dichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
2,3-dichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
3,4-dichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
Total Dichlorophenols	<99.3	<102	<105	<102	2.7
2,4,6-trichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
2,3,6-trichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
2,3,5-trichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
2,4,5-trichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
2,3,4-trichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
3,4,5-trichlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
Total Trichlorophenols	<119	<123	<126	<123	2.7
2,3,5,6/2,3,4,6-tetrachlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
2,3,4,5-tetrachlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
Total Tetrachlorophenols	<39.7	<40.9	<41.9	<40.9	2.7
Pentachlorophenol	<19.9	<20.5	<21.0	<20.4	2.7
Total Chlorophenols	<338	<348	<356	<347	2.7

* At 25°C and 1 atmosphere

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

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
2-monochlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
3-monochlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
4-monochlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
Total Monochlorophenols	<1.13	<1.15	<1.14	<1.14	1.3
2,6-dichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
2,4 & 2,5-dichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
3,5-dichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
2,3-dichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
3,4-dichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
Total Dichlorophenols	<1.88	<1.92	<1.91	<1.90	1.3
2,4,6-trichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
2,3,6-trichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
2,3,5-trichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
2,4,5-trichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
2,3,4-trichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
3,4,5-trichlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
Total Trichlorophenols	<2.25	<2.31	<2.29	<2.28	1.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
2,3,4,5-tetrachlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
Total Tetrachlorophenols	<0.75	<0.77	<0.76	<0.76	1.3
Pentachlorophenol	<0.38	<0.38	<0.38	<0.38	1.3
Total Chlorophenols	<6.38	<6.54	<6.49	<6.47	1.3

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

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
3-monochlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
4-monochlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
Total Monochlorophenols	<43.0	<74.3	<57.2	<61.3	<1.14
2,6-dichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
2,4 & 2,5-dichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
3,5-dichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
2,3-dichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
3,4-dichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
Total Dichlorophenols	<71.7	<124	<95.3	<102	<1.90
2,4,6-trichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
2,3,6-trichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
2,3,5-trichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
2,4,5-trichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
2,3,4-trichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
3,4,5-trichlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
Total Trichlorophenols	<86.0	<149	<114	<123	<2.28
2,3,5,6/2,3,4,6-tetrachlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
2,3,4,5-tetrachlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
Total Tetrachlorophenols	<28.7	<49.5	<38.1	<40.9	<0.76
Pentachlorophenol	<14.3	<24.8	<19.1	<20.4	<0.38
Total Chlorophenols	<244	<421	<324	<347	<6.47

* 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	<120	<120
3-monochlorophenol	<120	<120
4-monochlorophenol	<120	<120
Total Monochlorophenols	<360	<360
2,6-dichlorophenol	<120	<120
2,4 & 2,5-dichlorophenol	<120	<120
3,5-dichlorophenol	<120	<120
2,3-dichlorophenol	<120	<120
3,4-dichlorophenol	<120	<120
Total Dichlorophenols	<600	<600
2,4,6-trichlorophenol	<120	<120
2,3,6-trichlorophenol	<120	<120
2,3,5-trichlorophenol	<120	<120
2,4,5-trichlorophenol	<120	<120
2,3,4-trichlorophenol	<120	<120
3,4,5-trichlorophenol	<120	<120
Total Trichlorophenols	<720	<720
2,3,5,6/2,3,4,6-tetrachlorophenol	<120	<120
2,3,4,5-tetrachlorophenol	<120	<120
Total Tetrachlorophenols	<240	<240
Pentachlorophenol	<120	<120
Total Chlorophenols	<2040	<2040

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

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Acenaphthylene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Anthracene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Benzo(a)Anthracene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Benzo(b)Fluoranthene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Benzo(k)Fluoranthene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Benzo(a)fluorene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Benzo(b)fluorene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Benzo(g,h,i)Perylene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Benzo(a)Pyrene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Benzo(e)Pyrene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Biphenyl	30.2	3.50	6.09	4.70	5.00	0.094
2-Chloronaphthalene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Chrysene/Triphenylene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Coronene	<60	<6.95	<12.1	<9.34	<9.93	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Dibenzo(a,e)pyrene	<60	<6.95	<12.1	<9.34	<9.93	<0.19
9,10-dimethylanthracene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Fluoranthene	26.3	3.05	5.31	4.09	4.35	0.082
Fluorene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Indeno(1,2,3-cd)Pyrene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
2-methylanthracene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
3-Methylcholanthrene	<60	<6.95	<12.1	<9.34	<9.93	<0.19
1-Methylnaphthalene	19.4	2.25	3.92	3.02	3.21	0.061
2-Methylnaphthalene	32.3	3.74	6.52	5.03	5.35	0.10
1-Methylphenanthrene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
9-Methylphenanthrene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Naphthalene	186	21.5	37.5	28.9	30.8	0.58
Perylene	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Phenanthrene	64.0	7.41	12.9	9.96	10.6	0.20
Picene	<60	<6.95	<12.1	<9.34	<9.93	<0.19
Pyrene	34.0	3.94	6.86	5.29	5.63	0.11
Tetralin	335	38.8	67.6	52.1	55.4	1.05
m-terphenyl	<12	<1.39	<2.42	<1.87	<1.99	<0.038
o-Terphenyl	<12	<1.39	<2.42	<1.87	<1.99	<0.038
p-terphenyl	<12	<1.39	<2.42	<1.87	<1.99	<0.038
Total	<1267	<147	<256	<197	<210	<3.96

Dry Gas Volume Sampled (Rm³*) :	4.955
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Acenaphthylene	24.7	2.96	5.11	3.94	4.21	0.079
Anthracene	14.8	1.77	3.06	2.36	2.52	0.047
Benzo(a)Anthracene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Benzo(b)Fluoranthene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Benzo(k)Fluoranthene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Benzo(a)fluorene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Benzo(b)fluorene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Benzo(g,h,i)Perylene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Benzo(a)Pyrene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Benzo(e)Pyrene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Biphenyl	29.1	3.48	6.02	4.64	4.96	0.093
2-Chloronaphthalene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Chrysene/Triphenylene	67.8	8.11	14.0	10.8	11.6	0.22
Coronene	<60	<7.18	<12.4	<9.57	<10.2	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Dibenzo(a,e)pyrene	<60	<7.18	<12.4	<9.57	<10.2	<0.19
9,10-dimethylanthracene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Fluoranthene	183	21.9	37.9	29.2	31.2	0.59
Fluorene	23.3	2.79	4.82	3.72	3.97	0.075
Indeno(1,2,3-cd)Pyrene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
2-methylanthracene	26.8	3.21	5.54	4.28	4.57	0.086
3-Methylcholanthrene	<60	<7.18	<12.4	<9.57	<10.2	<0.19
1-Methylnaphthalene	40.9	4.89	8.46	6.52	6.98	0.13
2-Methylnaphthalene	63.1	7.55	13.1	10.1	10.8	0.20
1-Methylphenanthrene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
9-Methylphenanthrene	78.4	9.38	16.2	12.5	13.4	0.25
Naphthalene	237	28.4	49.0	37.8	40.4	0.76
Perylene	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Phenanthrene	445	53.2	92.1	71.0	75.9	1.43
Picene	<60	<7.18	<12.4	<9.57	<10.2	<0.19
Pyrene	134	16.0	27.7	21.4	22.9	0.43
Tetralin	322	38.5	66.6	51.4	54.9	1.03
m-terphenyl	<12	<1.44	<2.48	<1.91	<2.05	<0.038
o-Terphenyl	<12	<1.44	<2.48	<1.91	<2.05	<0.038
p-terphenyl	<12	<1.44	<2.48	<1.91	<2.05	<0.038
Total	<2158	<258	<446	<344	<368	<6.92

Dry Gas Volume Sampled (Rm³*) :	4.834
Actual Flowrate (m³/s) :	26.8
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Acenaphthylene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Anthracene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Benzo(a)Anthracene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Benzo(b)Fluoranthene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Benzo(k)Fluoranthene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Benzo(a)fluorene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Benzo(b)fluorene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Benzo(g,h,i)Perylene	35.5	4.36	7.48	5.73	6.20	0.11
Benzo(a)Pyrene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Benzo(e)Pyrene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Biphenyl	28.3	3.47	5.96	4.57	4.95	0.090
2-Chloronaphthalene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Chrysene/Triphenylene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Coronene	<60	<7.37	<12.6	<9.69	<10.5	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Dibenzo(a,e)pyrene	<60	<7.37	<12.6	<9.69	<10.5	<0.19
9,10-dimethylanthracene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Fluoranthene	20.5	2.52	4.32	3.31	3.58	0.065
Fluorene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Indeno(1,2,3-cd)Pyrene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
2-methylanthracene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
3-Methylcholanthrene	<60	<7.37	<12.6	<9.69	<10.5	<0.19
1-Methylnaphthalene	20.0	2.46	4.21	3.23	3.49	0.064
2-Methylnaphthalene	31.0	3.81	6.53	5.00	5.42	0.099
1-Methylphenanthrene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
9-Methylphenanthrene	12.0	1.47	2.53	1.94	2.10	0.038
Naphthalene	165	20.3	34.8	26.6	28.8	0.52
Perylene	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Phenanthrene	96.5	11.8	20.3	15.6	16.9	0.31
Picene	<60	<7.37	<12.6	<9.69	<10.5	<0.19
Pyrene	19.4	2.38	4.09	3.13	3.39	0.062
Tetralin	298	36.6	62.8	48.1	52.1	0.95
m-terphenyl	<12	<1.47	<2.53	<1.94	<2.10	<0.038
o-Terphenyl	<12	<1.47	<2.53	<1.94	<2.10	<0.038
p-terphenyl	<12	<1.47	<2.53	<1.94	<2.10	<0.038
Total	<1242	<153	<262	<201	<217	<3.95

Dry Gas Volume Sampled (Rm³*) :	4.748
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.7
Wet Reference Flowrate (Rm³/s*) :	18.2

* At 25°C and 1 atmosphere

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

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

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

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<1.39	<1.44	<1.47	<1.43	2.9
Acenaphthylene	<1.39	2.96	<1.47	<1.94	45.4
Anthracene	<1.39	1.77	<1.47	<1.54	12.9
Benzo(a)Anthracene	<1.39	<1.44	<1.47	<1.43	2.9
Benzo(b)Fluoranthene	<1.39	<1.44	<1.47	<1.43	2.9
Benzo(k)Fluoranthene	<1.39	<1.44	<1.47	<1.43	2.9
Benzo(a)fluorene	<1.39	<1.44	<1.47	<1.43	2.9
Benzo(b)fluorene	<1.39	<1.44	<1.47	<1.43	2.9
Benzo(g,h,i)Perylene	<1.39	<1.44	4.36	<2.40	71.0
Benzo(a)Pyrene	<1.39	<1.44	<1.47	<1.43	2.9
Benzo(e)Pyrene	<1.39	<1.44	<1.47	<1.43	2.9
Biphenyl	3.50	3.48	3.47	3.49	0.4
2-Chloronaphthalene	<1.39	<1.44	<1.47	<1.43	2.9
Chrysene/Triphenylene	<1.39	8.11	<1.47	<3.66	105
Coronene	<6.95	<7.18	<7.37	<7.17	2.9
Dibenzo(a,c/a,h)Anthracene	<1.39	<1.44	<1.47	<1.43	2.9
Dibenzo(a,e)pyrene	<6.95	<7.18	<7.37	<7.17	2.9
9,10-dimethylanthracene	<1.39	<1.44	<1.47	<1.43	2.9
7,12-Dimethylbenzo(a)anthracene	<1.39	<1.44	<1.47	<1.43	2.9
Fluoranthene	3.05	21.9	2.52	9.15	121
Fluorene	<1.39	2.79	<1.47	<1.88	41.6
Indeno(1,2,3-cd)Pyrene	<1.39	<1.44	<1.47	<1.43	2.9
2-methylanthracene	<1.39	3.21	<1.47	<2.02	50.7
3-Methylcholanthrene	<6.95	<7.18	<7.37	<7.17	2.9
1-Methylnaphthalene	2.25	4.89	2.46	3.20	46.0
2-Methylnaphthalene	3.74	7.55	3.81	5.03	43.3
1-Methylphenanthrene	<1.39	<1.44	<1.47	<1.43	2.9
9-Methylphenanthrene	<1.39	9.38	1.47	<4.08	112
Naphthalene	21.5	28.4	20.3	23.4	18.6
Perylene	<1.39	<1.44	<1.47	<1.43	2.9
Phenanthrene	7.41	53.2	11.8	24.2	105
Picene	<6.95	<7.18	<7.37	<7.17	2.9
Pyrene	3.94	16.0	2.38	7.45	100
Tetralin	38.8	38.5	36.6	38.0	3.2
m-terphenyl	<1.39	<1.44	<1.47	<1.43	2.9
o-Terphenyl	<1.39	<1.44	<1.47	<1.43	2.9
p-terphenyl	<1.39	<1.44	<1.47	<1.43	2.9
Total	<147	<258	<153	<186	33.7

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	<2.42	<2.48	<2.53	<2.48	2.1
Acenaphthylene	<2.42	5.11	<2.53	<3.35	45.4
Anthracene	<2.42	3.06	<2.53	<2.67	12.8
Benzo(a)Anthracene	<2.42	<2.48	<2.53	<2.48	2.1
Benzo(b)Fluoranthene	<2.42	<2.48	<2.53	<2.48	2.1
Benzo(k)Fluoranthene	<2.42	<2.48	<2.53	<2.48	2.1
Benzo(a)fluorene	<2.42	<2.48	<2.53	<2.48	2.1
Benzo(b)fluorene	<2.42	<2.48	<2.53	<2.48	2.1
Benzo(g,h,i)Perylene	<2.42	<2.48	7.48	<4.13	70.3
Benzo(a)Pyrene	<2.42	<2.48	<2.53	<2.48	2.1
Benzo(e)Pyrene	<2.42	<2.48	<2.53	<2.48	2.1
Biphenyl	6.09	6.02	5.96	6.03	1.1
2-Chloronaphthalene	<2.42	<2.48	<2.53	<2.48	2.1
Chrysene/Triphenylene	<2.42	14.0	<2.53	<6.32	105
Coronene	<12.1	<12.4	<12.6	<12.4	2.1
Dibenzo(a,c/a,h)Anthracene	<2.42	<2.48	<2.53	<2.48	2.1
Dibenzo(a,e)pyrene	<12.1	<12.4	<12.6	<12.4	2.1
9,10-dimethylanthracene	<2.42	<2.48	<2.53	<2.48	2.1
7,12-Dimethylbenzo(a)anthracene	<2.42	<2.48	<2.53	<2.48	2.1
Fluoranthene	5.31	37.9	4.32	15.8	121
Fluorene	<2.42	4.82	<2.53	<3.26	41.6
Indeno(1,2,3-cd)Pyrene	<2.42	<2.48	<2.53	<2.48	2.1
2-methylanthracene	<2.42	5.54	<2.53	<3.50	50.7
3-Methylcholanthrene	<12.1	<12.4	<12.6	<12.4	2.1
1-Methylnaphthalene	3.92	8.46	4.21	5.53	46.0
2-Methylnaphthalene	6.52	13.1	6.53	8.70	43.3
1-Methylphenanthrene	<2.42	<2.48	<2.53	<2.48	2.1
9-Methylphenanthrene	<2.42	16.2	2.53	<7.06	112
Naphthalene	37.5	49.0	34.8	40.4	18.7
Perylene	<2.42	<2.48	<2.53	<2.48	2.1
Phenanthrene	12.9	92.1	20.3	41.8	105
Picene	<12.1	<12.4	<12.6	<12.4	2.1
Pyrene	6.86	27.7	4.09	12.9	100
Tetralin	67.6	66.6	62.8	65.7	3.9
m-terphenyl	<2.42	<2.48	<2.53	<2.48	2.1
o-Terphenyl	<2.42	<2.48	<2.53	<2.48	2.1
p-terphenyl	<2.42	<2.48	<2.53	<2.48	2.1
Total	<256	<446	<262	<321	33.7

* At 25°C and 1 atmosphere

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

Compound	Dry Adjusted Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.87	<1.91	<1.94	<1.91	1.9
Acenaphthylene	<1.87	3.94	<1.94	<2.58	45.6
Anthracene	<1.87	2.36	<1.94	<2.06	13.0
Benzo(a)Anthracene	<1.87	<1.91	<1.94	<1.91	1.9
Benzo(b)Fluoranthene	<1.87	<1.91	<1.94	<1.91	1.9
Benzo(k)Fluoranthene	<1.87	<1.91	<1.94	<1.91	1.9
Benzo(a)fluorene	<1.87	<1.91	<1.94	<1.91	1.9
Benzo(b)fluorene	<1.87	<1.91	<1.94	<1.91	1.9
Benzo(g,h,i)Perylene	<1.87	<1.91	5.73	<3.17	69.9
Benzo(a)Pyrene	<1.87	<1.91	<1.94	<1.91	1.9
Benzo(e)Pyrene	<1.87	<1.91	<1.94	<1.91	1.9
Biphenyl	4.70	4.64	4.57	4.64	1.4
2-Chloronaphthalene	<1.87	<1.91	<1.94	<1.91	1.9
Chrysene/Triphenylene	<1.87	10.8	<1.94	<4.87	106
Coronene	<9.34	<9.57	<9.69	<9.53	1.9
Dibenzo(a,c/a,h)Anthracene	<1.87	<1.91	<1.94	<1.91	1.9
Dibenzo(a,e)pyrene	<9.34	<9.57	<9.69	<9.53	1.9
9,10-dimethylanthracene	<1.87	<1.91	<1.94	<1.91	1.9
7,12-Dimethylbenzo(a)anthracene	<1.87	<1.91	<1.94	<1.91	1.9
Fluoranthene	4.09	29.2	3.31	12.2	121
Fluorene	<1.87	3.72	<1.94	<2.51	41.8
Indeno(1,2,3-cd)Pyrene	<1.87	<1.91	<1.94	<1.91	1.9
2-methylanthracene	<1.87	4.28	<1.94	<2.69	50.9
3-Methylcholanthrene	<9.34	<9.57	<9.69	<9.53	1.9
1-Methylnaphthalene	3.02	6.52	3.23	4.26	46.2
2-Methylnaphthalene	5.03	10.1	5.00	6.70	43.5
1-Methylphenanthrene	<1.87	<1.91	<1.94	<1.91	1.9
9-Methylphenanthrene	<1.87	12.5	1.94	<5.44	113
Naphthalene	28.9	37.8	26.6	31.1	18.9
Perylene	<1.87	<1.91	<1.94	<1.91	1.9
Phenanthrene	9.96	71.0	15.6	32.18	105
Picene	<9.34	<9.57	<9.69	<9.53	1.9
Pyrene	5.29	21.4	3.13	9.93	100
Tetralin	52.1	51.4	48.1	50.5	4.2
m-terphenyl	<1.87	<1.91	<1.94	<1.91	1.9
o-Terphenyl	<1.87	<1.91	<1.94	<1.91	1.9
p-terphenyl	<1.87	<1.91	<1.94	<1.91	1.9
Total	<197	<344	<201	<247	33.9

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

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

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.99	<2.05	<2.10	<2.04	2.7
Acenaphthylene	<1.99	4.21	<2.10	<2.77	45.4
Anthracene	<1.99	2.52	<2.10	<2.20	12.9
Benzo(a)Anthracene	<1.99	<2.05	<2.10	<2.04	2.7
Benzo(b)Fluoranthene	<1.99	<2.05	<2.10	<2.04	2.7
Benzo(k)Fluoranthene	<1.99	<2.05	<2.10	<2.04	2.7
Benzo(a)fluorene	<1.99	<2.05	<2.10	<2.04	2.7
Benzo(b)fluorene	<1.99	<2.05	<2.10	<2.04	2.7
Benzo(g,h,i)Perylene	<1.99	<2.05	6.20	<3.41	70.9
Benzo(a)Pyrene	<1.99	<2.05	<2.10	<2.04	2.7
Benzo(e)Pyrene	<1.99	<2.05	<2.10	<2.04	2.7
Biphenyl	5.00	4.96	4.95	4.97	0.5
2-Chloronaphthalene	<1.99	<2.05	<2.10	<2.04	2.7
Chrysene/Triphenylene	<1.99	11.6	<2.10	<5.22	105
Coronene	<9.93	<10.2	<10.5	<10.2	2.7
Dibenzo(a,c/a,h)Anthracene	<1.99	<2.05	<2.10	<2.04	2.7
Dibenzo(a,e)pyrene	<9.93	<10.2	<10.5	<10.2	2.7
9,10-dimethylanthracene	<1.99	<2.05	<2.10	<2.04	2.7
7,12-Dimethylbenzo(a)anthracene	<1.99	<2.05	<2.10	<2.04	2.7
Fluoranthene	4.35	31.2	3.58	13.0	121
Fluorene	<1.99	3.97	<2.10	<2.69	41.6
Indeno(1,2,3-cd)Pyrene	<1.99	<2.05	<2.10	<2.04	2.7
2-methylanthracene	<1.99	4.57	<2.10	<2.88	50.7
3-Methylcholanthrene	<9.93	<10.2	<10.5	<10.2	2.7
1-Methylnaphthalene	3.21	6.98	3.49	4.56	46.0
2-Methylnaphthalene	5.35	10.8	5.42	7.18	43.3
1-Methylphenanthrene	<1.99	<2.05	<2.10	<2.04	2.7
9-Methylphenanthrene	<1.99	13.4	2.10	<5.82	112
Naphthalene	30.8	40.4	28.8	33.3	18.6
Perylene	<1.99	<2.05	<2.10	<2.04	2.7
Phenanthrene	10.6	75.9	16.9	34.5	105
Picene	<9.93	<10.2	<10.5	<10.2	2.7
Pyrene	5.63	22.9	3.39	10.6	100
Tetralin	55.4	54.9	52.1	54.1	3.4
m-terphenyl	<1.99	<2.05	<2.10	<2.04	2.7
o-Terphenyl	<1.99	<2.05	<2.10	<2.04	2.7
p-terphenyl	<1.99	<2.05	<2.10	<2.04	2.7
Total	<210	<368	<217	<265	33.7

* At 25°C and 1 atmosphere

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

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
Acenaphthene	<0.038	<0.038	<0.038	<0.038	1.3
Acenaphthylene	<0.038	0.079	<0.038	<0.052	46.2
Anthracene	<0.038	0.047	<0.038	<0.041	13.5
Benzo(a)Anthracene	<0.038	<0.038	<0.038	<0.038	1.3
Benzo(b)Fluoranthene	<0.038	<0.038	<0.038	<0.038	1.3
Benzo(k)Fluoranthene	<0.038	<0.038	<0.038	<0.038	1.3
Benzo(a)fluorene	<0.038	<0.038	<0.038	<0.038	1.3
Benzo(b)fluorene	<0.038	<0.038	<0.038	<0.038	1.3
Benzo(g,h,i)Perylene	<0.038	<0.038	0.11	<0.063	68.7
Benzo(a)Pyrene	<0.038	<0.038	<0.038	<0.038	1.3
Benzo(e)Pyrene	<0.038	<0.038	<0.038	<0.038	1.3
Biphenyl	0.094	0.093	0.090	0.093	2.5
2-Chloronaphthalene	<0.038	<0.038	<0.038	<0.038	1.3
Chrysene/Triphenylene	<0.038	0.22	<0.038	<0.098	106
Coronene	<0.19	<0.19	<0.19	<0.19	1.3
Dibenzo(a,c/a,h)Anthracene	<0.038	<0.038	<0.038	<0.038	1.3
Dibenzo(a,e)pyrene	<0.19	<0.19	<0.19	<0.19	1.3
9,10-dimethylanthracene	<0.038	<0.038	<0.038	<0.038	1.3
7,12-Dimethylbenzo(a)anthracene	<0.038	<0.038	<0.038	<0.038	1.3
Fluoranthene	0.082	0.59	0.065	0.24	121
Fluorene	<0.038	0.075	<0.038	<0.050	42.5
Indeno(1,2,3-cd)Pyrene	<0.038	<0.038	<0.038	<0.038	1.3
2-methylanthracene	<0.038	0.086	<0.038	<0.054	51.5
3-Methylcholanthrene	<0.19	<0.19	<0.19	<0.19	1.3
1-Methylnaphthalene	0.061	0.13	0.064	0.085	46.8
2-Methylnaphthalene	0.10	0.20	0.099	0.13	44.2
1-Methylphenanthrene	<0.038	<0.038	<0.038	<0.038	1.3
9-Methylphenanthrene	<0.038	0.25	0.038	<0.11	113
Naphthalene	0.58	0.76	0.52	0.62	19.7
Perylene	<0.038	<0.038	<0.038	<0.038	1.3
Phenanthrene	0.20	1.43	0.31	0.64	105
Picene	<0.19	<0.19	<0.19	<0.19	1.3
Pyrene	0.11	0.43	0.062	0.20	101
Tetralin	1.05	1.03	0.95	1.01	5.3
m-terphenyl	<0.038	<0.038	<0.038	<0.038	1.3
o-Terphenyl	<0.038	<0.038	<0.038	<0.038	1.3
p-terphenyl	<0.038	<0.038	<0.038	<0.038	1.3
Total	<3.96	<6.92	<3.95	<4.94	34.6

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

Compound	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<1.43	<2.48	<1.91	<2.04	<0.038
Acenaphthylene	<1.94	<3.35	<2.58	<2.77	<0.052
Anthracene	<1.54	<2.67	<2.06	<2.20	<0.041
Benzo(a)Anthracene	<1.43	<2.48	<1.91	<2.04	<0.038
Benzo(b)Fluoranthene	<1.43	<2.48	<1.91	<2.04	<0.038
Benzo(k)Fluoranthene	<1.43	<2.48	<1.91	<2.04	<0.038
Benzo(a)fluorene	<1.43	<2.48	<1.91	<2.04	<0.038
Benzo(b)fluorene	<1.43	<2.48	<1.91	<2.04	<0.038
Benzo(g,h,i)Perylene	<2.40	<4.13	<3.17	<3.41	<0.063
Benzo(a)Pyrene	<1.43	<2.48	<1.91	<2.04	<0.038
Benzo(e)Pyrene	<1.43	<2.48	<1.91	<2.04	<0.038
Biphenyl	3.49	6.03	4.64	4.97	0.093
2-Chloronaphthalene	<1.43	<2.48	<1.91	<2.04	<0.038
Chrysene/Triphenylene	<3.66	<6.32	<4.87	<5.22	<0.098
Coronene	<7.17	<12.4	<9.53	<10.2	<0.19
Dibenzo(a,c/a,h)Anthracene	<1.43	<2.48	<1.91	<2.04	<0.038
Dibenzo(a,e)pyrene	<7.17	<12.4	<9.53	<10.2	<0.19
9,10-dimethylanthracene	<1.43	<2.48	<1.91	<2.04	<0.038
7,12-Dimethylbenzo(a)anthracene	<1.43	<2.48	<1.91	<2.04	<0.038
Fluoranthene	9.15	15.8	12.2	13.0	0.24
Fluorene	<1.88	<3.26	<2.51	<2.69	<0.050
Indeno(1,2,3-cd)Pyrene	<1.43	<2.48	<1.91	<2.04	<0.038
2-methylanthracene	<2.02	<3.50	<2.69	<2.88	<0.054
3-Methylcholanthrene	<7.17	<12.4	<9.53	<10.2	<0.19
1-Methylnaphthalene	3.20	5.53	4.26	4.56	0.085
2-Methylnaphthalene	5.03	8.70	6.70	7.18	0.13
1-Methylphenanthrene	<1.43	<2.48	<1.91	<2.04	<0.038
9-Methylphenanthrene	<4.08	<7.06	<5.44	<5.82	<0.11
Naphthalene	23.4	40.4	31.1	33.3	0.62
Perylene	<1.43	<2.48	<1.91	<2.04	<0.038
Phenanthrene	24.2	41.8	32.2	34.5	0.64
Picene	<7.17	<12.4	<9.53	<10.2	<0.19
Pyrene	7.45	12.9	9.93	10.6	0.20
Tetralin	38.0	65.7	50.5	54.1	1.01
m-terphenyl	<1.43	<2.48	<1.91	<2.04	<0.038
o-Terphenyl	<1.43	<2.48	<1.91	<2.04	<0.038
p-terphenyl	<1.43	<2.48	<1.91	<2.04	<0.038
Total	<186	<321	<247	<265	<4.94

* 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	Media Blank
	ng	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	18.2
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	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	135	99.3
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	13.0
Tetralin	281	58.9
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<1028	<777

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

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

Acetaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acetaldehyde Concentration Actual $\mu g/m^3$	Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Acetaldehyde Emission Rate mg/s
1	12.2	0.0351	199	347	267	284	5.37
2	4.07	0.0354	66.4	115	88.5	94.7	1.78
3	4.79	0.0352	78.8	136	105	112	2.11
Average			115	199	154	164	3.09
Blank Train	4.98						
Method Blank	10.5						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Formaldehyde Concentration Actual $\mu g/m^3$	Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Formaldehyde Emission Rate mg/s
1	8.79	0.0351	144	251	193	206	3.88
2	11.6	0.0354	190	328	253	271	5.09
3	14.1	0.0352	232	402	310	331	6.22
Average			189	327	252	269	5.07
Blank Train	13.9						
Method Blank	4.10						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acrolein Concentration Actual $\mu g/m^3$	Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Acrolein Emission Rate mg/s
1	0.19	0.0351	3.11	5.42	4.18	4.44	0.084
2	0.24	0.0354	3.92	6.77	5.22	5.58	0.10
3	0.23	0.0352	3.78	6.54	5.04	5.39	0.10
Average			3.60	6.24	4.81	5.14	0.097
Blank Train	0.26						
Method Blank	3.39						

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/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	0.21	5.27	9.18	7.08	7.53	0.14
Benzene	<0.05	<1.28	<2.24	<1.73	<1.84	<0.035
Bromodichloromethane	0.023	0.59	1.03	0.79	0.84	0.016
Bromoform	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
Bromomethane	<0.09	<2.31	<4.03	<3.11	<3.30	<0.062
1,3-Butadiene	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
2-Butanone	0.022	0.57	0.98	0.76	0.81	0.015
Carbon Tetrachloride	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
Chloroform	0.052	1.34	2.33	1.80	1.91	0.036
Cumene (Isopropylbenzene)	<0.02	<0.51	<0.90	<0.69	<0.73	<0.014
Dibromochloromethane	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
Dichlorodifluoromethane	<0.02	<0.51	<0.90	<0.69	<0.73	<0.014
1,2-Dichloroethane	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
trans,1,2-Dichloroethene	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
1,1-Dichloroethene	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
1,2-Dichloropropane	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
Ethylbenzene	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
Ethylene Dibromide	<0.02	<0.51	<0.90	<0.69	<0.73	<0.014
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.51	<0.90	<0.69	<0.73	<0.014
Methylene Chloride	0.25	6.37	11.1	8.56	9.10	0.17
Styrene	<0.02	<0.51	<0.90	<0.69	<0.73	<0.014
Tetrachloroethene	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
Toluene	0.094	2.42	4.21	3.24	3.45	0.065
1,1,1-Trichloroethane	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
Trichlorotrifluoroethane	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
Trichlorofluoromethane	<0.02	<0.51	<0.90	<0.69	<0.73	<0.014
M&P-Xylene	<0.03	<0.77	<1.34	<1.04	<1.10	<0.021
O-Xylene	<0.01	<0.26	<0.45	<0.35	<0.37	<0.0069
Vinyl Chloride	<0.02	<0.51	<0.90	<0.69	<0.73	<0.014
Total	<1.09	<28.1	<49.0	<37.8	<40.2	<0.76

Dry Gas Volume Sampled (Rm³*) :	0.0223
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	<0.1	<2.74	<4.78	<3.68	<3.92	<0.074
Benzene	<0.05	<1.37	<2.39	<1.84	<1.96	<0.037
Bromodichloromethane	0.012	0.33	0.57	0.44	0.47	0.0089
Bromoform	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
Bromomethane	<0.09	<2.47	<4.30	<3.31	<3.53	<0.067
1,3-Butadiene	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
2-Butanone	0.026	0.71	1.24	0.96	1.02	0.019
Carbon Tetrachloride	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
Chloroform	0.035	0.96	1.67	1.29	1.37	0.026
Cumene (Isopropylbenzene)	<0.02	<0.55	<0.96	<0.74	<0.78	<0.015
Dibromochloromethane	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
Dichlorodifluoromethane	<0.02	<0.55	<0.96	<0.74	<0.78	<0.015
1,2-Dichloroethane	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
trans,1,2-Dichloroethene	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
1,1-Dichloroethene	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
1,2-Dichloropropane	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
Ethylbenzene	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
Ethylene Dibromide	<0.02	<0.55	<0.96	<0.74	<0.78	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.55	<0.96	<0.74	<0.78	<0.015
Methylene Chloride	0.10	2.77	4.82	3.72	3.96	0.075
Styrene	<0.02	<0.55	<0.96	<0.74	<0.78	<0.015
Tetrachloroethene	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
Toluene	<0.05	<1.37	<2.39	<1.84	<1.96	<0.037
1,1,1-Trichloroethane	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
Trichlorotrifluoroethane	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
Trichlorofluoromethane	<0.02	<0.55	<0.96	<0.74	<0.78	<0.015
M&P-Xylene	<0.03	<0.82	<1.43	<1.10	<1.18	<0.022
O-Xylene	<0.01	<0.27	<0.48	<0.37	<0.39	<0.0074
Vinyl Chloride	<0.02	<0.55	<0.96	<0.74	<0.78	<0.015
Total	<0.77	<21.2	<37.0	<28.5	<30.3	<0.57

Dry Gas Volume Sampled (Rm^3*) :	0.0209
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	<0.1	<2.76	<4.80	<3.70	<3.94	<0.074
Benzene	<0.05	<1.38	<2.40	<1.85	<1.97	<0.037
Bromodichloromethane	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Bromoform	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Bromomethane	<0.09	<2.48	<4.32	<3.33	<3.54	<0.067
1,3-Butadiene	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
2-Butanone	0.011	0.30	0.53	0.41	0.43	0.0082
Carbon Tetrachloride	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Chloroform	0.027	0.74	1.30	1.00	1.06	0.020
Cumene (Isopropylbenzene)	<0.02	<0.55	<0.96	<0.74	<0.79	<0.015
Dibromochloromethane	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Dichlorodifluoromethane	<0.02	<0.55	<0.96	<0.74	<0.79	<0.015
1,2-Dichloroethane	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
trans,1,2-Dichloroethene	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
1,1-Dichloroethene	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
1,2-Dichloropropane	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Ethylbenzene	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Ethylene Dibromide	<0.02	<0.55	<0.96	<0.74	<0.79	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.55	<0.96	<0.74	<0.79	<0.015
Methylene Chloride	0.11	2.95	5.14	3.96	4.21	0.080
Styrene	<0.02	<0.55	<0.96	<0.74	<0.79	<0.015
Tetrachloroethene	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Toluene	<0.05	<1.38	<2.40	<1.85	<1.97	<0.037
1,1,1-Trichloroethane	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Trichlorotrifluoroethane	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Trichlorofluoromethane	<0.02	<0.55	<0.96	<0.74	<0.79	<0.015
M&P-Xylene	<0.03	<0.83	<1.44	<1.11	<1.18	<0.022
O-Xylene	<0.01	<0.28	<0.48	<0.37	<0.39	<0.0074
Vinyl Chloride	<0.02	<0.55	<0.96	<0.74	<0.79	<0.015
Total	<0.76	<20.8	<36.2	<27.9	<29.7	<0.56

Dry Gas Volume Sampled (Rm^3*) :	0.0208
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

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

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m^3	µg/m^3	µg/m^3	µg/m^3	%
Acetone	5.27	<2.74	<2.76	<3.59	40.5
Benzene	<1.28	<1.37	<1.38	<1.34	3.8
Bromodichloromethane	0.59	0.33	<0.28	<0.40	42.4
Bromoform	<0.26	<0.27	<0.28	<0.27	3.8
Bromomethane	<2.31	<2.47	<2.48	<2.42	3.8
1,3-Butadiene	<0.26	<0.27	<0.28	<0.27	3.8
2-Butanone	0.57	0.71	0.30	0.53	39.4
Carbon Tetrachloride	<0.26	<0.27	<0.28	<0.27	3.8
Chloroform	1.34	0.96	0.74	1.01	29.6
Cumene (Isopropylbenzene)	<0.51	<0.55	<0.55	<0.54	3.8
Dibromochloromethane	<0.26	<0.27	<0.28	<0.27	3.8
Dichlorodifluoromethane	<0.51	<0.55	<0.55	<0.54	3.8
1,2-Dichloroethane	<0.26	<0.27	<0.28	<0.27	3.8
trans,1,2-Dichloroethene	<0.26	<0.27	<0.28	<0.27	3.8
1,1-Dichloroethene	<0.26	<0.27	<0.28	<0.27	3.8
1,2-Dichloropropane	<0.26	<0.27	<0.28	<0.27	3.8
Ethylbenzene	<0.26	<0.27	<0.28	<0.27	3.8
Ethylene Dibromide	<0.51	<0.55	<0.55	<0.54	3.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.51	<0.55	<0.55	<0.54	3.8
Methylene Chloride	6.37	2.77	2.95	4.03	50.4
Styrene	<0.51	<0.55	<0.55	<0.54	3.8
Tetrachloroethene	<0.26	<0.27	<0.28	<0.27	3.8
Toluene	2.42	<1.37	<1.38	<1.72	34.9
1,1,1-Trichloroethane	<0.26	<0.27	<0.28	<0.27	3.8
Trichloroethene/1,1,2-Trichloroethene	<0.26	<0.27	<0.28	<0.27	3.8
Trichlorotrifluoroethane	<0.26	<0.27	<0.28	<0.27	3.8
Trichlorofluoromethane	<0.51	<0.55	<0.55	<0.54	3.8
M&P-Xylene	<0.77	<0.82	<0.83	<0.81	3.8
O-Xylene	<0.26	<0.27	<0.28	<0.27	3.8
Vinyl Chloride	<0.51	<0.55	<0.55	<0.54	3.8
Total	<28.1	<21.2	<20.8	<23.4	17.6

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

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	9.18	<4.78	<4.80	<6.25	40.5
Benzene	<2.24	<2.39	<2.40	<2.34	3.8
Bromodichloromethane	1.03	0.57	<0.48	<0.69	42.4
Bromoform	<0.45	<0.48	<0.48	<0.47	3.8
Bromomethane	<4.03	<4.30	<4.32	<4.22	3.8
1,3-Butadiene	<0.45	<0.48	<0.48	<0.47	3.8
2-Butanone	0.98	1.24	0.53	0.92	39.4
Carbon Tetrachloride	<0.45	<0.48	<0.48	<0.47	3.8
Chloroform	2.33	1.67	1.30	1.77	29.6
Cumene (Isopropylbenzene)	<0.90	<0.96	<0.96	<0.94	3.8
Dibromochloromethane	<0.45	<0.48	<0.48	<0.47	3.8
Dichlorodifluoromethane	<0.90	<0.96	<0.96	<0.94	3.8
1,2-Dichloroethane	<0.45	<0.48	<0.48	<0.47	3.8
trans,1,2-Dichloroethene	<0.45	<0.48	<0.48	<0.47	3.8
1,1-Dichloroethene	<0.45	<0.48	<0.48	<0.47	3.8
1,2-Dichloropropane	<0.45	<0.48	<0.48	<0.47	3.8
Ethylbenzene	<0.45	<0.48	<0.48	<0.47	3.8
Ethylene Dibromide	<0.90	<0.96	<0.96	<0.94	3.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.90	<0.96	<0.96	<0.94	3.8
Methylene Chloride	11.1	4.82	5.14	7.02	50.4
Styrene	<0.90	<0.96	<0.96	<0.94	3.8
Tetrachloroethene	<0.45	<0.48	<0.48	<0.47	3.8
Toluene	4.21	<2.39	<2.40	<3.00	34.9
1,1,1-Trichloroethane	<0.45	<0.48	<0.48	<0.47	3.8
Trichloroethene/1,1,2-Trichloroethene	<0.45	<0.48	<0.48	<0.47	3.8
Trichlorotrifluoroethane	<0.45	<0.48	<0.48	<0.47	3.8
Trichlorofluoromethane	<0.90	<0.96	<0.96	<0.94	3.8
M&P-Xylene	<1.34	<1.43	<1.44	<1.41	3.8
O-Xylene	<0.45	<0.48	<0.48	<0.47	3.8
Vinyl Chloride	<0.90	<0.96	<0.96	<0.94	3.8
Total	<49.0	<37.0	<36.2	<40.7	17.6

* At 25°C and 1 atmosphere

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

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	7.08	<3.68	<3.70	<4.82	40.5
Benzene	<1.73	<1.84	<1.85	<1.81	3.8
Bromodichloromethane	0.79	0.44	<0.37	<0.54	42.4
Bromoform	<0.35	<0.37	<0.37	<0.36	3.8
Bromomethane	<3.11	<3.31	<3.33	<3.25	3.8
1,3-Butadiene	<0.35	<0.37	<0.37	<0.36	3.8
2-Butanone	0.76	0.96	0.41	0.71	39.4
Carbon Tetrachloride	<0.35	<0.37	<0.37	<0.36	3.8
Chloroform	1.80	1.29	1.00	1.36	29.6
Cumene (Isopropylbenzene)	<0.69	<0.74	<0.74	<0.72	3.8
Dibromochloromethane	<0.35	<0.37	<0.37	<0.36	3.8
Dichlorodifluoromethane	<0.69	<0.74	<0.74	<0.72	3.8
1,2-Dichloroethane	<0.35	<0.37	<0.37	<0.36	3.8
trans,1,2-Dichloroethene	<0.35	<0.37	<0.37	<0.36	3.8
1,1-Dichloroethene	<0.35	<0.37	<0.37	<0.36	3.8
1,2-Dichloropropane	<0.35	<0.37	<0.37	<0.36	3.8
Ethylbenzene	<0.35	<0.37	<0.37	<0.36	3.8
Ethylene Dibromide	<0.69	<0.74	<0.74	<0.72	3.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.69	<0.74	<0.74	<0.72	3.8
Methylene Chloride	8.56	3.72	3.96	5.41	50.4
Styrene	<0.69	<0.74	<0.74	<0.72	3.8
Tetrachloroethene	<0.35	<0.37	<0.37	<0.36	3.8
Toluene	3.24	<1.84	<1.85	<2.31	34.9
1,1,1-Trichloroethane	<0.35	<0.37	<0.37	<0.36	3.8
Trichloroethene/1,1,2-Trichloroethene	<0.35	<0.37	<0.37	<0.36	3.8
Trichlorotrifluoroethane	<0.35	<0.37	<0.37	<0.36	3.8
Trichlorofluoromethane	<0.69	<0.74	<0.74	<0.72	3.8
M&P-Xylene	<1.04	<1.10	<1.11	<1.08	3.8
O-Xylene	<0.35	<0.37	<0.37	<0.36	3.8
Vinyl Chloride	<0.69	<0.74	<0.74	<0.72	3.8
Total	<37.8	<28.5	<27.9	<31.4	17.6

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

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

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	7.53	<3.92	<3.94	<5.13	40.5
Benzene	<1.84	<1.96	<1.97	<1.92	3.8
Bromodichloromethane	0.84	0.47	<0.39	<0.57	42.4
Bromoform	<0.37	<0.39	<0.39	<0.38	3.8
Bromomethane	<3.30	<3.53	<3.54	<3.46	3.8
1,3-Butadiene	<0.37	<0.39	<0.39	<0.38	3.8
2-Butanone	0.81	1.02	0.43	0.75	39.4
Carbon Tetrachloride	<0.37	<0.39	<0.39	<0.38	3.8
Chloroform	1.91	1.37	1.06	1.45	29.6
Cumene (Isopropylbenzene)	<0.73	<0.78	<0.79	<0.77	3.8
Dibromochloromethane	<0.37	<0.39	<0.39	<0.38	3.8
Dichlorodifluoromethane	<0.73	<0.78	<0.79	<0.77	3.8
1,2-Dichloroethane	<0.37	<0.39	<0.39	<0.38	3.8
trans,1,2-Dichloroethene	<0.37	<0.39	<0.39	<0.38	3.8
1,1-Dichloroethene	<0.37	<0.39	<0.39	<0.38	3.8
1,2-Dichloropropane	<0.37	<0.39	<0.39	<0.38	3.8
Ethylbenzene	<0.37	<0.39	<0.39	<0.38	3.8
Ethylene Dibromide	<0.73	<0.78	<0.79	<0.77	3.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.73	<0.78	<0.79	<0.77	3.8
Methylene Chloride	9.10	3.96	4.21	5.76	50.4
Styrene	<0.73	<0.78	<0.79	<0.77	3.8
Tetrachloroethene	<0.37	<0.39	<0.39	<0.38	3.8
Toluene	3.45	<1.96	<1.97	<2.46	34.9
1,1,1-Trichloroethane	<0.37	<0.39	<0.39	<0.38	3.8
Trichloroethene/1,1,2-Trichloroethene	<0.37	<0.39	<0.39	<0.38	3.8
Trichlorotrifluoroethane	<0.37	<0.39	<0.39	<0.38	3.8
Trichlorofluoromethane	<0.73	<0.78	<0.79	<0.77	3.8
M&P-Xylene	<1.10	<1.18	<1.18	<1.15	3.8
O-Xylene	<0.37	<0.39	<0.39	<0.38	3.8
Vinyl Chloride	<0.73	<0.78	<0.79	<0.77	3.8
Total	<40.2	<30.3	<29.7	<33.4	17.6

* At 25°C and 1 atmosphere

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

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	%
Acetone	0.14	<0.074	<0.074	<0.097	40.5
Benzene	<0.035	<0.037	<0.037	<0.036	3.8
Bromodichloromethane	0.016	0.0089	<0.0074	<0.011	42.4
Bromoform	<0.0069	<0.0074	<0.0074	<0.0073	3.8
Bromomethane	<0.062	<0.067	<0.067	<0.065	3.8
1,3-Butadiene	<0.0069	<0.0074	<0.0074	<0.0073	3.8
2-Butanone	0.015	0.019	0.0082	0.014	39.4
Carbon Tetrachloride	<0.0069	<0.0074	<0.0074	<0.0073	3.8
Chloroform	0.036	0.026	0.020	0.027	29.6
Cumene (Isopropylbenzene)	<0.014	<0.015	<0.015	<0.015	3.8
Dibromochloromethane	<0.0069	<0.0074	<0.0074	<0.0073	3.8
Dichlorodifluoromethane	<0.014	<0.015	<0.015	<0.015	3.8
1,2-Dichloroethane	<0.0069	<0.0074	<0.0074	<0.0073	3.8
trans,1,2-Dichloroethene	<0.0069	<0.0074	<0.0074	<0.0073	3.8
1,1-Dichloroethene	<0.0069	<0.0074	<0.0074	<0.0073	3.8
1,2-Dichloropropane	<0.0069	<0.0074	<0.0074	<0.0073	3.8
Ethylbenzene	<0.0069	<0.0074	<0.0074	<0.0073	3.8
Ethylene Dibromide	<0.014	<0.015	<0.015	<0.015	3.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.014	<0.015	<0.015	<0.015	3.8
Methylene Chloride	0.17	0.075	0.080	0.11	50.4
Styrene	<0.014	<0.015	<0.015	<0.015	3.8
Tetrachloroethene	<0.0069	<0.0074	<0.0074	<0.0073	3.8
Toluene	0.065	<0.037	<0.037	<0.046	34.9
1,1,1-Trichloroethane	<0.0069	<0.0074	<0.0074	<0.0073	3.8
Trichloroethene/1,1,2-Trichloroethene	<0.0069	<0.0074	<0.0074	<0.0073	3.8
Trichlorotrifluoroethane	<0.0069	<0.0074	<0.0074	<0.0073	3.8
Trichlorofluoromethane	<0.014	<0.015	<0.015	<0.015	3.8
M&P-Xylene	<0.021	<0.022	<0.022	<0.022	3.8
O-Xylene	<0.0069	<0.0074	<0.0074	<0.0073	3.8
Vinyl Chloride	<0.014	<0.015	<0.015	<0.015	3.8
Total	<0.76	<0.57	<0.56	<0.63	17.6

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

Compound	Actual Concentration $\mu g/m^3$	Dry Reference Concentration $\mu g/Rm^3$*	Dry Adjusted Concentration $\mu g/Rm^3$*	Wet Reference Concentration $\mu g/Rm^3$*	Emission Rate mg/s
Acetone	<3.59	<6.25	<4.82	<5.13	<0.097
Benzene	<1.34	<2.34	<1.81	<1.92	<0.036
Bromodichloromethane	<0.40	<0.69	<0.54	<0.57	<0.011
Bromoform	<0.27	<0.47	<0.36	<0.38	<0.0073
Bromomethane	<2.42	<4.22	<3.25	<3.46	<0.065
1,3-Butadiene	<0.27	<0.47	<0.36	<0.38	<0.0073
2-Butanone	0.53	0.92	0.71	0.75	0.014
Carbon Tetrachloride	<0.27	<0.47	<0.36	<0.38	<0.0073
Chloroform	1.01	1.77	1.36	1.45	0.027
Cumene (Isopropylbenzene)	<0.54	<0.94	<0.72	<0.77	<0.015
Dibromochloromethane	<0.27	<0.47	<0.36	<0.38	<0.0073
Dichlorodifluoromethane	<0.54	<0.94	<0.72	<0.77	<0.015
1,2-Dichloroethane	<0.27	<0.47	<0.36	<0.38	<0.0073
trans,1,2-Dichloroethene	<0.27	<0.47	<0.36	<0.38	<0.0073
1,1-Dichloroethene	<0.27	<0.47	<0.36	<0.38	<0.0073
1,2-Dichloropropane	<0.27	<0.47	<0.36	<0.38	<0.0073
Ethylbenzene	<0.27	<0.47	<0.36	<0.38	<0.0073
Ethylene Dibromide	<0.54	<0.94	<0.72	<0.77	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.54	<0.94	<0.72	<0.77	<0.015
Methylene Chloride	4.03	7.02	5.41	5.76	0.11
Styrene	<0.54	<0.94	<0.72	<0.77	<0.015
Tetrachloroethene	<0.27	<0.47	<0.36	<0.38	<0.0073
Toluene	<1.72	<3.00	<2.31	<2.46	<0.046
1,1,1-Trichloroethane	<0.27	<0.47	<0.36	<0.38	<0.0073
Trichloroethene/1,1,2-Trichloroethene	<0.27	<0.47	<0.36	<0.38	<0.0073
Trichlorotrifluoroethane	<0.27	<0.47	<0.36	<0.38	<0.0073
Trichlorofluoromethane	<0.54	<0.94	<0.72	<0.77	<0.015
M&P-Xylene	<0.81	<1.41	<1.08	<1.15	<0.022
O-Xylene	<0.27	<0.47	<0.36	<0.38	<0.0073
Vinyl Chloride	<0.54	<0.94	<0.72	<0.77	<0.015
Total	<23.4	<40.7	<31.4	<33.4	<0.63

* 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 Tube 12A/12B µg	Method Blank µg
Acetone	0.30	<0.1
Benzene	0.054	<0.05
Bromodichloromethane	<0.01	<0.01
Bromoform	<0.01	<0.01
Bromomethane	<0.09	<0.09
1,3-Butadiene	<0.01	<0.01
2-Butanone	0.016	<0.01
Carbon Tetrachloride	<0.01	<0.01
Chloroform	<0.01	<0.01
Cumene (Isopropylbenzene)	<0.02	<0.02
Dibromochloromethane	<0.01	<0.01
Dichlorodifluoromethane	<0.02	<0.02
1,2-Dichloroethane	<0.01	<0.01
trans,1,2-Dichloroethene	<0.01	<0.01
1,1-Dichloroethene	<0.01	<0.01
1,2-Dichloropropane	<0.01	<0.01
Ethylbenzene	<0.01	<0.01
Ethylene Dibromide	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02
Methylene Chloride	0.30	<0.1
Styrene	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01
Toluene	4.89	<0.05
1,1,1-Trichloroethane	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01
Trichlorotrifluoroethane	<0.01	<0.01
Trichlorofluoromethane	<0.02	<0.02
M&P-Xylene	<0.03	<0.03
O-Xylene	<0.01	<0.01
Vinyl Chloride	<0.02	<0.02
Total	<5.97	<0.73

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

APPENDIX 2

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

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

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	September 20, 2023	8:13	11:23	180
2	September 20, 2023	13:42	16:52	180
3	September 20, 2023	16:55	20:02	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	September 21, 2023	8:22	10:26	120
2	September 21, 2023	11:21	13:25	120
3	September 21, 2023	14:26	16:30	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	September 20, 2023	8:14	9:14	60
2	September 20, 2023	9:56	10:56	60
3	September 20, 2023	13:42	14:42	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	October 3, 2023	8:08	12:19	240
2	October 3, 2023	12:56	17:05	240
3	October 4, 2023	8:16	12:24	240

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

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

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	October 3, 2023	11:15	12:15	60
2	October 3, 2023	12:19	13:19	60
3	October 3, 2023	13:22	14:22	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	October 3, 2023	8:09	8:49	40
2	October 3, 2023	8:53	9:33	40
3	October 3, 2023	9:38	10:18	40
4	October 3, 2023	10:22	11:02	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period		Sampling Time
			Start	Finish	min
BH Outlet	1	September 20, 2023	8:55	9:55	60
BH Outlet	2	September 20, 2023	10:20	11:20	60
BH Outlet	3	September 20, 2023	13:40	14:40	60
Quench Inlet	1	September 20, 2023	8:55	9:55	60
Quench Inlet	2	September 20, 2023	10:20	11:20	60
Quench Inlet	3	September 20, 2023	13:40	14:40	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	0.848	0.992	6.38	3.576	102.5
2	0.848	0.992	6.38	3.671	103.0
3	0.843	1.049	6.35	3.581	101.4

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	0.844	0.963	4.51	1.194	104.3
2	0.844	0.963	4.51	1.192	95.2
3	0.844	0.963	4.51	1.186	103.8

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.843	1.049	6.35	1.166	100.6
2	0.843	1.049	6.35	1.185	101.0
3	0.843	1.049	6.35	1.177	101.4

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.843	0.992	6.34	4.978	103.2
2	0.848	0.992	6.38	4.940	102.4
3	0.843	0.992	6.34	4.843	102.7

* Dry at 25°C and 1 atmosphere

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

Particulate and Metals Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	142	16.9	17.4	-2.71	98.6	11.0	7.96
2	143	17.1	17.9	-2.71	98.5	10.9	7.95
3	143	17.6	17.9	-2.71	98.5	10.7	8.17
Average	143	17.2	17.8	-2.71	98.5	10.9	8.03

Particle Size Distribution Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	143	17.6	17.1	-2.76	99.0	10.6	8.44
2	142	16.2	18.4	-2.76	99.0	10.50	8.54
3	141	17.1	17.0	-2.76	98.9	10.4	8.56
Average	142	17.0	17.5	-2.76	99.0	10.5	8.51

Acid Gases Trains **

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	139	17.2	17.5	-2.71	98.5	11.0	8.10
2	141	16.6	17.6	-2.71	98.6	11.1	7.84
3	142	17.1	17.5	-2.71	98.5	10.9	7.99
Average	141	17.0	17.5	-2.71	98.6	11.0	7.98

Semi-Volatile Organics Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	144	18.2	18.7	-2.76	98.5	10.7	8.27
2	144	17.6	18.4	-2.76	98.4	10.8	8.26
3	145	18.0	18.2	-2.79	98.4	10.8	8.32
Average	144	17.9	18.4	-2.77	98.4	10.8	8.28

* Dry basis, measured by the DYEC CEMS

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

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

Particulate and Metals Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.8	15.0	19.5	18.0
2	26.5	15.3	20.0	18.4
3	26.5	15.2	19.6	18.5
Average	26.2	15.2	19.7	18.3

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.3	14.6	18.4	17.7
2	27.3	16.0	20.0	19.2
3	25.2	14.7	18.3	17.7
Average	25.9	15.1	18.9	18.2

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	25.8	15.0	19.4	18.1
2	26.0	15.2	20.0	18.2
3	25.9	15.0	19.6	18.1
Average	25.9	15.1	19.7	18.2

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	27.6	15.7	20.0	19.1
2	27.2	15.5	19.8	18.8
3	26.9	15.3	19.4	18.7
Average	27.2	15.5	19.7	18.9

* At 25°C and 1 atmosphere

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

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

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

Test No.	Particulate Collected			Dry Gas	Particulate Concentration				Particulate
	Probe Rinse	Main Filter	Total	Volume Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission Rate
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	1.2	0.7	1.9	3.576	0.31	0.53	0.41	0.44	7.94
2	1.9	0.5	2.4	3.671	0.38	0.65	0.50	0.54	9.99
3	0.9	<0.8	<1.7	3.581	<0.27	<0.48	<0.37	<0.39	<7.23
Average					<0.32	<0.55	<0.43	<0.46	<8.39
Blank	0.7	0.5	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. 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	<1.2	1.194	<0.58	<1.01	<0.80	<0.83	<14.7
2	<1.2	1.192	<0.59	<1.01	<0.81	<0.84	<16.1
3	<0.9	1.186	<0.44	<0.76	<0.61	<0.63	<11.2
Average			<0.54	<0.92	<0.74	<0.77	<14.0
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	<1.6	1.194	<0.77	<1.34	<1.06	<1.11	<19.6
2	<1.4	1.192	<0.69	<1.17	<0.94	<0.98	<18.8
3	<1.0	1.186	<0.49	<0.84	<0.68	<0.70	<12.4
Average			<0.65	<1.12	<0.89	<0.93	<16.9
Blank	0.8						

* At 25 °C and 1 atmosphere

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

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

TABLE 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				Emission Rate mg/s
			Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	
1	3.8	1.194	1.84	3.18	2.53	2.63	46.5
2	3.3	1.192	1.62	2.77	2.22	2.31	44.3
3	3.4	1.186	1.67	2.87	2.30	2.38	42.1
Average			1.71	2.94	2.35	2.44	44.3
Blank	2.2						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Organic Condensable Particulate Concentration				Emission Rate mg/s
			Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	
1	1.9	1.194	0.92	1.59	1.26	1.31	23.2
2	0.6	1.192	0.30	0.50	0.40	0.42	8.05
3	0.5	1.186	0.25	0.42	0.34	0.35	6.20
Average			0.49	0.84	0.67	0.69	12.5
Blank	0.5						

* At 25 °C and 1 atmosphere

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

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

TABLE 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	3.84	1.166	1.91	3.29	2.52	2.74	49.2
2	4.21	1.185	2.06	3.55	2.72	2.95	53.1
3	4.47	1.177	2.19	3.80	2.90	3.15	58.0
Average			2.06	3.55	2.71	2.95	53.5
Blank	0.25						

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	<0.165	1.166	<0.082	<0.14	<0.11	<0.12	<2.12
2	<0.158	1.185	<0.077	<0.13	<0.10	<0.11	<1.99
3	<0.165	1.177	<0.081	<0.14	<0.11	<0.12	<2.14
Average			<0.080	<0.14	<0.11	<0.11	<2.08
Blank	<0.105						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Ammonia Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	0.793	1.166	0.39	0.68	0.52	0.57	10.2
2	0.816	1.185	0.40	0.69	0.53	0.57	10.3
3	0.751	1.177	0.37	0.64	0.49	0.53	9.75
Average			0.39	0.67	0.51	0.56	10.1
Blank	<0.142						

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 September 20 -21, 2023 and October 3-4, 2023

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.83	8.34	9.56
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	5	10	21
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	6.3	9.9	14.3
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.03	2
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.03	0.1
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	100	111	121
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	110	111	111
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	2	3	5
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	3.0	3.1	3.3
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	2	16
Quench Inlet	Oxygen (%, 1 hr Avg)	7	8	8

Data measured by the ORTECH CEMS on September 20, 2023

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	2.1
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	3.5	72.4
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	1.0	11.4
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		1.6	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.8	17.2
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	4.8
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.4	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	1.0	3.0
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.3	1.0
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		0.4	

* Reference conditions, dry basis adjusted to 11% oxygen

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

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	5.78	1.14	6.92
Beryllium	<0.2	<0.1	<0.20
Cadmium	3.74	<0.05	3.74
Chromium	3.22	0.77	3.99
Cobalt	<0.2	<0.1	<0.10
Copper	5.30	2.29	7.59
Lead	0.53	0.92	1.45
Mercury *	<0.015	<0.35	<0.35
Molybdenum	36.3	<0.1	36.3
Nickel	1.47	0.54	2.01
Selenium	<2	1.50	1.50
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.15	0.15
Zinc	10.4	7.19	17.6
Total			<82.7

* Includes the permanganate impingers

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	5.09	0.91	6.00
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	0.099	0.099
Chromium	3.00	1.05	4.05
Cobalt	<0.2	<0.1	<0.10
Copper	5.41	2.19	7.60
Lead	0.51	0.62	1.13
Mercury *	<0.015	<0.41	<0.41
Molybdenum	34.7	<0.1	34.7
Nickel	1.42	1.12	2.54
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.16	0.16
Zinc	11.8	6.62	18.4
Total			<77.2

* Includes the permanganate impingers

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	0.29	<0.1	0.29
Arsenic	<1	<0.2	<0.20
Barium	5.06	0.97	6.03
Beryllium	<0.2	<0.1	<0.20
Cadmium	1.29	<0.05	1.29
Chromium	2.86	2.70	5.56
Cobalt	<0.2	<0.1	<0.10
Copper	5.36	2.42	7.78
Lead	<0.5	0.99	0.99
Mercury *	<0.015	<0.41	<0.41
Molybdenum	35.1	<0.1	35.1
Nickel	1.32	2.51	3.83
Selenium	<2	1.08	1.08
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.15	0.15
Zinc	8.26	10.1	18.4
Total			<81.8

* 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	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.033	<0.056	<0.043	<0.047	<0.00084
Arsenic	<0.20	<0.033	<0.056	<0.043	<0.047	<0.00084
Barium	6.92	1.13	1.94	1.49	1.61	0.029
Beryllium	<0.20	<0.033	<0.056	<0.043	<0.047	<0.00084
Cadmium	3.74	0.61	1.05	0.80	0.87	0.016
Chromium	3.99	0.65	1.12	0.86	0.93	0.017
Cobalt	<0.10	<0.016	<0.028	<0.022	<0.023	<0.00042
Copper	7.59	1.23	2.12	1.63	1.77	0.032
Lead	1.45	0.24	0.40	0.31	0.34	0.0061
Mercury	<0.35	<0.057	<0.098	<0.075	<0.082	<0.0015
Molybdenum	36.3	5.90	10.2	7.81	8.46	0.15
Nickel	2.01	0.33	0.56	0.43	0.47	0.0084
Selenium	1.50	0.24	0.42	0.32	0.35	0.0063
Silver	<0.20	<0.033	<0.056	<0.043	<0.047	<0.00084
Thallium	<0.20	<0.033	<0.056	<0.043	<0.047	<0.00084
Vanadium	0.15	0.024	0.041	0.031	0.034	0.00061
Zinc	17.6	2.86	4.92	3.78	4.10	0.074
Total	<82.7	<13.4	<23.1	<17.8	<19.3	<0.35

Dry Gas Volume Sampled (Rm^3*) :	3.576
Actual Flowrate (m^3/s) :	25.8
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	18.0

* At 25°C and 1 atmosphere

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

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

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.031	<0.054	<0.042	<0.045	<0.00083
Arsenic	<0.20	<0.031	<0.054	<0.042	<0.045	<0.00083
Barium	6.00	0.94	1.63	1.25	1.36	0.025
Beryllium	<0.20	<0.031	<0.054	<0.042	<0.045	<0.00083
Cadmium	0.099	0.016	0.027	0.021	0.022	0.00041
Chromium	4.05	0.64	1.10	0.84	0.92	0.017
Cobalt	<0.10	<0.016	<0.027	<0.021	<0.023	<0.00042
Copper	7.60	1.20	2.07	1.58	1.72	0.032
Lead	1.13	0.18	0.31	0.24	0.26	0.0047
Mercury	<0.41	<0.064	<0.11	<0.085	<0.093	<0.0017
Molybdenum	34.7	5.46	9.45	7.23	7.86	0.14
Nickel	2.54	0.40	0.69	0.53	0.58	0.011
Selenium	<1.00	<0.16	<0.27	<0.21	<0.23	<0.0042
Silver	<0.20	<0.031	<0.054	<0.042	<0.045	<0.00083
Thallium	<0.20	<0.031	<0.054	<0.042	<0.045	<0.00083
Vanadium	0.16	0.025	0.042	0.033	0.035	0.00065
Zinc	18.4	2.90	5.02	3.84	4.17	0.077
Total	<77.2	<12.1	<21.0	<16.1	<17.5	<0.32

Dry Gas Volume Sampled (Rm^3*) :	3.671
Actual Flowrate (m^3/s) :	26.5
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	18.4

* At 25°C and 1 atmosphere

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

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

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	0.29	0.046	0.080	0.062	0.066	0.0012
Arsenic	<0.20	<0.032	<0.056	<0.043	<0.046	<0.00085
Barium	6.03	0.97	1.68	1.31	1.38	0.026
Beryllium	<0.20	<0.032	<0.056	<0.043	<0.046	<0.00085
Cadmium	1.29	0.21	0.36	0.28	0.30	0.0055
Chromium	5.56	0.89	1.55	1.20	1.28	0.024
Cobalt	<0.10	<0.016	<0.028	<0.022	<0.023	<0.00042
Copper	7.78	1.25	2.17	1.68	1.79	0.033
Lead	0.99	0.16	0.28	0.21	0.23	0.0042
Mercury	<0.41	<0.066	<0.11	<0.089	<0.094	<0.0017
Molybdenum	35.1	5.62	9.80	7.60	8.05	0.15
Nickel	3.83	0.61	1.07	0.83	0.88	0.016
Selenium	1.08	0.17	0.30	0.23	0.25	0.0046
Silver	<0.20	<0.032	<0.056	<0.043	<0.046	<0.00085
Thallium	<0.20	<0.032	<0.056	<0.043	<0.046	<0.00085
Vanadium	0.15	0.024	0.041	0.032	0.034	0.00062
Zinc	18.4	2.94	5.13	3.98	4.21	0.078
Total	<81.8	<13.1	<22.8	<17.7	<18.8	<0.35

Dry Gas Volume Sampled (Rm^3*) :	3.581
Actual Flowrate (m^3/s) :	26.5
Dry Reference Flowrate (Rm^3/s*) :	15.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.6
Wet Reference Flowrate (Rm^3/s*) :	18.5

* At 25°C and 1 atmosphere

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

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

Metal	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	<0.033	<0.031	0.046	<0.037	22.3
Arsenic	<0.033	<0.031	<0.032	<0.032	1.7
Barium	1.13	0.94	0.97	1.01	9.8
Beryllium	<0.033	<0.031	<0.032	<0.032	1.7
Cadmium	0.61	0.016	0.21	0.28	109
Chromium	0.65	0.64	0.89	0.73	19.7
Cobalt	<0.016	<0.016	<0.016	<0.016	1.7
Copper	1.23	1.20	1.25	1.23	2.2
Lead	0.24	0.18	0.16	0.19	20.9
Mercury	<0.057	<0.064	<0.066	<0.062	7.6
Molybdenum	5.90	5.46	5.62	5.66	4.0
Nickel	0.33	0.40	0.61	0.45	33.4
Selenium	0.24	<0.16	0.17	<0.19	24.1
Silver	<0.033	<0.031	<0.032	<0.032	1.7
Thallium	<0.033	<0.031	<0.032	<0.032	1.7
Vanadium	0.024	0.025	0.024	0.024	2.2
Zinc	2.86	2.90	2.94	2.90	1.4
Total	<13.4	<12.1	<13.1	<12.9	5.2

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

Metal	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.056	<0.054	0.080	<0.064	22.9
Arsenic	<0.056	<0.054	<0.056	<0.055	1.5
Barium	1.94	1.63	1.68	1.75	9.2
Beryllium	<0.056	<0.054	<0.056	<0.055	1.5
Cadmium	1.05	0.027	0.36	0.48	109
Chromium	1.12	1.10	1.55	1.26	20.3
Cobalt	<0.028	<0.027	<0.028	<0.028	1.5
Copper	2.12	2.07	2.17	2.12	2.4
Lead	0.40	0.31	0.28	0.33	20.3
Mercury	<0.098	<0.11	<0.11	<0.11	8.2
Molybdenum	10.2	9.45	9.80	9.80	3.6
Nickel	0.56	0.69	1.07	0.77	34.1
Selenium	0.42	<0.27	0.30	<0.33	23.5
Silver	<0.056	<0.054	<0.056	<0.055	1.5
Thallium	<0.056	<0.054	<0.056	<0.055	1.5
Vanadium	0.041	0.042	0.041	0.041	2.2
Zinc	4.92	5.02	5.13	5.02	2.1
Total	<23.1	<21.0	<22.8	<22.3	5.1

* 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	<0.043	<0.042	0.062	<0.049	23.6
Arsenic	<0.043	<0.042	<0.043	<0.043	2.0
Barium	1.49	1.25	1.31	1.35	9.3
Beryllium	<0.043	<0.042	<0.043	<0.043	2.0
Cadmium	0.80	0.021	0.28	0.37	108
Chromium	0.86	0.84	1.20	0.97	21.0
Cobalt	<0.022	<0.021	<0.022	<0.021	2.0
Copper	1.63	1.58	1.68	1.63	3.1
Lead	0.31	0.24	0.21	0.25	20.1
Mercury	<0.075	<0.085	<0.089	<0.083	8.5
Molybdenum	7.81	7.23	7.60	7.55	3.9
Nickel	0.43	0.53	0.83	0.60	34.7
Selenium	0.32	<0.21	0.23	<0.25	23.5
Silver	<0.043	<0.042	<0.043	<0.043	2.0
Thallium	<0.043	<0.042	<0.043	<0.043	2.0
Vanadium	0.031	0.033	0.032	0.032	1.7
Zinc	3.78	3.84	3.98	3.87	2.6
Total	<17.8	<16.1	<17.7	<17.2	5.6

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

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

Metal	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.047	<0.045	0.066	<0.053	22.1
Arsenic	<0.047	<0.045	<0.046	<0.046	1.4
Barium	1.61	1.36	1.38	1.45	9.7
Beryllium	<0.047	<0.045	<0.046	<0.046	1.4
Cadmium	0.87	0.022	0.30	0.40	109
Chromium	0.93	0.92	1.28	1.04	19.5
Cobalt	<0.023	<0.023	<0.023	<0.023	1.4
Copper	1.77	1.72	1.79	1.76	1.9
Lead	0.34	0.26	0.23	0.27	20.9
Mercury	<0.082	<0.093	<0.094	<0.090	7.7
Molybdenum	8.46	7.86	8.05	8.12	3.8
Nickel	0.47	0.58	0.88	0.64	33.3
Selenium	0.35	<0.23	0.25	<0.27	23.9
Silver	<0.047	<0.045	<0.046	<0.046	1.4
Thallium	<0.047	<0.045	<0.046	<0.046	1.4
Vanadium	0.034	0.035	0.034	0.034	2.5
Zinc	4.10	4.17	4.21	4.16	1.4
Total	<19.3	<17.5	<18.8	<18.5	5.0

* At 25°C and 1 atmosphere

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

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	<0.00084	<0.00083	0.0012	<0.00096	23.1
Arsenic	<0.00084	<0.00083	<0.00085	<0.00084	0.9
Barium	0.029	0.025	0.026	0.027	8.2
Beryllium	<0.00084	<0.00083	<0.00085	<0.00084	0.9
Cadmium	0.016	0.00041	0.0055	0.0072	108
Chromium	0.017	0.017	0.024	0.019	20.5
Cobalt	<0.00042	<0.00042	<0.00042	<0.00042	0.9
Copper	0.032	0.032	0.033	0.032	2.3
Lead	0.0061	0.0047	0.0042	0.0050	19.3
Mercury	<0.0015	<0.0017	<0.0017	<0.0016	9.1
Molybdenum	0.15	0.14	0.15	0.15	2.6
Nickel	0.0084	0.011	0.016	0.012	34.5
Selenium	0.0063	<0.0042	0.0046	<0.0050	22.4
Silver	<0.00084	<0.00083	<0.00085	<0.00084	0.9
Thallium	<0.00084	<0.00083	<0.00085	<0.00084	0.9
Vanadium	0.00061	0.00065	0.00062	0.00063	3.1
Zinc	0.074	0.077	0.078	0.076	2.8
Total	<0.35	<0.32	<0.35	<0.34	4.3

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

Metal	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.037	<0.064	<0.049	<0.053	<0.00096
Arsenic	<0.032	<0.055	<0.043	<0.046	<0.00084
Barium	1.01	1.75	1.35	1.45	0.027
Beryllium	<0.032	<0.055	<0.043	<0.046	<0.00084
Cadmium	0.28	0.48	0.37	0.40	0.0072
Chromium	0.73	1.26	0.97	1.04	0.019
Cobalt	<0.016	<0.028	<0.021	<0.023	<0.00042
Copper	1.23	2.12	1.63	1.76	0.032
Lead	0.19	0.33	0.25	0.27	0.0050
Mercury	<0.062	<0.11	<0.083	<0.090	<0.0016
Molybdenum	5.66	9.80	7.55	8.12	0.15
Nickel	0.45	0.77	0.60	0.64	0.012
Selenium	<0.19	<0.33	<0.25	<0.27	<0.0050
Silver	<0.032	<0.055	<0.043	<0.046	<0.00084
Thallium	<0.032	<0.055	<0.043	<0.046	<0.00084
Vanadium	0.024	0.041	0.032	0.034	0.00063
Zinc	2.90	5.02	3.87	4.16	0.076
Total	<12.9	<22.3	<17.2	<18.5	<0.34

* At 25°C and 1 atmosphere

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	47.4	0.79	48.2
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	3.80	0.50	4.30
Cobalt	<0.2	<0.1	<0.10
Copper	2.43	1.65	4.08
Lead	<0.5	1.82	1.82
Mercury *	<0.015	<0.17	<0.16
Molybdenum	17.8	<0.1	17.8
Nickel	15.5	0.32	15.8
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	34.1	<3	34.1
Total			<129

* Includes the permanganate impingers.

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

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

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	145	0.017	0.029	0.023	0.024	0.46
Pentachlorodibenzo-p-dioxins	231	0.026	0.046	0.036	0.038	0.73
Hexachlorodibenzo-p-dioxins	333	0.038	0.067	0.053	0.055	1.05
Heptachlorodibenzo-p-dioxins	258	0.029	0.052	0.041	0.043	0.81
Octachlorodibenzo-p-dioxin	105	0.012	0.021	0.017	0.017	0.33
Total	1072	0.12	0.22	0.17	0.18	3.38

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	58.6	0.0067	0.012	0.0092	0.0097	0.18
Pentachlorodibenzofurans	64.9	0.0074	0.013	0.010	0.011	0.20
Hexachlorodibenzofurans	42.7	0.0049	0.0086	0.0067	0.0071	0.13
Heptachlorodibenzofurans	35.8	0.0041	0.0072	0.0056	0.0059	0.11
Octachlorodibenzofuran	21.0	0.0024	0.0042	0.0033	0.0035	0.066
Total	223	0.025	0.045	0.035	0.037	0.70

Dry Gas Volume Sampled (Rm^3*) :	4.978
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.1

* 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. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	136	0.016	0.028	0.022	0.023	0.43
Pentachlorodibenzo-p-dioxins	293	0.034	0.059	0.046	0.049	0.92
Hexachlorodibenzo-p-dioxins	362	0.042	0.073	0.057	0.060	1.14
Heptachlorodibenzo-p-dioxins	242	0.028	0.049	0.038	0.040	0.76
Octachlorodibenzo-p-dioxin	102	0.012	0.021	0.016	0.017	0.32
Total	1135	0.13	0.23	0.18	0.19	3.56

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	82.7	0.0095	0.017	0.013	0.014	0.26
Pentachlorodibenzofurans	50.6	0.0058	0.010	0.0080	0.0084	0.16
Hexachlorodibenzofurans	45.0	0.0052	0.0091	0.0071	0.0075	0.14
Heptachlorodibenzofurans	13.6	0.0016	0.0028	0.0022	0.0023	0.043
Octachlorodibenzofuran	16.7	0.0019	0.0034	0.0026	0.0028	0.052
Total	209	0.024	0.042	0.033	0.035	0.65

Dry Gas Volume Sampled (Rm^3*) :	4.940
Actual Flowrate (m^3/s) :	27.2
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

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

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	208	0.024	0.043	0.034	0.035	0.66
Pentachlorodibenzo-p-dioxins	356	0.042	0.074	0.058	0.060	1.12
Hexachlorodibenzo-p-dioxins	424	0.050	0.088	0.069	0.072	1.34
Heptachlorodibenzo-p-dioxins	374	0.044	0.077	0.061	0.063	1.18
Octachlorodibenzo-p-dioxin	160	0.019	0.033	0.026	0.027	0.51
Total	1522	0.18	0.31	0.25	0.26	4.81

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	2000	0.23	0.41	0.33	0.34	6.32
Pentachlorodibenzofurans	586	0.069	0.12	0.095	0.099	1.85
Hexachlorodibenzofurans	177	0.021	0.037	0.029	0.030	0.56
Heptachlorodibenzofurans	66.9	0.0079	0.014	0.011	0.011	0.21
Octachlorodibenzofuran	33.5	0.0039	0.0069	0.0055	0.0057	0.11
Total	2863	0.34	0.59	0.47	0.48	9.05

Dry Gas Volume Sampled (Rm^3*) :	4.843
Actual Flowrate (m^3/s) :	26.9
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.7

* 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. 2 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.017	0.016	0.024	0.019	25.5
Pentachlorodibenzo-p-dioxins	0.026	0.034	0.042	0.034	22.7
Hexachlorodibenzo-p-dioxins	0.038	0.042	0.050	0.043	13.9
Heptachlorodibenzo-p-dioxins	0.029	0.028	0.044	0.034	26.1
Octachlorodibenzo-p-dioxin	0.012	0.012	0.019	0.014	28.1
Total	0.12	0.13	0.18	0.14	21.1

Furans

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.0067	0.0095	0.23	0.084	156
Pentachlorodibenzofurans	0.0074	0.0058	0.069	0.027	131
Hexachlorodibenzofurans	0.0049	0.0052	0.021	0.010	88.4
Heptachlorodibenzofurans	0.0041	0.0016	0.0079	0.0045	70.2
Octachlorodibenzofuran	0.0024	0.0019	0.0039	0.0028	38.1
Total	0.025	0.024	0.34	0.13	140

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.029	0.028	0.043	0.033	25.5
Pentachlorodibenzo-p-dioxins	0.046	0.059	0.074	0.060	22.7
Hexachlorodibenzo-p-dioxins	0.067	0.073	0.088	0.076	13.9
Heptachlorodibenzo-p-dioxins	0.052	0.049	0.077	0.059	26.2
Octachlorodibenzo-p-dioxin	0.021	0.021	0.033	0.025	28.2
Total	0.22	0.23	0.31	0.25	21.1

Furans

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.012	0.017	0.41	0.15	156
Pentachlorodibenzofurans	0.013	0.010	0.12	0.048	131
Hexachlorodibenzofurans	0.0086	0.0091	0.037	0.018	88.5
Heptachlorodibenzofurans	0.0072	0.0028	0.014	0.0079	70.3
Octachlorodibenzofuran	0.0042	0.0034	0.0069	0.0048	38.2
Total	0.045	0.042	0.59	0.23	140

* At 25°C and 1 atmosphere

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.023	0.022	0.034	0.026	25.9
Pentachlorodibenzo-p-dioxins	0.036	0.046	0.058	0.047	23.0
Hexachlorodibenzo-p-dioxins	0.053	0.057	0.069	0.060	14.3
Heptachlorodibenzo-p-dioxins	0.041	0.038	0.061	0.047	26.6
Octachlorodibenzo-p-dioxin	0.017	0.016	0.026	0.020	28.6
Total	0.17	0.18	0.25	0.20	21.5

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	0.0092	0.013	0.33	0.12	157
Pentachlorodibenzofurans	0.010	0.0080	0.095	0.038	132
Hexachlorodibenzofurans	0.0067	0.0071	0.029	0.014	88.8
Heptachlorodibenzofurans	0.0056	0.0022	0.011	0.0062	70.6
Octachlorodibenzofuran	0.0033	0.0026	0.0055	0.0038	38.6
Total	0.035	0.033	0.47	0.18	140

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

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.024	0.023	0.035	0.027	25.1
Pentachlorodibenzo-p-dioxins	0.038	0.049	0.060	0.049	22.4
Hexachlorodibenzo-p-dioxins	0.055	0.060	0.072	0.062	13.6
Heptachlorodibenzo-p-dioxins	0.043	0.040	0.063	0.049	25.8
Octachlorodibenzo-p-dioxin	0.017	0.017	0.027	0.020	27.8
Total	0.18	0.19	0.26	0.21	20.7

Furans

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0097	0.014	0.34	0.12	156
Pentachlorodibenzofurans	0.011	0.0084	0.099	0.039	131
Hexachlorodibenzofurans	0.0071	0.0075	0.030	0.015	88.1
Heptachlorodibenzofurans	0.0059	0.0023	0.011	0.0065	70.0
Octachlorodibenzofuran	0.0035	0.0028	0.0057	0.0040	37.8
Total	0.037	0.035	0.48	0.19	140

* 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				Coefficient of Variation
	Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	%
Tetrachlorodibenzo-p-dioxins	0.46	0.43	0.66	0.51	24.4
Pentachlorodibenzo-p-dioxins	0.73	0.92	1.12	0.92	21.4
Hexachlorodibenzo-p-dioxins	1.05	1.14	1.34	1.18	12.6
Heptachlorodibenzo-p-dioxins	0.81	0.76	1.18	0.92	25.0
Octachlorodibenzo-p-dioxin	0.33	0.32	0.51	0.39	27.0
Total	3.38	3.56	4.81	3.92	19.8

Furans

Congener Group	Emission Rate				Coefficient of Variation
	Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	%
Tetrachlorodibenzofurans	0.18	0.26	6.32	2.25	156
Pentachlorodibenzofurans	0.20	0.16	1.85	0.74	131
Hexachlorodibenzofurans	0.13	0.14	0.56	0.28	87.4
Heptachlorodibenzofurans	0.11	0.043	0.21	0.12	69.3
Octachlorodibenzofuran	0.066	0.052	0.11	0.075	37.1
Total	0.70	0.65	9.05	3.47	139

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	0.019	0.033	0.026	0.027	0.51
Pentachlorodibenzo-p-dioxins	0.034	0.060	0.047	0.049	0.92
Hexachlorodibenzo-p-dioxins	0.043	0.076	0.060	0.062	1.18
Heptachlorodibenzo-p-dioxins	0.034	0.059	0.047	0.049	0.92
Octachlorodibenzo-p-dioxin	0.014	0.025	0.020	0.020	0.39
Total	0.14	0.25	0.20	0.21	3.92

Furans

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	0.084	0.15	0.12	0.12	2.25
Pentachlorodibenzofurans	0.027	0.048	0.038	0.039	0.74
Hexachlorodibenzofurans	0.010	0.018	0.014	0.015	0.28
Heptachlorodibenzofurans	0.0045	0.0079	0.0062	0.0065	0.12
Octachlorodibenzofuran	0.0028	0.0048	0.0038	0.0040	0.075
Total	0.13	0.23	0.18	0.19	3.47

* 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	Method Blank
	pg	pg
Tetrachlorodibenzo-p-dioxins	<0.57	<1.6
Pentachlorodibenzo-p-dioxins	<1.2	<1.0
Hexachlorodibenzo-p-dioxins	<0.97	<1.1
Heptachlorodibenzo-p-dioxins	<1.2	<1.9
Octachlorodibenzo-p-dioxin	6.72	8.47
Total	<10.7	<14.1

Furans

Congener Group	Blank Train	Laboratory Blank
	pg	pg
Tetrachlorodibenzofurans	3.57	<0.92
Pentachlorodibenzofurans	<0.77	<1.8
Hexachlorodibenzofurans	<0.61	<0.63
Heptachlorodibenzofurans	<2.0	<0.87
Octachlorodibenzofuran	<4.1	<3.7
Total	<11.1	<7.92

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

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.8	<0.21	<0.36	<0.28	<0.30	<0.0057
12378-pentachlorodibenzo-p-dioxin	<7.5	<0.86	<1.51	<1.18	<1.24	<0.024
123478-hexachlorodibenzo-p-dioxin	8.56	0.98	1.72	1.35	1.41	0.027
123678-hexachlorodibenzo-p-dioxin	18.6	2.13	3.74	2.93	3.07	0.059
123789-hexachlorodibenzo-p-dioxin	<8.6	<0.98	<1.73	<1.36	<1.42	<0.027
1234678-heptachlorodibenzo-p-dioxin	117	13.4	23.5	18.5	19.3	0.37
Octachlorodibenzo-p-dioxin	105	12.0	21.1	16.6	17.3	0.33
2378-tetrachlorodibenzofuran	<2.8	<0.32	<0.56	<0.44	<0.46	<0.0088
12378-pentachlorodibenzofuran	5.51	0.63	1.11	0.87	0.91	0.017
23478-pentachlorodibenzofuran	9.29	1.06	1.87	1.46	1.53	0.029
123478-hexachlorodibenzofuran	<6.0	<0.69	<1.21	<0.95	<0.99	<0.019
123678-hexachlorodibenzofuran	7.53	0.86	1.51	1.19	1.24	0.024
234678-hexachlorodibenzofuran	<7.8	<0.89	<1.57	<1.23	<1.29	<0.025
123789-hexachlorodibenzofuran	4.21	0.48	0.85	0.66	0.70	0.013
1234678-heptachlorodibenzofuran	26.7	3.05	5.36	4.21	4.41	0.084
1234789-heptachlorodibenzofuran	<4.8	<0.55	<0.96	<0.76	<0.79	<0.015
Octachlorodibenzofuran	21.0	2.40	4.22	3.31	3.47	0.066
PCB 81	<8.7	<0.99	<1.75	<1.37	<1.44	<0.027
PCB 77	<67	<7.66	<13.5	<10.6	<11.1	<0.21
PCB 123	<29	<3.31	<5.83	<4.57	<4.79	<0.091
PCB 118	1900	217	382	300	314	5.99
PCB 114	51.6	5.90	10.4	8.14	8.52	0.16
PCB 105	471	53.8	94.6	74.3	77.8	1.49
PCB 126	<7.4	<0.85	<1.49	<1.17	<1.22	<0.023
PCB 167	<13	<1.49	<2.61	<2.05	<2.15	<0.041
PCB 156/157	<33	<3.77	<6.63	<5.20	<5.45	<0.10
PCB 169	<4.0	<0.46	<0.80	<0.63	<0.66	<0.013
PCB 189	<2.8	<0.32	<0.56	<0.44	<0.46	<0.0088
Total Dioxins & Furans Only	<363	<41.4	<72.9	<57.2	<59.9	<1.14
Total PCBs Only	<2588	<296	<520	<408	<427	<8.16
Total Dioxins & Furans and PCBs	<2950	<337	<593	<465	<487	<9.30

Dry Gas Volume Sampled (Rm³*) :	4.978
Actual Flowrate (m³/s) :	27.6
Dry Reference Flowrate (Rm³/s*) :	15.7
Dry Adjusted Flowrate (Rm³/s**) :	20.0
Wet Reference Flowrate (Rm³/s*) :	19.1

* 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 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	<1.7	<0.20	<0.34	<0.27	<0.28	<0.0053
12378-pentachlorodibenzo-p-dioxin	<3.5	<0.40	<0.71	<0.55	<0.58	<0.011
123478-hexachlorodibenzo-p-dioxin	7.61	0.88	1.54	1.21	1.27	0.024
123678-hexachlorodibenzo-p-dioxin	17.8	2.05	3.60	2.82	2.97	0.056
123789-hexachlorodibenzo-p-dioxin	<7.3	<0.84	<1.48	<1.16	<1.22	<0.023
1234678-heptachlorodibenzo-p-dioxin	111	12.8	22.5	17.6	18.5	0.35
Octachlorodibenzo-p-dioxin	102	11.8	20.6	16.2	17.0	0.32
2378-tetrachlorodibenzofuran	<2.5	<0.29	<0.51	<0.40	<0.42	<0.0078
12378-pentachlorodibenzofuran	5.35	0.62	1.08	0.85	0.89	0.017
23478-pentachlorodibenzofuran	7.26	0.84	1.47	1.15	1.21	0.023
123478-hexachlorodibenzofuran	<5.8	<0.67	<1.17	<0.92	<0.97	<0.018
123678-hexachlorodibenzofuran	<6.8	<0.78	<1.38	<1.08	<1.13	<0.021
234678-hexachlorodibenzofuran	9.25	1.07	1.87	1.47	1.54	0.029
123789-hexachlorodibenzofuran	<2.5	<0.29	<0.51	<0.40	<0.42	<0.0078
1234678-heptachlorodibenzofuran	<27	<3.11	<5.47	<4.28	<4.51	<0.085
1234789-heptachlorodibenzofuran	3.94	0.45	0.80	0.62	0.66	0.012
Octachlorodibenzofuran	16.7	1.93	3.38	2.65	2.79	0.052
PCB 81	<9.2	<1.06	<1.86	<1.46	<1.54	<0.029
PCB 77	48.7	5.62	9.86	7.72	8.13	0.15
PCB 123	13.3	1.53	2.69	2.11	2.22	0.042
PCB 118	848	97.8	172	134	142	2.66
PCB 114	<26	<3.00	<5.26	<4.12	<4.3	<0.082
PCB 105	249	28.7	50.4	39.5	41.6	0.78
PCB 126	<11	<1.27	<2.23	<1.74	<1.84	<0.035
PCB 167	11.2	1.29	2.27	1.77	1.87	0.035
PCB 156/157	25.6	2.95	5.18	4.06	4.27	0.080
PCB 169	<8.5	<0.98	<1.72	<1.35	<1.42	<0.027
PCB 189	<2.0	<0.23	<0.40	<0.32	<0.33	<0.0063
Total Dioxins & Furans Only	<338	<39.0	<68.4	<53.6	<56.4	<1.06
Total PCBs Only	<1253	<144	<254	<198	<209	<3.93
Total Dioxins & Furans and PCBs	<1591	<183	<322	<252	<265	<4.99

Dry Gas Volume Sampled (Rm³*) :	4.940
Actual Flowrate (m³/s) :	27.2
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.9	<0.22	<0.39	<0.31	<0.32	<0.0060
12378-pentachlorodibenzo-p-dioxin	<6.5	<0.76	<1.34	<1.06	<1.10	<0.021
123478-hexachlorodibenzo-p-dioxin	<8.6	<1.01	<1.78	<1.40	<1.45	<0.027
123678-hexachlorodibenzo-p-dioxin	24.9	2.92	5.14	4.05	4.21	0.079
123789-hexachlorodibenzo-p-dioxin	10.9	1.28	2.25	1.78	1.84	0.034
1234678-heptachlorodibenzo-p-dioxin	173	20.3	35.7	28.2	29.2	0.55
Octachlorodibenzo-p-dioxin	160	18.8	33.0	26.1	27.0	0.51
2378-tetrachlorodibenzofuran	66.5	7.81	13.7	10.8	11.2	0.21
12378-pentachlorodibenzofuran	30.5	3.58	6.30	4.97	5.15	0.096
23478-pentachlorodibenzofuran	44.8	5.26	9.25	7.30	7.57	0.14
123478-hexachlorodibenzofuran	19.5	2.29	4.03	3.18	3.29	0.062
123678-hexachlorodibenzofuran	22.9	2.69	4.73	3.73	3.87	0.072
234678-hexachlorodibenzofuran	<15	<1.76	<3.10	<2.44	<2.53	<0.047
123789-hexachlorodibenzofuran	7.75	0.91	1.60	1.26	1.31	0.024
1234678-heptachlorodibenzofuran	52.5	6.17	10.8	8.55	8.87	0.17
1234789-heptachlorodibenzofuran	<7.5	<0.88	<1.55	<1.22	<1.27	<0.024
Octachlorodibenzofuran	33.5	3.93	6.92	5.46	5.66	0.11
PCB 81	<70	<8.22	<14.5	<11.4	<11.8	<0.221
PCB 77	1240	146	256	202	209	3.92
PCB 123	746	87.6	154	121	126	2.36
PCB 118	63600	7469	13132	10357	10745	201
PCB 114	1660	195	343	270	280	5.24
PCB 105	17900	2102	3696	2915	3024	56.5
PCB 126	89.7	10.5	18.5	14.6	15.2	0.28
PCB 167	363	42.6	75.0	59.1	61.3	1.15
PCB 156/157	897	105	185	146	152	2.83
PCB 169	29.0	3.41	5.99	4.72	4.90	0.092
PCB 189	<15	<1.76	<3.10	<2.44	<2.53	<0.047
Total Dioxins & Furans Only	<686	<80.6	<142	<112	<116	<2.17
Total PCBs Only	<86610	<10172	<17883	<14104	<14632	<274
Total Dioxins & Furans and PCBs	<87296	<10252	<18025	<14216	<14748	<276

Dry Gas Volume Sampled (Rm³*) :	4.843
Actual Flowrate (m³/s) :	26.9
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	19.4
Wet Reference Flowrate (Rm³/s*) :	18.7

* 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 37
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.21	<0.20	<0.22	<0.21	6.6
12378-pentachlorodibenzo-p-dioxin	<0.86	<0.40	<0.76	<0.67	35.5
123478-hexachlorodibenzo-p-dioxin	0.98	0.88	<1.01	<0.96	7.2
123678-hexachlorodibenzo-p-dioxin	2.13	2.05	2.92	2.37	20.4
123789-hexachlorodibenzo-p-dioxin	<0.98	<0.84	1.28	<1.03	21.6
1234678-heptachlorodibenzo-p-dioxin	13.4	12.8	20.3	15.5	27.0
Octachlorodibenzo-p-dioxin	12.0	11.8	18.8	14.2	28.1
2378-tetrachlorodibenzofuran	<0.32	<0.29	7.81	<2.81	154
12378-pentachlorodibenzofuran	0.63	0.62	3.58	1.61	106
23478-pentachlorodibenzofuran	1.06	0.84	5.26	2.39	104
123478-hexachlorodibenzofuran	<0.69	<0.67	2.29	<1.21	76.6
123678-hexachlorodibenzofuran	0.86	<0.78	2.69	<1.44	74.7
234678-hexachlorodibenzofuran	<0.89	1.07	<1.76	<1.24	37.1
123789-hexachlorodibenzofuran	0.48	<0.29	0.91	<0.56	56.9
1234678-heptachlorodibenzofuran	3.05	<3.11	6.17	<4.11	43.3
1234789-heptachlorodibenzofuran	<0.55	0.45	<0.88	<0.63	35.7
Octachlorodibenzofuran	2.40	1.93	3.93	2.75	38.1
PCB 81	<0.99	<1.06	<8.22	<3.43	121
PCB 77	<7.66	5.62	146	<53.0	152
PCB 123	<3.31	1.53	87.6	<30.8	160
PCB 118	217	97.8	7469	2595	163
PCB 114	5.90	<3.00	195	<67.9	162
PCB 105	53.8	28.7	2102	728	163
PCB 126	<0.85	<1.27	10.5	<4.22	130
PCB 167	<1.49	1.29	42.6	<15.1	157
PCB 156/157	<3.77	2.95	105	<37.4	158
PCB 169	<0.46	<0.98	3.41	<1.61	97.4
PCB 189	<0.32	<0.23	<1.76	<0.77	111
Total Dioxins & Furans Only	<41.4	<39.0	<80.6	<53.7	43.5
Total PCBs Only	<296	<144	<10172	<3537	162
Total Dioxins & Furans and PCBs	<337	<183	<10252	<3591	161

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

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.36	<0.34	<0.39	<0.37	6.7
12378-pentachlorodibenzo-p-dioxin	<1.51	<0.71	<1.34	<1.19	35.5
123478-hexachlorodibenzo-p-dioxin	1.72	1.54	<1.78	<1.68	7.3
123678-hexachlorodibenzo-p-dioxin	3.74	3.60	5.14	4.16	20.5
123789-hexachlorodibenzo-p-dioxin	<1.73	<1.48	2.25	<1.82	21.7
1234678-heptachlorodibenzo-p-dioxin	23.5	22.5	35.7	27.2	27.1
Octachlorodibenzo-p-dioxin	21.1	20.6	33.0	24.9	28.2
2378-tetrachlorodibenzofuran	<0.56	<0.51	13.7	<4.93	154
12378-pentachlorodibenzofuran	1.11	1.08	6.30	2.83	106
23478-pentachlorodibenzofuran	1.87	1.47	9.25	4.20	104
123478-hexachlorodibenzofuran	<1.21	<1.17	4.03	<2.14	76.7
123678-hexachlorodibenzofuran	1.51	<1.38	4.73	<2.54	74.7
234678-hexachlorodibenzofuran	<1.57	1.87	<3.10	<2.18	37.2
123789-hexachlorodibenzofuran	0.85	<0.51	1.60	<0.98	56.9
1234678-heptachlorodibenzofuran	5.36	<5.47	10.8	<7.22	43.4
1234789-heptachlorodibenzofuran	<0.96	0.80	<1.55	<1.10	35.7
Octachlorodibenzofuran	4.22	3.38	6.92	4.84	38.2
PCB 81	<1.75	<1.86	<14.5	<6.02	121
PCB 77	<13.5	9.86	256	<93.1	152
PCB 123	<5.83	2.69	154	<54.2	160
PCB 118	382	172	13132	4562	163
PCB 114	10.4	<5.26	343	<119	162
PCB 105	94.6	50.4	3696	1280	163
PCB 126	<1.49	<2.23	18.5	<7.41	130
PCB 167	<2.61	2.27	75.0	<26.6	157
PCB 156/157	<6.63	5.18	185	<65.7	158
PCB 169	<0.80	<1.72	5.99	<2.84	97.5
PCB 189	<0.56	<0.40	<3.10	<1.35	112
Total Dioxins & Furans Only	<72.9	<68.4	<142	<94.3	43.6
Total PCBs Only	<520	<254	<17883	<6219	162
Total Dioxins & Furans and PCBs	<593	<322	<18025	<6313	161

* At 25°C and 1 atmosphere

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.28	<0.27	<0.31	<0.29	7.0
12378-pentachlorodibenzo-p-dioxin	<1.18	<0.55	<1.06	<0.93	35.7
123478-hexachlorodibenzo-p-dioxin	1.35	1.21	<1.40	<1.32	7.7
123678-hexachlorodibenzo-p-dioxin	2.93	2.82	4.05	3.27	20.9
123789-hexachlorodibenzo-p-dioxin	<1.36	<1.16	1.78	<1.43	22.1
1234678-heptachlorodibenzo-p-dioxin	18.5	17.6	28.2	21.4	27.5
Octachlorodibenzo-p-dioxin	16.6	16.2	26.1	19.6	28.6
2378-tetrachlorodibenzofuran	<0.44	<0.40	10.8	<3.89	155
12378-pentachlorodibenzofuran	0.87	0.85	4.97	2.23	106
23478-pentachlorodibenzofuran	1.46	1.15	7.30	3.30	105
123478-hexachlorodibenzofuran	<0.95	<0.92	3.18	<1.68	77.1
123678-hexachlorodibenzofuran	1.19	<1.08	3.73	<2.00	75.1
234678-hexachlorodibenzofuran	<1.23	1.47	<2.44	<1.71	37.5
123789-hexachlorodibenzofuran	0.66	<0.40	1.26	<0.77	57.3
1234678-heptachlorodibenzofuran	4.21	<4.28	8.55	<5.68	43.8
1234789-heptachlorodibenzofuran	<0.76	0.62	<1.22	<0.87	36.1
Octachlorodibenzofuran	3.31	2.65	5.46	3.80	38.6
PCB 81	<1.37	<1.46	<11.4	<4.74	122
PCB 77	<10.6	7.72	202	<73.4	152
PCB 123	<4.57	2.11	121	<42.7	160
PCB 118	300	134	10357	3597	163
PCB 114	8.14	<4.12	270	<94.2	162
PCB 105	74.3	39.5	2915	1010	163
PCB 126	<1.17	<1.74	14.6	<5.84	130
PCB 167	<2.05	1.77	59.1	<21.0	157
PCB 156/157	<5.20	4.06	146	<51.8	158
PCB 169	<0.63	<1.35	4.72	<2.23	97.8
PCB 189	<0.44	<0.32	<2.44	<1.07	112
Total Dioxins & Furans Only	<57.2	<53.6	<112	<74.2	43.9
Total PCBs Only	<408	<198	<14104	<4903	163
Total Dioxins & Furans and PCBs	<465	<252	<14216	<4978	161

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

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

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

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.30	<0.28	<0.32	<0.30	6.3
12378-pentachlorodibenzo-p-dioxin	<1.24	<0.58	<1.10	<0.97	35.4
123478-hexachlorodibenzo-p-dioxin	1.41	1.27	<1.45	<1.38	7.0
123678-hexachlorodibenzo-p-dioxin	3.07	2.97	4.21	3.42	20.1
123789-hexachlorodibenzo-p-dioxin	<1.42	<1.22	1.84	<1.49	21.3
1234678-heptachlorodibenzo-p-dioxin	19.3	18.5	29.2	22.4	26.7
Octachlorodibenzo-p-dioxin	17.3	17.0	27.0	20.5	27.8
2378-tetrachlorodibenzofuran	<0.46	<0.42	11.2	<4.04	154
12378-pentachlorodibenzofuran	0.91	0.89	5.15	2.32	106
23478-pentachlorodibenzofuran	1.53	1.21	7.57	3.44	104
123478-hexachlorodibenzofuran	<0.99	<0.97	3.29	<1.75	76.3
123678-hexachlorodibenzofuran	1.24	<1.13	3.87	<2.08	74.3
234678-hexachlorodibenzofuran	<1.29	1.54	<2.53	<1.79	36.8
123789-hexachlorodibenzofuran	0.70	<0.42	1.31	<0.81	56.5
1234678-heptachlorodibenzofuran	4.41	<4.51	8.87	<5.93	43.0
1234789-heptachlorodibenzofuran	<0.79	0.66	<1.27	<0.91	35.3
Octachlorodibenzofuran	3.47	2.79	5.66	3.97	37.8
PCB 81	<1.44	<1.54	<11.8	<4.93	121
PCB 77	<11.1	8.13	209	<76.2	151
PCB 123	<4.79	2.22	126	<44.3	160
PCB 118	314	142	10745	3733	163
PCB 114	8.52	<4.3	280	<97.8	162
PCB 105	77.8	41.6	3024	1048	163
PCB 126	<1.22	<1.84	15.2	<6.07	130
PCB 167	<2.15	1.87	61.3	<21.8	157
PCB 156/157	<5.45	4.27	152	<53.8	158
PCB 169	<0.66	<1.42	4.90	<2.33	97.2
PCB 189	<0.46	<0.33	<2.53	<1.11	111
Total Dioxins & Furans Only	<59.9	<56.4	<116	<77.4	43.2
Total PCBs Only	<427	<209	<14632	<5089	162
Total Dioxins & Furans and PCBs	<487	<265	<14748	<5167	161

* At 25°C and 1 atmosphere

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

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.0057	<0.0053	<0.0060	<0.0057	5.9
12378-pentachlorodibenzo-p-dioxin	<0.024	<0.011	<0.021	<0.018	35.9
123478-hexachlorodibenzo-p-dioxin	0.027	0.024	<0.027	<0.026	7.1
123678-hexachlorodibenzo-p-dioxin	0.059	0.056	0.079	0.064	19.3
123789-hexachlorodibenzo-p-dioxin	<0.027	<0.023	0.034	<0.028	20.7
1234678-heptachlorodibenzo-p-dioxin	0.37	0.35	0.55	0.42	25.9
Octachlorodibenzo-p-dioxin	0.33	0.32	0.51	0.39	27.0
2378-tetrachlorodibenzofuran	<0.0088	<0.0078	0.21	<0.076	154
12378-pentachlorodibenzofuran	0.017	0.017	0.096	0.044	105
23478-pentachlorodibenzofuran	0.029	0.023	0.14	0.065	103
123478-hexachlorodibenzofuran	<0.019	<0.018	0.062	<0.033	75.5
123678-hexachlorodibenzofuran	0.024	<0.021	0.072	<0.039	73.5
234678-hexachlorodibenzofuran	<0.025	0.029	<0.047	<0.034	35.9
123789-hexachlorodibenzofuran	0.013	<0.0078	0.024	<0.015	55.8
1234678-heptachlorodibenzofuran	0.084	<0.085	0.17	<0.11	42.1
1234789-heptachlorodibenzofuran	<0.015	0.012	<0.024	<0.017	34.6
Octachlorodibenzofuran	0.066	0.052	0.11	0.075	37.1
PCB 81	<0.027	<0.029	<0.221	<0.092	120
PCB 77	<0.21	0.15	3.92	<1.43	151
PCB 123	<0.091	0.042	2.36	<0.83	159
PCB 118	5.99	2.66	201	69.9	162
PCB 114	0.16	<0.082	5.24	<1.83	162
PCB 105	1.49	0.78	56.5	19.6	163
PCB 126	<0.023	<0.035	0.28	<0.11	129
PCB 167	<0.041	0.035	1.15	<0.41	157
PCB 156/157	<0.10	0.080	2.83	<1.01	157
PCB 169	<0.013	<0.027	0.092	<0.044	96.6
PCB 189	<0.0088	<0.0063	<0.047	<0.021	111
Total Dioxins & Furans Only	<1.14	<1.06	<2.17	<1.46	42.3
Total PCBs Only	<8.16	<3.93	<274	<95.2	162
Total Dioxins & Furans and PCBs	<9.30	<4.99	<276	<96.7	160

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

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.21	<0.37	<0.29	<0.30	<0.0057
12378-pentachlorodibenzo-p-dioxin	<0.67	<1.19	<0.93	<0.97	<0.018
123478-hexachlorodibenzo-p-dioxin	<0.96	<1.68	<1.32	<1.38	<0.026
123678-hexachlorodibenzo-p-dioxin	2.37	4.16	3.27	3.42	0.064
123789-hexachlorodibenzo-p-dioxin	<1.03	<1.82	<1.43	<1.49	<0.028
1234678-heptachlorodibenzo-p-dioxin	15.5	27.2	21.4	22.4	0.42
Octachlorodibenzo-p-dioxin	14.2	24.9	19.6	20.5	0.39
2378-tetrachlorodibenzofuran	<2.81	<4.93	<3.89	<4.04	<0.076
12378-pentachlorodibenzofuran	1.61	2.83	2.23	2.32	0.044
23478-pentachlorodibenzofuran	2.39	4.20	3.30	3.44	0.065
123478-hexachlorodibenzofuran	<1.21	<2.14	<1.68	<1.75	<0.033
123678-hexachlorodibenzofuran	<1.44	<2.54	<2.00	<2.08	<0.039
234678-hexachlorodibenzofuran	<1.24	<2.18	<1.71	<1.79	<0.034
123789-hexachlorodibenzofuran	<0.56	<0.98	<0.77	<0.81	<0.015
1234678-heptachlorodibenzofuran	<4.11	<7.22	<5.68	<5.93	<0.11
1234789-heptachlorodibenzofuran	<0.63	<1.10	<0.87	<0.91	<0.017
Octachlorodibenzofuran	2.75	4.84	3.80	3.97	0.075
PCB 81	<3.43	<6.02	<4.74	<4.93	<0.092
PCB 77	<53.0	<93.1	<73.4	<76.2	<1.43
PCB 123	<30.8	<54.2	<42.7	<44.3	<0.83
PCB 118	2595	4562	3597	3733	69.9
PCB 114	<67.9	<119	<94.2	<97.8	<1.83
PCB 105	728	1280	1010	1048	19.6
PCB 126	<4.22	<7.41	<5.84	<6.07	<0.11
PCB 167	<15.1	<26.6	<21.0	<21.8	<0.41
PCB 156/157	<37.4	<65.7	<51.8	<53.8	<1.01
PCB 169	<1.61	<2.84	<2.23	<2.33	<0.044
PCB 189	<0.77	<1.35	<1.07	<1.11	<0.021
Total Dioxins & Furans Only	<53.7	<94.3	<74.2	<77.4	<1.46
Total PCBs Only	<3537	<6219	<4903	<5089	<95.2
Total Dioxins & Furans and PCBs	<3591	<6313	<4978	<5167	<96.7

* 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 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	<0.57	<1.6
12378-pentachlorodibenzo-p-dioxin	<1.2	<1.0
123478-hexachlorodibenzo-p-dioxin	<0.97	<1.1
123678-hexachlorodibenzo-p-dioxin	<0.93	<1.1
123789-hexachlorodibenzo-p-dioxin	<0.91	<1.1
1234678-heptachlorodibenzo-p-dioxin	<1.9	<1.9
Octachlorodibenzo-p-dioxin	6.72	8.47
2378-tetrachlorodibenzofuran	3.57	<0.92
12378-pentachlorodibenzofuran	<1.7	<1.8
23478-pentachlorodibenzofuran	<0.74	<1.7
123478-hexachlorodibenzofuran	<0.53	<0.55
123678-hexachlorodibenzofuran	<0.51	<0.53
234678-hexachlorodibenzofuran	<0.53	<0.55
123789-hexachlorodibenzofuran	<0.61	<0.63
1234678-heptachlorodibenzofuran	<1.7	<1.2
1234789-heptachlorodibenzofuran	<2.0	<1.3
Octachlorodibenzofuran	<4.1	<3.7
PCB 81	<2.7	<5.3
PCB 77	<2.5	<5.0
PCB 123	<3.0	<7.8
PCB 118	18.1	<12
PCB 114	<3.2	<8.0
PCB 105	<2.9	<8.0
PCB 126	<3.0	<7.3
PCB 167	<2.2	<2.7
PCB 156/157	<3.1	<5.9
PCB 169	<2.3	<3.3
PCB 189	<1.4	<3.8
Total Dioxins & Furans Only	<29.2	<29.2
Total PCBs Only	<44.4	<69.1
Total Dioxins & Furans and PCBs	<73.6	<98.3

"<" 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	<0.21	<0.20	<0.22	<0.21
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.86	<0.40	<0.76	<0.67
123478-hexachlorodibenzo-p-dioxin	0.10000	0.098	0.088	<0.10	<0.096
123678-hexachlorodibenzo-p-dioxin	0.10000	0.21	0.21	0.29	0.24
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.098	<0.084	0.13	<0.10
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.13	0.13	0.20	0.15
Octachlorodibenzo-p-dioxin	0.00030	0.0036	0.0035	0.0056	0.0043
2378-tetrachlorodibenzofuran	0.10000	<0.032	<0.029	0.78	<0.28
12378-pentachlorodibenzofuran	0.03000	0.019	0.019	0.11	0.048
23478-pentachlorodibenzofuran	0.30000	0.32	0.25	1.58	0.72
123478-hexachlorodibenzofuran	0.10000	<0.069	<0.067	0.23	<0.12
123678-hexachlorodibenzofuran	0.10000	0.086	<0.078	0.27	<0.14
234678-hexachlorodibenzofuran	0.10000	<0.089	0.11	<0.18	<0.12
123789-hexachlorodibenzofuran	0.10000	0.048	<0.029	0.091	<0.056
1234678-heptachlorodibenzofuran	0.01000	0.031	<0.031	0.062	<0.041
1234789-heptachlorodibenzofuran	0.01000	<0.0055	0.0045	<0.0088	<0.0063
Octachlorodibenzofuran	0.00030	0.00072	0.00058	0.0012	0.00083
PCB 81	0.00030	<0.00030	<0.00032	<0.0025	<0.0010
PCB 77	0.00010	<0.00077	0.00056	0.015	<0.0053
PCB 123	0.00003	<0.000099	0.000046	0.0026	<0.00092
PCB 118	0.00003	0.0065	0.0029	0.22	0.078
PCB 114	0.00003	0.00018	<0.000090	0.0058	<0.0020
PCB 105	0.00003	0.0016	0.00086	0.063	0.022
PCB 126	0.10000	<0.085	<0.13	1.05	<0.42
PCB 167	0.00003	<0.000045	0.000039	0.0013	<0.00045
PCB 156/157	0.00003	<0.00011	0.000089	0.0032	<0.0011
PCB 169	0.03000	<0.014	<0.029	0.10	<0.048
PCB 189	0.00003	<0.0000096	<0.0000069	<0.000053	<0.000023
Total Dioxins & Furans Only		<2.31	<1.72	<5.02	<3.02
Total PCBs Only		<0.11	<0.16	<1.47	<0.58
Total Dioxins & Furans and PCBs		<2.41	<1.89	<6.49	<3.60

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	<0.36	<0.34	<0.39	<0.37
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.51	<0.71	<1.34	<1.19
123478-hexachlorodibenzo-p-dioxin	0.10000	0.17	0.15	<0.18	<0.17
123678-hexachlorodibenzo-p-dioxin	0.10000	0.37	0.36	0.51	0.42
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.17	<0.15	0.23	<0.18
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.24	0.22	0.36	0.27
Octachlorodibenzo-p-dioxin	0.00030	0.0063	0.0062	0.0099	0.0075
2378-tetrachlorodibenzofuran	0.10000	<0.056	<0.051	1.37	<0.49
12378-pentachlorodibenzofuran	0.03000	0.033	0.032	0.19	0.085
23478-pentachlorodibenzofuran	0.30000	0.56	0.44	2.78	1.26
123478-hexachlorodibenzofuran	0.10000	<0.12	<0.12	0.40	<0.21
123678-hexachlorodibenzofuran	0.10000	0.15	<0.14	0.47	<0.25
234678-hexachlorodibenzofuran	0.10000	<0.16	0.19	<0.31	<0.22
123789-hexachlorodibenzofuran	0.10000	0.085	<0.051	0.16	<0.098
1234678-heptachlorodibenzofuran	0.01000	0.054	<0.055	0.11	<0.072
1234789-heptachlorodibenzofuran	0.01000	<0.0096	0.0080	<0.015	<0.011
Octachlorodibenzofuran	0.00030	0.0013	0.0010	0.0021	0.0015
PCB 81	0.00030	<0.00052	<0.00056	<0.0043	<0.0018
PCB 77	0.00010	<0.0013	0.00099	0.026	<0.0093
PCB 123	0.00003	<0.00017	0.000081	0.0046	<0.0016
PCB 118	0.00003	0.011	0.0051	0.39	0.14
PCB 114	0.00003	0.00031	<0.00016	0.010	<0.0036
PCB 105	0.00003	0.0028	0.0015	0.11	0.038
PCB 126	0.10000	<0.15	<0.22	1.85	<0.74
PCB 167	0.00003	<0.000078	0.000068	0.0022	<0.00080
PCB 156/157	0.00003	<0.00020	0.00016	0.0056	<0.0020
PCB 169	0.03000	<0.024	<0.052	0.18	<0.085
PCB 189	0.00003	<0.000017	<0.000012	<0.000093	<0.000041
Total Dioxins & Furans Only		<4.05	<3.03	<8.83	<5.30
Total PCBs Only		<0.19	<0.28	<2.59	<1.02
Total Dioxins & Furans and PCBs		<4.24	<3.31	<11.4	<6.32

* 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	<0.28	<0.27	<0.31	<0.29
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.18	<0.55	<1.06	<0.93
123478-hexachlorodibenzo-p-dioxin	0.10000	0.13	0.12	<0.14	<0.13
123678-hexachlorodibenzo-p-dioxin	0.10000	0.29	0.28	0.41	0.33
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.14	<0.12	0.18	<0.14
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.18	0.18	0.28	0.21
Octachlorodibenzo-p-dioxin	0.00030	0.0050	0.0048	0.0078	0.0059
2378-tetrachlorodibenzofuran	0.10000	<0.044	<0.040	1.08	<0.39
12378-pentachlorodibenzofuran	0.03000	0.026	0.025	0.15	0.067
23478-pentachlorodibenzofuran	0.30000	0.44	0.35	2.19	0.99
123478-hexachlorodibenzofuran	0.10000	<0.095	<0.092	0.32	<0.17
123678-hexachlorodibenzofuran	0.10000	0.12	<0.11	0.37	<0.20
234678-hexachlorodibenzofuran	0.10000	<0.12	0.15	<0.24	<0.17
123789-hexachlorodibenzofuran	0.10000	0.066	<0.040	0.13	<0.077
1234678-heptachlorodibenzofuran	0.01000	0.042	<0.043	0.085	<0.057
1234789-heptachlorodibenzofuran	0.01000	<0.0076	0.0062	<0.012	<0.0087
Octachlorodibenzofuran	0.00030	0.00099	0.00079	0.0016	0.0011
PCB 81	0.00030	<0.00041	<0.00044	<0.0034	<0.0014
PCB 77	0.00010	<0.0011	0.00077	0.020	<0.0073
PCB 123	0.00003	<0.00014	0.000063	0.0036	<0.0013
PCB 118	0.00003	0.0090	0.0040	0.31	0.11
PCB 114	0.00003	0.00024	<0.00012	0.0081	<0.0028
PCB 105	0.00003	0.0022	0.0012	0.087	0.030
PCB 126	0.10000	<0.12	<0.17	1.46	<0.58
PCB 167	0.00003	<0.000062	0.000053	0.0018	<0.00063
PCB 156/157	0.00003	<0.00016	0.00012	0.0044	<0.0016
PCB 169	0.03000	<0.019	<0.040	0.14	<0.067
PCB 189	0.00003	<0.000013	<0.0000095	<0.000073	<0.000032
Total Dioxins & Furans Only		<3.18	<2.37	<6.96	<4.17
Total PCBs Only		<0.15	<0.22	<2.04	<0.80
Total Dioxins & Furans and PCBs		<3.33	<2.59	<9.00	<4.98

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

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

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

TABLE 46A
Covanta - Durham York Energy Centre
Boiler No. 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	0.14	0.13	0.15	0.14
12378-pentachlorodibenzo-p-dioxin	1.00000	0.59	0.28	0.53	0.47
123478-hexachlorodibenzo-p-dioxin	0.10000	0.13	0.12	0.070	0.11
123678-hexachlorodibenzo-p-dioxin	0.10000	0.29	0.28	0.41	0.33
123789-hexachlorodibenzo-p-dioxin	0.10000	0.068	0.058	0.18	0.10
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.18	0.18	0.28	0.21
Octachlorodibenzo-p-dioxin	0.00030	0.0050	0.0048	0.0078	0.0059
2378-tetrachlorodibenzofuran	0.10000	0.022	0.020	1.08	0.37
12378-pentachlorodibenzofuran	0.03000	0.026	0.025	0.15	0.067
23478-pentachlorodibenzofuran	0.30000	0.44	0.35	2.19	0.99
123478-hexachlorodibenzofuran	0.10000	0.047	0.046	0.32	0.14
123678-hexachlorodibenzofuran	0.10000	0.12	0.054	0.37	0.18
234678-hexachlorodibenzofuran	0.10000	0.062	0.15	0.12	0.11
123789-hexachlorodibenzofuran	0.10000	0.066	0.020	0.13	0.071
1234678-heptachlorodibenzofuran	0.01000	0.042	0.021	0.085	0.050
1234789-heptachlorodibenzofuran	0.01000	0.0038	0.0062	0.0061	0.0054
Octachlorodibenzofuran	0.00030	0.00099	0.00079	0.0016	0.0011
PCB 81	0.00030	0.00021	0.00022	0.0017	0.00071
PCB 77	0.00010	0.00053	0.00077	0.020	0.0072
PCB 123	0.00003	0.000069	0.000063	0.0036	0.0013
PCB 118	0.00003	0.0090	0.0040	0.31	0.11
PCB 114	0.00003	0.00024	0.000062	0.0081	0.0028
PCB 105	0.00003	0.0022	0.0012	0.087	0.030
PCB 126	0.10000	0.058	0.087	1.46	0.54
PCB 167	0.00003	0.000031	0.000053	0.0018	0.00062
PCB 156/157	0.00003	0.000078	0.00012	0.0044	0.0015
PCB 169	0.03000	0.0095	0.020	0.14	0.057
PCB 189	0.00003	0.0000066	0.0000048	0.000037	0.000016
Total Dioxins & Furans Only		2.25	1.74	6.08	3.35
Total PCBs Only		0.080	0.11	2.04	0.74
Total Dioxins & Furans and PCBs		2.33	1.85	8.12	4.10

* 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	<0.28	<0.27	<0.31	<0.29
12378-pentachlorodibenzo-p-dioxin	0.50	<0.59	<0.28	<0.53	<0.47
123478-hexachlorodibenzo-p-dioxin	0.10	0.13	0.12	<0.14	<0.13
123678-hexachlorodibenzo-p-dioxin	0.10	0.29	0.28	0.41	0.33
123789-hexachlorodibenzo-p-dioxin	0.10	<0.14	<0.12	0.18	<0.14
1234678-heptachlorodibenzo-p-dioxin	0.01	0.18	0.18	0.28	0.21
Octachlorodibenzo-p-dioxin	0.001	0.017	0.016	0.026	0.020
2378-tetrachlorodibenzofuran	0.10	<0.044	<0.040	1.08	<0.39
12378-pentachlorodibenzofuran	0.05	0.043	0.042	0.25	0.11
23478-pentachlorodibenzofuran	0.50	0.73	0.58	3.65	1.65
123478-hexachlorodibenzofuran	0.10	<0.095	<0.092	0.32	<0.17
123678-hexachlorodibenzofuran	0.10	0.12	<0.11	0.37	<0.20
234678-hexachlorodibenzofuran	0.10	<0.12	0.15	<0.24	<0.17
123789-hexachlorodibenzofuran	0.10	0.066	<0.040	0.13	<0.077
1234678-heptachlorodibenzofuran	0.01	0.042	<0.043	0.085	<0.057
1234789-heptachlorodibenzofuran	0.01	<0.0076	0.0062	<0.012	<0.0087
Octachlorodibenzofuran	0.001	0.0033	0.0026	0.0055	0.0038
Total Dioxins & Furans		<2.92	<2.35	<8.01	<4.43
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	<0.30	<0.28	<0.32	<0.30
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.24	<0.58	<1.10	<0.97
123478-hexachlorodibenzo-p-dioxin	0.10000	0.14	0.13	<0.15	<0.14
123678-hexachlorodibenzo-p-dioxin	0.10000	0.31	0.30	0.42	0.34
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.14	<0.12	0.18	<0.15
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.19	0.19	0.29	0.22
Octachlorodibenzo-p-dioxin	0.00030	0.0052	0.0051	0.0081	0.0061
2378-tetrachlorodibenzofuran	0.10000	<0.046	<0.042	1.12	<0.40
12378-pentachlorodibenzofuran	0.03000	0.027	0.027	0.15	0.070
23478-pentachlorodibenzofuran	0.30000	0.46	0.36	2.27	1.03
123478-hexachlorodibenzofuran	0.10000	<0.099	<0.097	0.33	<0.18
123678-hexachlorodibenzofuran	0.10000	0.12	<0.11	0.39	<0.21
234678-hexachlorodibenzofuran	0.10000	<0.13	0.15	<0.25	<0.18
123789-hexachlorodibenzofuran	0.10000	0.070	<0.042	0.13	<0.081
1234678-heptachlorodibenzofuran	0.01000	0.044	<0.045	0.089	<0.059
1234789-heptachlorodibenzofuran	0.01000	<0.0079	0.0066	<0.013	<0.0091
Octachlorodibenzofuran	0.00030	0.0010	0.00084	0.0017	0.0012
PCB 81	0.00030	<0.00043	<0.00046	<0.0035	<0.0015
PCB 77	0.00010	<0.0011	0.00081	0.021	<0.0076
PCB 123	0.00003	<0.00014	0.000067	0.0038	<0.0013
PCB 118	0.00003	0.0094	0.0042	0.32	0.11
PCB 114	0.00003	0.00026	<0.00013	0.0084	<0.0029
PCB 105	0.00003	0.0023	0.0012	0.091	0.031
PCB 126	0.10000	<0.12	<0.18	1.52	<0.61
PCB 167	0.00003	<0.000064	0.000056	0.0018	<0.00065
PCB 156/157	0.00003	<0.00016	0.00013	0.0045	<0.0016
PCB 169	0.03000	<0.020	<0.043	0.15	<0.070
PCB 189	0.00003	<0.000014	<0.000010	<0.000076	<0.000033
Total Dioxins & Furans Only		<3.33	<2.50	<7.22	<4.35
Total PCBs Only		<0.16	<0.23	<2.12	<0.84
Total Dioxins & Furans and PCBs		<3.49	<2.73	<9.34	<5.19

* 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	<0.0057	<0.0053	<0.0060	<0.0057
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.024	<0.011	<0.021	<0.018
123478-hexachlorodibenzo-p-dioxin	0.10000	0.0027	0.0024	<0.0027	<0.0026
123678-hexachlorodibenzo-p-dioxin	0.10000	0.0059	0.0056	0.0079	0.0064
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.0027	<0.0023	0.0034	<0.0028
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.0037	0.0035	0.0055	0.0042
Octachlorodibenzo-p-dioxin	0.00030	0.000099	0.000096	0.00015	0.00012
2378-tetrachlorodibenzofuran	0.10000	<0.00088	<0.00078	0.021	<0.0076
12378-pentachlorodibenzofuran	0.03000	0.00052	0.00050	0.0029	0.0013
23478-pentachlorodibenzofuran	0.30000	0.0088	0.0068	0.042	0.019
123478-hexachlorodibenzofuran	0.10000	<0.0019	<0.0018	0.0062	<0.0033
123678-hexachlorodibenzofuran	0.10000	0.0024	<0.0021	0.0072	<0.0039
234678-hexachlorodibenzofuran	0.10000	<0.0025	0.0029	<0.0047	<0.0034
123789-hexachlorodibenzofuran	0.10000	0.0013	<0.00078	0.0024	<0.0015
1234678-heptachlorodibenzofuran	0.01000	0.00084	<0.00085	0.0017	<0.0011
1234789-heptachlorodibenzofuran	0.01000	<0.00015	0.00012	<0.00024	<0.00017
Octachlorodibenzofuran	0.00030	0.000020	0.000016	0.000032	0.000022
PCB 81	0.00030	<0.0000082	<0.0000087	<0.000066	<0.000028
PCB 77	0.00010	<0.000021	0.000015	0.00039	<0.00014
PCB 123	0.00003	<0.0000027	0.0000013	0.000071	<0.000025
PCB 118	0.00003	0.00018	0.000080	0.0060	0.0021
PCB 114	0.00003	0.0000049	<0.0000024	0.00016	<0.000055
PCB 105	0.00003	0.000045	0.000023	0.0017	0.00059
PCB 126	0.10000	<0.0023	<0.0035	0.028	<0.011
PCB 167	0.00003	<0.0000012	0.0000011	0.000034	<0.000012
PCB 156/157	0.00003	<0.0000031	0.0000024	0.000085	<0.000030
PCB 169	0.03000	<0.00038	<0.00080	0.0027	<0.0013
PCB 189	0.00003	<0.00000026	<0.00000019	<0.0000014	<0.00000062
Total Dioxins & Furans Only		<0.064	<0.047	<0.14	<0.082
Total PCBs Only		<0.0030	<0.0044	<0.040	<0.016
Total Dioxins & Furans and PCBs		<0.067	<0.051	<0.17	<0.098

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

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

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg TEQ/m³	pg TEQ/Rm³*	pg TEQ/Rm³**	pg TEQ/Rm³*	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.21	<0.37	<0.29	<0.30	<0.0057
12378-pentachlorodibenzo-p-dioxin	<0.67	<1.19	<0.93	<0.97	<0.018
123478-hexachlorodibenzo-p-dioxin	<0.096	<0.17	<0.13	<0.14	<0.0026
123678-hexachlorodibenzo-p-dioxin	0.24	0.42	0.33	0.34	0.0064
123789-hexachlorodibenzo-p-dioxin	<0.10	<0.18	<0.14	<0.15	<0.0028
1234678-heptachlorodibenzo-p-dioxin	0.15	0.27	0.21	0.22	0.0042
Octachlorodibenzo-p-dioxin	0.0043	0.0075	0.0059	0.0061	0.00012
2378-tetrachlorodibenzofuran	<0.28	<0.49	<0.39	<0.40	<0.0076
12378-pentachlorodibenzofuran	0.048	0.085	0.067	0.070	0.0013
23478-pentachlorodibenzofuran	0.72	1.26	0.99	1.03	0.019
123478-hexachlorodibenzofuran	<0.12	<0.21	<0.17	<0.18	<0.0033
123678-hexachlorodibenzofuran	<0.14	<0.25	<0.20	<0.21	<0.0039
234678-hexachlorodibenzofuran	<0.12	<0.22	<0.17	<0.18	<0.0034
123789-hexachlorodibenzofuran	<0.056	<0.098	<0.077	<0.081	<0.0015
1234678-heptachlorodibenzofuran	<0.041	<0.072	<0.057	<0.059	<0.0011
1234789-heptachlorodibenzofuran	<0.0063	<0.011	<0.0087	<0.0091	<0.00017
Octachlorodibenzofuran	0.00083	0.0015	0.0011	0.0012	0.000022
PCB 81	<0.0010	<0.0018	<0.0014	<0.0015	<0.000028
PCB 77	<0.0053	<0.0093	<0.0073	<0.0076	<0.00014
PCB 123	<0.00092	<0.0016	<0.0013	<0.0013	<0.000025
PCB 118	0.078	0.14	0.11	0.11	0.0021
PCB 114	<0.0020	<0.0036	<0.0028	<0.0029	<0.000055
PCB 105	0.022	0.038	0.030	0.031	0.00059
PCB 126	<0.42	<0.74	<0.58	<0.61	<0.011
PCB 167	<0.00045	<0.00080	<0.00063	<0.00065	<0.000012
PCB 156/157	<0.0011	<0.0020	<0.0016	<0.0016	<0.000030
PCB 169	<0.048	<0.085	<0.067	<0.070	<0.0013
PCB 189	<0.000023	<0.000041	<0.000032	<0.000033	<0.00000062
Total Dioxins & Furans Only	<3.02	<5.30	<4.17	<4.35	<0.082
Total PCBs Only	<0.58	<1.02	<0.80	<0.84	<0.016
Total Dioxins & Furans and PCBs	<3.60	<6.32	<4.98	<5.19	<0.098

* 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	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg TEQ/m^3	pg TEQ/Rm^3*	pg TEQ/Rm^3**	pg TEQ/Rm^3*	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.10	0.18	0.14	0.15	0.0028
12378-pentachlorodibenzo-p-dioxin	0.34	0.59	0.47	0.49	0.0092
123478-hexachlorodibenzo-p-dioxin	0.079	0.14	0.11	0.11	0.0021
123678-hexachlorodibenzo-p-dioxin	0.237	0.42	0.33	0.34	0.0064
123789-hexachlorodibenzo-p-dioxin	0.073	0.13	0.10	0.11	0.0020
1234678-heptachlorodibenzo-p-dioxin	0.15	0.27	0.21	0.22	0.0042
Octachlorodibenzo-p-dioxin	0.0043	0.0075	0.0059	0.0061	0.00012
2378-tetrachlorodibenzofuran	0.27	0.48	0.37	0.39	0.0073
12378-pentachlorodibenzofuran	0.048	0.085	0.067	0.070	0.0013
23478-pentachlorodibenzofuran	0.72	1.26	0.99	1.03	0.019
123478-hexachlorodibenzofuran	0.099	0.17	0.14	0.14	0.0027
123678-hexachlorodibenzofuran	0.13	0.23	0.18	0.19	0.0036
234678-hexachlorodibenzofuran	0.080	0.14	0.11	0.12	0.0022
123789-hexachlorodibenzofuran	0.051	0.090	0.071	0.074	0.0014
1234678-heptachlorodibenzofuran	0.036	0.063	0.050	0.052	0.00097
1234789-heptachlorodibenzofuran	0.0039	0.0068	0.0054	0.0056	0.00011
Octachlorodibenzofuran	0.00083	0.0015	0.0011	0.0012	0.000022
PCB 81	0.00051	0.00090	0.00071	0.00074	0.000014
PCB 77	0.0052	0.0091	0.0072	0.0074	0.00014
PCB 123	0.00091	0.0016	0.0013	0.0013	0.000024
PCB 118	0.078	0.14	0.11	0.11	0.0021
PCB 114	0.0020	0.0036	0.0028	0.0029	0.000054
PCB 105	0.022	0.038	0.030	0.031	0.00059
PCB 126	0.39	0.68	0.54	0.56	0.010
PCB 167	0.00045	0.00079	0.00062	0.00064	0.000012
PCB 156/157	0.0011	0.0019	0.0015	0.0016	0.000030
PCB 169	0.041	0.073	0.057	0.059	0.0011
PCB 189	0.000012	0.000020	0.000016	0.000017	0.00000031
Total Dioxins & Furans Only	2.43	4.26	3.35	3.50	0.066
Total PCBs Only	0.54	0.94	0.74	0.77	0.014
Total Dioxins & Furans and PCBs	2.96	5.21	4.10	4.27	0.080

* At 25°C and 1 atmosphere

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

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

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

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1030	118	207	162	170	3.25
1,3-Dichlorobenzene	118	13.5	23.7	18.6	19.5	0.37
1,4-Dichlorobenzene	139	15.9	27.9	21.9	23.0	0.44
1,2-Dichlorobenzene	118	13.5	23.7	18.6	19.5	0.37
Total Dichlorobenzene	375	42.9	75.3	59.1	61.9	1.18
1,3,5-trichlorobenzene	14.3	1.63	2.87	2.26	2.36	0.045
1,2,4-trichlorobenzene	27.4	3.13	5.50	4.32	4.52	0.086
1,2,3-trichlorobenzene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Total Trichlorobenzene	<53.7	<6.14	<10.8	<8.47	<8.87	<0.17
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	13.9	1.59	2.79	2.19	2.30	0.044
1,2,3,4-tetrachlorobenzene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Total Tetrachlorobenzene	<25.9	<2.96	<5.20	<4.08	<4.28	<0.082
Pentachlorobenzene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Hexachlorobenzene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Total Chlorobenzenes	<1509	<172	<303	<238	<249	<4.76

Dry Gas Volume Sampled (Rm^3*) :	4.978
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.1

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1250	144	253	198	209	3.92
1,3-Dichlorobenzene	120	13.8	24.3	19.0	20.0	0.38
1,4-Dichlorobenzene	88.1	10.2	17.8	14.0	14.7	0.28
1,2-Dichlorobenzene	110	12.7	22.3	17.4	18.4	0.35
Total Dichlorobenzene	318	36.7	64.4	50.4	53.1	1.00
1,3,5-trichlorobenzene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
1,2,4-trichlorobenzene	28.3	3.26	5.73	4.48	4.72	0.089
1,2,3-trichlorobenzene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Total Trichlorobenzene	<52.3	<6.03	<10.6	<8.29	<8.73	<0.16
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	13.8	1.59	2.79	2.19	2.30	0.043
1,2,3,4-tetrachlorobenzene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Total Tetrachlorobenzene	<25.8	<2.98	<5.22	<4.09	<4.31	<0.081
Pentachlorobenzene	12.1	1.40	2.45	1.92	2.02	0.038
Hexachlorobenzene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Total Chlorobenzenes	<1670	<193	<338	<265	<279	<5.24

Dry Gas Volume Sampled (Rm^3*) :	4.940
Actual Flowrate (m^3/s) :	27.2
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1360	160	281	221	230	4.30
1,3-Dichlorobenzene	142	16.7	29.3	23.1	24.0	0.45
1,4-Dichlorobenzene	102	12.0	21.1	16.6	17.2	0.32
1,2-Dichlorobenzene	70.5	8.28	14.6	11.5	11.9	0.22
Total Dichlorobenzene	315	36.9	64.9	51.2	53.1	0.99
1,3,5-trichlorobenzene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
1,2,4-trichlorobenzene	31.7	3.72	6.55	5.16	5.36	0.10
1,2,3-trichlorobenzene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Total Trichlorobenzene	<56	<6.54	<11.5	<9.07	<9.41	<0.18
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	12.7	1.49	2.62	2.07	2.15	0.040
1,2,3,4-tetrachlorobenzene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Total Tetrachlorobenzene	<24.7	<2.90	<5.10	<4.02	<4.17	<0.078
Pentachlorobenzene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Hexachlorobenzene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Total Chlorobenzenes	<1779	<209	<367	<290	<301	<5.62

Dry Gas Volume Sampled (Rm^3*) :	4.843
Actual Flowrate (m^3/s) :	26.9
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.7

* 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 54
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	118	144	160	141	15.1
1,3-Dichlorobenzene	13.5	13.8	16.7	14.7	11.9
1,4-Dichlorobenzene	15.9	10.2	12.0	12.7	23.1
1,2-Dichlorobenzene	13.5	12.7	8.28	11.5	24.4
Total Dichlorobenzene	42.9	36.7	36.9	38.8	9.0
1,3,5-trichlorobenzene	1.63	<1.38	<1.41	<1.48	9.3
1,2,4-trichlorobenzene	3.13	3.26	3.72	3.37	9.2
1,2,3-trichlorobenzene	<1.37	<1.38	<1.41	<1.39	1.4
Total Trichlorobenzene	<6.14	<6.03	<6.54	<6.24	4.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	1.59	1.59	1.49	1.56	3.7
1,2,3,4-tetrachlorobenzene	<1.37	<1.38	<1.41	<1.39	1.4
Total Tetrachlorobenzene	<2.96	<2.98	<2.90	<2.95	1.3
Pentachlorobenzene	<1.37	1.40	<1.41	<1.39	1.4
Hexachlorobenzene	<1.37	<1.38	<1.41	<1.39	1.4
Total Chlorobenzenes	<172	<193	<209	<191	9.6

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

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	207	253	281	247	15.1
1,3-Dichlorobenzene	23.7	24.3	29.3	25.8	12.0
1,4-Dichlorobenzene	27.9	17.8	21.1	22.3	23.1
1,2-Dichlorobenzene	23.7	22.3	14.6	20.2	24.4
Total Dichlorobenzene	75.3	64.4	64.9	68.2	9.0
1,3,5-trichlorobenzene	2.87	<2.43	<2.48	<2.59	9.4
1,2,4-trichlorobenzene	5.50	5.73	6.55	5.93	9.2
1,2,3-trichlorobenzene	<2.41	<2.43	<2.48	<2.44	1.4
Total Trichlorobenzene	<10.8	<10.6	<11.5	<11.0	4.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.79	2.79	2.62	2.74	3.6
1,2,3,4-tetrachlorobenzene	<2.41	<2.43	<2.48	<2.44	1.4
Total Tetrachlorobenzene	<5.20	<5.22	<5.10	<5.18	1.3
Pentachlorobenzene	<2.41	2.45	<2.48	<2.45	1.4
Hexachlorobenzene	<2.41	<2.43	<2.48	<2.44	1.4
Total Chlorobenzenes	<303	<338	<367	<336	9.6

* At 25°C and 1 atmosphere

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	%
Monochlorobenzene	162	198	221	194	15.3
1,3-Dichlorobenzene	18.6	19.0	23.1	20.2	12.3
1,4-Dichlorobenzene	21.9	14.0	16.6	17.5	23.2
1,2-Dichlorobenzene	18.6	17.4	11.5	15.8	24.1
Total Dichlorobenzene	59.1	50.4	51.2	53.6	9.0
1,3,5-trichlorobenzene	2.26	<1.90	<1.95	<2.04	9.4
1,2,4-trichlorobenzene	4.32	4.48	5.16	4.66	9.6
1,2,3-trichlorobenzene	<1.89	<1.90	<1.95	<1.92	1.7
Total Trichlorobenzene	<8.47	<8.29	<9.07	<8.61	4.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.19	2.19	2.07	2.15	3.3
1,2,3,4-tetrachlorobenzene	<1.89	<1.90	<1.95	<1.92	1.7
Total Tetrachlorobenzene	<4.08	<4.09	<4.02	<4.07	0.9
Pentachlorobenzene	<1.89	1.92	<1.95	<1.92	1.6
Hexachlorobenzene	<1.89	<1.90	<1.95	<1.92	1.7
Total Chlorobenzenes	<238	<265	<290	<264	9.8

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

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	170	209	230	203	14.9
1,3-Dichlorobenzene	19.5	20.0	24.0	21.2	11.6
1,4-Dichlorobenzene	23.0	14.7	17.2	18.3	23.1
1,2-Dichlorobenzene	19.5	18.4	11.9	16.6	24.6
Total Dichlorobenzene	61.9	53.1	53.1	56.0	9.1
1,3,5-trichlorobenzene	2.36	<2.00	<2.03	<2.13	9.4
1,2,4-trichlorobenzene	4.52	4.72	5.36	4.87	8.9
1,2,3-trichlorobenzene	<1.98	<2.00	<2.03	<2.00	1.1
Total Trichlorobenzene	<8.87	<8.73	<9.41	<9.00	4.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.30	2.30	2.15	2.25	4.0
1,2,3,4-tetrachlorobenzene	<1.98	<2.00	<2.03	<2.00	1.1
Total Tetrachlorobenzene	<4.28	<4.31	<4.17	<4.25	1.6
Pentachlorobenzene	<1.98	2.02	<2.03	<2.01	1.2
Hexachlorobenzene	<1.98	<2.00	<2.03	<2.00	1.1
Total Chlorobenzenes	<249	<279	<301	<276	9.3

* At 25°C and 1 atmosphere

TABLE 58
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
Monochlorobenzene	3.25	3.92	4.30	3.82	13.9
1,3-Dichlorobenzene	0.37	0.38	0.45	0.40	10.8
1,4-Dichlorobenzene	0.44	0.28	0.32	0.35	24.2
1,2-Dichlorobenzene	0.37	0.35	0.22	0.31	25.4
Total Dichlorobenzene	1.18	1.00	0.99	1.06	10.2
1,3,5-trichlorobenzene	0.045	<0.038	<0.038	<0.040	10.5
1,2,4-trichlorobenzene	0.086	0.089	0.10	0.092	8.0
1,2,3-trichlorobenzene	<0.038	<0.038	<0.038	<0.038	0.4
Total Trichlorobenzene	<0.17	<0.16	<0.18	<0.17	3.5
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.044	0.043	0.040	0.042	4.7
1,2,3,4-tetrachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.4
Total Tetrachlorobenzene	<0.082	<0.081	<0.078	<0.080	2.4
Pentachlorobenzene	<0.038	0.038	<0.038	<0.038	0.2
Hexachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.4
Total Chlorobenzenes	<4.76	<5.24	<5.62	<5.21	8.3

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	141	247	194	203	3.82
1,3-Dichlorobenzene	14.7	25.8	20.2	21.2	0.40
1,4-Dichlorobenzene	12.7	22.3	17.5	18.3	0.35
1,2-Dichlorobenzene	11.5	20.2	15.8	16.6	0.31
Total Dichlorobenzene	38.8	68.2	53.6	56.0	1.06
1,3,5-trichlorobenzene	<1.48	<2.59	<2.04	<2.13	<0.040
1,2,4-trichlorobenzene	3.37	5.93	4.66	4.87	0.092
1,2,3-trichlorobenzene	<1.39	<2.44	<1.92	<2.00	<0.038
Total Trichlorobenzene	<6.24	<11.0	<8.61	<9.00	<0.17
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	1.56	2.74	2.15	2.25	0.042
1,2,3,4-tetrachlorobenzene	<1.39	<2.44	<1.92	<2.00	<0.038
Total Tetrachlorobenzene	<2.95	<5.18	<4.07	<4.25	<0.080
Pentachlorobenzene	<1.39	<2.45	<1.92	<2.01	<0.038
Hexachlorobenzene	<1.39	<2.44	<1.92	<2.00	<0.038
Total Chlorobenzenes	<191	<336	<264	<276	<5.21

* 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	<12	<12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	19.8	13.4
1,2-Dichlorobenzene	44.1	<12
Total Dichlorobenzene	<75.9	<37.4
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	<172	<133

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

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<120	<13.7	<24.1	<18.9	<19.8	<0.38
3/4-monochlorophenol	<120	<13.7	<24.1	<18.9	<19.8	<0.38
Total Monochlorophenols	<240	<27.4	<48.2	<37.8	<39.6	<0.76
2,6-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,4 & 2,5-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
3,5-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
3,4-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Dichlorophenols	NQ	NQ	NQ	NQ	NQ	NQ
2,4,6-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,6-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,4,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,4-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
3,4,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Trichlorophenols	NQ	NQ	NQ	NQ	NQ	NQ
2,3,5,6/2,3,4,6-tetrachlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,4,5-tetrachlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Tetrachlorophenols	NQ	NQ	NQ	NQ	NQ	NQ
Pentachlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Chlorophenols	NQ	NQ	NQ	NQ	NQ	NQ

Dry Gas Volume Sampled (Rm^3*) :	4.978
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.1

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<120	<13.8	<24.3	<19.0	<20.0	<0.38
3/4-monochlorophenol	<120	<13.8	<24.3	<19.0	<20.0	<0.38
Total Monochlorophenols	<240	<27.7	<48.6	<38.0	<40.1	<0.75
2,6-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,4 & 2,5-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
3,5-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
3,4-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Dichlorophenols	NQ	NQ	NQ	NQ	NQ	NQ
2,4,6-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,6-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,4,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,4-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
3,4,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Trichlorophenols	NQ	NQ	NQ	NQ	NQ	NQ
2,3,5,6/2,3,4,6-tetrachlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,4,5-tetrachlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Tetrachlorophenols	NQ	NQ	NQ	NQ	NQ	NQ
Pentachlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Chlorophenols	NQ	NQ	NQ	NQ	NQ	NQ

Dry Gas Volume Sampled (Rm^3*) :	4.940
Actual Flowrate (m^3/s) :	27.2
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

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

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 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	<120	<14.1	<24.8	<19.5	<20.3	<0.38
3/4-monochlorophenol	<120	<14.1	<24.8	<19.5	<20.3	<0.38
Total Monochlorophenols	<240	<28.2	<49.6	<39.1	<40.5	<0.76
2,6-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,4 & 2,5-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
3,5-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
3,4-dichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Dichlorophenols	NQ	NQ	NQ	NQ	NQ	NQ
2,4,6-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,6-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,4,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,4-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
3,4,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Trichlorophenols	NQ	NQ	NQ	NQ	NQ	NQ
2,3,5,6/2,3,4,6-tetrachlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
2,3,4,5-tetrachlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Tetrachlorophenols	NQ	NQ	NQ	NQ	NQ	NQ
Pentachlorophenol	NQ	NQ	NQ	NQ	NQ	NQ
Total Chlorophenols	NQ	NQ	NQ	NQ	NQ	NQ

Dry Gas Volume Sampled (Rm^3*) :	4.843
Actual Flowrate (m^3/s) :	26.9
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.7

* 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.

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

TABLE 64
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<13.7	<13.8	<14.1	<13.9	1.4
3/4-monochlorophenol	<13.7	<13.8	<14.1	<13.9	1.4
Total Monochlorophenols	<27.4	<27.7	<28.2	<27.8	1.4
2,6-dichlorophenol	NQ	NQ	NQ	NQ	-
2,4 & 2,5-dichlorophenol	NQ	NQ	NQ	NQ	-
3,5-dichlorophenol	NQ	NQ	NQ	NQ	-
2,3-dichlorophenol	NQ	NQ	NQ	NQ	-
3,4-dichlorophenol	NQ	NQ	NQ	NQ	-
Total Dichlorophenols	NQ	NQ	NQ	NQ	-
2,4,6-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,6-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,5-trichlorophenol	NQ	NQ	NQ	NQ	-
2,4,5-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,4-trichlorophenol	NQ	NQ	NQ	NQ	-
3,4,5-trichlorophenol	NQ	NQ	NQ	NQ	-
Total Trichlorophenols	NQ	NQ	NQ	NQ	-
2,3,5,6/2,3,4,6-tetrachlorophenol	NQ	NQ	NQ	NQ	-
2,3,4,5-tetrachlorophenol	NQ	NQ	NQ	NQ	-
Total Tetrachlorophenols	NQ	NQ	NQ	NQ	-
Pentachlorophenol	NQ	NQ	NQ	NQ	-
Total Chlorophenols	NQ	NQ	NQ	NQ	-

TABLE 65
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<24.1	<24.3	<24.8	<24.4	1.4
3/4-monochlorophenol	<24.1	<24.3	<24.8	<24.4	1.4
Total Monochlorophenols	<48.2	<48.6	<49.6	<48.8	1.4
2,6-dichlorophenol	NQ	NQ	NQ	NQ	-
2,4 & 2,5-dichlorophenol	NQ	NQ	NQ	NQ	-
3,5-dichlorophenol	NQ	NQ	NQ	NQ	-
2,3-dichlorophenol	NQ	NQ	NQ	NQ	-
3,4-dichlorophenol	NQ	NQ	NQ	NQ	-
Total Dichlorophenols	NQ	NQ	NQ	NQ	-
2,4,6-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,6-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,5-trichlorophenol	NQ	NQ	NQ	NQ	-
2,4,5-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,4-trichlorophenol	NQ	NQ	NQ	NQ	-
3,4,5-trichlorophenol	NQ	NQ	NQ	NQ	-
Total Trichlorophenols	NQ	NQ	NQ	NQ	-
2,3,5,6/2,3,4,6-tetrachlorophenol	NQ	NQ	NQ	NQ	-
2,3,4,5-tetrachlorophenol	NQ	NQ	NQ	NQ	-
Total Tetrachlorophenols	NQ	NQ	NQ	NQ	-
Pentachlorophenol	NQ	NQ	NQ	NQ	-
Total Chlorophenols	NQ	NQ	NQ	NQ	-

* At 25°C and 1 atmosphere

TABLE 66
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<18.9	<19.0	<19.5	<19.2	1.7
3/4-monochlorophenol	<18.9	<19.0	<19.5	<19.2	1.7
Total Monochlorophenols	<37.8	<38.0	<39.1	<38.3	1.7
2,6-dichlorophenol	NQ	NQ	NQ	NQ	-
2,4 & 2,5-dichlorophenol	NQ	NQ	NQ	NQ	-
3,5-dichlorophenol	NQ	NQ	NQ	NQ	-
2,3-dichlorophenol	NQ	NQ	NQ	NQ	-
3,4-dichlorophenol	NQ	NQ	NQ	NQ	-
Total Dichlorophenols	NQ	NQ	NQ	NQ	-
2,4,6-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,6-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,5-trichlorophenol	NQ	NQ	NQ	NQ	-
2,4,5-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,4-trichlorophenol	NQ	NQ	NQ	NQ	-
3,4,5-trichlorophenol	NQ	NQ	NQ	NQ	-
Total Trichlorophenols	NQ	NQ	NQ	NQ	-
2,3,5,6/2,3,4,6-tetrachlorophenol	NQ	NQ	NQ	NQ	-
2,3,4,5-tetrachlorophenol	NQ	NQ	NQ	NQ	-
Total Tetrachlorophenols	NQ	NQ	NQ	NQ	-
Pentachlorophenol	NQ	NQ	NQ	NQ	-
Total Chlorophenols	NQ	NQ	NQ	NQ	-

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

TABLE 67
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<19.8	<20.0	<20.3	<20.0	1.1
3/4-monochlorophenol	<19.8	<20.0	<20.3	<20.0	1.1
Total Monochlorophenols	<39.6	<40.1	<40.5	<40.1	1.1
2,6-dichlorophenol	NQ	NQ	NQ	NQ	-
2,4 & 2,5-dichlorophenol	NQ	NQ	NQ	NQ	-
3,5-dichlorophenol	NQ	NQ	NQ	NQ	-
2,3-dichlorophenol	NQ	NQ	NQ	NQ	-
3,4-dichlorophenol	NQ	NQ	NQ	NQ	-
Total Dichlorophenols	NQ	NQ	NQ	NQ	-
2,4,6-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,6-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,5-trichlorophenol	NQ	NQ	NQ	NQ	-
2,4,5-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,4-trichlorophenol	NQ	NQ	NQ	NQ	-
3,4,5-trichlorophenol	NQ	NQ	NQ	NQ	-
Total Trichlorophenols	NQ	NQ	NQ	NQ	-
2,3,5,6/2,3,4,6-tetrachlorophenol	NQ	NQ	NQ	NQ	-
2,3,4,5-tetrachlorophenol	NQ	NQ	NQ	NQ	-
Total Tetrachlorophenols	NQ	NQ	NQ	NQ	-
Pentachlorophenol	NQ	NQ	NQ	NQ	-
Total Chlorophenols	NQ	NQ	NQ	NQ	-

* At 25°C and 1 atmosphere

TABLE 68
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
2-monochlorophenol	<0.38	<0.38	<0.38	<0.38	0.4
3/4-monochlorophenol	<0.38	<0.38	<0.38	<0.38	0.4
Total Monochlorophenols	<0.76	<0.75	<0.76	<0.76	0.4
2,6-dichlorophenol	NQ	NQ	NQ	NQ	-
2,4 & 2,5-dichlorophenol	NQ	NQ	NQ	NQ	-
3,5-dichlorophenol	NQ	NQ	NQ	NQ	-
2,3-dichlorophenol	NQ	NQ	NQ	NQ	-
3,4-dichlorophenol	NQ	NQ	NQ	NQ	-
Total Dichlorophenols	NQ	NQ	NQ	NQ	-
2,4,6-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,6-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,5-trichlorophenol	NQ	NQ	NQ	NQ	-
2,4,5-trichlorophenol	NQ	NQ	NQ	NQ	-
2,3,4-trichlorophenol	NQ	NQ	NQ	NQ	-
3,4,5-trichlorophenol	NQ	NQ	NQ	NQ	-
Total Trichlorophenols	NQ	NQ	NQ	NQ	-
2,3,5,6/2,3,4,6-tetrachlorophenol	NQ	NQ	NQ	NQ	-
2,3,4,5-tetrachlorophenol	NQ	NQ	NQ	NQ	-
Total Tetrachlorophenols	NQ	NQ	NQ	NQ	-
Pentachlorophenol	NQ	NQ	NQ	NQ	-
Total Chlorophenols	NQ	NQ	NQ	NQ	-

TABLE 69
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<13.9	<24.4	<19.2	<20.0	<0.38
3/4-monochlorophenol	<13.9	<24.4	<19.2	<20.0	<0.38
Total Monochlorophenols	<27.8	<48.8	<38.3	<40.1	<0.76
2,6-dichlorophenol	NQ	NQ	NQ	NQ	NQ
2,4 & 2,5-dichlorophenol	NQ	NQ	NQ	NQ	NQ
3,5-dichlorophenol	NQ	NQ	NQ	NQ	NQ
2,3-dichlorophenol	NQ	NQ	NQ	NQ	NQ
3,4-dichlorophenol	NQ	NQ	NQ	NQ	NQ
Total Dichlorophenols	NQ	NQ	NQ	NQ	NQ
2,4,6-trichlorophenol	NQ	NQ	NQ	NQ	NQ
2,3,6-trichlorophenol	NQ	NQ	NQ	NQ	NQ
2,3,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ
2,4,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ
2,3,4-trichlorophenol	NQ	NQ	NQ	NQ	NQ
3,4,5-trichlorophenol	NQ	NQ	NQ	NQ	NQ
Total Trichlorophenols	NQ	NQ	NQ	NQ	NQ
2,3,5,6/2,3,4,6-tetrachlorophenol	NQ	NQ	NQ	NQ	NQ
2,3,4,5-tetrachlorophenol	NQ	NQ	NQ	NQ	NQ
Total Tetrachlorophenols	NQ	NQ	NQ	NQ	NQ
Pentachlorophenol	NQ	NQ	NQ	NQ	NQ
Total Chlorophenols	NQ	NQ	NQ	NQ	NQ

* 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	<120	<120
3/4-monochlorophenol	<120	<120
Total Monochlorophenols	<240	<240
2,6-dichlorophenol	NQ	NQ
2,4 & 2,5-dichlorophenol	NQ	NQ
3,5-dichlorophenol	NQ	NQ
2,3-dichlorophenol	NQ	NQ
3,4-dichlorophenol	NQ	NQ
Total Dichlorophenols	NQ	NQ
2,4,6-trichlorophenol	NQ	NQ
2,3,6-trichlorophenol	NQ	NQ
2,3,5-trichlorophenol	NQ	NQ
2,4,5-trichlorophenol	NQ	NQ
2,3,4-trichlorophenol	NQ	NQ
3,4,5-trichlorophenol	NQ	NQ
Total Trichlorophenols	NQ	NQ
2,3,5,6/2,3,4,6-tetrachlorophenol	NQ	NQ
2,3,4,5-tetrachlorophenol	NQ	NQ
Total Tetrachlorophenols	NQ	NQ
Pentachlorophenol	NQ	NQ
Total Chlorophenols	NQ	NQ

"<" 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 71
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Acenaphthylene	41.9	4.79	8.42	6.61	6.92	0.13
Anthracene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Benzo(a)Anthracene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Benzo(b)Fluoranthene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Benzo(k)Fluoranthene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Benzo(a)fluorene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Benzo(b)fluorene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Benzo(g,h,i)Perylene	17.0	1.94	3.42	2.68	2.81	0.054
Benzo(a)Pyrene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Benzo(e)Pyrene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Biphenyl	24.9	2.85	5.00	3.93	4.11	0.079
2-Chloronaphthalene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Chrysene/Triphenylene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Coronene	<60	<6.86	<12.1	<9.46	<9.91	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Dibenzo(a,e)pyrene	<60	<6.86	<12.1	<9.46	<9.91	<0.19
9,10-dimethylanthracene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Fluoranthene	20.0	2.29	4.02	3.15	3.30	0.063
Fluorene	15.1	1.73	3.03	2.38	2.49	0.048
Indeno(1,2,3-cd)Pyrene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
2-methylanthracene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
3-Methylcholanthrene	<60	<6.86	<12.1	<9.46	<9.91	<0.19
1-Methylnaphthalene	26.8	3.06	5.38	4.23	4.43	0.085
2-Methylnaphthalene	52.0	5.94	10.4	8.20	8.59	0.16
1-Methylphenanthrene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
9-Methylphenanthrene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Naphthalene	155	17.7	31.1	24.4	25.6	0.49
Perylene	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Phenanthrene	71.2	8.14	14.3	11.2	11.8	0.22
Picene	<60	<6.86	<12.1	<9.46	<9.91	<0.19
Pyrene	22.7	2.59	4.56	3.58	3.75	0.072
Tetralin	267	30.5	53.6	42.1	44.1	0.84
m-terphenyl	<12	<1.37	<2.41	<1.89	<1.98	<0.038
o-Terphenyl	<12	<1.37	<2.41	<1.89	<1.98	<0.038
p-terphenyl	<12	<1.37	<2.41	<1.89	<1.98	<0.038
Total	<1218	<139	<245	<192	<201	<3.84

Dry Gas Volume Sampled (Rm^3*) :	4.978
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.1

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	12.0	1.38	2.43	1.90	2.00	0.038
Acenaphthylene	36.5	4.21	7.39	5.78	6.09	0.11
Anthracene	30.2	3.48	6.11	4.79	5.04	0.095
Benzo(a)Anthracene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Benzo(b)Fluoranthene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Benzo(k)Fluoranthene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Benzo(a)fluorene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Benzo(b)fluorene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Benzo(g,h,i)Perylene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Benzo(a)Pyrene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Benzo(e)Pyrene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Biphenyl	39.8	4.59	8.06	6.31	6.64	0.12
2-Chloronaphthalene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Chrysene/Triphenylene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Coronene	<60	<6.92	<12.1	<9.51	<10.0	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Dibenzo(a,e)pyrene	<60	<6.92	<12.1	<9.51	<10.0	<0.19
9,10-dimethylanthracene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Fluoranthene	90.5	10.4	18.3	14.3	15.1	0.28
Fluorene	26.5	3.06	5.36	4.20	4.42	0.083
Indeno(1,2,3-cd)Pyrene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
2-methylanthracene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
3-Methylcholanthrene	<60	<6.92	<12.1	<9.51	<10.0	<0.19
1-Methylnaphthalene	88.0	10.2	17.8	13.9	14.7	0.28
2-Methylnaphthalene	190	21.9	38.5	30.1	31.7	0.60
1-Methylphenanthrene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
9-Methylphenanthrene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Naphthalene	1980	228	401	314	330	6.21
Perylene	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Phenanthrene	495	57.1	100	78.4	82.6	1.55
Picene	<60	<6.92	<12.1	<9.51	<10.0	<0.19
Pyrene	86.5	9.98	17.5	13.7	14.4	0.27
Tetralin	325	37.5	65.8	51.5	54.2	1.02
m-terphenyl	<12	<1.38	<2.43	<1.90	<2.00	<0.038
o-Terphenyl	<12	<1.38	<2.43	<1.90	<2.00	<0.038
p-terphenyl	<12	<1.38	<2.43	<1.90	<2.00	<0.038
Total	<3892	<449	<788	<617	<650	<12.2

Dry Gas Volume Sampled (Rm³*) :	4.940
Actual Flowrate (m³/s) :	27.2
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

TABLE 73
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Acenaphthylene	22.7	2.67	4.69	3.70	3.83	0.072
Anthracene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Benzo(a)Anthracene	20.4	2.40	4.21	3.32	3.45	0.064
Benzo(b)Fluoranthene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Benzo(k)Fluoranthene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Benzo(a)fluorene	35.3	4.15	7.29	5.75	5.96	0.11
Benzo(b)fluorene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Benzo(g,h,i)Perylene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Benzo(a)Pyrene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Benzo(e)Pyrene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Biphenyl	35.0	4.11	7.23	5.70	5.91	0.11
2-Chloronaphthalene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Chrysene/Triphenylene	291	34.2	60.1	47.4	49.2	0.92
Coronene	<60	<7.05	<12.4	<9.77	<10.1	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Dibenzo(a,e)pyrene	<60	<7.05	<12.4	<9.77	<10.1	<0.19
9,10-dimethylanthracene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Fluoranthene	253	29.7	52.2	41.2	42.7	0.80
Fluorene	43.3	5.09	8.94	7.05	7.32	0.14
Indeno(1,2,3-cd)Pyrene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
2-methylanthracene	98.7	11.6	20.4	16.1	16.7	0.31
3-Methylcholanthrene	<60	<7.05	<12.4	<9.77	<10.1	<0.19
1-Methylnaphthalene	28.9	3.39	5.97	4.71	4.88	0.091
2-Methylnaphthalene	53.2	6.25	11.0	8.66	8.99	0.17
1-Methylphenanthrene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
9-Methylphenanthrene	229	26.9	47.3	37.3	38.7	0.72
Naphthalene	199	23.4	41.1	32.4	33.6	0.63
Perylene	<12	<1.41	<2.48	<1.95	<2.03	<0.038
Phenanthrene	639	75.0	132	104	108	2.02
Picene	<60	<7.05	<12.4	<9.77	<10.1	<0.19
Pyrene	164	19.3	33.9	26.7	27.7	0.52
Tetralin	348	40.9	71.9	56.7	58.8	1.10
m-terphenyl	42.1	4.94	8.69	6.86	7.11	0.13
o-Terphenyl	<12	<1.41	<2.48	<1.95	<2.03	<0.038
p-terphenyl	20.4	2.40	4.21	3.32	3.45	0.064
Total	<2955	<347	<610	<481	<499	<9.34

Dry Gas Volume Sampled (Rm³*) :	4.843
Actual Flowrate (m³/s) :	26.9
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	19.4
Wet Reference Flowrate (Rm³/s*) :	18.7

* 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 74
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<1.37	1.38	<1.41	<1.39	1.4
Acenaphthylene	4.79	4.21	2.67	3.89	28.2
Anthracene	<1.37	3.48	<1.41	<2.09	57.9
Benzo(a)Anthracene	<1.37	<1.38	2.40	<1.72	34.2
Benzo(b)Fluoranthene	<1.37	<1.38	<1.41	<1.39	1.4
Benzo(k)Fluoranthene	<1.37	<1.38	<1.41	<1.39	1.4
Benzo(a)fluorene	<1.37	<1.38	4.15	<2.30	69.5
Benzo(b)fluorene	<1.37	<1.38	<1.41	<1.39	1.4
Benzo(g,h,i)Perylene	1.94	<1.38	<1.41	<1.58	20.0
Benzo(a)Pyrene	<1.37	<1.38	<1.41	<1.39	1.4
Benzo(e)Pyrene	<1.37	<1.38	<1.41	<1.39	1.4
Biphenyl	2.85	4.59	4.11	3.85	23.4
2-Chloronaphthalene	<1.37	<1.38	<1.41	<1.39	1.4
Chrysene/Triphenylene	<1.37	<1.38	34.2	<12.3	154
Coronene	<6.86	<6.92	<7.05	<6.94	1.4
Dibenzo(a,c/a,h)Anthracene	<1.37	<1.38	<1.41	<1.39	1.4
Dibenzo(a,e)pyrene	<6.86	<6.92	<7.05	<6.94	1.4
9,10-dimethylanthracene	<1.37	<1.38	<1.41	<1.39	1.4
7,12-Dimethylbenzo(a)anthracene	<1.37	<1.38	<1.41	<1.39	1.4
Fluoranthene	2.29	10.4	29.7	14.1	99.6
Fluorene	1.73	3.06	5.09	3.29	51.4
Indeno(1,2,3-cd)Pyrene	<1.37	<1.38	<1.41	<1.39	1.4
2-methylanthracene	<1.37	<1.38	11.6	<4.78	123
3-Methylcholanthrene	<6.86	<6.92	<7.05	<6.94	1.4
1-Methylnaphthalene	3.06	10.2	3.39	5.54	72.3
2-Methylnaphthalene	5.94	21.9	6.25	11.4	80.4
1-Methylphenanthrene	<1.37	<1.38	<1.41	<1.39	1.4
9-Methylphenanthrene	<1.37	<1.38	26.9	<9.88	149
Naphthalene	17.7	228	23.4	89.8	134
Perylene	<1.37	<1.38	<1.41	<1.39	1.4
Phenanthrene	8.14	57.1	75.0	46.8	74.1
Picene	<6.86	<6.92	<7.05	<6.94	1.4
Pyrene	2.59	9.98	19.3	10.6	78.7
Tetralin	30.5	37.5	40.9	36.3	14.6
m-terphenyl	<1.37	<1.38	4.94	<2.57	80.2
o-Terphenyl	<1.37	<1.38	<1.41	<1.39	1.4
p-terphenyl	<1.37	<1.38	2.40	<1.72	34.2
Total	<139	<449	<347	<312	50.7

TABLE 75
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.41	2.43	<2.48	<2.44	1.4
Acenaphthylene	8.42	7.39	4.69	6.83	28.2
Anthracene	<2.41	6.11	<2.48	<3.67	57.8
Benzo(a)Anthracene	<2.41	<2.43	4.21	<3.02	34.3
Benzo(b)Fluoranthene	<2.41	<2.43	<2.48	<2.44	1.4
Benzo(k)Fluoranthene	<2.41	<2.43	<2.48	<2.44	1.4
Benzo(a)fluorene	<2.41	<2.43	7.29	<4.04	69.5
Benzo(b)fluorene	<2.41	<2.43	<2.48	<2.44	1.4
Benzo(g,h,i)Perylene	3.42	<2.43	<2.48	<2.77	20.0
Benzo(a)Pyrene	<2.41	<2.43	<2.48	<2.44	1.4
Benzo(e)Pyrene	<2.41	<2.43	<2.48	<2.44	1.4
Biphenyl	5.00	8.06	7.23	6.76	23.4
2-Chloronaphthalene	<2.41	<2.43	<2.48	<2.44	1.4
Chrysene/Triphenylene	<2.41	<2.43	60.1	<21.6	154
Coronene	<12.1	<12.1	<12.4	<12.2	1.4
Dibenzo(a,c/a,h)Anthracene	<2.41	<2.43	<2.48	<2.44	1.4
Dibenzo(a,e)pyrene	<12.1	<12.1	<12.4	<12.2	1.4
9,10-dimethylanthracene	<2.41	<2.43	<2.48	<2.44	1.4
7,12-Dimethylbenzo(a)anthracene	<2.41	<2.43	<2.48	<2.44	1.4
Fluoranthene	4.02	18.3	52.2	24.9	99.6
Fluorene	3.03	5.36	8.94	5.78	51.5
Indeno(1,2,3-cd)Pyrene	<2.41	<2.43	<2.48	<2.44	1.4
2-methylanthracene	<2.41	<2.43	20.4	<8.41	123
3-Methylcholanthrene	<12.1	<12.1	<12.4	<12.2	1.4
1-Methylnaphthalene	5.38	17.8	5.97	9.72	72.1
2-Methylnaphthalene	10.4	38.5	11.0	20.0	80.3
1-Methylphenanthrene	<2.41	<2.43	<2.48	<2.44	1.4
9-Methylphenanthrene	<2.41	<2.43	47.3	<17.4	149
Naphthalene	31.1	401	41.1	158	134
Perylene	<2.41	<2.43	<2.48	<2.44	1.4
Phenanthrene	14.3	100	132	82.1	74.1
Picene	<12.1	<12.1	<12.4	<12.2	1.4
Pyrene	4.56	17.5	33.9	18.6	78.8
Tetralin	53.6	65.8	71.9	63.8	14.6
m-terphenyl	<2.41	<2.43	8.69	<4.51	80.3
o-Terphenyl	<2.41	<2.43	<2.48	<2.44	1.4
p-terphenyl	<2.41	<2.43	4.21	<3.02	34.3
Total	<245	<788	<610	<548	50.6

* At 25°C and 1 atmosphere

TABLE 76
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.89	1.90	<1.95	<1.92	1.7
Acenaphthylene	6.61	5.78	3.70	5.36	28.0
Anthracene	<1.89	4.79	<1.95	<2.88	57.4
Benzo(a)Anthracene	<1.89	<1.90	3.32	<2.37	34.7
Benzo(b)Fluoranthene	<1.89	<1.90	<1.95	<1.92	1.7
Benzo(k)Fluoranthene	<1.89	<1.90	<1.95	<1.92	1.7
Benzo(a)fluorene	<1.89	<1.90	5.75	<3.18	69.9
Benzo(b)fluorene	<1.89	<1.90	<1.95	<1.92	1.7
Benzo(g,h,i)Perylene	2.68	<1.90	<1.95	<2.18	20.0
Benzo(a)Pyrene	<1.89	<1.90	<1.95	<1.92	1.7
Benzo(e)Pyrene	<1.89	<1.90	<1.95	<1.92	1.7
Biphenyl	3.93	6.31	5.70	5.31	23.3
2-Chloronaphthalene	<1.89	<1.90	<1.95	<1.92	1.7
Chrysene/Triphenylene	<1.89	<1.90	47.4	<17.1	154
Coronene	<9.46	<9.51	<9.77	<9.58	1.7
Dibenzo(a,c/a,h)Anthracene	<1.89	<1.90	<1.95	<1.92	1.7
Dibenzo(a,e)pyrene	<9.46	<9.51	<9.77	<9.58	1.7
9,10-dimethylanthracene	<1.89	<1.90	<1.95	<1.92	1.7
7,12-Dimethylbenzo(a)anthracene	<1.89	<1.90	<1.95	<1.92	1.7
Fluoranthene	3.15	14.3	41.2	19.6	99.9
Fluorene	2.38	4.20	7.05	4.54	51.8
Indeno(1,2,3-cd)Pyrene	<1.89	<1.90	<1.95	<1.92	1.7
2-methylanthracene	<1.89	<1.90	16.1	<6.62	124
3-Methylcholanthrene	<9.46	<9.51	<9.77	<9.58	1.7
1-Methylnaphthalene	4.23	13.9	4.71	7.63	71.8
2-Methylnaphthalene	8.20	30.1	8.66	15.7	79.9
1-Methylphenanthrene	<1.89	<1.90	<1.95	<1.92	1.7
9-Methylphenanthrene	<1.89	<1.90	37.3	<13.7	149
Naphthalene	24.4	314	32.4	124	133
Perylene	<1.89	<1.90	<1.95	<1.92	1.7
Phenanthrene	11.2	78.4	104	64.6	74.2
Picene	<9.46	<9.51	<9.77	<9.58	1.7
Pyrene	3.58	13.7	26.7	14.7	79.1
Tetralin	42.1	51.5	56.7	50.1	14.7
m-terphenyl	<1.89	<1.90	6.86	<3.55	80.6
o-Terphenyl	<1.89	<1.90	<1.95	<1.92	1.7
p-terphenyl	<1.89	<1.90	3.32	<2.37	34.7
Total	<192	<617	<481	<430	50.5

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

TABLE 77
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.98	2.00	<2.03	<2.00	1.1
Acenaphthylene	6.92	6.09	3.83	5.62	28.4
Anthracene	<1.98	5.04	<2.03	<3.02	58.1
Benzo(a)Anthracene	<1.98	<2.00	3.45	<2.48	33.9
Benzo(b)Fluoranthene	<1.98	<2.00	<2.03	<2.00	1.1
Benzo(k)Fluoranthene	<1.98	<2.00	<2.03	<2.00	1.1
Benzo(a)fluorene	<1.98	<2.00	5.96	<3.32	69.1
Benzo(b)fluorene	<1.98	<2.00	<2.03	<2.00	1.1
Benzo(g,h,i)Perylene	2.81	<2.00	<2.03	<2.28	20.1
Benzo(a)Pyrene	<1.98	<2.00	<2.03	<2.00	1.1
Benzo(e)Pyrene	<1.98	<2.00	<2.03	<2.00	1.1
Biphenyl	4.11	6.64	5.91	5.56	23.4
2-Chloronaphthalene	<1.98	<2.00	<2.03	<2.00	1.1
Chrysene/Triphenylene	<1.98	<2.00	49.2	<17.7	154
Coronene	<9.91	<10.0	<10.1	<10.0	1.1
Dibenzo(a,c/a,h)Anthracene	<1.98	<2.00	<2.03	<2.00	1.1
Dibenzo(a,e)pyrene	<9.91	<10.0	<10.1	<10.0	1.1
9,10-dimethylanthracene	<1.98	<2.00	<2.03	<2.00	1.1
7,12-Dimethylbenzo(a)anthracene	<1.98	<2.00	<2.03	<2.00	1.1
Fluoranthene	3.30	15.1	42.7	20.4	99.3
Fluorene	2.49	4.42	7.32	4.74	51.2
Indeno(1,2,3-cd)Pyrene	<1.98	<2.00	<2.03	<2.00	1.1
2-methylanthracene	<1.98	<2.00	16.7	<6.89	123
3-Methylcholanthrene	<9.91	<10.0	<10.1	<10.0	1.1
1-Methylnaphthalene	4.43	14.7	4.88	8.00	72.5
2-Methylnaphthalene	8.59	31.7	8.99	16.4	80.6
1-Methylphenanthrene	<1.98	<2.00	<2.03	<2.00	1.1
9-Methylphenanthrene	<1.98	<2.00	38.7	<14.2	149
Naphthalene	25.6	330	33.6	130	134
Perylene	<1.98	<2.00	<2.03	<2.00	1.1
Phenanthrene	11.8	82.6	108	67.4	73.9
Picene	<9.91	<10.0	<10.1	<10.0	1.1
Pyrene	3.75	14.4	27.7	15.3	78.5
Tetralin	44.1	54.2	58.8	52.4	14.4
m-terphenyl	<1.98	<2.00	7.11	<3.70	79.9
o-Terphenyl	<1.98	<2.00	<2.03	<2.00	1.1
p-terphenyl	<1.98	<2.00	3.45	<2.48	33.9
Total	<201	<650	<499	<450	50.7

* At 25°C and 1 atmosphere

TABLE 78
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate				Coefficient
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	of Variation %
Acenaphthene	<0.038	0.038	<0.038	<0.038	0.4
Acenaphthylene	0.13	0.11	0.072	0.11	29.3
Anthracene	<0.038	0.095	<0.038	<0.057	57.8
Benzo(a)Anthracene	<0.038	<0.038	0.064	<0.047	33.0
Benzo(b)Fluoranthene	<0.038	<0.038	<0.038	<0.038	0.4
Benzo(k)Fluoranthene	<0.038	<0.038	<0.038	<0.038	0.4
Benzo(a)fluorene	<0.038	<0.038	0.11	<0.062	68.3
Benzo(b)fluorene	<0.038	<0.038	<0.038	<0.038	0.4
Benzo(g,h,i)Perylene	0.054	<0.038	<0.038	<0.043	21.2
Benzo(a)Pyrene	<0.038	<0.038	<0.038	<0.038	0.4
Benzo(e)Pyrene	<0.038	<0.038	<0.038	<0.038	0.4
Biphenyl	0.079	0.12	0.11	0.10	22.7
2-Chloronaphthalene	<0.038	<0.038	<0.038	<0.038	0.4
Chrysene/Triphenylene	<0.038	<0.038	0.92	<0.33	153
Coronene	<0.19	<0.19	<0.19	<0.19	0.4
Dibenzo(a,c/a,h)Anthracene	<0.038	<0.038	<0.038	<0.038	0.4
Dibenzo(a,e)pyrene	<0.19	<0.19	<0.19	<0.19	0.4
9,10-dimethylanthracene	<0.038	<0.038	<0.038	<0.038	0.4
7,12-Dimethylbenzo(a)anthracene	<0.038	<0.038	<0.038	<0.038	0.4
Fluoranthene	0.063	0.28	0.80	0.38	98.9
Fluorene	0.048	0.083	0.14	0.089	50.3
Indeno(1,2,3-cd)Pyrene	<0.038	<0.038	<0.038	<0.038	0.4
2-methylanthracene	<0.038	<0.038	0.31	<0.13	123
3-Methylcholanthrene	<0.19	<0.19	<0.19	<0.19	0.4
1-Methylnaphthalene	0.085	0.28	0.091	0.15	72.2
2-Methylnaphthalene	0.16	0.60	0.17	0.31	80.3
1-Methylphenanthrene	<0.038	<0.038	<0.038	<0.038	0.4
9-Methylphenanthrene	<0.038	<0.038	0.72	<0.27	149
Naphthalene	0.49	6.21	0.63	2.44	134
Perylene	<0.038	<0.038	<0.038	<0.038	0.4
Phenanthrene	0.22	1.55	2.02	1.27	73.6
Picene	<0.19	<0.19	<0.19	<0.19	0.4
Pyrene	0.072	0.27	0.52	0.29	77.9
Tetralin	0.84	1.02	1.10	0.99	13.3
m-terphenyl	<0.038	<0.038	0.13	<0.070	79.1
o-Terphenyl	<0.038	<0.038	<0.038	<0.038	0.4
p-terphenyl	<0.038	<0.038	0.064	<0.047	33.0
Total	<3.84	<12.2	<9.34	<8.46	50.3

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<1.39	<2.44	<1.92	<2.00	<0.038
Acenaphthylene	3.89	6.83	5.36	5.62	0.11
Anthracene	<2.09	<3.67	<2.88	<3.02	<0.057
Benzo(a)Anthracene	<1.72	<3.02	<2.37	<2.48	<0.047
Benzo(b)Fluoranthene	<1.39	<2.44	<1.92	<2.00	<0.038
Benzo(k)Fluoranthene	<1.39	<2.44	<1.92	<2.00	<0.038
Benzo(a)fluorene	<2.30	<4.04	<3.18	<3.32	<0.062
Benzo(b)fluorene	<1.39	<2.44	<1.92	<2.00	<0.038
Benzo(g,h,i)Perylene	<1.58	<2.77	<2.18	<2.28	<0.043
Benzo(a)Pyrene	<1.39	<2.44	<1.92	<2.00	<0.038
Benzo(e)Pyrene	<1.39	<2.44	<1.92	<2.00	<0.038
Biphenyl	3.85	6.76	5.31	5.56	0.10
2-Chloronaphthalene	<1.39	<2.44	<1.92	<2.00	<0.038
Chrysene/Triphenylene	<12.3	<21.6	<17.1	<17.7	<0.33
Coronene	<6.94	<12.2	<9.58	<10.0	<0.19
Dibenzo(a,c/a,h)Anthracene	<1.39	<2.44	<1.92	<2.00	<0.038
Dibenzo(a,e)pyrene	<6.94	<12.2	<9.58	<10.0	<0.19
9,10-dimethylanthracene	<1.39	<2.44	<1.92	<2.00	<0.038
7,12-Dimethylbenzo(a)anthracene	<1.39	<2.44	<1.92	<2.00	<0.038
Fluoranthene	14.1	24.9	19.6	20.4	0.38
Fluorene	3.29	5.78	4.54	4.74	0.089
Indeno(1,2,3-cd)Pyrene	<1.39	<2.44	<1.92	<2.00	<0.038
2-methylanthracene	<4.78	<8.41	<6.62	<6.89	<0.13
3-Methylcholanthrene	<6.94	<12.2	<9.58	<10.0	<0.19
1-Methylnaphthalene	5.54	9.72	7.63	8.00	0.15
2-Methylnaphthalene	11.4	20.0	15.7	16.4	0.31
1-Methylphenanthrene	<1.39	<2.44	<1.92	<2.00	<0.038
9-Methylphenanthrene	<9.88	<17.4	<13.7	<14.2	<0.27
Naphthalene	89.8	158	124	130	2.44
Perylene	<1.39	<2.44	<1.92	<2.00	<0.038
Phenanthrene	46.8	82.1	64.6	67.4	1.27
Picene	<6.94	<12.2	<9.58	<10.0	<0.19
Pyrene	10.6	18.6	14.7	15.3	0.29
Tetralin	36.3	63.8	50.1	52.4	0.99
m-terphenyl	<2.57	<4.51	<3.55	<3.70	<0.070
o-Terphenyl	<1.39	<2.44	<1.92	<2.00	<0.038
p-terphenyl	<1.72	<3.02	<2.37	<2.48	<0.047
Total	<312	<548	<430	<450	<8.46

* 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	17.6	<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	12.0	<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	15.1	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	138	21.4
Perylene	<12	<12
Phenanthrene	12.4	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	322	<12
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<1081	<645

"<" 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	22.5	0.0329	389	684	537	562	10.7
2	5.23	0.0353	84.3	148	116	122	2.29
3	5.90	0.0344	97.7	171	134	141	2.66
Average			190	334	262	275	5.23
Blank Train	7.17						
Method Blank	8.29						

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	8.33	0.0329	144	253	199	208	3.97
2	15.5	0.0353	250	439	343	362	6.80
3	17.9	0.0344	297	521	408	430	8.08
Average			230	404	317	333	6.28
Blank Train	21.8						
Method Blank	3.10						

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	0.0329	<1.73	<3.04	<2.39	<2.50	<0.048
2	<0.1	0.0353	<1.61	<2.83	<2.22	<2.33	<0.044
3	<0.1	0.0344	<1.66	<2.91	<2.27	<2.40	<0.045
Average			<1.67	<2.92	<2.29	<2.41	<0.046
Blank Train	<0.1						
Method Blank	3.23						

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/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Benzene	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Bromodichloromethane	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Bromoform	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Bromomethane	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
1,3-Butadiene	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
2-Butanone	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Carbon Tetrachloride	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Chloroform	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Cumene (Isopropylbenzene)	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Dibromochloromethane	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Dichlorodifluoromethane	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
1,2-Dichloroethane	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
trans,1,2-Dichloroethene	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
1,1-Dichloroethene	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
1,2-Dichloropropane	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Ethylbenzene	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Ethylene Dibromide	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Methylene Chloride	0.255	6.62	11.6	9.13	9.56	0.18
Styrene	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Tetrachloroethene	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Toluene	0.143	3.71	6.52	5.12	5.36	0.10
1,1,1-Trichloroethane	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Trichlorotrifluoroethane	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Trichlorofluoromethane	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
M&P-Xylene	<0.10	<2.59	<4.56	<3.58	<3.75	<0.072
O-Xylene	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Vinyl Chloride	<0.050	<1.30	<2.28	<1.79	<1.87	<0.036
Total	<1.85	<48.0	<84.3	<66.2	<69.3	<1.32

Dry Gas Volume Sampled (Rm³*) :	0.0219
Actual Flowrate (m³/s) :	27.6
Dry Reference Flowrate (Rm³/s*) :	15.7
Dry Adjusted Flowrate (Rm³/s**) :	20.0
Wet Reference Flowrate (Rm³/s*) :	19.1

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

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

Compound	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Benzene	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Bromodichloromethane	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Bromoform	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Bromomethane	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
1,3-Butadiene	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
2-Butanone	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Carbon Tetrachloride	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Chloroform	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Cumene (Isopropylbenzene)	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Dibromochloromethane	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Dichlorodifluoromethane	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
1,2-Dichloroethane	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
trans,1,2-Dichloroethene	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
1,1-Dichloroethene	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
1,2-Dichloropropane	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Ethylbenzene	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Ethylene Dibromide	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Methylene Chloride	0.123	3.08	5.41	4.25	4.45	0.085
Styrene	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Tetrachloroethene	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Toluene	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
1,1,1-Trichloroethane	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Trichlorotrifluoroethane	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Trichlorofluoromethane	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
M&P-Xylene	<0.10	<2.50	<4.40	<3.46	<3.62	<0.069
O-Xylene	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Vinyl Chloride	<0.050	<1.25	<2.20	<1.73	<1.81	<0.035
Total	<1.62	<40.6	<71.5	<56.1	<58.7	<1.12

Dry Gas Volume Sampled (Rm³*) :	0.0227
Actual Flowrate (m³/s) :	27.6
Dry Reference Flowrate (Rm³/s*) :	15.7
Dry Adjusted Flowrate (Rm³/s**) :	20.0
Wet Reference Flowrate (Rm³/s*) :	19.1

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

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Benzene	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Bromodichloromethane	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Bromoform	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Bromomethane	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
1,3-Butadiene	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
2-Butanone	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Carbon Tetrachloride	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Chloroform	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Cumene (Isopropylbenzene)	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Dibromochloromethane	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Dichlorodifluoromethane	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
1,2-Dichloroethane	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
trans,1,2-Dichloroethene	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
1,1-Dichloroethene	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
1,2-Dichloropropane	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Ethylbenzene	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Ethylene Dibromide	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Methylene Chloride	0.131	2.96	5.20	4.08	4.27	0.082
Styrene	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Tetrachloroethene	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Toluene	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
1,1,1-Trichloroethane	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Trichlorotrifluoroethane	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Trichlorofluoromethane	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
M&P-Xylene	<0.10	<2.26	<3.97	<3.11	<3.26	<0.062
O-Xylene	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Vinyl Chloride	<0.050	<1.13	<1.98	<1.56	<1.63	<0.031
Total	<1.63	<36.8	<64.7	<50.8	<53.2	<1.02

Dry Gas Volume Sampled (Rm^3*) :	0.0252
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.1

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

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

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Acetone	<1.30	<1.25	<1.13	<1.23	7.1
Benzene	<1.30	<1.25	<1.13	<1.23	7.1
Bromodichloromethane	<1.30	<1.25	<1.13	<1.23	7.1
Bromoform	<1.30	<1.25	<1.13	<1.23	7.1
Bromomethane	<1.30	<1.25	<1.13	<1.23	7.1
1,3-Butadiene	<1.30	<1.25	<1.13	<1.23	7.1
2-Butanone	<1.30	<1.25	<1.13	<1.23	7.1
Carbon Tetrachloride	<1.30	<1.25	<1.13	<1.23	7.1
Chloroform	<1.30	<1.25	<1.13	<1.23	7.1
Cumene (Isopropylbenzene)	<1.30	<1.25	<1.13	<1.23	7.1
Dibromochloromethane	<1.30	<1.25	<1.13	<1.23	7.1
Dichlorodifluoromethane	<1.30	<1.25	<1.13	<1.23	7.1
1,2-Dichloroethane	<1.30	<1.25	<1.13	<1.23	7.1
trans,1,2-Dichloroethene	<1.30	<1.25	<1.13	<1.23	7.1
1,1-Dichloroethene	<1.30	<1.25	<1.13	<1.23	7.1
1,2-Dichloropropane	<1.30	<1.25	<1.13	<1.23	7.1
Ethylbenzene	<1.30	<1.25	<1.13	<1.23	7.1
Ethylene Dibromide	<1.30	<1.25	<1.13	<1.23	7.1
Mesitylene (1,3,5-Trimethylbenzene)	<1.30	<1.25	<1.13	<1.23	7.1
Methylene Chloride	6.62	3.08	2.96	4.22	49.3
Styrene	<1.30	<1.25	<1.13	<1.23	7.1
Tetrachloroethene	<1.30	<1.25	<1.13	<1.23	7.1
Toluene	3.71	<1.25	<1.13	<2.03	71.7
1,1,1-Trichloroethane	<1.30	<1.25	<1.13	<1.23	7.1
Trichloroethene/1,1,2-Trichloroethene	<1.30	<1.25	<1.13	<1.23	7.1
Trichlorotrifluoroethane	<1.30	<1.25	<1.13	<1.23	7.1
Trichlorofluoromethane	<1.30	<1.25	<1.13	<1.23	7.1
M&P-Xylene	<2.59	<2.50	<2.26	<2.45	7.1
O-Xylene	<1.30	<1.25	<1.13	<1.23	7.1
Vinyl Chloride	<1.30	<1.25	<1.13	<1.23	7.1
Total	<48.0	<40.6	<36.8	<41.8	13.5

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. 3	Average	of Variation
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	<2.28	<2.20	<1.98	<2.16	7.1
Benzene	<2.28	<2.20	<1.98	<2.16	7.1
Bromodichloromethane	<2.28	<2.20	<1.98	<2.16	7.1
Bromoform	<2.28	<2.20	<1.98	<2.16	7.1
Bromomethane	<2.28	<2.20	<1.98	<2.16	7.1
1,3-Butadiene	<2.28	<2.20	<1.98	<2.16	7.1
2-Butanone	<2.28	<2.20	<1.98	<2.16	7.1
Carbon Tetrachloride	<2.28	<2.20	<1.98	<2.16	7.1
Chloroform	<2.28	<2.20	<1.98	<2.16	7.1
Cumene (Isopropylbenzene)	<2.28	<2.20	<1.98	<2.16	7.1
Dibromochloromethane	<2.28	<2.20	<1.98	<2.16	7.1
Dichlorodifluoromethane	<2.28	<2.20	<1.98	<2.16	7.1
1,2-Dichloroethane	<2.28	<2.20	<1.98	<2.16	7.1
trans,1,2-Dichloroethene	<2.28	<2.20	<1.98	<2.16	7.1
1,1-Dichloroethene	<2.28	<2.20	<1.98	<2.16	7.1
1,2-Dichloropropane	<2.28	<2.20	<1.98	<2.16	7.1
Ethylbenzene	<2.28	<2.20	<1.98	<2.16	7.1
Ethylene Dibromide	<2.28	<2.20	<1.98	<2.16	7.1
Mesitylene (1,3,5-Trimethylbenzene)	<2.28	<2.20	<1.98	<2.16	7.1
Methylene Chloride	11.6	5.41	5.20	7.41	49.3
Styrene	<2.28	<2.20	<1.98	<2.16	7.1
Tetrachloroethene	<2.28	<2.20	<1.98	<2.16	7.1
Toluene	6.52	<2.20	<1.98	<3.57	71.7
1,1,1-Trichloroethane	<2.28	<2.20	<1.98	<2.16	7.1
Trichloroethene/1,1,2-Trichloroethene	<2.28	<2.20	<1.98	<2.16	7.1
Trichlorotrifluoroethane	<2.28	<2.20	<1.98	<2.16	7.1
Trichlorofluoromethane	<2.28	<2.20	<1.98	<2.16	7.1
M&P-Xylene	<4.56	<4.40	<3.97	<4.31	7.1
O-Xylene	<2.28	<2.20	<1.98	<2.16	7.1
Vinyl Chloride	<2.28	<2.20	<1.98	<2.16	7.1
Total	<84.3	<71.5	<64.7	<73.5	13.5

* 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. 3	Average	of Variation
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	<1.79	<1.73	<1.56	<1.69	7.1
Benzene	<1.79	<1.73	<1.56	<1.69	7.1
Bromodichloromethane	<1.79	<1.73	<1.56	<1.69	7.1
Bromoform	<1.79	<1.73	<1.56	<1.69	7.1
Bromomethane	<1.79	<1.73	<1.56	<1.69	7.1
1,3-Butadiene	<1.79	<1.73	<1.56	<1.69	7.1
2-Butanone	<1.79	<1.73	<1.56	<1.69	7.1
Carbon Tetrachloride	<1.79	<1.73	<1.56	<1.69	7.1
Chloroform	<1.79	<1.73	<1.56	<1.69	7.1
Cumene (Isopropylbenzene)	<1.79	<1.73	<1.56	<1.69	7.1
Dibromochloromethane	<1.79	<1.73	<1.56	<1.69	7.1
Dichlorodifluoromethane	<1.79	<1.73	<1.56	<1.69	7.1
1,2-Dichloroethane	<1.79	<1.73	<1.56	<1.69	7.1
trans,1,2-Dichloroethene	<1.79	<1.73	<1.56	<1.69	7.1
1,1-Dichloroethene	<1.79	<1.73	<1.56	<1.69	7.1
1,2-Dichloropropane	<1.79	<1.73	<1.56	<1.69	7.1
Ethylbenzene	<1.79	<1.73	<1.56	<1.69	7.1
Ethylene Dibromide	<1.79	<1.73	<1.56	<1.69	7.1
Mesitylene (1,3,5-Trimethylbenzene)	<1.79	<1.73	<1.56	<1.69	7.1
Methylene Chloride	9.13	4.25	4.08	5.82	49.3
Styrene	<1.79	<1.73	<1.56	<1.69	7.1
Tetrachloroethene	<1.79	<1.73	<1.56	<1.69	7.1
Toluene	5.12	<1.73	<1.56	<2.80	71.7
1,1,1-Trichloroethane	<1.79	<1.73	<1.56	<1.69	7.1
Trichloroethene/1,1,2-Trichloroethene	<1.79	<1.73	<1.56	<1.69	7.1
Trichlorotrifluoroethane	<1.79	<1.73	<1.56	<1.69	7.1
Trichlorofluoromethane	<1.79	<1.73	<1.56	<1.69	7.1
M&P-Xylene	<3.58	<3.46	<3.11	<3.38	7.1
O-Xylene	<1.79	<1.73	<1.56	<1.69	7.1
Vinyl Chloride	<1.79	<1.73	<1.56	<1.69	7.1
Total	<66.2	<56.1	<50.8	<57.7	13.5

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

TABLE 88
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	<1.87	<1.81	<1.63	<1.77	7.1
Benzene	<1.87	<1.81	<1.63	<1.77	7.1
Bromodichloromethane	<1.87	<1.81	<1.63	<1.77	7.1
Bromoform	<1.87	<1.81	<1.63	<1.77	7.1
Bromomethane	<1.87	<1.81	<1.63	<1.77	7.1
1,3-Butadiene	<1.87	<1.81	<1.63	<1.77	7.1
2-Butanone	<1.87	<1.81	<1.63	<1.77	7.1
Carbon Tetrachloride	<1.87	<1.81	<1.63	<1.77	7.1
Chloroform	<1.87	<1.81	<1.63	<1.77	7.1
Cumene (Isopropylbenzene)	<1.87	<1.81	<1.63	<1.77	7.1
Dibromochloromethane	<1.87	<1.81	<1.63	<1.77	7.1
Dichlorodifluoromethane	<1.87	<1.81	<1.63	<1.77	7.1
1,2-Dichloroethane	<1.87	<1.81	<1.63	<1.77	7.1
trans,1,2-Dichloroethene	<1.87	<1.81	<1.63	<1.77	7.1
1,1-Dichloroethene	<1.87	<1.81	<1.63	<1.77	7.1
1,2-Dichloropropane	<1.87	<1.81	<1.63	<1.77	7.1
Ethylbenzene	<1.87	<1.81	<1.63	<1.77	7.1
Ethylene Dibromide	<1.87	<1.81	<1.63	<1.77	7.1
Mesitylene (1,3,5-Trimethylbenzene)	<1.87	<1.81	<1.63	<1.77	7.1
Methylene Chloride	9.56	4.45	4.27	6.09	49.3
Styrene	<1.87	<1.81	<1.63	<1.77	7.1
Tetrachloroethene	<1.87	<1.81	<1.63	<1.77	7.1
Toluene	5.36	<1.81	<1.63	<2.93	71.7
1,1,1-Trichloroethane	<1.87	<1.81	<1.63	<1.77	7.1
Trichloroethene/1,1,2-Trichloroethene	<1.87	<1.81	<1.63	<1.77	7.1
Trichlorotrifluoroethane	<1.87	<1.81	<1.63	<1.77	7.1
Trichlorofluoromethane	<1.87	<1.81	<1.63	<1.77	7.1
M&P-Xylene	<3.75	<3.62	<3.26	<3.54	7.1
O-Xylene	<1.87	<1.81	<1.63	<1.77	7.1
Vinyl Chloride	<1.87	<1.81	<1.63	<1.77	7.1
Total	<69.3	<58.7	<53.2	<60.4	13.5

* At 25°C and 1 atmosphere

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Acetone	<0.036	<0.035	<0.031	<0.034	7.1
Benzene	<0.036	<0.035	<0.031	<0.034	7.1
Bromodichloromethane	<0.036	<0.035	<0.031	<0.034	7.1
Bromoform	<0.036	<0.035	<0.031	<0.034	7.1
Bromomethane	<0.036	<0.035	<0.031	<0.034	7.1
1,3-Butadiene	<0.036	<0.035	<0.031	<0.034	7.1
2-Butanone	<0.036	<0.035	<0.031	<0.034	7.1
Carbon Tetrachloride	<0.036	<0.035	<0.031	<0.034	7.1
Chloroform	<0.036	<0.035	<0.031	<0.034	7.1
Cumene (Isopropylbenzene)	<0.036	<0.035	<0.031	<0.034	7.1
Dibromochloromethane	<0.036	<0.035	<0.031	<0.034	7.1
Dichlorodifluoromethane	<0.036	<0.035	<0.031	<0.034	7.1
1,2-Dichloroethane	<0.036	<0.035	<0.031	<0.034	7.1
trans,1,2-Dichloroethene	<0.036	<0.035	<0.031	<0.034	7.1
1,1-Dichloroethene	<0.036	<0.035	<0.031	<0.034	7.1
1,2-Dichloropropane	<0.036	<0.035	<0.031	<0.034	7.1
Ethylbenzene	<0.036	<0.035	<0.031	<0.034	7.1
Ethylene Dibromide	<0.036	<0.035	<0.031	<0.034	7.1
Mesitylene (1,3,5-Trimethylbenzene)	<0.036	<0.035	<0.031	<0.034	7.1
Methylene Chloride	0.18	0.085	0.082	0.12	49.3
Styrene	<0.036	<0.035	<0.031	<0.034	7.1
Tetrachloroethene	<0.036	<0.035	<0.031	<0.034	7.1
Toluene	0.10	<0.035	<0.031	<0.056	71.7
1,1,1-Trichloroethane	<0.036	<0.035	<0.031	<0.034	7.1
Trichloroethene/1,1,2-Trichloroethene	<0.036	<0.035	<0.031	<0.034	7.1
Trichlorotrifluoroethane	<0.036	<0.035	<0.031	<0.034	7.1
Trichlorofluoromethane	<0.036	<0.035	<0.031	<0.034	7.1
M&P-Xylene	<0.072	<0.069	<0.062	<0.068	7.1
O-Xylene	<0.036	<0.035	<0.031	<0.034	7.1
Vinyl Chloride	<0.036	<0.035	<0.031	<0.034	7.1
Total	<1.32	<1.12	<1.02	<1.15	13.5

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	<1.23	<2.16	<1.69	<1.77	<0.034
Benzene	<1.23	<2.16	<1.69	<1.77	<0.034
Bromodichloromethane	<1.23	<2.16	<1.69	<1.77	<0.034
Bromoform	<1.23	<2.16	<1.69	<1.77	<0.034
Bromomethane	<1.23	<2.16	<1.69	<1.77	<0.034
1,3-Butadiene	<1.23	<2.16	<1.69	<1.77	<0.034
2-Butanone	<1.23	<2.16	<1.69	<1.77	<0.034
Carbon Tetrachloride	<1.23	<2.16	<1.69	<1.77	<0.034
Chloroform	<1.23	<2.16	<1.69	<1.77	<0.034
Cumene (Isopropylbenzene)	<1.23	<2.16	<1.69	<1.77	<0.034
Dibromochloromethane	<1.23	<2.16	<1.69	<1.77	<0.034
Dichlorodifluoromethane	<1.23	<2.16	<1.69	<1.77	<0.034
1,2-Dichloroethane	<1.23	<2.16	<1.69	<1.77	<0.034
trans,1,2-Dichloroethene	<1.23	<2.16	<1.69	<1.77	<0.034
1,1-Dichloroethene	<1.23	<2.16	<1.69	<1.77	<0.034
1,2-Dichloropropane	<1.23	<2.16	<1.69	<1.77	<0.034
Ethylbenzene	<1.23	<2.16	<1.69	<1.77	<0.034
Ethylene Dibromide	<1.23	<2.16	<1.69	<1.77	<0.034
Mesitylene (1,3,5-Trimethylbenzene)	<1.23	<2.16	<1.69	<1.77	<0.034
Methylene Chloride	4.22	7.41	5.82	6.09	0.12
Styrene	<1.23	<2.16	<1.69	<1.77	<0.034
Tetrachloroethene	<1.23	<2.16	<1.69	<1.77	<0.034
Toluene	<2.03	<3.57	<2.80	<2.93	<0.056
1,1,1-Trichloroethane	<1.23	<2.16	<1.69	<1.77	<0.034
Trichloroethene/1,1,2-Trichloroethene	<1.23	<2.16	<1.69	<1.77	<0.034
Trichlorotrifluoroethane	<1.23	<2.16	<1.69	<1.77	<0.034
Trichlorofluoromethane	<1.23	<2.16	<1.69	<1.77	<0.034
M&P-Xylene	<2.45	<4.31	<3.38	<3.54	<0.068
O-Xylene	<1.23	<2.16	<1.69	<1.77	<0.034
Vinyl Chloride	<1.23	<2.16	<1.69	<1.77	<0.034
Total	<41.8	<73.5	<57.7	<60.4	<1.15

* 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 Tube 7A/7B	Trip Blank Tube 5A/5B	Method Blank
	µg	µg	µg
Acetone	<0.050	<0.050	<0.050
Benzene	<0.050	<0.050	<0.050
Bromodichloromethane	<0.050	<0.050	<0.050
Bromoform	<0.050	<0.050	<0.050
Bromomethane	<0.050	<0.050	<0.050
1,3-Butadiene	<0.050	<0.050	<0.050
2-Butanone	<0.050	<0.050	<0.050
Carbon Tetrachloride	<0.050	<0.050	<0.050
Chloroform	<0.050	<0.050	<0.050
Cumene (Isopropylbenzene)	<0.050	<0.050	<0.050
Dibromochloromethane	<0.050	<0.050	<0.050
Dichlorodifluoromethane	<0.050	<0.050	<0.050
1,2-Dichloroethane	<0.050	<0.050	<0.050
trans,1,2-Dichloroethene	<0.050	<0.050	<0.050
1,1-Dichloroethene	<0.050	<0.050	<0.050
1,2-Dichloropropane	<0.050	<0.050	<0.050
Ethylbenzene	<0.050	<0.050	<0.050
Ethylene Dibromide	<0.050	<0.050	<0.050
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<0.050	<0.050
Methylene Chloride	0.964	0.382	<0.050
Styrene	<0.050	<0.050	<0.050
Tetrachloroethene	<0.050	<0.050	<0.050
Toluene	<0.050	<0.050	<0.050
1,1,1-Trichloroethane	<0.050	<0.050	<0.050
Trichloroethene/1,1,2-Trichloroethene	<0.050	<0.050	<0.050
Trichlorotrifluoroethane	<0.050	<0.050	<0.050
Trichlorofluoromethane	<0.050	<0.050	<0.050
M&P-Xylene	<0.10	<0.10	<0.10
O-Xylene	<0.050	<0.050	<0.050
Vinyl Chloride	<0.050	<0.050	<0.050
Total	<2.46	<1.88	<1.55

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

APPENDIX 3

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

aMinistry 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: 110188:23

2023/08/08

Chris Belore
ORTECH Consulting Inc.

Dear Mr. Belore:

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

We received your pre-test plan letter (Project #22235), dated July 26, 2023, 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 2023 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 2023 testing program.

We have noted the sampling schedule to commence the week of September 22, 2023. 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 District Office and 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)
Darek T. Teeters – VP General Manager, Covanta DYEC L.P. (dteeters@covanta.com)
Rick Kohler – Environmental Engineer, Covanta DYEC L.P. (rkohler@covant.com)
Lydia Kwan – Environmental Specialist, Covanta DYEC L.P. (lkwan@covanta.com)
Andrew Evans – Durham Region (andrew.evans@durham.ca)
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Lipika Saha- Durham Region (Lipika.saha@durham.ca)
Muneeb Farid – York Region (muneeb.farid@york.ca)
Laura McDowell – York Region (laura.mcdowell@york.ca)
Lindsay Milne – York Region (Lindsay.Milne@york.ca)
Golnaz Karbasi – York Region (golnaz.karbasi@york.ca)
J. McKerrall –TSS (jeffrey.mckerrall@ontario.ca)
B. Fullerton- TSS (bill.fullerton@ontario.ca)

File AQ-02 (Durham-York Energy Centre)

Doc.Mgmt # 5AG080063

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. **COMPLAINTS / ODOUR-CONTAMINANT EMISSIONS RESPONSE PROCEDURE**

(1) The Owner or a designated representative of the Owner shall be available to receive public complaints caused by the operations at the Site twenty-four (24) hours per day, seven (7) days per week.

(2) If at any time, the Owner or the Ministry receives a complaint or the Owner or the Provincial Officer detects an emission of odour or any contaminant, (Emission Event), from the Site, in addition to the requirements set out in the EA approval, the Owner shall record all relevant information in the computerized tracking system and shall respond to the complaint/Emission Event according to the following procedure:

Step 1: Record of Complaint/Emission Event

(a) (i) The Owner shall record each complaint/Emission Event and each record shall include the following:

(A) name, address and the telephone number of the complainant, if known;
(B) time and date of the complaint/Emission Event;
(C) details of the complaint; and

(ii) After the complaint/Emission Event has been recorded in the tracking system, the Owner shall immediately report to the District Manager by phone or e-mail during office hours and to the Ministry's Spills Actions Centre at 1-800-268-6060 after office hours on the receipt of the complaint or occurrence of the Emission Event.

Step 2: Investigation and Handling of Complaint/Emission Event

(b) The Owner shall immediately initiate investigation of the complaint/Emission Event. As a minimum, the investigation shall include the following:

(i) determination of the activities being undertaken at the Site at the time of the complaint/Emission Event;
(ii) meteorological conditions including, but not limited to the ambient temperature, approximate wind speed and its direction.
(iii) determination if the complaint is attributed to activities being undertaken at the Site and if so, the possible cause(s) of the complaint/Emission Event; and

(iv) determination of the remedial action(s) to address the cause(s) of the Complaint/Emission Event, and the schedule for the implementation of the necessary remedial action(s).

(c) The Owner shall respond to the complainant, if known, and the response shall include the results of the investigation of the Complaint, the action(s) taken or planned to be taken to address the cause(s) of the Complaint, and if any follow-up response(s) will be provided.

(d) Upon completed investigation of the Complaint/Emission event, the Owner shall, within three (3) business days, submit a report to the District Manager on the Complaint, on the action(s) taken or planned to be taken to address the cause(s) of the Complaint and on all proposed action(s) to prevent recurrence of the Complaint/Emission Event in the future.

(3) If, in the opinion of the District Manager, failure of the APC Equipment and/or any other process or equipment upset or malfunction results in off-site Complaint/Emission Event, confirmed by the Owner or a Provincial Officer of the Ministry, the Owner shall, immediately upon notification from the District Manager, implement any necessary additional control measures, including, but not necessarily limited to, those in the Contingency and Emergency Response Plan required by this Certificate.

(4) If the District Manager deems the additional control measures taken as per condition 10.(3) to be unsuitable, insufficient or ineffective, the District Manager may direct the Owner, in writing, to take further measures to address the noted failure, upset or malfunction including pursuant to section 39 of the *EPA* requiring a reduction in the receipt of Waste, cessation of the receipt of Waste, removal and off-site disposal of Waste from the Tipping Building as well as making repairs or modifications to equipment or processes.

11. CONTINGENCY and EMERGENCY RESPONSE PLAN

(1) (a) The Owner shall develop and implement a Contingency and Emergency Response Plan in accordance with the requirements set out in the EA Approval.

(b) Notwithstanding the requirements set out in the EA Approval, the Contingency and Emergency Response Plan shall be prepared in consultation with the District Manager or designate, the local Municipality and the Fire Department.

(2) In addition to the requirements set out in the EA Approval, the Contingency and Emergency Response Plan, as a minimum, shall include the following:

(a) the Site plan clearly showing the equipment layout and all storage areas for wastes and reagents;

(b) a list of Site personnel responsible for the implementation of the contingency measures and various emergency response tasks and their training requirements;
(c) a list of equipment and materials required for the implementation of the contingency measures and the emergency situation response;
(d) maintenance and testing program for equipment required for the implementation of the contingency measures and the emergency situation response;
(e) procedures to be undertaken as part of the implementation of the contingency measures and the emergency situation response;
(f) names and telephone numbers of waste management companies available for emergency response;
(g) notification protocol, with names and telephone numbers of persons to be contacted, including the Owner, the Site personnel, the Ministry of the Environment Spills Action Centre and the York Durham District, the local Fire and Police Departments, the local Municipality, the local Medical Officer of Health, and the Ministry of Labour;
(h) procedures and actions to be taken should the incoming Waste not meet the applicable quality criteria specified in this Certificate;
(i) procedures and actions to be taken should the outgoing Residual Waste fail to meet the criteria specified in this Certificate;
(j) procedures and actions to be taken should the current disposal options for the outgoing Residual Waste become unavailable;
(k) design of the contingency measure, procedures and actions should the emissions from the Site, including the fugitive odour/dust emissions, cause occurrences of public Complaints;
(l) procedures and actions to be taken should the Owner be unable to maintain the negative pressure in the Tipping Building;
(m) procedures and actions to be taken should the occurrence of Complaints require the Owner to suspend the waste processing activities at the Site; and
(n) identification and risk assessment of all reasonably foreseeable incidents that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate, including but not limited to:
    (i) a breakdown of the Facility/Equipment or part of the Facility/Equipment, including the APC Equipment and the CEM Systems associated with the Boilers;
    (ii) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements;
    (iii) any change in process parameters which may result in non compliance with the Performance Requirements;
    (iv) power failure resulting in the use of the Emergency Diesel Generator or Total Power Failure; and
    (v) description of the preventative and control measures to minimize the occurrence or impacts of the above incidents; and
    (vi) procedures for corrective measures and timelines to take to address the above incidents in a timely manner to effectively prevent or minimize the discharge of any contaminant into the natural environment and continue to maintain compliance with the *EPA* , the Regulations and

this Certificate, including procedures for Waste Processing Rate reduction, waste feed cut-off, Controlled Shutdown or Emergency Shutdown of the Boilers as applicable.

(3) The Owner shall submit the finalized Contingency and Emergency Response Plan to the Director a minimum of one hundred and twenty (120) days prior to the Commencement Date of Operation, for approval.

(4) An up-to-date version of the Contingency and Emergency Response Plan shall be kept at the Site at all times, in a central location available to all staff, and it shall be available for inspection by a Provincial Officer upon request.

(5) The Owner shall ensure that the names and telephone numbers of the persons to be contacted in the event of an emergency situation are kept up-to-date, and that these numbers are prominently displayed at the Site and at all times available to all staff and emergency response personnel.

(6) The Contingency and Emergency Response Plan shall be reviewed on a regular basis and updated, as necessary. The revised version of the Contingency and Emergency Response Plan shall be submitted to the local Municipality and the Fire Department for comments and to the District Manager for comments and concurrence.

(7) The Owner shall implement the recommendations of the updated Contingency and Emergency Response Plan, immediately upon receipt of the written concurrence from the District Manager.

12. **EMERGENCY SITUATION RESPONSE and REPORTING**

(1) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site and manage any emergency situation in accordance with the Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the equipment and materials listed in the Contingency and Emergency Response Plan are immediately available at the Site, are in a good state of repair, and fully operational at all times.

(3) The Owner shall ensure that all Site personnel responsible for the emergency situation response are fully trained in the use of the equipment and related materials, and in the procedures to be employed in the event of an emergency.

(4) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

13. **SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER**

(1) The Owner shall notify the District Manager in writing, at least six (60) days prior to the scheduled date for the first receipt of Waste at the Site, as to whether or not the construction of the Facility has been carried out in accordance with this Certificate to a point of Substantial Completion.

(2) (a) The Owner shall forthwith notify the District Manager and the Spills Action Centre by telephone, when any of the following incidents occur that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate:

(i) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements triggering a Waste Processing Rate Reduction, Waste Feed cut-off, Controlled Shutdown or Emergency Shutdown as specified in the Emergency Response and Contingency Plan;
(ii) failure of the APC Equipment associated with the Boilers; and
(iii) power failure resulting in the use of the emergency diesel generator or Total Power Failure;

(b) In addition to fulfilling the notification requirements from the *EPA,* the Owner shall prepare and submit a written report to the District Manager with respect to any of the above said occurrences, within five (5) calendar days of the occurrence, in the following format:

(i) date of the occurrence;
(ii) general description of the occurrence;
(iii) duration of the occurrence;
(iv) effect of the occurrence on the emissions from the Facility;
(v) measures taken to alleviate the effect of the occurrence on the emissions from the Facility; and
(vi) measures taken to prevent the occurrence of the same or similar occurrence in the future.

(3) Should a Spill, as defined in the *EPA*, occur at the Site, in addition to fulfilling the requirements from the *EPA* and applicable regulations, the Owner shall submit to the District Manager a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the Site.

(4) (a) Within ninety (90) days from the date of this Certificate, the Regions shall prepare and submit to the District Manager for concurrence, a Soil Testing Plan to monitor the impact of the Site operations at the locations where the ambient air monitoring is proposed by the Owner in accordance with the requirements set out in the EA Approval.

(b) (i) This Plan shall ensure that representative samples of the soil to be tested are collected in sufficient numbers and that the samples are properly preserved and tested so that reliable data on the soil characteristics is collected.

(ii) As a minimum, the Plan shall include testing for cadmium, lead, chromium, nickel, cobalt, copper, molybdenum, selenium, zinc and mercury, Dioxins and Furans.

(iii) This Plan shall comply with the Ministry's regulatory requirements for sampling and testing of soil and it shall include the rationale for the proposed methods.

(iv) This Plan be kept at the Site at all times and be available for inspection by a Provincial Officer upon request.

14. RECORDS KEEPING

(1) Any information requested by the Ministry concerning the Facility and its operation under this Certificate, including, but not limited to, any records required to be kept by this Certificate, shall be provided to the Ministry, upon request, in a timely manner.

(2) The Owner shall retain, for a minimum of seven (7) years from the date of their creation, except as noted below, all reports, records and information described in this Certificate.

Daily Activities

(3) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) date of record and the name and signature of the person completing the report;
(b) quantity and source of the incoming Waste received at the Site;
(c) records of the estimated quantity of Waste thermally treated in the Boilers;
(d) quantity of the Unacceptable Waste received at the Site by the end of the approved Waste receipt period and the type(s) of the Unacceptable Waste received;
(e) quantity and type of the Residual Waste shipped from the Site, including any required outgoing Residual Waste characterization results;
(f) destination and/or receiving site(s) for the Residual Waste shipped from the Site;
(g) quantity and type of any Rejected Waste accepted at the Site;
(h) destination and/or receiving site(s) for the Rejected Waste shipped from the Site;
(i) housekeeping activities, including litter collection and washing/cleaning activities, etc.
(j) amount of electricity produced;

(k) amount of excess electricity exported to the electrical grid.

Monitoring and Testing Records

(4) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) day and time of the activity;
(b) all original records produced by the recording devices associated with the CEM Systems;
(c) a summary of daily records of readings of the CEM Systems, including:
  (i) the daily minimum and maximum 4-hour average readings for carbon monoxide;
  (ii) the daily minimum and maximum one hour average readings for oxygen;
  (iii) the daily minimum and maximum 10-minute average readings for organic matter;
  (iv) the daily minimum and maximum 24-hour average readings for sulphur dioxide;
  (v) the daily minimum and maximum 24-hour average readings for nitrogen oxides;
  (vi) the daily minimum and maximum 24-hour average readings for hydrogen chloride;
  (vii) the daily minimum and maximum 6-minute average and 2-hour average opacity readings; and
  (viii) the daily minimum and maximum one-hour average readings for temperature measurements.
(d) records of all excursions from the applicable Performance Requirements as measured by the CEM Systems, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions;
(e) all records produced during any Acoustic Audit;
(f) all records produced during any Source Testing;
(g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;
(h) all records produced during the Residual Waste compliance testing;
(i) all records produced during the Soil Testing;
(j) all records produced during the Groundwater and Surface Water Monitoring required by this Certificate;
(k) all records produced during the Ambient Air Monitoring required by this Certificate;
(l) all records associated with radiation monitoring of the incoming Waste, including but not limited to:
  (i) transaction number;
  (ii) hauler;
  (iii) vehicle ID;
  (iv) alarm level;
  (v) maximum CPS;
  (vi) uSv/hr;

(vii) comment;
(viii) background CPS;
(ix) driver time in and out; and
(x) name of the Trainer Personnel that carried out the monitoring.

(m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;

(n) results the negative pressure in the Tipping Building carried out, as required.

Inspections/Maintenance/Repairs

(5) The Owner shall maintain an on-Site written or digital record of inspections and maintenance as required by this Certificate. As a minimum, the record shall include the following:

(a) the name and signature of the Trained Personnel that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered, including the need for a maintenance or repair activity;
(d) the recommendations for remedial action;
(e) the date, time and description of actions (repair or maintenance) undertaken;
(f) the name and signature of the Trained Personnel who undertook the remedial action; and
(g) an estimate of the quantity of any materials removed during cleaning of the Works.

Emergency Situations

(6) The Owner shall maintain an on-Site written or digital record of the emergency situations. As a minimum, the record shall include the following:

(a) the type of an emergency situation;
(b) description of how the emergency situation was handled;
(c) the type and amount of material spilled, if applicable;
(d) a description of how the material was cleaned up and stored, if generated; and
(e) the location and time of final disposal, if applicable; and
(f) description of the preventative and control measures undertaken to minimize the potential for re-occurrence of the emergency situation in the future.

Complaints Response Records

(7) The Owner shall establish and maintain a written or digital record of complaints received and the responses made as required by this Certificate.

Training

(8) The Owner shall maintain an on-Site written or digital record of training as required by this Certificate. As a minimum, the record shall include the following:

(a) date of training;
(b) name and signature of person who has been trained; and
(c) description of the training provided.

Reports

(9) The Owner shall keep at the Site the following reports required by this Certificate:

(a) the ESDM Report
(b) the Acoustic Assessment Report;
(c) the Annual Report; and
(d) the Third Party Audit.

15. REPORTING

Annual Report

(1) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager and to the Advisory Committee, an Annual Report summarizing the operation of the Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:

(a) a summary of the quality and the quantity of the Wastes accepted at the Site, including the maximum amount of the Waste received annually and daily and the sources of the Waste;

(b) a summary of the quality and the quantity of the Residual Waste shipped from the Site, including the analytical data required to characterize the Residual Waste, the off-Site destinations for the Residual Waste and its subsequent use, if known;

(c) estimated material balance for each month documenting the maximum amount of wastes stored at the Site;

(d) annual water usage;

(e) annual amount of the electricity produced and the annual amount of the electricity exported to the electrical grid;

(f) summaries and conclusions from the records required by Conditions 14.(3) through 14.(8) of this Certificate;

(g) the Emission Summary Table and the Acoustic Assessment Summary Table for the Facility as of December 31 from the previous calendar year;

(h) a summary of dates, duration and reasons for any environmental and operational problems, Boilers downtime, APC Equipment and CEM System malfunctions that may have negatively impacted the quality of the environment or any incidents triggered by the Emergency Response and

Contingency Plan and corrective measures taken to eliminate the environmental impacts of the incidents;

(i) a summary of the dates, duration and reasons for all excursions from the applicable Performance Requirements as measured by the CEM Systems or as reported by the annual Source Testing, reasons for the excursions and corrective measures taken to eliminate the excursions;

(j) results of the evaluation of the performance of the long-term sampling system in determining the Dioxins and Furans emission trends and/or fluctuations for the year reported on as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers;

(k) dates of all environmental complaints relating to the Site together with cause of the Complaints and actions taken to prevent future Complaints and/or events that could lead to future Complaints;

(l) any environmental and operational problems that could have negatively impacted the environment, discovered as a result of daily inspections or otherwise and any mitigative actions taken;

(m) a summary of any emergency situations that have occurred at the Site and how they were handled;

(n) the results and an interpretive analysis of the results of the groundwater and surface water, including an assessment of the need to amend the monitoring programs;

(o) summaries of the Advisory Committee meetings, including the issues raised by the public and their current status;

(p) any recommendations to improve the environmental and process performance of the Site in the future;

(q) statement of compliance with this Certificate, including compliance with the *O. Reg. 419/05* and all air emission limits based on the results of source testing, continuous monitoring and engineering calculations, as may be appropriate; and

(r) interpretation of the results and comparison to the results from previous Annual Reports to demonstrate the Facility's impact on the environment.

Third Party Audit

(2) (a) The Regions shall ensure that an independent technical review of the operations at the Site is undertaken in accordance with the requirements of the EA Approval.

(b) In addition to the Third Party Audit requirements set out in the EA approval, the Third Party Audit shall include the following:

(i) a review of the data from the monitoring and testing required by this Certificate;
(ii) a review of all complaints received about the operation of the Facility;
(iii) any recommendations for improving the operation of the Facility received from the Advisory Committee; and
(iv) a recommendation of any improvements that could be made to ensure that the operation of the Facility is optimized and is protective of the health and safety of people and the environment.

(3) The Regions shall submit a Written Audit Report on the results of the independent technical review to the Regional Director in accordance with the Audit Plan and retain a copy at the Site.

Soil Testing Report

(4) Within one (1) month of completion of each Soil Testing event, the Regions shall submit to the District Manager a Soil Testing Report, which includes the details on the sampling/testing procedures, the results of the testing and a comparison with the results obtained during the previous Soil Testing.

16. PUBLIC ACCESS TO DOCUMENTATION

(1) The Owner shall, at all times, maintain documentation that describes the current operations of the Facility. The Owner shall post the documentation at the website for the undertaking and during regular business hours, the Owner shall make the following documents available for inspection at the Site by any interested member of the public, upon submission to the Ministry for review:

(a) a current ESDM Report that demonstrates compliance with the Performance Limits for the Facility regarding all Compounds of Concern;

(b) a current Acoustic Assessment Report that demonstrates compliance with the Performance Limits for the Facility regarding noise emissions;

(c) the most recent Annual Report;

(d) the most current Third Party Audit Report;

(e) Odour Management and Mitigation Plan, prepared in accordance with the requirements of the EA Approval;

(f) Noise Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval; and

(g) Groundwater and Surface Water Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval.

(2) The Owner shall ensure that necessary hardware and software are provided at a location available to the public, to provide on-line real-time reporting of the operating parameter data for the Facility, including acceptable operating limits, stack emissions, and all other parameters for which continuous monitoring is required and that continuous records of the same be kept and made available to the public.

17. ADVISORY COMMITTEE

(1) The Regions shall establish an Advisory Committee in accordance with the requirements set out in the EA Approval.

18. CLOSURE of the SITE

(1) A minimum of nine (9) months prior to closure of the Site, the Owner shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Owner shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

SCHEDULE "A"

Supporting Documentation

(1) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) Emission Summary and Dispersion Modelling Report, dated March 2011, prepared by Golder Associates;

(b) Acoustic Assessment Report prepared by Golder Associates Ltd., dated March 2011 and signed by Paul Niejadlik.

(2) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) Attachment #1 containing the "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.;

(b) Attachment #3 containing the "Public Consultation Report", dated March 2011, prepared by Golder Associates Ltd.;

(c) Attachment #4 containing the Host Community Agreement

(d) Attachment #5 containing the proof of legal name for Covanta Durham York Renewable Energy Limited Partnership; and

(e) A letter May 24, 2011 from Anthony Ciccone, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, providing additional technical information on the proposal and attaching a report entitled "Amendment #1 Durham York Energy Centre Design and Operations Report", dated May 2011;

(3) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of Durham and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) "Surface Water and Groundwater Technical Study Report" dated July 2009, prepared by Jacques Whitford, Markham, Ontario (CD Report).

(b) "Stormwater Design Model Output" prepared by Sigma Energy, dated March 2001 (CD Report).

(c) Clearance letter from Central Lake Ontario Conservation date February 22, 2011.

(d) A letter dated March 23, 2011, from Brian Bahor, Covanta Energy Corporation, to Stefanos Habtom, Ontario Ministry of the Environment, providing additional technical design information on the proposed stormwater management ponds.

SCHEDULE "B"

Procedure to calculate and record the 10-minute average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor

(a) Calculate and record one-hour average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor, employing CALPUFF atmospheric dispersion model or the dispersion model acceptable to the Director that employs at least five (5) years of hourly local meteorological data and that can provide results reported as individual one-hour average odour concentrations.

(b) Convert and record each of the one-hour average concentrations predicted over the five (5) years of hourly local meteorological data at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations using the One-hour Average to 10-Minute Average Conversion described below; and

(c) Record and present the 10-Minute Average concentrations predicted to occur over a five (5) year period at the Point of Impingement and at the most impacted Sensitive Receptor in a histogram. The histogram shall identify all predicted 10-minute average odour concentration occurrences in terms of frequency, identifying the number of occurrences over the entire range of predicted odour concentration in increments of not more than 1/10 of one odour unit. The maximum 10-minute average concentration of odour at the Sensitive Receptor will be considered to be the maximum odour concentration at the most impacted Sensitive Receptor that occurs and is represented in the histogram, disregarding outlying data points on the histogram as agreed to by the Director.

One-hour Average To 10-minute Average Conversion

1. Use the following formula to convert and record one-hour average concentrations predicted by the CALPUFF atmospheric dispersion model or by the dispersion model acceptable to the Director to 10-minute average concentrations:

X10min = X60min*1.65

where X10min = 10-minute average concentration
X60min = one-hour average concentration

SCHEDULE "C"

PERFORMANCE REQUIREMENTS
In-Stack Emission Limits

Parameter	In-Stack Emission Limit	Verification of Compliance
Total Suspended Particulate Matter (filterable particulate measured in accordance with the Ontario Source Testing Code)	9 mg/Rm3	Results from compliance Source Testing
cadmium	7 µg/Rm3	Results from compliance Source Testing
lead	50 µg/Rm3	Results from compliance Source Testing
mercury	15 µg/Rm3	Results from compliance Source Testing
dioxins and furans	60 pg/Rm3	Results from compliance Source Testing; results expressed as I-TEQ
hydrochloric acid (HCl)	9 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
sulphur dioxide (SO2)	35 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
nitrogen oxides (NOx)	121 mg/ Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
organic matter (undiluted, expressed as equivalent methane)	50 ppmdv (33 mg/ Rm3)	Results from compliance source testing
carbon monoxide	35 ppmdv (40 mg/Rm3)	Calculated as the rolling arithmetic average of four (4) hours of data measured by a CEM System that provides data at least once every fifteen minutes, in accordance with condition 6 (2) (c)
opacity	10 percent	Calculated as the rolling arithmetic average of six (6) minutes of data measured by a CEM System that provides data at least once every minute
	5 percent	Calculated as the rolling arithmetic average of two (2) hours of data measured by a CEM System that provides data at least once every

		fifteen minutes

mg/Rm3- milligrams per reference cubic metre;

pg/Rm3 - picograms per reference cubic metre

ppmdv parts per million by dry volume,

µg/Rm3 - micrograms per reference cubic metre

R- reference conditions - 25 degrees Celsius, 101.3 kilopascals, dry basis, 11% oxygen

SCHEDULE "D"

TEST CONTAMINANTS

Hydrogen Chloride
Hydrogen Fluoride
Oxides of Nitrogen expressed as Nitrogen Dioxide
Sulphur Dioxide
Total Hydrocarbons, expressed as methane on wet basis
Carbon Dioxide
Total Suspended Particulate Matter (< 44 microns)
Total PM-10 including condensables
Total PM-2.5 including condensables

Metals

Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Mercury
Molybdenum
Nickel
Selenium
Silver
Thallium
Vanadium
Zinc

Schedule "D" - Cont'd

Chlorobenzenes	Chlorophenols
Monochlorobenzene (MCB) 1,2-Dichlorobenzene (1,2-DCB) 1,3-Dichlorobenzene (1,3-DCB) 1,4-Dichlorobenzene (1,4-DCB) 1,2,3-Trichlorobenzene (1,2,3-TCB) 1,2,4-Trichlorobenzene (1,2,4-TCB) 1,3,5-Trichlorobenzene (1,3,5-TCB) 1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB) 1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB) 1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB) Pentachlorobenzene (PeCB) Hexachlorobenzene (HxCB)	2-monochlorophenol (2-MCP) 3-monochlorophenol (3-MCP) 4-monochlorophenol (4-MCP) 2,3-dichlorophenol (2,3-DCP) 2,4-dichlorophenol (2,4-DCP) 2,5-dichlorophenol (2,5-DCP) 2,6-dichlorophenol (2,6-DCP) 3,4-dichlorophenol (3,4-DCP) 3,5-dichlorophenol (3,5-DCP) 2,3,4-trichlorophenol (2,3,4-T3CP) 2,3,5-trichlorophenol (2,3,5-T3CP) 2,3,6-trichlorophenol (2,3,6-T3CP) 2,4,5-trichlorophenol (2,4,5-T3CP) 2,4,6-trichlorophenol (2,4,6-T3CP) 3,4,5-trichlorophenol (3,4,5-T3CP) 2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP) 2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP) 2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP) Pentachlorophenol (PeCP)

Schedule "D" - Cont'd

Co-Planar PCBs (Dioxin-like PCBs)	Volatile Organic Matter
PCB-077 (3,3',4,4'-TCB)	Acetaldehyde
PCB-081 (3,4,4',5-TCB)	Acetone
PCB-105 (2,3,3',4,4'-PeCB)	Acrolein
PCB-114 (2,3,4,4',5-PeCB)	Benzene
PCB-118 (2,3',4,4',5-PeCB)	Bromodichloromethane
PCB-123 (2',3,4,4',5-PeCB)	Bromoform
PCB-126 (3,3',4,4',5-PeCB)	Bromomethane
PCB-156 (2,3,3',4,4',5-HxCB)	Butadiene, 1,3 -
PCB-157 (2,3,3',4,4',5'-HxCB)	Butanone, 2 -
PCB-167 (2,3',4,4',5,5'-HxCB)	Carbon Tetrachloride
PCB-169 (3,3',4,4',5,5'-HxCB)	Chloroform
PCB-189 (2,3,3',4,4',5,5'-HpCB)	Cumene
	Dibromochloromethane
	Dichlorodifluoromethane
	Dichloroethane, 1,2 -
	Dichloroethene, Trans - 1,2
	Dichloroethene, 1,1 -
	Dichloropropane, 1,2 -
	Ethylbenzene
	Ethylene Dibromide
	Formaldehyde
	Mesitylene
	Methylene Chloride
	Styrene
	Tetrachloroethene
	Toluene
	Trichloroethane, 1,1,1 -
	Trichloroethene
	Trichloroethylene, 1,1,2 -
	Trichlorotrifluoroethane
	Trichlorofluoromethane
	Xylenes, M-, P- and O-
	Vinyl Chloride

Schedule "D" - Cont'd

Polycyclic Organic Matter	Dioxin/Furan Isomers
Acenaphthylene	
Acenaphthene	2,3,7,8-Tetrachlorodibenzo-p-dioxin
Anthracene	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
Benzo(a)anthracene	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
Benzo(b)fluoranthene	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
Benzo(k)fluoranthene	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
Benzo(a)fluorene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
Benzo(b)fluorene	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin
Benzo(ghi)perylene	
Benzo(a)pyrene	2,3,7,8-Tetrachlorodibenzofuran
Benzo(e)pyrene	2,3,4,7,8-Pentachlorodibenzofuran
Biphenyl	1,2,3,7,8-Pentachlorodibenzofuran
2-Chloronaphthalene	1,2,3,4,7,8-Hexachlorodibenzofuran
Chrysene	1,2,3,6,7,8-Hexachlorodibenzofuran
Coronene	1,2,3,7,8,9-Hexachlorodibenzofuran
Dibenzo(a,c)anthracene	2,3,4,6,7,8-Hexachlorodibenzofuran
Dibenzo(a,h)anthracene	1,2,3,4,6,7,8-Heptachlorodibenzofuran
Dibenzo(a,e)pyrene	1,2,3,4,7,8,9-Heptachlorodibenzofuran
9,10-Dimethylanthracene	1,2,3,4,6,7,8,9-Octachlorodibenzofuran
7,12-Dimethylbenzo(a)anthracene	
Fluoranthene	
Fluorene	
Indeno(1,2,3-cd)pyrene	
2-Methylanthracene	
3-Methylcholanthrene	
1-Methylnaphthalene	
2-Methylnaphthalene	
1-Methylphenanthrene	
9-Methylphenanthrene	
Naphthalene	
Perylene	
Phenanthrene	
Picene	
Pyrene	
Tetralin	
M-terphenyl	
O-terphenyl	
P-terphenyl	
Triphenylene	

SCHEDULE "E"

SOURCE TESTING PROCEDURES

1. The Owner shall submit, to the Manager a test protocol including the Pre-Test Information required by the Source Testing Code, at least two (2) months prior to the scheduled Source Testing date.

2. (1) For the purpose of the Source Testing program, the Owner is temporarily permitted to operate the Boilers at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b) during the period of the Source Testing. The Owner shall ensure that the concentration of residual oxygen in the Undiluted Gases leaving the combustion zone of the Boilers, as measured and recorded by the CEM System, shall not be less than 5 percent by volume on a dry basis, during this Source Testing program.

   (2) If the Source Testing results demonstrate that compliance with the Performance Requirements can be maintained at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b), the Owner may apply to the Director for approval to alter the required residual oxygen concentration.

3. The Owner shall finalize the test protocol in consultation with the Manager.

4. The Owner shall not commence the Source Testing until the Manager has accepted the test protocol.

5. The Owner shall complete the first Source Testing not later than six (6) months after Commencement of Operation of the Facility/Equipment.

6. The Owner shall conduct subsequent Source Testing at least once (1) every calendar year thereafter.

7. The Owner shall notify the District Manager and the Manager in writing of the location, date and time of any impending Source Testing required by this Certificate, at least fifteen (15) days prior to the Source Testing.

8. The Owner shall submit a report on the Source Testing programs to the District Manager and the Manager not later than three (3) months after completing each Source Testing program. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:

   (1) an executive summary;
   (2) records of operating conditions; including process description, records of waste composition and feed rate during the Source Testing;
   (3) all records produced by the CEM Equipment;
   (4) procedures followed during the Source Testing and any deviation from the proposed test protocol and the reasons therefore;
   (5) the results of the analyses of the stack emissions;

(6) a summary table that compares the Source Testing results, the monitoring data and the records of operating conditions during the Source Testing to the requirements imposed by the *EPA*, the Regulation and/or the Performance Requirements;

(7) the results of dispersion calculations in accordance with the *O. Reg. 419/05*, indicating the maximum concentration of the Test Contaminants, at the Point of Impingement.

(8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the Test Contaminants.

9. The Owner shall ensure that the Source Testing Report is made available and easily accessible for review by the public at the Facility, immediately after the document is submitted to the Ministry.

10. The Director may not accept the results of the Source Testing if:

(1) the Source Testing Code or the requirements of the Manager were not followed; or

(2) the Owner did not notify the District Manager and the Manager of the Source Testing; or

(3) the Owner failed to provide a complete report on the Source Testing.

11. If the Director does not accept the results of the Source Testing, the Director may require re-testing.

SCHEDULE "F"

PARAMETER:
Temperature

LOCATION:
The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000°C for a period of not less than one second. Compliance shall be proven by direct measurement or/and a correlation between the measured temperature and the intended target proven by a method acceptable to the Director.

PERFORMANCE:
The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	SPECIFICATION
1)	Type:	"K", "J" or other type or alternative measurement device with equivalent measurement accuracy and suitable to the temperature range being measured
2)	Accuracy:	± 1.5 percent of the minimum gas temperature

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 1 minutes or better. Temperature readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

PARAMETER:
Carbon Monoxide

INSTALLATION:
The Continuous Carbon Monoxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2.5 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤5 percent of span value
8) Response Time (90 percent response to a step change):	≤180 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Oxygen

INSTALLATION:
The Continuous Oxygen Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (percentage):	0 - 20 or 0 - 25
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (percentage):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data
3) Calibration Error:	0.25 percent O_2
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 0.5 percent O_2
7) Span Calibration Drift (24-hour):	≤ 0.5 percent O_2
8) Response Time (90 percent response to a step change):	≤ 90 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Oxygen concentration readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Hydrogen Chloride

INSTALLATION:
The Continuous Hydrogen Chloride Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of hydrogen chloride in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Hydrogen Chloride Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 20 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated daily at the sample point, to ensure that it meets the drift limits specified above, during the periods of the operation of the . The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 5 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Nitrogen Oxides

INSTALLATION:
The Continuous Nitrogen Oxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of nitrogen oxides in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Analyzer Operating Range (parts per million, ppm):	0 to ≥200 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Nitrogen Oxides Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Sulphur Dioxide

INSTALLATION:
The Continuous Sulphur Dioxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of sulphur dioxide in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1. Range (parts per million, ppm):	0 to ≥100 ppm
2. Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1. Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2. Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3. Calibration Error:	≤ 2 percent of actual concentration
4. System Bias:	≤ 4 percent of the mean value of the reference method test data
5. Procedure for Zero and Span Calibration Check:	all system components checked
6. Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7. Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8. Response Time (90 percent response to a step change):	≤ 200 seconds
9. Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and shall meet the following installation specifications.

PARAMETERS		SPECIFICATION
1.	Detector Type:	Flame Ionization
2.	Oven Temperature:	160°C minimum
3.	Flame Temperature:	1800 °C minimum at the corona of the hydrogen flame
4.	Range (parts per million, ppm):	0 to ≥200 ppm
5.	Calibration Gas:	propane in air or nitrogen
6.	Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS		SPECIFICATION
1.	Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2.	Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3.	System Bias:	≤ 4 percent of the mean value of the reference method test data
4.	Noise:	≤ 1 percent of span value on most sensitive range
5.	Repeatability:	≤ 1 percent of span value
6.	Linearity (response with propane in air):	≤ 3 percent of span value over all ranges
7.	Calibration Error:	≤ 2 percent of actual concentration
8.	Procedure for Zero and Span Calibration Check:	all system components checked on all ranges
9.	Zero Calibration Drift (24-hours):	≤ 2.5 percent of span value on all ranges
10.	Span Calibration Drift (24-hours):	≤ 2.5 percent of span value
11.	Response Time (90 percent response to a step change):	≤ 60 seconds
12.	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER: Opacity

INSTALLATION: The Continuous Opacity Monitor shall be installed at an accessible location where the measurements are representative of the actual opacity of the Undiluted Gases leaving the APC Equipment associated with each Boiler and shall meet the following design and installation specifications.

PARAMETERS		SPECIFICATION
1)	Wavelength at Peak Spectral Response (nanometres, nm):	500 - 600
2)	Wavelength at Mean Spectral Response (nm):	500 - 600
3)	Detector Angle of View:	≤ 5 degrees
4)	Angle of Projection:	≤ 5 degrees
5)	Range (percent of opacity):	0 -100

PERFORMANCE:
The Continuous Opacity Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS		SPECIFICATION
1)	Span Value (percent opacity):	2 times the average normal opacity of the source
2)	Calibration Error:	≤3 percent opacity
3)	Attenuator Calibration:	≤2 percent opacity
4)	Response Time (95 percent response to a step change):	≤ 10 seconds
5)	Schedule for Zero and Calibration Checks:	daily minimum
6)	Procedure for Zero and Calibration Checks:	all system components checked
7)	Zero Calibration Drift (24-hours):	≤ 2 percent opacity
8)	Span Calibration Drift (24-hours):	≤ 2 percent opacity
9)	Conditioning Test Period:	≥ 168 hours without corrective maintenance
10)	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated, to ensure that it meets the drift limits specified above, during the periods of the operation of the Equipment. The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 30 seconds or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Moisture, Hydrogen Fluoride and Ammonia

Selection and Installation

The Owner shall select and install a CEM System, to measure moisture content of the stack gases, the concentration of hydrogen fluoride and ammonia in the Undiluted Gases leaving the APC Equipment associated with each Boiler, as follows:

a) Design and Performance Specifications shall be in accordance with 40 CFR 60, Appendix B, Specification 4.

b) The Owner shall select the probe locations in compliance with 40 CFR 60, Appendix B, Specification 2.

Test Procedures

The Owner shall verify compliance with the Design and Performance Specifications in accordance with 40 CFR 60, Appendix B, Specification 4, with the reference method for the relative accuracy test being Method 4. of the Source Testing Code.

In furtherance of, but without limiting the generality of the foregoing, the mean difference between the calibration gas value and the analyzer response value at each of the four test concentrations shall be less than 5 percent of the measurement range.

SCHEDULE "G"

A stormwater management facility to service a 10.0 ha drainage area of the Durham York Energy Centre located on the west side of Osbourne Road and north of the CN Rail, Lot 27, Concession Broken Front, Part, Municipality of Clarington, Regional Municipality of Durham, designed to provide quality and quantity control of stormwater run-off by attenuating runoff from storm events up to 1:100 years return frequency to or below the pre-development levels, consisting of:

East Stormwater Management Pond (East SWM Pond)

A stormwater management facility to service a 5.7 ha drainage area comprising of the eastern part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 128 m long drainage ditch collecting stormwater runoff from the north eastern part of the site, having an average horizontal slope of 1.56%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- one (1) approximately 199 m long drainage ditch collecting stormwater runoff from the eastern part of the site, having an average horizontal slope of 2.77%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately fourteen (14) catch basins/maintenance holes and a total of 466.8 m long 450 mm diameter and 34.6 m of 600 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the north and north eastern part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 11.0 m wide and 34.8 m long and depth of 1.0 m, equipped with 600 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south east part of the site, with approximate bottom dimensions of 21.0 m wide and 71.4 m long and a maximum depth of 2.7 m at 96.70 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent pool storage capacity of 1,008 m^3 at elevation 95.0 m masl, an active storage capacity of 3,099 m^3 at 96.70 m masl elevation, and total storage capacity of 4,107 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 97.0 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

West Stormwater Management Pond (West SWM Pond)

A stormwater management facility to service a 4.3 ha drainage area comprising of the western part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 296 m long drainage ditch collecting stormwater runoff from the north western part of the site, having an average horizontal slope of 1.0%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately five (5) catch basins/maintenance holes and a total of 272.2 m long 450 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the western part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 13.0 m wide and 26.0 m long and depth of 1.0 m, equipped with 450 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south western part of the site, with approximate bottom dimensions of 13.0 m wide and 58.0 m long and a maximum depth of 2.5 m at 96.5 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent storage capacity of 623 m^3 at elevation 95.0 m masl, an active storage capacity of 2,054 m^3 at 96.50 m masl elevation, and total storage capacity of 2,677 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 96.80 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

including all associated controls and appurtenances.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

Conditions 1.(1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), (17), (18) and (19) are included to clarify the legal rights and responsibilities of the Owner.

Conditions Nos.1.(3) and (4) are included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

Condition No. 1.(14) is included to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

Condition No.1.(15) is included to restrict potential transfer or encumbrance of the Site without the notification to the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate.

Condition No. 1.(16) is included to ensure that the appropriate Ministry staff has ready access to the operations of the Site which are approved under this Certificate. The Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.

SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

Condition No. 2. is included to specify the approved waste receipt rates, the approved waste types and the service area from which waste may be accepted at the Site based on the Owner's application and supporting documentation. Condition No. 2. is also included to specify the maximum amount of waste that is approved to be stored at the Site.

SIGNS and SITE SECURITY

Condition No. 3. is included to ensure that the Site's users, operators and the public are fully aware of important information and restrictions related to the operation of the Site. Condition No. 3. is also included to ensure that the Site is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site personnel is on duty.

SITE OPERATIONS

Condition No. 4. is included to outline the operational requirements for the Facility to ensure that the said operation does not result in an adverse effect or a hazard to the natural environment or any person.

EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Condition No. 5. is included to require the Site to be maintained and inspected thoroughly on a regular basis to ensure that the operations at the Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

PERFORMANCE REQUIREMENTS

Condition No. 6 is included to set out the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

TESTING, MONITORING and AUDITING

Condition No. 7. is to require the Owner to gather accurate information on the operation of the Facility so that the environmental impact and subsequent compliance with the *EPA*, the *OWRA*, their Regulations and this Certificate can be verified.

NUISANCE IMPACT CONTROL and HOUSEKEEPING

Condition No. 8. is included to ensure that the Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person. Condition No. 8 is also included to specify odour control measures to minimize a potential for odour emissions from the Site.

STAFF TRAINING

Condition No. 9. is included to ensure that staff are properly trained in the operation of the equipment and instrumentation used at the Site, in the emergency response procedures and on the requirements and restrictions related to the Site operations under this Certificate.

COMPLAINTS RECORDING PROCEDURE

Condition No.10. is included to require the Owner to respond to any environmental complaints resulting from the Facility appropriately and in a timely manner and that appropriate actions are taken to prevent any further incidents that may cause complaints in the future.

CONTINGENCY and EMERGENCY RESPONSE PLAN and EMERGENCY SITUATIONS RESPONSE AND REPORTING

Conditions Nos.11. and 12. are included to ensure that the Owner is prepared and properly equipped to take immediate action in the event of an emergency situation.

SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER

Condition No. 13. is included to set out the requirements for the submissions to the District Manager and the Regional Director regarding the operation of the Facility and the activities required by this Certificate.

RECORDS KEEPING

Condition No.14. is included to ensure that detailed records of Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

REPORTING

Condition No.15. is to ensure that regular review of site, operations and monitoring is carried out and findings documented by a third party for determining whether or not the Site is being operated in compliance with this Certificate of Approval, the EPA and its regulations and whether or not any changes should be considered.

PUBLIC ACCESS to DOCUMENTATION

Condition No.16. is included to ensure that the public has access to information on the operation of the Site in order to participate in the activities of the Advisory Committee in a meaningful and effective way.

ADVISORY COMMITTEE

Condition No.17. is included to require the Owner to establish a forum for the exchange of information and public dialogue on activities carried out at the Site and to ensure that the local residents are properly informed of the activities at the Site and that their concerns can be heard and acted upon , as necessary. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Site and protection of the natural environment. Condition 16. is also included to ensure that the requirements of the EA Approval are fulfilled.

CLOSURE of the SITE

Condition No.18. is included to ensure that the final closure of the Site is completed in accordance with Ministry's standards.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, and in accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written Notice served upon me, the Environmental Review Tribunal, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act and Section 101 of the

Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 9 and 39, *Environmental Protection Act*
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted site is approved under Section 9 and Section 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of June, 2011

Signature
Ian Parrott, P .Eng.
Director
Section 9, *EPA*
Section 39, *EPA*
Section 53, *OWRA*

MW,QN,SH/

c: District Manager, MOE York-Durham
Regional Director, MOE Central Region

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: August 12, 2014

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

and

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

and

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

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 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

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

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.

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.

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

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

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.

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 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:

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:

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

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

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.

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 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:

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:

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.olt.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 September 14, 2023	
Test Location	APC Outlet No. 1
Operator BP	

Project No.:	22235
Page	1 of 5
Probe No.:	6 Series
Meter Box No.:	TEAM # 3
Impinger Box No.:	4

Pitot Factor	0.848	
DGMCF	0.992	
Barometric Pressure	29.70	"Hg
Static Pressure	- 11.76	"H2O
Nozzle Size	0.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter	0.20	mg
Probe	1.50	mg

Moisture Gain

CWTR	602.7	g
WCBDA	25.7	g

Combustion Gas Concentration

Oxygen	8.29	%
Carbon Dioxide	10.76	%
Carbon Monoxide	5.0	ppm

Measuring Device	MII Numbers
Probe / Pitot PE	COE 20113
Trendicator	COE 20093
Control Box	↓
Incline Manometer	↓
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV CAN
Calipers	CAN 22136

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

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: Sept 19, 2023	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 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	76.83	.90	.74	283	253	251	62	82	68	68	2.2	3.5
	2.5	78.78	.88	.77	284	261	252	53	91	66	67	2.2	3.5
	5	80.73	.89	.78	289	261	252	51	107	66	67	2.2	3.5
2	7.5	82.68	.91	.78	289	261	252	49	113	66	67	2.2	3.5
	10	84.62	.92	.79	289	252	253	49	110	66	68	2.2	3.5
	12.5	86.61	.94	.80	290	261	253	48	112	67	68	2.3	3.5
3	15	88.60	.91	.79	290	253	253	48	117	67	69	2.3	3.5
	17.5	90.59	.93	.80	290	260	253	49	116	67	70	2.3	3.5
	20	92.59	.98	.82	291	256	253	50	120	68	71	2.3	3.9
4	22.5	94.62	.94	.80	293	255	254	51	117	68	72	2.4	4.0
	25	96.64	.93	.80	293	253	253	51	123	68	72	2.4	4.0
	27.5	98.67	.92	.79	293	258	253	51	127	69	73	2.4	4.0
5	30	100.66	.89	.78	294	262	254	52	131	70	74	2.3	4.0
	32.5	102.61	.83	.75	295	256	255	51	127	69	73	2.2	3.9
	35	104.49	.83	.75	295	251	253	52	131	70	74	2.1	3.5
6	37.5	106.38	.75	.72	295	262	253	52	129	70	74	2.1	3.5
	40	108.22	.74	.71	295	254	253	52	121	70	75	2.0	3.5
	42.5	110.01	.73	.71	295	251	252	52	116	71	75	1.9	3.5
7	45	111.80	.78	.73	294	263	252	52	125	71	75	1.9	3.5
	47.5	113.65	.80	.74	294	257	252	52	125	71	75	2.0	3.5
	50	115.54	.81	.75	294	259	252	51	124	71	76	2.1	3.9

Traverse: 2				
Start Time: 8:17	Initial Leak Check:	0.003	cfm@ 16	"Hg
Finish Time:	Final Leak Check:		cfm@	"Hg

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 19, 2023	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 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	117.43	.84	.76	294	260	252	51	123	72	76	2.1	3.9
	55	119.37	.82	.75	294	254	253	52	125	72	77	2.2	4.0
	57.5	121.28	.79	.74	294	255	252	52	123	73	77	2.1	3.9
9	60	123.18	.84	.76	294	255	252	52	124	73	77	2.1	3.9
	62.5	125.12	.82	.75	293	255	252	52	121	73	77	2.2	4.0
	65	127.02	.81	.75	293	256	252	52	130	73	77	2.1	4.0
10	67.5	128.92	.86	.77	292	258	252	52	124	74	78	2.1	4.0
	70	130.85	.82	.75	293	256	252	52	123	74	78	2.2	4.0
	72.5	132.75	.80	.75	292	260	252	52	130	75	78	2.1	4.0
11	75	134.67	.77	.73	292	254	252	52	122	74	78	2.1	4.0
	77.5	136.52	.75	.73	285	258	253	54	122	75	74	2.0	3.5
	80	138.36	.79	.75	285	254	253	56	125	76	80	2.0	3.5
12	82.5	140.24	.67	.69	285	251	252	53	119	75	78	2.1	4.0
	85	142.00	.66	.68	285	254	252	53	117	75	78	1.8	3.5
	87.5	143.73	.66	.68	286	248	254	53	125	76	80	1.8	3.5
	90	145.48											

Traverse: 2			
Start Time:	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 9:47	Final Leak Check: 0.004	cfm@ 15.5	"Hg

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 14, 2023	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 ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp (Inlet)/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	146.07	.96	.82	289	260	253	61	97	75	75	2.4	4.0
	2.5	148.14	.97	.82	292	258	250	54	121	75	75	2.4	4.0
	5	150.18	.96	.82	292	251	250	52	129	75	76	2.4	4.0
2	7.5	152.23	1.0	.83	292	255	252	52	140	75	76	2.4	4.0
	10	154.31	1.0	.83	293	260	251	52	128	74	77	2.5	4.0
	12.5	156.38	1.0	.83	293	259	252	52	130	75	77	2.5	4.0
3	15	158.48	.96	.82	293	255	253	52	125	75	78	2.5	4.0
	17.5	160.54	.97	.83	294	260	252	53	150	80	84	2.4	4.0
	20	162.58	1.0	.83	296	257	251	52	155	80	84	2.4	4.0
4	22.5	164.60	1.1	.84	296	255	253	59	149	83	86	2.4	4.0
	25	166.77	1.0	.84	295	251	251	55	150	76	80	2.7	4.5
	27.5	169.81	.91	.80	295	253	252	56	134	76	79	2.5	4.5
5	30	170.88	.79	.74	296	262	253	56	147	76	80	2.3	4.5
	32.5	172.76	.76	.73	296	263	252	56	154	76	80	2.0	4.0
	35	174.82	.77	.73	295	257	252	56	133	76	80	2.0	4.0
6	37.5	176.47	.66	.68	294	267	255	56	126	76	80	2.0	4.0
	40	178.22	.67	.68	294	254	251	55	128	76	80	1.8	3.9
	42.5	179.97	.65	.67	294	252	251	55	107	77	80	1.8	3.9
7	45	181.68	.78	.74	293	257	252	55	124	76	80	1.7	3.9
	47.5	183.52	.78	.74	293	253	252	54	109	77	80	2.0	4.0
	50	185.42	.79	.74	293	259	252	54	112	77	81	2.0	4.0

Traverse: 1				
Start Time: 9:59	Initial Leak Check: 0.002	cfm@ 15	"Hg	
Finish Time:	Final Leak Check: —	cfm@ —	"Hg	

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 14, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	187.32	.78	.74	292	262	252	53	114	77	81	2.1	4.0
	55	189.22	.78	.74	292	258	252	53	113	77	81	2.1	4.0
	57.5	191.11	.78	.74	292	253	252	53	116	77	81	2.1	4.0
9	60	193.01	.79	.75	292	258	252	53	108	77	81	2.1	4.0
	62.5	194.90	.78	.74	292	252	252	53	112	78	82	2.1	4.0
	65	196.78	.81	.76	291	255	252	53	112	78	81	2.1	4.0
10	67.5	198.70	.80	.75	291	261	251	53	110	78	81	2.1	4.0
	70	200.61	.81	.76	290	256	251	53	111	78	82	2.1	4.0
	72.5	202.53	.83	.77	290	262	251	52	115	78	82	2.1	4.0
11	75	204.48	.75	.73	285	251	251	52	116	78	82	2.2	4.0
	77.5	206.35	.76	.74	285	260	250	52	111	78	82	2.0	4.0
	80	208.20	.80	.75	285	251	250	53	106	78	82	2.0	4.0
12	82.5	210.10	.69	.70	283	260	252	53	107	78	82	2.1	4.0
	85	211.91	.69	.70	284	251	250	54	107	74	82	1.9	4.0
	87.5	213.72	.69	.70	284	261	250	53	112	74	83	1.9	4.0
	90	215.49											

Traverse: 1			
Start Time:	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 11:29	Final Leak Check: 0.002	cfm@ 15.5	"Hg

Project No.: 22235

Operator: BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date September 14, 2023	
Test Location	APC Outlet No. 1
Operator BT	

Project No.:	22235
Page	1 of 5
Probe No.: 6 Series	
Meter Box No.: TEAM #3	
Impinger Box No.: 10	

Pitot Factor	0.848	
DGMCF	0.992	
Barometric Pressure	29.71	"Hg
Static Pressure	-11.76	"H2O
Nozzle Size	.2510	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	0.20	mg
Probe	3.60	mg

Moisture Gain

CWTR	562.8	g
WCBDA	26.2	g

Combustion Gas Concentration

Oxygen	8.17	%
Carbon Dioxide	10.73	%
Carbon Monoxide	5.7	ppm

Measuring Device	MII Numbers
Probe / Pitot ISE	COE 20113
Trendicator	COE 20093
Control Box	↓
Incline Manometer	↓
Comb.Gas.Analyzer	
Micromanometer	
Barometer	EW CAN
Calipers	CAN 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: Sept 19, 2023	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 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	15.85	.88	.78	285	249	247	68	63	75	75	2.3	4.0
	2.5	17.87	.87	.78	289	249	248	64	140	75	75	2.3	4.0
	5	19.84	.84	.79	284	260	251	63	173	75	75	2.2	3.9
2	7.5	21.83	.93	.80	288	251	251	57	192	75	75	2.3	4.0
	10	23.86	.92	.80	288	254	252	55	199	75	76	2.4	4.0
	12.5	25.88	.90	.79	289	259	253	55	205	75	77	2.4	4.0
3	15	27.88	.87	.78	288	257	253	55	209	75	78	2.3	4.0
	17.5	29.85	.90	.79	288	256	253	55	212	76	78	2.2	4.0
	20	31.86	.90	.80	288	260	253	56	215	76	79	2.3	4.0
4	22.5	33.87	.86	.78	289	256	254	56	217	76	79	2.3	4.0
	25	35.83	.87	.78	289	254	253	56	218	77	80	2.2	4.0
	27.5	37.80	.86	.78	290	260	255	56	219	77	80	2.2	4.0
5	30	39.78	.77	.74	290	254	254	57	220	77	81	2.2	4.0
	32.5	41.65	.76	.75	290	258	254	56	220	77	81	2.0	3.9
	35	43.51	.75	.73	290	261	255	56	220	78	81	2.0	3.9
6	37.5	45.35	.64	.67	289	255	255	57	220	78	82	2.0	3.9
	40	47.07	.62	.66	288	251	254	57	219	78	82	1.7	3.5
	42.5	48.78	.62	.66	288	255	254	57	218	78	82	1.7	3.4
7	45	50.47	.71	.71	288	262	254	57	218	78	82	1.7	3.4
	47.5	52.19	.70	.71	288	252	254	57	218	79	82	1.75	3.5
	50	53.90	.68	.70	288	261	254	57	219	79	83	1.8	3.5

Traverse: 1				
Start Time: 12:09	Initial Leak Check:	0.006	cfm@ 15	"Hg
Finish Time:	Final Leak Check:	—	cfm@ —	"Hg

Project No.: 22235

Operator: BF

Field Data Sheet

Date: Sept 14, 2023	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 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	55.63	.74	.73	288	263	266	57	219	80	84	2.0	3.5
	55	57.44	.77	.74	288	260	255	57	220	79	83	2.1	3.5
	57.5	59.34	.77	.74	290	256	254	56	221	80	84	2.05	3.5
9	60	61.20	.82	.76	290	258	254	56	221	80	83	2.3	4
	62.5	63.17	.82	.76	290	261	253	56	221	80	84	2.25	4
	65	65.16	.85	.78	291	253	254	56	222	80	84	2.3	4
10	67.5	67.16	.85	.78	291	261	254	60	224	80	84	2.3	4
	70	69.16	.83	.77	292	255	254	56	221	80	84	2.3	4
	72.5	71.13	.81	.76	292	262	254	57	221	80	84	2.2	4
11	75	73.08	.75	.73	292	258	253	57	220	81	84	2.2	4
	77.5	74.94	.72	.72	288	258	253	57	219	81	84	2.0	4.0
	80	76.77	.75	.73	288	254	253	57	219	81	84	2.0	4.0
12	82.5	78.60	.46	.57	287	260	253	57	218	81	85	2.0	4.0
	85	80.11	.44	.56	286	254	253	58	216	81	84	1.3	3.0
	87.5	81.54	.41	.54	286	261	253	58	214	81	84	1.2	3.0
	90	82.96											

Traverse: 1			
Start Time:	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 13:39	Final Leak Check: 0.004	cfm@ 15	"Hg

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 19, 2023	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 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	83.35	.80	.76	285	254	253	68	120	81	81	2.1	4
	2.5	85.27	.83	.77	288	250	253	57	78	81	82	2.1	4
	5	87.23	.87	.79	288	258	254	53	81	81	82	2.2	4
2	7.5	89.68	.86	.78	289	259	253	51	82	81	83	2.2	4
	10	91.13	.89	.80	289	259	253	50	83	81	83	2.3	4
	12.5	93.12	.85	.78	289	262	254	50	87	81	84	2.3	4
3	15	95.13	.88	.80	289	257	253	50	89	81	84	2.2	4
	17.5	96.72	.92	.82	290	261	253	50	89	81	85	2.5	4
	20	99.20	.90	.81	290	251	253	50	89	81	85	2.3	4
4	22.5	101.22	.90	.81	290	253	253	50	88	82	85	2.3	4
	25	103.23	.79	.76	291	258	253	50	88	86	87	2.3	4
	27.5	105.12	.79	.75	291	259	253	50	85	82	86	2.3	4
5	30	107.19	.76	.74	290	253	253	50	94	82	86	2.2	4
	32.5	109.14	.74	.73	291	257	253	50	95	82	86	2.2	4
	35	111.16	.73	.73	290	262	253	50	90	82	86	2.1	4
6	37.5	112.93	.66	.67	305	249	256	50	71	82	86	2.0	4
	40	114.74	.68	.69	290	255	253	50	67	83	86	1.9	4
	42.5	116.53	.68	.69	290	255	252	48	69	83	86	1.9	4
7	45	118.32	.77	.73	290	256	252	48	70	83	86	1.9	4
	47.5	120.19	.75	.72	290	253	253	47	70	83	86	1.9	4
	50	121.87	.76		290	254	252	47	75	83	86	1.9	4

Traverse: 2		
Start Time: 13:49	Initial Leak Check: 0.004 cfm@ 15 "Hg	
Finish Time:	Final Leak Check: — cfm@ — "Hg	

Project No.: 22235

Operator: BP / TC

Field Data Sheet

Date: Sept 19, 2023	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	123.69	.78	.74	290	260	253	47	80	83	87	2.0	4
	55	125.54	.78	.75	290	254	253	47	82	83	87	2.1	4
	57.5	127.40	.79	.75	290	256	252	47	84	83	87	2.1	4
9	60	129.26	.80	.76	290	259	253	48	83	83	87	2.1	4
	62.5	131.12	.81	.76	290	262	252	47	83	84	87	2.1	4
	65	133.04	.82	.77	291	262	252	48	84	84	87	2.1	4
10	67.5	134.86	.83	.77	290	261	253	48	84	84	87	2.1	4
	70	136.74	.82	.77	290	257	252	48	85	84	87	2.1	4
	72.5	138.63	.81	.76	290	257	252	48	84	84	87	2.1	4
11	75	140.54	.78	.75	285	260	253	48	84	84	88	2.1	4
	77.5	142.40	.80	.76	285	257	252	48	84	84	88	2.1	4
	80	144.28	.79	.76	285	256	252	48	84	85	88	2.1	4
12	82.5	146.16	.67	.70	280	262	252	48	84	86	88	2.1	4
	85	148.04	.66	.70	280	260	252	48	84	84	88	2.1	4
	87.5	149.90	.68	.71	280	261	252	48	84	85	88	1.9	4
	90	151.78										1.9	4

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: ~~15:20~~ 15:19	Final Leak Check: .001	cfm@ 15	"Hg

Project No.: 22235

Operator: BP/TC

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date	September 19 2023
Test Location	APC Outlet No. 1
Operator	

Project No.:	22235
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	Team 2
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.049	
Barometric Pressure	29.72	"Hg
Static Pressure	-11.76	"H2O
Nozzle Size	.2501	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

Particulate Gain

Filter	0.80	mg
Probe	1.90	mg

Moisture Gain

CWTR	530.2	g
WCBDA	27.0	g

Combustion Gas Concentration

Oxygen	8.32	%
Carbon Dioxide	10.50	%
Carbon Monoxide	6.6	ppm

Measuring Device	MII Numbers
Probe / Pitot S11	B03772
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements	
1	.2495
2	.2505
3	.2505
4	.2500
Average:	.2501

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal/ (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Sept. 19 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	49.16	.98	.74	284	248	259	53	145	74	74	2.15	4.5
	2.5	51.05	1.0	.77	287	255	259	51	222	75	76	2.3	4
	5	52.96	1.05	.79	288	256	259	49	231	75	76	2.4	4
2	7.5	54.99	1.05	.79	289	256	260	49	234	75	76	2.4	4
	10	56.99	1.05	.79	289	256	260	48	236	75	77	2.4	4
	12.5	59.03	1.0	.77	290	256	260	48	236	76	77	2.3	4
3	15	61.0	.96	.76	289	256	260	49	236	76	77	2.25	4
	17.5	62.94	.88	.73	289	256	258	50	236	76	78	2.0	4
	20	64.79	.90	.73	288	256	260	51	235	76	79	2.0	4
4	22.5	66.61	.82	.70	288	257	260	52	235	76	79	1.95	4
	25	68.41	.82	.70	287	256	254	53	235	76	80	1.95	4
	27.5	70.18	.83	.71	287	256	260	54	235	77	81	2.0	4
5	30	71.99	.72	.66	287	257	260	54	235	77	81	1.7	4
	32.5	73.71	.74	.67	286	260	260	55	234	77	82	1.8	4
	35	75.44	.74	.67	286	257	260	56	234	77	82	1.75	4
6	37.5	77.16	.64	.62	286	257	261	56	234	78	83	1.55	3.5
	40	78.79	1.1	.82	286	257	261	57	233	78	83	2.4	4
	42.5	80.77	.65	.63	285	257	254	57	235	78	84	1.6	4
7	45	82.42	.75	.68	286	257	261	57	234	78	84	1.7	4
	47.5	84.13	.74	.67	286	257	262	58	233	79	84	1.65	3.5
	50	85.80	.74	.67	286	257	261	58	233	79	85	1.65	3.5

Traverse:					
Start Time: 15:23	Initial Leak Check:	.008	cfm@	18	"Hg
Finish Time:	Final Leak Check:		cfm@		"Hg

Project No.: 22235

Operator :

Field Data Sheet

Date: Sept. 19 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	87.47	.75	.68	286	257	260	58	233	79	85	1.7	3.5
	55	89.18	.74	.67	286	257	261	57	233	80	85	1.65	3.5
	57.5	90.88	.74	.67	286	257	262	58	233	80	85	1.65	3.5
9	60	92.55	.76	.68	286	257	262	57	232	80	86	1.7	3.5
	62.5	94.27	.76	.68	287	257	261	58	233	80	86	1.7	3.5
	65	95.97	.74	.67	286	257	261	58	233	81	86	1.65	3.5
10	67.5	97.67	.73	.67	286	257	262	58	233	81	86	1.65	3.5
	70	99.34	.75	.68	285	257	262	58	232	81	86	1.7	3.5
	72.5	101.05	.78	.69	285	257	262	58	233	81	86	1.75	4
11	75	102.75	.66	.64	286	257	261	58	233	81	86	1.5	4
	77.5	104.35	.66	.64	287	257	262	58	232	81	87	1.5	4
	80	105.98	.65	.63	286	257	262	58	232	82	87	1.45	3.5
12	82.5	107.59	.65	.63	286	257	262	58	232	82	87	1.45	3.5
	85	109.20	.61	.61	286	256	263	58	232	82	87	1.4	3.5
	87.5	110.69	.60	.61	286	255	262	59	232	82	88	1.4	3.5
	90	112.28											

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg	
Finish Time: 16:53	Final Leak Check: .006	cfm@ 14	"Hg	

Project No.: 22235

Operator :

Field Data Sheet

Date: Sept. 19 2023	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	112.75	.85	.72	284	257	263	67	166	82	86	2.05	4
	2.5	114.54	.87	.73	286	257	261	56	224	82	86	2.1	4
	5	116.41	.92	.75	285	261	261	53	232	83	85	2.2	4
2	7.5	118.33	.90	.74	286	257	262	50	234	83	85	2.1	4
	10	120.20	.91	.75	286	256	262	49	234	82	85	2.15	4
	12.5	122.11	.90	.74	287	257	262	48	235	83	85	2.1	4
3	15	124.0	.84	.72	286	257	262	48	235	83	86	2.0	4
	17.5	125.83	.84	.72	286	258	262	49	234	83	86	2.0	4
	20	127.66	.84	.72	286	258	262	49	234	83	86	2.0	4
4	22.5	129.49	.78	.69	286	258	263	49	234	83	86	1.8	4
	25	131.26	.76	.69	285	258	262	49	233	83	87	1.8	4
	27.5	133.02	.76	.69	285	258	263	49	233	83	87	1.8	4
5	30	134.78	.71	.66	284	258	254	49	233	83	87	1.6	4
	32.5	136.44	.68	.65	284	259	262	49	233	83	87	1.55	3.5
	35	138.08	.71	.66	284	258	262	50	232	83	87	1.6	4
6	37.5	139.75	.64	.63	284	258	262	50	233	83	88	1.45	3.5
	40	141.33	.65	.64	283	258	263	50	232	83	88	1.5	3.5
	42.5	142.94	.65	.64	283	258	262	50	232	83	88	1.5	3.5
7	45	144.56	.71	.67	283	258	262	50	232	84	88	1.65	3.5
	47.5	146.24	.71	.67	283	258	263	50	231	84	88	1.65	3.5
	50	147.92	.71	.66	284	258	263	50	231	84	88	1.6	3.5

Traverse:					
Start Time: 17:02	Initial Leak Check:	.006	cfm@	14	"Hg
Finish Time:	Final Leak Check:		cfm@		"Hg

Project No.: 22235

Operator :

Field Data Sheet

Date: Sept. 19 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	149.57	.74	.68	284	258	263	50	231	84	88	1.7	3.5
	55	151.28	.77	.69	284	258	262	50	231	84	89	1.75	3.5
	57.5	153.02	.80	.71	285	258	262	50	232	84	89	1.85	4
9	60	154.80	.80	.71	285	258	262	50	233	84	89	1.85	4
	62.5	156.58	.82	.71	286	258	262	50	233	84	89	1.85	4
	65	158.44	.84	.72	286	258	263	50	233	84	89	2.0	4
10	67.5	160.32	.81	.71	286	258	263	50	233	84	89	2.0	4
	70	162.17	.84	.72	287	258	263	50	233	85	89	1.9	4
	72.5	164.02	.85	.73	287	258	262	50	233	85	89	1.9	4
11	75	165.83	.72	.67	287	258	262	51	233	85	89	1.85	4
	77.5	167.57	.74	.68	286	258	262	51	232	85	89	1.7	4
	80	169.33	.74	.68	286	258	262	51	232	85	89	1.75	4
12	82.5	171.06	.57	.60	286	258	263	51	232	85	89	1.65	4
	85	172.63	.55	.59	286	258	263	51	231	85	89	1.35	4
	87.5	174.14	.54	.58	286	258	262	52	230	85	89	1.2	3.9
	90	175.59											

Traverse:				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg	
Finish Time: 18:32	Final Leak Check: 0.005	cfm@ 15	"Hg	

Project No.: 22235

Operator:

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Metals
Test Date September 20, 2023	
Test Location	APC Outlet No. 2
Operator BP	

Project No.:	22235
Page	1 of 5
Probe No.: 6 Series	
Meter Box No.: TEAM #3	
Impinger Box No.: 10	

Pitot Factor	0.848	
DGMCF	0.992	
Barometric Pressure	29.91	"Hg
Static Pressure	-10.88	"H2O
Nozzle Size	0.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter	0.70	mg
Probe	1.20	mg

Moisture Gain

CWTR	511.8	g
WCBDA	21.6	g

Combustion Gas Concentration

Oxygen	7.96	%
Carbon Dioxide	11.00	%
Carbon Monoxide	12.0	ppm

Measuring Device	MII Numbers
Probe / Pitot 15F	COE 20113
Trendicator	COE 20073
Control Box	〃
Incline Manometer	〃
Comb.Gas.Analyzer	
Micromanometer	
Barometer	EW CAN
Calipers	CAN 22136

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

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: Sept 20, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	52.14	.75	.71	285	260	255	61	77	63	63	1.9	4
	2.5	53.96	.75	.71	286	258	256	53	196	64	64	1.9	4
	5	55.75	.75	.71	287	259	257	52	209	64	64	1.9	4
2	7.5	57.54	.76	.71	287	254	256	51	210	64	64	1.9	4
	10	59.31	.79	.73	287	260	256	50	211	64	65	1.9	4
	12.5	61.14	.78	.72	287	253	257	49	211	64	65	2.0	4
3	15	62.97	.76	.72	287	257	257	49	211	64	66	2.0	4
	17.5	64.78	.76	.72	287	261	256	49	212	64	67	1.95	4
	20	66.58	.74	.73	288	253	257	49	212	65	67	1.95	4
4	22.5	68.39	.73	.70	288	260	256	49	223	65	68	2.0	4
	25	70.17	.71	.69	288	253	256	50	224	65	69	1.9	4
	27.5	71.93	.70	.69	289	258	256	50	224	66	69	1.85	4
5	30	73.67	.63	.65	288	260	255	50	224	66	70	1.85	4
	32.5	75.35	.63	.65	288	256	256	50	223	66	70	1.7	3.5
	35	77.02	.64	.66	288	262	256	50	224	67	71	1.7	3.5
6	37.5	78.69	.61	.65	288	254	256	50	224	67	71	1.7	3.5
	40	80.34	.60	.64	288	255	256	50	224	67	71	1.65	3.5
	42.5	81.98	.60	.64	288	260	256	50	224	68	72	1.6	3.5
7	45	83.61	.68	.68	288	254	256	50	224	68	72	1.6	3.5
	47.5	85.35	.67	.68	288	252	256	50	226	68	73	1.8	4
	50	87.08	.65	.67	288	263	255	50	226	69	73	1.8	4

Traverse: 1					
Start Time: 8:13	Initial Leak Check: 0.003	cfm@ 15	"Hg		
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg		

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 20, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	88.78	.71	.70	288	256	256	50	226	68	73	1.75	4
	55	90.54	.70	.69	289	261	256	50	227	68	74	1.9	4
	57.5	92.30	.68	.68	284	256	255	50	227	70	74	1.9	4
9	60	94.04	.67	.68	284	263	255	50	226	70	74	1.8	4
	62.5	95.77	.67	.68	289	255	255	50	226	70	74	1.8	4
	65	97.50	.68	.69	284	263	255	50	226	70	75	1.8	4
10	67.5	99.23	.70	.70	288	253	256	50	225	71	75	1.8	4
	70	101.06	.69	.69	288	263	255	50	226	71	75	1.9	4
	72.5	102.74	.70	.70	288	252	255	50	226	71	75	1.8	4
11	75	104.52	.61	.65	288	260	256	50	225	71	75	1.9	4
	77.5	106.17	.60	.65	286	254	255	50	224	72	76	1.6	3.9
	80	107.82	.59	.64	286	253	255	51	224	72	76	1.6	3.9
12	82.5	109.44	.54	.61	286	259	255	51	223	72	76	1.6	3.9
	85	111.01	.54	.61	286	260	254	51	223	72	76	1.5	3.5
	87.5	112.57	.58	.64	286	251	254	50	222	72	76	1.5	3.5
	90	114.19											

Traverse: 1				
Start Time: ~	Initial Leak Check: —	cfm@ ~	"Hg	
Finish Time: 9:43	Final Leak Check: 0.004	cfm@ 15.5	"Hg	

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 20, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	114.60	.83	.76	287	261	255	60	143	72	73	2.15	4.5
	2.5	116.50	.86	.77	289	256	255	52	208	72	73	2.15	4.5
	5	118.44	.84	.76	289	253	257	50	221	72	74	2.2	4.5
2	7.5	120.38	.84	.76	289	251	255	48	222	72	75	2.2	4.5
	10	122.32	.86	.77	289	255	255	47	223	72	75	2.2	4.5
	12.5	124.25	.86	.77	289	261	255	47	223	73	76	2.2	4.5
3	15	126.20	.83	.76	289	252	254	47	224	73	76	2.2	4.5
	17.5	128.14	.82	.76	289	260	255	47	224	73	77	2.2	4.5
	20	130.14	.84	.77	289	255	255	47	225	73	77	2.2	4.5
4	22.5	132.05	.76	.73	289	254	256	47	225	73	77	2.2	4.5
	25	133.81	.77	.73	289	263	255	48	225	74	75	2.0	4.
	27.5	135.64	.76	.73	289	262	253	48	225	74	78	2.0	4.0
5	30	137.46	.68	.69	289	261	254	48	225	74	78	2.0	4.0
	32.5	139.24	.72	.71	289	262	255	48	224	74	78	1.9	4.0
	35	141.09	.74	.72	290	254	254	48	224	74	78	1.9	4.0
6	37.5	142.89	.64	.67	290	262	256	48	225	75	79	2.0	4.0
	40	144.63	.61	.65	291	252	253	48	225	75	79	1.9	4.0
	42.5	146.27	.60	.65	291	252	254	48	224	75	79	1.5	4.0
7	45	148.09	.65	.67	291	258	255	48	224	75	79	1.8	4.0
	47.5	149.80	.64	.67	291	256	254	48	224	75	79	1.7	4.0
	50	151.42	.65	.68	290	256	254	48	224	73	79	1.8	4.0

Traverse: 2					
Start Time: 9:53	Initial Leak Check:	0.003	cfm@	15	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg

Project No.: 22235

Operator: BP ITC

Field Data Sheet

Date: Sept 20, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp (Inlet)/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	153.14	.63	.66	290	261	255	48	224	75	79	1.8	4
	55	154.84	.71	.71	290	254	253	48	224	76	79	1.8	4
	57.5	156.57	.72	.71	290	261	253	48	224	76	79	1.9	4
9	60	158.35	.72	.71	290	254	252	49	224	76	80	1.9	4
	62.5	160.15	.71	.71	290	258	254	49	224	76	80	1.9	4
	65	162.04	.70	.70	290	251	255	49	224	76	80	1.9	4
10	67.5	163.72	.66	.68	290	251	253	49	224	76	80	1.9	4
	70	165.46	.69	.70	289	260	253	49	223	77	80	1.8	4
	72.5	167.23	.68	.69	289	262	253	49	223	77	80	1.9	4
11	75	168.99	.58	.64	289	256	252	49	223	77	80	1.8	4
	77.5	170.66	.58	.64	272	261	253	50	222	77	80	1.6	4
	80	172.3	.55	.62	286	259	251	49	221	77	80	1.6	4
12	82.5	173.93	.44	.56	286	257	252	49	226	77	81	1.5	4
	85	175.39	.45	.56	286	260	253	49	219	77	80	1.2	4
	87.5	176.83	.46	.57	286	251	251	49	218	77	80	1.3	4
	90	178.29			286								

Traverse: 2			
Start Time: 11:23	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: ~~12:24~~	Final Leak Check:	cfm@	"Hg

Project No.: 22235

Operator: BP / TC

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date September 20, 2023	
Test Location	APC Outlet No. 2
Operator	

Project No.:	22235
Page	1 of 5
Probe No.:	6 Series
Meter Box No.:	TEAM #3
Impinger Box No.:	9

Pitot Factor	0.848	
DGMCF	0.992	
Barometric Pressure	29.89	"Hg
Static Pressure	-10.88	"H2O
Nozzle Size	0.2510	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	0.50	mg
Probe	1.90	mg

Moisture Gain

CWTR	535.3	g
WCBDA	21.3	g

Combustion Gas Concentration

Oxygen	7.95	%
Carbon Dioxide	10.91	%
Carbon Monoxide	13.1	ppm

Measuring Device	MII Numbers
Probe / Pitot 15E	COE 20113
Trendicator	COE 2093
Control Box	↓
Incline Manometer	↓
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV CAN
Calipers	CAN 22136

Nozzle Measurements	
1	.2505
2	.2515
3	.2510
4	.2510
Average:	.2510

Site Diagram

Notes:

Field Data Sheet

Date: Sept 20, 2023	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 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	78.9	.85	.77	285	259	251	69	174	75	75	2.2	3.5
	2.5	80.87	.85	.77	289	261	252	55	176	74	75	2.2	3.5
	5	82.82	.84	.76	290	252	253	51	213	74	75	2.2	3.5
2	7.5	84.76	.88	.78	290	262	248	49	230	74	74	2.2	3.5
	10	86.73	.93	.80	290	252	253	48	234	74	75	2.25	3.5
	12.5	88.76	.90	.79	290	259	254	48	236	75	76	2.4	4
3	15	90.76	.85	.77	290	256	254	48	235	75	77	2.3	3.9
	17.5	92.71	.84	.77	291	251	253	48	234	75	77	2.2	3.5
	20	94.65	.84	.77	290	262	252	49	232	75	78	2.2	3.5
4	22.5	96.58	.77	.73	290	253	251	50	231	75	79	2.2	3.5
	25	98.45	.79	.75	290	256	251	50	230	76	79	2.05	3.5
	27.5	100.35	.77	.74	290	260	251	51	230	76	80	2.1	3.5
5	30	102.23	.70	.70	290	252	251	51	229	76	80	2.05	3.5
	32.5	104.04	.70	.70	290	256	251	51	229	77	81	1.9	3.5
	35	105.81	.69	.70	290	260	251	51	229	77	81	1.9	3.5
6	37.5	107.58	.62	.66	290	252	251	52	228	78	82	1.9	3.5
	40	109.28	.64	.67	291	261	251	52	228	78	82	1.7	3
	42.5	110.94	.64	.67	292	259	251	52	228	78	82	1.7	3
7	45	112.71	.69	.70	292	251	251	52	228	79	83	1.7	3
	47.5	114.50	.69	.70	292	262	251	52	229	79	83	1.9	3.5
	50	116.28	.68	.70	292	258	251	52	229	79	84	1.9	3.5

Traverse: 2				
Start Time: 13:42	Initial Leak Check: 0.004	cfm@ 15	"Hg	
Finish Time:	Final Leak Check: —	cfm@ —	"Hg	

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 20, 2023	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	118.05	.73	.72	292	251	251	53	228	79	~~84~~ 84	1.9	3.5
	55	114.90	.72	.72	291	260	250	53	229	80	85	2.0	3.5
	57.5	121.72	.70	.71	291	258	250	53	228	80	84	1.95	3.5
9	60	123.51	.72	.72	291	252	250	53	228	80	84	1.9	3.5
	62.5	125.33	.71	.71	290	261	250	53	228	80	84	1.95	3.5
	65	127.14	.70	.71	290	254	250	53	228	81	85	1.95	3.5
10	67.5	128.93	.69	.70	290	262	250	53	229	81	86	1.9	3.5
	70	130.73	.69	.70	290	259	250	53	229	81	85	1.9	3.5
	72.5	132.51	.70	.71	290	262	250	54	228	81	85	1.9	3.5
11	75	134.30	.62	.67	286	251	250	54	229	81	85	1.9	3.5
	77.5	136.00	.64	.68	286	258	250	54	227	82	85	1.7	3.5
	80	137.74	.62	.67	286	263	250	54	226	82	85	1.8	3.5
12	82.5	139.47	.55	.63	286	252	249	54	225	82	86	1.75	3.5
	85	141.08	.55	.63	286	253	248	55	225	82	86	1.5	3
	87.5	142.67	.53	.62	286	257	247	55	224	82	86	1.5	3
	90	144.27											

Traverse: 2				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg	
Finish Time: 15:12	Final Leak Check: 0.003	cfm@ 15	"Hg	

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 20, 2023	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	144.76	.78	.75	286	250	264	67	132	82	82	2.1	4
	2.5	146.67	.80	.76	290	253	256	58	217	84	85	2.1	4
	5	148.60	.81	.76	290	256	251	54	228	82	84	2.15	4
2	7.5	150.51	.82	.77	289	263	255	50	230	83	85	2.15	4
	10	152.47	.81	.76	291	250	251	52	231	82	84	2.2	4
	12.5	154.43	.81	.76	290	262	251	52	231	82	84	2.2	4
3	15	156.36	.81	.76	291	257	251	53	232	82	85	2.15	4
	17.5	158.29	.81	.76	291	250	251	53	234	82	85	2.15	4
	20	160.21	.80	.76	291	260	251	53	231	82	86	2.15	4
4	22.5	162.14	.77	.74	291	256	254	56	231	83	86	2.15	4
	25	164.04	.76	.74	291	257	251	54	231	83	86	2.1	4
	27.5	165.42	.73	.73	291	257	251	54	230	83	86	2.05	4
5	30	167.76	.68	.70	290	251	250	54	229	83	86	2.0	4
	32.5	169.56	.68	.70	290	251	250	54	229	83	86	1.9	4
	35	171.37	.69	.71	290	256	251	54	229	83	87	1.9	4
6	37.5	173.26	.65	.69	290	262	250	54	228	83	87	1.9	4
	40	174.97	.64	.68	290	252	250	54	229	83	87	1.9	4
	42.5	176.72	.62	.67	291	255	250	54	229	83	87	1.8	4
7	45	178.44	.66	.69	291	261	250	54	228	83	87	1.7	4
	47.5	180.21	.69	.88	290	251	250	54	228	84	87	1.8	4
	50	182.	.67		290	256	250	54	228	84	87	1.9	4

Traverse: 1				
Start Time: 15:22	Initial Leak Check: 0.003	cfm@ 15	"Hg	
Finish Time:	Final Leak Check: —	cfm@ —	"Hg	

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 20, 2023	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	183.79	.68	.70	290	260	250	55	228	84	87	1.9	4
	55	185.59	.70	.71	290	258	250	55	228	84	87	1.9	4
	57.5	187.41	.72	.72	290	258	250	55	228	84	87	1.9	4
9	60	189.22	.71	.72	291	256	250	55	225	84	88	1.9	4
	62.5	191.04	.73	.73	291	262	250	55	228	84	88	2.0	4
	65	192.88	.75	.74	291	257	250	55	228	84	88	2.0	4
10	67.5	194.73	.78	.75	291	254	250	55	228	84	88	2.0	4
	70	196.57	.76	.74	291	256	251	56	229	85	88	2.0	4
	72.5	198.43	.74	.73	291	261	250	55	225	85	88	2.0	4
11	75	200.28	.68	.71	282	257	249	55	228	85	88	2.0	4
	77.5	202.09	.66	.70	282	257	249	55	227	85	88	1.9	4
	80	203.87	.67	.70	282	260	249	56	228	86	88	1.9	4
12	82.5	205.68	.61	.67	282	254	248	56	227	86	89	1.9	4
	85	207.43	.60	.66	282	260	248	56	226	85	89	1.8	4
	87.5	209.13	.61	.67	282	260	248	56	226	85	89	1.7	4
	90	210.8											

Traverse: 1			
Start Time: ~~16:52~~	Initial Leak Check:	cfm@	"Hg
Finish Time: 16:52	Final Leak Check: .001	cfm@ 15	"Hg

Project No.: 22235

Operator: BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date	September 20 2023
Test Location	APC Outlet No. 2
Operator	

Project No.:	22235
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	Team 2
Impinger Box No.:	10

Pitot Factor	.843	
DGMCF	1.049	
Barometric Pressure	29.90	"Hg
Static Pressure	-10.88	"H2O
Nozzle Size	.2501	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

Particulate Gain

Filter	40.8	mg
Probe	0.90	mg

Moisture Gain

CWTR	538.0	g
WCBDA	23.4	g

Combustion Gas Concentration

Oxygen	8.17	%
Carbon Dioxide	10.74	%
Carbon Monoxide	16.2	ppm

Measuring Device	MII Numbers
Probe / Pitot S11	B03772
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements	
1	.2495
2	.2505
3	.2505
4	.2500
Average:	.2501

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Sept. 20 2023	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	94.23	.84	.71	287	257	256	74	141	76	77	1.8	4
	2.5	96.01	.87	.72	287	257	256	74	141	76	77	1.9	4
	5	97.75	.87	.72	287	259	254	54	210	76	77	1.95	4
2	7.5	99.56	.87	.72	287	258	254	52	218	76	77	1.95	4
	10	101.39	.88	.72	287	258	254	52	220	76	77	1.95	4
	12.5	103.21	.88	.73	287	258	254	52	220	76	78	1.95	4
3	15	105.03	.81	.70	287	258	254	53	221	76	78	1.8	4
	17.5	106.78	.81	.70	287	257	254	53	221	77	79	1.8	4
	20	108.52	.81	.70	287	258	254	53	221	77	79	1.85	4
4	22.5	110.28	.79	.69	287	257	254	54	222	77	80	1.8	4
	25	112.03	.76	.68	288	258	254	54	223	77	80	1.7	4
	27.5	113.67	.74	.67	288	258	254	54	224	77	81	1.7	4
5	30	115.36	.64	.62	288	257	254	54	223	77	81	1.45	4
	32.5	116.93	.66	.63	288	258	254	54	223	77	81	1.5	4
	35	118.54	.66	.63	289	258	254	54	223	78	82	1.5	4
6	37.5	120.14	.61	.61	289	258	254	54	222	78	83	1.4	4
	40	121.69	.61	.61	289	257	254	55	223	78	83	1.4	4
	42.5	123.30	.61	.61	289	258	255	55	222	78	83	1.35	4
7	45	124.78	.67	.64	289	257	255	55	222	79	84	1.5	4
	47.5	126.37	.67	.64	290	258	255	55	223	79	84	1.5	4
	50	127.97	.68	.64	290	257	255	55	223	79	84	1.5	4

Traverse:			
Start Time: 16:55	Initial Leak Check: .005	cfm@ 15	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22235

Operator:

Field Data Sheet

Date: Sept. 20 2023	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 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	129.60	.66	.63	290	258	255	55	223	79	85	1.55	4
	55	131.22	.71	.66	290	257	255	54	222	80	85	1.6	4
	57.5	132.89	.71	.66	289	257	255	54	223	80	85	1.6	4
9	60	134.55	.71	.66	288	257	255	54	223	80	85	1.6	4
	62.5	136.21	.70	.65	288	257	255	54	223	80	85	1.55	4
	65	137.85	.72	.66	288	257	255	54	222	80	85	1.6	4
10	67.5	139.52	.68	.64	289	257	255	54	223	80	85	1.55	4
	70	141.15	.68	.64	289	257	256	54	222	81	86	1.55	4
	72.5	142.79	.68	.65	287	257	255	54	222	81	86	1.6	4
11	75	144.43	.68	.65	287	257	255	54	222	81	86	1.6	4
	77.5	146.08	.57	.59	287	257	255	54	222	81	86	1.3	4
	80	147.65	.61	.61	287	257	255	54	222	81	86	1.4	4
12	82.5	149.22	.60	.61	287	257	255	53	220	81	86	1.4	4
	85	150.78	.60	.61	285	257	255	54	220	81	86	1.35	4
	87.5	152.31	.59	.60	285	257	255	53	220	81	86	1.3	4
	90	153.82											

Traverse:					
Start Time: —	Initial Leak Check: —	cfm@	"Hg		
Finish Time:	Final Leak Check: .005	cfm@ 14	"Hg		

Project No.: 22235

Operator :

Field Data Sheet

Date: Sept. 20 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	154.22	.84	.72	290	257	255	62	143	82	85	1.8	4
	2.5	156.0	.91	.75	290	258	253	54	215	82	85	2.0	4
	5	157.84	.90	.74	290	258	254	53	222	82	85	2.0	4
2	7.5	159.68	.88	.73	290	258	255	52	223	82	85	1.95	5
	10	161.52	.88	.73	290	258	255	52	224	82	85	1.95	5
	12.5	163.34	.87	.73	290	259	255	52	225	82	85	1.95	5
3	15	165.19	.82	.71	289	258	255	52	225	82	85	1.85	4.5
	17.5	166.97	.84	.72	289	259	255	53	225	82	86	1.95	5
	20	168.79	.84	.72	289	259	255	53	225	82	86	1.95	5
4	22.5	170.61	.78	.69	290	259	255	53	225	82	86	1.75	5
	25	172.37	.79	.69	290	259	255	53	225	82	86	1.75	5
	27.5	174.12	.81	.70	290	259	255	53	225	82	86	1.8	5
5	30	175.88	.77	.69	290	259	255	53	225	82	86	1.8	5
	32.5	177.63	.77	.69	291	259	255	53	225	82	86	1.8	5
	35	179.37	.78	.69	291	258	256	54	225	82	86	1.8	5
6	37.5	181.12	.69	.65	291	259	255	54	225	82	86	1.6	5
	40	182.78	.68	.64	291	259	256	54	225	82	86	1.55	4.5
	42.5	184.42	.68	.64	291	259	255	54	224	82	86	1.55	4.5
7	45	186.04	.74	.67	291	259	255	54	224	82	86	1.7	4.5
	47.5	187.74	.74	.67	291	259	255	54	224	82	86	1.7	4.5
	50	189.44	.74	.67	291	259	255	54	225	82	86	1.7	4.5

Traverse:			
Start Time: 18:32	Initial Leak Check: .002	cfm@ 15	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22235

Operator:

Field Data Sheet

Date: Sept. 20 2023	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 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	191.16	.73	.67	291	259	256	54	225	82	86	1.7	4.5
	55	192.87	.73	.67	291	259	255	54	225	82	86	1.7	4.5
	57.5	194.57	.73	.67	291	259	255	54	225	82	86	1.7	4.5
9	60	196.28	.76	.68	291	259	256	55	225	82	87	1.75	4.5
	62.5	198.02	.79	.70	291	259	256	55	225	82	87	1.8	4.5
	65	199.78	.78	.69	291	259	256	55	225	82	86	1.75	4.5
10	67.5	201.53	.77	.69	290	259	263	55	225	82	86	1.75	4.5
	70	203.26	.78	.69	288	259	256	55	225	82	86	1.75	4.5
	72.5	205.02	.76	.68	288	259	256	55	225	82	86	1.7	4.5
11	75	206.72	.60	.61	288	259	256	55	225	82	86	1.35	4.5
	77.5	208.25	.60	.59	288	258	256	56	224	82	86	1.3	4.5
	80	209.75	.57	.59	288	258	256	56	223	82	86	1.3	4.5
12	82.5	211.27	.58	.60	288	258	255	56	223	82	86	1.4	4.5
	85	212.81	.58	.60	288	258	255	56	223	82	86	1.4	4.5
	87.5	214.34	.59	.60	288	258	255	56	223	82	86	1.35	4.5
	90	215.86											

Traverse:					
Start Time: –	Initial Leak Check: –	cfm@ –	"Hg		
Finish Time: 20.02	Final Leak Check: .004	cfm@ 15	"Hg		

Project No.: 22235

Operator: [illegible]

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	SEPTEMBER 20, 2023
Test Location	APC Outlet No. 1
Operator	RM

Project No.:	22235
Page	1 of 2
Probe No.:	AM10/2.5
Meter Box No.:	T1
Impinger Box No.:	11

Pitot Factor	.844	
DGMCF	.963	
Barometric Pressure	29.91	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	160.4	g
WCBDA	8.0	g

Combustion Gas Concentration

Oxygen	8.63	%
Carbon Dioxide	10.48	%
Carbon Monoxide	8.3	ppm

Measuring Device	MII Numbers
Probe / Pitot	AM10/2.5
Trendicator	3
Control Box	3 COE20094
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV. CAN
Calipers	8039226

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

Nozzle Measurements

1 _____
2 _____
3 _____
4 _____
Average:

Probe Liner Glass / Metal /Teflon / Other N/A

Nozzle Glass / Metal / Other_____

Union None /Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Sept 20/23	Plant: Covanta DYEC	Test No.: 1 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	34.87	.70	.35	286	255	251	59	60	64	62	.38	3.5
2	10.2	38.56	.67		286	254	251	49	62	64	62	.38	3.5
3	20.3	42.12	.67		286	254	252	47	63	65	63	.38	3.5
4	30.5	45.90	.67		287	254	251	48	63	67	64	.38	3.5
5	40.5	49.40	.58		287	254	251	48	64	69	65	.38	3.5
6	49.8	52.81	.57		288	254	251	48	63	70	66	.38	3.5
	59.1	56.14											
1	0	56.14	.70		287	255	251	52	68	70	66	.38	3.5
2	11.0	59.98	.68		287	254	251	52	67	71	67	.38	3.5
3	21.9	63.79	.64		286	254	252	54	66	72	68	.38	3.5
4	32.5	67.46	.56		286	255	251	54	66	72	69	.38	3.5
5	42.5	70.94	.53		285	255	251	54	65	72	69	.38	3.5
6	51.8	74.20	.50		284	254	252	54	69	74	70	.38	3.5
	60.9	77.10											

Traverse: 2			
Start Time: 903	Initial Leak Check: .002	cfm@ 16	"Hg
Finish Time: 1002	Final Leak Check:	cfm@	"Hg

Traverse: 1			
Start Time: 1005	Initial Leak Check:	cfm @	"Hg
Finish Time: 1106	Final Leak Check:	cfm @	"Hg

Project No.: 22235

Operator : RLA

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	SEPTEMBER 20, 2023
Test Location	APC Outlet No. 1
Operator	RM

Project No.:	22235
Page	1 of 2
Probe No.:	AM102.5
Meter Box No.:	5-T1
Impinger Box No.:	5

Pitot Factor	.844	
DGMCF	.963	
Barometric Pressure	29.89	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	154.2	g
WCBDA	8.6	g

Combustion Gas Concentration

Oxygen	8.18	%
Carbon Dioxide	10.83	%
Carbon Monoxide	6.7	ppm

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

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

Nozzle Measurements

1 _____
2 _____
3 _____
4 _____
Average:

Probe Liner Glass / Metal / Teflon / Other N/A

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: SEPT 24/23	Plant: Covanta DYEC	Test No.: 2 Particle Size	
	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	77.56	.85	.35	289	269	250	69	71	72	71	.38	3
2	10.7	81.42	.79	↓	291	260	250	64	70	73	71	.38	3
3	21.1	85.14	.79		291	261	251	60	67	74	72	.38	3
4	31.5	88.88	.77		292	270	251	62	61	76	73	.38	3
5	41.5	92.48	.65		292	260	251	62	62	76	73	.38	3
6	51.2	96.00	.61		291	261	251	55	53	77	74	.38	3
	60.8	99.34											
1	0	99.34	.84		289	260	250	56	53	77	75	.38	3
2	10.7	102.84	.84		291	260	251	56	54	77	75	.38	3
3	21.2	106.65	.81		293	260	250	56	54	79	76	.38	3
4	31.3	110.30	.73		293	261	250	58	55	79	76	.38	3
5	40.9	113.90	.59		293	261	250	58	55	79	76	.38	3
6	50.1	117.20	.57	↓	292	261	250	58	55	80	76	.38	3
	59.2	120.50											

Traverse: 2			
Start Time: 1354	Initial Leak Check: .003 cfm@ 15 "Hg		
Finish Time: 1455	Final Leak Check: cfm@ "Hg		

Traverse: 1			
Start Time: 1500	Initial Leak Check: cfm @ "Hg		
Finish Time: 1555	Final Leak Check: cfm @ "Hg		

READY TO TEST @ 1200 DELAYED TIL 1:30

Project No.: 22235

Operator : [signature]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date	SEPT 20/23
Test Location	APC Outlet No. 1
Operator	DM

Project No.:	22235
Page	1 of 2
Probe No.:	PM10/2.5
Meter Box No.:	T1
Impinger Box No.:	5

Pitot Factor	.844	
DGMCF	.963	
Barometric Pressure	29.88	"Hg
Static Pressure	-10.0	"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	177.3	g
WCBDA	8.7	g

Combustion Gas Concentration

Oxygen	8.10	%
Carbon Dioxide	10.86	%
Carbon Monoxide	7.6	ppm

Measuring Device	MII Numbers
Probe / Pitot	556
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	
Calipers	

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

Nozzle Measurements

1 _____
2 _____
3 _____
4 _____
Average:

Probe Liner Glass / Metal /Teflon / Other N/A

Nozzle Glass / Metal / Other_____

Union None /Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: SEPT 20/23	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 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
								77					
1	0	20.65	.78	.35	293	260	263	250	77	77	78	.38	4
2	10.7	24.65	.75		288	264	251	58	62	77	77	.38	4
3	21.4	28.40	.72		286	264	252	56	61	79	77	.38	4
4	31.9	32.15	.70		286	264	252	57	61	79	77	.38	4
5	41.9	35.66	.59		286	260	252	56	60	79	77	.38	4
6	50.9	38.76	.56		289	260	251	56	61	80	79	.39	4
	59.7	41.83											
1	0	41.83	.85		290	264	252	58	63	81	78	.39	4
2	10.8	45.69	.90		291	264	252	57	61	81	78	.38	4
3	21.1	49.44	.80		292	260	251	57	61	81	79	.38	4
4	31.5	53.20	.79		292	261	250	55	60	81	79	.38	4
5	41.8	57.10	.66		292	260	250	55	61	81	79	.38	4
6	51.2	60.56	.61		290	259	249	56	62	82	79	.38	4
	60.3	63.89											

Traverse: 1					Traverse: 2				
Start Time:	1653	Initial Leak Check: .002	cfm@ 15	"Hg	Start Time:	1755	Initial Leak Check:	cfm @	"Hg
Finish Time:	1753	Final Leak Check:	cfm@	"Hg	Finish Time:	1855	Final Leak Check:	cfm @	"Hg

Project No.: 22235

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Particle Size
Test Date	SEPTEMBER 21, 2023
Test Location	APC Outlet No. 2
Operator	RM

Project No.:	22235
Page	1 of 2
Probe No.:	PM10/2.5
Meter Box No.:	T1
Impinger Box No.:	

Pitot Factor	.844	
DGMCF	0.963	
Barometric Pressure	-11.1 30.04	"Hg
Static Pressure	-11.1	"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	179.5	g
WCBDA	8.0	g

Combustion Gas Concentration

Oxygen	8.44	%
Carbon Dioxide	10.63	%
Carbon Monoxide	12.8	ppm

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

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

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / (Other) N/A

Nozzle Glass / (Metal) / Other_____

Union None / (Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: SEPT 21/23	Plant: Covanta DYEC	Test No.: 1 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	64.04	.68	.35	287	264	250	64	65	69	67	.38	3
2	10.5	67.89	.69		288	265	251	52	55	69	68	.38	3
3	21.3	71.80	.72		288	265	252	52	54	70	68	.38	3
4	31.7	75.52	.70		289	265	251	52	54	72	69	.38	3
5	41.9	79.25	.65		290	265	251	51	53	73	69	.38	3
6	51.5	82.59	.58		290	265	250	52	53	74	70	.38	3
	60.5	85.85											
1	0	85.85	.73		289	265	248	55	57	74	71	.38	3
2	10.9	89.65	.71		290	265	250	52	56	75	72	.38	3
3	21.6	93.63	.68		289	265	249	53	56	76	73	.38	3
4	31.6	97.25	.66		289	265	249	55	57	77	74	.38	3
5	41.2	100.65	.61		288	265	249	56	58	78	74	.38	3
6	50.6	104.01	.53		288	265	249	57	59	78	74	.38	3
	59.5	107.17											

Traverse: 1					Traverse: 2				
Start Time: 9:22	Initial Leak Check: .005	cfm@ 16	"Hg		Start Time: 9:26	Initial Leak Check:	cfm @	"Hg	
Finish Time: 9:22	Final Leak Check:	cfm@	"Hg		Finish Time: 10:26	Final Leak Check:	cfm @	"Hg	

Project No.: 22235

Operator : RM

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	SEPT 21/23
Test Location	APC Outlet No. 2
Operator	DW

Project No.:	22235
Page	1 of 2
Probe No.:	AM10/2.5
Meter Box No.:	T1
Impinger Box No.:	

Pitot Factor	.844	
DGMCF	.963	
Barometric Pressure	30.05	"Hg
Static Pressure	-1.1	"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	160.0	g
WCBDA	10.0	g

Combustion Gas Concentration

Oxygen	8.54	%
Carbon Dioxide	10.50	%
Carbon Monoxide	11.7	ppm

Measuring Device	MII Numbers
Probe / Pitot	356
Trendicator	TEST 1
Control Box	
Incline Manometer	UNIT 1
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

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

Nozzle Measurements

1 _____
2 _____
3 _____
4 _____
Average:

Probe Liner Glass / Metal /Teflon / Other PM

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: SEPT 21/25	Plant: Covanta DYEC	Test No.: 2 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	7.39	.81	.35	289	266	253	68	71	78	76	.38	3
2	10.5	11.06	.86		287	265	252	59	64	77	75	.38	3
3	20.9	14.85	.79		287	266	252	58	63	78	76	.38	3
4	31.0	18.34	.78		288	266	252	59	60	79	76	.38	3
5	41.0	22.00	.72		289	265	252	58	64	80	77	.38	3
6	50.6	25.52	.59		289	265	252	58	64	80	77	.38	3
	59.6	28.90											
1	0	28.90	.81		286	266	253	63	67	81	77	.38	3
2	10.1	32.45	.85		286	264	252	61	62	81	79	.38	3
3	20.4	36.37	.84		286	264	253	60	61	82	79	.38	3
4	30.8	40.10	.77		287	264	253	60	61	82	79	.38	3
5	41.1	43.70	.77		289	264	252	59	60	83	80	.38	3
6	51.0	47.42	.72		290	265	252	59	60	83	80	.38	3
	60.4	51.0											

Traverse: 2			
Start Time: 1121	Initial Leak Check: .003	cfm@ 16	"Hg
Finish Time: 1221	Final Leak Check:	cfm@	"Hg

Traverse: 1			
Start Time: 1225	Initial Leak Check:	cfm @	"Hg
Finish Time: 1325	Final Leak Check:	cfm @	"Hg

1400

Project No.: 22235

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date SEPT 21/23	
Test Location	APC Outlet No. 2
Operator	RM

Project No.:	22235
Page	1 of 2
Probe No.:	PM10/2.5
Meter Box No.:	T1
Impinger Box No.:	

Pitot Factor	.844	
DGMCF	.963	
Barometric Pressure	30.02	"Hg
Static Pressure	-11.1	"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	169.0	g
WCBDA	11.5	g

Combustion Gas Concentration

Oxygen	8.56	%
Carbon Dioxide	10.39	%
Carbon Monoxide	18.7	ppm

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

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

Nozzle Measurements

1 _____
2 _____
3 _____
4 _____
Average:

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: SEP 21/23	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	51.19	.73	.35	283	265	252	61	74	82	80	.39	4
2	10.2	55.05	.74		288	265	253	57	62	80	79	.38	4
3	20.8	58.94	.67		284	264	254	56	60	81	79	.38	4
4	30.9	62.75	.64		287	264	254	56	59	82	80	.38	4
5	40.9	66.29	.57		281	265	253	55	61	83	80	.38	4
6	50.6	69.81	.54		286	265	253	56	61	83	80	.38	4
	59.3	72.92											
1	0	72.92	.77		285	265	253	56	60	83	80	.39	4
2	10.2	76.62	.75		286	265	253	56	62	84	81	.38	4
3	20.7	80.38	.72		286	264	252	56	61	84	82	.38	4
4	31.1	84.13	.66		287	263	252	56	61	84	82	.38	4
5	41.1	87.80	.59		285	264	252	58	65	85	82	.39	4
6	51.1	91.40	.57		282	263	251	57	63	85	82	.38	4
	60.7	94.85											
				V									

Traverse: 2					Traverse: 1			
Start Time: 1426	Initial Leak Check: .003	cfm@ 16	"Hg		Start Time: 1529	Initial Leak Check:	cfm @	"Hg
Finish Time: 1525	Final Leak Check:	cfm@	"Hg		Finish Time: 1650	Final Leak Check:	cfm @	"Hg

Project No.: 22235

Operator :

APPENDIX 6

SVOC Data Sheets
(30 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date September 21, 2023	
Test Location	APC Outlet No. 1
Operator BP	

Project No.:	22235
Page	1 of 5
Probe No.: 6 Series	
Meter Box No.: TEAM #3	
Impinger Box No.: 14	

Pitot Factor	0.848	
DGMCF	0.992	
Barometric Pressure	30.05	"Hg
Static Pressure	-10.78	"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	757.8	g
WCBDA	18.0	g

Combustion Gas Concentration

Oxygen	8.10	%
Carbon Dioxide	10.96	%
Carbon Monoxide	8.4	ppm

Measuring Device	MII Numbers
Probe / Pitot 15E	COE 20113
Trendicator	COE 20093
Control Box	↓
Incline Manometer	↓
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENVCAN
Calipers	CAN 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: Sept 21, 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	11.32	.86	.75	285	250	251	64	47	64	64	2.1	6.5
	5	~~15.05~~ 15.05	.85	.75	290	251	252	64	47	64	64	2.1	6.5
2	10	18.80	.87	.76	291	261	252	58	50	68	70	2.1	7
	15	22.66	.87	.76	291	260	252	55	50	68	71	2.2	7
3	20	26.56	.86	.76	291	255	252	53	49	70	73	2.2	7
	25	30.42	.86	.76	292	260	252	51	49	71	74	2.15	7
4	30	34.25	.82	.75	292	261	252	51	49	71	75	2.15	7
	35	38.02	.85	.76	293	258	252	50	50	72	76	2	7
5	40	41.84	.72	.70	293	251	252	50	50	72	77	2.15	7
	45	45.42	.73	.71	293	254	252	50	47	73	77	1.9	6.5
6	50	49.04	.65	.67	293	256	252	50	48	74	78	1.9	6.5
	55	52.46	.62	.65	293	253	252	50	47	74	78	1.7	6
7	60	55.80	.66	.67	293	253	252	50	47	75	74	1.65	6
	65	59.23	.64	.69	293	251	252	50	46	76	79	1.75	6
8	70	62.73	.71	.70	293	254	252	50	47	76	80	1.8	6
	75	66.24	.75	.72	293	255	252	50	47	76	80	1.9	6.5
9	80	69.92	.78	.73	294	251	252	50	48	77	81	1.9	6.5
	85	73.60	.72	.71	294	251	252	50	49	77	81	2.0	7
10	90	77.19	.72	.71	293	254	252	50	49	77	81	1.9	6.5
	95	80.79	.71	.70	292	261	252	51	49	78	81	1.9	6.5
11	100	84.37	.64	.67	292	254	252	52	48	78	82	1.9	6.5

Traverse: 1					Traverse:				
Start Time: 8:07	Initial Leak Check: 0.004	cfm@ 15	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg	
Finish Time:	Final Leak Check: —	cfm@ —	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg	

Project No.: 22235

Operator : BP

Field Data Sheet

Date: Sept 21, 2023	Plant: Covanta DYEC	Test No.: (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	87.77	.68	.69	286	258	252	52	48	78	82	1.7	6
12	110	91.30	.58	.64	286	257	251	52	44	74	82	1.8	6
	115	94.60	.57	.63	286	253	251	53	50	74	83	1.6	6
	120	97.86											

Traverse: 1			
Start Time:	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 10:07	Final Leak Check: 0.003	cfm@ 15	"Hg

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

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 21, 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	98.21	.81	.75	287	251	251	61	50	74	81	2.1	7.5
	5	102.01	.84	.76	293	262	252	51	50	74	81	2.1	7.5
2	10	105.90	.84	.76	293	268	251	49	49	79	82	2.2	8
	15	109.79	.86	.77	293	261	252	49	50	79	82	2.2	8
3	20	113.67	.80	.75	293	255	251	49	49	80	83	2.2	8
	25	117.47	.79	.74	292	258	251	49	48	86	83	2.1	7.5
4	30	121.22	.79	.74	292	252	251	49	49	80	84	2.1	7.5
	35	124.94	.81	.75	291	252	251	49	50	80	84	2.1	7.5
5	40	128.71	.73	.72	291	255	251	50	51	81	84	2.1	7.5
	45	132.37	.72	.71	292	250	251	56	51	81	84	1.9	7.
6	50	136.01	.68	.69	292	261	251	50	49	82	88	1.9	7
	55	139.52	.65	.68	292	258	251	50	48	81	85	1.8	7
7	60	143.02	.70	.70	292	257	251	50	48	82	85	1.8	7
	65	146.57	.71	.71	292	257	251	50	48	82	85	1.9	7
8	70	150.14	.74	.72	292	250	251	50	47	82	85	1.9	7
	75	153.88	.76	.73	292	259	250	51	47	82	86	2.0	7.5
9	80	157.46	.74	.72	292	256	251	51	47	82	86	2.0	7.5
	85	161.14	.75	.73	292	252	250	51	47	82	86	2.0	7.5
10	90	164.84	.78	.74	291	255	250	51	45	83	86	2.0	7.5
	95	168.54	.84	.77	291	258	250	51	45	83	86	2.1	7.5
11	100	172.40	.74	.72	291	260	250	51	46	83	86	2.2	8

Traverse: 2					Traverse:				
Start Time: 10:14	Initial Leak Check: 0.003	cfm@ 15	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg	
Finish Time:	Final Leak Check: —	cfm@ —	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg	

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Sept 21/2023	Plant: Covanta DYEC	Test No.: SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

*	*	*	*	*	*	*	*	*	*	*	*

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp		Meter Temp		Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
								Outlet °F	Inlet/Trap °F	Outlet °F	Inlet °F		
	105	176.10	.73	.72	284	258	250	62	47	83	86	2.0	7.5
12	110	179.85	.61	.78	284	261	250	53	46	83	87	2.0	7.5
	115	183.63	.6	.66	281	250	249	53	48	84	87	2.2	8
	120	187.11											

Traverse: 2				
Start Time:	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 12:14	Final Leak Check: 0.003	cfm@ 16.5	"Hg

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

Project No.: 22235

Operator : BP

ORTECH Consulting Inc.

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

Project No.:	22235
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	Team 2
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.049	
Barometric Pressure	30.02	"Hg
Static Pressure	-10.78	"H2O
Nozzle Size	.2501	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	742.2	g
WCBDA	18.4	g

Combustion Gas Concentration

Oxygen	8.07	%
Carbon Dioxide	10.86	%
Carbon Monoxide	9.2	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot S/L	B03792
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2495
2	.2505
3	.2505
4	.2500
Average:	.2501

Notes:

Field Data Sheet

Date: Sept. 21 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	16.42	.66	.72	281	258	253	72	49	76	78	1.8	6.5
	5	~~10~~ 19.82	.91	.74	287	258	252	57	42	76	77	2.0	7.5
2	10	23.42	.91	.74	287	258	252	55	44	76	77	2.1	8
	15	27.09	.90	.73	287	258	251	55	47	76	78	2.1	8
3	20	30.74	.90	.73	287	257	252	55	48	77	79	2.15	8
	25	34.49	.86	.72	288	257	252	56	51	77	80	2.05	8
4	30	38.16	.81	.70	288	258	252	56	52	78	80	1.8	8
	35	41.64	.83	.71	288	257	252	56	53	78	81	1.9	8
5	40	45.17	.72	.66	288	257	252	57	55	79	82	1.7	8
	45	48.54	.72	.66	289	257	252	57	57	79	82	1.65	8
6	50	51.84	.63	.62	289	257	253	58	58	79	83	1.45	7
	55	54.94	.64	.62	288	257	252	58	60	80	84	1.45	7
7	60	58.04	.71	.66	288	257	252	59	62	80	84	1.65	7
	65	61.31	.71	.66	289	258	252	58	58	80	85	1.7	7
8	70	64.67	.74	.67	289	257	252	55	47	81	86	1.75	7
	75	68.10	.75	.67	290	257	252	54	46	81	86	1.7	7.5
9	80	71.52	.71	.66	290	257	252	53	44	82	86	1.6	7.5
	85	74.82	.71	.66	289	257	252	53	43	82	86	1.65	7.5
10	90	78.15	.72	.66	288	257	252	53	44	82	86	1.65	7.5
	95	81.47	.71	.66	287	257	253	54	43	83	86	1.65	7.5
11	100	84.81	.63	.62	287	257	253	54	43	83	87	1.45	7

Traverse:					Traverse:				
Start Time: 12:31	Initial Leak Check:	.005	cfm@ 16	"Hg	Start Time:		Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:		cfm@	"Hg	Finish Time:		Final Leak Check:	cfm @	"Hg

Project No.: 22235

Operator :

Field Data Sheet

Date: Sept. 21 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	87,97	.63	.62	286	257	253	55	42	83	87	1.45	7
12	110	91.08	.64	.63	286	258	253	55	42	83	87	1.5	6.5
	115	94.29	.64	.63	285	257	253	56	43	84	87	1.5	6.5
	120	97.44											

Traverse:					Traverse:				
Start Time: —	Initial Leak Check: —	cfm@	"Hg		Start Time: /	Initial Leak Check: /	cfm @	"Hg	
Finish Time: 14:31	Final Leak Check: .005	cfm@	17	"Hg	Finish Time: /	Final Leak Check: /	cfm @	"Hg	

Project No.: 22235

Operator :

Field Data Sheet

Date: Sept. 21 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	97.86	.92	.75	285	258	257	68	46	84	87	2.15	9
	5	101.55	.92	.75	289	259	252	54	44	84	86	2.15	9
2	10	105.34	.91	.75	289	259	254	50	47	84	86	2.15	9
	15	109.14	.91	.75	289	259	253	49	49	84	86	2.1	9
3	20	112.84	.90	.74	284	259	253	44	51	84	86	2.1	9
	25	116.58	.88	.73	284	260	253	48	51	84	86	1.95	9
4	30	120.24	.82	.71	284	260	253	48	55	84	87	1.95	9
	35	123.83	.79	.70	284	260	253	44	53	84	87	1.85	8.5
5	40	127.38	.71	.66	287	260	253	44	48	84	87	1.8	8
	45	130.74	.70	.66	287	260	254	44	45	84	87	1.6	7.5
6	50	134.06	.66	.64	287	259	253	44	45	84	87	1.6	7.5
	55	137.34	.65	.63	286	259	253	50	44	84	88	1.5	7
7	60	140.53	.72	.67	286	259	253	50	46	84	87	1.45	7
	65	143.90	.73	.67	287	259	254	50	44	85	88	1.65	7.5
8	70	147.30	.73	.67	287	259	254	50	45	85	88	1.65	7.5
	75	150.64	.72	.67	286	259	254	50	45	85	87	1.65	7.5
9	80	154.06	.72	.67	286	259	254	51	46	85	89	1.65	7.5
	85	157.46	.68	.65	285	259	254	51	47	85	89	1.65	7.5
10	90	160.73	.70	.66	285	259	253	52	47	86	88	1.5	7
	95	164.05	.73	.67	285	259	253	52	46	86	89	1.6	7.5
11	100	167.47	.62	.62	285	258	254	52	47	86	89	1.65	7.5

Traverse:					
Start Time: 14:40	Initial Leak Check:	.005	cfm@	17	"Hg
Finish Time:	Final Leak Check:	—	cfm@	—	"Hg

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

Project No.: 22235

Operator :

Field Data Sheet

Date: Sept. 21 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	170.58	.63	.63	285	260	253	52	48	86	84	1.4	7
12	110	173.77	.65	.64	285	259	253	52	48	86	84	1.45	7
	115	176.98	.68	.65	285	259	254	53	50	86	84	1.5	7
	120	180.27											

Traverse:					Traverse:			
Start Time:	Initial Leak Check:	—	cfm@ —	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 16:40	Final Leak Check:	0.004	cfm@ 18	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22235

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	September 22 2023
Test Location	APC Outlet No. 1
Operator	

Project No.:	22235
Page	1 of 5
Probe No.:	7- Series
Meter Box No.:	Team 2
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.049	
Barometric Pressure	30.08	"Hg
Static Pressure	~~-2.501~~ -10.78	"H2O
Nozzle Size	.2501	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	700.6	g
WCBDA	18.0	g

Combustion Gas Concentration

Oxygen	8.02	%
Carbon Dioxide	10.98	%
Carbon Monoxide	12.3	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	See Lab
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Site Diagram

Notes:

Field Data Sheet

Date: Sept 12 2024	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	80.66	.91	.73	287	247	246	66	41	69	69	2.1	8
	5	84.23	.87	.71	289	252	250	61	50	69	70	2.1	8
2	10	87.82	.87	.71	289	253	251	61	51	69	70	2.1	8
	15	91.43	.87	.71	289	254	251	61	51	70	71	2.05	8
3	20	95.04	.81	.69	289	255	252	56	50	70	72	1.95	9
	25	98.53	.83	.70	288	255	252	56	48	70	73	2.0	8.5
4	30	102.09	.81	.69	289	256	252	56	51	71	74	1.95	8.5
	35	105.63	.76	.67	288	256	252	55	49	71	75	1.85	8.5
5	40	109.10	.76	.67	288	256	252	55	50	72	75	1.75	8.5
	45	112.41	.72	.65	289	256	252	54	51	72	76	1.6	8.5
6	50	115.64	.68	.63	289	256	252	54	52	72	77	1.5	7.5
	55	118.75	.59	.59	289	256	253	54	52	73	77	1.4	7
7	60	121.76	.60	.60	289	256	252	54	54	73	78	1.45	7
	65	124.79	.62	.61	288	256	253	54	56	74	78	1.5	7
8	70	127.88	.65	.62	288	256	253	54	58	74	79	1.55	7
	75	131.02	.66	.61	288	256	253	55	60	74	79	1.5	7
9	80	134.10	.66	.63	287	256	253	55	62	75	81	1.6	7.5
	85	137.30	.68	.64	287	255	253	56	53	75	80	1.65	7.5
10	90	140.55	.62	.61	288	255	254	57	48	76	80	1.5	7.5
	95	143.69	.64	.62	286	255	254	57	47	76	81	1.4	7
11	100	146.76	.65	.62	286	255	253	56	48	76	81	1.4	7

Traverse: 1						Traverse:					
Start Time: 7:52	Initial Leak Check:	.008	cfm@	17	"Hg	Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg	Finish Time:		Final Leak Check:		cfm @	"Hg

Project No.: 22235

Operator :

Field Data Sheet

Date: Sept. 22 2023	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp		Meter Temp		Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
								Outlet °F	Inlet/Trap °F	Outlet °F	Inlet °F		
	105	149.80	.56	.58	286	255	254	53	50	77	81	1.25	6.5
12	110	152.67	.57	.59	286	255	254	52	45	77	81	1.4	6.5
	115	155.65	.57	.59	286	256	254	51	45	77	82	1.4	6.5
	120	158.64											

Traverse:	1					Traverse:					
Start Time:	—	Initial Leak Check:	—	cfm@	—	"Hg	Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time:	9:52	Final Leak Check:	.002	cfm@	15	"Hg	Finish Time:		Final Leak Check:		cfm @	"Hg

Project No.: 22235

Operator:

Field Data Sheet

Date: Sept. 21 2023	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	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
								60					
1	0	158.92	.81	.70	287	254	256	~~255~~	60	78	81	1.9	7
	5	162.08	.87	.72	287	257	255	51	46	78	81	2.05	9
2	10	165.66	.82	.70	288	257	255	51	47	78	81	1.9	9
	15	169.05	.81	.70	288	257	255	51	46	78	81	1.9	9
3	20	172.62	.81	.70	288	257	255	52	47	78	81	1.9	9
	25	176.27	.80	.69	288	257	255	53	48	79	82	2.0	9
4	30	179.69	.73	.66	288	258	255	53	49	79	82	1.9	9
	35	183.27	.74	.67	288	255	255	54	51	79	82	1.8	9
5	40	186.61	.68	.64	288	258	255	55	45	79	82	1.8	9
	45	190.01	.72	.66	288	258	255	55	43	79	83	1.7	8.5
6	50	193.42	.64	.62	289	258	255	56	44	79	83	1.8	8.5
	55	196.73	.63	.62	289	258	255	56	43	80	84	1.6	8
7	60	199.97	.69	.65	289	257	255	57	43	80	84	1.6	8
	65	203.30	.69	.65	289	257	255	57	43	80	84	1.7	8
8	70	206.76	.74	.67	289	257	255	57	43	81	85	1.7	8
	75	210.05	.72	.66	289	257	255	57	44	81	85	1.8	8
9	80	213.47	.77	.68	289	257	255	57	43	81	85	1.8	8.5
	85	216.98	.74	.67	289	257	255	56	45	81	85	1.9	9
10	90	220.49	.71	.66	289	257	255	56	44	82	85	1.9	9
	95	223.92	.73	.67	289	257	255	57	44	82	85	1.8	8.5
11	100	227.36	.62	.62	289	257	255	57	43	82	85	1.8	8.5

Traverse: 2				Traverse:			
Start Time: 9:59	Initial Leak Check: .002	cfm@ 15	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Static: - 9.78

Project No.: 22235

Operator :

Field Data Sheet

Date: Sept. 21, 2023	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp 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	230.59	.63	.62	282	257	255	58	43	82	86	1.6	8
12	110	233.82	.47	.54	282	257	255	59	43	82	86	1.6	8
	115	236.72	.46	.53	282	257	255	60	42	82	86	1.2	7.5
	120	239.52											

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 11:59	Final Leak Check: .003	cfm@ 16	"Hg

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

Project No.: 22235

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date October 3, 2023	
Test Location	APC Outlet No. 2
Operator BP	

Project No.:	22235
Page	1 of 5
Probe No.:	6 Series
Meter Box No.:	TEAM 3
Impinger Box No.:	6

Pitot Factor	0.843	
DGMCF	0.992	
Barometric Pressure	29.90	"Hg
Static Pressure	-11.1	"H2O
Nozzle Size	.2498	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	795.5	g
WCBDA	19.2	g

Combustion Gas Concentration

Oxygen	8.27	%
Carbon Dioxide	10.72	%
Carbon Monoxide	7.0	ppm

Measuring Device	MII Numbers
Probe / Pitot S11	B03772
Trendicator	COE 2043
Control Box	↓
Incline Manometer	↓
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV CAN
Calipers	CAN 2236

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

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: Oct 3, 2023	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	35.36	.95	.80	289	249	258	68	48	78	78	2.35	6
	5	39.37	.98	.81	294	252	256	54	48	77	78	2.35	6
2	10	43.43	.99	.81	295	254	256	52	48	77	78	2.4	6
	15	47.53	1.0	.82	295	256	257	51	49	77	78	2.4	6.5
3	20	51.60	.94	.79	294	255	257	50	48	78	81	2.4	6.5
	25	55.61	.93	.79	293	255	256	50	48	78	82	2.3	6.5
4	30	59.60	.88	.77	292	255	256	50	48	79	83	2.3	6.5
	35	63.53	.89	.78	292	253	256	51	48	80	84	2.2	6
5	40	67.47	.80	.74	292	255	256	51	47	80	84	2.2	6
	45	71.24	.84	.76	292	255	256	51	47	81	85	2.05	6
6	50	75.09	.76	.72	292	255	255	52	47	82	86	2.1	6
	55	78.82	.73	.71	292	254	256	52	47	82	86	2	6
7	60	82.44	.78	.73	292	253	256	53	46	83	86	1.9	5.5
	65	86.12	.79	.74	292	250	256	54	48	83	87	2	5.5
8	70	89.83	.78	.73	292	250	256	54	48	84	87	2	6
	75	93.58	.78	.73	292	249	255	55	47	84	87	2.05	6
9	80	97.34	.80	.74	292	250	255	55	48	84	88	2	6
	85	101.10	.81	.75	292	249	255	55	47	84	88	2.05	6
10	90	104.89	.81	.75	292	249	255	55	49	85	88	2.1	6
	95	108.67	.80	.74	292	249	256	56	48	85	89	2.1	6
11	100	112.45	.70	.70	292	249	255	57	49	85	89	2.1	6

Traverse: 1					Traverse:				
Start Time: 8:08	Initial Leak Check: 0.003	cfm@ 15	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg	
Finish Time:	Final Leak Check: —	cfm@ —	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg	

Project No.: 22235

Operator: BP

Field Data Sheet

Date: OCT 3, 2023	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 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	116.05	.70	.70	290	248	256	58	48	86	89	1.85	5.5
12	110	119.61	.60	.65	290	249	255	58	48	86	89	1.85	5.5
	115	122.99	.60	.65	290	250	255	58	48	86	89	1.6	5
	120	126.33											

Traverse: 1				Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 10:08	Final Leak Check: 0.004	cfm@ 15	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22235

Operator : BP

Field Data Sheet

Date: Oct 3, 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	126.71	.96	.82	289	252	257	71	48	87	87	2.4	6.5
	5	130.80	.96	.82	292	252	255	61	51	87	88	2.4	7
2	10	134.91	.95	.81	292	255	255	58	52	86	88	2.4	7
	15	139.02	.93	.80	292	255	255	57	51	86	88	2.4	7
3	20	143.10	.86	.77	291	255	255	57	50	86	89	2.35	7
	25	147.08	.87	.78	291	255	255	57	50	86	89	2.2	6.5
4	30	151.01	.85	.77	291	255	255	57	50	86	90	2.2	6.5
	35	154.93	.85	.77	291	254	255	58	51	86	90	2.2	6.5
5	40	158.82	.77	.73	291	254	255	57	50	87	90	2.2	6.5
	45	162.56	.77	.73	292	252	255	56	49	87	90	2	6
6	50	166.27	.65	.67	292	250	255	56	48	87	90	2	6
	55	169.71	.66	.68	292	249	255	56	45	87	90	1.7	5.5
7	60	173.20	.72	.71	293	249	255	56	47	87	90	1.8	5.5
	65	176.82	.72	.71	293	250	255	56	46	87	91	1.9	6
8	70	180.40	.76	.72	293	251	255	56	46	88	91	1.9	6
	75	184.10	.74	.72	292	252	254	56	47	88	91	2.0	6
9	80	187.76	.71	.70	292	251	255	57	47	88	91	2.0	6
	85	191.31	.72	.71	292	251	254	57	48	88	91	1.9	6
10	90	194.85	.73	.71	293	250	255	57	49	88	91	1.9	6
	95	198.46	.71	.70	292	250	255	57	50	88	91	1.9	6
11	100	202.06	.60	.65	291	250	254	57	50	88	91	1.9	6

Traverse: 2					
Start Time: 10:19	Initial Leak Check:	0.002	cfm@	15	"Hg
Finish Time:	Final Leak Check:	—	cfm@	—	"Hg

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

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Oct 3, 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	205.43	.55	.62	290	250	254	58	51	88	91	1.65	5.5
12	110	208.61	.57	.63	290	250	254	58	53	88	91	1.5	5.5
	115	211.79	.57	.63	290	250	254	54	55	88	91	1.5	5.5
	120	215.02											

Traverse: 2					Traverse:				
Start Time:	Initial Leak Check:		cfm@	"Hg	Start Time:	Initial Leak Check:		cfm @	"Hg
Finish Time: 12:19	Final Leak Check:	0.002	cfm@	15 "Hg	Finish Time:	Final Leak Check:		cfm @	"Hg

Project No.: 22235

Operator : BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date October 3, 2023	
Test Location	APC Outlet No. 2
Operator BP	

Project No.:	22235
Page	1 of 5
Probe No.:	6 Series
Meter Box No.:	TEAM #3
Impinger Box No.:	4

Pitot Factor	0.848	
DGMCF	0.972	
Barometric Pressure	29.86	"Hg
Static Pressure	-11.1	"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	759.3	g
WCBDA	17.8	g

Combustion Gas Concentration

Oxygen	8.26	%
Carbon Dioxide	10.77	%
Carbon Monoxide	9.3	ppm

Measuring Device	MII Numbers
Probe / Pitot 15 E	COE 20113
Trendicator	COE 20193
Control Box	↓
Incline Manometer	↓
Comb.Gas.Analyzer	
Micromanometer	
Barometer	EW CAN
Calipers	CAN 22136

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

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: Oct 3, 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	19.34	.90	.80	289	251	260	68	57	87	87	2.3	8
	5	17.34	.91	.81	293	257	251	68	48	87	87	2.3	8
2	10	23.33	.90	.80	293	259	260	63	48	87	87	2.3	8
	15	27.35	.89	.80	293	250	262	61	47	87	86	2.3	8
3	20	31.38	.87	.79	292	258	260	57	48	88	89	2.3	8
	25	35.40	.87	.79	292	254	258	55	48	87	89	2.3	8
4	30	39.41	.83	.77	292	257	257	55	48	87	90	2.3	8
	35	43.36	.83	.77	292	257	257	55	48	87	90	2.2	8
5	40	47.29	.75	.73	292	252	258	55	50	87	91	2.2	8
	45	50.99	.72	.72	291	259	258	55	50	88	91	2	7.5
6	50	54.68	.66	.69	291	255	258	55	51	86	91	2	7.5
	55	58.23	.67	.69	292	255	257	56	52	88	91	1.8	7
7	60	61.75	.67	.70	291	254	257	56	54	88	92	1.8	7
	65	65.26	.68	.70	291	257	257	54	53	89	92	1.8	7
8	70	68.84	.71	.72	291	253	257	52	52	89	92	1.9	7
	75	72.48	.70	.71	291	260	257	51	53	89	92	1.9	7
9	80	76.12	.72	.72	291	249	257	51	54	89	93	1.9	7
	85	79.78	.71	.72	290	254	257	51	54	88	93	1.95	7
10	90	83.43	.69	.71	290	258	257	51	54	90	93	1.95	7
	95	87.08	.74	.73	290	259	257	52	49	90	93	1.9	7
11	100	90.76	.73	.73	290	259	257	52	50	90	93	2.0	7

Traverse: 1					
Start Time: 12:56	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.: 22235

Operator: BP

Field Data Sheet

Date: Oct 3, 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	94.43	.73	.73	289	244	257	53	50	90	93	2	7.5
12	110	98.13	.62	.67	289	250	257	53	52	90	94	2	7.5
	115	101.59	.61	.67	284	253	257	54	50	91	94	1.7	7
	120	105.04											

Traverse: 1					
Start Time:	Initial Leak Check:		cfm@		"Hg
Finish Time: 1456	Final Leak Check:	0.003	cfm@	15	"Hg

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

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Oct 3, 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	105.35	.87	.80	289	250	259	67	51	91	91	2.3	9
	5	109.36	.87	.79	292	253	257	56	51	91	92	2.3	9
2	10	113.39	.87	.79	292	249	256	56	52	91	92	2.3	9
	15	117.40	.92	.82	292	250	257	56	54	90	92	2.3	9
3	20	121.52	.88	.80	293	255	258	57	52	91	93	2.4	10
	25	125.59	.84	.78	293	254	258	57	48	91	93	2.3	9.5
4	30	129.57	.81	.77	292	252	257	58	48	90	93	2.2	9
	35	133.51	.74	.76	292	258	257	55	49	91	93	2.2	9
5	40	137.35	.70	.71	292	254	257	53	49	91	93	2.1	9
	45	141.02	.76	.74	293	252	257	52	49	91	94	1.9	8
6	50	144.73	.67	.70	293	257	257	52	48	91	94	2	8
	55	148.28	.65	.69	293	250	257	52	50	91	94	1.8	7.5
7	60	151.77	.74	.73	293	255	257	52	51	91	94	1.8	7.5
	65	155.45	.74	.73	294	259	256	52	47	92	95	2	8
8	70	159.16	.74	.73	295	249	256	52	47	92	94	2	8
	75	162.90	.74	.73	295	255	256	52	47	92	94	2	8
9	80	166.62	.78	.75	295	259	256	52	49	92	95	2	8
	85	170.42	.77	.75	294	258	256	52	49	92	95	2.1	9
10	90	174.20	.75	.74	294	253	256	52	50	92	95	2.1	9
	95	177.93	.72	.72	294	254	256	53	48	92	95	2.0	8.5
11	100	181.64	.64	.68	290	257	256	53	47	92	95	2.0	8.5

Traverse: 2						Traverse:					
Start Time: 15:05	Initial Leak Check:	0.004	cfm@	15	"Hg	Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time:	Final Leak Check:	—	cfm@	—	"Hg	Finish Time:		Final Leak Check:		cfm @	"Hg

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Oct 3, 2023	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 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	185.15	.61	.67	~~290~~	257	256	53	48	92	95	1.8	8
12	110	188.58	.61	.67	290	251	256	53	47	92	95	1.7	7.5
	115	191.98	.63	.68	290	250	255	53	48	93	95	1.7	7.5
	120	195.48											

Traverse: 2				
Start Time:	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 17:05	Final Leak Check: 0.002	cfm@ 15	"Hg

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

Project No.: 22235

Operator: BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date October 4, 2023	
Test Location	APC Outlet No. 2
Operator BP	

Project No.:	22235
Page	1 of 5
Probe No.: 6 Series	
Meter Box No.:	TEAM #3
Impinger Box No.:	1

Pitot Factor	0.843	
DGMCF	0.992	
Barometric Pressure	29.88	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	.2498	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	761.2	g
WCBDA	19.2	g

Combustion Gas Concentration

Oxygen	8.32	%
Carbon Dioxide	10.80	%
Carbon Monoxide	10.6	ppm

Measuring Device	MII Numbers
Probe / Pitot S/I	B03742
Trendicator	COE 20093
Control Box	↓
Incline Manometer	↓
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV CAN
Calipers	CAN 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: Oct 4, 2023	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 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	96.43	.83	.75	291	250	254	67	53	78	78	2.1	6
	5	100.21	.85	.75	293	257	255	66	53	78	78	2.1	6
2	10	103.96	.84	.75	292	256	255	54	53	78	79	2.1	6
	15	107.70	.87	.76	292	251	257	48	54	78	80	2.1	6.5
3	20	111.58	.86	.76	293	250	257	46	56	78	81	2.2	7
	25	115.45	.85	.76	293	255	257	45	57	79	82	2.15	7
4	30	119.29	.80	.74	293	252	256	45	57	79	83	2.15	7
	35	123.03	.79	.73	293	251	256	45	56	80	84	2.05	7
5	40	126.74	.75	.71	293	256	256	46	55	80	84	2.05	7
	45	130.36	.75	.71	294	251	255	46	54	81	85	1.95	6.5
6	50	133.98	.69	.68	294	252	255	47	54	81	85	1.95	6.5
	55	137.48	.67	.68	294	256	255	47	54	82	86	1.8	6
7	60	140.94	.72	.70	293	251	255	47	53	82	86	1.8	6
	65	144.49	.74	.71	293	250	255	47	55	83	87	1.9	6
8	70	148.09	.77	.73	294	250	254	48	55	83	87	1.95	6.5
	75	151.78	.77	.73	294	254	255	47	55	84	88	2	7
9	80	155.48	.75	.72	294	252	255	46	53	84	88	2	7
	85	159.15	.75	.72	294	249	255	46	50	84	89	1.95	6.5
10	90	162.78	.75	.72	293	251	254	46	51	85	90	1.95	6.5
	95	166.41	.75	.72	293	255	255	46	51	85	89	1.95	6.5
11	100	170.06	.73	.71	291	255	254	46	52	86	89	2	7

Traverse: 1					Traverse:				
Start Time: 8:16	Initial Leak Check: 0.004	cfm@ 15	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg	
Finish Time:	Final Leak Check: —	cfm@ —	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg	

Project No.: 22235

Operator: BP

Field Data Sheet

Date: Oct 4, 2023	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter 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	173.70	.72	.71	291	257	255	47	52	86	90	1.95	7
12	110	177.29	.61	.65	290	254	254	47	52	86	90	1.9	6.5
	115	180.65	.60	.65	290	253	255	47	50	86	90	1.65	6
	120	184.04											

Traverse: 1					
Start Time:	Initial Leak Check:	—	cfm@	✓	"Hg
Finish Time: 10:16	Final Leak Check:	0.003	cfm@	15	"Hg

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

Project No.: 22235

Operator : BP

Field Data Sheet

Date: Oct 4, 2023	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter 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	184.34	.90	.79	290	253	257	63	52	87	87	2.3	8
	5	188.31	.91	.79	293	252	251	48	56	87	84	23	8
2	10	192.31	.88	.78	293	253	254	48	56	87	84	2.3	8
	15	196.28	.89	.79	292	251	254	48	55	87	90	2.25	8
3	20	200.26	.87	.78	292	254	254	50	55	87	91	2.3	8
	25	204.20	.87	.78	293	255	254	51	55	87	90	2.25	8
4	30	208.15	.82	.76	293	252	253	51	57	87	91	2.25	8
	35	212.07	.80	.75	294	260	254	51	54	88	91	2.15	7.5
5	40	215.83	.70	.70	292	250	253	50	53	88	91	2.1	7
	45	219.37	.70	.70	292	254	254	51	52	88	92	1.8	6.5
6	50	222.92	.62	.66	293	256	254	51	53	88	92	1.8	6.5
	55	226.29	.62	.66	293	252	253	51	51	89	92	1.7	6
7	60	229.65	.67	.68	292	249	254	51	51	89	92	1.7	6
	65	233.12	.68	.69	292	251	253	51	52	89	93	1.8	6.5
8	70	236.64	.71	.71	292	253	253	51	52	89	93	1.8	6.5
	75	240.23	.70	.70	292	255	254	51	52	89	93	1.9	7
9	80	243.80	.71	.71	292	255	253	52	52	90	93	1.85	7
	85	247.36	.71	.71	292	256	254	52	53	90	93	1.85	7
10	90	250.92	.69	.70	291	255	253	53	53	90	93	1.9	7
	95	254.48	.68	.69	291	256	253	53	55	90	93	1.9	7
11	100	258.01	.67	.66	290	255	253	53	53	90	93	1.85	7

Traverse: 2					
Start Time: 10:24	Initial Leak Check: 0.003	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.: 22235

Operator: BP

Field Data Sheet

Date: Oct 4, 2023	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	261.38	.63	.67	270	252	253	54	51	90	93	1.7	6.5
12	110	264.71	.65	.68	270	250	253	54	50	90	93	1.7	6.5
	115	268.11	.67	.69	270	252	253	54	52	90	94	1.75	6.5
	120	271.59											

Traverse: 2				Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 12:24	Final Leak Check: 0.002	cfm@ 15	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22235

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	September 19 2023
Test Location	APC Outlet No. 1
Operator	TT

Project No.:	22235
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 2
Impinger Box No.:	12

Pitot Factor	.843	
DGMCF	1.049	
Barometric Pressure	29.70	"Hg
Static Pressure	-11.76	"H2O
Nozzle Size	.2501	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	185.7	g
WCBDA	13.7	g

Combustion Gas Concentration

Oxygen	8.50	%
Carbon Dioxide	10.60	%
Carbon Monoxide	5.8	ppm

Measuring Device	MII Numbers
Probe / Pitot S11	B03772
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

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

Nozzle Measurements	
1	.2495
2	.2505
3	.2503
4	.2500
Average:	.2501

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Sept. 19 2023	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	121.37	.73	.66	282	248	264	61	141	64	65	1.4	3
	5	24.42	.76	.63	285	253	263	48	147	64	65	1.5	3
	10	27.86	.77	.67	285	249	264	46	147	64	65	1.6	3
	15	30.64	.80	.68	286	249	264	46	148	65	66	1.8	3
	20	34.05	.86	.71	287	249	264	48	148	65	67	2.05	3.5
	25	37.67	.84	.70	289	250	264	50	149	65	69	2	3.5
	30	41.17	.84	.70	289	250	264	50	149	65	69	2	3.5
	35	44.42	.81	.69	290	250	265	54	148	66	71	2.05	4
	40	47.93	.80	.68	290	251	265	54	149	67	71	2.05	4
	45	51.41	.80	.68	290	251	265	54	149	67	72	2.05	4
	50	54.88	.80	.69	290	251	265	55	150	68	72	1.9	4
	55	58.67	.74	.66	290	251	265	56	149	68	73	1.8	4
	60	62.14											

Traverse: 1				
Start Time: 8:18	Initial Leak Check: .004	cfm@ 17	"Hg
Finish Time: 9:18	Final Leak Check: .004	cfm@ 17	"Hg

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

-11.76

Project No.: 22235

Operator : TT

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	September 19, 2023
Test Location	APC Outlet No. 1
Operator	

Project No.:	22235
Page	1 of 2
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.049	
Barometric Pressure	29.70	"Hg
Static Pressure	-11.76	"H2O
Nozzle Size	.2501	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	200.9	g
WCBDA	11.4	g

Combustion Gas Concentration

Oxygen	8.19	%
Carbon Dioxide	10.80	%
Carbon Monoxide	4.9	ppm

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

Nozzle Measurements
1 ______
2 ______
3 ______
4 ______
Average:

Probe Liner (Glass) / Metal /Teflon / Other__________

Nozzle (Glass) / Metal / Other__________

Union None /Metal /(Teflon) / Other__________

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Sept. 19, 2023	Plant: Covanta DYEC	Test No.: 2 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	62.53	.81	.69	285	253	265	63	148	69	70	2.0	4
	5	66.13	.83	.70	288	254	257	46	136	69	71	2.05	4
	10	69.62	.83	.70	288	254	257	46	136	69	71	2.05	4
	15	73.37	.84	.70	290	252	259	42	146	69	70	1.9	4
	20	76.90	.87	.71	290	252	259	41	146	69	71	2.0	4
	25	80.48	.87	.71	291	252	259	41	147	69	72	2.0	4
	30	84.08	.84	.70	291	252	259	42	147	70	73	1.9	4
	35	87.63	.84	.70	291	252	259	42	147	70	74	1.9	4
	40	91.17	.83	.70	290	252	259	42	148	70	74	1.9	4
	45	94.70	.80	.69	289	252	259	43	148	71	75	1.85	4
	50	98.18	.80	.69	289	252	258	43	148	71	75	1.85	4
	55	101.66	.80	.69	288	253	259	45	149	71	76	1.85	4
	60	105.13											

Traverse: 1				
Start Time: 10:01	Initial Leak Check: .005	cfm@ 18	"Hg
Finish Time: 11:01	Final Leak Check: .004	cfm@ 18	"Hg

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

Project No.: 22235

Operator : TT

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	September 19 2023
Test Location	APC Outlet No. 1
Operator	TT

Project No.:	22235
Page	1 of 2
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.049	
Barometric Pressure	29.70	"Hg
Static Pressure	- 11.76	"H2O
Nozzle Size	.2501	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	185.1	g
WCBDA	13.4	g

Combustion Gas Concentration

Oxygen	8.60	%
Carbon Dioxide	10.41	%
Carbon Monoxide	5.7	ppm

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

Nozzle Measurements

1 ____________

2 ____________

3 ____________

4 ____________

Average:

Probe Liner (Glass) / Metal /Teflon / Other__________

Nozzle (Glass) / Metal / Other__________

Union None /Metal / (Teflon) / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Sept. 19, 2021	Plant: Covanta DYEC	Test No.: 3 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	5.45	.81	.69	288	254	261	60	137	72	74	1.9	4
	5	9.01	.84	.71	289	254	259	53	144	72	74	1.95	4
	10	12.58	.82	.70	290	254	260	48	145	72	74	1.9	4
	15	16.13	.79	.69	290	253	260	47	145	72	75	1.85	3.5
	20	19.60	.78	.68	289	253	260	47	147	72	75	1.85	3.5
	25	23.08	.78	.68	289	253	260	48	147	73	76	1.85	3.5
	30	26.54	.78	.68	289	254	260	49	148	73	77	1.85	3.5
	35	30.01	.79	.69	289	254	260	50	147	73	78	1.85	3.5
	40	33.47	.79	.69	288	254	260	51	148	74	78	1.85	3.5
	45	36.96	.78	.69	288	254	261	52	149	74	79	1.85	3.5
	50	40.48	.76	.68	287	254	261	54	148	74	79	1.8	3.5
	55	43.92	.78	.69	287	254	261	57	148	75	79	1.85	3.5
	60	47.42											

Traverse:					
Start Time: 11:17	Initial Leak Check: .002	cfm@ 18	"Hg		
Finish Time: 12:17	Final Leak Check: .002	cfm@ 18	"Hg		

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

Project No.: 22235

Operator : TT

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	M26A
Test Date	September 20 2023
Test Location	APC Outlet No. 2
Operator	

Project No.:	22235
Page	1 of 2
Probe No.:	7 Series
Meter Box No.:	Team 2
Impinger Box No.:	12

Pitot Factor	.843	
DGMCF	1.049	
Barometric Pressure	29.90	"Hg
Static Pressure	-10.88	"H2O
Nozzle Size	.2501	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	166.5	g
WCBDA	12.0	g

Combustion Gas Concentration

Oxygen	8.10	%
Carbon Dioxide	10.95	%
Carbon Monoxide	12.8	ppm

Measuring Device	MII Numbers
Probe / Pitot S/L	BC3772
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2495
2	.2505
3	.2505
4	.2500
Average:	.2501

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Sept. 20 2023	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp 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	76.08	.70	.63	277	250	256	53	111	61	61	1.5	3
	5	79.12	.70	.63	282	253	255	44	106	61	62	1.5	3
	10	82.18	.72	.64	283	253	257	42	108	62	63	1.7	3
	15	85.43	.72	.64	283	254	257	42	112	62	64	1.7	3
	20	88.70	.73	.65	284	254	256	43	129	62	65	1.75	3
	25	92.05	.71	.64	284	254	259	44	131	62	67	1.55	3
	30	95.23	.67	.62	284	254	257	45	132	63	68	1.5	3
	35	98.35	.67	.63	283	255	257	46	133	64	69	1.55	3
	40	101.54	.67	.63	283	255	258	47	133	64	70	1.55	3
	45	104.69	.69	.64	283	255	258	48	133	65	70	1.6	3
	50	107.91	.71	.65	284	255	258	50	133	65	71	1.65	3
	55	111.16	.68	.63	284	255	258	51	134	66	72	1.55	3
	60	114.31											

Traverse:						Traverse:					
Start Time: 8:14	Initial Leak Check:	.001	cfm@	15	"Hg	Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time: 9:14	Final Leak Check:	.002	cfm@	13	"Hg	Finish Time:		Final Leak Check:		cfm @	"Hg

Project No.: 22235

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	September 20 2023
Test Location	APC Outlet No. 2
Operator	

Project No.:	22235
Page	1 of 2
Probe No.:	
Meter Box No.:	Team 2
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.049	
Barometric Pressure	29.91	"Hg
Static Pressure	-10.88	"H2O
Nozzle Size	.2501	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	164.6	g
WCBDA	9.0	g

Combustion Gas Concentration

Oxygen	7.84	%
Carbon Dioxide	11.06	%
Carbon Monoxide	9.5	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	See
Control Box	
Incline Manometer	Tex
Comb.Gas.Analyzer	
Micromanometer	/
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Notes:

Field Data Sheet

Date: Sept. 20 2023	Plant: Covanta DYEC	Test No.: 2 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	14.65	.70	.64	284	257	258	57	139	67	69	1.6	3.5
	5	17.85	.68	.63	285	257	259	42	135	67	69	1.55	3.5
	10	21.03	.68	.63	285	257	260	41	136	67	69	1.55	3.5
	15	24.17	.70	.64	285	257	259	41	136	68	70	1.65	3.5
	20	27.43	.70	.64	285	257	259	42	136	68	72	1.65	3.5
	25	30.70	.69	.64	285	256	259	42	137	68	73	1.65	3.5
	30	33.93	.76	.67	285	256	260	43	136	69	74	1.8	3.5
	35	37.33	.74	.66	286	256	259	43	137	69	75	1.75	3.5
	40	40.70	.71	.65	287	256	260	44	137	70	76	1.7	4
	45	44.05	.71	.65	287	256	260	45	137	71	76	1.65	4
	50	47.34	.71	.65	287	256	260	46	138	71	77	1.65	4
	55	50.63	.71	.65	287	256	260	47	147	72	77	1.65	4
	60	53.92											

Traverse:					
Start Time: 9:56	Initial Leak Check:	.002	cfm@	15	"Hg
Finish Time: 10:56	Final Leak Check:	.004	cfm@	14	"Hg

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

Project No.: 22235

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	September 20 2023
Test Location	APC Outlet No. 2
Operator	TT

Project No.:	22235
Page	1 of 2
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.049	
Barometric Pressure	29.90	"Hg
Static Pressure	-10.88	"H2O
Nozzle Size	.2501	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	169.8	g
WCBDA	9.3	g

Combustion Gas Concentration

Oxygen	7.99	%
Carbon Dioxide	10.88	%
Carbon Monoxide	62.2	ppm

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

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

Nozzle Measurements

1 _____
2 _____
3 _____
4 _____
Average:

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Sept. 20 2023	Plant: Covanta DYEC	Test No.: 3 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	54.39	.70	.64	285	258	262	61	142	73	75	1.6	3
	5	57.70	.70	.65	287	258	254	46	123	72	73	1.65	3
	10	60.96	.71	.65	287	258	254	43	128	72	74	1.65	3
	15	64.27	.71	.65	287	258	253	43	132	72	74	1.6	3
	20	67.54	.70	.65	287	257	253	44	145	73	76	1.6	3
	25	70.82	.68	.64	286	257	253	44	144	73	77	1.5	3
	30	74.0	.74	.67	286	257	253	45	146	74	78	1.7	3
	35	77.37	.71	.66	286	257	254	46	146	74	79	1.6	3.5
	40	80.67	.71	.66	287	257	254	47	145	75	80	1.6	3.5
	45	83.96	.71	.66	288	257	254	48	144	75	81	1.6	3.5
	50	87.27	.67	.64	288	257	254	50	145	76	82	1.5	3.5
	55	90.50	.67	.64	288	257	254	51	145	77	82	1.5	3.5
	60	93.76											

Traverse:					
Start Time: 13:42	Initial Leak Check: .002	cfm@ 15	"Hg		
Finish Time: 14:42	Final Leak Check: .002	cfm@ 14	"Hg		

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

Project No.: 22235

Operator :

APPENDIX 8

VOST Field Data Sheets
(6 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organics Sampling Train
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
1	1.004	3138.7	3160.8	22.10	30.03	0.50	24.4	22.34	0.0223
2	1.004	3161.1	3182.0	20.90	30.04	0.50	27.2	20.94	0.0209
3	1.004	3182.3	3203.2	20.90	30.05	0.50	28.8	20.84	0.0208
4	1.004	3203.7	3225.9	22.20	30.05	0.50	30.9	21.98	0.0220

* Dry at 25°C and 1 atmosphere

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organics Sampling Train
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
1	1.004	337.6	359.7	22.10	29.90	0.50	28.8	21.92	0.0219
2	1.004	360.3	383.4	23.10	29.90	0.50	31.4	22.71	0.0227
3	1.004	83.7	109.5	25.80	29.91	0.50	33.6	25.20	0.0252
4	1.004	10.2	33.1	22.90	29.91	0.50	34.7	22.29	0.0223

* Dry at 25°C and 1 atmosphere

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition: Compliance		Control Box ID: Vost #3
Test location: APC Outlet No. 1	DGMCF: 1.004		Operator: JG
Date: SEPTEMBER 2, 2023	Barometric Pressure: "Hg		Project No: 22235
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 12A, 12B	

L2752081-66.

PBAR = 30.03

Test 1 Start Time: 0806	Initial Leak Check NDL @ 15 "Hg	Sample ID: 1A, 1B			
Test 1 End Time: 0846	Final Leak Check NDL @ 15 "Hg	Lab ID: L2752081-55			

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	3138.7	129	141	8	19	.5	2.0
5	3142.2	130	142	8	22	.5	2.0
10	3145.1	131	142	8	23	.5	2.0
15	3148.0	132	142	8	25	.5	2.0
20	3150.6	132	142	8	25	.5	2.0
25	3153.4	133	142	8	26	.5	2.0
30	3156.8	133	142	8	26	.5	2.0
35	3158.1	133	142	9	27	.5	2.0
40	3160.8	133	142	9	27	.5	2.0

PBAR = 30.04

Test 2 Start Time: 0852	Initial Leak Check NDL @ 16 "Hg	Sample ID: 2A, 2B			
Test 2 End Time: 0932	Final Leak Check NDL @ 15 "Hg	Lab ID: -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	3161.1	132	141	9	25	0.5	2.0
5	3164.4	133	141	9	26	0.5	2.0
10	3166.6	133	141	9	26	0.5	2.0
15	3169.0	133	141	9	26	0.5	2.0
20	3171.7	133	142	8	28	0.5	2.0
25	3174.8	133	141	8	28	0.5	2.0
30	3177.2	133	141	8	28	0.5	2.0
35	3179.6	133	142	7	29	0.5	2.0
40	3182.0	133	142	6	29	0.5	2.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition: Compliance		Control Box ID: Vost 3
Test location: APC Outlet No. 1	DGMCF: 1.004		Operator: JG
Date: September 21, 2023	Barometric Pressure: "Hg		Project No: 22235
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID:	12A, 12B

PBAR = 30.05

Test 3 Start Time: 09:37	Initial Leak Check NDL @ 15 "Hg				Sample ID: 3A, 3B
Test 3 End Time: 10:17	Final Leak Check NDL @ 15 "Hg				Lab ID: -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	3187.3	133	141	7	26	0.5	2.0
5	3185.2	133	141	6	26	0.5	2.0
10	3187.6	133	141	7	29	0.5	2.0
15	3190.1	133	141	7	29	0.5	2.0
20	3192.9	133	141	7	29	0.5	2.0
25	3195.6	134	142	7	30	0.5	2.0
30	3198.1	134	142	7	30	0.5	2.0
35	3200.8	134	141	8	30	0.5	2.0
40	3203.2	134	141	8	30	0.5	2.0

PBAR = 30.05

Test 4 Start Time: 10:27	Initial Leak Check NDL @ 15 "Hg				Sample ID: 4A 4B
Test 4 End Time: 11:02	Final Leak Check @ "Hg				Lab ID: -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	3203.7	133	140	7	28	0.5	4.0
5	3206.8	133	140	7	28	0.5	4.0
10	3209.0	134	141	9	31	0.5	4.0
15	3210.2	134	141	9	31	0.5	6
20	3213.8	134	141	10	32	0.5	6
25	3216.9	134	140	10	32	0.5	6
30	3219.7	134	141	11	32	0.5	6
35	3222.8	134	141	12	32	0.5	6.0
40	3225.9	134	141	12	32	0.5	6.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition: Compliance		Control Box ID: VOST #3
Test location: APC Outlet No. 2	DGMCF: 1.004		Operator: JG
Date: October 13, 2023	Barometric Pressure:	"Hg	Project No: 22235
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak		Field Blank Pair ID:

PBAR 29.90

Test 3 Start Time: 0809	Initial Leak Check NDL @ 15 "Hg				Sample ID: 14A, 14B
Test 3 End Time: 0849	Final Leak Check NDL @ 15 "Hg				Lab ID: L2752081-68

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	337.6	131	142	12	26	0.5	4
5	340.6	132	143	14	27	0.5	4
10	343.5	133	144	10	28	0.5	4
15	346.6	134	144	9	28	0.5	4
20	349.3	134	144	9	30	0.5	4
25	352.1	135	142	8	30	0.5	4
30	355.0	135	141	8	30	0.5	4
35	357.8	135	140	8	30	0.5	4
40	359.7	136	140	8	30	0.5	4

PBAR = 29.90

Test 4 Start Time: 0850	Initial Leak Check NDL @ 15 "Hg				Sample ID: 15A, 15B
Test 4 End Time: 0933	Final Leak Check @ "Hg				Lab ID: 69

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	360.3	135	140	10	30	0.5	5
5	363.4	136	141	10	31	0.5	5
10	366.6	136	141	8	31	0.5	5
15	368.9	135	141	8	31	0.5	5
20	372.1	135	141	8	32	0.5	5
25	375.0	05	140	6	32	0.5	5
30	377.7	135	140	6	32	0.5	5
35	380.4	140	140	6	32	0.5	5
40	383.4	135	140	6	32	0.5	5

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition: Compliance		Control Box ID: Vost #3
Test location: APC Outlet No. 2	DGMCF: 1.004		Operator: LG
Date: OCTOBER 3rd, 2023	Barometric Pressure: "Hg		Project No: 22235
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 7A, 7B	

L22-52081-61

PBAR=29.91

Test 1 Start Time: 0938		Initial Leak Check NDL @ 15 "Hg				Sample ID: 16A, 16B	
Test 1 End Time: 1018		Final Leak Check NDL @ 15 "Hg				Lab ID: 70	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	83.7	135	140	10	32	0.5	5
5	87.9	135	140	8	32	0.5	5
10	89.8	135	140	7	34	0.5	5
15	93.1	135	140	6	34	0.5	5
20	96.6	135	140	6	34	0.5	5
25	99.9	135	140	6	34	0.5	5
30	103.3	135	140	6	34	0.5	5
35	106.50	135	140	6	34	0.5	5
40	109.50	135	140	6	34	0.5	5

PBAR=29.91

Test 2 Start Time: 1022		Initial Leak Check NDL @ 15 "Hg				Sample ID: 8A 8B	
Test 2 End Time: 1102		Final Leak Check NDL @ 15 "Hg				Lab ID: 62	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	10.2	135	140	10	34	0.5	4.0
5	13.0	135	140	10	34	0.5	4.0
10	15.7	135	140	8	34	0.5	4.0
15	18.4	135	140	7	35	0.5	4.0
20	21.6	135	140	6	35	0.5	4.0
25	23.7	135	140	6	35	0.5	4.0
30	28.0	135	140	6	35	0.5	4.0
35	30.8	135	140	6	35	0.5	4.0
40	32.1	135	140	6	35	0.5	4.0

APPENDIX 9

Aldehydes Field Data Sheets
(8 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Aldehydes
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H_2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm^3)*
1	1.004	3226.2	3261.8	35.60	30.05	0.50	32.4	35.07	0.0351
2	1.004	3262.8	3298.8	36.00	30.05	0.50	32.5	35.45	0.0354
3	1.004	3300.0	3336.0	36.00	30.03	0.50	34.9	35.16	0.0352

* Dry at 25°C and 1 atmosphere.

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Aldehydes
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H_2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm^3)*
1	1.004	33.80	67.50	33.70	29.90	0.50	33.5	32.91	0.0329
2	1.004	70.15	106.50	36.35	29.89	0.50	34.9	35.34	0.0353
3	1.004	8.00	43.60	35.60	29.87	0.50	36.3	34.42	0.0344

* 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:	SEPTEMBER 21, 2023
Project No.:	22235

Measuring Device	MII Number
Control Module	Vac #3 A12010
Barometer	Env Canada

Barometric Pressure:	30.05	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	3226.2	133	140	8	29	0.5	2.0
5	3229.7	134	141	10	32	0.5	2.0
10	3232.6	134	141	10	32	0.5	2.0
15	3235.5	134	141	10	32	0.5	2.0
20	3239.0	134	141	10	32	0.5	2.0
25	3241.5	134	141	10	33	0.5	2.0
30	3244.3	134	141	10	33	0.5	2.0
35	3247.0	134	141	10	33	0.5	2.0
40	3250.0	134	141	10	33	0.5	2.0
45	3253.9	134	141	10	33	0.5	2.0
50	3255.8	134	141	10	33	0.5	2.0
55	3258.7	134	141	10	33	0.5	2.0
60	3261.8	134	141	10	33	0.5	2.0

Start Time:	420		
Finish Time:	1220		
Initial Leak Check:	<.01 ~~CFM~~	Lpm @	15 " Hg
Final Leak Check:		Lpm @	" Hg

DGMCF:	1.004
Sample Volume:	35.6
Average DGM Temp:	32.38
Average DGM Δ H:	0.5

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.:	
Test location:	APC Outlet No. 1
Date:	SEPTEMBER 2, 2023
Project No.:	22235

Measuring Device	MII Number
Control Module	Vost3 A120ko.
Barometer	Env Canada

Barometric Pressure:	30.05	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	3262.8	133	140	18	29	0.5	2.0
5	3266.0	133	140	10	29	0.5	2.0
10	3270.6	134	140	9	32	0.5	2.0
15	3273.4	134	140	9	32	0.5	2.0
20	3276.0	134	140	9	33	0.5	2.0
25	3281.8	134	141	9	33	0.5	2.0
30	3284.4	135	141	9	33	0.5	2.0
35	3285.4	135	141	9	33	0.5	2.0
40	3286.8	134	141	9	33	0.5	2.0
45	3289.8	135	141	9	34	0.5	2.0
50	3292.8	135	141	9	34	0.5	2.0
55	3295.7	135	141	9	34	0.5	2.0
60	3298.8	135	141	9	34	0.5	2.0

Start Time:	1234		
Finish Time:	1334		
Initial Leak Check:	<0.01	Lpm @ 15	" Hg
Final Leak Check:	<0.01	Lpm @ 15	" Hg

DGMCF:	1.004.
Sample Volume:	05.
Average DGM Temp:	32.54
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.:	3
Test location:	APC Outlet No. 1
Date:	SEPTEMBER 21, 2023
Project No.:	22235

Measuring Device	MII Number
Control Module	Vost 3 A-120 10.
Barometer	Env Canada

Barometric Pressure:	30.03	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	3300.0	135	141	10	33	0.5	20.
5	3304.2	135	141	10	33	0.5	20.
10	3307.0	~~142~~ 135	141	10	33	0.5	20.
15	3309.8	137	144	10	40	0.5	20
20	3312.9	137	149	9	41	0.5	20
25	3316.7	135	140	9	34	0.5	20
30	3318.6	135	141	9	34	0.5	20
35	3321.5	136	140	9	34	0.5	20
40	3324.3	135	140	10	34	0.5	20.
45	3327.3	135	140	10	34	0.5	20
50	3329.8	135	140	10	34	0.5	20
55	3333.0	136	140	10	34	0.5	20
60	3336.0	135	141	9	35	0.5	20.

Start Time:	1337		
Finish Time:	1437		
Initial Leak Check:	<.01	Lpm @ 15	" Hg
Final Leak Check:	<.01	Lpm @ 15	" Hg

DGMCF:	1.004
Sample Volume:	56.
Average DGM Temp:	34.85
Average DGM Δ H:	0.5

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.:	1
Test location:	APC Outlet No. 2
Date:	October 12, 2023
Project No.:	22235 3

Measuring Device	MII Number
Control Module	Vaisala A120K0
Barometer	Env Canada

Barometric Pressure:	29.90	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	33.8	134	139	19	31	0.5	0.5
5	36.2	134	139	19	31	0.5	0.5
10	40.2	135	141	17	34	0.5	0.5
15	43.8	135	141	17	34	0.5	0.5
20	45.7	135	141	17	34	0.5	0.5
25	48.4	135	141	17	34	0.5	0.5
30	51.2	136	141	16	34	0.5	0.5
35	53.9	136	141	16	34	0.5	0.5
40	56.5	135	141	15	34	0.5	0.5
45	59.4	136	141	16	34	0.5	0.5
50	62.0	136	141	16	34	0.5	0.5
55	64.8	136	141	16	34	0.5	0.5
60	67.5	136	141	15	34	0.5	0.5

Start Time:	1115		
Finish Time:	1215		
Initial Leak Check:	2.01	Lpm @ 15	" Hg
Final Leak Check:	2.01	Lpm @ 15	" Hg

DGMCF:	1.004
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. 2
Date:	October ~~10~~ 31, 2023
Project No.:	22235

Measuring Device	MII Number
Control Module	Vaisala #3 A12010
Barometer	Env Canada

Barometric Pressure:	29.89	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	70.15	134	140	12	34	0.5	2.0
5	75.6	134	140	12	34	0.5	2.0
10	78.1	134	139	12	35	0.5	2.0
15	80.8	134	140	12	35	0.5	2.0
20	83.1	134	140	12	35	0.6	2.0
25	86.0	134	140	10	35	0.5	2.0
30	88.7	134	140	10	35	0.6	2.0
35	92.2	134	140	10	35	0.5	2.0
40	95.0	134	140	10	35	0.5	2.0
45	97.5	134	140	10	35	0.5	2.0
50	98.8	134	140	10	35	0.5	2.0
55	103.50	134	140	10	35	0.5	2.0
60	106.50	134	140	10	35	0.6	2.0

Start Time:	1219		
Finish Time:	1319		
Initial Leak Check:	<.01	Lpm @ 15	" Hg
Final Leak Check:	<.01	Lpm @ 15	" Hg

DGMCF:	1.004
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.:	3
Test location:	APC Outlet No. 3
Date:	OCTOBER ~~FB~~ 3, 2023
Project No.:	22235

Measuring Device	MII Number
Control Module	Vost #3 A120100
Barometer	Env Canada

Barometric Pressure:	29.87	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	8.0	141 ⇔ 135		20	34	0.5	2.0
5	10.2	135 141	141	20	34	0.4	2.0
10	13.1	135+	141	15	34	0.5	2.0
15	16.1	135	140	15	37	0.5	2.0
20	19.0	135	140	14	37	0.5	2.0
25	21.9	135	140	13	37	0.5	2.0
30	24.7	135	140	12	37	0.6	2.0
35	27.6	135	140	10	37	0.6	2.0
40	30.7	135	140	10	37	0.5	2.0
45	33.9	135	140	10	37	0.5	2.0
50	36.4	135	140	10	37	0.5	2.0
55	39.3	135	140	10	37	0.5	2.0
60	42.6	135	140	10	37	0.5	2.0

Start Time:	13:22		
Finish Time:	14:22		
Initial Leak Check:	C.01	Lpm @ 16	" Hg
Final Leak Check:	C.01	Lpm @ 16	" Hg

DGMCF:	1.004
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

APPENDIX 10

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

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

Client: Covanta
Project Number: 22235
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22235-J2924

ORTECH Sample ID 23-22235-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
1	Sept 19/23	#1 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
2				Probe Rinse Nitric	0.1N Nitric	Metals
3				Filter	Particulate	Particulate & Metals
4				Impinger 1-4 Solution	Nitric/Peroxide	Metals
5				Impinger 5-6 Solution	Acid. KMnO4	Mercury
6				Impinger 5-6 Rinse	8N HCl	Mercury
7		#1 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
8				Probe Rinse Nitric	0.1N Nitric	Metals
9				Filter	Particulate	Particulate & Metals
10				Impinger 1-4 Solution	Nitric/Peroxide	Metals
11				Impinger 5-6 Solution	Acid. KMnO4	Mercury
12				Impinger 5-6 Rinse	8N HCl	Mercury
13		#1 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
14				Probe Rinse Nitric	0.1N Nitric	Metals
15				Filter	Particulate	Particulate & Metals
16				Impinger 1-4 Solution	Nitric/Peroxide	Metals
17				Impinger 5-6 Solution	Acid. KMnO4	Mercury
18				Impinger 5-6 Rinse	8N HCl	Mercury
19	Sept 20/23	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

22-Sept-23 8:15

8.04 °C

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

Client: Covanta
Project Number: 22235
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22235-J2924

ORTECH Sample ID 23-22235-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
25	21 Sept 23	#2 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
26				Probe Rinse Nitric	0.1N Nitric	Metals
27				Filter	Particulate	Particulate & Metals
28				Impinger 1-4 Solution	Nitric/Peroxide	Metals
29				Impinger 5-6 Solution	Acid. KMnO4	Mercury
30				Impinger 5-6 Rinse	8N HCl	Mercury
31		#2 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
32				Probe Rinse Nitric	0.1N Nitric	Metals
33				Filter	Particulate	Particulate & Metals
34				Impinger 1-4 Solution	Nitric/Peroxide	Metals
35				Impinger 5-6 Solution	Acid. KMnO4	Mercury
36				Impinger 5-6 Rinse	8N HCl	Mercury
37		#2 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
38				Probe Rinse Nitric	0.1N Nitric	Metals
39				Filter	Particulate	Particulate & Metals
40				Impinger 1-4 Solution	Nitric/Peroxide	Metals
41				Impinger 5-6 Solution	Acid. KMnO4	Mercury
42				Impinger 5-6 Rinse	8N HCl	Mercury
43		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: 09-22-23

Relinquished To: Date:

8-4 °C

22-Sept-23 8:15

Client: Covanta
Job/Report Number: 22235
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22235-J2924

ORTECH Sample ID 23-22235-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
1	Sept 20/23	1	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
2				PM 2.5 cyclone Rinse	Acetone	Particulate
3				PM 2.5 exit & connectors	Acetone	Particulate
4				Back up filter	filter	Particulate
5				Impinger Soln & rinse	Water	Particulate
6				Secondary Filter	Filter	Particulate*
7				Impinger Rinse	Acetone & Hexane	Particulate
8		2	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
9				PM 2.5 cyclone Rinse	Acetone	Particulate
10				PM 2.5 exit & connectors	Acetone	Particulate
11				Back up filter	filter	Particulate
12				Impinger Soln & rinse	Water	Particulate
13				Secondary Filter	Filter	Particulate*
14				Impinger Rinse	Acetone & Hexane	Particulate
15		3	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
16				PM 2.5 cyclone Rinse	Acetone	Particulate
17				PM 2.5 exit & connectors	Acetone	Particulate
18				Back up filter	filter	Particulate
19				Impinger Soln & rinse	Water	Particulate
20				Secondary Filter	Filter	Particulate*
21				Impinger Rinse	Acetone & Hexane	Particulate
22	Sept 21/23	1	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
23				PM 2.5 cyclone Rinse	Acetone	Particulate
24				PM 2.5 exit & connectors	Acetone	Particulate
25				Back up filter	filter	Particulate
26				Impinger Soln & rinse	Water	Particulate
27				Secondary Filter	Filter	Particulate*
28				Impinger Rinse	Acetone & Hexane	Particulate
29		2	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
30				PM 2.5 cyclone Rinse	Acetone	Particulate
31				PM 2.5 exit & connectors	Acetone	Particulate
32				Back up filter	Filter	Particulate
33				Impinger Soln & rinse	Water	Particulate
34				Secondary Filter	Filter	Particulate*
35				Impinger Rinse	Acetone & Hexane	Particulate

8:15

8-4 °C

22-Sept-23

Client: Covanta
Job/Report Number: 22235
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22235-J2924

ORTECH Sample ID 23-22235-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
36	Sept 21/23	3	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
37				PM 2.5 cyclone Rinse	Acetone	Particulate
38				PM 2.5 exit & connectors	Acetone	Particulate
39				Back up filter	Filter	Particulate
40				Impinger Soln & rinse	Water	Particulate
41				Secondary Filter	Filter	Particulate*
42				Impinger Rinse	Acetone & Hexane	Particulate
43		Blank	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
44				PM 2.5 cyclone Rinse	Acetone	Particulate
45				PM 2.5 exit & connectors	Acetone	Particulate
46				Back up filter	filter	Particulate
47				Impinger Soln & rinse	Water	Particulate
48				Secondary Filter	Filter	Particulate*
49				Impinger Rinse	Acetone & Hexane	Particulate
50		Blank	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
51				PM 2.5 cyclone Rinse	Acetone	Particulate
52				PM 2.5 exit & connectors	Acetone	Particulate
53				Back up filter	Filter	Particulate
54				Impinger Soln & rinse	Water	Particulate
55				Secondary Filter	Filter	Particulate*
56				Impinger Rinse	Acetone & Hexane	Particulate

Note: *To be included in condensible particulate analysis as per US EPA Method 202.

Relinquished To: _____ Date: _____

Relinquished By: Jay JC Date: 09.22.23

8:15

8.4 °C

22 - Sept - 23

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

Client: Covanta
Job/Report Number: 22235
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: 22235-J2924

ORTECH Sample ID 23-22235-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 03, 2023 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: 22235
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: 22235-J2924

ORTECH Sample ID 23-22235-SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
21	Oct 3, 2023	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	Oct 3, 2023	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	Oct 4, 2023	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	Oct 3, 2023	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

8.3°C

Refer to letter dated August 03, 2023 for lists of analytes.

Relinquished To: Sara Burton Date: 5-Oct-2023 14:20

Relinquished By: Date: Oct 6, 2023

ORTECH Consulting Inc. - Sample Log

Acid Gases

Covanta

Client: Covanta
Job/Report Number: 22235
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22235-J2924

ORTECH Sample ID 23-22235-M26A-	Sample Date	Location	Sample Description	Media	Initial Volume(ml)	Final Volume(ml)	Sample Analysis
1	19-Sep-23	APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	501	HCl, HF & Ammonia
2		APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	502	HCl, HF & Ammonia
3		APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	495	HCl, HF & Ammonia
4	20-Sep-23	APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	486	HCl, HF & Ammonia
5		APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	465	HCl, HF & Ammonia
6		APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	484	HCl, HF & Ammonia
Blank 1		APC # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	300	HCl, HF & Ammonia
Blank 2		APC # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	302	HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By: _____ Date: 09-22-23

Relinquished To: _____ Date: _____

22-Sep-23 8:15

8.4°C

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

Client: Covanata DYEC
Job/Report Number: 22235
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22235-J2924

Test Number	Test Location	ORTECH Sample ID 23-22235-	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	09.21.23	ALD-1	112.5	165.5	166.2	179.9	189.7
2 ✓	APC Outlet #1	ALD-2	"	ALD-2	117.2	161.2	162.9	177.8	187.2
3 ✓	APC Outlet #1	ALD-3	"	ALD-3	112.8	163.9	166.1	182.0	194.0
Blank 1 ✓	APC Outlet #1	Blank 1	"	ALD-4	112.6	164.6	164.6	194.9	208.9
1 ✓	APC Outlet #2	ALD-5	10.16.23	ALD-5	113.6	166.7	167.9	176.1	192.5
2 ✓	APC Outlet #2	ALD-6	"	ALD-6	111.9	164.7	165.6	191.1	210.2
3 ✓	APC Outlet #2	ALD-7	"	ALD-7	113.0	163.7	165.5	182.6	200.3
Blank 2 ✓	APC Outlet #2	Blank 2	"	ALD-8	112.2	165.1	165.1	178.8	191.6
				~~ALD-9~~	~~112.9~~	~~162.3~~			
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				~~ALD-10~~	~~112.5~~	~~162.6~~			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: ______________________ Date: ______________________

Relinquished to: Aaron Bartan Date: 5-Oct-2023 14:20

13.6°C

22- ~~Aug~~ Sept-23 8:15

8.4°C

ORTECH Consulting Inc. - Sample Log
VOCs

Client: Covanta
Project Number: 22235
Received By: C Belore
Job Assigned To: ALS
Quote / PO : 22235-J2924

Test Location	Test Number	ORTECH Sample ID 23-22235-VOST-		Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	1	A,B	09.21.23	Tenax and Tenax/Charcoal	VOCs
	2	2	A,B	↓	Tenax and Tenax/Charcoal	VOCs
	3	3	A,B		Tenax and Tenax/Charcoal	VOCs
	4	4	A,B		Tenax and Tenax/Charcoal	VOCs
	Field Blank	12	A,B		Tenax and Tenax/Charcoal	VOCs

Refer to letter dated Aug 3, 23 for lists of analytes.

Custody Relinquished by: [signature] Date: 09.22.23

Custody Received by: Date:

22-Sept-23
8.4 °C
8:15

ORTECH Consulting Inc. - Sample Log
VOCs

Client: Covanta
Project Number: 22235
Received By: C Belore
Job Assigned To: ALS
Quote / PO : 22235-J2924

Test Location	Test Number	ORTECH Sample ID 23-22235-VOST-	Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	A,B		Tenax and Tenax/Charcoal	VOCs
	2	A,B		Tenax and Tenax/Charcoal	VOCs
	3	A,B		Tenax and Tenax/Charcoal	VOCs
	4	A,B		Tenax and Tenax/Charcoal	VOCs
	Field Blank	A,B		Tenax and Tenax/Charcoal	VOCs
# 2 APC Outlet	1	14 A,B 14		Tenax and Tenax/Charcoal	VOCs
	2	15 A,B 15		Tenax and Tenax/Charcoal	VOCs
	3	16 A,B 16		Tenax and Tenax/Charcoal	VOCs
	4	8 A,B 8		Tenax and Tenax/Charcoal	VOCs
	Field Blank	7 A,B 7		Tenax and Tenax/Charcoal	VOCs
	Trip Blank			Tenax and Tenax/Charcoal	VOCs

Refer to letter dated Aug 3, 23 for lists of analytes.

Custody Relinquished by: Jay [signature] Date: Oct 5, 2023

8.7°C

Custody Received by: Aara Burton Date: 5-oct-2023 14:20

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.: 22235
Date: SEPT 19/23
Test No.: 1
Test Location: UNIT 1

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	219.5
After Act. Rinse:	330.0
Total TS1:	110.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	220.0
After 0.1N HNO_3 Rinse:	434.0
Total TS2:	214.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: QZ10056

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	23-22235-PM-
TS1 (Probe Rinse-Acetone)	1
TS2 (Probe Rinse-0.1N HNO_3)	2
TS3 (Filter)	3
TS4 (Impinger 1-4 Sol'n-HNO_3)	4
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	5
TS5-B (Impinger 5,6 Rinse-HCl)	6

Train Loaded By:
Train Recovered By: DT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	587.3
Final Wt:	743.0
1 Gain:	155.7
Colour:	Clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	539.7
Initial Wt:	641.5
Final Wt:	879.0
2 Gain:	237.5
Colour:	Clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	644.0
Initial Wt:	792.5
Final Wt:	885.0
3 Gain:	132.5
Colour:	Clear

Impinger #4 Empty	
Empty Wt:	620.0
Final Wt:	676.0
4 Gain:	56.0
Colour:	Clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	407.5
w/ Imp. 1-4 Soln:	1200.0
After HNO_3 Rinse:	1309.0
Total TS4:	901.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	643.0
Initial Wt:	761.5
Final Wt:	774.5
5 Gain:	13.0
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	665.7
Initial Wt:	773.5
Final Wt:	781.5
6 Gain:	8.0
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	407.7
With Imp. 5&6 Soln:	650.9
After $KMnO_4$ Rinse:	762.0
7 After100g H_2O Rinse:	862.4
Total TS5-A:	454.7

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.0
With 150 mL DI H_2O:	430.0
After HCl Rinse:	476.7
After DI H_2O Rinse:	611.5
Total TS5-B:	329.5

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: 602.7

WCBDA= 7: 27.7

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	967.0
Final Wt:	992.7
7 Gain:	25.7

Impinger Box ID: 9

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: SEPT 19/23
Test No.: 2
Test Location: UNIT 1

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	219.0
After Act. Rinse:	348.5
Total TS1:	129.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	220.5
After 0.1N HNO_3 Rinse:	364.5
Total TS2:	144.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 02.10059

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:	588.5
Final Wt:	779.6
1 Gain:	191.1
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	661.5
Initial Wt:	760.0
Final Wt:	921.3
2 Gain:	161.3
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	583.2
Initial Wt:	687.5
Final Wt:	868.0
3 Gain:	180.5
Colour:	clear

Impinger #4 Empty	
Empty Wt:	565.0
Final Wt:	574.0
4 Gain:	9.0
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	408.0
w/ Imp. 1-4 Soln:	1158.5
After HNO_3 Rinse:	1244.0
Total TS4:	836.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	645.4
Initial Wt:	753.0
Final Wt:	763.5
5 Gain:	10.5
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	626.5
Initial Wt:	743.8
Final Wt:	754.2
6 Gain:	10.4
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	408.0
With Imp. 5&6 Soln:	651.3
After $KMnO_4$ Rinse:	798.0
After100g H_2O Rinse:	860.0
Total TS5-A:	452.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	253.0
With 150 mL DI H_2O:	472.0
After HCl Rinse:	483.6
After DI H_2O Rinse:	659.0
Total TS5-B:	376.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	956.5
Final Wt:	982.7
7 Gain:	26.2

Impinger Box ID: 10

SAMPLE IDENTIFICATION	23-22235-PM-
TS1 (Probe Rinse-Acetone)	7
TS2 (Probe Rinse-0.1N HNO_3)	8
TS3 (Filter)	9
TS4 (Impinger 1-4 Sol'n-HNO_3)	10
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	11
TS5-B (Impinger 5,6 Rinse-HCl)	12

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

CWTR = 1 to 6: 562.8

WCBDA= 7: 26.2

Train Loaded By:
Train Recovered By:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: SEPT 19/23
Test No.: 3
Test Location: UNIT 1

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	219.0
After Act. Rinse:	321.5
Total TS1:	102.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	220.0
After 0.1N HNO_3 Rinse:	378.8
Total TS2:	158.8

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 02.0060

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:	587.3
Final Wt:	714.3
1 Gain:	127.0
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	535.7
Initial Wt:	640.8
Final Wt:	869.3
2 Gain:	228.5
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	644.0
Initial Wt:	~~620~~ 761.0
Final Wt:	838.5
3 Gain:	77.5
Colour:	clear

Impinger #4 Empty	
Empty Wt:	620.0
Final Wt:	711.5
4 Gain:	91.5
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	408.0
w/ Imp. 1-4 Soln:	1150.0
After HNO_3 Rinse:	1278.0
Total TS4:	870.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	693.0
Initial Wt:	756.8
Final Wt:	758.5
5 Gain:	1.7
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	665.7
Initial Wt:	779.0
Final Wt:	783.0
6 Gain:	4.0
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	407.8
With Imp. 5&6 Soln:	636.7
After $KMnO_4$ Rinse:	748.3
After100g H_2O Rinse:	849.5
Total TS5-A:	441.7

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.0
With 150 mL DI H_2O:	432.0
After HCl Rinse:	483.2
After DI H_2O Rinse:	632.0
Total TS5-B:	350.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

769.7

Impinger #7 Silica Gel	
Initial Wt:	~~772.7~~
Final Wt:	796.7
7 Gain:	27.0

Impinger Box ID: 9

SAMPLE IDENTIFICATION	23-22235-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: 530.2

WCBDA= 7: 27.0

Train Loaded By:
Train Recovered By:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: Oct 20/17
Test No.: 1
Test Location: UNIT 2

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	281.0
After Act. Rinse:	387.7
Total TS1:	106.7

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.0
After 0.1N HNO_3 Rinse:	464.0
Total TS2:	182.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: QZ10061

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:	588.5
Final Wt:	739.0
1 Gain:	150.5
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	691.5
Initial Wt:	760.2
Final Wt:	940.8
2 Gain:	180.6
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	583.0
Initial Wt:	691.5
Final Wt:	842.0
3 Gain:	150.5
Colour:	clear

Impinger #4 Empty	
Empty Wt:	565.0
Final Wt:	579.0
4 Gain:	14.0
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	408.0
w/ Imp. 1-4 Soln:	1116.0
After HNO_3 Rinse:	
Total TS4:	

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	645.4
Initial Wt:	762.0
Final Wt:	772.5
5 Gain:	10.5
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	626.3
Initial Wt:	737.0
Final Wt:	742.7
6 Gain:	5.7
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	408.0
With Imp. 5&6 Soln:	649.3
After $KMnO_4$ Rinse:	761.6
After100g H_2O Rinse:	963.0
Total TS5-A:	455.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	287.5
With 150 mL DI H_2O:	432.0
After HCl Rinse:	471.3
After DI H_2O Rinse:	645.5
Total TS5-B:	363.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	948.0
Final Wt:	969.6
7 Gain:	21.6

Impinger Box ID: 10

SAMPLE IDENTIFICATION	23-22235-PM-
TS1 (Probe Rinse-Acetone)	25
TS2 (Probe Rinse-0.1N HNO_3)	26
TS3 (Filter)	27
TS4 (Impinger 1-4 Sol'n-HNO_3)	28
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	29
TS5-B (Impinger 5,6 Rinse-HCl)	30

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

CWTR = 1 to 6: 511.8

WCBDA= 7: 21.6

Train Loaded By:
Train Recovered By: DF

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: SEPT 20/23
Test No.: 2
Test Location: Unit 2

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	250.0
After Act. Rinse:	381.5
Total TS1:	131.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.0
After 0.1N HNO_3 Rinse:	417.0
Total TS2:	136.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: RZ10562

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:	587.3
Final Wt:	784.7
1 Gain:	197.4
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	537.7
Initial Wt:	640.0
Final Wt:	877.0
2 Gain:	237.0
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	644.0
Initial Wt:	746.8
Final Wt:	830.0
3 Gain:	83.2
Colour:	clear

Impinger #4 Empty	
Empty Wt:	620.0
Final Wt:	626.7
4 Gain:	6.7
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	407.5
w/ Imp. 1-4 Soln:	1134.5
After HNO_3 Rinse:	1244.5
Total TS4:	837.0

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:	762.0
5 Gain:	5.0
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	665.5
Initial Wt:	773.0
Final Wt:	779.0
6 Gain:	6.0
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	407.5
With Imp. 5&6 Soln:	634.0
After $KMnO_4$ Rinse:	743.3
After100g H_2O Rinse:	943.0
Total TS5-A:	435.5

MARK FLUID LEVEL
SEAL & LABEL T55-A

CONTAINER TS5-B	
Empty Wt:	282.0
With 150 mL DI H_2O:	432.0
After HCl Rinse:	473.5
After DI H_2O Rinse:	621.5
Total TS5-B:	339.5

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	996.7
Final Wt:	1018.0
7 Gain:	21.3

Impinger Box ID: 9

SAMPLE IDENTIFICATION	23-22235-PM-
TS1 (Probe Rinse-Acetone)	31
TS2 (Probe Rinse-0.1N HNO_3)	32
TS3 (Filter)	33
TS4 (Impinger 1-4 Sol'n-HNO_3)	34
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	35
TS5-B (Impinger 5,6 Rinse-HCl)	36

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

CWTR = 1 to 6: 535.3

WCBDA= 7: 21.3

Train Loaded By: DT
Train Recovered By:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: Sept 20/23
Test No.: 3
Test Location: Unit 2

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.0
After Act. Rinse:	313.5
Total TS1:	103.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	280.5
After 0.1N HNO_3 Rinse:	435.0
Total TS2:	154.5

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: R2100 64

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:	538.5
Final Wt:	699.0
1 Gain:	110.5
Colour:	Clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	691.5
Initial Wt:	760.0
Final Wt:	949.3
2 Gain:	189.3
Colour:	Clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	593.0
Initial Wt:	685.0
Final Wt:	898.5
3 Gain:	213.5
Colour:	Clear

Impinger #4 Empty	
Empty Wt:	565.0
Final Wt:	569.5
4 Gain:	4.5
Colour:	Clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	407.5
w/ Imp. 1-4 Soln:	1131.7
After HNO_3 Rinse:	1237.6
Total TS4:	829.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	645.5
Initial Wt:	762.0
Final Wt:	775.0
5 Gain:	13.0
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	626.5
Initial Wt:	731.5
Final Wt:	738.7
6 Gain:	7.2
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	407.0
With Imp. 5&6 Soln:	646.0
After $KMnO_4$ Rinse:	755.7
After100g H_2O Rinse:	860.5
Total TS5-A:	453.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.5
With 150 mL DI H_2O:	431.5
After HCl Rinse:	477.8
After DI H_2O Rinse:	643.5
Total TS5-B:	362.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	969.6
Final Wt:	993.0
7 Gain:	23.4

Impinger Box ID: 10

SAMPLE IDENTIFICATION	23-22235-PM-
TS1 (Probe Rinse-Acetone)	37
TS2 (Probe Rinse-0.1N HNO_3)	38
TS3 (Filter)	39
TS4 (Impinger 1-4 Sol'n-HNO_3)	40
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	41
TS5-B (Impinger 5,6 Rinse-HCl)	42

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

CWTR = 1 to 6: 538.0

WCBDA= 7: 23.4

Train Loaded By: DT
Train Recovered By:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	22235
Date:	Sept 20/23
Test No.:	
Test Location:	BLANK

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	509.0
Total TS1:	227.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.0
After 0.1N HNO_3 Rinse:	512.5
Total TS2:	230.5

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: Q210474

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:	407.5
w/ Imp. 1-4 Soln:	623.5
After HNO_3 Rinse:	745.5
Total TS4:	338.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
5 Gain:	
Colour:	

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	408.0
With Imp. 5&6 Soln:	635.2
After $KMnO_4$ Rinse:	747.4
After100g H_2O Rinse:	845.5
Total TS5-A:	437.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.5
With 150 mL DI H_2O:	432.5
After HCl Rinse:	477.0
After DI H_2O Rinse:	606.0
Total TS5-B:	323.5

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

SAMPLE IDENTIFICATION	23-22235-PM-
TS1 (Probe Rinse-Acetone)	19
TS2 (Probe Rinse-0.1N HNO_3)	20
TS3 (Filter)	21
TS4 (Impinger 1-4 Sol'n-HNO_3)	22
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	23
TS5-B (Impinger 5,6 Rinse-HCl)	24

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 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:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: SEPT 20/23
Test No.:
Test Location: BLANK 2

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.2
After Act. Rinse:	451.9
Total TS1:	169.7

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.3
After 0.1N HNO_3 Rinse:	537.9
Total TS2:	256.6

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 02 0475

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	23-22235-PM-
TS1 (Probe Rinse-Acetone)	43
TS2 (Probe Rinse-0.1N HNO_3)	44
TS3 (Filter)	45
TS4 (Impinger 1-4 Sol'n-HNO_3)	46
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	47
TS5-B (Impinger 5,6 Rinse-HCl)	48

Train Loaded By: DT
Train Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty

Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 HNO_3/H_2O_2

Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2

Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Empty

Empty Wt:	
Final Wt:	
4 Gain:	
Colour:	

CONTAINER TS4 WEIGHTS

Empty Wt:	407.5
w/ Imp. 1-4 Soln:	618.0
After HNO_3 Rinse:	752.5
Total TS4:	345.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$

Empty Wt:	
Initial Wt:	
Final Wt:	
5 Gain:	
Colour:	

Impinger # 6 $KMnO_4/H_2SO_4$

Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger 5 & 6

CONTAINER TS5-A & TSS-B

CONTAINER TS5-A

Empty Wt:	408.0
With Imp. 5&6 Soln:	630.7
After $KMnO_4$ Rinse:	744.0
After100g H_2O Rinse:	847.0
Total TS5-A:	439.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B

Empty Wt:	281.0
With 150 mL DI H_2O:	431.0
After HCl Rinse:	484.5
After DI H_2O Rinse:	645.0
Total TS5-B:	364.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

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

CWTR = 1 to 6:

WCBDA= 7:

Impinger 7

Impinger #7 Silica Gel

Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

APPENDIX 12

Inorganics Analytical Reports
(28 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
ALS WO#:	L2752768		Mississauga, ON L5J 2Y4
Date of Report	12-Oct-23		Canada
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 5 (GN 4-Oct-2023)

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		23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1		23-22235-PM-(7 THRU 12) TEST#2 APC OUTLET#1		23-22235-PM-(13 THRU 18) TEST#3 APC OUTLET#1		23-22235-PM-(19 THRU 24) BLANK#1		23-22235-PM-(25 THRU 30) TEST#1 APC OUTLET#2	
ALS Sample ID		L2752768-1		L2752768-2		L2752768-3		L2752768-4		L2752768-5	
Matrix		Stack		Stack		Stack		Stack		Stack	
Analysis type		Sample		Sample		Sample		Sample		Sample	
Sampling Date/Time		19-Sep-23		19-Sep-23		19-Sep-23		20-Sep-23		20-Sep-23	
Date of Receipt		22-Sep-23		22-Sep-23		22-Sep-23		22-Sep-23		22-Sep-23	
PM via Gravimetric Analysis Method 5	**LOR**										
	mg	**mg**		**mg**		**mg**		**mg**		**mg**	
Filter Particulate Matter	0.8	0.20	J	0.20	J	0.80	J	1.2		0.70	J
Acetone Particulate Matter	0.4	1.5		3.60		1.90		0.800		1.20	
	g	**g**		**g**		**g**		**g**		**g**	
Acetone Mass	0.02	108		125		92.3		220		105	

ALS Environmental

Sample Analysis Summary Report

Sample Name		23-22235-PM-(31 THRU 36) TEST#2 APC OUTLET#2		23-22235-PM-(37 THRU 42) TEST#3 APC OUTLET#2	23-22235-PM-(43 THRU 48) BLANK#2		MB
ALS Sample ID		L2752768-6		L2752768-7	L2752768-8		L2752768-MB
Matrix		Stack		Stack	Stack		n/a
Analysis type		Sample		Sample	Sample		Sample
Sampling Date/Time		20-Sep-23		20-Sep-23	20-Sep-23		n/a
Date of Receipt		22-Sep-23		22-Sep-23	22-Sep-23		n/a
PM via Gravimetric Analysis Method 5	**LOR**						
	mg	**mg**		**mg**	**mg**		**mg**
Filter Particulate Matter	0.8	0.50	J	<	0.50	J	<
Acetone Particulate Matter	0.4	1.90		0.900	0.700		<
	g	**g**		**g**	**g**		**g**
Acetone Mass	0.02	99.3		89.8	169		30.9

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 Consulting Inc.
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2752773		Mississauga, ON L5J 2Y4
Date of Report	5-Oct-23		Canada
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS:

F as HF Anion Analyzed via Ion Chromatography USEPA Method 26/26A (GN 3-Oct-23)
Cl as HCl Anion Analyzed via Ion Chromatography USEPA Method 26/26A (GN 3-Oct-23)
Ammonia, Total (as NH_3) via Ion Chromatography USEPA Method CTM-027 (GN 2-Oct-23)

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	23-22235-M26A-1 APC OUTLET#1	23-22235-M26A-2 APC OUTLET#1	23-22235-M26A-3 APC OUTLET#1	23-22235-M26A-4 APC OUTLET#2	23-22235-M26A-5 APC OUTLET#2
ALS Sample ID	L2752773-1	L2752773-2	L2752773-3	L2752773-4	L2752773-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	19-Sep-23	19-Sep-23	19-Sep-23	20-Sep-23	20-Sep-23
Date of Receipt	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.171	<0.171	<0.168	<0.165	<0.158
Analysis 1	<0.171	<0.171	<0.168	<0.165	<0.158
Analysis 2	<0.171	<0.171	<0.168	<0.165	<0.158
Total Cl^- as HCl (ave)	6.90	6.90	6.19	3.84	4.21
Analysis 1	6.91	6.89	6.19	3.84	4.21
Analysis 2	6.89	6.90	6.20	3.85	4.21
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**mg**	**mg**
Total Ammonia as NH_3	0.815	0.767	0.589	0.793	0.816

ALS Environmental

Sample Analysis Summary Report

Sample Name	23-22235-M26A-6 APC OUTLET#2	23-22235-M26A-BLANK1 APC OUTLET#1	23-22235-M26A-BLANK2 APC OUTLET#2
ALS Sample ID	L2752773-6	L2752773-7	L2752773-8
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	20-Sep-23	20-Sep-23	20-Sep-23
Date of Receipt	22-Sep-23	22-Sep-23	22-Sep-23
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.165	<0.105	<0.105
Analysis 1	<0.165	<0.105	<0.105
Analysis 2	<0.165	<0.105	<0.105
Total Cl^- as HCl (ave)	4.47	0.235	0.246
Analysis 1	4.47	0.235	0.246
Analysis 2	4.47	0.235	0.245
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**
Total Ammonia as NH_3	0.751	<0.142	<0.142

ALS Environmental

Sample QC Summary Report

Sample Name	MB	LCS	LCS
ALS Sample ID	MB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	n/a	n/a	n/a
Date of Receipt	n/a	n/a	n/a
Ion Chromatography Analysis			
USEPA Method 26/26A	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	0.00192	0.0576	106%
Analysis 1	0.00192	0.0577	
Analysis 2	0.00191	0.0575	
Total Cl^- as HCl (ave)	<0.00241	0.0817	104%
Analysis 1	<0.00241	0.0821	
Analysis 2	<0.00241	0.0814	
Ion Chromatography Analysis			
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	<0.00236	0.0500	106%

ALS Environmental

Sample QC Summary Report

Sample Name	23-22235-M26A-1 APC OUTLET#1	23-22235-M26A-1 APC OUTLET#1	23-22235-M26A-1 APC OUTLET#1	23-22235-M26A-1 APC OUTLET#1
ALS Sample ID	L2752773-1	L2752773-1DUP	L2752773-1MS	L2752773-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	19-Sep-23	19-Sep-23	19-Sep-23	19-Sep-23
Date of Receipt	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	<0.171	<0.171	5.31	97%
Analysis 1	<0.171	<0.171	5.31	
Analysis 2	<0.171	<0.171	5.32	
Total Cl^- as HCl (ave)	6.90	6.90	14.6	96%
Analysis 1	6.91	6.91	14.6	
Analysis 2	6.89	6.89	14.6	
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	0.815	0.791	5.57	101%

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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#:	L2752769		Mississauga, ON L5J 2Y4
Date of Report	17-Oct-23		Canada
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 201A (GN 11-Oct-2023)
Sample Particulate Analysis via Gravimetric USEPA Method 202 (SA/MOSM 6-Oct-2023)

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		23-22235-M201A-1 TEST#1 APC OUTLET#1		23-22235-M201A-2 TEST#1 APC OUTLET#1		23-22235-M201A-3 TEST#1 APC OUTLET#1	23-22235-M201A-4 TEST#1 APC OUTLET#1	23-22235-M201A-(5-7) TEST#1 APC OUTLET#1
ALS Sample ID		L2752769-1		L2752769-2		L2752769-3	L2752769-4	L2752769-5
Matrix		Stack		Stack		Stack	Stack	Stack
Analysis type		Sample		Sample		Sample	Sample	Sample
Sampling Date/Time		20-Sep-23		20-Sep-23		20-Sep-23	20-Sep-23	20-Sep-23
Date of Receipt		22-Sep-23		22-Sep-23		22-Sep-23	22-Sep-23	22-Sep-23
PM via Gravimetric Analysis Method 201A	**LOR**							
	mg	**mg**		**mg**		**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-		-		-	<	-
Acetone Particulate Matter	0.4	0.40	J	0.400	J	<	-	-
	g	**g**		**g**		**g**	**g**	**g**
Acetone Mass	0.02	44.2		22.7		5.6	-	-
PM via Gravimetric Analysis Method 202	**LOR**							
	mg	**mg**		**mg**		**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-		-		-	-	0.70
Non-Extractable Condensable Particulates	0.4	-		-		-	-	2.7
	g	**g**		**g**		**g**	**g**	**g**
Water Mass	0.02	-		-		-	-	203

ALS Environmental

Sample Analysis Summary Report

Sample Name		23-22235-M201A-8 TEST#2 APC OUTLET#1	23-22235-M201A-9 TEST#2 APC OUTLET#1	23-22235-M201A-10 TEST#2 APC OUTLET#1	23-22235-M201A-11 TEST#2 APC OUTLET#1	23-22235-M201A-(12-14) TEST#2 APC OUTLET#1
ALS Sample ID		L2752769-6	L2752769-7	L2752769-8	L2752769-9	L2752769-10
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		20-Sep-23	20-Sep-23	20-Sep-23	20-Sep-23	20-Sep-23
Date of Receipt		22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
PM via Gravimetric Analysis Method 201A	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	0.20 J	-
Acetone Particulate Matter	0.4	0.400 J	0.100 J	0.100 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	30.7	31.9	12.9	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	1.00
Non-Extractable Condensable Particulates	0.4	-	-	-	-	2.4
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	217

ALS Environmental

Sample Analysis Summary Report

Sample Name		23-22235-M201A-15 TEST#3 APC OUTLET#1	23-22235-M201A-16 TEST#3 APC OUTLET#1	23-22235-M201A-17 TEST#3 APC OUTLET#1	23-22235-M201A-18 TEST#3 APC OUTLET#1	23-22235-M201A-(19-21) TEST#3 APC OUTLET#1
ALS Sample ID		L2752769-11	L2752769-12	L2752769-13	L2752769-14	L2752769-15
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		20-Sep-23	20-Sep-23	20-Sep-23	20-Sep-23	20-Sep-23
Date of Receipt		22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
PM via Gravimetric Analysis Method 201A	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<	-
Acetone Particulate Matter	0.4	0.400 J	0.300 J	0.300 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	31.2	24.4	9.4	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	1.50
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.0
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	242

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Sample Analysis Summary Report

Sample Name		23-22235-M201A-22 TEST#1 APC OUTLET#2	23-22235-M201A-23 TEST#1 APC OUTLET#2	23-22235-M201A-24 TEST#1 APC OUTLET#2	23-22235-M201A-25 TEST#1 APC OUTLET#2	23-22235-M201A-(26-28) TEST#1 APC OUTLET#2
ALS Sample ID		L2752769-16	L2752769-17	L2752769-18	L2752769-19	L2752769-20
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23
Date of Receipt		22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
PM via Gravimetric Analysis Method 201A	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<	-
Acetone Particulate Matter	0.4	0.200 J	0.400 J	<	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	27.2	27.6	8.1	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.90
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.8
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	302

ALS Environmental

Sample Analysis Summary Report

Sample Name		23-22235-M201A-29 TEST#2 APC OUTLET#2	23-22235-M201A-30 TEST#2 APC OUTLET#2	23-22235-M201A-31 TEST#2 APC OUTLET#2	23-22235-M201A-32 TEST#2 APC OUTLET#2	23-22235-M201A-(33-35) TEST#2 APC OUTLET#2
ALS Sample ID		L2752769-21	L2752769-22	L2752769-23	L2752769-24	L2752769-25
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23
Date of Receipt		22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
PM via Gravimetric Analysis Method 201A	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<	-
Acetone Particulate Matter	0.4	<	0.200 J	<	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	29.3	19.2	5.8	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	0.600
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.3
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	265

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Sample Analysis Summary Report

Sample Name		23-22235-M201A-36 TEST#3 APC OUTLET#2	23-22235-M201A-37 TEST#3 APC OUTLET#2	23-22235-M201A-38 TEST#3 APC OUTLET#2	23-22235-M201A-39 TEST#3 APC OUTLET#2	23-22235-M201A-(40-42) TEST#3 APC OUTLET#2
ALS Sample ID		L2752769-26	L2752769-27	L2752769-28	L2752769-29	L2752769-30
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23
Date of Receipt		22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
PM via Gravimetric Analysis	LOR					
Method 201A	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<	-
Acetone Particulate Matter	0.4	0.300 J	0.100 J	0.100 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	24.3	25.8	12.0	-	-
PM via Gravimetric Analysis	LOR					
Method 202	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	0.500
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.4
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	307

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Sample Analysis Summary Report

Sample Name		23-22235-M201A-43 BLANK#1 APC OUTLET#1	23-22235-M201A-44 BLANK#1 APC OUTLET#1	23-22235-M201A-45 BLANK#1 APC OUTLET#1	23-22235-M201A-46 BLANK#1 APC OUTLET#1	23-22235-M201A-(47-49) BLANK#1 APC OUTLET#1
ALS Sample ID		L2752769-31	L2752769-32	L2752769-33	L2752769-34	L2752769-35
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23
Date of Receipt		22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
PM via Gravimetric Analysis Method 201A	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	0.20 J	-
Acetone Particulate Matter	0.4	<	0.200 J	0.40 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	67.6	84.1	68.6	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	0.700
Non-Extractable Condensable Particulates	0.4	-	-	-	-	1.8
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	178

ALS Environmental

Sample Analysis Summary Report

Sample Name		23-22235-M201A-50 BLANK#2 APC OUTLET#2	23-22235-M201A-51 BLANK#2 APC OUTLET#2	23-22235-M201A-52 BLANK#2 APC OUTLET#2	23-22235-M201A-53 BLANK#2 APC OUTLET#2	23-22235-M201A-(54-56) BLANK#2 APC OUTLET#2
ALS Sample ID		L2752769-36	L2752769-37	L2752769-38	L2752769-39	L2752769-40
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23
Date of Receipt		22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
PM via Gravimetric Analysis Method 201A	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	0.10 J	-
Acetone Particulate Matter	0.4	0.300 J	0.400 J	0.300 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	79.0	72.8	69.3	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	0.500
Non-Extractable Condensable Particulates	0.4	-	-	-	-	2.2
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	245

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Sample Analysis Summary Report

Sample Name		MB1		MB2
ALS Sample ID		L2752769-MB		L2752769-MB1
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	0.0		-
Acetone Particulate Matter	0.4	0.100	J	<
	g	**g**		**g**
Acetone Mass	0.02	31.7		30.9
PM via Gravimetric Analysis	**LOR**			
Method 202	**mg**	**mg**		**mg**
Extractable Condensable Particulates	0.4	<		-
Non-Extractable Condensable Particulates	0.4	1.4		-
	g	**g**		**g**
Water Mass	0.02	151		-

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#:	L2752768		Mississauga, ON L5J 2Y4
Date of Report	16-Oct-23		Canada
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS:
Metals analysed via ICP-MS Method USEPA 6020B (SA 12-Oct-23)
Sample Preparation via USEPA Method 29 (KC11 10-Oct-23)

ANALYST COMMENTS:
1A:

Cr, Cu, Mo and Ni were observed in the method blank (MB) at a level significantly above its LOR. Sample data within a factor of 5x this potential background contribution may be biased high. **SA 12-Oct-23**

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		23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(7 THRU 12) TEST#2 APC OUTLET#1	23-22235-PM-(13 THRU 18) TEST#3 APC OUTLET#1	23-22235-PM-(19 THRU 24) BLANK#1	23-22235-PM-(25 THRU 30) TEST#1 APC OUTLET#2	23-22235-PM-(31 THRU 36) TEST#2 APC OUTLET#2
ALS Sample ID		L2752768-1	L2752768-2	L2752768-3	L2752768-4	L2752768-5	L2752768-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		19-Sep-23	19-Sep-23	19-Sep-23	20-Sep-23	20-Sep-23	20-Sep-23
Date of Receipt		22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Front Half HF Fraction 1A							
Antimony	0.2	<	0.303	0.444	<	<	<
Arsenic	1	<	<	<	<	<	<
Barium	5	<	6.34	<	47.9	5.78	5.09
Beryllium	0.2	<	<	<	<	<	<
Cadmium	0.1	0.123	11.5	0.252	<	3.74	<
Chromium	1	4.82	7.50	4.49	3.47	3.22	3.00
Cobalt	0.2	<	<	<	<	<	<
Copper	1	6.86	8.23	6.23	2.25	5.30	5.41
Lead	0.5	0.633	0.795	0.612	<	0.525	0.513
Molybdenum	0.2	33.3	33.8	31.5	18.3	36.3	34.7
Nickel	0.2	2.40	3.51	2.49	1.09	1.47	1.42
Selenium	2	<	<	<	<	<	<
Silver	0.2	<	<	<	<	<	<
Thallium	0.2	<	<	<	<	<	<
Vanadium	1	<	<	<	<	<	<
Zinc	6	12.4	19.6	15.0	33.7	10.4	11.8
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	<	<	<	<
Arsenic	0.2	<	<	<	<	<	<
Barium	0.5	1.62	1.33	1.80	0.804	1.14	0.908
Beryllium	0.1	<	<	<	<	<	<
Cadmium	0.05	<	0.0720	0.102	<	<	0.0990
Chromium	0.15	2.84	1.06	1.82	0.474	0.773	1.05
Cobalt	0.1	0.273	0.119	<	<	<	<
Copper	0.3	2.81	2.39	3.41	1.71	2.29	2.19
Lead	0.05	1.81	2.04	2.18	0.734	0.921	0.615
Molybdenum	0.1	<	0.101	0.110	<	<	<
Nickel	0.1	2.25	0.963	3.49	0.285	0.536	1.12
Selenium	1	<	3.43	<	<	1.50	<
Silver	0.1	<	<	<	<	<	<
Thallium	0.05	<	<	<	<	<	<
Vanadium	0.1	<	0.159	0.170	0.140	0.146	0.156
Zinc	3	11.2	13.4	17.1	<	7.19	6.62

ALS Environmental

Sample Analysis Summary Report

Sample Name		23-22235-PM-(37 THRU 42) TEST#3 APC OUTLET#2	23-22235-PM-(43 THRU 48) BLANK#2	MB
ALS Sample ID		L2752768-7	L2752768-8	L2752768-MB
Matrix		Stack	Stack	n/a
Analysis Type		Sample	Sample	Sample
Sampling Date		20-Sep-23	20-Sep-23	n/a
Date of Receipt		22-Sep-23	22-Sep-23	n/a
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**
Front Half HF Fraction 1A				
Antimony	0.2	0.288	<	<
Arsenic	1	<	<	<
Barium	5	5.06	47.4	<
Beryllium	0.2	<	<	<
Cadmium	0.1	1.29	<	<
Chromium	1	2.86	3.80	3.01
Cobalt	0.2	<	<	<
Copper	1	5.36	2.43	5.09
Lead	0.5	<	<	<
Molybdenum	0.2	35.1	17.8	34.1
Nickel	0.2	1.32	15.5	1.27
Selenium	2	<	<	<
Silver	0.2	<	<	<
Thallium	0.2	<	<	<
Vanadium	1	<	<	<
Zinc	6	8.26	34.1	<
Back Half (HNO3 / H2O2) Fraction 2A				
Antimony	0.1	<	<	-
Arsenic	0.2	<	<	-
Barium	0.5	0.968	0.791	-
Beryllium	0.1	<	<	-
Cadmium	0.05	<	<	-
Chromium	0.15	2.70	0.500	-
Cobalt	0.1	<	<	-
Copper	0.3	2.42	1.65	-
Lead	0.05	0.990	1.82	-
Molybdenum	0.1	<	<	-
Nickel	0.1	2.51	0.315	-
Selenium	1	1.08	<	-
Silver	0.1	<	<	-
Thallium	0.05	<	<	-
Vanadium	0.1	0.147	0.134	-
Zinc	3	10.1	<	-

ALS Environmental

Sample QC Summary Report

Sample Name		RB	LCS	LCS	LCSD	LCSD
ALS Sample ID		RB	LCS	LCS	LCSD	LCSD
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis Type		Blank	LCS	LCS	LCS	LCS
Sampling Date		n/a	n/a	n/a	n/a	n/a
Date of Receipt		n/a	n/a	n/a	n/a	n/a
Multi-Metals via ICP-MS	**LOR**					
	ug	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A						
Antimony	0.2	<	10.9	91	11.8	98
Arsenic	1	<	61.2	102	61.1	102
Barium	5	<	62.0	103	62.7	104
Beryllium	0.2	<	52.7	88	58.6	98
Cadmium	0.1	<	29.5	98	30.0	100
Chromium	1	<	60.4	101	59.2	99
Cobalt	0.2	<	61.5	102	60.5	101
Copper	1	<	61.9	103	60.5	101
Lead	0.5	<	58.9	98	59.0	98
Molybdenum	0.2	<	27.0	90	29.2	97
Nickel	0.2	<	61.9	103	59.7	99
Selenium	2	<	61.3	102	58.9	98
Silver	0.2	<	26.1	87	28.3	94
Thallium	0.2	<	57.6	96	58.3	97
Vanadium	1	<	59.6	99	58.8	98
Zinc	6	<	121	100	121	101
Back Half (HNO3 / H2O2) Fraction 2A						
Antimony	0.1	<	6.14	102	6.14	102
Arsenic	0.2	<	32.0	107	32.9	110
Barium	0.5	<	33.1	110	33.6	112
Beryllium	0.1	<	29.7	99	29.2	97
Cadmium	0.05	<	16.0	107	16.0	107
Chromium	0.15	<	31.3	104	32.5	108
Cobalt	0.1	<	32.0	107	32.5	108
Copper	0.3	<	31.4	104	32.4	108
Lead	0.05	<	31.1	104	31.0	103
Molybdenum	0.1	<	15.6	104	15.6	103
Nickel	0.1	<	31.8	106	32.5	108
Selenium	1	<	30.3	101	31.8	106
Silver	0.1	<	15.0	100	15.1	101
Thallium	0.05	<	31.7	106	31.2	104
Vanadium	0.1	<	31.3	104	32.3	108
Zinc	3	<	62.4	103	63.9	106

ALS Environmental

Sample QC Summary Report

Sample Name		23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1
ALS Sample ID		L2752768-1	L2752768-1	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		19-Sep-23	19-Sep-23	19-Sep-23	19-Sep-23	19-Sep-23	19-Sep-23
Date of Receipt		22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A							
Antimony	0.2	<	<	23.0	95	23.5	97
Arsenic	1	<	<	121	101	122	102
Barium	5	<	<	121	98	120	97
Beryllium	0.2	<	<	112	93	114	95
Cadmium	0.1	0.123	0.123	59.5	99	62.1	103
Chromium	1	4.82	4.85	124	99	120	96
Cobalt	0.2	<	<	119	99	115	96
Copper	1	6.86	6.97	125	98	121	95
Lead	0.5	0.633	0.609	117	97	114	95
Molybdenum	0.2	33.3	33.5	86.1	88	91.0	96
Nickel	0.2	2.40	2.45	122	100	117	96
Selenium	2	<	<	113	94	110	91
Silver	0.2	<	<	53.0	88	55.3	92
Thallium	0.2	<	<	120	100	124	103
Vanadium	1	<	<	117	97	117	97
Zinc	6	12.4	12.1	249	99	247	98
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	10.9	91	11.3	93
Arsenic	0.2	<	<	59.5	99	61.3	102
Barium	0.5	1.62	1.60	58.6	95	61.4	100
Beryllium	0.1	<	<	55.2	92	55.0	92
Cadmium	0.05	<	<	29.1	97	29.9	100
Chromium	0.15	2.84	3.00	62.7	100	63.1	100
Cobalt	0.1	0.273	0.287	60.7	101	60.6	101
Copper	0.3	2.81	2.83	61.9	99	62.2	99
Lead	0.05	1.81	1.87	56.8	92	56.6	91
Molybdenum	0.1	<	<	27.5	91	28.4	94
Nickel	0.1	2.25	2.39	62.3	100	62.5	100
Selenium	1	<	<	57.4	95	54.8	90
Silver	0.1	<	<	26.7	89	26.7	89
Thallium	0.05	<	<	56.8	95	57.3	95
Vanadium	0.1	<	0.176	59.3	99	60.5	101
Zinc	3	11.2	11.2	128	97	132	100

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#:	L2752768		Mississauga, ON L5J 2Y4
Date of Report	13-Oct-23		Canada
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS:

Sample Preparation via USEPA Method 29 (KC11 10-Oct-2023)
Mercury Analysis via CVAA using Method USEPA 7470A (KC11 11-Oct-2023)

ANALYST COMMENTS:

Recoveries for the Fraction 1B (HF) LCS and LCSD are outside ALS DQOs (found: 76,86%, limits: 90-110%). MS and MSD recoveries are within control limits. These results are reproducible, with re-analysis. This may indicate a standard spiking issue, or potentially an interference caused by the reagents used in this fraction. A matrix interference is not expected. Sample data for this fraction may be biased low. **MOS 12-Oct-23**

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			23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(7 THRU 12) TEST#2 APC OUTLET#1	23-22235-PM-(13 THRU 18) TEST#3 APC OUTLET#1	23-22235-PM-(19 THRU 24) BLANK#1	23-22235-PM-(25 THRU 30) TEST#1 APC OUTLET#2
ALS Sample ID			L2752768-1	L2752768-2	L2752768-3	L2752768-4	L2752768-5
Matrix			Stack	Stack	Stack	Stack	Stack
Analysis type			Sample	Sample	Sample	Sample	Sample
Sampling Date/Time			19-Sep-23	19-Sep-23	19-Sep-23	20-Sep-23	20-Sep-23
Date of Receipt			22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
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	<0.445	<0.41	<0.43	<0.1625	<0.3475
	Analytical Fraction 3B	0.025	<0.0225	<0.0225	<0.0225	<0.0225	<0.0225
	Analytical Fraction 3C	0.25	<0.225	<0.225	<0.225	<0.225	<0.225

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Sample Analysis Summary Report

Sample Name			23-22235-PM-(31 THRU 36) TEST#2 APC OUTLET#2	23-22235-PM-(37 THRU 42) TEST#3 APC OUTLET#2	23-22235-PM-(43 THRU 48) BLANK#2
ALS Sample ID			L2752768-6	L2752768-7	L2752768-8
Matrix			Stack	Stack	Stack
Analysis type			Sample	Sample	Sample
Sampling Date/Time			20-Sep-23	20-Sep-23	20-Sep-23
Date of Receipt			22-Sep-23	22-Sep-23	22-Sep-23
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	<0.4125	<0.41	<0.165
	Analytical Fraction 3B	0.025	<0.0225	<0.0225	<0.0225
	Analytical Fraction 3C	0.25	<0.225	<0.225	<0.225

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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	0.228	76%	0.259	86%
Analytical Fraction 2B	0.050	<0.05	0.946	95%	0.948	95%
Analytical Fraction 3B	0.025	<0.025	0.475	95%	0.475	95%
Analytical Fraction 3C	0.25	<0.25	4.82	96%	4.77	95%

ALS Environmental

Sample QC Summary Report

Sample Name			23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1	23-22235-PM-(1 THRU 6) TEST#1 APC OUTLET#1
ALS Sample ID			L2752768-1	L2752768-1DUP	L2752768-1MS	L2752768-1MS	L2752768-1MSD	L2752768-1MSD
Matrix			Stack	Stack	Stack	Stack	Stack	Stack
Analysis type			Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date/Time			19-Sep-23	19-Sep-23	19-Sep-23	19-Sep-23	19-Sep-23	19-Sep-23
Date of Receipt			22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23	22-Sep-23
Mercury via CVAA		**LOR**						
	Method 29	**ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
	Analytical Fraction 1B	0.015	<0.015	<0.015	0.263	87%	0.261	87%
	Analytical Fraction 2B	0.050	<0.445	<0.445	8.75	97%	8.67	97%
	Analytical Fraction 3B	0.025	<0.0225	<0.0225	0.408	90%	0.410	91%
	Analytical Fraction 3C	0.250	<0.225	<0.225	4.32	95%	4.29	94%

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.: 22235
Date: SEPT 20/23

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	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
			Filter ID: QZ10468	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
				Empty Wt: 527.0		
				Final Wt: 688.0		
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	1 Gain: 161.0	* if there is no gain purge is not required.	
				Colour: clear		
			Initial Wt:			Acetone/Hexane Rinse
			Final Wt:	Impinger #2 Empty	Purge On: 12:15	
			Gain:	Empty Wt: 640.7	Purge Off: 13:15	
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	Colour: WHITE	Final Wt: 640.7		Mark Fluid Level and Seal and Label Container
				2 Gain: —	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
			Seal and label container TS4	Colour: —		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 657.0	Mark Fluid Level and Seal and Label Container	
				Initial Wt: 757.4		
				Final Wt: 756.8		
				3 Gain: -0.6		
				Colour: clear	CONTAINER TS6	
					Secondary Filter	
				Impinger #4 Silica Gel		
				Initial Wt: 984.8	Seal and label container TS6	
				Final Wt: 992.8		
				4 Gain: 8.0		
				% Spent: —		

SAMPLE IDENTIFICATION	23-22235-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: DU
Train Recovered By: DU/DT

CWTR=1+2+3:	160.4
WCBDA=4:	8.0

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ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: SEPT 20/23

Test No.: 2
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	Filter ID: QZ 10467
			CONTAINER TS4
			Initial Wt:
			Final Wt:
			Gain:
			Colour: WHITE
			Seal and label 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	

SAMPLE IDENTIFICATION	23-22235-M201A-
TS1 (Part. > 10)	8
TS2 (Part. > 2.5)	9
TS3 (Part. < 2.5)	10
TS4 (Back Up Filter, <2.5)	11
TS5 (Imp 2 H_20 and rinse)	12
TS6 (Secondary Filter)	13
TS7 (Acetone / Hexane rinse)	14

Train Loaded By: DM
Train Recovered By: DM/DT

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out
	Empty Wt: 475.8
	Final Wt: 633.5
1	Gain: 157.7
	Colour: clear

	Impinger #2 Empty
	Empty Wt: 659.7
	Final Wt: 660.2
2	Gain: 0.5
	Colour: clear

Secondary Filter

	Impinger #3 H_2O
	Empty Wt: 677.2
	Initial Wt: 778.0
	Final Wt: 774.0
3	Gain: -4.0
	Colour: clear

	Impinger #4 Silica Gel
	Initial Wt: 917.8
	Final Wt: 926.4
4	Gain: 8.6
	% Spent:

CONTAINER TSS & 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: 16:15
Purge Off: 17:15

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

CWTR=1+2+3: 154.2
WCBDA=4: 8.6

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ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: Sept 20 / 23

Test No.: 3
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	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: 22-1046	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			CONTAINER TS4	Empty Wt: 527.0	* if there is no gain purge is not required.	
			Initial Wt:	Final Wt: 705.0		Acetone/Hexane Rinse
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	Final Wt:	1 Gain: 178.0	Purge On: 19:10	
			Gain:	Colour: clear	Purge Off: 20:10	Mark Fluid Level and Seal and Label Container
			Colour: WHITE	Impinger #2 Empty		
			Seal and label container TS4	Empty Wt: 640.5	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Final Wt: 640.5		
				2 Gain: 0		
				Colour: —		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 657.0	Mark Fluid Level and Seal and Label Container	
				Initial Wt: 756.8		
				Final Wt: 756.1		
				3 Gain: -0.7		
				Colour: clear	CONTAINER TS6	16
				Impinger #4 Silica Gel	Secondary Filter	
				Initial Wt: 992.8		
				Final Wt: 1001.5	Seal and label container TS6	
				4 Gain: 8.7		
				% Spent:		

SAMPLE IDENTIFICATION	23-22235-M201A-
TS1 (Part. > 10)	15
TS2 (Part. > 2.5)	16
TS3 (Part. < 2.5)	17
TS4 (Back Up Filter, <2.5)	18
TS5 (Imp 2 H_2O and rinse)	19
TS6 (Secondary Filter)	20
TS7 (Acetone / Hexane rinse)	21

Train Loaded By: DU/BT
Train Recovered By: DU/BT

CWTR=1+2+3: 177.3
WCBDA=4: 8.7

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: Sept 21/23

Test No.: 1
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: R210465	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			CONTAINER TS4	Empty Wt: 476.0	* if there is no goin purge is not required.	
			Initial Wt:	Final Wt: 656.0		Acetone/Hexane Rinse
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	Final Wt:	1 Gain: 180.0	Purge On: 10:45	
			Gain:	Colour: clear	Purge Off: 11:45	Mark Fluid Level and Seal and Label Container
			Colour: WHITE	Impinger #2 Empty		
			Seal and label container TS4	Empty Wt: ~~654.0~~ 654.0	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Final Wt: 654.0		
				2 Gain: 0		
				Colour: —		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 687.2	Mark Fluid Level and Seal and Label Container	
				Initial Wt: 774.0		
				Final Wt: 773.5		
				3 Gain: -0.5		
				Colour: clear	CONTAINER TS6	16
				Impinger #4 Silica Gel	Secondary Filter	
				Initial Wt: 926.4		
				Final Wt: 934.4	Seal and label container TS6	
				4 Gain: 8.0		
				% Spent:		

SAMPLE IDENTIFICATION	23-22235-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: DA/ST
Train Recovered By: DA/ST

CWTR=1+2+3: 179.5
WCBDA=4: 8.0

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: Sept 21/23

Test No.: 2
Test Location: Unit 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: RZ10464	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			CONTAINER TS4	Empty Wt: 527.5	* if there is no gain purge is not required.	
			Initial Wt:	Final Wt: 689.5		Acetone/Hexane Rinse
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	Final Wt:	1 Gain: 162.0	Purge On: 13:40	
			Gain:	Colour: Clear	Purge Off: 14:40	Mark Fluid Level and Seal and Label Container
			Colour: WHITE	Impinger #2 Empty		
			Seal and label container TS4	Empty Wt: 640.5	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Final Wt: 640.5		
				2 Gain: 0		
				Colour: —		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 657.0	Mark Fluid Level and Seal and Label Container	
				Initial Wt: 756.1		
				Final Wt: 754.1		
				3 Gain: -2.0		
				Colour: Clear	CONTAINER TS6	
				Impinger #4 Silica Gel	Secondary Filter	
				Initial Wt: 1001.5		
				Final Wt: 1011.5	Seal and label container TS6	
				4 Gain: 10.0		
				% Spent:		

SAMPLE IDENTIFICATION	23-22235-M201A-
TS1 (Part. > 10)	29
TS2 (Part. > 2.5)	30
TS3 (Part. < 2.5)	31
TS4 (Back Up Filter, <2.5)	32
TS5 (Imp 2 H_2O and rinse)	33
TS6 (Secondary Filter)	34
TS7 (Acetone / Hexane rinse)	35

Train Loaded By: DH
Train Recovered By: DH/SL

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CWTR=1+2+3: 160.0
WCBDA=4: 10.0

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: Sept 21/23

Test No.: 3
Test Location: Unit 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: QZ_10463	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			CONTAINER TS4	Empty Wt: 476.0	* if there is no gain purge is not required.	
			Initial Wt:	Final Wt: 647.5		Acetone/Hexane Rinse
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	Final Wt:	1 Gain: 171.5	Purge On: 16:40	
			Gain:	Colour: clear	Purge Off: 17:40	Mark Fluid Level and Seal and Label Container
			Colour: WHITE	Impinger #2 Empty		
			Seal and label container TS4	Empty Wt: 654.0	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Final Wt: 654.0		
				2 Gain: 0		
				Colour:		
				Secondary Filter		

SAMPLE IDENTIFICATION	23-2223S-M201A-
TS1 (Part. > 10)	
TS2 (Part. > 2.5)	
TS3 (Part. < 2.5)	
TS4 (Back Up Filter, <2.5)	
TS5 (Imp 2 H_2O and rinse)	
TS6 (Secondary Filter)	
TS7 (Acetone / Hexane rinse)	

Impinger #3 H_2O	CONTAINER TS5
Empty Wt: 677.2	Mark Fluid Level and Seal and Label Container
Initial Wt: 773.5	
Final Wt: 771.0	
3 Gain: -2.5	
Colour: clear	

CONTAINER TS6
Secondary Filter

Impinger #4 Silica Gel	Seal and label container TS6
Initial Wt: 952.0	
Final Wt: 963.5	
4 Gain: 11.5	
% Spent:	

16

CWTR=1+2+3:	169.0
WCBDA=4:	11.5

Train Loaded By: DW/BT
Train Recovered By: BW/BT

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: Sept 21/23

Test No.: BLANK 1
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: Q71046	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			CONTAINER TS4	Empty Wt: 476.0	** if there is no goin purge is not required.*	
			Initial Wt:	Final Wt: 476.0		Acetone/Hexane Rinse
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	Final Wt:	1 Gain: 0	Purge On:	
			Gain:	Colour: —	Purge Off:	Mark Fluid Level and Seal and Label Container
			Colour: WHITE	Impinger #2 Empty		
			Seal and label container TS4	Empty Wt: 654.0	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Final Wt: 654.0		
				2 Gain: 0		
				Colour: —		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 677.2	Mark Fluid Level and Seal and Label Container	
				Initial Wt: 773.5		
				Final Wt: 773.5		
				3 Gain: 0		
				Colour: —	CONTAINER TS6	
					Secondary Filter	
				Impinger #4 Silica Gel		
				Initial Wt: 952.0	Seal and label container TS6	
				Final Wt: 952.0		
				4 Gain: 0		
				% Spent:		

SAMPLE IDENTIFICATION	23-22235-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_2O and rinse)	47
TS6 (Secondary Filter)	48
TS7 (Acetone / Hexane rinse)	49

Train Loaded By:
Train Recovered By:

CWTR=1+2+3:	0
WCBDA=4:	0

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22235
Date: Apr 24/23

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	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: Q210461 CONTAINER TS4	Impinger #1 Knock Out Empty Wt: Final Wt: 1 Gain: Colour:	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.*	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Initial Wt: Final Wt: Gain: Colour: WHITE Seal and label container TS4	Impinger #2 Empty Empty Wt: Final Wt: 2 Gain: Colour: Secondary Filter	Purge On: Purge Off: Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	Acetone/Hexane Rinse Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	23-22235-M201A-
TS1 (Part. > 10)	90
TS2 (Part. > 2.5)	91
TS3 (Part. < 2.5)	92
TS4 (Back Up Filter, <2.5)	93
TS5 (Imp 2 H_20 and rinse)	94
TS6 (Secondary Filter)	95
TS7 (Acetone / Hexane rinse)	96

Impinger #3 H_2O	CONTAINER TS5
Empty Wt:	Mark Fluid Level and Seal and Label Container
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	
	CONTAINER TS6
	Secondary Filter
Impinger #4 Silica Gel	Seal and label container TS6
Initial Wt:	
Final Wt:	
4 Gain:	
% Spent:	

Train Loaded By:
Train Recovered By:

CWTR=1+2+3:	
WCBDA=4:	

APPENDIX 14

SVOC Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22235
Sample Batch No.:	23-22235-SVOC-

Test No.:	1
Test Date:	Sept 21/23
Test Location:	UNIT 1

Sample ID 1	Sample ID 2	Sample ID 3	Sample ID 4	Sample ID 5	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)

Empty Wt:	403.0	Colour:	WHITE	Initial Wt:	463.4		Impinger #1 Empty		Empty Wt:	403.0	Initial Wt:	967.3
After Acetone/ Hexane Rinse:	690.8	FOLD IN FOIL		1 Final Wt:	420.0		Empty Wt:	617.2	After Acetone/ Hexane Rinse:	625.8	Final Wt:	935.0
Total TS1:	287.8			Gain:	6.6		Final Wt:	1166.5	5 Gain:	222.8	Gain:	18.0
		SEAL AND LABEL CONTAINER TS2		Colour:	WHITE	2	Gain:	549.3	Total TS5:	217.8	% Spent:	
							Colour:	clear				
MARK FLUID LEVEL		SEAL TRAP					Impinger #2 Ethylene Glycol					
SEAL AND LABEL CONTAINER TS1		WRAP IN FOIL					Empty Wt:	538.6				
		LABEL AS CONTAINER TS3					Initial Wt:	637.5				
							Final Wt:	938.0				
						3	Gain:	300.5				
							Colour:	clear				
							Impinger #3 Empty					
							Empty Wt:	526.6				
							Final Wt:	528.0				
						4	Gain:	1.4				
							Colour:	clear				
							Container TS4 Weights					
							Empty Wt:	407.5				
							With Imp Soln:	1246.5				
							After ~100g H_2O Rinse:	1392.0				
							Total TS4:	944.5				

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	9
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	RL3
Hexane Batch No.:	107640
Acetone Batch No.:	107652

Impinger Box ID: #14

CWTR = 1 + 2 + 3 + 4:	757.8
WCBDA=5:	63.0

Train Loaded By: TC/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.:	22235
Sample Batch No.:	23-22235-SVOC-

Test No.:	2
Test Date:	SEPT 21/23
Test Location:	UNIT 2

Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	
6	7	8	9	10	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)

Empty Wt:	408.0	Colour:	WHITE	Initial Wt:	396.3		Impinger #1 Empty		Empty Wt:	407.5	Initial Wt: 969.3
After Acetone/ Hexane Rinse:	660.5	FOLD IN FOIL		Final Wt:	401.5	1	Empty Wt:	~~550.2~~ 502.6	After Acetone/ Hexane Rinse:	613.5	Final Wt: 987.7
Total TS1:				Gain:	5.2	2	Final Wt:	1114.7	5		Gain: 18.4
		SEAL AND LABEL CONTAINER TS2		Colour:	WHITE		Gain:	607.1	Total TS5:		% Spent:
							Colour:	clear			
MARK FLUID LEVEL			SEAL TRAP				Impinger #2 Ethylene Glycol				
SEAL AND LABEL CONTAINER TS1			WRAP IN FOIL				Empty Wt:	559.5			
							Initial Wt:	695.6			
			LABEL AS CONTAINER TS3				Final Wt:	825.0			
						3	Gain:	129.4			
							Colour:	clear			
							Impinger #3 Empty				
							Empty Wt:	556.0			
							Final Wt:	556.5			
						4	Gain:	0.5			
							Colour:	clear			
							Container TS4 Weights				
							Empty Wt:	407.0			
							With Imp Soln:	1247.0			
							After ~100g H_2O Rinse:	1385.9			
							Total TS4:				

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	12
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: BT

Train Recovered By: BT

Impinger Box ID: 2

CWTR = 1 + 2 + 3 + 4:	742.2
WCBDA=5:	18.4

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.:	22235
Sample Batch No.:	23-22235-SVOC-

Test No.:	3
Test Date:	Sept 22/23
Test Location:	unit 1

Sample ID	11	Sample ID	12	Sample ID	13	Sample ID	14	Sample ID	15

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)

Empty Wt:	~~408.0~~	Colour:	WHITE	Initial Wt:	414.5	Impinger #1 Empty		Empty Wt:	407.0
After Acetone/ Hexane Rinse:	644.0	FOLD IN FOIL		Final Wt:	419.5	Empty Wt:	595.3	After Acetone/ Hexane Rinse:	618.0
Total TS1:	236.0			1 Gain:	5.0	Final Wt:	1132.3	5 Total TS5:	211.0
		SEAL AND LABEL CONTAINER TS2		Colour:	WHITE	2 Gain:	~~537~~ ~~540.0~~		
						Colour:	clear		
MARK FLUID LEVEL		SEAL TRAP				Impinger #2 Ethylene Glycol			
SEAL AND LABEL CONTAINER TS1		WRAP IN FOIL				Empty Wt:	534.3		
						Initial Wt:	643.2		
		LABEL AS CONTAINER TS3				Final Wt:	901.2		
						3 Gain:	158.0		
						Colour:	clear		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	7
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By:	TC
Train Recovered By:	DT

Impinger #3 Empty	
Empty Wt:	650.9
Final Wt:	660.5
4 Gain:	0.6
Colour:	clear

Container TS4 Weights	
Empty Wt:	407.0
With Imp Soln:	1202.0
After ~100g H_2O Rinse:	1307.0
Total TS4:	

Impinger Box ID: #15

CWTR = 1 + 2 + 3 + 4:	~~707.6~~ ~~707.6~~	700.6
WCBDA=S:	13.0	

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22235
Sample Batch No.: 23-22235-SVOC-

Test No.: 1
Test Date: OCTOBER 3, 2023
Test Location: UNIT 2

Sample ID 21	Sample ID 22	Sample ID 23	Sample ID 24	Sample ID 25	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 406.0	Colour: WHITE	Initial Wt: 370.6	Impinger #1 Empty	Empty Wt: 407.7	Initial Wt: 970.1
After Acetone/ Hexane Rinse: 746.8	FOLD IN FOIL	1 Final Wt: 375.9	Empty Wt: 508	After Acetone/ Hexane Rinse: 635.3	Final Wt: 989.3
Total TS1: 340.8		Gain: 5.3	Final Wt: 1115.2	5 Total TS5: 227.6	Gain: 19.2
	SEAL AND LABEL CONTAINER TS2	Colour: WHITE	2 Gain: 607.2		% Spent: 25
		SEAL TRAP	Colour: —		
MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 622.6		
			Initial Wt: 727.2		
			Final Wt: 909.5		
			3 Gain: 181.3		
			Colour: —		
			Impinger #3 Empty	Impinger Box ID: #6	
			Empty Wt: 654.9		
			Final Wt: 656.6		
			4 Gain: 1.7		
			Colour: —	CWTR = 1 + 2 + 3 + 4: 795.5	
			Container TS4 Weights	WCBDA=5: 19.2	
			Empty Wt: 407.3		
			With Imp Soln: 1286.3		
			After ~100g H_2O Rinse: 1393.7		
			Total TS4: 986.4		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	6
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	ALS
Hexane Batch No.:	107640
Acetone Batch No.:	107652

Train Loaded By: DT
Train Recovered By: RDL

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.: 22235
Sample Batch No.: 23-22235-SVOC-

Test No.: 2
Test Date: OCT 3/23
Test Location: UNIT 2

Sample ID	26	Sample ID	27	Sample ID	28	Sample ID	29	Sample ID	30	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser		Filter		XAD-II Trap		Impingers 1, 2 & 3		Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers		Impinger 4 Silica Gel
CONTAINER TS1		CONTAINER TS2		CONTAINER TS3		CONTAINER TS4		CONTAINER TS5		CONTAINER TS6 (Impinger)
Empty Wt:	407.0	Colour:	WHITE	Initial Wt:	393	Impinger #1 Empty		Empty Wt:	407.7	Initial Wt: 953.7
After Acetone/ Hexane Rinse:	754.8	FOLD IN FOIL		1 Final Wt:	398.6	Empty Wt:	481	After Acetone/ Hexane Rinse:	607.1	5 Final Wt: 971.5
Total TS1:	347.8	SEAL AND LABEL CONTAINER TS2		Gain:	5.6	2 Final Wt:	1048.6	Total TS5:	199.4	Gain: 17.8
MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1				Colour:	WHITE	Gain:	567.6			% Spent: 75
				SEAL TRAP		Colour:	—			
				WRAP IN FOIL		Impinger #2 Ethylene Glycol				
				LABEL AS CONTAINER TS3		Empty Wt:	546			
						Initial Wt:	647			
						Final Wt:	832.2			
						3 Gain:	185.2			
						Colour:	—			
						Impinger #3 Empty				
						Empty Wt:	655.5			
						Final Wt:	656.4			
						4 Gain:	0.9			
						Colour:	—			

Impinger Box ID: #4

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	4
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	ALS
Hexane Batch No.:	107640
Acetone Batch No.:	107652

Container TS4 Weights	
Empty Wt:	406.9
With Imp Soln:	1240.0
After ~100g H_2O Rinse:	1350.6
Total TS4:	943.8

759.3
CWTR = 1 + 2 + 3 + 4: 758.4

WCBDA=5: 17.8

Train Loaded By: DT
Train Recovered By: RDL

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.: 22235
Sample Batch No.: 23-22235-SVOC-

Test No.: 3
Test Date: Oct 4/23
Test Location: Unit 2

Sample ID 31	Sample ID 32	Sample ID 33	Sample ID 34	Sample ID 35	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 407.0	Colour: WHITE	Initial Wt: 412.6	Impinger #1 Empty	Empty Wt: 282.5	Initial Wt: 967.1
After Acetone/ Hexane Rinse: 700.7	FOLD IN FOIL	1 Final Wt: 419.8	Empty Wt: 537.8	After Acetone/ Hexane Rinse: 457.7	Final Wt: 986.3
Total TS1: 293.7	SEAL AND LABEL CONTAINER TS2	Gain: 7.2	Final Wt: 1108.5	5 Total TS5: 175.2	Gain: 19.2
MARK FLUID LEVEL		Colour: WHITE	2 Gain: 570.7		% Spent:
SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour:		
		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 537.8		
			Initial Wt: 634.8		
			Final Wt: 816.7		
			3 Gain: 191.9		
			Colour:		
			Impinger #3 Empty		
			Empty Wt: 554.4		
			Final Wt: 555.8		
			4 Gain: 1.4		
			Colour: —		

Impinger Box ID: #1

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	11
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	ALS
Hexane Batch No.:	107640
Acetone Batch No.:	107652

Container TS4 Weights	
Empty Wt:	406.8
With Imp Soln:	1239.9
After ~100g H_2O Rinse:	1359.7
Total TS4:	952.9

CWTR = 1 + 2 + 3 + 4: 761.2

WCBDA=5: 19.2

Train Loaded By: TC / DT
Train Recovered By: RL

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.: 22235
Sample Batch No.: 23-22235-SVOC-

Test No.: BLANK 2
Test Date: OCT 3/23
Test Location: —

Sample ID 36	Sample ID 37	Sample ID 38	Sample ID 39	Sample ID 40	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)

Empty Wt: 406.4	Colour:	Initial Wt: 392.1	Impinger #1 Empty	Empty Wt: 406.2	Initial Wt: 975.2
After Acetone/ Hexane Rinse: 661.0	FOLD IN FOIL	1 Final Wt: 392.0	Empty Wt: 502.2	After Acetone/ Hexane Rinse: 689.6	Final Wt:
Total TS1: 254.6	SEAL AND LABEL CONTAINER TS2	Gain: —	Final Wt: 502.2	5 Total TS5:	Gain: —
MARK FLUID LEVEL		Colour: WHITE	2 Gain: —		% Spent:
SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour: —		
		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 547.2		
			Initial Wt: 671.9		
			Final Wt: 671.9		
			3 Gain: —		
			Colour: —		
			Impinger #3 Empty		
			Empty Wt: 532.2		
			Final Wt: 532.2		
			4 Gain: —		
			Colour: —		
			Container TS4 Weights		
			Empty Wt: 407.4		
			With Imp Soln: 546.9		
			After ~100g H_2O Rinse: 657.3		
			Total TS4: 249.9		

Impinger Box ID: 15

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	5
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	ALS
Hexane Batch No.:	107652
Acetone Batch No.:	107640

CWTR = 1 + 2 + 3 + 4:

WCBDA=5:

Train Loaded By: DM
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.:	22235
Sample Batch No.:	23-22235-SVOC-

Test No.:	BLANK 1
Test Date:	SEPT 22/23
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:	401.5
After Acetone/ Hexane Rinse:	407.5
Total TS1:	30.0

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:	396.0
Final Wt:	396.0
1 Gain:	0
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:	536.0
Final Wt:	536.0
2 Gain:	0
Colour:	—

Impinger #2 Ethylene Glycol	
Empty Wt:	540.2
Initial Wt:	670.8
Final Wt:	670.8
3 Gain:	0
Colour:	—

Impinger #3 Empty	
Empty Wt:	554.0
Final Wt:	554.0
4 Gain:	0
Colour:	—

Container TS4 Weights	
Empty Wt:	409.0
With Imp Soln:	507.2
After ~100g H_2O Rinse:	614.0
Total TS4:	206.0

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:	618.0
5 Total TS5:	211.0

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

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:	3
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
(83 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
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2752774		Mississauga, ON
Date of Report	23-Oct-23		L5J 2Y4
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS: **PCDD/F by EPA M23**

Certified by:

Sabrina Jin
Technical Specialist

ALS Life Sciences

Sample Analysis summary Report

Sample Name	23-22235-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1	23-22235-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1	23-22235-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1	23-22235-SVOC-(16 THRU 20) BLANK
ALS Sample ID	L2752774-1	L2752774-2	L2752774-3	L2752774-4
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	21-Sep-23	21-Sep-23	22-Sep-23	22-Sep-23
Extraction Date	5-Oct-23	5-Oct-23	5-Oct-23	5-Oct-23
Target Analytes	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<2.2	<2.8	<2.0	<2.6
1,2,3,7,8-PeCDD	<7.9	9.08	<5.9	<2.2
1,2,3,4,7,8-HxCDD	49.8	54.3	38.8	<2.1
1,2,3,6,7,8-HxCDD	112	107	94.6	<1.9
1,2,3,7,8,9-HxCDD	40.8	43.2	36.7	<1.9
1,2,3,4,6,7,8-HpCDD	1000	1020	913	<2.4
OCDD	799	807	765	<8.9
2,3,7,8-TCDF	<3.0	<12	<3.7	<1.9
1,2,3,7,8-PeCDF	<8.4	10.7	<4.9	<1.7
2,3,4,7,8-PeCDF	24.0	24.6	<15	<1.5
1,2,3,4,7,8-HxCDF	<33	<30	27.3	<1.4
1,2,3,6,7,8-HxCDF	47.4	46.8	38.6	<1.3
2,3,4,6,7,8-HxCDF	85.5	86.0	79.0	<1.4
1,2,3,7,8,9-HxCDF	<18	22.0	22.1	<1.7
1,2,3,4,6,7,8-HpCDF	275	264	246	<1.7
1,2,3,4,7,8,9-HpCDF	52.5	<51	53.1	<2.1
OCDF	181	196	181	<4.3
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	104	104	106	105
13C12-1,2,3,4,7,8-HxCDD	108	107	109	112
13C12-2,3,4,7,8-PeCDF	96	95	98	100
13C12-1,2,3,4,7,8-HxCDF	106	110	112	109
13C12-1,2,3,4,7,8,9-HpCDF	99	107	105	101
Extraction Standards				
13C12-2,3,7,8-TCDD	50	53	55	38
13C12-1,2,3,7,8-PeCDD	54	58	61	47
13C12-1,2,3,6,7,8-HxCDD	55	55	59	46
13C12-1,2,3,4,6,7,8-HpCDD	57	60	62	51
13C12-OCDD	48	50	50	41
13C12-2,3,7,8-TCDF	51	55	56	39
13C12-1,2,3,7,8-PeCDF	60	63	65	50
13C12-1,2,3,6,7,8-HxCDF	59	57	62	49
13C12-1,2,3,4,6,7,8-HpCDF	61	61	63	53
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	70	73	80	63
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**
Total-TCDD	111	119	84.3	<2.6
Total-PeCDD	419	518	411	<2.2
Total-HxCDD	1910	1840	1700	<2.1
Total-HpCDD	2150	2200	2000	<2.4
Total-TCDF	37.5	260	4.33	<1.9
Total-PeCDF	179	198	80.3	<1.7
Total-HxCDF	509	514	492	<1.7
Total-HpCDF	540	358	384	<2.1
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	54.3	65.9	46.1	0.00
Mid Point PCDD/F TEQ (WHO 2005)	68.8	72.0	57.8	3.37
Upper Bound PCDD/F TEQ (WHO 2005)	70.1	73.4	59.0	6.73

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG3786998-1	WG3786998-2
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	5-Oct-23	5-Oct-23
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<1.9	92
1,2,3,7,8-PeCDD	<4.1	115
1,2,3,4,7,8-HxCDD	<1.4	111
1,2,3,6,7,8-HxCDD	<1.3	103
1,2,3,7,8,9-HxCDD	<1.3	111
1,2,3,4,6,7,8-HpCDD	1.67	95
OCDD	6.55	95
2,3,7,8-TCDF	<1.6	99
1,2,3,7,8-PeCDF	<1.6	106
2,3,4,7,8-PeCDF	<1.4	98
1,2,3,4,7,8-HxCDF	<1.0	111
1,2,3,6,7,8-HxCDF	<0.90	107
2,3,4,6,7,8-HxCDF	<0.95	106
1,2,3,7,8,9-HxCDF	<1.1	114
1,2,3,4,6,7,8-HpCDF	<1.4	105
1,2,3,4,7,8,9-HpCDF	<1.7	104
OCDF	8.34	109
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	51	46
13C12-1,2,3,7,8-PeCDD	60	54
13C12-1,2,3,6,7,8-HxCDD	61	54
13C12-1,2,3,4,6,7,8-HpCDD	66	59
13C12-OCDD	53	49
13C12-2,3,7,8-TCDF	53	47
13C12-1,2,3,7,8-PeCDF	64	58
13C12-1,2,3,6,7,8-HxCDF	64	57
13C12-1,2,3,4,6,7,8-HpCDF	68	61
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	76	78
Homologue Group Totals	**pg**	
Total-TCDD	<1.9	
Total-PeCDD	<2.0	
Total-HxCDD	<1.4	
Total-HpCDD	<1.7	
Total-TCDF	<1.6	
Total-PeCDF	<1.5	
Total-HxCDF	<1.1	
Total-HpCDF	<1.7	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.0212	
Mid Point PCDD/F TEQ (WHO 2005)	5.87	
Upper Bound PCDD/F TEQ (WHO 2005)	7.48	

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Sample Analysis Report

Sample Name	**23-22235-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	21-Sep-23		Approved:
ALS Sample ID	L2752774-1	Extraction Date	5-Oct-23		*M.Elchawiche*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		19-Oct-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-231018A09
Run Date	19-Oct-23 03:48
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 ZB-DX1098141

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	28.46	<2.2	2.2	M,U	2.1	30
1,2,3,7,8-PeCDD	1	31.53	<7.9	1.6	J,R	7.9	150
1,2,3,4,7,8-HxCDD	0.1	33.73	49.8	2.4	J		150
1,2,3,6,7,8-HxCDD	0.1	33.81	112	2.2	J		150
1,2,3,7,8,9-HxCDD	0.1	34.01	40.8	2.3	J		150
1,2,3,4,6,7,8-HpCDD	0.01	36.26	1000	3.1			150
OCDD	0.0003	39.10	799	4.6			300
2,3,7,8-TCDF	0.1	NotFnd	<3.0	3.0	U		30
1,2,3,7,8-PeCDF	0.03	30.80	<8.4	2.0	J,R	8.4	150
2,3,4,7,8-PeCDF	0.3	31.42	24.0	1.8	J		150
1,2,3,4,7,8-HxCDF	0.1	33.17	<33	2.1	J,R	33	150
1,2,3,6,7,8-HxCDF	0.1	33.26	47.4	1.9	J		150
2,3,4,6,7,8-HxCDF	0.1	33.68	85.5	2.0	J		150
1,2,3,7,8,9-HxCDF	0.1	34.38	<18	2.4	M,J,R	18	150
1,2,3,4,6,7,8-HpCDF	0.01	35.33	275	2.0			150
1,2,3,4,7,8,9-HpCDF	0.01	36.90	52.5	2.4	J		150
OCDF	0.0003	39.44	181	3.3	J		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1200	28.48	104	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.72	108	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.41	96	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	33.15	106	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.88	99	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.45	50	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.52	54	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.80	55	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.25	57	25-130			
13C12-OCDD	24000	39.09	48	25-130			
13C12-2,3,7,8-TCDF	12000	27.89	51	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.79	60	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.25	59	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.32	61	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	18000	34.36	70	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	3	111	2.2	30
Total-PeCDD	3	419	1.6	150
Total-HxCDD	7	1910	2.4	150
Total-HpCDD	2	2150	3.1	150
Total-TCDF	6	37.5	3.0	30
Total-PeCDF	9	179	2.0	150
Total-HxCDF	10	509	2.4	150
Total-HpCDF	4	540	2.4	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	54.3
Mid Point PCDD/F TEQ (WHO 2005)	68.8
Upper Bound PCDD/F TEQ (WHO 2005)	70.1

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	21-Sep-23		Approved:
ALS Sample ID	L2752774-2	Extraction Date	5-Oct-23		*M.Elchawiche*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		19-Oct-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-231018A10
Run Date	19-Oct-23 04:33
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 ZB-DX1098141

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.8	2.8	U		30
1,2,3,7,8-PeCDD	1	31.52	9.08	3.6	J		150
1,2,3,4,7,8-HxCDD	0.1	33.72	54.3	4.1	J		150
1,2,3,6,7,8-HxCDD	0.1	33.81	107	3.8	J		150
1,2,3,7,8,9-HxCDD	0.1	34.00	43.2	3.9	J		150
1,2,3,4,6,7,8-HpCDD	0.01	36.26	1020	4.2			150
OCDD	0.0003	39.10	807	5.0			300
2,3,7,8-TCDF	0.1	27.91	<12	5.2	J,R	12	30
1,2,3,7,8-PeCDF	0.03	30.79	10.7	2.2	J		150
2,3,4,7,8-PeCDF	0.3	31.42	24.6	1.9	J		150
1,2,3,4,7,8-HxCDF	0.1	33.16	<30	2.5	J,R	30	150
1,2,3,6,7,8-HxCDF	0.1	33.25	46.8	2.3	J		150
2,3,4,6,7,8-HxCDF	0.1	33.67	86.0	2.4	J		150
1,2,3,7,8,9-HxCDF	0.1	34.37	22.0	2.9	M,J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.33	264	2.1			150
1,2,3,4,7,8,9-HpCDF	0.01	36.90	<51	2.6	J,R	51	150
OCDF	0.0003	39.44	196	3.7	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	33.72	107	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.41	95	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.15	110	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.88	107	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.45	53	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.52	58	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.80	55	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.25	60	25-130
13C12-OCDD	24000	39.09	50	25-130
13C12-2,3,7,8-TCDF	12000	27.89	55	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.79	63	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.24	57	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.32	61	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	34.35	73	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	4	119	2.8	30
Total-PeCDD	6	518	3.6	150
Total-HxCDD	7	1840	4.1	150
Total-HpCDD	2	2200	4.2	150
Total-TCDF	8	260	5.2	30
Total-PeCDF	10	198	2.2	150
Total-HxCDF	11	514	2.9	150
Total-HpCDF	2	358	2.6	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	65.9
Mid Point PCDD/F TEQ (WHO 2005)	72.0
Upper Bound PCDD/F TEQ (WHO 2005)	73.4

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.
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	**23-22235-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	22-Sep-23		Approved:
ALS Sample ID	L2752774-3	Extraction Date	5-Oct-23		*M.Elchawiche*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		19-Oct-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-231018A11
Run Date	19-Oct-23 05:17
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Z8-DX1098141

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	28.49	<2.0	2.0	M,U	1.9	30
1,2,3,7,8-PeCDD	1	31.52	<5.9	4.0	J,R	5.9	150
1,2,3,4,7,8-HxCDD	0.1	33.72	38.8	2.6	J		150
1,2,3,6,7,8-HxCDD	0.1	33.81	94.6	2.4	J		150
1,2,3,7,8,9-HxCDD	0.1	34.00	36.7	2.4	J		150
1,2,3,4,6,7,8-HpCDD	0.01	36.26	913	3.1			150
OCDD	0.0003	39.09	765	5.1			300
2,3,7,8-TCDF	0.1	NotFnd	<3.7	3.7	U		30
1,2,3,7,8-PeCDF	0.03	30.79	<4.9	2.0	M,J,R	4.9	150
2,3,4,7,8-PeCDF	0.3	31.41	<15	1.8	J,R	15	150
1,2,3,4,7,8-HxCDF	0.1	33.16	27.3	2.6	J		150
1,2,3,6,7,8-HxCDF	0.1	33.25	38.6	2.4	J		150
2,3,4,6,7,8-HxCDF	0.1	33.67	79.0	2.6	J		150
1,2,3,7,8,9-HxCDF	0.1	34.37	22.1	3.0	J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.33	246	2.3			150
1,2,3,4,7,8,9-HpCDF	0.01	36.89	53.1	2.9	J		150
OCDF	0.0003	39.44	181	4.0	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	33.71	109	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.40	98	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.15	112	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.88	105	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.45	55	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.51	61	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.80	59	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.25	62	25-130
13C12-OCDD	24000	39.09	50	25-130
13C12-2,3,7,8-TCDF	12000	27.89	56	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.78	65	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.24	62	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.32	63	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	34.35	80	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	1	84.3	2.0	30
Total-PeCDD	4	411	4.0	150
Total-HxCDD	8	1700	2.6	150
Total-HpCDD	2	2000	3.1	150
Total-TCDF	2	4.33	3.7	30
Total-PeCDF	5	80.3	2.0	150
Total-HxCDF	12	492	3.0	150
Total-HpCDF	3	384	2.9	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	46.1
Mid Point PCDD/F TEQ (WHO 2005)	57.8
Upper Bound PCDD/F TEQ (WHO 2005)	59.0

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

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(16 THRU 20) BLANK**	Sampling Date	22-Sep-23		Approved:
ALS Sample ID	L2752774-4	Extraction Date	5-Oct-23		*M.Elchawiche*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		19-Oct-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-231018A08
Run Date	19-Oct-23 03:04
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 ZB-DX1098141

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.6	2.6	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<2.2	2.2	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<2.1	2.1	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<1.9	1.9	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<1.9	1.9	U		150
1,2,3,4,6,7,8-HpCDD	0.01	36.26	<2.4	2.4	M,U		150
OCDD	0.0003	39.13	<8.9	4.9	M,J,R	8.9	300
2,3,7,8-TCDF	0.1	NotFnd	<1.9	1.9	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<1.7	1.7	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.5	1.5	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<1.4	1.4	U		150
1,2,3,6,7,8-HxCDF	0.1	33.25	<1.3	1.3	M,U	1.0	150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<1.4	1.4	U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<1.7	1.7	U		150
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<1.7	1.7	U		150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<2.1	2.1	U		150
OCDF	0.0003	39.46	<4.3	3.9	M,J,R	4.3	300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1200	28.48	105	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.72	112	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.41	100	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	33.15	109	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.89	101	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.46	38	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.52	47	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.80	46	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.25	51	25-130			
13C12-OCDD	24000	39.09	41	25-130			
13C12-2,3,7,8-TCDF	12000	27.89	39	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.79	50	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.25	49	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.32	53	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	18000	34.36	63	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<2.6	2.6	U	30
Total-PeCDD	0	<2.2	2.2	U	150
Total-HxCDD	0	<2.1	2.1	U	150
Total-HpCDD	0	<2.4	2.4	U	150
Total-TCDF	0	<1.9	1.9	U	30
Total-PeCDF	0	<1.7	1.7	U	150
Total-HxCDF	0	<1.7	1.7	U	150
Total-HpCDF	0	<2.1	2.1	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	3.37
Upper Bound PCDD/F TEQ (WHO 2005)	6.73

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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Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		
ALS Sample ID	WG3786998-1	Extraction Date	5-Oct-23		Approved:
Analysis Method	EPA M23	Sample Size	1	Sample	*M.Elchawiche*
Analysis Type	Blank	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	6		19-Oct-2023

Run Information	**Run 1**
Filename	7-231018A06
Run Date	19-Oct-23 01:34
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Z8-DX1098141

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.9	1.9	U		30
1,2,3,7,8-PeCDD	1	31.53	<4.1	2.0	M,J,R	4.1	150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.4	1.4	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<1.3	1.3	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<1.3	1.3	U		150
1,2,3,4,6,7,8-HpCDD	0.01	36.26	1.67	1.7	M,J		150
OCDD	0.0003	39.11	6.55	3.4	M,J		300
2,3,7,8-TCDF	0.1	NotFnd	<1.6	1.6	U		30
1,2,3,7,8-PeCDF	0.03	30.80	<1.6	1.5	J,R	1.6	150
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.4	1.4	U		150
1,2,3,4,7,8-HxCDF	0.1	33.18	<1.0	0.97	M,J,R	1.0	150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<0.90	0.90	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.95	0.95	U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<1.1	1.1	U		150
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<1.4	1.4	U		150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<1.7	1.7	U		150
OCDF	0.0003	39.45	8.34	4.2	M,J		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	28.46	51	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.52	60	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.81	61	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.26	66	25-130
13C12-OCDD	24000	39.10	53	25-130
13C12-2,3,7,8-TCDF	12000	27.91	53	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.79	64	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.25	64	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.33	68	25-130

Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	34.36	76	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<1.9	1.9	U	30
Total-PeCDD	0	<2.0	2.0	U	150
Total-HxCDD	0	<1.4	1.4	U	150
Total-HpCDD	0	<1.7	1.7	U	150
Total-TCDF	0	<1.6	1.6	U	30
Total-PeCDF	0	<1.5	1.5	U	150
Total-HxCDF	0	<1.1	1.1	U	150
Total-HpCDF	0	<1.7	1.7	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.0212
Mid Point PCDD/F TEQ (WHO 2005)	5.87
Upper Bound PCDD/F TEQ (WHO 2005)	7.48

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
NS	Indicates that this compound was not spiked

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Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		Approved:
ALS Sample ID	WG3786998-2	Extraction Date	5-Oct-23		*M.Elchawiche*
Analysis Method	EPA M23	Sample Size	1	n/a	--e-signature--
Analysis Type	LCS	Percent Moisture	n/a		19-Oct-2023
Sample Matrix	QC	Split Ratio	6		

Run Information	**Run 1**
Filename	7-231018A02
Run Date	18-Oct-23 22:36
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 ZB-DX1098141

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1200	28.46	92	70-130	
1,2,3,7,8-PeCDD	6000	31.53	115	70-130	
1,2,3,4,7,8-HxCDD	6000	33.72	111	70-130	
1,2,3,6,7,8-HxCDD	6000	33.81	103	70-130	
1,2,3,7,8,9-HxCDD	6000	34.00	111	70-130	
1,2,3,4,6,7,8-HpCDD	6000	36.26	95	70-130	
OCDD	12000	39.10	95	70-130	
2,3,7,8-TCDF	1200	27.91	99	70-130	M
1,2,3,7,8-PeCDF	6000	30.79	106	70-130	
2,3,4,7,8-PeCDF	6000	31.41	98	70-130	
1,2,3,4,7,8-HxCDF	6000	33.16	111	70-130	
1,2,3,6,7,8-HxCDF	6000	33.25	107	70-130	
2,3,4,6,7,8-HxCDF	6000	33.67	106	70-130	
1,2,3,7,8,9-HxCDF	6000	34.36	114	70-130	
1,2,3,4,6,7,8-HpCDF	6000	35.33	105	70-130	
1,2,3,4,7,8,9-HpCDF	6000	36.89	104	70-130	
OCDF	12000	39.44	109	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	28.45	46	40-130	
13C12-1,2,3,7,8-PeCDD	12000	31.51	54	40-130	
13C12-1,2,3,6,7,8-HxCDD	12000	33.80	54	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.25	59	25-130	
13C12-OCDD	24000	39.09	49	25-130	
13C12-2,3,7,8-TCDF	12000	27.89	47	40-130	
13C12-1,2,3,7,8-PeCDF	12000	30.78	58	40-130	
13C12-1,2,3,6,7,8-HxCDF	12000	33.24	57	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.32	61	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	18000	34.35	78	40-130	

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2752967		Mississauga, ON
Date of Report	14-Nov-23		L5J 2Y4
Date of Sample Receipt	5-Oct-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 COVANTA

COMMENTS: **PCDD/F by EPA M23**

Certified by:

Steve Kennedy
Technical Supervisor

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Sample Analysis summary Report

Sample Name	23-22235-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2	23-22235-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2	23-22235-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2	23-22235-SVOC-(36 THRU 40) BLANK2
ALS Sample ID	L2752967-1	L2752967-2	L2752967-3	L2752967-4
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	3-Oct-23	3-Oct-23	4-Oct-23	3-Oct-23
Extraction Date	17-Oct-23	17-Oct-23	17-Oct-23	17-Oct-23
Target Analytes	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<1.8	<1.7	<1.9	<0.57
1,2,3,7,8-PeCDD	<7.5	<3.5	<6.5	<1.2
1,2,3,4,7,8-HxCDD	8.56	7.61	<8.6	<0.97
1,2,3,6,7,8-HxCDD	18.6	17.8	24.9	<0.93
1,2,3,7,8,9-HxCDD	<8.6	<7.3	10.9	<0.91
1,2,3,4,6,7,8-HpCDD	117	111	173	<1.9
OCDD	105	102	160	6.72
2,3,7,8-TCDF	<2.8	<2.5	66.5	3.57
1,2,3,7,8-PeCDF	5.51	5.35	30.5	<1.7
2,3,4,7,8-PeCDF	9.29	7.26	44.8	<0.74
1,2,3,4,7,8-HxCDF	<6.0	<5.8	19.5	<0.53
1,2,3,6,7,8-HxCDF	7.53	<6.8	22.9	<0.51
2,3,4,6,7,8-HxCDF	<7.8	9.25	<15	<0.53
1,2,3,7,8,9-HxCDF	4.21	<2.5	7.75	<0.61
1,2,3,4,6,7,8-HpCDF	26.7	<27	52.5	<1.7
1,2,3,4,7,8,9-HpCDF	<4.8	3.94	<7.5	<2.0
OCDF	21.0	16.7	33.5	<4.1
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	92	102	99	99
13C12-1,2,3,4,7,8-HxCDD	97	102	96	99
13C12-2,3,4,7,8-PeCDF	98	101	99	100
13C12-1,2,3,4,7,8-HxCDF	95	106	104	99
13C12-1,2,3,4,7,8,9-HpCDF	90	95	92	96
Extraction Standards				
13C12-2,3,7,8-TCDD	69	85	89	72
13C12-1,2,3,7,8-PeCDD	73	83	90	74
13C12-1,2,3,6,7,8-HxCDD	82	99	106	87
13C12-1,2,3,4,6,7,8-HpCDD	77	81	87	86
13C12-OCDD	69	69	72	85
13C12-2,3,7,8-TCDF	60	66	71	40
13C12-1,2,3,7,8-PeCDF	72	85	92	75
13C12-1,2,3,6,7,8-HxCDF	84	105	109	86
13C12-1,2,3,4,6,7,8-HpCDF	79	88	93	87
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	71	81	92	82
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**
Total-TCDD	145	136	208	<0.57
Total-PeCDD	231	293	356	<1.2
Total-HxCDD	333	362	424	<0.97
Total-HpCDD	258	242	374	<1.2
Total-TCDF	58.6	82.7	2000	3.57
Total-PeCDF	64.9	50.6	586	<0.77
Total-HxCDF	42.7	45.0	177	<0.61
Total-HpCDF	35.8	13.6	66.9	<2.0
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	8.32	6.99	31.9	0.359
Mid Point PCDD/F TEQ (WHO 2005)	16.4	14.1	42.7	1.69
Upper Bound PCDD/F TEQ (WHO 2005)	20.2	14.9	42.7	2.96

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG3787134-1	WG3787134-2
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	17-Oct-23	17-Oct-23
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<1.6	88
1,2,3,7,8-PeCDD	<1.0	107
1,2,3,4,7,8-HxCDD	<1.1	96
1,2,3,6,7,8-HxCDD	<1.1	94
1,2,3,7,8,9-HxCDD	<1.1	98
1,2,3,4,6,7,8-HpCDD	<1.9	104
OCDD	8.47	97
2,3,7,8-TCDF	<0.92	96
1,2,3,7,8-PeCDF	<1.8	103
2,3,4,7,8-PeCDF	<1.7	103
1,2,3,4,7,8-HxCDF	<0.55	106
1,2,3,6,7,8-HxCDF	<0.53	102
2,3,4,6,7,8-HxCDF	<0.55	98
1,2,3,7,8,9-HxCDF	<0.63	107
1,2,3,4,6,7,8-HpCDF	<1.2	108
1,2,3,4,7,8,9-HpCDF	<1.3	108
OCDF	<3.7	100
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	69	65
13C12-1,2,3,7,8-PeCDD	77	66
13C12-1,2,3,6,7,8-HxCDD	91	77
13C12-1,2,3,4,6,7,8-HpCDD	98	77
13C12-OCDD	94	80
13C12-2,3,7,8-TCDF	61	46
13C12-1,2,3,7,8-PeCDF	73	64
13C12-1,2,3,6,7,8-HxCDF	89	74
13C12-1,2,3,4,6,7,8-HpCDF	92	76
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	90	80
Homologue Group Totals	**pg**	
Total-TCDD	<1.6	
Total-PeCDD	<1.0	
Total-HxCDD	<1.1	
Total-HpCDD	<1.9	
Total-TCDF	<0.92	
Total-PeCDF	<1.8	
Total-HxCDF	<0.63	
Total-HpCDF	<0.87	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.00254	
Mid Point PCDD/F TEQ (WHO 2005)	1.95	
Upper Bound PCDD/F TEQ (WHO 2005)	3.86	

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Sample Analysis Report

Sample Name	**23-22235-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2**	Sampling Date	3-Oct-23		Approved:
ALS Sample ID	L2752967-1	Extraction Date	17-Oct-23		*M.Elchawiche*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Nov-2023
Sample Matrix	Stack	Split Ratio	3		

Run Information	**Run 1**
Filename	12-231030A21
Run Date	31-Oct-23 06:42
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-12 ZB-DX1159082

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	29.71	<1.8	0.95	J,R	1.8	15
1,2,3,7,8-PeCDD	1	NotFnd	<7.5	7.5	U		75
1,2,3,4,7,8-HxCDD	0.1	34.78	8.56	1.2	J		75
1,2,3,6,7,8-HxCDD	0.1	34.86	18.6	1.1	J		75
1,2,3,7,8,9-HxCDD	0.1	35.07	<8.6	1.1	J,R	8.6	75
1,2,3,4,6,7,8-HpCDD	0.01	37.56	117	1.6			75
OCDD	0.0003	40.78	105	2.8	J		150
2,3,7,8-TCDF	0.1	29.33	<2.8	2.3	J,R	2.8	15
1,2,3,7,8-PeCDF	0.03	31.72	5.51	2.3	J		75
2,3,4,7,8-PeCDF	0.3	32.36	9.29	2.2	M,J		75
1,2,3,4,7,8-HxCDF	0.1	34.19	<6.0	0.79	J,R	6.0	75
1,2,3,6,7,8-HxCDF	0.1	34.28	7.53	0.77	J		75
2,3,4,6,7,8-HxCDF	0.1	34.74	<7.8	0.79	M,J,R	7.8	75
1,2,3,7,8,9-HxCDF	0.1	35.52	4.21	0.91	J		75
1,2,3,4,6,7,8-HpCDF	0.01	36.55	26.7	1.1	J		75
1,2,3,4,7,8,9-HpCDF	0.01	38.29	<4.8	1.4	M,J,R	4.8	75
OCDF	0.0003	41.19	21.0	7.0	J		150
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1200	29.71	92	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	34.76	97	70-130			
13C12-2,3,4,7,8-PeCDF	12000	32.34	98	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	34.17	95	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	38.28	90	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	29.70	69	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.44	73	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.85	82	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	37.55	77	25-130			
13C12-OCDD	24000	40.77	69	25-130			
13C12-2,3,7,8-TCDF	12000	29.31	60	40-130			
13C12-1,2,3,7,8-PeCDF	12000	31.70	72	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	34.27	84	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	36.53	79	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	18000	35.49	71	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	4	145	0.95	15
Total-PeCDD	3	231	7.5	75
Total-HxCDD	4	333	1.2	75
Total-HpCDD	2	258	1.6	75
Total-TCDF	5	58.6	2.3	15
Total-PeCDF	6	64.9	2.3	75
Total-HxCDF	7	42.7	0.91	75
Total-HpCDF	2	35.8	1.4	75

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	8.32
Mid Point PCDD/F TEQ (WHO 2005)	16.4
Upper Bound PCDD/F TEQ (WHO 2005)	20.2

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.
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	**23-22235-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2**	Sampling Date	3-Oct-23		Approved:
ALS Sample ID	L2752967-2	Extraction Date	17-Oct-23		*M.Elchawiche*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Nov-2023
Sample Matrix	Stack	Split Ratio	3		

Run Information	**Run 1**
Filename	12-231030A22
Run Date	31-Oct-23 07:29
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-12 ZB-DX1159082

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		15
1,2,3,7,8-PeCDD	1	32.48	<3.5	1.8	M,J,R	3.5	75
1,2,3,4,7,8-HxCDD	0.1	34.80	7.61	1.2	J		75
1,2,3,6,7,8-HxCDD	0.1	34.89	17.8	1.2	J		75
1,2,3,7,8,9-HxCDD	0.1	35.11	<7.3	1.2	J,R	7.3	75
1,2,3,4,6,7,8-HpCDD	0.01	37.59	111	1.2			75
OCDD	0.0003	40.81	102	7.4	J		150
2,3,7,8-TCDF	0.1	29.34	<2.5	1.8	J,R	2.5	15
1,2,3,7,8-PeCDF	0.03	31.73	5.35	1.3	J		75
2,3,4,7,8-PeCDF	0.3	32.37	7.26	1.3	J		75
1,2,3,4,7,8-HxCDF	0.1	34.21	<5.8	0.87	J,R	5.8	75
1,2,3,6,7,8-HxCDF	0.1	34.30	<6.8	0.84	J,R	6.8	75
2,3,4,6,7,8-HxCDF	0.1	34.76	9.25	0.88	M,J		75
1,2,3,7,8,9-HxCDF	0.1	35.54	<2.5	1.0	M,J,R	2.5	75
1,2,3,4,6,7,8-HpCDF	0.01	36.55	<27	2.2	J,R	27	75
1,2,3,4,7,8,9-HpCDF	0.01	38.34	3.94	2.6	J		75
OCDF	0.0003	41.21	16.7	2.3	J		150
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1200	29.74	102	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	34.79	102	70-130			
13C12-2,3,4,7,8-PeCDF	12000	32.36	101	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	34.20	106	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	38.30	95	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	29.73	85	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.47	83	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.88	99	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	37.57	81	25-130			
13C12-OCDD	24000	40.79	69	25-130			
13C12-2,3,7,8-TCDF	12000	29.33	66	40-130			
13C12-1,2,3,7,8-PeCDF	12000	31.73	85	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	34.28	105	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	36.55	88	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	18000	35.50	81	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	3	136	1.7	15
Total-PeCDD	5	293	1.8	75
Total-HxCDD	6	362	1.2	75
Total-HpCDD	2	242	1.2	75
Total-TCDF	9	82.7	1.8	15
Total-PeCDF	5	50.6	1.3	75
Total-HxCDF	4	45.0	1.0	75
Total-HpCDF	2	13.6	2.6	75

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	6.99
Mid Point PCDD/F TEQ (WHO 2005)	14.1
Upper Bound PCDD/F TEQ (WHO 2005)	14.9

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
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	**23-22235-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2**	Sampling Date	4-Oct-23		Approved:
ALS Sample ID	L2752967-3	Extraction Date	17-Oct-23		*M.Elchawiche*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Nov-2023
Sample Matrix	Stack	Split Ratio	3		

Run Information	**Run 1**
Filename	12-231030A23
Run Date	31-Oct-23 08:16
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-12 ZB-DX1159082

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	29.74	<1.9	0.58	J,R	1.9	15
1,2,3,7,8-PeCDD	1	32.48	<6.5	0.92	J,R	6.5	75
1,2,3,4,7,8-HxCDD	0.1	34.80	<8.6	0.96	J,R	8.6	75
1,2,3,6,7,8-HxCDD	0.1	34.89	24.9	0.92	J		75
1,2,3,7,8,9-HxCDD	0.1	35.10	10.9	0.91	J		75
1,2,3,4,6,7,8-HpCDD	0.01	37.59	173	1.1			75
OCDD	0.0003	40.80	160	4.1			150
2,3,7,8-TCDF	0.1	29.34	66.5	0.98			15
1,2,3,7,8-PeCDF	0.03	31.73	30.5	7.5	J		75
2,3,4,7,8-PeCDF	0.3	32.37	44.8	7.2	J		75
1,2,3,4,7,8-HxCDF	0.1	34.21	19.5	0.86	J		75
1,2,3,6,7,8-HxCDF	0.1	34.31	22.9	0.83	J		75
2,3,4,6,7,8-HxCDF	0.1	34.75	<15	0.86	M,J,R	15	75
1,2,3,7,8,9-HxCDF	0.1	35.54	7.75	0.99	J		75
1,2,3,4,6,7,8-HpCDF	0.01	36.56	52.5	1.6	J		75
1,2,3,4,7,8,9-HpCDF	0.01	38.31	<7.5	1.9	M,J,R	7.5	75
OCDF	0.0003	41.21	33.5	1.9	M,J		150
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1200	29.74	99	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	34.79	96	70-130			
13C12-2,3,4,7,8-PeCDF	12000	32.36	99	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	34.20	104	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	38.30	92	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	29.73	89	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.47	90	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.88	106	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	37.57	87	25-130			
13C12-OCDD	24000	40.79	72	25-130			
13C12-2,3,7,8-TCDF	12000	29.33	71	40-130			
13C12-1,2,3,7,8-PeCDF	12000	31.73	92	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	34.28	109	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	36.55	93	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	18000	35.52	92	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	9	208	0.58	15
Total-PeCDD	7	356	0.92	75
Total-HxCDD	5	424	0.96	75
Total-HpCDD	2	374	1.1	75
Total-TCDF	20	2000	0.98	15
Total-PeCDF	10	586	7.5	75
Total-HxCDF	10	177	0.99	75
Total-HpCDF	2	66.9	1.9	75

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	31.9
Mid Point PCDD/F TEQ (WHO 2005)	42.7
Upper Bound PCDD/F TEQ (WHO 2005)	42.7

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.
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	**23-22235-SVOC-(36 THRU 40) BLANK2**	Sampling Date	3-Oct-23		Approved:
ALS Sample ID	L2752967-4	Extraction Date	17-Oct-23		*M.Elchawiche*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Nov-2023
Sample Matrix	Stack	Split Ratio	3		

Run Information	**Run 1**
Filename	12-231030A20
Run Date	31-Oct-23 05:56
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-12 ZB-DX1159082

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<0.57	0.57	U		15
1,2,3,7,8-PeCDD	1	NotFnd	<1.2	1.2	U		75
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<0.97	0.97	U		75
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<0.93	0.93	U		75
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<0.91	0.91	U		75
1,2,3,4,6,7,8-HpCDD	0.01	37.56	<1.9	1.2	J,R	1.9	75
OCDD	0.0003	40.81	6.72	3.0	M,J,B		150
2,3,7,8-TCDF	0.1	29.27	3.57	1.0	J		15
1,2,3,7,8-PeCDF	0.03	31.72	<1.7	0.77	M,J,R	1.7	75
2,3,4,7,8-PeCDF	0.3	32.36	<0.74	0.74	M,U	0.63	75
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<0.53	0.53	U		75
1,2,3,6,7,8-HxCDF	0.1	34.28	<0.51	0.51	M,U		75
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.53	0.53	M,U		75
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<0.61	0.61	U		75
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<1.7	1.7	U		75
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<2.0	2.0	U		75
OCDF	0.0003	NotFnd	<4.1	4.1	U		150

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	29.73	99	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	34.78	99	70-130
13C12-2,3,4,7,8-PeCDF	12000	32.34	100	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	34.19	99	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	38.29	96	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	29.71	72	40-130
13C12-1,2,3,7,8-PeCDD	12000	32.46	74	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.86	87	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	37.56	86	25-130
13C12-OCDD	24000	40.76	85	25-130
13C12-2,3,7,8-TCDF	12000	29.31	40	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.72	75	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	34.27	86	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	36.54	87	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	35.49	82	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<0.57	0.57	U	15
Total-PeCDD	0	<1.2	1.2	U	75
Total-HxCDD	0	<0.97	0.97	U	75
Total-HpCDD	0	<1.2	1.2	U	75
Total-TCDF	1	3.57	1.0		15
Total-PeCDF	0	<0.77	0.77	U	75
Total-HxCDF	0	<0.61	0.61	U	75
Total-HpCDF	0	<2.0	2.0	U	75

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.359
Mid Point PCDD/F TEQ (WHO 2005)	1.69
Upper Bound PCDD/F TEQ (WHO 2005)	2.96

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		Approved:
ALS Sample ID	WG3787134-1	Extraction Date	17-Oct-23		*M.Elchawiche*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Blank	Percent Moisture	n/a		08-Nov-2023
Sample Matrix	QC	Split Ratio	3		

Run Information	**Run 1**
Filename	12-231030A19
Run Date	31-Oct-23 05:09
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-12 Z8-DX1159082

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.6	1.6	U		15
1,2,3,7,8-PeCDD	1	NotFnd	<1.0	1.0	U		75
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.1	1.1	U		75
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<1.1	1.1	U		75
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<1.1	1.1	U		75
1,2,3,4,6,7,8-HpCDD	0.01	37.59	<1.9	1.9	M,J,R	1.9	75
OCDD	0.0003	40.81	8.47	2.3	M,J		150
2,3,7,8-TCDF	0.1	NotFnd	<0.92	0.92	U		15
1,2,3,7,8-PeCDF	0.03	NotFnd	<1.8	1.8	U		75
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.7	1.7	U		75
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<0.55	0.55	U		75
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<0.53	0.53	U		75
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.55	0.55	U		75
1,2,3,7,8,9-HxCDF	0.1	35.53	<0.63	0.63	M,U	0.28	75
1,2,3,4,6,7,8-HpCDF	0.01	36.55	<1.2	0.74	M,J,R	1.2	75
1,2,3,4,7,8,9-HpCDF	0.01	38.29	<1.3	0.87	M,J,R	1.3	75
OCDF	0.0003	41.18	<3.7	2.9	M,J,R	3.7	150

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	29.71	69	40-130
13C12-1,2,3,7,8-PeCDD	12000	32.46	77	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.86	91	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	37.56	98	25-130
13C12-OCDD	24000	40.76	94	25-130
13C12-2,3,7,8-TCDF	12000	29.33	61	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.72	73	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	34.27	89	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	36.54	92	25-130

Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	35.50	90	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<1.6	1.6	U	15
Total-PeCDD	0	<1.0	1.0	U	75
Total-HxCDD	0	<1.1	1.1	U	75
Total-HpCDD	0	<1.9	1.9	U	75
Total-TCDF	0	<0.92	0.92	U	15
Total-PeCDF	0	<1.8	1.8	U	75
Total-HxCDF	0	<0.63	0.63	U	75
Total-HpCDF	0	<0.87	0.87	U	75

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00254
Mid Point PCDD/F TEQ (WHO 2005)	1.95
Upper Bound PCDD/F TEQ (WHO 2005)	3.86

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
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
NS	Indicates that this compound was not spiked

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG3787134-2	Extraction Date	17-Oct-23		Approved:
Analysis Method	EPA M23	Sample Size	1	n/a	*M.Elchawiche*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	3		08-Nov-2023

Run Information	**Run 1**
Filename	12-231030A15
Run Date	31-Oct-23 03:06
Final Volume	10 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-12 ZB-DX1159082

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1200	29.73	88	70-130	
1,2,3,7,8-PeCDD	6000	32.47	107	70-130	
1,2,3,4,7,8-HxCDD	6000	34.79	96	70-130	
1,2,3,6,7,8-HxCDD	6000	34.88	94	70-130	
1,2,3,7,8,9-HxCDD	6000	35.08	98	70-130	
1,2,3,4,6,7,8-HpCDD	6000	37.57	104	70-130	
OCDD	12000	40.79	97	70-130	
2,3,7,8-TCDF	1200	29.34	96	70-130	
1,2,3,7,8-PeCDF	6000	31.73	103	70-130	
2,3,4,7,8-PeCDF	6000	32.37	103	70-130	
1,2,3,4,7,8-HxCDF	6000	34.20	106	70-130	
1,2,3,6,7,8-HxCDF	6000	34.30	102	70-130	
2,3,4,6,7,8-HxCDF	6000	34.74	98	70-130	
1,2,3,7,8,9-HxCDF	6000	35.52	107	70-130	
1,2,3,4,6,7,8-HpCDF	6000	36.55	108	70-130	
1,2,3,4,7,8,9-HpCDF	6000	38.30	108	70-130	
OCDF	12000	41.20	100	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	29.71	65	40-130	
13C12-1,2,3,7,8-PeCDD	12000	32.46	66	40-130	
13C12-1,2,3,6,7,8-HxCDD	12000	34.86	77	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	12000	37.56	77	25-130	
13C12-OCDD	24000	40.77	80	25-130	
13C12-2,3,7,8-TCDF	12000	29.33	46	40-130	
13C12-1,2,3,7,8-PeCDF	12000	31.72	64	40-130	
13C12-1,2,3,6,7,8-HxCDF	12000	34.28	74	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	12000	36.54	76	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	18000	35.50	80	40-130	

NS Indicates that this compound was not spiked

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
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2752774		Mississauga, ON L5J 2Y4
Date of Report	24-Oct-23		Canada
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 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:

Sabrina Jin
Technical Specialist

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	23-22235-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1	23-22235-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1	23-22235-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1	23-22235-SVOC-(16 THRU 20) BLANK
ALS Sample ID	L2752774-1	L2752774-2	L2752774-3	L2752774-4
Sample Size	1	1	1	1
Sample size units	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	21-Sep-23	21-Sep-23	22-Sep-23	22-Sep-23
Extraction Date	5-Oct-23	5-Oct-23	5-Oct-23	5-Oct-23
Target Analytes	**pg**	**pg**	**pg**	**pg**
PCB-081	<6.4	<28	<6.2	<5.2
PCB-077	91.8	629	72.0	<5.2
PCB-123	39.1	350	<19	<3.6
PCB-118	2490	23800	1930	<9.0
PCB-114	64.0	593	<44	<3.6
PCB-105	601	6640	586	<3.2
PCB-126	<8.0	32.1	<5.7	<3.1
PCB-167	20.2	134	<19	<2.5
PCB-156/157	60.8	356	60.1	<3.4
PCB-169	<8.0	15.8	<8.1	<2.5
PCB-189	<16	<16	14.9	<2.8
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-081	65	68	50	54
13C12-PCB-077	68	70	52	57
13C12-PCB-123	67	69	53	57
13C12-PCB-118	65	66	52	57
13C12-PCB-114	63	65	49	54
13C12-PCB-105	69	68	53	60
13C12-PCB-126	74	72	59	65
13C12-PCB-167	72	71	60	65
13C12-PCB-156/157	71	67	57	65
13C12-PCB-169	77	74	63	71
13C12-PCB-189	64	62	53	59
Field Spike Standards				
13C12-PCB-031	88	95	89	87
13C12-PCB-095	88	94	88	85
13C12-PCB-153	99	103	102	93
Cleanup Standards				
13C12-PCB-028	53	62	41	46
13C12-PCB-111	74	76	61	67
13C12-PCB-178	74	79	66	74
Toxic Equivalency - (WHO 2005)				
Lower Bound PCB TEQ	0.107	4.70	0.0849	0.00
Mid Point PCB TEQ	1.15	4.71	0.616	0.194
Upper Bound PCB TEQ	1.15	4.71	0.902	0.388

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Quality Control Summary Report

Sample Name	Method Blank
ALS Sample ID	WG3786998-1
Sample Size	1
Sample size units	sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	5-Oct-23

Target Analytes	pg
PCB-0B1	<2.8
PCB-077	<2.8
PCB-123	<2.3
PCB-118	<9.3
PCB-114	<2.2
PCB-105	<2.1
PCB-126	<2.0
PCB-167	<1.4
PCB-156/157	12.2
PCB-169	<1.4
PCB-189	<1.3
Extraction Standards	**% Rec**
13C12-PCB-081	43
13C12-PCB-077	45
13C12-PCB-123	45
13C12-PCB-11B	43
13C12-PCB-114	43
13C12-PCB-105	46
13C12-PCB-126	50
13C12-PCB-167	49
13C12-PCB-156/157	49
13C12-PCB-169	54
13C12-PCB-189	48
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-02B	42
13C12-PCB-111	48
13C12-PCB-178	50

Toxic Equivalency - (WHO 2005)	
Lower Bound PCB TEQ	0.000366
Mid Point PCB TEQ	0.122
Upper Bound PCB TEQ	0.244

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample
ALS Sample ID	WG3786998-2
Sample Size	1
Sample size units	n/a
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	5-Oct-23
Target Analytes	**% Rec**
PCB-081	89
PCB-077	85
PCB-123	91
PCB-118	90
PCB-114	96
PCB-105	86
PCB-126	89
PCB-167	90
PCB-156/157	93
PCB-169	94
PCB-189	93
Extraction Standards	**% Rec**
13C12-PCB-081	40
13C12-PCB-077	42
13C12-PCB-123	43
13C12-PCB-118	43
13C12-PCB-114	40
13C12-PCB-105	45
13C12-PCB-126	48
13C12-PCB-167	48
13C12-PCB-156/157	46
13C12-PCB-169	53
13C12-PCB-189	45
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	41
13C12-PCB-111	50
13C12-PCB-178	53

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	21-Sep-23		Approved:
ALS Sample ID	L2752774-1	Extraction Date	5-Oct-23		*B.SINGH*
Analysis Method	EPA 1668C	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		23-Oct-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-231014A22
Run Date	14-Oct-23 14:31
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL283005-05

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	22.37	<6.4	6.4	U	3.5	150
PCB-077	0.0001	22.68	91.8	6.6	J		150
PCB-123	0.00003	23.66	39.1	5.2	M,J		150
PCB-118	0.00003	23.86	2490	4.9			150
PCB-114	0.00003	24.16	64.0	5.2	J		150
PCB-105	0.00003	24.50	601	4.8			150
PCB-126	0.1	26.09	<8.0	4.5	J,R	8.0	150
PCB-167	0.00003	27.00	20.2	2.7	J		150
PCB-156/157	0.00003	27.63	60.8	3.6	J,B		300
PCB-169	0.03	29.31	<8.0	2.7	M,J,R	8.0	150
PCB-189	0.00003	30.59	<16	2.9	J,R	16	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.36	65	10-145
13C12-PCB-077	12000	22.66	68	10-145
13C12-PCB-123	12000	23.66	67	10-145
13C12-PCB-118	12000	23.84	65	10-145
13C12-PCB-114	12000	24.15	63	10-145
13C12-PCB-105	12000	24.50	69	10-145
13C12-PCB-126	12000	26.08	74	10-145
13C12-PCB-167	12000	26.99	72	10-145
13C12-PCB-156/157	24000	27.63	71	10-145
13C12-PCB-169	12000	29.28	77	10-145
13C12-PCB-189	12000	30.57	64	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.33	88	70-130
13C12-PCB-095	12000	19.67	88	70-130
13C12-PCB-153	12000	24.77	99	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.51	53	5-145
13C12-PCB-111	18000	22.60	74	10-145
13C12-PCB-178	18000	25.67	74	10-145

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.107
Mid Point PCB TEQ	1.15
Upper Bound PCB TEQ	1.15

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-2223S-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	21-Sep-23		Approved:
ALS Sample ID	L2752774-2	Extraction Date	5-Oct-23		*B.SINGH*
Analysis Method	EPA 1668C	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		23-Oct-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-231014A23
Run Date	14-Oct-23 15:16
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL283005-05

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	22.36	<28	6.6	M,J,R	28	150
PCB-077	0.0001	22.67	629	6.6			150
PCB-123	0.00003	23.67	350	5.2			150
PCB-118	0.00003	23.86	23800	5.1			150
PCB-114	0.00003	24.16	593	5.4			150
PCB-105	0.00003	24.50	6640	5.1			150
PCB-126	0.1	26.09	32.1	4.8	J		150
PCB-167	0.00003	27.00	134	3.3	J		150
PCB-156/157	0.00003	27.63	356	4.7			300
PCB-169	0.03	29.29	15.8	3.4	J		150
PCB-189	0.00003	30.59	<16	3.5	J,R	16	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.36	68	10-145
13C12-PCB-077	12000	22.66	70	10-145
13C12-PCB-123	12000	23.66	69	10-145
13C12-PCB-118	12000	23.84	66	10-145
13C12-PCB-114	12000	24.15	65	10-145
13C12-PCB-105	12000	24.48	68	10-145
13C12-PCB-126	12000	26.08	72	10-145
13C12-PCB-167	12000	26.99	71	10-145
13C12-PCB-156/157	24000	27.63	67	10-145
13C12-PCB-169	12000	29.28	74	10-145
13C12-PCB-189	12000	30.57	62	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.33	95	70-130
13C12-PCB-095	12000	19.67	94	70-130
13C12-PCB-153	12000	24.77	103	70-130
Cleanup Standards				
13C12-PCB-028	16000	16.51	62	5-145
13C12-PCB-111	16000	22.60	76	10-145
13C12-PCB-178	16000	25.67	79	10-145

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	4.70
Mid Point PCB TEQ	4.71
Upper Bound PCB TEQ	4.71

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-2223S-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	22-Sep-23		
ALS Sample ID	L2752774-3	Extraction Date	5-Oct-23		Approved:
Analysis Method	EPA 1668C	Sample Size	1	sample	*B.SINGH*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		23-Oct-2023

Run Information	**Run 1**
Filename	6-231014A24
Run Date	14-Oct-23 16:01
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL283005-05

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	22.36	<6.2	6.2	M,U	5.7	150
PCB-077	0.0001	22.67	72.0	6.2	J		150
PCB-123	0.00003	23.67	<19	6.4	J,R	19	150
PCB-118	0.00003	23.84	1930	6.0			150
PCB-114	0.00003	24.15	<44	6.6	J,R	44	150
PCB-105	0.00003	24.50	586	6.1			150
PCB-126	0.1	NotFnd	<5.7	5.7	U		150
PCB-167	0.00003	27.00	<19	4.1	J,R	19	150
PCB-156/157	0.00003	27.61	60.1	5.7	J,B		300
PCB-169	0.03	29.28	<8.1	4.2	J,R	8.1	150
PCB-189	0.00003	30.57	14.9	3.3	J		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.35	50	10-145
13C12-PCB-077	12000	22.65	52	10-145
13C12-PCB-123	12000	23.66	53	10-145
13C12-PCB-118	12000	23.83	52	10-145
13C12-PCB-114	12000	24.13	49	10-145
13C12-PCB-105	12000	24.48	53	10-145
13C12-PCB-126	12000	26.07	59	10-145
13C12-PCB-167	12000	26.99	60	10-145
13C12-PCB-156/157	24000	27.61	57	10-145
13C12-PCB-169	12000	29.27	63	10-145
13C12-PCB-189	12000	30.57	53	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.32	89	70-130
13C12-PCB-095	12000	19.66	88	70-130
13C12-PCB-153	12000	24.76	102	70-130
Cleanup Standards				
13C12-PCB-02B	18000	16.50	41	5-145
13C12-PCB-111	18000	22.59	61	10-145
13C12-PCB-17B	18000	25.66	66	10-145

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.0849
Mid Point PCB TEQ	0.616
Upper Bound PCB TEQ	0.902

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(16 THRU 20) BLANK**	Sampling Date	22-Sep-23		Approved:
ALS Sample ID	L2752774-4	Extraction Date	5-Oct-23		*B.SINGH*
Analysis Method	EPA 1668C	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		23-Oct-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-231014A21
Run Date	14-Oct-23 13:46
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL283005-05

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<5.2	5.2	U		150
PCB-077	0.0001	NotFnd	<5.2	5.2	U		150
PCB-123	0.00003	NotFnd	<3.6	3.6	U		150
PCB-118	0.00003	23.83	<9.0	3.3	J,R	9.0	150
PCB-114	0.00003	NotFnd	<3.6	3.6	U		150
PCB-105	0.00003	NotFnd	<3.2	3.2	U		150
PCB-126	0.1	NotFnd	<3.1	3.1	U		150
PCB-167	0.00003	NotFnd	<2.5	2.5	U		150
PCB-156/157	0.00003	NotFnd	<3.4	3.4	U		300
PCB-169	0.03	NotFnd	<2.5	2.5	U		150
PCB-189	0.00003	NotFnd	<2.8	2.8	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.36	54	10-145
13C12-PCB-077	12000	22.66	57	10-145
13C12-PCB-123	12000	23.66	57	10-145
13C12-PCB-118	12000	23.83	57	10-145
13C12-PCB-114	12000	24.15	54	10-145
13C12-PCB-105	12000	24.48	60	10-145
13C12-PCB-126	12000	26.08	65	10-145
13C12-PCB-167	12000	26.99	65	10-145
13C12-PCB-156/157	24000	27.63	65	10-145
13C12-PCB-169	12000	29.28	71	10-145
13C12-PCB-189	12000	30.57	59	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.34	87	70-130
13C12-PCB-095	12000	19.67	85	70-130
13C12-PCB-153	12000	24.77	93	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.51	46	5-145
13C12-PCB-111	18000	22.60	67	10-145
13C12-PCB-178	18000	25.67	74	10-145

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.194
Upper Bound PCB TEQ	0.388

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		Approved:
ALS Sample ID	WG3786998-1	Extraction Date	5-Oct-23		*B.SINGH*
Analysis Method	EPA 1668C	Sample Size	1	sample	--e-signature--
Analysis Type	Blank	Percent Moisture	n/a		23-Oct-2023
Sample Matrix	QC	Split Ratio	6		

Run Information	**Run 1**
Filename	6-231014A19
Run Date	14-Oct-23 12:16
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL283005-05

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<2.8	2.8	U		150
PCB-077	0.0001	NotFnd	<2.8	2.8	U		150
PCB-123	0.00003	NotFnd	<2.3	2.3	U		150
PCB-118	0.00003	23.86	<9.3	2.1	M,J,R	9.3	150
PCB-114	0.00003	NotFnd	<2.2	2.2	U		150
PCB-105	0.00003	NotFnd	<2.1	2.1	U		150
PCB-126	0.1	NotFnd	<2.0	2.0	U		150
PCB-167	0.00003	NotFnd	<1.4	1.4	U		150
PCB-156/157	0.00003	27.63	12.2	3.7	J		300
PCB-169	0.03	NotFnd	<1.4	1.4	U		150
PCB-189	0.00003	NotFnd	<1.3	1.3	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.36	43	10-145
13C12-PCB-077	12000	22.67	45	10-145
13C12-PCB-123	12000	23.67	45	10-145
13C12-PCB-118	12000	23.84	43	10-145
13C12-PCB-114	12000	24.15	43	10-145
13C12-PCB-105	12000	24.50	46	10-145
13C12-PCB-126	12000	26.08	50	10-145
13C12-PCB-167	12000	27.00	49	10-145
13C12-PCB-156/157	24000	27.63	49	10-145
13C12-PCB-169	12000	29.28	54	10-145
13C12-PCB-189	12000	30.57	48	10-145
Field Spike Standards				
13C12-PCB-031	0		NS	70-130
13C12-PCB-095	0		NS	70-130
13C12-PCB-153	0		NS	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.51	42	5-145
13C12-PCB-111	18000	22.60	48	10-145
13C12-PCB-178	18000	25.67	50	10-145

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.000366
Mid Point PCB TEQ	0.122
Upper Bound PCB TEQ	0.244

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
NS	Indicates that this compound was not spiked

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Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG3786998-2	Extraction Date	5-Oct-23		Approved:
Analysis Method	EPA 1668C	Sample Size	1	n/a	*B.SINGH*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		23-Oct-2023

Run Information	**Run 1**
Filename	6-231014A17
Run Date	14-Oct-23 10:47
Final Volume	25 ul
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-6 SP8OCTYL283005-05

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
PCB-081	6000	22.37	89	60-135	
PCB-077	6000	22.68	85	60-135	
PCB-123	6000	23.67	91	60-135	
PCB-118	6000	23.86	90	60-135	
PCB-114	6000	24.16	96	60-135	
PCB-105	6000	24.50	86	60-135	
PCB-126	6000	26.09	89	60-135	
PCB-167	6000	27.00	90	60-135	
PCB-156/157	12000	27.64	93	60-135	
PCB-169	6000	29.29	94	60-135	
PCB-189	6000	30.59	93	60-135	
Extraction Standards		**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	22.35	40	40-145	
13C12-PCB-077	12000	22.66	42	40-145	
13C12-PCB-123	12000	23.66	43	40-145	
13C12-PCB-118	12000	23.83	43	40-145	
13C12-PCB-114	12000	24.13	40	40-145	
13C12-PCB-105	12000	24.48	45	40-145	
13C12-PCB-126	12000	26.08	48	40-145	
13C12-PCB-167	12000	26.99	48	40-145	
13C12-PCB-156/157	24000	27.63	46	40-145	
13C12-PCB-169	12000	29.28	53	40-145	
13C12-PCB-189	12000	30.57	45	40-145	
Field Spike Standards					
13C12-PCB-031	0		NS	70-130	
13C12-PCB-095	0		NS	70-130	
13C12-PCB-153	0		NS	70-130	
Cleanup Standards					
13C12-PCB-028	18000	16.50	41	15-145	
13C12-PCB-111	18000	22.59	50	40-145	
13C12-PCB-178	18000	25.67	53	40-145	

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
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2752967		Mississauga, ON L5J 2Y4
Date of Report	3-Nov-23		Canada
Date of Sample Receipt	5-Oct-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 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

For the sample 23-22235-SVOC-(36 THRU 40) BLANK2, the recovery of the field standard 13C12-PCB-31 was marginally above the method control limit. No impact to overall data quality is expected as a result.

Certified by:

Sabrina Jin
Technical Specialist

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	23-22235-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2	23-22235-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2	23-22235-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2	23-22235-SVOC-(36 THRU 40) BLANK2
ALS Sample ID	L2752967-1	L2752967-2	L2752967-3	L2752967-4
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	3-Oct-23	3-Oct-23	4-Oct-23	3-Oct-23
Extraction Date	17-Oct-23	17-Oct-23	17-Oct-23	17-Oct-23
Target Analytes	**pg**	**pg**	**pg**	**pg**
PCB-081	<8.7	<9.2	<70	<2.7
PCB-077	<67	48.7	1240	<2.5
PCB-123	<29	13.3	746	<3.0
PCB-118	1900	848	63600	18.1
PCB-114	51.6	<26	1660	<3.2
PCB-105	471	249	17900	<2.9
PCB-126	<7.4	<11	89.7	<3.0
PCB-167	<13	11.2	363	<2.2
PCB-156/157	<33	25.6	897	<3.1
PCB-169	<4.0	<8.5	29.0	<2.3
PCB-189	<2.8	<2.0	<15	<1.4
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-081	82	93	83	69
13C12-PCB-077	88	98	83	82
13C12-PCB-123	95	106	90	84
13C12-PCB-118	90	103	86	82
13C12-PCB-114	87	97	83	79
13C12-PCB-105	96	105	87	84
13C12-PCB-126	94	105	89	87
13C12-PCB-167	90	101	88	74
13C12-PCB-156/157	87	98	86	73
13C12-PCB-169	88	100	88	80
13C12-PCB-189	71	78	69	83
Field Spike Standards				
13C12-PCB-031	119	121	117	132
13C12-PCB-095	100	93	99	88
13C12-PCB-153	114	104	113	105
Cleanup Standards				
13C12-PCB-028	68	71	65	64
13C12-PCB-111	77	83	76	69
13C12-PCB-178	72	77	71	58
Toxic Equivalency - (WHO 2005)	**pg**	**pg**	**pg**	**pg**
Lower Bound PCB TEQ	0.0727	0.0393	12.5	0.000543
Mid Point PCB TEQ	0.513	1.40	12.5	0.186
Upper Bound PCB TEQ	0.944	1.40	12.5	0.371

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Quality Control Summary Report

Sample Name	Method Blank
ALS Sample ID	WG3787134-1
Sample Size	1
Sample size units	Blank
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	17-Oct-23
Target Analytes	**pg**
PCB-081	<5.3
PCB-077	<5.0
PCB-123	<7.8
PCB-118	<12
PCB-114	<8.0
PCB-105	<8.0
PCB-126	<7.3
PCB-167	<2.7
PCB-156/157	<5.9
PCB-169	<3.3
PCB-189	<3.8
Extraction Standards	**% Rec**
13C12-PCB-081	51
13C12-PCB-077	53
13C12-PCB-123	54
13C12-PCB-118	53
13C12-PCB-114	51
13C12-PCB-105	55
13C12-PCB-126	57
13C12-PCB-167	53
13C12-PCB-156/157	53
13C12-PCB-169	56
13C12-PCB-189	46
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	48
13C12-PCB-111	49
13C12-PCB-178	48
Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.466
Upper Bound PCB TEQ	0.833

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample
ALS Sample ID	WG3787134-2
Sample Size	1
Sample size units	n/a
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	17-Oct-23

Target Analytes	% Rec
PCB-081	91
PCB-077	88
PCB-123	91
PCB-118	91
PCB-114	99
PCB-105	89
PCB-126	91
PCB-167	95
PCB-156/157	96
PCB-169	97
PCB-189	93
Extraction Standards	**% Rec**
13C12-PCB-081	57
13C12-PCB-077	57
13C12-PCB-123	60
13C12-PCB-118	58
13C12-PCB-114	56
13C12-PCB-105	60
13C12-PCB-126	62
13C12-PCB-167	59
13C12-PCB-156/157	57
13C12-PCB-169	61
13C12-PCB-189	48
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	52
13C12-PCB-111	59
13C12-PCB-178	57

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2**	Sampling Date	3-Oct-23		Approved
ALS Sample ID	L2752967-1	Extraction Date	17-Oct-23		*A. Kuol*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		31-Oct-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5-231025A27
Run Date	26-Oct-23 12:20
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRM5-5 5PBOCTYL283005-01

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	22.09	<67	8.3	M,J,R	67	150
PCB-123	0.00003	23.10	<29	7.1	J,R	29	150
PCB-118	0.00003	23.27	1900	6.9			150
PCB-114	0.00003	23.56	51.6	7.6	J		150
PCB-105	0.00003	23.91	471	6.9			150
PCB-126	0.1	25.50	<7.4	7.4	M,U	6.7	150
PCB-167	0.00003	26.40	<13	3.4	J,R	13	150
PCB-156/157	0.00003	27.03	<33	4.8	J,R	33	300
PCB-169	0.03	28.68	<4.0	4.0	M,U	2.9	150
PCB-189	0.00003	NotFnd	<2.8	2.8	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.76	82	10-145
13C12-PCB-077	12000	22.08	88	10-145
13C12-PCB-123	12000	23.09	95	10-145
13C12-PCB-118	12000	23.26	90	10-145
13C12-PCB-114	12000	23.55	87	10-145
13C12-PCB-105	12000	23.90	96	10-145
13C12-PCB-126	12000	25.48	94	10-145
13C12-PCB-167	12000	26.40	90	10-145
13C12-PCB-156/157	24000	27.03	87	10-145
13C12-PCB-169	12000	28.67	88	10-145
13C12-PCB-189	12000	29.96	71	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.78	119	70-130
13C12-PCB-095	12000	19.10	100	70-130
13C12-PCB-153	12000	24.20	114	70-130
Cleanup Standards				
13C12-PCB-028	18000	15.96	68	5-145
13C12-PCB-111	18000	22.03	77	10-145
13C12-PCB-178	18000	25.08	72	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0727
Mid Point PCB TEQ	0.513
Upper Bound PCB TEQ	0.944

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	**23-22235-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2**	Sampling Date	3-Oct-23		Approved
ALS Sample ID	L2752967-2	Extraction Date	17-Oct-23		*A. Kuol*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		31-Oct-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5-231025A28
Run Date	26-Oct-23 13:02
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL283005-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<9.2	9.2	U		150
PCB-077	0.0001	22.09	48.7	8.7	J		150
PCB-123	0.00003	23.07	13.3	5.7	M,J		150
PCB-118	0.00003	23.27	848	5.4			150
PCB-114	0.00003	23.56	<26	6.3	J,R	26	150
PCB-105	0.00003	23.91	249	5.7			150
PCB-126	0.1	25.49	<11	6.0	M,J,R	11	150
PCB-167	0.00003	26.42	11.2	4.2	J		150
PCB-156/157	0.00003	27.03	25.6	5.7	J		300
PCB-169	0.03	28.66	<8.5	4.9	M,J,R	8.5	150
PCB-189	0.00003	NotFnd	<2.0	2.0	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.78	93	10-145
13C12-PCB-077	12000	22.08	98	10-145
13C12-PCB-123	12000	23.09	106	10-145
13C12-PCB-118	12000	23.26	103	10-145
13C12-PCB-114	12000	23.56	97	10-145
13C12-PCB-105	12000	23.90	105	10-145
13C12-PCB-126	12000	25.48	105	10-145
13C12-PCB-167	12000	26.40	101	10-145
13C12-PCB-156/157	24000	27.03	98	10-145
13C12-PCB-169	12000	28.67	100	10-145
13C12-PCB-189	12000	29.96	78	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.79	121	70-130
13C12-PCB-095	12000	19.10	93	70-130
13C12-PCB-153	12000	24.20	104	70-130
Cleanup Standards				
13C12-PCB-028	18000	15.96	71	5-145
13C12-PCB-111	18000	22.03	83	10-145
13C12-PCB-178	18000	25.08	77	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0393
Mid Point PCB TEQ	1.40
Upper Bound PCB TEQ	1.40

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	**23-22235-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2**	Sampling Date	4-Oct-23		
ALS Sample ID	L2752967-3	Extraction Date	17-Oct-23		Approved
Analysis Method	EPA 1668C	Sample Size	1	Sample	*A. Kuol*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		31-Oct-2023

Run Information	**Run 1**
Filename	5-231025A29
Run Date	26-Oct-23 13:44
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL283005-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	21.76	<70	17	M,J,R	70	150
PCB-077	0.0001	22.08	1240	18			150
PCB-123	0.00003	23.09	746	17			150
PCB-118	0.00003	23.26	63600	16			150
PCB-114	0.00003	23.56	1660	18			150
PCB-105	0.00003	23.90	17900	16			150
PCB-126	0.1	25.48	89.7	17	M,J		150
PCB-167	0.00003	26.40	363	7.9			150
PCB-156/157	0.00003	27.01	897	10			300
PCB-169	0.03	28.67	29.0	8.6	M,J		150
PCB-189	0.00003	29.96	<15	6.9	M,J,R	15	150
Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**			
13C12-PCB-081	12000	21.76	83	10-145			
13C12-PCB-077	12000	22.06	83	10-145			
13C12-PCB-123	12000	23.07	90	10-145			
13C12-PCB-118	12000	23.24	86	10-145			
13C12-PCB-114	12000	23.53	83	10-145			
13C12-PCB-105	12000	23.88	87	10-145			
13C12-PCB-126	12000	25.47	89	10-145			
13C12-PCB-167	12000	26.39	88	10-145			
13C12-PCB-156/157	24000	27.01	86	10-145			
13C12-PCB-169	12000	28.67	88	10-145			
13C12-PCB-189	12000	29.94	69	10-145			
Field Spike Standards							
13C12-PCB-031	12000	15.77	117	70-130			
13C12-PCB-095	12000	19.09	99	70-130			
13C12-PCB-153	12000	24.19	113	70-130			
Cleanup Standards							
13C12-PCB-028	18000	15.95	65	5-145			
13C12-PCB-111	18000	22.01	76	10-145			
13C12-PCB-178	18000	25.07	71	10-145			

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	12.5
Mid Point PCB TEQ	12.5
Upper Bound PCB TEQ	12.5

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	
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	**23-22235-SVOC-(36 THRU 40) BLANK2**	Sampling Date	3-Oct-23		Approved
ALS Sample ID	L2752967-4	Extraction Date	17-Oct-23		*A. Kuol*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		31-Oct-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5-231030A06
Run Date	30-Oct-23 15:32
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBDCTYL283005-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<2.7	2.7	U		150
PCB-077	0.0001	NotFnd	<2.5	2.5	U		150
PCB-123	0.00003	NotFnd	<3.0	3.0	U		150
PCB-118	0.00003	23.28	18.1	2.8	M,J		150
PCB-114	0.00003	NotFnd	<3.2	3.2	U		150
PCB-105	0.00003	NotFnd	<2.9	2.9	U		150
PCB-126	0.1	NotFnd	<3.0	3.0	U		150
PCB-167	0.00003	NotFnd	<2.2	2.2	U		150
PCB-156/157	0.00003	27.06	<3.1	3.1	M,U	2.2	300
PCB-169	0.03	NotFnd	<2.3	2.3	U		150
PCB-189	0.00003	NotFnd	<1.4	1.4	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.80	69	10-145
13C12-PCB-077	12000	22.09	82	10-145
13C12-PCB-123	12000	23.10	84	10-145
13C12-PCB-118	12000	23.27	82	10-145
13C12-PCB-114	12000	23.57	79	10-145
13C12-PCB-105	12000	23.92	84	10-145
13C12-PCB-126	12000	25.52	87	10-145
13C12-PCB-167	12000	26.42	74	10-145
13C12-PCB-156/157	24000	27.06	73	10-145
13C12-PCB-169	12000	28.72	80	10-145
13C12-PCB-189	12000	30.01	83	10-145
Field Spike Standards				
13C12-PCB-031	12000	15.79	132	70-130
13C12-PCB-095	12000	19.11	88	70-130
13C12-PCB-153	12000	24.21	105	70-130
Cleanup Standards				
13C12-PCB-028	18000	15.97	64	5-145
13C12-PCB-111	18000	22.04	69	10-145
13C12-PCB-178	18000	25.09	58	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.000543
Mid Point PCB TEQ	0.186
Upper Bound PCB TEQ	0.371

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		Approved
ALS Sample ID	WG3787134-1	Extraction Date	17-Oct-23		*A. Kuol*
Analysis Method	EPA 1668C	Sample Size	1	Blank	--e-signature--
Analysis Type	Blank	Percent Moisture	n/a		31-Oct-2023
Sample Matrix	QC	Split Ratio	6		

Run Information	**Run 1**
Filename	5-231025A20
Run Date	26-Oct-23 05:12
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL283005-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<5.3	5.3	U		150
PCB-077	0.0001	NotFnd	<5.0	5.0	U		150
PCB-123	0.00003	NotFnd	<7.8	7.8	U		150
PCB-118	0.00003	23.23	<12	7.2	M,J,R	12	150
PCB-114	0.00003	NotFnd	<8.0	8.0	U		150
PCB-105	0.00003	23.86	<8.0	7.4	M,J,R	8.0	150
PCB-126	0.1	NotFnd	<7.3	7.3	U		150
PCB-167	0.00003	NotFnd	<2.7	2.7	U		150
PCB-156/157	0.00003	26.99	<5.9	3.7	M,J,R	5.9	300
PCB-169	0.03	28.63	<3.3	3.0	M,J,R	3.3	150
PCB-189	0.00003	NotFnd	<3.8	3.8	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.73	51	10-145
13C12-PCB-077	12000	22.03	53	10-145
13C12-PCB-123	12000	23.05	54	10-145
13C12-PCB-118	12000	23.22	53	10-145
13C12-PCB-114	12000	23.51	51	10-145
13C12-PCB-105	12000	23.86	55	10-145
13C12-PCB-126	12000	25.44	57	10-145
13C12-PCB-167	12000	26.36	53	10-145
13C12-PCB-156/157	24000	26.99	53	10-145
13C12-PCB-169	12000	28.63	56	10-145
13C12-PCB-189	12000	29.92	46	10-145
Field Spike Standards				
13C12-PCB-031	0		NS	70-130
13C12-PCB-095	0		NS	70-130
13C12-PCB-153	0		NS	70-130
Cleanup Standards				
13C12-PCB-028	18000	15.91	48	5-145
13C12-PCB-111	18000	21.98	49	10-145
13C12-PCB-178	18000	25.04	48	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.466
Upper Bound PCB TEQ	0.833

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.
NS	Indicates that this compound was not spiked.
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 Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		Approved
ALS Sample ID	WG3787134-2	Extraction Date	17-Oct-23		*A. Kuol*
Analysis Method	EPA 1668C	Sample Size	1	n/a	--e-signature--
Analysis Type	LCS	Percent Moisture	n/a		31-Oct-2023
Sample Matrix	QC	Split Ratio	6		

Run Information	**Run 1**
Filename	5-231025A17
Run Date	26-Oct-23 03:06
Final Volume	25 ul
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-5 SPBOCTYL283005-01

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
PCB-081	6000	21.75	91	60-135	
PCB-077	6000	22.05	88	60-135	
PCB-123	6000	23.06	91	60-135	
PCB-118	6000	23.23	91	60-135	
PCB-114	6000	23.53	99	60-135	
PCB-105	6000	23.87	89	60-135	
PCB-126	6000	25.47	91	60-135	
PCB-167	6000	26.39	95	60-135	
PCB-156/157	12000	27.00	96	60-135	
PCB-169	6000	28.66	97	60-135	
PCB-189	6000	29.94	93	60-135	
Extraction Standards		**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.73	57	40-145	
13C12-PCB-077	12000	22.04	57	40-145	
13C12-PCB-123	12000	23.05	60	40-145	
13C12-PCB-118	12000	23.22	58	40-145	
13C12-PCB-114	12000	23.52	56	40-145	
13C12-PCB-105	12000	23.86	60	40-145	
13C12-PCB-126	12000	25.46	62	40-145	
13C12-PCB-167	12000	26.37	59	40-145	
13C12-PCB-156/157	24000	26.99	57	40-145	
13C12-PCB-169	12000	28.65	61	40-145	
13C12-PCB-189	12000	29.93	48	40-145	
Field Spike Standards					
13C12-PCB-031	0		NS	70-130	
13C12-PCB-095	0		NS	70-130	
13C12-PCB-153	0		NS	70-130	
Cleanup Standards					
13C12-PCB-028	18000	15.92	52	15-145	
13C12-PCB-111	18000	21.99	59	40-145	
13C12-PCB-178	18000	25.04	57	40-145	

NS Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2752774		Mississauga, ON L5J 2Y4
Date of Report	7-Nov-23		Canada
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS: **CB by HRGC/SRM QQQ - Isotope dilution**

For the field blank, 13C6-chlorobenzene was not adequately recovered. As a result, chlorobenzene has not been reported for this sample.

For some samples, as well as the method blank and the laboratory control sample (LCS) the recoveries of some of the labelled standards were below typical values. However, the target analyte recoveries are all in control for the LCS. No bias to sample results is expected.

Certified by

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank	23-22235-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1	23-22235-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1	23-22235-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1	23-22235-SVOC-(16 THRU 20) BLANK	Laboratory Control Sample
ALS Sample ID	WG3786998-1	L2752774-1	L2752774-2	L2752774-3	L2752774-4	WG3786998-2
Sample Size	1	1	1	1	1	1
Sample units	sample	sample	sample	sample	sample	n/a
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	MEDIA	Stack	Stack	Stack	Stack	QC
Sampling Date	n/a	21-Sep-23	21-Sep-23	22-Sep-23	22-Sep-23	n/a
Extraction Date	5-Oct-23	5-Oct-23	5-Oct-23	5-Oct-23	5-Oct-23	5-Oct-23
Target Analytes	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**	**% Recovery**
Chlorobenzene	<12 U	1160	990	1190	NQ	NS
1,3-Dichlorobenzene	<12 U	111	89.5	115	<12 U	96
1,4-Dichlorobenzene	25.2	121	80.9	135	22.9 B	106
1,2-Dichlorobenzene	<12 U	60.6	90.6	63.4	<12 U	96
1,3,5-Trichlorobenzene	<12 U	13.7	13.8	<12 U	<12 U	83
1,2,4-Trichlorobenzene	<12 U	24.8	27.8	25.3	<12 U	67
1,2,3-Trichlorobenzene	<12 U	<12 U	<12 U	<12 U	<12 U	71
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12 U	13.0	12.5	<12 U	<12 U	126
1,2,3,4-Tetrachlorobenzene	<12 U	<12 U	<12 U	<12 U	<12 U	118
Pentachlorobenzene	<12 U	<12 U	<12 U	<12 U	<12 U	114
Hexachlorobenzene	<12 U	<12 U	<12 U	<12 U	<12 U	114
Field Sampling Standards	**%Rec**	**%Rec**	**%Rec**	**%Rec**	**%Rec**	**%Rec**
1-Bromo-2,3-Dichlorobenzene	NS	100	104	105	67	NS
Extraction Standards	**%Rec**	**%Rec**	**%Rec**	**%Rec**	**%Rec**	**%Rec**
13C6-Chlorobenzene (ES)	18	40	34	38	1.2	6
13C6-1,4-Dichlorobenzene (ES)	22	44	45	36	26	28
13C6-1,2,3-Trichlorobenzene (ES)	28	38	37	29	11	24
13C6-1,2,3,4-Tetrachlorobenzene (ES)	25	34	34	25	7	11
13C6-Pentachlorobenzene (ES)	23	38	37	26	6	9
13C6-Hexachlorobenzene (ES)	21	40	39	31	5	8

U	Indicates that this compound was not detected above the LOD.
NS	Indicates that this compound was not spiked in.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
NQ	Indicates that this value could not be quantified.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3786998-1	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	12		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	WG3786998-1
Run Date	10/29/2023 2:40
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.19	<12	U
1,3-Dichlorobenzene	6.62	<12	U
1,4-Dichlorobenzene	6.78	25.2	
1,2-Dichlorobenzene	6.98	<12	U
1,3,5-Trichlorobenzene	8.24	<12	U
1,2,4-Trichlorobenzene	8.76	<12	U
1,2,3-Trichlorobenzene	9.21	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.44	<12	U
1,2,3,4-Tetrachlorobenzene	10.94	<12	U
Pentachlorobenzene	12.17	<12	U
Hexachlorobenzene	13.89	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene			NS
Extraction Standards			**%Rec**
13C6-Chlorobenzene (ES)	300	4.19	18
13C6-1,4-Dichlorobenzene (ES)	300	6.77	22
13C6-1,2,3-Trichlorobenzene (ES)	300	9.21	28
13C6-1,2,3,4-Tetrachlorobenzene	300	10.93	25
13C6-Pentachlorobenzene (ES)	300	12.26	23
13C6-Hexachlorobenzene (ES)	300	13.89	21

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	**23-22235-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	21-Sep-23
ALS Sample ID	L2752774-1	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	12		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	L2752774-1
Run Date	10/29/2023 3:49
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.19	1160	
1,3-Dichlorobenzene	6.65	111	
1,4-Dichlorobenzene	6.77	121	
1,2-Dichlorobenzene	7.03	60.6	
1,3,5-Trichlorobenzene	8.28	13.7	
1,2,4-Trichlorobenzene	8.82	24.8	
1,2,3-Trichlorobenzene	9.21	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.42	13	
1,2,3,4-Tetrachlorobenzene	10.93	<12	U
Pentachlorobenzene	12.25	<12	U
Hexachlorobenzene	13.88	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	600	10.23	100

Extraction Standards			**%Rec**
13C6-Chlorobenzene (ES)	300	4.18	40
13C6-1,4-Dichlorobenzene (ES)	300	6.77	44
13C6-1,2,3-Trichlorobenzene (ES)	300	9.20	38
13C6-1,2,3,4-Tetrachlorobenzene	300	10.93	34
13C6-Pentachlorobenzene (ES)	300	12.25	38
13C6-Hexachlorobenzene (ES)	300	13.88	40

U Indicates that this compound was not detected above the MDL.

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Sample Analysis Report

Sample Name	**23-22235-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	21-Sep-23
ALS Sample ID	L2752774-2	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	12		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	L2752774-2
Run Date	10/29/2023 4:11
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.19	990	
1,3-Dichlorobenzene	6.65	89.5	
1,4-Dichlorobenzene	6.77	80.9	
1,2-Dichlorobenzene	7.03	90.6	
1,3,5-Trichlorobenzene	8.29	13.8	
1,2,4-Trichlorobenzene	8.83	27.8	
1,2,3-Trichlorobenzene	9.20	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.42	12.5	
1,2,3,4-Tetrachlorobenzene	10.94	<12	U
Pentachlorobenzene	12.26	<12	U
Hexachlorobenzene	13.88	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	600	10.23	104

Extraction Standards			**%Rec**
13C6-Chlorobenzene (ES)	300	4.18	34
13C6-1,4-Dichlorobenzene (ES)	300	6.77	45
13C6-1,2,3-Trichlorobenzene (ES)	300	9.20	37
13C6-1,2,3,4-Tetrachlorobenzene	300	10.93	34
13C6-Pentachlorobenzene (ES)	300	12.26	37
13C6-Hexachlorobenzene (ES)	300	13.88	39

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	22-Sep-23
ALS Sample ID	L2752774-3	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	12		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	L2752774-3
Run Date	10/29/2023 4:34
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.18	1190	
1,3-Dichlorobenzene	6.65	115	
1,4-Dichlorobenzene	6.77	135	
1,2-Dichlorobenzene	7.03	63.4	
1,3,5-Trichlorobenzene	8.30	<12	U
1,2,4-Trichlorobenzene	8.83	25.3	
1,2,3-Trichlorobenzene	9.21	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.43	<12	U
1,2,3,4-Tetrachlorobenzene	10.94	<12	U
Pentachlorobenzene	12.26	<12	U
Hexachlorobenzene	13.88	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	600	10.23	105

Extraction Standards			**%Rec**
13C6-Chlorobenzene (ES)	300	4.18	38
13C6-1,4-Dichlorobenzene (ES)	300	6.77	36
13C6-1,2,3-Trichlorobenzene (ES)	300	9.20	29
13C6-1,2,3,4-Tetrachlorobenzene	300	10.94	25
13C6-Pentachlorobenzene (ES)	300	12.26	26
13C6-Hexachlorobenzene (ES)	300	13.88	31

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(16 THRU 20) BLANK**	Sampling Date	22-Sep-23
ALS Sample ID	L2752774-4	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	12		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	L2752774-4
Run Date	10/29/2023 3:26
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.19	NQ	
1,3-Dichlorobenzene	6.64	<12	U
1,4-Dichlorobenzene	6.82	22.9	B
1,2-Dichlorobenzene	7.01	<12	U
1,3,5-Trichlorobenzene	8.31	<12	U
1,2,4-Trichlorobenzene	8.83	<12	U
1,2,3-Trichlorobenzene	9.20	<12	U
1,2,3,S/1,2,4,5-Tetrachlorobenzen	10.34	<12	U
1,2,3,4-Tetrachlorobenzene	10.88	<12	U
Pentachlorobenzene	12.14	<12	U
Hexachlorobenzene	13.88	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	600	10.23	67

Extraction Standards			**%Rec**
13C6-Chlorobenzene (ES)	300	4.19	1.2
13C6-1,4-Dichlorobenzene (ES)	300	6.81	26
13C6-1,2,3-Trichlorobenzene (ES)	300	9.20	11
13C6-1,2,3,4-Tetrachlorobenzene	300	10.93	7
13C6-Pentachlorobenzene (ES)	300	12.25	6
13C6-Hexachlorobenzene (ES)	300	13.88	5

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.
NQ Indicates that this value could not be quantified.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3786998-2	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	12		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	WG3786998-2
Run Date	10/29/2023 1:55
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene	600	4.18	NS	
1,3-Dichlorobenzene	600	6.66	96	
1,4-Dichlorobenzene	600	6.79	106	
1,2-Dichlorobenzene	600	7.04	96	
1,3,5-Trichlorobenzene	600	8.30	83	
1,2,4-Trichlorobenzene	600	8.82	67	
1,2,3-Trichlorobenzene	600	9.20	71	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	1200	10.45	126	
1,2,3,4-Tetrachlorobenzene	600	10.94	118	
Pentachlorobenzene	600	12.25	114	
Hexachlorobenzene	600	13.88	114	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene (ES)	300	4.18	6	
13C6-1,4-Dichlorobenzene (ES)	300	6.79	28	
13C6-1,2,3-Trichlorobenzene (ES)	300	9.20	24	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.93	11	
13C6-Pentachlorobenzene (ES)	300	12.26	9	
13C6-Hexachlorobenzene (ES)	300	13.88	8	

NS Indicates that this compound was not spiked in.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2752967		Mississauga, ON L5J 2Y4
Date of Report	3-Nov-23		Canada
Date of Sample Receipt	5-Oct-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS: **CB by HRGC/SRM QQQ - Isotope dilution**

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank	23-22235-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2	23-22235-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2	23-22235-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2	23-22235-SVOC-(36 THRU 40) BLANK2	Laboratory Control Sample	Laboratory Control Sample (Low Level)
ALS Sample ID	WG3787134-1	L2752967-1	L2752967-2	L2752967-3	L2752967-4	WG3787134-2	WG3787134-5
Sample Size	1	1	1	1	1	1	1
Sample units	sample	sample	sample	sample	sample	n/a	n/a
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	QC	Stack	Stack	Stack	Stack	QC	QC
Sampling Date	n/a	3-Oct-23	3-Oct-23	4-Oct-23	3-Oct-23	n/a	n/a
Extraction Date	5-Oct-23	5-Oct-23	5-Oct-23	5-Oct-23	5-Oct-23	5-Oct-23	n/a
Target Analytes	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**	**% Recovery**	**% Recovery**
Chlorobenzene	<12 U	1030	1250	1360	<12 U	NS	NS
1,3-Dichlorobenzene	<12 U	118	120	142	<12 U	89	70
1,4-Dichlorobenzene	13.4	139 B	88.1 B	102 B	19.8 B	74	85
1,2-Dichlorobenzene	<12 U	118	110	70.5	44.1	84	82
1,3,5-Trichlorobenzene	<12 U	14.3	<12 U	<12 U	<12 U	71	78
1,2,4-Trichlorobenzene	<12 U	27.4	28.3	31.7	<12 U	65	71
1,2,3-Trichlorobenzene	<12 U	<12 U	<12 U	<12 U	<12 U	74	76
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12 U	13.9	13.8	12.7	<12 U	119	90
1,2,3,4-Tetrachlorobenzene	<12 U	<12 U	<12 U	<12 U	<12 U	117	89
Pentachlorobenzene	<12 U	<12 U	12.1	<12 U	<12 U	113	89
Hexachlorobenzene	<12 U	<12 U	<12 U	<12 U	<12 U	114	96
Field Sampling Standards	**%Rec**	**%Rec**	**%Rec**	**%Rec**	**%Rec**	**%Rec**	**%Rec**
1-Bromo-2,3-Dichlorobenzene	NS	109	91	111	86	NS	NS
Extraction Standards	**%Rec**	**%Rec**	**%Rec**	**%Rec**	**%Rec**	**%Rec**	**%Rec**
13C6-Chlorobenzene (ES)	45	31	28	33	32	39	39
13C6-1,4-Dichlorobenzene (ES)	34	31	29	30	29	30	32
13C6-1,2,3-Trichlorobenzene (ES)	38	23	20	22	23	56	37
13C6-1,2,3,4-Tetrachlorobenzene (ES)	29	21	18	21	20	32	29
13C6-Pentachlorobenzene (ES)	29	22	19	21	20	31	29
13C6-Hexachlorobenzene (ES)	27	22	19	23	21	30	25

U	Indicates that this compound was not detected above the LOD.
NS	Indicates that this compound was not spiked in
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	Laboratory Control Sample (Low Level)
ALS Sample ID	WG3787134-5
Sample Size	1
Sample units	n/a
Moisture Content	n/a
Matrix	QC
Sampling Date	n/a
Extraction Date	n/a

Target Analytes	% Recovery
Chlorobenzene	NS
1,3-Dichlorobenzene	70
1,4-Dichlorobenzene	85
1,2-Dichlorobenzene	82
1,3,5-Trichlorobenzene	78
1,2,4-Trichlorobenzene	71
1,2,3-Trichlorobenzene	76
1,2,3,5/1,2,4,5-Tetrachlorobenzene	90
1,2,3,4-Tetrachlorobenzene	89
Pentachlorobenzene	89
Hexachlorobenzene	96
Field Sampling Standards	**%Rec**
1-Bromo-2,3-Dichlorobenzene	NS
Extraction Standards	**%Rec**
13C6-Chlorobenzene (ES)	39
13C6-1,4-Dichlorobenzene (ES)	32
13C6-1,2,3-Trichlorobenzene (ES)	37
13C6-1,2,3,4-Tetrachlorobenzene (ES)	29
13C6-Pentachlorobenzene (ES)	29
13C6-Hexachlorobenzene (ES)	25

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	WG3787134-1	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	WG3787134-1
Run Date	10/29/2023 11:01
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.19	<12	U
1,3-Dichlorobenzene	6.60	<12	U
1,4-Dichlorobenzene	6.77	13.4	
1,2-Dichlorobenzene	6.98	<12	U
1,3,5-Trichlorobenzene	8.30	<12	U
1,2,4-Trichlorobenzene	8.84	<12	U
1,2,3-Trichlorobenzene	9.19	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzer	10.36	<12	U
1,2,3,4-Tetrachlorobenzene	10.87	<12	U
Pentachlorobenzene	12.22	<12	U
Hexachlorobenzene	13.89	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene			NS

Extraction Standards			**%Rec**
13C6-Chlorobenzene (ES)	300	4.18	45
13C6-1,4-Dichlorobenzene (ES)	300	6.77	34
13C6-1,2,3-Trichlorobenzene (ES)	300	9.21	38
13C6-1,2,3,4-Tetrachlorobenzene	300	10.94	29
13C6-Pentachlorobenzene (ES)	300	12.26	29
13C6-Hexachlorobenzene (ES)	300	13.89	27

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	**23-22235-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2**	Sampling Date	3-Oct-23
ALS Sample ID	L2752967-1	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	L2752967-1
Run Date	10/29/2023 11:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.18	1030	
1,3-Dichlorobenzene	6.65	118	
1,4-Dichlorobenzene	6.77	139	B
1,2-Dichlorobenzene	7.03	118	
1,3,5-Trichlorobenzene	8.30	14.3	
1,2,4-Trichlorobenzene	8.83	27.4	
1,2,3-Trichlorobenzene	9.21	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzer	10.42	13.9	
1,2,3,4-Tetrachlorobenzene	10.94	<12	U
Pentachlorobenzene	12.26	<12	U
Hexachlorobenzene	13.89	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	600	10.24	109

Extraction Standards			**%Rec**
13C6-Chlorobenzene (ES)	300	4.17	31
13C6-1,4-Dichlorobenzene (ES)	300	6.77	31
13C6-1,2,3-Trichlorobenzene (ES)	300	9.21	23
13C6-1,2,3,4-Tetrachlorobenzene	300	10.93	21
13C6-Pentachlorobenzene (ES)	300	12.26	22
13C6-Hexachlorobenzene (ES)	300	13.89	22

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	**23-22235-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2**	Sampling Date	3-Oct-23
ALS Sample ID	L2752967-2	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	L2752967-2
Run Date	10/29/2023 12:09
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.19	1250	
1,3-Dichlorobenzene	6.65	120	
1,4-Dichlorobenzene	6.77	88.1	B
1,2-Dichlorobenzene	7.03	110	
1,3,5-Trichlorobenzene	8.29	<12	U
1,2,4-Trichlorobenzene	8.83	28.3	
1,2,3-Trichlorobenzene	9.21	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzer	10.43	13.8	
1,2,3,4-Tetrachlorobenzene	10.94	<12	U
Pentachlorobenzene	12.26	12.1	
Hexachlorobenzene	13.89	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	600	10.24	91

Extraction Standards			**%Rec**
13C6-Chlorobenzene (ES)	300	4.18	28
13C6-1,4-Dichlorobenzene (ES)	300	6.77	29
13C6-1,2,3-Trichlorobenzene (ES)	300	9.21	20
13C6-1,2,3,4-Tetrachlorobenzene	300	10.93	18
13C6-Pentachlorobenzene (ES)	300	12.26	19
13C6-Hexachlorobenzene (ES)	300	13.89	19

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	**23-22235-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2**	Sampling Date	4-Oct-23
ALS Sample ID	L2752967-3	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	L2752967-3
Run Date	10/29/2023 12:32
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.18	1360	
1,3-Dichlorobenzene	6.65	142	
1,4-Dichlorobenzene	6.77	102	B
1,2-Dichlorobenzene	7.03	70.5	
1,3,5-Trichlorobenzene	8.29	<12	U
1,2,4-Trichlorobenzene	8.83	31.7	
1,2,3-Trichlorobenzene	9.21	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzer	10.43	12.7	
1,2,3,4-Tetrachlorobenzene	10.94	<12	U
Pentachlorobenzene	12.26	<12	U
Hexachlorobenzene	13.89	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	600	10.24	111

Extraction Standards			**%Rec**
13C6-Chlorobenzene (ES)	300	4.17	33
13C6-1,4-Dichlorobenzene (ES)	300	6.77	30
13C6-1,2,3-Trichlorobenzene (ES)	300	9.21	22
13C6-1,2,3,4-Tetrachlorobenzene	300	10.94	21
13C6-Pentachlorobenzene (ES)	300	12.26	21
13C6-Hexachlorobenzene (ES)	300	13.88	23

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	**23-22235-SVOC-(36 THRU 40) BLANK2**	Sampling Date	3-Oct-23
ALS Sample ID	L2752967-4	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	L2752967-4
Run Date	10/29/2023 11:24
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.17	<12	U
1,3-Dichlorobenzene	6.61	<12	U
1,4-Dichlorobenzene	6.77	19.8	B
1,2-Dichlorobenzene	6.98	44.1	
1,3,5-Trichlorobenzene	8.29	<12	U
1,2,4-Trichlorobenzene	8.74	<12	U
1,2,3-Trichlorobenzene	9.16	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzer	10.43	<12	U
1,2,3,4-Tetrachlorobenzene	10.87	<12	U
Pentachlorobenzene	12.18	<12	U
Hexachlorobenzene	13.88	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	600	10.24	86

Extraction Standards			**%Rec**
13C6-Chlorobenzene (ES)	300	4.17	32
13C6-1,4-Dichlorobenzene (ES)	300	6.77	29
13C6-1,2,3-Trichlorobenzene (ES)	300	9.21	23
13C6-1,2,3,4-Tetrachlorobenzene	300	10.93	20
13C6-Pentachlorobenzene (ES)	300	12.26	20
13C6-Hexachlorobenzene (ES)	300	13.88	21

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	WG3787134-2	Extraction Date	5-Oct-23
Analysis Method	SRM GC/QQQ		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	WG3787134-2
Run Date	10/29/2023 10:16
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene			NS	
1,3-Dichlorobenzene	600	6.65	89	
1,4-Dichlorobenzene	600	6.77	74	
1,2-Dichlorobenzene	600	7.03	84	
1,3,5-Trichlorobenzene	600	8.31	71	
1,2,4-Trichlorobenzene	600	8.83	65	
1,2,3-Trichlorobenzene	600	9.21	74	
1,2,3,5/1,2,4,5-Tetrachlorobenzer	1200	10.45	119	
1,2,3,4-Tetrachlorobenzene	600	10.94	117	
Pentachlorobenzene	600	12.26	113	
Hexachlorobenzene	600	13.89	114	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene (ES)	300	4.18	39	
13C6-1,4-Dichlorobenzene (ES)	300	6.77	30	
13C6-1,2,3-Trichlorobenzene (ES)	300	9.21	56	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.93	32	
13C6-Pentachlorobenzene (ES)	300	12.26	31	
13C6-Hexachlorobenzene (ES)	300	13.89	30	

NS Indicates that this compound was not spiked in

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (Low Level)**	Sampling Date	n/a
ALS Sample ID	WG3787134-5	Extraction Date	n/a
Analysis Method	SRM GC/QQQ		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
30-Oct-2023

Run Information	**Run 1**
Filename	WG3787134-5
Run Date	10/29/2023 9:53
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	TSQ-1
Column	TG-5SILMS 1517249

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene			NS	
1,3-Dichlorobenzene	60	6.64	70	
1,4-Dichlorobenzene	60	6.77	85	
1,2-Dichlorobenzene	60	7.03	82	
1,3,5-Trichlorobenzene	60	8.31	78	
1,2,4-Trichlorobenzene	60	8.83	71	
1,2,3-Trichlorobenzene	60	9.21	76	
1,2,3,5/1,2,4,5-Tetrachlorobenzer	120	10.45	90	
1,2,3,4-Tetrachlorobenzene	60	10.94	89	
Pentachlorobenzene	60	12.26	89	
Hexachlorobenzene	60	13.89	96	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene (ES)	250	4.17	39	
13C6-1,4-Dichlorobenzene (ES)	250	6.77	32	
13C6-1,2,3-Trichlorobenzene (ES)	250	9.21	37	
13C6-1,2,3,4-Tetrachlorobenzene	250	10.94	29	
13C6-Pentachlorobenzene (ES)	250	12.26	29	
13C6-Hexachlorobenzene (ES)	250	13.83	25	

NS Indicates that this compound was not spiked in

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L2752774		Mississauga, ON L5J 2Y4
Date of Report	7-Nov-23		Canada
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

The recoveries of select labelled extraction standards were below the method control limit. Reported results are not expected to be biased as a result.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		23-22235-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1		23-22235-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1		23-22235-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1		23-22235-SVOC-(16 THRU 20) BLANK		Laboratory Control Sample	
ALS Sample ID	WG3786998-1		L2752774-1		L2752774-2		L2752774-3		L2752774-4		WG3786998-2	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		n/a	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		QC	
Sampling Date	n/a		21-Sep-23		21-Sep-23		22-Sep-23		22-Sep-23		n/a	
Extraction Date	5-Oct-23		5-Oct-23		5-Oct-23		5-Oct-23		5-Oct-23		5-Oct-23	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**%**	
Naphthalene	99.3		186	B	237	B	165	B	135	B	80.6	
2-Methylnaphthalene	<12	U	32.3		63.1		31.0		<12	U	74.3	
1-Methylnaphthalene	<12	U	19.4		40.9		20.0		<12	U	82.8	
Acenaphthylene	<12	U	<12	U	24.7		<12	U	<12	U	73.0	
Acenaphthene	<12	U	<12	U	<12	U	<12	U	<12	U	98.7	
Fluorene	<12	U	<12	U	23.3		<12	U	<12	U	77.0	
Phenanthrene	<12	U	64.0		445		96.5		<12	U	75.3	
Anthracene	<12	U	<12	U	14.8		<12	U	<12	U	66.5	
Fluoranthene	18.2		26.3	B	183		20.5	B	<12	U	79.7	
Pyrene	13.0		34.0	B	134		19.4	B	<12	U	80.9	
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	91.0	
Chrysene/Triphenylene	<12	U	<12	U	67.8		<12	U	<12	U	80.7	M
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U	70.7	
Benzo(k)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U	75.7	
Benzo(e)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	118.0	
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	80.6	M
Perylene	<12	U	<12	U	<12	U	<12	U	<12	U	85.8	M
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	74.9	
Dibenzo(a,c/a,h)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	82.0	
Benzo(g,h,i)Perylene	<12	U	<12	U	<12	U	35.5		<12	U	83.9	
Additional Analytes												
Tetralin	58.9	M	335	M	322	M	298	M	281	M	NS	
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U	NS	
Biphenyl	<12	U	30.2		29.1		28.3		<12	U	NS	
o-Terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U	NS	
1-Methylphenanthrene	<12	U	<12	U	<12	U	<12	U	<12	U	NS	
9-Methylphenanthrene	<12	U	<12	U	78.4		12.0		<12	U	NS	
2-methylanthracene	<12	U	<12	U	26.8		<12	U	<12	U	NS	
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U	<12	U	NS	
m-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U	NS	
p-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U	NS	
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U	NS	
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U	NS	
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	NS	
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U	<60	U	NS	
Picene	<60	U	<60	U	<60	U	<60	U	<60	U	NS	
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U	<60	U	NS	
Coronene	<60	U	<60	U	<60	U	<60	U	<60	U	NS	
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	NS		112.1		114.3		114.6		113.9		NS	
Fluorene D10	NS		119.7		111.2		116.3		133.8		NS	
Terphenyl D14(Surr.)	NS		83.6		85.4		89.9	M	92.0	M	NS	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	61.5		72.0		76.7		81.9		89.8		89.0	
2-Methylnaphthalene-D10	59.1		68.2		71.4		76.0		85.2		85.1	
Acenaphthylene D8	44.5		40.6		53.0		58.3		62.7		61.7	
Phenanthrene D10	57.5		66.2		69.0		81.8		93.4		86.4	
Anthracene-D10	32.4		24.9		42.4		48.7		47.9		51.8	
Fluoranthene D10	55.3		62.7		71.3		78.2		82.1		75.4	
Benz(a)Anthracene-D12	17.1		23.2	M	26.7		27.3		26.0	M	26.6	
Chrysene D12	35.0		42.9		45.4		49.8		50.3		57.7	
Benzo(b)Fluoranthene-D12	43.3		43.6		53.8		56.8		64.6		58.2	
Benzo(k)Fluoranthene-D12	36.9		35.6		44.7		47.8		56.5		58.4	
Benzo(a)Pyrene D12	31.0		31.4	M	35.3		43.5		54.8	M	45.5	
Perylene D12	33.3		27.4		37.9		45.8		57.4	M	50.7	
Indeno(1,2,3,cd)Pyrene-D12	33.9		28.7		32.3		35.5		44.2		46.9	
Dibenz(a,h)Anthracene-D14	15.7		22.2	M	23.3	M	25.6	M	28.2	M	22.9	
Benzo(g,h,i)Perylene D12	43.7		34.4		43.7		49.7		61.6		62.5	

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.
NS	Indicates that this compound was not spiked.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG37B6998-1	Extraction Date	05-Oct-23
Analysis Method	PAH by CARB 429		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
01-Nov-2023

Run Information	**Run 1**
Filename	23103035.D
Run Date	10/31/2023 14:23
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.87	99.3	
2-Methylnaphthalene	3.41	<12	U
1-Methylnaphthalene	3.51	<12	U
Acenaphthylene	4.47	<12	U
Acenaphthene	4.74	<12	U
Fluorene	5.61	<12	U
Phenanthrene	7.73	<12	U
Anthracene	7.84	<12	U
Fluoranthene	11.05	18.2	
Pyrene	11.68	13.0	
Benzo(a)Anthracene	15.55	<12	U
Chrysene/Triphenylene	15.68	<12	U
Benzo(b)Fluoranthene	18.90	<12	U
Benzo(k)Fluoranthene	18.96	<12	U
Benzo(e)Pyrene	19.57	<12	U
Benzo(a)Pyrene	19.77	<12	U
Perylene	20.00	<12	U
Indeno(1,2,3-cd)Pyrene	23.15	<12	U
Dibenzo(a,c/a,h)Anthracene	23.38	<12	U
Benzo(g,h,i)Perylene	24.00	<12	U
Additional Analytes			
Tetralin	2.76	58.9	M
2-Chloronaphthalene	3.88	<12	U
Biphenyl	3.90	<12	U
o-Terphenyl	8.98	<12	U
1-Methylphenanthrene	9.22	<12	U
9-Methylphenanthrene	9.35	<12	U
2-methylanthracene	9.41	<12	U
9,10-dimethylanthracene	11.93	<12	U
m-terphenyl	12.11	<12	U
p-terphenyl	12.57	<12	U
Benzo(a)fluorene	12.83	<12	U
Benzo(b)fluorene	13.06	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	20.90	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	27.98	<60	U
Coronene	28.78	<60	U

Field Sampling Standards	**ng spiked**	**% Rec**
1-Methylnaphthalene-D10	0	NS
Fluorene D10	0	NS
Terphenyl D14(Surr.)	0	NS

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.86	61.5	50-150
2-Methylnaphthalene-D10	600	3.38	59.1	50-150
Acenaphthylene D8	600	4.45	44.5	50-150
Phenanthrene D10	600	7.67	57.5	50-150
Anthracene-D10	600	7.80	32.4	50-150
Fluoranthene D10	600	11.00	55.3	50-150
Benz(a)Anthracene-D12	600	15.52	17.1	50-150
Chrysene D12	600	15.63	35.0	50-150
Benzo(b)Fluoranthene-D12	600	18.83	43.3	50-150
Benzo(k)Fluoranthene-D12	600	18.93	36.9	50-150
Benzo(a)Pyrene D12	600	19.72	31.0	50-150
Perylene D12	600	19.95	33.3	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.07	33.9	50-150
Dibenz(a,h)Anthracene-D14	600	23.26	15.7	50-150
Benzo(g,h,i)Perylene D12	600	23.90	43.7	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
NS	Indicates that this compound was not spiked.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	21-Sep-23
ALS Sample ID	L2752774-1	Extraction Date	05-Oct-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
01-Nov-2023

Run Information	**Run 1**
Filename	23103038.D
Run Date	10/31/2023 16:28
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.87	186	B
2-Methylnaphthalene	3.41	32.3	
1-Methylnaphthalene	3.52	19.4	
Acenaphthylene	4.47	<12	U
Acenaphthene	4.74	<12	U
Fluorene	5.62	<12	U
Phenanthrene	7.73	64.0	
Anthracene	7.83	<12	U
Fluoranthene	11.05	26.3	B
Pyrene	11.68	34.0	B
Benzo(a)Anthracene	15.59	<12	U
Chrysene/Triphenylene	15.67	<12	U
Benzo(b)Fluoranthene	18.88	<12	U
Benzo(k)Fluoranthene	18.96	<12	U
Benzo(e)Pyrene	19.63	<12	U
Benzo(a)Pyrene	19.76	<12	U
Perylene	20.07	<12	U
Indeno(1,2,3-cd)Pyrene	23.10	<12	U
Dibenzo(a,c/a,h)Anthracene	23.35	<12	U
Benzo(g,h,i)Perylene	23.96	<12	U
Additional Analytes			
Tetralin	2.74	335 M	
2-Chloronaphthalene	3.93	<12	U
Biphenyl	3.90	30.2	
o-Terphenyl	8.98	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.35	<12	U
2-methylanthracene	9.41	<12	U
9,10-dimethylanthracene	11.89	<12	U
m-terphenyl	12.10	<12	U
p-terphenyl	12.57	<12	U
Benzo(a)fluorene	12.79	<12	U
Benzo(b)fluorene	13.02	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	23.33	<60	U
Dibenzo(a,e)pyrene	27.93	<60	U
Coronene	28.80	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.48	112.1
Fluorene D10	600	5.56	119.7
Terphenyl D14(Surr.)	600	12.52	83.6

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.86	72.0	50-150
2-Methylnaphthalene-D10	600	3.39	68.2	50-150
Acenaphthylene D8	600	4.45	40.6	50-150
Phenanthrene D10	600	7.67	66.2	50-150
Anthracene-D10	600	7.79	24.9	50-150
Fluoranthene D10	600	11.00	62.7	50-150
Benz(a)Anthracene-D12	600	15.51	23.2 M	50-150
Chrysene D12	600	15.62	42.9	50-150
Benzo(b)Fluoranthene-D12	600	18.83	43.6	50-150
Benzo(k)Fluoranthene-D12	600	18.92	35.6	50-150
Benzo(a)Pyrene D12	600	19.71	31.4 M	50-150
Perylene D12	600	19.94	27.4	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.07	28.7	50-150
Dibenz(a,h)Anthracene-D14	600	23.32	22.2 M	50-150
Benzo(g,h,i)Perylene D12	600	23.90	34.4	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	**23-22235-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	21-Sep-23
ALS Sample ID	L2752774-2	Extraction Date	05-Oct-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
01-Nov-2023

Run Information	**Run 1**
Filename	23103039.D
Run Date	10/31/2023 17:10
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.87	237	B
2-Methylnaphthalene	3.41	63.1	
1-Methylnaphthalene	3.51	40.9	
Acenaphthylene	4.47	24.7	
Acenaphthene	4.74	<12	U
Fluorene	5.61	23.3	
Phenanthrene	7.72	445	
Anthracene	7.83	14.8	
Fluoranthene	11.05	183	
Pyrene	11.68	134	
Benzo(a)Anthracene	15.57	<12	U
Chrysene/Triphenylene	15.67	67.8	
Benzo(b)Fluoranthene	18.89	<12	U
Benzo(k)Fluoranthene	18.97	<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	23.12	<12	U
Dibenzo(a,c/a,h)Anthracene	23.36	<12	U
Benzo(g,h,i)Perylene	23.96	<12	U
Additional Analytes			
Tetralin	2.74	322	M
2-Chloronaphthalene	3.93	<12	U
Biphenyl	3.90	29.1	
o-Terphenyl	8.98	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.35	78.4	
2-methylanthracene	9.41	26.8	
9,10-dimethylanthracene	11.90	<12	U
m-terphenyl	12.10	<12	U
p-terphenyl	12.58	<12	U
Benzo(a)fluorene	12.77	<12	U
Benzo(b)fluorene	13.04	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	20.95	<60	U
Picene	23.29	<60	U
Dibenzo(a,e)pyrene	28.01	<60	U
Coronene	28.81	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.48	114.3	
Fluorene D10	600	5.56	111.2	
Terphenyl D14(Surr.)	600	12.52	85.4	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.86	76.7	50-150
2-Methylnaphthalene-D10	600	3.38	71.4	50-150
Acenaphthylene D8	600	4.45	53.0	50-150
Phenanthrene D10	600	7.67	69.0	50-150
Anthracene-D10	600	7.79	42.4	50-150
Fluoranthene D10	600	11.00	71.3	50-150
Benz(a)Anthracene-D12	600	15.51	26.7	50-150
Chrysene D12	600	15.62	45.4	50-150
Benzo(b)Fluoranthene-D12	600	18.83	53.8	50-150
Benzo(k)Fluoranthene-D12	600	18.93	44.7	50-150
Benzo(a)Pyrene D12	600	19.71	35.3	50-150
Perylene D12	600	19.94	37.9	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.05	32.3	50-150
Dibenz(a,h)Anthracene-D14	600	23.28	23.3 M	50-150
Benzo(g,h,i)Perylene D12	600	23.90	43.7	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	22-Sep-23
ALS Sample ID	L2752774-3	Extraction Date	05-Oct-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG37B6998

Approved:
Nick Schrobilgen
--e-signature--
01-Nov-2023

Run Information	**Run 1**
Filename	23103040.D
Run Date	10/31/2023 17:52
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.87	165	B
2-Methylnaphthalene	3.41	31.0	
1-Methylnaphthalene	3.51	20.0	
Acenaphthylene	4.47	<12	U
Acenaphthene	4.74	<12	U
Fluorene	5.61	<12	U
Phenanthrene	7.73	96.5	
Anthracene	7.83	<12	U
Fluoranthene	11.05	20.5	B
Pyrene	11.68	19.4	B
Benzo(a)Anthracene	15.59	<12	U
Chrysene/Triphenylene	15.67	<12	U
Benzo(b)Fluoranthene	18.89	<12	U
Benzo(k)Fluoranthene	18.96	<12	U
Benzo(e)Pyrene	19.63	<12	U
Benzo(a)Pyrene	19.76	<12	U
Perylene	20.03	<12	U
Indeno(1,2,3-cd)Pyrene	23.09	<12	U
Dibenzo(a,c/a,h)Anthracene	23.33	<12	U
Benzo(g,h,i)Perylene	23.98	35.5	
Additional Analytes			
Tetralin	2.74	298	M
2-Chloronaphthalene	3.93	<12	U
Biphenyl	3.90	28.3	
o-Terphenyl	8.98	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.35	12.0	
2-methylanthracene	9.41	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.10	<12	U
p-terphenyl	12.57	<12	U
Benzo(a)fluorene	12.92	<12	U
Benzo(b)fluorene	13.05	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	20.94	<60	U
Picene	23.55	<60	U
Dibenzo(a,e)pyrene	27.97	<60	U
Coronene	28.80	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.48	114.6	
Fluorene D10	600	5.56	116.3	
Terphenyl D14(Surr.)	600	12.54	89.9	M

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.86	81.9		50-150
2-Methylnaphthalene-D10	600	3.38	76.0		50-150
Acenaphthylene D8	600	4.45	58.3		50-150
Phenanthrene D10	600	7.67	81.8		50-150
Anthracene-D10	600	7.79	48.7		50-150
Fluoranthene D10	600	11.00	78.2		50-150
Benz(a)Anthracene-D12	600	15.51	27.3		50-150
Chrysene D12	600	15.62	49.8		50-150
Benzo(b)Fluoranthene-D12	600	18.83	56.8		50-150
Benzo(k)Fluoranthene-D12	600	18.93	47.8		50-150
Benzo(a)Pyrene D12	600	19.71	43.5		50-150
Perylene D12	600	19.94	45.8		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.05	35.5		50-150
Dibenz(a,h)Anthracene-D14	600	23.28	25.6	M	50-150
Benzo(g,h,i)Perylene D12	600	23.90	49.7		50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(16 THRU 20) BLANK**	Sampling Date	22-Sep-23
ALS Sample ID	L2752774-4	Extraction Date	05-Oct-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
01-Nov-2023

Run Information	**Run 1**
Filename	23103037.D
Run Date	10/31/2023 15:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.87	135	B
2-Methylnaphthalene	3.41	<12	U
1-Methylnaphthalene	3.51	<12	U
Acenaphthylene	4.46	<12	U
Acenaphthene	4.74	<12	U
Fluorene	5.61	<12	U
Phenanthrene	7.73	<12	U
Anthracene	7.85	<12	U
Fluoranthene	11.05	<12	U
Pyrene	11.68	<12	U
Benzo(a)Anthracene	15.60	<12	U
Chrysene/Triphenylene	15.68	<12	U
Benzo(b)Fluoranthene	18.94	<12	U
Benzo(k)Fluoranthene	19.02	<12	U
Benzo(e)Pyrene	19.67	<12	U
Benzo(a)Pyrene	19.75	<12	U
Perylene	20.02	<12	U
Indeno(1,2,3-cd)Pyrene	23.14	<12	U
Dibenzo(a,c/a,h)Anthracene	23.37	<12	U
Benzo(g,h,i)Perylene	23.97	<12	U
Additional Analytes			
Tetralin	2.74	281 M	
2-Chloronaphthalene	3.92	<12	U
Biphenyl	3.90	<12	U
o-Terphenyl	8.98	<12	U
1-Methylphenanthrene	9.23	<12	U
9-Methylphenanthrene	9.35	<12	U
2-methylanthracene	9.41	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.10	<12	U
p-terphenyl	12.58	<12	U
Benzo(a)fluorene	12.84	<12	U
Benzo(b)fluorene	13.04	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	20.88	<60	U
Picene	23.37	<60	U
Dibenzo(a,e)pyrene	28.02	<60	U
Coronene	28.80	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.48	113.9
Fluorene D10	600	5.56	133.8
Terphenyl D14(Surr.)	600	12.57	92.0 M

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.86	89.8	50-150
2-Methylnaphthalene-D10	600	3.38	85.2	50-150
Acenaphthylene D8	600	4.45	62.7	50-150
Phenanthrene D10	600	7.67	93.4	50-150
Anthracene-D10	600	7.80	47.9	50-150
Fluoranthene D10	600	11.01	82.1	50-150
Benz(a)Anthracene-D12	600	15.52	26.0 M	50-150
Chrysene D12	600	15.63	50.3	50-150
Benzo(b)Fluoranthene-D12	600	18.83	64.6	50-150
Benzo(k)Fluoranthene-D12	600	18.93	56.5	50-150
Benzo(a)Pyrene D12	600	19.73	54.8 M	50-150
Perylene D12	600	19.95	57.4 M	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.08	44.2	50-150
Dibenz(a,h)Anthracene-D14	600	23.36	28.2 M	50-150
Benzo(g,h,i)Perylene D12	600	23.90	61.6	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3786998-2	Extraction Date	05-Oct-23
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	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
01-Nov-2023

Run Information	**Run 1**
Filename	2310302B.D
Run Date	10/31/2023 9:30
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	2.87	80.6		50-150
2-Methylnaphthalene	600	3.41	74.3		50-150
1-Methylnaphthalene	600	3.51	82.8		50-150
Acenaphthylene	600	4.47	73		50-150
Acenaphthene	600	4.74	98.7		50-150
Fluorene	600	5.62	77		50-150
Phenanthrene	600	7.73	75.3		50-150
Anthracene	600	7.84	66.5		50-150
Fluoranthene	600	11.05	79.7		50-150
Pyrene	600	11.69	80.9		50-150
Benzo(a)Anthracene	600	15.58	91		50-150
Chrysene/Triphenylene	600	15.70	80.7	M	50-150
Benzo(b)Fluoranthene	600	18.89	70.7		50-150
Benzo(k)Fluoranthene	600	18.98	75.7		50-150
Benzo(e)Pyrene	600	19.63	118		50-150
Benzo(a)Pyrene	600	19.77	80.6	M	50-150
Perylene	600	20.01	85.8	M	50-150
Indeno(1,2,3-cd)Pyrene	600	23.13	74.9		50-150
Dibenzo(a,c/a,h)Anthracene	600	23.37	82		50-150
Benzo(g,h,i)Perylene	600	23.98	83.9		50-150
Additional Analytes					
Tetralin	0		NS		
2-Chloronaphthalene	0		NS		
Biphenyl	0		NS		
o-Terphenyl	0		NS		
1-Methylphenanthrene	0		NS		
9-Methylphenanthrene	0		NS		
2-methylanthracene	0		NS		
9,10-dimethylanthracene	0		NS		
m-terphenyl	0		NS		
p-terphenyl	0		NS		
Benzo(a)fluorene	0		NS		
Benzo(b)fluorene	0		NS		
7,12-Dimethylbenzo(a)anthracene	0		NS		
3-Methylcholanthrene	0		NS		
Picene	0		NS		
Dibenzo(a,e)pyrene	0		NS		
Coronene	0		NS		
Field Sampling Standards	**ng spiked**		**% Rec**		
1-Methylnaphthalene-D10	0		NS		
Fluorene D10	0		NS		
Terphenyl D14(Surr.)	0		NS		
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.86	89.0		30-150
2-Methylnaphthalene-D10	600	3.38	85.1		30-150
Acenaphthylene D8	600	4.45	61.7		30-150
Phenanthrene D10	600	7.67	86.4		50-150
Anthracene-D10	600	7.80	51.8		50-150
Fluoranthene D10	600	11.00	75.4		50-150
Benz(a)Anthracene-D12	600	15.51	26.6		50-150
Chrysene D12	600	15.63	57.7		50-150
Benzo(b)Fluoranthene-D12	600	18.83	58.2		50-150
Benzo(k)Fluoranthene-D12	600	18.93	58.4		50-150
Benzo(a)Pyrene D12	600	19.71	45.5		30-150
Perylene D12	600	19.95	50.7		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.07	46.9		50-150
Dibenz(a,h)Anthracene-D14	600	23.26	22.9		50-150
Benzo(g,h,i)Perylene D12	600	23.90	62.5		50-150

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked.

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 Rd.
ALS WO#:	L2752967		Mississauga, ON L5J 2Y4
Date of Report	14-Nov-23		Canada
Date of Sample Receipt	5-Oct-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		23-22235-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2		23-22235-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2		23-22235-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2		23-22235-SVOC-(36 THRU 40) BLANK2		Laboratory Control Sample
ALS Sample ID	WG3787134-1		L2752967-1		L2752967-2		L2752967-3		L2752967-4		WG3787134-2
Sample Size	1		1		1		1		1		1
Sample units	sample		sample		sample		sample		sample		n/a
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a
Matrix	QC		Stack		Stack		Stack		Stack		QC
Sampling Date	n/a		3-Oct-23		3-Oct-23		4-Oct-23		3-Oct-23		n/a
Extraction Date	17-Oct-23		17-Oct-23		17-Oct-23		17-Oct-23		17-Oct-23		17-Oct-23
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**%**
Naphthalene	21.4		155	B	1980		199	B	138	B	77.7
2-Methylnaphthalene	<12	U	52.0		190		53.2		15.1		85.4
1-Methylnaphthalene	<12	U	26.8		88.0		28.9		<12	U	85.6
Acenaphthylene	<12	U	41.9		36.5		22.7		17.6		81.9
Acenaphthene	<12	U	<12	U	12.0		<12	U	<12	U	116.3
Fluorene	<12	U	15.1		26.5		43.3		<12	U	81.1
Phenanthrene	<12	U	71.2		495		639		12.4		86.0
Anthracene	<12	U	<12	U	30.2		<12	U	<12	U	76.8
Fluoranthene	<12	U	20.0	M	90.5		253		<12	U	91.3
Pyrene	<12	U	22.7		86.5		164		<12	U	103.0
Benzo(a)Anthracene	<12	U	<12	U	<12	U	20.4		<12	U	102.4
Chrysene/Triphenylene	<12	U	<12	U	<12	U	291		<12	U	85.3
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U	79.9
Benzo(k)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U	87.7
Benzo(e)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	128.4
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	70.7
Perylene	<12	U	<12	U	<12	U	<12	U	<12	U	82.5
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	84.1
Dibenzo(a,h,/a,c)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	90.0
Benzo(g,h,i)Perylene	<12	U	17.0	M	<12	U	<12	U	<12	U	91.6
Additional Analytes											
Tetralin	<12	U	267	M	325	M	348	M	322	M	NS
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U	NS
Biphenyl	<12	U	24.9	M,	39.8		35.0		<12	U	NS
o-Terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U	NS
1-Methylphenanthrene	<12	U	<12	U	<12	U	<12	U	<12	U	NS
9-Methylphenanthrene	<12	U	<12	U	<12	U	229		<12	U	NS
2-methylanthracene	<12	U	<12	U	<12	U	98.7		<12	U	NS
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U	<12	U	NS
m-terphenyl	<12	U	<12	U	<12	U	42.1		<12	U	NS
p-terphenyl	<12	U	<12	U	<12	U	20.4	M,	<12	U	NS
Benzo(a)fluorene	<12	U	<12	U	<12	U	35.3	M	<12	U	NS
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U	NS
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	NS
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U	<60	U	NS
Picene	<60	U	<60	U	<60	U	<60	U	<60	U	NS
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U	<60	U	NS
Coronene	<60	U	<60	U	<60	U	<60	U	<60	U	NS
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**
1-Methylnaphthalene-D10	NS		97.6		102.0		99.0		100.6		NS
Fluorene D10	NS		108.3		116.8		104.9		110.7		NS
Terphenyl D14(Surr.)	NS		94.5		111.9		109.5		120.4		NS
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**
Naphthalene D8	106.9		86.7		95.9		89.6		65.1		110.1
2-Methylnaphthalene-D10	92.3		76.2		83.8		78.0		57.8		95.4
Acenaphthylene D8	68.1		28.0		37.5		48.5		30.4		64.2
Phenanthrene D10	86.1		84.8		89.7		74.2		68.2		79.1
Anthracene-D10	59.8		23.2		32.4		43.9		30.2		51.8
Fluoranthene D10	74.5		65.5		71.6		70.6		61.0		56.0
Benz(a)Anthracene-D12	31.2		22.5		28.4		34.3		29.3		21.7
Chrysene D12	49.6		46.0		54.5		53.4		54.7		39.2
Benzo(b)Fluoranthene-D12	51.9		48.5		58.4		57.1		60.4		37.3
Benzo(k)Fluoranthene-D12	45.4		40.5		55.5		54.8		56.6		41.0
Benzo(a)Pyrene D12	48.4		25.8		35.2		43.4		38.8		41.0
Perylene D12	40.9		22.9		31.7		38.1		35.4		30.8
Indeno(1,2,3,cd)Pyrene-D12	37.4		32.3		40.3		35.5		41.6		29.4
Dibenz(a,h)Anthracene-D14	27.0		30.6		40.2		34.2		42.5		24.7
Benzo(g,h,i)Perylene D12	46.9		43.0		49.7		42.9		52.0		36.8

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.
NS	Indicates that this compound was not spiked.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3787134-1	Extraction Date	17-Oct-23
Analysis Method	PAH by CARB 429		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3787134

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23110163.D
Run Date	11/3/2023 22:57
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US3386814H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.87	21.4	
2-Methylnaphthalene	3.41	<12	U
1-Methylnaphthalene	3.52	<12	U
Acenaphthylene	4.47	<12	U
Acenaphthene	4.74	<12	U
Fluorene	5.61	<12	U
Phenanthrene	7.72	<12	U
Anthracene	7.83	<12	U
Fluoranthene	11.04	<12	U
Pyrene	11.68	<12	U
Benzo(a)Anthracene	15.58	<12	U
Chrysene/Triphenylene	15.67	<12	U
Benzo(b)Fluoranthene	18.87	<12	U
Benzo(k)Fluoranthene	18.96	<12	U
Benzo(e)Pyrene	19.66	<12	U
Benzo(a)Pyrene	19.76	<12	U
Perylene	20.01	<12	U
Indeno(1,2,3-cd)Pyrene	23.09	<12	U
Dibenzo(a,h,/a,c)Anthracene	23.31	<12	U
Benzo(g,h,i)Perylene	23.96	<12	U
Additional Analytes			
Tetralin	NotFnd	<12	U
2-Chloronaphthalene	3.89	<12	U
Biphenyl	3.90	<12	U
o-Terphenyl	8.98	<12	U
1-Methylphenanthrene	9.23	<12	U
9-Methylphenanthrene	9.35	<12	U
2-methylanthracene	9.41	<12	U
9,10-dimethylanthracene	11.93	<12	U
m-terphenyl	12.09	<12	U
p-terphenyl	12.58	<12	U
Benzo(a)fluorene	12.84	<12	U
Benzo(b)fluorene	13.05	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	20.87	<60	U
Picene	23.76	<60	U
Dibenzo(a,e)pyrene	28.01	<60	U
Coronene	28.74	<60	U

Field Sampling Standards	**ng spiked**	**% Rec**
1-Methylnaphthalene-D10	0	NS
Fluorene D10	0	NS
Terphenyl D14(Surr.)	0	NS

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.87	106.9	50-150
2-Methylnaphthalene-D10	600	3.39	92.3	50-150
Acenaphthylene D8	600	4.45	68.1	50-150
Phenanthrene D10	600	7.67	88.1	50-150
Anthracene-D10	600	7.79	59.8	50-150
Fluoranthene D10	600	11.00	74.5	50-150
Benz(a)Anthracene-D12	600	15.50	31.2	50-150
Chrysene D12	600	15.61	49.6	50-150
Benzo(b)Fluoranthene-D12	600	18.82	51.9	50-150
Benzo(k)Fluoranthene-D12	600	18.92	45.4	50-150
Benzo(a)Pyrene D12	600	19.70	48.4	50-150
Perylene D12	600	19.93	40.9	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.03	37.4	50-150
Dibenz(a,h)Anthracene-D14	600	23.22	27.0	50-150
Benzo(g,h,i)Perylene D12	600	23.88	46.9	50-150

U Indicates that this compound was not detected above the MDL.
NS Indicates that this compound was not spiked

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**23-22235-SVOC-(21 THRU 25) TEST#1 APC OUTLET#2**	Sampling Date	03-Oct-23
ALS Sample ID	L2752967-1	Extraction Date	17-Oct-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3787134

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23110165.D
Run Date	11/4/2023 0:21
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.87	155	B
2-Methylnaphthalene	3.42	52.0	
1-Methylnaphthalene	3.52	26.8	
Acenaphthylene	4.46	41.9	
Acenaphthene	4.74	<12	U
Fluorene	5.61	15.1	
Phenanthrene	7.72	71.2	
Anthracene	7.83	<12	U
Fluoranthene	11.04	20.0 M	
Pyrene	11.68	22.7	
Benzo(a)Anthracene	15.55	<12	U
Chrysene/Triphenylene	15.67	<12	U
Benzo(b)Fluoranthene	18.89	<12	U
Benzo(k)Fluoranthene	18.89	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	19.75	<12	U
Perylene	19.94	<12	U
Indeno(1,2,3-cd)Pyrene	23.08	<12	U
Dibenzo(a,h,/a,c)Anthracene	23.38	<12	U
Benzo(g,h,i)Perylene	23.96	17.0 M	
Additional Analytes			
Tetralin	2.74	267 M	
2-Chloronaphthalene	3.89	<12	U
Biphenyl	3.90	24.9 M	
o-Terphenyl	8.98	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.35	<12	U
2-methylanthracene	9.41	<12	U
9,10-dimethylanthracene	11.92	<12	U
m-terphenyl	12.08	<12	U
p-terphenyl	12.57	<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	20.90	<60	U
Picene	23.71	<60	U
Dibenzo(a,e)pyrene	27.99	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.48	97.6
Fluorene D10	600	5.56	108.3
Terphenyl D14(Surr.)	600	12.51	94.5

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.86	86.7	50-150
2-Methylnaphthalene-D10	600	3.39	76.2	50-150
Acenaphthylene D8	600	4.45	28.0	50-150
Phenanthrene D10	600	7.67	84.8	50-150
Anthracene-D10	600	7.79	23.2	50-150
Fluoranthene D10	600	11.00	65.5	50-150
Benz(a)Anthracene-D12	600	15.50	22.5	50-150
Chrysene D12	600	15.61	46.0	50-150
Benzo(b)Fluoranthene-D12	600	18.82	48.5	50-150
Benzo(k)Fluoranthene-D12	600	18.91	40.5	50-150
Benzo(a)Pyrene D12	600	19.70	25.8	50-150
Perylene D12	600	19.93	22.9	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.03	32.3	50-150
Dibenz(a,h)Anthracene-D14	600	23.22	30.6	50-150
Benzo(g,h,i)Perylene D12	600	23.88	43.0	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(26 THRU 30) TEST#2 APC OUTLET#2**	Sampling Date	03-Oct-23
ALS Sample ID	L2752967-2	Extraction Date	17-Oct-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3787134

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23110166.D
Run Date	11/4/2023 1:02
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.88	1980	
2-Methylnaphthalene	3.42	190	
1-Methylnaphthalene	3.52	88.0	
Acenaphthylene	4.47	36.5	
Acenaphthene	4.74	12.0	
Fluorene	5.61	26.5	
Phenanthrene	7.72	495	
Anthracene	7.83	30.2	
Fluoranthene	11.05	90.5	
Pyrene	11.68	86.5	
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene	NotFnd	<12	U
Benzo(b)Fluoranthene	18.88	<12	U
Benzo(k)Fluoranthene	19.01	<12	U
Benzo(e)Pyrene	19.62	<12	U
Benzo(a)Pyrene	19.74	<12	U
Perylene	19.99	<12	U
Indeno(1,2,3-cd)Pyrene	23.08	<12	U
Dibenzo(a,h,/a,c)Anthracene	23.28	<12	U
Benzo(g,h,i)Perylene	23.95	<12	U
Additional Analytes			
Tetralin	2.74	325	M
2-Chloronaphthalene	3.97	<12	U
Biphenyl	3.90	39.8	
o-Terphenyl	8.98	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.35	<12	U
2-methylanthracene	9.41	<12	U
9,10-dimethylanthracene	11.91	<12	U
m-terphenyl	12.09	<12	U
p-terphenyl	12.57	<12	U
Benzo(a)fluorene	12.83	<12	U
Benzo(b)fluorene	13.01	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	20.88	<60	U
Picene	24.10	<60	U
Dibenzo(a,e)pyrene	27.97	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.49	102
Fluorene D10	600	5.56	116.8
Terphenyl D14(Surr.)	600	12.51	111.9

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.87	95.9	50-150
2-Methylnaphthalene-D10	600	3.39	83.8	50-150
Acenaphthylene D8	600	4.45	37.5	50-150
Phenanthrene D10	600	7.67	89.7	50-150
Anthracene-D10	600	7.79	32.4	50-150
Fluoranthene D10	600	11.00	71.6	50-150
Benz(a)Anthracene-D12	600	15.50	28.4	50-150
Chrysene D12	600	15.61	54.5	50-150
Benzo(b)Fluoranthene-D12	600	18.82	58.4	50-150
Benzo(k)Fluoranthene-D12	600	18.91	55.5	50-150
Benzo(a)Pyrene D12	600	19.70	35.2	50-150
Perylene D12	600	19.93	31.7	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.02	40.3	50-150
Dibenz(a,h)Anthracene-D14	600	23.22	40.2	50-150
Benzo(g,h,i)Perylene D12	600	23.88	49.7	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	**23-22235-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2**	Sampling Date	04-Oct-23
ALS Sample ID	L2752967-3	Extraction Date	17-Oct-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3787134

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23110167.D
Run Date	11/4/2023 1:44
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.87	199	B
2-Methylnaphthalene	3.42	53.2	
1-Methylnaphthalene	3.52	28.9	
Acenaphthylene	4.47	22.7	
Acenaphthene	4.74	<12	U
Fluorene	5.61	43.3	
Phenanthrene	7.72	639	
Anthracene	NotFnd	<12	U
Fluoranthene	11.04	253	
Pyrene	11.67	164	
Benzo(a)Anthracene	15.56	20.4	
Chrysene/Triphenylene	15.66	291	
Benzo(b)Fluoranthene	18.88	<12	U
Benzo(k)Fluoranthene	18.95	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	19.75	<12	U
Perylene	19.96	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,h,/a,c)Anthracene	23.33	<12	U
Benzo(g,h,i)Perylene	23.95	<12	U
Additional Analytes			
Tetralin	2.74	348	M
2-Chloronaphthalene	3.92	<12	U
Biphenyl	3.90	35.0	
o-Terphenyl	8.98	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.35	229	
2-methylanthracene	9.41	98.7	
9,10-dimethylanthracene	11.82	<12	U
m-terphenyl	12.09	42.1	
p-terphenyl	12.57	20.4	M
Benzo(a)fluorene	12.80	35.3	M
Benzo(b)fluorene	13.04	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	20.91	<60	U
Picene	23.73	<60	U
Dibenzo(a,e)pyrene	27.97	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.49	99
Fluorene D10	600	5.56	104.9
Terphenyl D14(Surr.)	600	12.50	109.5

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.87	89.6	50-150
2-Methylnaphthalene-D10	600	3.39	78.0	50-150
Acenaphthylene D8	600	4.45	48.5	50-150
Phenanthrene D10	600	7.67	74.2	50-150
Anthracene-D10	600	7.79	43.9	50-150
Fluoranthene D10	600	10.99	70.6	50-150
Benz(a)Anthracene-D12	600	15.50	34.3	50-150
Chrysene D12	600	15.61	53.4	50-150
Benzo(b)Fluoranthene-D12	600	18.82	57.1	50-150
Benzo(k)Fluoranthene-D12	600	18.91	54.8	50-150
Benzo(a)Pyrene D12	600	19.70	43.4	50-150
Perylene D12	600	19.93	38.1	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.02	35.5	50-150
Dibenz(a,h)Anthracene-D14	600	23.22	34.2	50-150
Benzo(g,h,i)Perylene D12	600	23.88	42.9	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	**23-22235-SVOC-(36 THRU 40) BLANK2**	Sampling Date	03-Oct-23
ALS Sample ID	L2752967-4	Extraction Date	17-Oct-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3787134

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23110164.D
Run Date	11/3/2023 23:39
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.88	138	B
2-Methylnaphthalene	3.41	15.1	
1-Methylnaphthalene	3.52	<12	U
Acenaphthylene	4.46	17.6	
Acenaphthene	4.74	<12	U
Fluorene	5.61	<12	U
Phenanthrene	7.72	12.4	
Anthracene	7.83	<12	U
Fluoranthene	11.04	<12	U
Pyrene	11.67	<12	U
Benzo(a)Anthracene	15.59	<12	U
Chrysene/Triphenylene	15.67	<12	U
Benzo(b)Fluoranthene	18.88	<12	U
Benzo(k)Fluoranthene	18.95	<12	U
Benzo(e)Pyrene	19.68	<12	U
Benzo(a)Pyrene	19.76	<12	U
Perylene	20.06	<12	U
Indeno(1,2,3-cd)Pyrene	23.11	<12	U
Dibenzo(a,h,/a,c)Anthracene	23.31	<12	U
Benzo(g,h,i)Perylene	24.07	<12	U
Additional Analytes			
Tetralin	2.74	322	M
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.90	<12	U
o-Terphenyl	8.98	<12	U
1-Methylphenanthrene	9.22	<12	U
9-Methylphenanthrene	9.35	<12	U
2-methylanthracene	9.41	<12	U
9,10-dimethylanthracene	11.92	<12	U
m-terphenyl	12.09	<12	U
p-terphenyl	12.57	<12	U
Benzo(a)fluorene	12.85	<12	U
Benzo(b)fluorene	13.05	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	20.97	<60	U
Picene	23.74	<60	U
Dibenzo(a,e)pyrene	28.01	<60	U
Coronene	28.80	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.49	100.6
Fluorene D10	600	5.56	110.7
Terphenyl D14(Surr.)	600	12.51	120.4

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.87	65.1	50-150
2-Methylnaphthalene-D10	600	3.39	57.8	50-150
Acenaphthylene D8	600	4.45	30.4	50-150
Phenanthrene D10	600	7.67	68.2	50-150
Anthracene-D10	600	7.79	30.2	50-150
Fluoranthene D10	600	11.00	61.0	50-150
Benz(a)Anthracene-D12	600	15.50	29.3	50-150
Chrysene D12	600	15.61	54.7	50-150
Benzo(b)Fluoranthene-D12	600	18.82	60.4	50-150
Benzo(k)Fluoranthene-D12	600	18.91	56.6	50-150
Benzo(a)Pyrene D12	600	19.70	38.8	50-150
Perylene D12	600	19.93	35.4	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.02	41.6	50-150
Dibenz(a,h)Anthracene-D14	600	23.21	42.5	50-150
Benzo(g,h,i)Perylene D12	600	23.88	52.0	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3787134-2	Extraction Date	17-Oct-23
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	WG3787134

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23110157.D
Run Date	11/3/2023 18:46
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP-5MS US3388814H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	2.87	77.7		50-150
2-Methylnaphthalene	600	3.42	85.4		50-150
1-Methylnaphthalene	600	3.52	85.6		50-150
Acenaphthylene	600	4.47	81.9		50-150
Acenaphthene	600	4.74	116.3		50-150
Fluorene	600	5.61	81.1		50-150
Phenanthrene	600	7.72	86.0		50-150
Anthracene	600	7.83	76.8		50-150
Fluoranthene	600	11.05	91.3		50-150
Pyrene	600	11.68	103.0		50-150
Benzo(a)Anthracene	600	15.57	102.4		50-150
Chrysene/Triphenylene	600	15.68	85.3		50-150
Benzo(b)Fluoranthene	600	18.88	79.9		50-150
Benzo(k)Fluoranthene	600	18.97	87.7		50-150
Benzo(e)Pyrene	600	19.63	128.4		50-150
Benzo(a)Pyrene	600	19.76	70.7		50-150
Perylene	600	20.00	82.5		50-150
Indeno(1,2,3-cd)Pyrene	600	23.11	84.1		50-150
Dibenzo(a,h,/a,c)Anthracene	600	23.32	90.0		50-150
Benzo(g,h,i)Perylene	600	23.97	91.6		50-150
Additional Analytes					
Tetralin	0		NS		
2-Chloronaphthalene	0		NS		
Biphenyl	0		NS		
o-Terphenyl	0		NS		
1-Methylphenanthrene	0		NS		
9-Methylphenanthrene	0		NS		
2-methylanthracene	0		NS		
9,10-dimethylanthracene	0		NS		
m-terphenyl	0		NS		
p-terphenyl	0		NS		
Benzo(a)fluorene	0		NS		
Benzo(b)fluorene	0		NS		
7,12-Dimethylbenzo(a)anthracene	0		NS		
3-Methylcholanthrene	0		NS		
Picene	0		NS		
Dibenzo(a,e)pyrene	0		NS		
Coronene	0		NS		
Field Sampling Standards	**ng spiked**		**% Rec**		
1-Methylnaphthalene-D10	0		NS		
Fluorene D10	0		NS		
Terphenyl D14(Surr.)	0		NS		
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.86	110.1		30-150
2-Methylnaphthalene-D10	600	3.39	95.4		30-150
Acenaphthylene D8	600	4.45	64.2		30-150
Phenanthrene D10	600	7.67	79.1		50-150
Anthracene-D10	600	7.79	51.8		50-150
Fluoranthene D10	600	11.00	56.0		50-150
Benz(a)Anthracene-D12	600	15.50	21.7		50-150
Chrysene D12	600	15.61	39.2		50-150
Benzo(b)Fluoranthene-D12	600	18.82	37.3		50-150
Benzo(k)Fluoranthene-D12	600	18.92	41.0		50-150
Benzo(a)Pyrene D12	600	19.70	41.0		30-150
Perylene D12	600	19.93	30.8		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.02	29.4		50-150
Dibenz(a,h)Anthracene-D14	600	23.22	24.7		50-150
Benzo(g,h,i)Perylene D12	600	23.88	36.8		50-150

NS Indicates that this compound was not spiked

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#:	L2752774		Mississauga, ON
Date of Report	10-Nov-23		L5J 2Y4
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS: **Chlorophenols by modifed EPA 8270E**

The recoveries of some of the labelled extraction standards were below the method control limits. No targets were detected in the samples. Detection limits were verified to be valid, based on a signal:noise basis.

The recovery of 2,4,6-trichlorophenol was below the method control limit for the laboratory control sample (LCS). However, this target has not been detected in the samples.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		23-22235-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1		23-22235-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1		23-22235-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1		23-22235-SVOC-(16 THRU 20) BLANK		Laboratory Control Sample	
ALS Sample ID	WG3786998-1		L2752774-1		L2752774-2		L2752774-3		L2752774-4		WG3786998-2	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		n/a	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		QC	
Sampling Date	n/a		21-Sep-23		21-Sep-23		22-Sep-23		22-Sep-23		n/a	
Extraction Date	5-Oct-23		5-Oct-23		5-Oct-23		5-Oct-23		5-Oct-23		5-Oct-23	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**	
2-Chlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	54	M
3/4-Chlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	.	
2,4/2,5-Dichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	102	
2,3-Dichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U		
2,6-Dichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	64	
3,5-Dichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U		
3,4-Dichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U		
2,3,5-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U		
2,4,6-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	19	
2,4,5-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	88	
2,3,4-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U		
2,3,6-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U		
3,4,5-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U		
2,3,5,6-Tetrachlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	62	
2,3,4,5/2,3,4,6-Tetrachlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	131	
Pentachlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	96	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	17.4		9.8		15.6		62.3		34.2		75.7	
13C6-2,4-Dichlorophenol (ES)	8.2		1.5		5.1		46.4		18.5		44.1	
13C6-2,4,5-Trichlorophenol (ES)	30.2		22.5		28.7		72.4		46.9		63.5	
13C6-2,3,4,5-Tetrachlorophenol (ES)	37.4		45.8		40.2		79		42.9		75.9	
13C6-Pentachlorophenol (ES)	9.7		11.8		18.7		78.7		45.7		42.1	

U Indicates that this compound was not detected above the LOD.
M Indicates that a peak has been manually integrated.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3786998-1	Extraction Date	5-Oct-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23102370.D
Run Date	10/24/2023 10:20
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5-MS US2498036H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.85	<120	U
3/4-Chlorophenol	8.14	<120	U
2,4/2,5-Dichlorophenol	7.99	<120	U
2,3-Dichlorophenol	7.99	<120	U
2,6-Dichlorophenol	8.33	<120	U
3,5-Dichlorophenol	10.24	<120	U
3,4-Dichlorophenol	10.50	<120	U
2,3,5-Trichlorophenol	9.69	<120	U
2,4,6-Trichlorophenol	9.85	<120	U
2,4,5-Trichlorophenol	9.94	<120	U
2,3,4-Trichlorophenol	10.10	<120	U
2,3,6-Trichlorophenol	10.10	<120	U
3,4,5-Trichlorophenol	12.41	<120	U
2,3,5,6-Tetrachlorophenol	11.66	<120	U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.73	<120	U
Pentachlorophenol	13.40	<120	U

Extraction Standards			**% Rec**	**Limits**
13C6-4-Chlorophenol (ES)	1200	8.11	17.4	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.95	8.2	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.94	30.2	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.73	37.4	50-150
13C6-Pentachlorophenol (ES)	1200	13.40	9.7	50-150

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	21-Sep-23
ALS Sample ID	L2752774-1	Extraction Date	5-Oct-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23102373.D
Run Date	10/24/2023 11:31
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5-MS US2498036H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.85	<120	U
3/4-Chlorophenol	8.14	<120	U
2,4/2,5-Dichlorophenol	7.99	<120	U
2,3-Dichlorophenol	7.99	<120	U
2,6-Dichlorophenol	8.34	<120	U
3,5-Dichlorophenol	10.21	<120	U
3,4-Dichlorophenol	10.60	<120	U
2,3,5-Trichlorophenol	9.68	<120	U
2,4,6-Trichlorophenol	9.86	<120	U
2,4,5-Trichlorophenol	9.94	<120	U
2,3,4-Trichlorophenol	10.14	<120	U
2,3,6-Trichlorophenol	10.20	<120	U
3,4,5-Trichlorophenol	12.35	<120	U
2,3,5,6-Tetrachlorophenol	11.66	<120	U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.74	<120	U
Pentachlorophenol	13.40	<120	U

Extraction Standards			**% Rec**	**Limits**
13C6-4-Chlorophenol (ES)	1200	8.27	9.8	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.95	1.5	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.94	22.5	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.72	45.8	50-150
13C6-Pentachlorophenol (ES)	1200	13.40	11.8	50-150

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	21-Sep-23
ALS Sample ID	L2752774-2	Extraction Date	5-Oct-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23102374.D
Run Date	10/24/2023 11:54
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5-MS US2498036H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.88	<120	U
3/4-Chlorophenol	8.24	<120	U
2,4/2,5-Dichlorophenol	7.94	<120	U
2,3-Dichlorophenol	7.99	<120	U
2,6-Dichlorophenol	8.33	<120	U
3,5-Dichlorophenol	9.90	<120	U
3,4-Dichlorophenol	10.59	<120	U
2,3,5-Trichlorophenol	9.94	<120	U
2,4,6-Trichlorophenol	9.94	<120	U
2,4,5-Trichlorophenol	9.94	<120	U
2,3,4-Trichlorophenol	10.14	<120	U
2,3,6-Trichlorophenol	10.14	<120	U
3,4,5-Trichlorophenol	12.30	<120	U
2,3,5,6-Tetrachlorophenol	11.66	<120	U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.73	<120	U
Pentachlorophenol	13.40	<120	U

Extraction Standards			**% Rec**	**Limits**
13C6-4-Chlorophenol (ES)	1200	8.24	15.6	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.95	5.1	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.94	28.7	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.72	40.2	50-150
13C6-Pentachlorophenol (ES)	1200	13.40	18.7	50-150

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	22-Sep-23
ALS Sample ID	L2752774-3	Extraction Date	5-Oct-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23102375.D
Run Date	10/24/2023 12:18
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5-MS US2498036H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.72	<120	U
3/4-Chlorophenol	8.15	<120	U
2,4/2,5-Dichlorophenol	7.95	<120	U
2,3-Dichlorophenol	7.99	<120	U
2,6-Dichlorophenol	8.34	<120	U
3,5-Dichlorophenol	10.09	<120	U
3,4-Dichlorophenol	10.35	<120	U
2,3,5-Trichlorophenol	9.85	<120	U
2,4,6-Trichlorophenol	9.85	<120	U
2,4,5-Trichlorophenol	9.94	<120	U
2,3,4-Trichlorophenol	9.94	<120	U
2,3,6-Trichlorophenol	10.14	<120	U
3,4,5-Trichlorophenol	12.35	<120	U
2,3,5,6-Tetrachlorophenol	11.66	<120	U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.73	<120	U
Pentachlorophenol	13.40	<120	U

Extraction Standards			**% Rec**	**Limits**
13C6-4-Chlorophenol (ES)	1200	8.24	62.3	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.95	46.4	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.94	72.4	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.71	79	50-150
13C6-Pentachlorophenol (ES)	1200	13.40	78.7	50-150

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22235-SVOC-(16 THRU 20) BLANK**	Sampling Date	22-Sep-23
ALS Sample ID	L2752774-4	Extraction Date	5-Oct-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23102372.D
Run Date	10/24/2023 11:07
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5-MS US2498036H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.90	<120	U
3/4-Chlorophenol	8.15	<120	U
2,4/2,5-Dichlorophenol	7.99	<120	U
2,3-Dichlorophenol	7.99	<120	U
2,6-Dichlorophenol	8.27	<120	U
3,5-Dichlorophenol	10.24	<120	U
3,4-Dichlorophenol	10.44	<120	U
2,3,5-Trichlorophenol	9.69	<120	U
2,4,6-Trichlorophenol	9.85	<120	U
2,4,5-Trichlorophenol	9.94	<120	U
2,3,4-Trichlorophenol	10.10	<120	U
2,3,6-Trichlorophenol	10.14	<120	U
3,4,5-Trichlorophenol	12.32	<120	U
2,3,5,6-Tetrachlorophenol	11.66	<120	U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.73	<120	U
Pentachlorophenol	13.40	<120	U

Extraction Standards			**% Rec**	**Limits**
13C6-4-Chlorophenol (ES)	1200	8.24	34.2	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.95	18.5	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.93	46.9	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.71	42.9	50-150
13C6-Pentachlorophenol (ES)	1200	13.40	45.7	50-150

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	WG3786998-2	Extraction Date	5-Oct-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3786998

Approved:
Nick Schrobilgen
--e-signature--
07-Nov-2023

Run Information	**Run 1**
Filename	23102368.D
Run Date	10/24/2023 9:33
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP5-MS US2498036H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**	**Limits**
2-Chlorophenol	1200	5.93	54	M	50-150
3/4-Chlorophenol	1200	8.14	NS		50-150
2,4/2,5-Dichlorophenol	1200	7.95	102		50-150
2,3-Dichlorophenol	1200	8.09	NS		50-150
2,6-Dichlorophenol	1200	8.31	64		50-150
3,5-Dichlorophenol	1200	10.10	NS		50-150
3,4-Dichlorophenol	1200	10.10	NS		50-150
2,3,5-Trichlorophenol	1200	9.85	NS		50-150
2,4,6-Trichlorophenol	1200	9.85	19		50-150
2,4,5-Trichlorophenol	1200	9.94	88		50-150
2,3,4-Trichlorophenol	1200	9.94	NS		50-150
2,3,6-Trichlorophenol	1200	10.11	NS		50-150
3,4,5-Trichlorophenol	1200	12.41	NS		50-150
2,3,5,6-Tetrachlorophenol	1200	11.65	62		50-150
2,3,4,5/2,3,4,6-Tetrachlorophenol	1200	11.73	131		50-150
Pentachlorophenol	1200	13.40	96		50-150
Extraction Standards			**% Rec**		**Limits**
13C6-4-Chlorophenol (ES)	1200	8.27	75.7		30-150
13C6-2,4-Dichlorophenol (ES)	1200	7.95	44.1		30-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.94	63.5		30-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.73	75.9		30-150
13C6-Pentachlorophenol (ES)	1200	13.40	42.1		30-150

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked.

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 Rd.
ALS WO#:	L2752967		Mississauga, ON L5J 2Y4
Date of Report	27-Nov-23		Canada
Date of Sample Receipt	5-Oct-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS: **Chlorophenols by modifed EPA 8270E**

Di- to penta-chlorophenol data is not available on this set of samples due to an absence of recovery on the corresponding labelled targets. The absence of recoveries was confirmed by analysis of a second portion of the DCM combined extracted. It was also confirmed that secondary soxhlet extraction of the solids using toluene did not extract these chlorophenols since a combined DCM and toluene extract also showed the same absence of recoveries. It is noteworthy that all of the neutral targets (including PCDD/F, PCB, CB and PAHs) were all effectively extracted while only the more acidic phenols (i.e. more acidic than monochlorophenols) were not. Low extraction biases on chlorophenols (relative to neutrals) has been observed in the past without acidification of the solids but never to this extreme. There is an absence of an explanation for the different extraction behavior on this batch of Outlet 2 samples relative to the Outlet 1 batch.

Certified by:

Ron McLeod, Ph.D.
Technical Director

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		23-22235-SVOC (21 THRU 25) TEST#1 APC OUTLET#2		23-22235-SVOC (26 THRU 30) TEST#2 APC OUTLET#2		23-22235-SVOC-(31 THRU 35) TEST#3 APC OUTLET#2		23-22235-SVOC-(36 THRU 40) BLANK2		Laboratory Control Sample
ALS Sample ID	WG3787134-1		L2752967-1		L2752967-2		L2752967-3		L2752967-4		WG3787134-5
Sample Size	1		1		1		1		1		1
Sample units	sample		sample		sample		sample		sample		n/a
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a
Matrix	QC		Stack		Stack		Stack		Stack		QC
Sampling Date	n/a		3-Oct-23		3-Oct-23		4-Oct-23		3-Oct-23		n/a
Extraction Date	17-Oct-23		17-Oct-23		17-Oct-23		17-Oct-23		17-Oct-23		17-Oct-23
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**
2-Chlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	85
3/4-Chlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U	NS
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**
13C6-4-Chlorophenol (ES)	11.2		40.2		19.2		12.2		38.4		2.9

U Indicates that this compound was not detected above the LOD.

NS Indicates that this compound was not spiked.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample	
ALS Sample ID	WG3787134-2	
Sample Size	1	
Sample units	n/a	
Moisture Content	n/a	
Matrix	QC	
Sampling Date	n/a	
Extraction Date	17-Oct-23	
Target Analytes	**% Recovery**	
2-Chlorophenol	85	R
3/4-Chlorophenol	NS	
Extraction Standards	**% Rec**	
13C6-4-Chlorophenol (ES)	2.9	

R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. Value is an estimated maximum
NS	Indicates that this compound was not spiked.

APPENDIX 16

Acid Gas Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22235
Date:	SEPT 19/23
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:	660.9
Initial Wt:	760.0
Final Wt:	890.0
1 Gain:	130.0
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	640.4
Initial Wt:	745.0
Final Wt:	795.4
2 Gain:	50.4
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	486.6
Final Wt:	491.9
3 Gain:	5.3
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.0
With Imp. 1,2,3 Soln:	672.7
After Rinse:	782.7
Total TS3:	500.7

Train Loaded By:

Train Recovered By: DT

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	996.8
Final Wt:	1010.5
4 Gain:	13.7

Box ID:

CWTR = 1+2+3:	185.7
WCBDA= 4:	13.7

SAMPLE ID: 23-22235-M26A- 1

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 22235
Date: SEPT 19/23
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:	542.0
Initial Wt:	642.8
Final Wt:	808.0
1 Gain:	165.2
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	667.0
Initial Wt:	774.0
Final Wt:	805.7
2 Gain:	31.7
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	606.6
Final Wt:	610.6
3 Gain:	4.0
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	283.0
With Imp. 1,2,3 Soln:	687.6
After Rinse:	785.2
Total TS3:	502.2

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	946.4
Final Wt:	957.8
4 Gain:	11.4

Box ID:

CWTR = 1+2+3: 200.9

WCBDA= 4: 11.4

SAMPLE ID: 23-22235-M26A- 2

Train Loaded By: DT
Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22235
Date:	SEPT 19/23
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:	659.0
Initial Wt:	760.5
Final Wt:	914.3
1 Gain:	153.8
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	638.5
Initial Wt:	738.0
Final Wt:	766.8
2 Gain:	28.8
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	485.5
Final Wt:	488.0
3 Gain:	2.5
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	292.0
With Imp. 1,2,3 Soln:	665.4
After Rinse:	776.7
Total TS3:	~~483~~ 484.7

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	976.0
Final Wt:	989.4
4 Gain:	13.4

Box ID:

CWTR = 1+2+3:	185.1
WCBDA= 4:	13.4

SAMPLE ID: 23-22235-M26A-

Train Loaded By: DT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 22235
Date: Sept 20/23
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:	659.0
Initial Wt:	759.0
Final Wt:	887.0
1 Gain:	128.0
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	638.5
Initial Wt:	738.5
Final Wt:	772.5
2 Gain:	34.0
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	485.5
Final Wt:	490.0
3 Gain:	4.5
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.5
With Imp. 1,2,3 Soln:	644.0
After Rinse:	767.0
Total TS3:	485.5

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	989.4
Final Wt:	1001.4
4 Gain:	12.0

Box ID:

CWTR = 1+2+3: 166.5

WCBDA= 4: 12.0

SAMPLE ID: 23-22235-M26A- 4

Train Loaded By:
Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22235
Date:	Sept 20/23
Test No.:	2
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:	541.2
Initial Wt:	648.4
Final Wt:	790.0
1 Gain:	141.6
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	667.0
Initial Wt:	760.3
Final Wt:	780.3
2 Gain:	20.0
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	607.0
Final Wt:	610.0
3 Gain:	3.0
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.5
With Imp. 1,2,3 Soln:	645.0
After Rinse:	747.5
Total TS3:	465.0

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	957.8
Final Wt:	966.8
4 Gain:	9.0

Box ID:

CWTR = 1+2+3: 164.6

WCBDA= 4: 9.0

SAMPLE ID: 23-22235-M26A- 5

Train Loaded By:

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22235
Date:	Sept 20/23
Test No.:	3
Test Location:	unit 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	652.0
Initial Wt:	754.5
Final Wt:	896.7
1 Gain:	142.2
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	638.5
Initial Wt:	744.5
Final Wt:	769.1
2 Gain:	24.6
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	485.5
Final Wt:	488.5
3 Gain:	3.0
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.0
With Imp. 1,2,3 Soln:	650.0
After Rinse:	766.2
Total TS3:	484.2

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	1001.5
Final Wt:	1010.8
4 Gain:	9.3

Box ID:

CWTR = 1+2+3: 169.8

WCBDA= 4: 9.3

SAMPLE ID: 23-22235-M26A- 6

Train Loaded By: ST

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 22235
Date: Sept 20/23
Test No.:
Test Location: BLANK 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Box ID:

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

CWTR = 1+2+3:

WCBDA= 4:

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.8
With Imp. 1,2,3 Soln:	481.8
After Rinse:	582.2
Total TS3:	300.4

SAMPLE ID: 23-22235-M26A-BLANK 1

Train Loaded By:
Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 22235
Date: Sept 20/23
Test No.:
Test Location: BLANK 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Box ID:

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

CWTR = 1+2+3:

WCBDA= 4:

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.8
With Imp. 1,2,3 Soln:	484.0
After Rinse:	985.2
Total TS3:	3024

SAMPLE ID: 23-22235-M26A-BLANK2

Train Loaded By: DT
Train Recovered By:

APPENDIX 17

VOST Analytical Report
(24 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#:	L2752778		Mississauga, ON L5J 2Y4
Date of Report	25-Oct-23		Canada
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 COVANTA

COMMENTS: **VOCs via SW846 Method 5041A/8260C**

Ketone data by VOST analyses are estimated values only

For the sample 23-22235-VOST-3A,B TEST#3 APC OUTLET#1, The internal standard and surrogate standards do not appear to have been completely applied to the sample tube. As a result, the values have been calculated via external calibration and surrogate recoveries have not been reported. The field standard recovery is within the range of typical values, but approximately 30% lower than the other samples. Data for 23-22235-VOST-3A,B TEST#3 APC OUTLET#1 may be considered estimated and may be biased 30% low.

For the sample 23-22235-VOST-12A,B FIELD BLANK APC OUTLET#1, the d14-hexane and d6-benzene internal standards were below the method control limit. Perhaps consequently, the d4-1,2-Dichloroethane surrogate recovery is elevated. The possibility that the early-eluting results are elevated cannot be eliminated. There was a significant concentration of toluene detected, which is not expected to be biased.

Certified by: Steve Kennedy
Technical Supervisor

ALS Environmental

Sample Analysis Summary Report

Sample Name	23-22235-VOST-1A,B TEST#1 APC OUTLET#1		23-22235-VOST-2A,B TEST#2 APC OUTLET#1		23-22235-VOST-3A,B TEST#3 APC OUTLET#1		23-22235-VOST-12A,B FIELD BLANK APC OUTLET#1	
ALS Sample ID	L2752778-1		L2752778-2		L2752778-3		L2752778-4	
Sample units	sample		sample		sample		sample	
Matrix	VOST		VOST		VOST		VOST	
Sampling Date	21-Sep-23		21-Sep-23		21-Sep-23		21-Sep-23	
Extraction Date	4-Oct-23		4-Oct-23		4-Oct-23		4-Oct-23	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U	<0.09	U	<0.09	U
Trichlorofluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
1,1-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Acetone	0.205		<0.1	U	<0.1	U	0.303	
Methylene Chloride	0.248		0.101	M	0.107		0.296	
trans,1,2-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
2-Butanone	0.022		0.026		0.011		0.016	
Chloroform	0.052		0.035		0.027		<0.01	U
1,1,1-Trichloroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Carbon Tetrachloride	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Benzene	<0.05	U	<0.05	U	<0.05	U	0.054	
1,2-Dichloroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Trichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Bromodichloromethane	0.023		0.012		<0.01	U	<0.01	U
Toluene	0.094		<0.05	U	<0.05	U	4.89	E
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Tetrachloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Ethylbenzene	<0.01	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
O-Xylene	<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
Bromoform	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Isopropylbenzene	<0.02	U	<0.02	U	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	<0.02	U	<0.02	U	<0.02	U	<0.02	U
1,3-Butadiene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Trichlorotrifluoroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Field Standard	**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	85.0		93.5		62.1		91.8	
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	135.3		71.0		NQ		258.9	H
d8-Toluene(SURR)	108.1		100.6		NQ		102.2	
4-Bromofluorobenzene(SURR)	107.8		99.1		NQ		98.8	
Internal Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d14-Hexane	50.4		71.2		0.4	L	37.8	L
d6-Benzene	50.1		92.6		0.5	L	28.7	L
d5-Chlorobenzene	50.1		65.1		1.4	L	62.1	

U	Indicates that this compound was not detected above the RL.
M	Indicates that a peak has been manually integrated.
L	Indicates this value is below the control limit.
H	Indicates this value is above the control limit.
E	Indicates Estimated value. Instrument response exceeds instrument calibration range of 1.0 ug.
NQ	Indicates that this value was not quantifiable.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		Laboratory Control Sample	
ALS Sample ID	WG3787098-1		WG3787098-2	
Sample units	sample		n/a	
Matrix	QC		QC	
Sampling Date	n/a		n/a	
Extraction Date	4-Oct-23		4-Oct-23	
Target Analytes	**ug/sample**		**% Rec**	
Dichlorodifluoromethane	<0.02	U	93.0	
Vinyl Chloride	<0.02	U	96.2	
Bromomethane	<0.09	U	100.9	
Trichlorofluoromethane	<0.02	U	88.4	
1,1-Dichloroethene	<0.01	U	102.1	
Acetone	<0.1	U	148.9	
Methylene Chloride	<0.1	U	128.3	
trans,1,2-Dichloroethene	<0.01	U	83.3	
2-Butanone	<0.01	U	104.7	M
Chloroform	<0.01	U	78.3	
1,1,1-Trichloroethane	<0.01	U	68.6	
Carbon Tetrachloride	<0.01	U	86.0	
Benzene	<0.05	U	112.8	
1,2-Dichloroethane	<0.01	U	88.9	
Trichloroethene	<0.01	U	96.8	
1,2-Dichloropropane	<0.01	U	105.2	
Bromodichloromethane	<0.01	U	95.1	
Toluene	<0.05	U	107.3	
1,1,2-Trichloroethane	<0.02	U	85.3	
Tetrachloroethene	<0.01	U	97.4	
Chlorodibromomethane	<0.01	U	73.4	
Ethylene Dibromide	<0.02	U	114.1	
Ethylbenzene	<0.01	U	108.6	
M&P-Xylene	<0.03	U	91.5	
O-Xylene	<0.01	U	85.5	
Styrene	<0.02	U	86.3	
Bromoform	<0.01	U	113.4	
Isopropylbenzene	<0.02	U	102.6	
1,3,5-Trimethylbenzene	<0.02	U	73.5	
1,3-Butadiene	<0.01	U	NS	
Trichlorotrifluoroethane	<0.01	U	NS	
Field Standard	**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	103.9		102.1	
Surrogate Standards	**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	104.6	M	80	
d8-Toluene(SURR)	111.6		101.9	
4-Bromofluorobenzene(SURR)	87.4		90.7	
Internal Standards	**% Rec**		**% Rec**	
d14-Hexane	72.1		89.7	
d6-Benzene	69.9		93.6	
d5-Chlorobenzene	69.6		91.6	

U	Indicates that this compound was not detected above the RL.
M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked.

ALS Environmental

Sample Analysis Report

Sample Name	**23-22235-VOST-1A,B TEST#1 APC OUTLET#1**	Sampling Date	21-Sep-23
ALS Sample ID	L2752778-1	Extraction Date	4-Oct-23
Analysis Method	VOCs by 5041A/8260C		
Analysis Type	sample		
Sample Matrix	VOST		
Split Ratio	1	Workgroup	WG3787098

Approved:
Nick Schrobilgen
--e-signature--
20-Oct-2023

Run Information	**Run 1**
Filename	23100408.D
Run Date	10/4/2023 14:11
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rxi-624Sil MS 1360231

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**
Dichlorodifluoromethane	1.29	<0.02	U
Vinyl Chloride	1.53	<0.02	U
Bromomethane	1.81	<0.09	U
Trichlorofluoromethane	2.13	<0.02	U
1,1-Dichloroethene	2.64	<0.01	U
Acetone	2.68	0.21	
Methylene Chloride	3.21	0.25	
trans,1,2-Dichloroethene	3.57	<0.01	U
2-Butanone	5.26	0.02	
Chloroform	5.92	0.05	
1,1,1-Trichloroethane	6.17	<0.01	U
Carbon Tetrachloride	6.44	<0.01	U
Benzene	6.81	<0.05	U
1,2-Dichloroethane	6.95	<0.01	U
Trichloroethene	8.07	<0.01	U
1,2-Dichloropropane	8.53	<0.01	U
Bromodichloromethane	9.05	0.02	
Toluene	10.39	0.09	
1,1,2-Trichloroethane	11.16	<0.02	U
Tetrachloroethene	11.16	<0.01	U
Chlorodibromomethane	11.59	<0.01	U
Ethylene Dibromide	11.39	<0.02	U
Ethylbenzene	12.49	<0.01	U
M&P-Xylene	12.64	<0.03	U
O-Xylene	13.07	<0.01	U
Styrene	13.10	<0.02	U
Bromoform	13.27	<0.01	U
Isopropylbenzene	13.47	<0.02	U
1,3,5-Trimethylbenzene	14.10	<0.02	U
1,3-Butadiene	NotFnd	<0.01	U
Trichlorotrifluoroethane	NotFnd	<0.01	U

Field Standard	**ug spiked**		**% Rec**	
d10-Ethylbenzene(SPK)	0.2	12.39	85.0	
Surrogate Standards			**% Rec**	**Limits**
d4-1,2-Dichloroethane(SURR)	0.25	6.81	135.3	50-150
d8-Toluene(SURR)	0.25	10.29	108.1	50-150
4-Bromofluorobenzene(SURR)	0.25	13.64	107.8	50-150
Internal Standards			**% Rec**	**Limits**
d14-Hexane	0.25	3.76	50.4	50-200
d6-Benzene	0.25	6.74	50.1	50-200
d5-Chlorobenzene	0.25	12.31	50.1	50-200

U Indicates that this compound was not detected above the RL.

ALS Environmental

Sample Analysis Report

Sample Name	**23-2223S-VOST-2A,B TEST#2 APC OUTLET#1**	Sampling Date	21-Sep-23
ALS Sample ID	L2752778-2	Extraction Date	4-Oct-23
Analysis Method	VOCs by 5041A/8260C		
Analysis Type	sample		
Sample Matrix	VOST		
Split Ratio	1	Workgroup	WG3787098

Approved:
Nick Schrobilgen
--e-signature--
20-Oct-2023

Run Information	**Run 1**
Filename	23100409.D
Run Date	10/4/2023 14:39
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rxi-624Sil MS 1360231

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**
Dichlorodifluoromethane	1.27	<0.02	U
Vinyl Chloride	1.51	<0.02	U
Bromomethane	1.79	<0.09	U
Trichlorofluoromethane	2.12	<0.02	U
1,1-Dichloroethene	2.63	<0.01	U
Acetone	2.67	<0.1	U
Methylene Chloride	3.20	0.10	M
trans,1,2-Dichloroethene	3.56	<0.01	U
2-Butanone	5.26	0.03	
Chloroform	5.92	0.04	
1,1,1-Trichloroethane	6.16	<0.01	U
Carbon Tetrachloride	6.43	<0.01	U
Benzene	6.81	<0.05	U
1,2-Dichloroethane	6.95	<0.01	U
Trichloroethene	8.07	<0.01	U
1,2-Dichloropropane	8.51	<0.01	U
Bromodichloromethane	9.06	0.01	
Toluene	10.39	<0.05	U
1,1,2-Trichloroethane	11.03	<0.02	U
Tetrachloroethene	11.16	<0.01	U
Chlorodibromomethane	11.59	<0.01	U
Ethylene Dibromide	11.85	<0.02	U
Ethylbenzene	12.48	<0.01	U
M&P-Xylene	12.64	<0.03	U
O-Xylene	13.07	<0.01	U
Styrene	13.10	<0.02	U
Bromoform	13.27	<0.01	U
Isopropylbenzene	13.47	<0.02	U
1,3,5-Trimethylbenzene	14.10	<0.02	U
1,3-Butadiene	NotFnd	<0.01	U
Trichlorotrifluoroethane	NotFnd	<0.01	U

Field Standard	**ug spiked**		**% Rec**	
d10-Ethylbenzene(SPK)	0.2	12.39	93.5	
Surrogate Standards			**% Rec**	**Limits**
d4-1,2-Dichloroethane(SURR)	0.25	6.80	71.0	50-150
d8-Toluene(SURR)	0.25	10.28	100.6	50-150
4-Bromofluorobenzene(SURR)	0.25	13.65	99.1	50-150
Internal Standards			**% Rec**	**Limits**
d14-Hexane	0.25	3.75	71.2	50-200
d6-Benzene	0.25	6.74	92.6	50-200
d5-Chlorobenzene	0.25	12.31	65.1	50-200

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the RL.

ALS Environmental

Sample Analysis Report

Sample Name	**23-22235-VOST-3A,B TEST#3 APC OUTLET#1**	Sampling Date	21-Sep-23
ALS Sample ID	L2752778-3	Extraction Date	4-Oct-23
Analysis Method	VOCs by 5041A/8260C		
Analysis Type	sample		
Sample Matrix	VOST		
Split Ratio	1	Workgroup	WG3787098

Approved:
Nick Schrobilgen
--e-signature--
20-Oct-2023

Run Information	**Run 1**
Filename	23100410.D
Run Date	10/4/2023 15:06
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rxi-624Sil MS 1360231

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**
Dichlorodifluoromethane	1.28	<0.02	U
Vinyl Chloride	1.52	<0.02	U
Bromomethane	1.80	<0.09	U
Trichlorofluoromethane	2.12	<0.02	U
1,1-Dichloroethene	2.63	<0.01	U
Acetone	2.67	<0.1	U
Methylene Chloride	3.20	0.11	
trans,1,2-Dichloroethene	3.56	<0.01	U
2-Butanone	5.25	0.01	
Chloroform	5.92	0.03	
1,1,1-Trichloroethane	6.15	<0.01	U
Carbon Tetrachloride	6.43	<0.01	U
Benzene	6.81	<0.05	U
1,2-Dichloroethane	6.95	<0.01	U
Trichloroethene	8.07	<0.01	U
1,2-Dichloropropane	8.44	<0.01	U
Bromodichloromethane	9.05	<0.01	U
Toluene	10.39	<0.05	U
1,1,2-Trichloroethane	10.81	<0.02	U
Tetrachloroethene	11.16	<0.01	U
Chlorodibromomethane	11.58	<0.01	U
Ethylene Dibromide	11.68	<0.02	U
Ethylbenzene	12.49	<0.01	U
M&P-Xylene	12.64	<0.03	U
O-Xylene	13.07	<0.01	U
Styrene	13.10	<0.02	U
Bromoform	13.27	<0.01	U
Isopropylbenzene	13.47	<0.02	U
1,3,5-Trimethylbenzene	14.10	<0.02	U
1,3-Butadiene	NotFnd	<0.01	U
Trichlorotrifluoroethane	NotFnd	<0.01	U

Field Standard	**ug spiked**		**% Rec**		
d10-Ethylbenzene(SPK)	0.2	12.39	63.1		
Surrogate Standards			**% Rec**		**Limits**
d4-1,2-Dichloroethane(SURR)	0.25	6.80	NQ		50-150
d8-Toluene(SURR)	0.25	10.29	NQ		50-150
4-Bromofluorobenzene(SURR)	0.25	13.64	NQ		50-150
Internal Standards			**% Rec**		**Limits**
d14-Hexane	0.25	3.73	0.4	L	50-200
d6-Benzene	0.25	6.74	0.5	L	50-200
d5-Chlorobenzene	0.25	12.31	1.4	L	50-200

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the RL.
L	Indicates this value is below the control limit.
NQ	Indicates that this value was not quantifiable.

ALS Environmental

Sample Analysis Report

Sample Name	**23-22235-VOST-12A,B FIELD BLANK APC OUTLET#1**	Sampling Date	21-Sep-23
ALS Sample ID	L2752778-4	Extraction Date	4-Oct-23
Analysis Method	VOCs by 5041A/8260C		
Analysis Type	sample		
Sample Matrix	VOST		
Split Ratio	1	Workgroup	WG3787098

Approved:
Nick Schrobilgen
--e-signature--
20-Oct-2023

Run Information	**Run 1**
Filename	23100407.D
Run Date	10/4/2023 13:43
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rxi-624Sil MS 1360231

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**
Dichlorodifluoromethane	1.27	<0.02	U
Vinyl Chloride	1.52	<0.02	U
Bromomethane	2.23	<0.09	U
Trichlorofluoromethane	2.12	<0.02	U
1,1-Dichloroethene	2.45	<0.01	U
Acetone	2.67	0.30	
Methylene Chloride	3.20	0.30	
trans,1,2-Dichloroethene	3.56	<0.01	U
2-Butanone	5.25	0.02	
Chloroform	5.92	<0.01	U
1,1,1-Trichloroethane	6.15	<0.01	U
Carbon Tetrachloride	6.44	<0.01	U
Benzene	6.81	0.05	
1,2-Dichloroethane	6.95	<0.01	U
Trichloroethene	8.05	<0.01	U
1,2-Dichloropropane	8.79	<0.01	U
Bromodichloromethane	9.05	<0.01	U
Toluene	10.40	4.89	E
1,1,2-Trichloroethane	11.20	<0.02	U
Tetrachloroethene	11.11	<0.01	U
Chlorodibromomethane	11.59	<0.01	U
Ethylene Dibromide	11.70	<0.02	U
Ethylbenzene	12.49	<0.01	U
M&P-Xylene	12.64	<0.03	U
O-Xylene	13.07	<0.01	U
Styrene	13.10	<0.02	U
Bromoform	13.13	<0.01	U
Isopropylbenzene	13.48	<0.02	U
1,3,5-Trimethylbenzene	14.10	<0.02	U
1,3-Butadiene	NotFnd	<0.01	U
Trichlorotrifluoroethane	NotFnd	<0.01	U

Field Standard	**ug spiked**		**% Rec**		
d10-Ethylbenzene(SPK)	0.2	12.39	91.8		
Surrogate Standards			**% Rec**		**Limits**
d4-1,2-Dichloroethane(SURR)	0.25	6.80	258.9	H	50-150
d8-Toluene(SURR)	0.25	10.29	102.2		50-150
4-Bromofluorobenzene(SURR)	0.25	13.64	98.8		50-150
Internal Standards			**% Rec**		**Limits**
d14-Hexane	0.25	3.75	37.8	L	50-200
d6-Benzene	0.25	6.74	28.7	L	50-200
d5-Chlorobenzene	0.25	12.31	62.1		50-200

U	Indicates that this compound was not detected above the RL.
E	Indicates Estimated value. Instrument response exceeds instrument calibration range of 1.0 ug.
L	Indicates this value is below the control limit.
H	Indicates this value is above the control limit.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3787098-1	Extraction Date	4-Oct-23
Analysis Method	VOCs by 8260C		
Analysis Type	blank		
Sample Matrix	QC		
Split Ratio	1	Workgroup	WG3787098

Approved:
Nick Schrobilgen
--e-signature--
20-Oct-2023

Run Information	**Run 1**
Filename	23100406.D
Run Date	10/4/2023 13:16
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rxi-624Sil MS 1360231

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**
Dichlorodifluoromethane	1.29	<0.02	U
Vinyl Chloride	1.52	<0.02	U
Bromomethane	1.80	<0.09	U
Trichlorofluoromethane	2.13	<0.02	U
1,1-Dichloroethene	2.63	<0.01	U
Acetone	2.68	<0.1	U
Methylene Chloride	3.21	<0.1	U
trans,1,2-Dichloroethene	3.57	<0.01	U
2-Butanone	5.27	<0.01	U
Chloroform	5.92	<0.01	U
1,1,1-Trichloroethane	6.15	<0.01	U
Carbon Tetrachloride	6.43	<0.01	U
Benzene	6.81	<0.05	U
1,2-Dichloroethane	6.95	<0.01	U
Trichloroethene	8.07	<0.01	U
1,2-Dichloropropane	8.64	<0.01	U
Bromodichloromethane	9.05	<0.01	U
Toluene	10.39	<0.05	U
1,1,2-Trichloroethane	10.91	<0.02	U
Tetrachloroethene	11.15	<0.01	U
Chlorodibromomethane	11.29	<0.01	U
Ethylene Dibromide	11.70	<0.02	U
Ethylbenzene	12.49	<0.01	U
M&P-Xylene	12.64	<0.03	U
O-Xylene	12.94	<0.01	U
Styrene	13.10	<0.02	U
Bromoform	13.16	<0.01	U
Isopropylbenzene	13.38	<0.02	U
1,3,5-Trimethylbenzene	14.10	<0.02	U
1,3-Butadiene	NotFnd	<0.01	U
Trichlorotrifluoroethane	NotFnd	<0.01	U

Field Standard	**ug spiked**		**% Rec**	
d10-Ethylbenzene(SPK)	0.2	12.39	103.9	
Surrogate Standards			**% Rec**	**Limits**
d4-1,2-Dichloroethane(SURR)	0.25	6.80	104.6 M	50-150
d8-Toluene(SURR)	0.25	10.28	111.6	50-150
4-Bromofluorobenzene(SURR)	0.25	13.65	87.4	50-150
Internal Standards			**% Rec**	**Limits**
d14-Hexane	0.25	3.76	72.1	50-200
d6-Benzene	0.25	6.74	69.9	50-200
d5-Chlorobenzene	0.25	12.31	69.6	50-200

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the RL.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3787098-2	Extraction Date	4-Oct-23
Analysis Method	VOCs by 8260C		
Analysis Type	LCS		
Sample Matrix	QC		
Split Ratio	1	Workgroup	WG3787098

Approved:
Nick Schrobilgen
--e-signature--
20-Oct-2023

Run Information	**Run 1**
Filename	23100404.D
Run Date	10/4/2023 12:20
Final Volume	1 mL
Dilution Factor	1
Analysis Units	% Rec
Instrument	MSD-3
Column	Rxi-624Sil MS 1360231

Target Analytes	**ng spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Dichlorodifluoromethane	175	1.30	93.0		50-150
Vinyl Chloride	175	1.53	96.2		50-150
Bromomethane	175	1.81	100.9		50-150
Trichlorofluoromethane	175	2.12	88.4		50-150
1,1-Dichloroethene	175	2.63	102.1		50-150
Acetone	175	2.67	148.9		50-150
Methylene Chloride	175	3.21	128.3		50-150
trans,1,2-Dichloroethene	175	3.55	83.3		50-150
2-Butanone	175	5.25	104.7	M	50-150
Chloroform	175	5.91	78.3		50-150
1,1,1-Trichloroethane	175	6.15	68.6		50-150
Carbon Tetrachloride	175	6.42	86.0		50-150
Benzene	175	6.80	112.8		50-150
1,2-Dichloroethane	175	6.93	88.9		50-150
Trichloroethene	175	8.06	96.8		50-150
1,2-Dichloropropane	175	8.52	105.2		50-150
Bromodichloromethane	175	9.05	95.1		50-150
Toluene	175	10.39	107.3		50-150
1,1,2-Trichloroethane	175	11.10	85.3		50-150
Tetrachloroethene	175	11.15	97.4		50-150
Chlorodibromomethane	175	11.58	73.4		50-150
Ethylene Dibromide	175	11.70	114.1		50-150
Ethylbenzene	175	12.48	108.6		50-150
M&P-Xylene	350	12.64	91.5		50-150
O-Xylene	175	13.07	85.5		50-150
Styrene	175	13.09	86.3		50-150
Bromoform	175	13.26	113.4		50-150
Isopropylbenzene	175	13.47	102.6		50-150
1,3,S-Trimethylbenzene	175	14.10	73.5		50-150
1,3-Butadiene	0		NS		
Trichlorotrifluoroethane	0		NS		
Field Standard	**ng spiked**		**% Rec**		
d10-Ethylbenzene(SPK)	200	12.39	102.1		
Surrogate Standards			**% Rec**		**Limits**
d4-1,2-Dichloroethane(SURR)	250	6.79	80.0		50-150
d8-Toluene(SURR)	250	10.27	101.9		50-150
4-Bromofluorobenzene(SURR)	250	13.64	90.7		50-150
Internal Standards			**% Rec**		**Limits**
d14-Hexane	250	3.74	89.7		50-200
d6-Benzene	250	6.73	93.6		50-200
d5-Chlorobenzene	250	12.30	91.6		50-200

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked.

Your P.O. #: L2752965
Your Project #: 22235 COVANTA

Attention: Lynne Wrona
ALS Environmental
1435 Norjohn Court
Unit 1
Burlington, ON
CANADA L7L 0E6

Report Date: 2023/11/27
Report #: R7929485
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3X1438
Received: 2023/10/24, 10:04

Sample Matrix: Stack Sampling Train
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
VOST EPA5041A, 8260D for 0030, 0031	5	N/A	2023/11/23	BRL SOP-00302	EPA5041A, 8260D

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCCFP, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your P.O. #: L2752965
Your Project #: 22235 COVANTA

Attention: Lynne Wrona

ALS Environmental
1435 Norjohn Court
Unit 1
Burlington, ON
CANADA L7L 0E6

Report Date: 2023/11/27
Report #: R7929485
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3X1438
Received: 2023/10/24, 10:04

Encryption Key

Bureau Veritas
27 Nov 2023 12:45:38

Please direct all questions regarding this Certificate of Analysis to:
Clayton Johnson, CET LEAD-Air Toxics, Source Evaluation
Email: Clayton.Johnson@bureauveritas.com
Phone# (905)817-5769

==========

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Bureau Veritas Job #: C3X1438
Report Date: 2023/11/27

ALS Environmental
Client Project #: 22235 COVANTA
Your P.O. #: L2752965

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Bureau Veritas ID		XJS805	XJS806	XJS807		
Sampling Date		2023/10/03	2023/10/03	2023/10/03		
	UNITS	23-22235- FIELD BLANK	23-22235- TRIP BLANK	23-22235- T1- 14 A,B	RDL	QC Batch
Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ug	<0.050	<0.050	<0.050	0.050	9067897
Vinyl Chloride	ug	<0.050	<0.050	<0.050	0.050	9067897
Bromomethane	ug	<0.050	<0.050	<0.050	0.050	9067897
Trichlorofluoromethane (FREON 11)	ug	<0.050	<0.050	<0.050	0.050	9067897
Acetone (2-Propanone)	ug	<0.050	<0.050	<0.050	0.050	9067897
1,1-Dichloroethylene	ug	<0.050	<0.050	<0.050	0.050	9067897
Methylene Chloride(Dichloromethane)	ug	0.964	0.382	0.255	0.050	9067897
trans-1,2-Dichloroethylene	ug	<0.050	<0.050	<0.050	0.050	9067897
Chloroform	ug	<0.050	<0.050	<0.050	0.050	9067897
1,2-Dichloroethane	ug	<0.050	<0.050	<0.050	0.050	9067897
Methyl Ethyl Ketone (2-Butanone)	ug	<0.050	<0.050	<0.050	0.050	9067897
1,1,1-Trichloroethane	ug	<0.050	<0.050	<0.050	0.050	9067897
Carbon Tetrachloride	ug	<0.050	<0.050	<0.050	0.050	9067897
Benzene	ug	<0.050	<0.050	<0.050	0.050	9067897
1,2-Dichloropropane	ug	<0.050	<0.050	<0.050	0.050	9067897
Trichloroethylene	ug	<0.050	<0.050	<0.050	0.050	9067897
Bromodichloromethane	ug	<0.050	<0.050	<0.050	0.050	9067897
Dibromochloromethane	ug	<0.050	<0.050	<0.050	0.050	9067897
Toluene	ug	<0.050	<0.050	0.143	0.050	9067897
Ethylene Dibromide	ug	<0.050	<0.050	<0.050	0.050	9067897
Tetrachloroethylene	ug	<0.050	<0.050	<0.050	0.050	9067897
Ethylbenzene	ug	<0.050	<0.050	<0.050	0.050	9067897
m / p-Xylene	ug	<0.10	<0.10	<0.10	0.10	9067897
Styrene	ug	<0.050	<0.050	<0.050	0.050	9067897
o-Xylene	ug	<0.050	<0.050	<0.050	0.050	9067897
Bromoform	ug	<0.050	<0.050	<0.050	0.050	9067897
Surrogate Recovery (%)						
Bromofluorobenzene	%	93	94	94		9067897
D10-Ethylbenzene (FS)	%	51	62	50		9067897
D4-1,2-Dichloroethane	%	102	103	102		9067897
D8-Toluene	%	102	101	105		9067897

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Bureau Veritas ID		XJS808	XJS827		
Sampling Date		2023/10/03	2023/10/03		
	UNITS	23-22235- T2- 15 A,B	23-22235- T3- 16 A,B	RDL	QC Batch
Volatile Organics					
Dichlorodifluoromethane (FREON 12)	ug	<0.050	<0.050	0.050	9067897
Vinyl Chloride	ug	<0.050	<0.050	0.050	9067897
Bromomethane	ug	<0.050	<0.050	0.050	9067897
Trichlorofluoromethane (FREON 11)	ug	<0.050	<0.050	0.050	9067897
Acetone (2-Propanone)	ug	<0.050	<0.050	0.050	9067897
1,1-Dichloroethylene	ug	<0.050	<0.050	0.050	9067897
Methylene Chloride(Dichloromethane)	ug	0.123	0.131	0.050	9067897
trans-1,2-Dichloroethylene	ug	<0.050	<0.050	0.050	9067897
Chloroform	ug	<0.050	<0.050	0.050	9067897
1,2-Dichloroethane	ug	<0.050	<0.050	0.050	9067897
Methyl Ethyl Ketone (2-Butanone)	ug	<0.050	<0.050	0.050	9067897
1,1,1-Trichloroethane	ug	<0.050	<0.050	0.050	9067897
Carbon Tetrachloride	ug	<0.050	<0.050	0.050	9067897
Benzene	ug	<0.050	<0.050	0.050	9067897
1,2-Dichloropropane	ug	<0.050	<0.050	0.050	9067897
Trichloroethylene	ug	<0.050	<0.050	0.050	9067897
Bromodichloromethane	ug	<0.050	<0.050	0.050	9067897
Dibromochloromethane	ug	<0.050	<0.050	0.050	9067897
Toluene	ug	<0.050	<0.050	0.050	9067897
Ethylene Dibromide	ug	<0.050	<0.050	0.050	9067897
Tetrachloroethylene	ug	<0.050	<0.050	0.050	9067897
Ethylbenzene	ug	<0.050	<0.050	0.050	9067897
m / p-Xylene	ug	<0.10	<0.10	0.10	9067897
Styrene	ug	<0.050	<0.050	0.050	9067897
o-Xylene	ug	<0.050	<0.050	0.050	9067897
Bromoform	ug	<0.050	<0.050	0.050	9067897
Surrogate Recovery (%)					
Bromofluorobenzene	%	89	93		9067897
D10-Ethylbenzene (FS)	%	33 (1)	50		9067897
D4-1,2-Dichloroethane	%	102	102		9067897
D8-Toluene	%	107	103		9067897

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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TEST SUMMARY

Bureau Veritas ID: XJS805
Sample ID: 23-22235- FIELD BLANK
Matrix: Stack Sampling Train

Collected: 2023/10/03
Shipped:
Received: 2023/10/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260D for 0030, 0031	GC/MS	9067897	N/A	2023/11/23	Yujie Yan

Bureau Veritas ID: XJS806
Sample ID: 23-22235- TRIP BLANK
Matrix: Stack Sampling Train

Collected: 2023/10/03
Shipped:
Received: 2023/10/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260D for 0030, 0031	GC/MS	9067897	N/A	2023/11/23	Yujie Yan

Bureau Veritas ID: XJS807
Sample ID: 23-22235- T1- 14 A,B
Matrix: Stack Sampling Train

Collected: 2023/10/03
Shipped:
Received: 2023/10/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260D for 0030, 0031	GC/MS	9067897	N/A	2023/11/23	Yujie Yan

Bureau Veritas ID: XJS808
Sample ID: 23-22235- T2- 15 A,B
Matrix: Stack Sampling Train

Collected: 2023/10/03
Shipped:
Received: 2023/10/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260D for 0030, 0031	GC/MS	9067897	N/A	2023/11/23	Yujie Yan

Bureau Veritas ID: XJS827
Sample ID: 23-22235- T3- 16 A,B
Matrix: Stack Sampling Train

Collected: 2023/10/03
Shipped:
Received: 2023/10/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260D for 0030, 0031	GC/MS	9067897	N/A	2023/11/23	Yujie Yan

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

GENERAL COMMENTS

Samples received and analyzed past hold time. Tubes were not supplied by Bureau Veritas Laboratories.

Sample XJS808 [23-22235- T2- 15 A,B] : D10-Ethylbenzene surrogate recovery was below the acceptance range of 47%.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
9067897	YYA	Spiked Blank	Bromofluorobenzene	2023/11/23		99	%	43 - 131
			D10-Ethylbenzene (FS)	2023/11/23		107	%	47 - 157
			D4-1,2-Dichloroethane	2023/11/23		100	%	64 - 133
			D8-Toluene	2023/11/23		100	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2023/11/23		114	%	50 - 150
			Vinyl Chloride	2023/11/23		109	%	50 - 150
			Bromomethane	2023/11/23		120	%	50 - 150
			Trichlorofluoromethane (FREON 11)	2023/11/23		104	%	50 - 150
			Acetone (2-Propanone)	2023/11/23		91	%	50 - 150
			1,1-Dichloroethylene	2023/11/23		106	%	50 - 150
			Methylene Chloride(Dichloromethane)	2023/11/23		106	%	50 - 150
			trans-1,2-Dichloroethylene	2023/11/23		108	%	50 - 150
			Chloroform	2023/11/23		107	%	50 - 150
			1,2-Dichloroethane	2023/11/23		109	%	50 - 150
			Methyl Ethyl Ketone (2-Butanone)	2023/11/23		85	%	50 - 150
			1,1,1-Trichloroethane	2023/11/23		105	%	50 - 150
			Carbon Tetrachloride	2023/11/23		107	%	50 - 150
			Benzene	2023/11/23		108	%	50 - 150
			1,2-Dichloropropane	2023/11/23		107	%	50 - 150
			Trichloroethylene	2023/11/23		106	%	50 - 150
			Bromodichloromethane	2023/11/23		107	%	50 - 150
			Dibromochloromethane	2023/11/23		105	%	50 - 150
			Toluene	2023/11/23		107	%	50 - 150
			Ethylene Dibromide	2023/11/23		104	%	50 - 150
			Tetrachloroethylene	2023/11/23		104	%	50 - 150
			Ethylbenzene	2023/11/23		108	%	50 - 150
			m / p-Xylene	2023/11/23		108	%	50 - 150
			Styrene	2023/11/23		110	%	50 - 150
			o-Xylene	2023/11/23		108	%	50 - 150
			Bromoform	2023/11/23		105	%	50 - 150
9067897	YYA	Method Blank	Bromofluorobenzene	2023/11/23		93	%	43 - 131
			D10-Ethylbenzene (FS)	2023/11/23		108	%	47 - 157
			D4-1,2-Dichloroethane	2023/11/23		103	%	64 - 133
			D8-Toluene	2023/11/23		101	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2023/11/23	<0.050		ug	
			Vinyl Chloride	2023/11/23	<0.050		ug	
			Bromomethane	2023/11/23	<0.050		ug	
			Trichlorofluoromethane (FREON 11)	2023/11/23	<0.050		ug	
			Acetone (2-Propanone)	2023/11/23	<0.050		ug	
			1,1-Dichloroethylene	2023/11/23	<0.050		ug	
			Methylene Chloride(Dichloromethane)	2023/11/23	<0.050		ug	
			trans-1,2-Dichloroethylene	2023/11/23	<0.050		ug	
			Chloroform	2023/11/23	<0.050		ug	
			1,2-Dichloroethane	2023/11/23	<0.050		ug	
			Methyl Ethyl Ketone (2-Butanone)	2023/11/23	<0.050		ug	
			1,1,1-Trichloroethane	2023/11/23	<0.050		ug	
			Carbon Tetrachloride	2023/11/23	<0.050		ug	
			Benzene	2023/11/23	<0.050		ug	
			1,2-Dichloropropane	2023/11/23	<0.050		ug	
			Trichloroethylene	2023/11/23	<0.050		ug	
			Bromodichloromethane	2023/11/23	<0.050		ug	
			Dibromochloromethane	2023/11/23	<0.050		ug	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Toluene	2023/11/23	<0.050		ug	
			Ethylene Dibromide	2023/11/23	<0.050		ug	
			Tetrachloroethylene	2023/11/23	<0.050		ug	
			Ethylbenzene	2023/11/23	<0.050		ug	
			m / p-Xylene	2023/11/23	<0.10		ug	
			Styrene	2023/11/23	<0.050		ug	
			o-Xylene	2023/11/23	<0.050		ug	
			Bromoform	2023/11/23	<0.050		ug	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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Bureau Veritas Job #: C3X1438
Report Date: 2023/11/27

ALS Environmental
Client Project #: 22235 COVANTA
Your P.O. #: L2752965

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anke Macfarlane, Laboratory Manager, VOC

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: Method Blank

Field ID#: Method Blank

Number of TICs found: NA

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: XJS805

Field ID#: 23-22235-FIELD BLANK 7A/B

Number of TICs found: NA

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: XJS806

Field ID#: 23-22235-TRIP BLANK 5A/B

Number of TICs found: NA

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#:	XJS807
Field ID#:	23-22235-T1 14A/B

Number of TICs found:_____NA_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: XJS808

Field ID#: 23-22235-T2 15A/B

Number of TICs found: NA

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: XJS827

Field ID#: 23-22235-T3 16A/B

Number of TICs found: NA

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

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: 22235
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22235-J2924

Test Number	Test Location	ORTECH Sample ID 23-22235-	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	09.21.23	ALD-1	112.5	165.5	166.1	179.9	189.7
2	APC Outlet #1	ALD-2	"	ALD-2	117.2	161.2	162.9	177.8	184.2
3	APC Outlet #1	ALD-3	"	ALD-3	112.8	163.9	166.1	182.0	194.0
Blank 1	APC Outlet #1	Blank 1	"	ALD-4	112.6	161.6	164.6	184.9	200.9
1	APC Outlet #2	ALD-5	10.10.23	ALD-5	113.6	166.7	167.9	176.1	192.5
2	APC Outlet #2	ALD-6	"	ALD-6	111.9	164.7	165.6	191.1	210.2
3	APC Outlet #2	ALD-7	"	ALD-7	113.6	163.7	166.5	182.6	200.3
Blank 2	APC Outlet #2	Blank 2	"	ALD-8	112.2	165.1	165.4	178.3	191.6
				~~ALD-9~~	~~112.9~~	~~162.3~~			
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				~~ALD-10~~	~~112.5~~	~~162.6~~			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: _____ **Date:** _____

Relinquished to: Akka Berta **Date:** 5-Oct-2023 14:20

13.6°C

22 - Fri Sept - 23

8:15

8.4°C

APPENDIX 19

Aldehydes Analytical Report
(6 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
ALS WO#:	L2752777		Mississauga, ON L5J 2Y4
Date of Revised Report	12-Dec-23		Canada
Date of Sample Receipt	22-Sep-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS: **Aldehydes as benzyloxime derivatives by SIM GC/MS**

***** Revised Report *****

This report supersedes all prior reports for the above-noted workorder and test. The report has been revised as follows:
Reporting units have been amended

***** Original Report Comments *****

Formaldehdye and acetaldehyde data are biased high, clearly due to contamination in the BHA media sent to the field. Reported values are not blank corrected but represent maximum possible values. True emissions are clearly well below the values reported. The LCS recoveries for these targets are not available due to the high levels of background bias.

For acrolein, the method blank is apparently contaminated and not representative of the field samples. Note that the field blank and the BHA reagent blank, show levels of acrolein very similar to the levels in the field samples.

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank	23-22235-ALD-1 TEST#1 APC OUTLET#1	23-22235-ALD-2 TEST#2 APC OUTLET#1	23-22235-ALD-3 TEST#3 APC OUTLET#1	23-22235-ALD-4 BLANK#1 APC OUTLET#1	FIELD BHA & SPIKE
ALS Sample ID	WG3787000-1	L2752777-1	L2752777-2	L2752777-3	L2752777-4	L2752777-5
Sample Size	1	1	1	1	1	1
Sample units	Train	Train	Train	Train	Train	Train
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	QC	Stack	Stack	Stack	Stack	Stack
Sampling Date	n/a	21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23	n/a
Extraction Date	3-Oct-23	3-Oct-23	3-Oct-23	3-Oct-23	3-Oct-23	3-Oct-23
Target Analytes	**ug/Train**	**ug/Train**	**ug/Train**	**ug/Train**	**ug/Train**	**% Rec**
Formaldehyde	4.1	8.79	11.64	14.12	13.85	n/a
Acetaldehyde	10.49	12.16	4.07	4.79	4.98	n/a
Acrolein	3.39	0.19	0.24	0.23	0.26	159

ALS Environmental

Sample Analysis Summary Report

Sample Name	BHA BLANK	Laboratory Control Sample (10ug)	Laboratory Control Sample (2ug)
ALS Sample ID	L2752777-6	WG3787000-2	WG3787000-4
Sample Size	1	1	1
Sample units	Train	n/a	n/a
Moisture Content	n/a	n/a	n/a
Matrix	Stack	QC	QC
Sampling Date	n/a	n/a	n/a
Extraction Date	3-Oct-23	3-Oct-23	3-Oct-23
Target Analytes	**ug/Train**	**% Rec**	**% Rec**
Formaldehyde	7.38	n/a	n/a
Acetaldehyde	10.73	n/a	n/a
Acrolein	0.22	52	15

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2752966		Mississauga, ON L5J 2Y4
Date of Report	27-Oct-23		Canada
Date of Sample Receipt	5-Oct-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 Covanta

COMMENTS: **Aldehydes as benzyloxime derivatives by SIM GC/MS**

Formaldehdye and acetaldehyde data are biased high, clearly due to contamination in the BHA media sent to the field. Reported values are not blank corrected but represent maximum possible values. True emissions are clearly well below the values reported. The LCS recoveries for these targets are not available due to the high levels of background bias.

For acrolein, the method blank is apparently contaminated and not representative of the field samples.

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank	23-22235-ALD-5 TEST#1 APC OUTLET#2	23-22235-ALD-6 TEST#2 APC OUTLET#2	23-22235-ALD-7 TEST#3 APC OUTLET#2	23-22235-ALD-BLANK2 APC OUTLET#2	Laboratory Control Sample (10ug)
ALS Sample ID	WG3787135-1	L2752966-1	L2752966-2	L2752966-3	L2752966-4	WG3787135-2
Sample Size	1	1	1	1	1	1
Sample units	Train	Train	Train	Train	Train	n/a
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	QC	Stack	Stack	Stack	Stack	QC
Sampling Date	n/a	3-Oct-23	3-Oct-23	3-Oct-23	3-Oct-23	n/a
Extraction Date	19-Oct-23	19-Oct-23	19-Oct-23	19-Oct-23	19-Oct-23	19-Oct-23
Target Analytes	**ug/Train**	**ug/Train**	**ug/Train**	**ug/Train**	**ug/Train**	**% Rec**
Formaldehyde	3.1	8.33	15.5	17.94	21.76	n/a
Acetaldehyde	8.29	22.5	5.23	5.9	7.17	n/a
Acrolein	3.23	<0.1	<0.1	<0.1	<0.1	188

ALS Environmental

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample (2ug)
ALS Sample ID	WG3787135-4
Sample Size	1
Sample units	n/a
Moisture Content	n/a
Matrix	QC
Sampling Date	n/a
Extraction Date	19-Oct-23
Target Analytes	**% Rec**
Formaldehyde	n/a
Acetaldehyde	n/a
Acrolein	66

APPENDIX 20

SVOC and VOST Proof Data
(12 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#:	L2752081		Mississauga, ON L5J 2Y4
Date of Report	22-Sep-23		Canada
Date of Sample Receipt	9-Aug-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 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:

Bradley Reimer
GC/MS Laboratory Senior Technical Specialist

ALS Life Sciences

Quality Control Summary Report

Sample Name	Method Blank	GLASSWARE PROOF
ALS Sample ID	WG3786483-1	L2752081-53
Sample Size	1	1
Sample size units	Method Blank	Sample
Percent Moisture	n/a	n/a
Sample Matrix	QC	Media prep
Sampling Date	n/a	n/a
Extraction Date	14-Aug-23	14-Aug-23
Target Analytes	**pg**	**pg**
PCB-081	<2.0	<3.5
PCB-077	<2.0	15.0
PCB-123	<3.3	6.51
PCB-118	<3.1	487
PCB-114	<3.5	<16
PCB-105	<3.2	167
PCB-126	<3.3	<3.5
PCB-167	<1.8	<2.7
PCB-156/157	<2.1	<11
PCB-169	<1.8	<2.9
PCB-189	<1.6	<1.8
Homologue Group Totals		
Total MonoCB	14.8	21.7
Total DiCB	<9.5	255
Total TriCB	<3.4	428
Total TetraCB	12.8	3350
Total PentaCB	7.40	8370
Total HexaCB	5.32	1780
Total HeptaCB	<1.1	105
Total OctaCB	4.40	16.5
Total NonaCB	<3.2	<6.8
DecaCB	7.53	1.55
Total PCB	52.3	14300
Toxic Equivalency - (WHO 2005)		
Lower Bound PCB TEQ	0.00	0.0213
Mid Point PCB TEQ	0.193	0.241
Upper Bound PCB TEQ	0.385	0.460

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#:	L2752081		Mississauga, ON L5J 2Y4
Date of Report	15-Sep-23		CANADA
Date of Sample Receipt	9-Aug-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 COVANTA

COMMENTS: **PCDD/F by EPA M23**

Glassware is approved.

Certified by: _____
Sabrina Jin
Technical Specialist

ALS Life Sciences

Sample Analysis summary Report

Sample Name	Method Blank	GLASSWARE PROOF
ALS Sample ID	WG3786483-1	L2752081-53
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	28-Aug-23	28-Aug-23
Target Analytes	**pg**	**pg**
2,3,7,8-TCDD	<0.53	<1.7
1,2,3,7,8-PeCDD	<0.94	<3.7
1,2,3,4,7,8-HxCDD	<1.8	<8.8
1,2,3,6,7,8-HxCDD	<1.6	<6.8
1,2,3,7,8,9-HxCDD	<1.6	<7.3
1,2,3,4,6,7,8-HpCDD	<1.9	<2.0
OCDD	<2.6	9.68
2,3,7,8-TCDF	<0.55	<1.9
1,2,3,7,8-PeCDF	<1.2	<7.8
2,3,4,7,8-PeCDF	<0.90	<7.7
1,2,3,4,7,8-HxCDF	<1.1	1.34
1,2,3,6,7,8-HxCDF	<0.92	<1.1
2,3,4,6,7,8-HxCDF	<0.99	1.96
1,2,3,7,8,9-HxCDF	<1.1	<1.9
1,2,3,4,6,7,8-HpCDF	<1.2	2.04
1,2,3,4,7,8,9-HpCDF	<0.60	<1.0
DCDF	<2.4	4.09
Extraction Standards		
13C12-2,3,7,8-TCDD	80	100
13C12-1,2,3,7,8-PeCDD	116	120
13C12-1,2,3,6,7,8-HxCDD	72	48
13C12-1,2,3,4,6,7,8-HpCDD	76	76
13C12-DCDD	56	44
13C12-2,3,7,8-TCDF	76	88
13C12-1,2,3,7,8-PeCDF	100	116
13C12-1,2,3,6,7,8-HxCDF	72	64
13C12-1,2,3,4,6,7,8-HpCDF	76	84
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.00	0.355
Mid Point PCDD/F TEQ (WHO 2005)	1.39	5.79
Upper Bound PCDD/F TEQ (WHO 2005)	2.78	11.1

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#:	L2752081		Mississauga, ON, L5J 2Y4
Date of Report	14-Sep-23		Canada
Date of Sample Receipt	9-Aug-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 COVANTA

COMMENTS: **Chlorophenols by modifed EPA 8270E**

Glassware is approved.

Certified by:

Sabrina Jin
Technical Specialist

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3786483-1		L2752081-53	
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	14-Aug-23		14-Aug-23	
Target Analytes	**ng/sample**		**ng/sample**	
2-Chlorophenol	<50	U	<50	U
3/4-Chlorophenol	<50	U	<50	U
2,4/2,5-Dichlorophenol	<50	U	<50	U
2,3-Dichlorophenol	<50	U	<50	U
2,6-Dichlorophenol	<50	U	<50	U
3,5-Dichlorophenol	<50	U	<50	U
3,4-Dichlorophenol	<50	U	<50	U
2,3,5-Trichlorophenol	<50	U	<50	U
2,4,6-Trichlorophenol	<50	U	<50	U
2,4,5-Trichlorophenol	<50	U	<50	U
2,3,4-Trichlorophenol	<50	U	<50	U
2,3,6-Trichlorophenol	<50	U	<50	U
3,4,5-Trichlorophenol	<50	U	<50	U
2,3,5,6-Tetrachlorophenol	<50	U	<50	U
2,3,4,5-Tetrachlorophenol	<50	U	<50	U
2,3,4,6-Tetrachlorophenol	<50	U	<50	U
Pentachlorophenol	<50	U	<50	U
Extraction Standards	**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	68.2		64.7	
13C6-2,4-Dichlorophenol (ES)	74.6		63.7	
13C6-2,4,5-Trichlorophenol (ES)	76.9		69.4	
13C6-2,3,4,5-Tetrachlorophenol (ES)	77.5		74.1	
13C6-Pentachlorophenol (ES)	78.7		87.3	

U Indicates that this compound was not detected above the LOD.

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 Rd.
ALS WO#:	L2752081		Mississauga, ON L5J 2Y4
Date of Report	14-Sep-23		Canada
Date of Sample Receipt	9-Aug-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 COVANTA

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Low level of select targets in the proof and blank.
Glassware is approved.

Certified by:

Sabrina Jin
Technical Specialist

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3786483-1		L2752081-53	
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	14-Aug-23		14-Aug-23	
Target Analytes	**ng/sample**		**ng/sample**	
Naphthalene	<4.0	U	7.46	M
2-Methylnaphthalene	<4.0	U	<4.0	U
1-Methylnaphthalene	<4.0	U	<4.0	U
Acenaphthylene	<4.0	U	<4.0	U
Acenaphthene	<4.0	U	<4.0	U
Fluorene	<4.0	U	<4.0	U
Phenanthrene	<4.0	U	<4.0	U
Anthracene	<4.0	U	<4.0	U
Fluoranthene	<4.0	U	<4.0	U
Pyrene	<4.0	U	<4.0	U
Benzo(a)Anthracene	<4.0	U	<4.0	U
Chrysene/Triphenylene	<4.0	U	<4.0	U
Benzo(b)Fluoranthene	<4.0	U	<4.0	U
Benzo(k)Fluoranthene	<4.0	U	<4.0	U
Benzo(e)Pyrene	<4.0	U	<4.0	U
Benzo(a)Pyrene	<4.0	U	<4.0	U
Perylene	<4.0	U	<4.0	U
Indeno(1,2,3-cd)Pyrene	<4.0	U	<4.0	U
Dibenzo(a,h)Anthracene	<4.0	U	<4.0	U
Benzo(g,h,i)Perylene	<4.0	U	<4.0	U
Additional Analytes				
Tetralin	7.05	M	9.08	
2-Chloronaphthalene	<4.0	U	<4.0	U
Biphenyl	<4.0	U	<4.0	U
o-Terphenyl	<4.0	U	<4.0	U
1-Methylphenanthrene	<4.0	U	<4.0	U
9-Methylphenanthrene	<4.0	U	<4.0	U
2-methylanthracene	<4.0	U	<4.0	U
9,10-dimethylanthracene	<4.0	U	<4.0	U
m-terphenyl	<4.0	U	<4.0	U
p-terphenyl	<4.0	U	<4.0	U
Benzo(a)fluorene	<4.0	U	<4.0	U
Benzo(b)fluorene	<4.0	U	<4.0	U
7,12-Dimethylbenzo(a)anthracene	<4.0	U	<4.0	U
3-Methylcholanthrene	<20	U	<20	U
Picene	<20	U	<20	U
Dibenzo(a,e)pyrene	<20	U	<20	U
Coronene	<20	U	<20	U
Extraction Standards	**% Rec**		**% Rec**	
Naphthalene D8	82.8		69.3	
2-Methylnaphthalene-D10	86.7		70.4	
Acenaphthylene D8	89.4		75.0	
Phenanthrene D10	98.4		71.6	
Anthracene-D10	93.9		76.9	
Fluoranthene D10	88.6		75.5	
Benz(a)Anthracene-D12	77.7		98.5	
Chrysene D12	76.0		75.9	
Benzo(b)Fluoranthene-D12	86.1		79.7	
Benzo(k)Fluoranthene-D12	71.3		63.2	
Benzo(a)Pyrene D12	86.6		83.4	
Perylene D12	78.7		71.0	
Indeno(1,2,3,cd)Pyrene-D12	70.1		58.8	
Dibenz(a,h)Anthracene-D14	60.9		52.1	
Benzo(g,h,i)Perylene D12	79.3		62.7	

U Indicates that this compound was not detected above the LOD.
M Indicates that a peak has been manually integrated.

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 Rd.
ALS WO#:	L2752081		Mississauga, ON L5J 2Y4
Date of Report	14-Sep-23		Canada
Date of Sample Receipt	9-Aug-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 COVANTA

COMMENTS: **VOCs via SW846 Method 5041A/8260C**

Glassware is approved.

Ketone data by VOST analyses are estimated values only

Certified by:

Sabrina Jin
Technical Specialist

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		VOST PROOF	
ALS Sample ID	WG3786885-1		L2752081-71	
Sample units	sample		sample	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	13-Sep-23		13-Sep-23	
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
1,1-Dichloroethane	<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
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
Tetrachloroethene	<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U
Ethylbenzene	<0.01	U	<0.01	U
M&P-Xylene	<0.03	U	<0.03	U
O-Xylene	<0.01	U	<0.01	U
Styrene	<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U
Isopropylbenzene	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	<0.02	U	<0.02	U
1,2,4-Trimethylbenzene	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.02	U	<0.02	U
1,3-Butadiene	<0.02	U	<0.02	U
Field Standard	**% Rec**		**% Rec**	
d10-Ethylbenzene	111.4		113.1	
Surrogate Standards	**% Rec**		**% Rec**	
d4-1,2-Dichloroethane	103.6		104.9	
d8-Toluene	111.6		111.9	
4-Bromofluorobenzene	93.4		96.1	

U Indicates that this compound was not detected above the RL.

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#:	L2752081		Mississauga, ON, L5J 2Y4
Date of Report	14-Sep-23		Canada
Date of Sample Receipt	9-Aug-23	**Client Contact:**	Chris Belore
		Client Project ID:	22235 COVANTA

COMMENTS: **CB by LRGC/MS - Isotope dilution**

Glassware is approved.

Certified by:

Sabrina Jin
Technical Specialist

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3786483-1		L2752081-53	
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	14-Aug-23		14-Aug-23	
Target Analytes	**ng/sample**		**ng/sample**	
Chlorobenzene	<10	U	<10	U
1,3-Dichlorobenzene	<10	U	<10	U
1,4-Dichlorobenzene	<10	U	<10	U
1,2-Dichlorobenzene	<10	U	<10	U
1,3,5-Trichlorobenzene	<10	U	<10	U
1,2,4-Trichlorobenzene	<10	U	<10	U
1,2,3-Trichlorobenzene	<10	U	<10	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<10	U	<10	U
1,2,3,4-Tetrachlorobenzene	<10	U	<10	U
Pentachlorobenzene	<10	U	<10	U
Hexachlorobenzene	<10	U	<10	U
Extraction Standards	**%Rec**		**%Rec**	
13C6-Chlorobenzene	64		40	
13C6-1,4-Dichlorobenzene	71		70	
13C6-1,2,3-Trichlorobenzene	75		72	
13C6-1,2,3,4-Tetrachlorobenzene	72		70	
13C6-Pentachlorobenzene	81		81	
13C6-Hexachlorobenzene	74		78	

U Indicates that this compound was not detected above the LOD.

APPENDIX 21

ORTECH Equipment Calibration Data
(26 pages)

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 21, 2023
Probe/Pitot ID	S11
MII Number	B03772
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	03-SOP-007

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	7.47	0.135	0.190	0.842	0.0010
(0.25")	9.32	0.210	0.300	0.836	0.0072
	11.32	0.310	0.440	0.839	0.0045
	13.79	0.460	0.640	0.847	0.0039
	16.27	0.640	0.880	0.852	0.0089
			Mean	0.843	0.0051
Without Nozzle	7.33	0.130	0.180	0.849	0.0028
	9.09	0.200	0.280	0.845	0.0019
	10.86	0.285	0.400	0.844	0.0029
	13.64	0.450	0.630	0.845	0.0019
	16.14	0.630	0.870	0.851	0.0039
			Mean	0.847	0.0027

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated.
(Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 22, 2023
Probe/Pitot ID	15E
MII Number	COE 20113
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	03-SOP-007

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

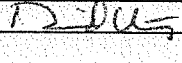
Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	8.26	0.165	0.230	0.847	0.0012
(0.25")	9.86	0.235	0.330	0.843	0.0043
	11.32	0.310	0.430	0.849	0.0009
	13.79	0.460	0.640	0.847	0.0004
	16.64	0.670	0.920	0.853	0.0052
			Mean	0.848	0.0024
Without Nozzle	8.26	0.165	0.230	0.847	0.0008
	9.86	0.235	0.330	0.843	0.0023
	11.14	0.300	0.420	0.845	0.0010
	13.94	0.470	0.660	0.843	0.0023
	16.14	0.630	0.870	0.851	0.0048
			Mean	0.846	0.0022

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 22, 2023
Probe/Pitot ID	PM 10 2.5
MII Number	COE 20132
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	03-SOP-007

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Nozzle Size inches	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
NA	8.13	0.160	0.225	0.843	0.0016
	9.75	0.230	0.325	0.841	0.0037
	10.95	0.290	0.410	0.841	0.0039
	13.33	0.430	0.600	0.846	0.0016
	16.08	0.625	0.860	0.852	0.0076
			Mean	0.844	0.0037

Note: Pitots must always be used in the orientation that they are calibrated in.

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 1
Meter MII Number	COE 20094
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.65	in Hg
Theoretical Critical Vacuum	14.0	in Hg
System Leak Check	<0.001 in 15"Hg	
Calibration Date	September 11, 2023	
Calibration Technician	Brayden Pacheco	
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	0.040	3.225	73.0	73.0	UR-40	0.2352	74.3	74.3	22.5
13.0	0.58	3.225	9.060	73.0	73.5	UR-48	0.3308	74.3	74.3	21.0
11.0	1.10	9.060	15.810	73.5	74.0	UR-55	0.4520	74.3	74.3	19.5
10.0	1.90	15.810	23.780	74.0	74.0	UR-63	0.5874	74.3	74.3	17.5
10.0	3.70	23.780	34.670	74.5	75.0	UR-73	0.8107	74.3	74.3	14.5

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
3.129	0.313	3.017	0.302	0.964	0.001	0.302	1.730	-0.086
5.734	0.441	5.516	0.424	0.962	-0.001	0.424	1.812	-0.004
6.635	0.603	6.378	0.580	0.961	-0.002	0.580	1.841	0.024
7.846	0.785	7.535	0.753	0.960	-0.003	0.753	1.883	0.066
10.753	1.075	10.399	1.040	0.967	0.004	1.040	1.925	0.108
			DGMCF	0.963			1.816	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	September 11, 2023
Calibrated By	Brayden Pacheco
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.S
250	252		-0.8
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	700		0.0
800	799		0.1
900	900		0.0
1000	1001		-0.1
1100	1101		-0.1
1200	1200		0.0
1250	1251		-0.1

$$\% \text{ Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH

Manometer Calibration Data

Date	September 11, 2023	Calibrated By	Brayden Pacheco
Manometer Number	Team 1	Signature	Brayden Pacheco
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	Dual 3		
MII Number	COE 20008		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.160		0.161	0.6
0-1.0	0.510		0.508	-0.4
	0.970		0.965	-0.5
	1.50		1.54	2.6
1.0-10.0	5.00		4.97	-0.6
	9.10		8.94	-1.8

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

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

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 2
Meter Mfl Number	COE 20092
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.35	in Hg
Theoretical Critical Vacuum	13.9	in Hg
System Leak Check	.001 @ 25.5	
Calibration Date	August 30, 2023	
Calibration Technician	D Turton	
Reviewed and Accepted By	CHRIS BELOPE	

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	0.33	2.148	5.064	74.0	75.0	UR-40	0.2352	73.4	73.4	22.5
10.0	0.61	5.064	9.175	74.5	75.0	UR-48	0.3308	73.4	73.4	21.5
10.0	1.15	9.175	14.822	75.0	75.0	UR-55	0.4520	73.4	73.4	20.2
10.0	1.95	14.822	22.172	75.0	75.5	UR-63	0.5874	73.4	73.4	19.0
10.0	3.70	22.172	32.320	75.5	76.0	UR-73	0.8107	73.4	73.4	16.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
2.828	0.283	2.989	0.299	1.057	0.008	0.299	2.078	0.091
3.988	0.399	4.204	0.420	1.054	0.005	0.420	1.942	-0.046
5.483	0.548	5.744	0.574	1.048	-0.001	0.574	1.961	-0.027
7.147	0.715	7.465	0.746	1.044	-0.004	0.746	1.968	-0.019
9.902	0.990	10.302	1.030	1.040	-0.008	1.030	1.961	-0.026
			DGMCF	1.049			1.987	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	August 30, 2023
Calibrated By	D Turton
Reviewed and Accepted By	CHRIS BELLURE

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	N/A	0.0
70	70		0.0
100	100		0.0
200	200		0.0
250	250		0.0
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	100		90.0
1100	1100		0.0
1200	1200		0.0
1250	1250		0.0

$$\% \text{ Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH

Manometer Calibration Data

Date	August 30, 2023	Calibrated By	D Turton
Manometer Number	Team 2	Signature	
Manometer MII Number	COE 20092	Reviewed/Accepted By	CHRIS RELYEA
Calibrated Against	Omega		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.260	N/A	0.260	0.0
0-1.0	0.690		0.690	0.0
	0.920		0.920	0.0
	1.60		1.56	-2.6
1.0-10.0	5.20		5.15	-1.0
	7.80		7.82	0.3

Percent Difference = (Ref. Manometer - Instrument Reading) x 100
Ref. Manometer

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team # 3
Meter MII Number	COE 20093
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.65	in Hg
Theoretical Critical Vacuum	14.0	in Hg
System Leak Check	<0.001@ 17"Hg	
Calibration Date	September 11, 2023	
Calibration Technician	Brayden Pacheco	
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	0.32	80.790	83.880	74.0	75.0	UR-40	0.2352	75.2	75.2	22.0
10.0	0.64	83.880	88.230	75.0	76.0	UR-48	0.3308	75.2	75.2	20.5
10.0	1.20	88.230	94.220	76.0	76.0	UR-55	0.4520	75.2	75.2	19.5
10.0	2.10	94.220	102.005	76.0	77.0	UR-63	0.5874	75.2	75.2	17.0
10.0	3.80	2.005	12.660	77.0	79.0	UR-73	0.8107	75.2	75.2	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	
3.027	0.303	3.014	0.301	0.996	0.004	0.301	1.981	-0.039
4.257	0.426	4.240	0.424	0.996	0.004	0.424	2.003	-0.017
5.865	0.586	5.793	0.579	0.988	-0.004	0.579	2.011	-0.008
7.632	0.763	7.528	0.753	0.986	-0.005	0.753	2.084	0.064
10.460	1.046	10.390	1.039	0.993	0.001	1.039	1.980	-0.040
			DGMCF	0.992			2.020	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 DP116
MII	A12007
Date	September 11, 2023
Calibrated By	Brayden Pacheco
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	31	32	0.0
70		69	1.4
100		99	1.0
200		200	0.0
250		251	-0.4
300		301	-0.3
400		399	0.3
500		498	0.4
600		599	0.2
700		701	-0.1
800		800	0.0
900		900	0.0
1000		1001	-0.1
1100		1101	-0.1
1200		1200	0.0
1250		1251	-0.1

$$\% \text{ Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH Environmental

Manometer Calibration Data

Date	9-11-2023	Calibrated By	Brayden Pacheco
Manometer Number	Team 3	Signature	Brayden Pacheco
Manometer MII Numbe	COE 20093	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Back Leg

Manometer Scale "H_2O	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.260		0.258	-0.8
0-1.0	0.560		0.561	0.2
	0.950		0.950	0.0
	1.60		1.57	-1.9
1.0-10.0	5.10		5.08	-0.4
	9.50		9.45	-0.5

Percent Difference = (Ref. Manometer - Instrument Reading) x 100
Ref. Manometer

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 3
Date	August 31, 2023
Barometric Pressure	29.68
System Leak Check	NDL @ 15" Hg

MII NUMBERS	
DGM	A12010
Gasometer	A01463
Barometer	COE 20028

Calibrated By	D Turton
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ °F+460}{Tstd\ °F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C	Factor	min.	lpm
53.60	48.50	5.10	0.240	23.0	20.92	27.70	0.239	28.0	0.5	28.0	1.018	14	0.5
48.50	43.50	5.00	0.235	23.0	27.70	34.55	0.242	30.0	0.5	30.0	0.994	14	0.5
43.50	39.20	4.30	0.202	23.0	34.55	40.42	0.207	31.0	0.5	31.0	1.001	12	0.5

Acceptance Criteria:

Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE

0.5Lpm 1.004

Revision June 5, 2007

ORTECH
Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Nutech**
MII	**A12010**
Date	**August 31, 2023**
Calibrated By	**D Turton**
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	200		0.0
300	300		0.0
400	400		0.0
500	499		0.2
600	600		0.0

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading}) \times 100}{\text{micromite}}$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22235	Date:	September 19, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	0.997	C				
High	90.3	A2	90	B2						
Mid	51.9	A4	51.2	B4			51.7	D4	-1.0	E4
Low	31.2	A3	29.8	B3			31.1	D3	-4.2	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	29.8	30.0	-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	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:	22235	Date:	September 19, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	0.997	C				
High	90.3	A2	90	B2						
Mid	51.9	A4	51.2	B4			51.7	D4	-1.0	E4
Low	31.2	A3	29.8	B3			31.1	D3	-4.2	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	30.0	29.5	0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	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:	22235	Date:	September 19, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	0.997	C				
High	90.3	A2	90	B2						
Mid	51.9	A4	51.2	B4			51.7	D4	-1.0	E4
Low	31.2	A3	29.8	B3			31.1	D3	-4.2	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	30.4	29.5	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:	22235	Date:	September 19, 2023
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	B1	0.988	C				
High	90.3	A2	89.2	B2						
Mid	51.9	A4	50.5	B4			51.3	D4	-1.5	E4
Low	31.2	A3	30.6	B3			30.8	D3	-0.7	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0.5	-0.5
Mid	30.6	29.5	1.1

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:	22235	Date:	September 19, 2023
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	B1	0.997				
High	90.3	A2	90	B2	C				
Mid	51.9	A4	50.5	B4		51.7	D4	-2.4	E4
Low	31.2	A3	30.6	B3		31.1	D3	-1.6	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	0.5	0	0.5
Mid	29.5	30.0	-0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	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:	22235	Date:	September 19, 2023
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	B1	0.997				
High	90.3	A2	90	B2	C				
Mid	51.9	A4	50.5	B4		51.7	D4	-2.4	E4
Low	31.2	A3	30.6	B3		31.1	D3	-1.6	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	30.0	0.0

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	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:	22235	Date:	September 20, 2023
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	0.1	B1	0.996	C				
High	90.3	A2	90	B2						
Mid	51.9	A4	51.8	B4			51.7	D4	0.3	E4
Low	31.2	A3	31	B3			31.1	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	31	29.8	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**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22235	Date:	September 20, 2023
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	0.03	B1	0.991	C				
High	90.3	A2	89.5	B2						
Mid	51.9	A4	51.78	B4			51.4	D4	0.7	E4
Low	31.2	A3	30.52	B3			30.9	D3	-1.3	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	0.2	-0.2
Mid	29.8	30.0	-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:	22235	Date:	September 20, 2023
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	0.03	B1	0.991	C				
High	90.3	A2	89.5	B2						
Mid	51.9	A4	51.78	B4			51.4	D4	0.7	E4
Low	31.2	A3	30.52	B3			30.9	D3	-1.3	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	29.8	30.0	-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:	22235	Date:	September 20, 2023
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	0.988	C				
High	90.3	A2	89.3	B2						
Mid	51.9	A4	51.25	B4			51.3	D4	-0.1	E4
Low	31.2	A3	30.7	B3			30.8	D3	-0.4	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	0.8	0.1	0.7
Mid	31	30.5	0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	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:	22235	Date:	September 20, 2023
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	0.988 C		
High	90.3	A2	89.3	B2			
Mid	51.9	A4	51.25	B4		51.3 D4	-0.1 E4
Low	31.2	A3	30.7	B3		30.8 D3	-0.4 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.1	0	0.1
Mid	30.5	32.0	-1.5

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:	22235	Date:	September 20, 2023
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	0.988	C				
High	90.3	A2	89.3	B2						
Mid	51.9	A4	51.25	B4			51.3	D4	-0.1	E4
Low	31.2	A3	30.7	B3			30.8	D3	-0.4	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	0.9	-0.9
Mid	32	29.4	2.6

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**

APPENDIX 22

Particulate and Metals Test Emission Calculations
(23 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - Partculate & Metals
Date:	Septmber 20, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.992	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	3.576	m^3
AVGERGE ISOKINETICITY	102.5	%
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	142.4	°C
AVERAGE GAS MOISTURE BY VOLUME	16.9	%
AVERAGE GAS VELOCITY	17.43	m/s
BAROMETRIC PRESSURE (Station)	101.287	Kpa
STATIC PRESSURE	-2.709	Kpa
ABSOLUTE GAS PRESSURE	98.578	Kpa
OXYGEN CONCENTRATION	7.96	%
CARBON DIOXIDE CONCENTRATION	11.00	%
CARBON MONOXIDE CONCENTRATION	12.0	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.76	m^3/s
DRY REF GAS FLOWRATE	14.95	Rm^3/s
DRY ADJ GAS FLOWRATE	19.54	Rm^3/s
WET REF GAS FLOWRATE	17.98	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.2	mg
	-FILTER	0.7	mg
	-TOTAL	1.9	mg
DRY REF GAS VOLUME SAMPLED		3.576	m^3
PARTICULATE CONC. - ACTUAL		0.308	mg/m^3
PARTICULATE CONC. - DRY REF		0.531	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.406	mg/m^3
PARTICULATE CONC. - WET REF		0.442	mg/m^3
PARTICULATE EMISSION RATE		0.007941	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. 2
Date:	Septmber 20, 2023	**Operator:**	BP

Pitot Factor	0.848	**Filter (mg)**	0.7		
DGMCF	0.992	**Probe (mg)**	1.2		
Barometric Pressure	29.91 "Hg	**CWTR (g)**	511.8		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	21.6		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.41 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	7.96
CO2%	11.00
COppm	12.0

Measured H2O
16.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	52.14	0.75	285	61	63	63	1.9	4.0		18.22	
	2.5	53.96	0.75	286	53	64	64	1.9	4.0		18.23	**103.7**
	5	55.75	0.75	287	52	64	64	1.9	4.0		18.24	**101.9**
2	7.5	57.54	0.76	287	51	64	64	1.9	4.0		18.36	**101.9**
	10	59.31	0.79	287	50	64	65	1.9	4.0		18.72	**100.1**
	12.5	61.14	0.78	287	49	64	65	2	4.0		18.60	**101.4**
3	15	62.97	0.76	287	49	64	66	2	4.0		18.36	**102.1**
	17.5	64.78	0.76	287	49	64	67	1.95	4.0		18.36	**102.2**
	20	66.58	0.79	288	49	65	67	1.95	4.0		18.73	**101.5**
4	22.5	68.39	0.73	288	49	65	68	2	4.0		18.01	**100.1**
	25	70.17	0.71	288	50	65	69	1.9	4.0		17.76	**102.3**
	27.5	71.93	0.7	289	50	66	69	1.85	4.0		17.65	**102.5**
5	30	73.67	0.63	288	50	66	70	1.85	4.0		16.73	**102.0**
	32.5	75.35	0.63	288	50	66	70	1.7	3.5		16.73	**103.6**
	35	77.02	0.64	288	50	67	71	1.7	3.5		16.86	**103.0**
6	37.5	78.69	0.61	288	50	67	71	1.7	3.5		16.46	**102.0**
	40	80.34	0.6	288	50	67	71	1.65	3.5		16.33	**103.2**
	42.5	81.98	0.6	288	50	68	72	1.6	3.5		16.33	**103.4**
7	45	83.61	0.68	288	50	68	72	1.6	3.5		17.38	**102.6**
	47.5	85.35	0.67	288	50	68	73	1.8	4.0		17.25	**102.9**
	50	87.08	0.65	288	50	69	73	1.8	4.0		16.99	**103.0**
8	52.5	88.78	0.71	288	50	69	73	1.75	4.0		17.76	**102.7**
	55	90.54	0.7	289	50	69	74	1.9	4.0		17.65	**101.7**
	57.5	92.30	0.68	289	50	70	74	1.9	4.0		17.39	**102.4**
9	60	94.04	0.67	289	50	70	74	1.8	4.0		17.26	**102.6**
	62.5	95.77	0.67	289	50	70	74	1.8	4.0		17.26	**102.8**
	65	97.50	0.68	289	50	70	75	1.8	4.0		17.39	**102.8**
10	67.5	99.23	0.7	288	50	71	75	1.8	4.0		17.63	**101.9**
	70	101.00	0.69	288	50	71	75	1.9	4.0		17.51	**102.6**
	72.5	102.74	0.7	288	50	71	75	1.8	4.0		17.63	**101.6**
11	75	104.52	0.61	288	50	71	75	1.9	4.0		16.46	**103.2**
	77.5	106.17	0.6	286	50	72	76	1.6	3.9		16.30	**102.5**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	Septmber 20, 2023	**Operator:**	BP

Pitot Factor	0.848	**Filter (mg)**	0.7		
DGMCF	0.992	**Probe (mg)**	1.2		
Barometric Pressure	29.91 "Hg	**CWTR (g)**	511.8		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	21.6		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.41 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%	7.96
CO2%	11.00
COppm	12.0

Measured H2O
16.9 %

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 %
	80	107.82	0.59	286	51	72	76	1.6	3.9		16.17	**102.9**
12	82.5	109.44	0.54	286	51	72	76	1.6	3.9		15.47	**101.9**
	85	111.01	0.54	286	51	72	76	1.5	3.5		15.47	**103.2**
	87.5	112.57	0.58	286	50	72	76	1.5	3.5		16.03	**102.6**
	90	114.19								0.41		**102.8**
1	0	114.60	0.83	287	60	72	73	2.15	4.5		19.19	
	2.5	116.50	0.86	289	52	72	73	2.15	4.5		19.56	**101.3**
	5	118.44	0.84	289	50	72	74	2.2	4.5		19.33	**101.7**
2	7.5	120.38	0.84	289	48	72	75	2.2	4.5		19.33	**102.8**
	10	122.32	0.86	289	47	72	75	2.2	4.5		19.56	**102.7**
	12.5	124.25	0.86	289	47	73	76	2.2	4.5		19.56	**101.0**
3	15	126.20	0.83	289	47	73	76	2.2	4.5		19.22	**101.9**
	17.5	128.14	0.82	289	47	73	77	2.2	4.5		19.10	**103.2**
	20	130.14	0.84	289	47	73	77	2.2	4.5		19.33	**106.9**
4	22.5	132.05	0.76	289	47	73	77	2.2	4.5		18.39	**100.9**
	25	133.81	0.77	289	48	74	78	2	4.0		18.51	**97.7**
	27.5	135.64	0.76	289	48	74	78	2	4.0		18.39	**100.7**
5	30	137.46	0.68	289	48	74	78	2	4.0		17.39	**100.8**
	32.5	139.24	0.72	289	48	74	78	1.9	4.0		17.90	**104.2**
	35	141.09	0.74	290	48	74	78	1.9	4.0		18.16	**105.2**
6	37.5	142.89	0.64	290	48	75	79	2	4.0		16.88	**101.1**
	40	144.63	0.61	291	48	75	79	1.9	4.0		16.50	**104.9**
	42.5	146.27	0.6	291	48	75	79	1.8	4.0		16.36	**101.3**
7	45	148.09	0.65	291	48	75	79	1.8	4.0		17.03	**113.3**
	47.5	149.80	0.64	291	48	75	79	1.7	4.0		16.90	**102.3**
	50	151.42	0.65	290	48	75	79	1.8	4.0		17.02	**97.7**
8	52.5	153.14	0.63	290	48	75	79	1.8	4.0		16.75	**102.8**
	55	154.84	0.71	290	48	76	79	1.8	4.0		17.78	**103.2**
	57.5	156.57	0.72	290	48	76	79	1.9	4.0		17.91	**98.9**
9	60	158.35	0.72	290	49	76	80	1.9	4.0		17.91	**101.0**
	62.5	160.15	0.71	290	49	76	80	1.9	4.0		17.78	**102.1**
	65	162.04	0.7	290	49	76	80	1.9	4.0		17.66	**107.9**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	Septmber 20, 2023	**Operator:**	BP

Pitot Factor	0.848	**Filter (mg)**	0.7		
DGMCF	0.992	**Probe (mg)**	1.2		
Barometric Pressure	29.91 "Hg	**CWTR (g)**	511.8		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	21.6		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.41 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%	7.96
CO2%	11.00
COppm	12.0

Measured H2O
16.9 %

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 %
10	67.5	163.72	0.66	290	49	76	80	1.9	4.0		17.15	**96.6**
	70	165.46	0.69	289	49	77	80	1.8	4.0		17.52	**103.1**
	72.5	167.23	0.68	289	49	77	80	1.9	4.0		17.39	**102.4**
11	75	168.99	0.58	289	49	77	80	1.8	4.0		16.06	**102.6**
	77.5	170.66	0.58	286	50	77	80	1.6	4.0		16.03	**105.3**
	80	172.30	0.55	286	49	77	80	1.6	4.0		15.61	**103.2**
12	82.5	173.93	0.44	286	49	77	81	1.5	4.0		13.96	**105.3**
	85	175.39	0.45	286	49	77	80	1.2	4.0		14.12	**105.3**
	87.5	176.83	0.46	286	49	77	80	1.3	4.0		14.28	**102.8**
	90	178.29										**103.1**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - Partculate & Metals
Date:	Septmber 20, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.992	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	3.671	m^3
AVGERGE ISOKINETICITY	103.0	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.9	°C
AVERAGE GAS MOISTURE BY VOLUME	17.1	%
AVERAGE GAS VELOCITY	17.90	m/s
BAROMETRIC PRESSURE (Station)	101.219	Kpa
STATIC PRESSURE	-2.709	Kpa
ABSOLUTE GAS PRESSURE	98.510	Kpa
OXYGEN CONCENTRATION	7.95	%
CARBON DIOXIDE CONCENTRATION	10.91	%
CARBON MONOXIDE CONCENTRATION	13.1	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.45	m^3/s
DRY REF GAS FLOWRATE	15.28	Rm^3/s
DRY ADJ GAS FLOWRATE	19.98	Rm^3/s
WET REF GAS FLOWRATE	18.43	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.9	mg
	-FILTER	0.5	mg
	-TOTAL	2.4	mg
DRY REF GAS VOLUME SAMPLED		3.671	m^3
PARTICULATE CONC. - ACTUAL		0.378	mg/m^3
PARTICULATE CONC. - DRY REF		0.654	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.500	mg/m^3
PARTICULATE CONC. - WET REF		0.542	mg/m^3
PARTICULATE EMISSION RATE		0.009988	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 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	Septmber 20, 2023	**Operator:**	BP

Pitot Factor	0.848	**Filter (mg)**	0.5		
DGMCF	0.992	**Probe (mg)**	1.9		
Barometric Pressure	29.89 "Hg	**CWTR (g)**	535.3		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	21.3		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.49 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	7.95
CO2%	10.91
COppm	13.1

Measured H2O
17.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	78.90	0.85	285	69	75	75	2.2	3.5		19.41	
	2.5	80.87	0.85	289	55	74	75	2.2	3.5		19.47	**103.3**
	5	82.82	0.84	290	51	74	75	2.2	3.5		19.36	**102.6**
2	7.5	84.76	0.88	290	49	74	75	2.2	3.5		19.82	**102.8**
	10	86.73	0.93	290	48	74	75	2.25	3.5		20.38	**102.0**
	12.5	88.76	0.9	290	48	75	76	2.4	4.0		20.04	**102.2**
3	15	90.76	0.85	290	48	75	77	2.3	3.9		19.48	**102.2**
	17.5	92.71	0.84	291	48	75	77	2.2	3.5		19.38	**102.4**
	20	94.65	0.84	290	49	75	78	2.2	3.5		19.36	**102.6**
4	22.5	96.58	0.77	290	50	75	79	2.2	3.5		18.54	**101.9**
	25	98.45	0.79	290	50	76	79	2.05	3.5		18.78	**103.0**
	27.5	100.35	0.77	290	51	76	80	2.1	3.5		18.54	**103.2**
5	30	102.23	0.7	290	51	76	80	2.05	3.5		17.68	**103.3**
	32.5	104.04	0.7	290	51	77	81	1.9	3.5		17.68	**104.3**
	35	105.81	0.69	290	51	77	81	1.9	3.5		17.55	**101.8**
6	37.5	107.58	0.62	290	52	78	82	1.9	3.5		16.64	**102.5**
	40	109.28	0.64	291	52	78	82	1.7	3.0		16.91	**103.7**
	42.5	110.99	0.64	292	52	78	82	1.7	3.0		16.93	**102.7**
7	45	112.71	0.69	292	52	79	83	1.7	3.0		17.57	**103.4**
	47.5	114.50	0.69	292	52	79	83	1.9	3.5		17.57	**103.4**
	50	116.28	0.68	292	52	79	84	1.9	3.5		17.45	**102.9**
8	52.5	118.05	0.73	292	53	79	84	1.9	3.5		18.08	**102.9**
	55	119.90	0.72	291	53	80	85	2	3.5		17.94	**103.9**
	57.5	121.72	0.7	291	53	80	84	1.95	3.5		17.69	**102.6**
9	60	123.51	0.72	291	53	80	84	1.9	3.5		17.94	**102.5**
	62.5	125.33	0.71	290	53	80	84	1.95	3.5		17.80	**102.7**
	65	127.14	0.7	290	53	81	85	1.95	3.5		17.68	**102.8**
10	67.5	128.93	0.69	290	53	81	86	1.9	3.5		17.55	**102.2**
	70	130.73	0.69	290	53	81	85	1.9	3.5		17.55	**103.4**
	72.5	132.51	0.7	290	54	81	85	1.9	3.5		17.68	**102.4**
11	75	134.30	0.62	286	54	81	85	1.9	3.5		16.59	**102.2**
	77.5	136.00	0.64	286	54	82	85	1.7	3.5		16.86	**102.9**

ORTECH Environmental

Plant: Covanta DYEC
Test No.: 2 - Partculate & Metals
Date: Septmber 20, 2023

Plant Location: Courtice, ON
Test Location: APC Outlet No. 2
Operator: BP

Pitot Factor	0.848	**Filter (mg)**	0.5		
DGMCF	0.992	**Probe (mg)**	1.9		
Barometric Pressure	29.89 "Hg	**CWTR (g)**	535.3		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	21.3		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.49 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%	7.95
CO2%	10.91
COppm	13.1

Measured H2O
17.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	137.74	0.62	286	54	82	85	1.8	3.5		16.59	**103.5**
12	82.5	139.47	0.55	286	54	82	86	1.75	3.5		15.63	**104.5**
	85	141.08	0.55	286	54	82	86	1.5	3.0		15.63	**103.2**
	87.5	142.67	0.53	286	54	82	86	1.5	3.0		15.34	**101.8**
	90	144.27								0.49		**104.4**
1	0	144.76	0.78	286	67	82	82	2.1	4.0		18.61	
	2.5	146.67	0.8	290	58	84	85	2.1	4.0		18.90	**103.3**
	5	148.60	0.81	290	54	82	84	2.15	4.0		19.02	**102.8**
2	7.5	150.51	0.82	289	50	83	85	2.15	4.0		19.12	**101.4**
	10	152.47	0.81	291	52	82	84	2.2	4.0		19.03	**103.2**
	12.5	154.43	0.81	290	52	82	84	2.2	4.0		19.02	**104.2**
3	15	156.36	0.81	291	53	82	85	2.15	4.0		19.03	**102.5**
	17.5	158.29	0.81	291	53	82	85	2.15	4.0		19.03	**102.5**
	20	160.21	0.8	291	53	82	86	2.15	4.0		18.91	**101.9**
4	22.5	162.14	0.77	291	56	83	86	2.15	4.0		18.55	**103.0**
	25	164.04	0.76	291	54	83	86	2.1	4.0		18.43	**103.3**
	27.5	165.92	0.73	291	54	83	86	2.05	4.0		18.06	**102.8**
5	30	167.76	0.68	290	54	83	86	2	4.0		17.42	**102.7**
	32.5	169.56	0.68	290	54	83	86	1.9	4.0		17.42	**104.0**
	35	171.37	0.69	290	54	83	87	1.9	4.0		17.55	**104.6**
6	37.5	173.26	0.65	290	54	83	87	1.9	4.0		17.03	**108.3**
	40	174.97	0.64	290	54	83	87	1.9	4.0		16.90	**100.9**
	42.5	176.72	0.62	290	54	83	87	1.8	4.0		16.64	**104.1**
7	45	178.44	0.66	291	54	83	87	1.7	4.0		17.18	**103.9**
	47.5	180.21	0.69	290	54	84	87	1.8	4.0		17.55	**103.7**
	50	182.00	0.67	290	54	84	87	1.9	4.0		17.29	**102.4**
8	52.5	183.79	0.68	290	55	84	87	1.9	4.0		17.42	**104.0**
	55	185.59	0.7	290	55	84	87	1.9	4.0		17.68	**103.8**
	57.5	187.41	0.72	290	55	84	87	1.9	4.0		17.93	**103.4**
9	60	189.22	0.71	291	55	84	88	1.9	4.0		17.81	**101.4**
	62.5	191.04	0.73	291	55	84	88	2	4.0		18.06	**102.7**
	65	192.88	0.75	291	55	84	88	2	4.0		18.31	**102.4**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	Septmber 20, 2023	**Operator:**	BP

Pitot Factor	0.848	**Filter (mg)**	0.5		
DGMCF	0.992	**Probe (mg)**	1.9		
Barometric Pressure	29.89 "Hg	**CWTR (g)**	535.3		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	21.3		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.49 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%	7.95
CO2%	10.91
COppm	13.1

Measured H2O
17.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
10	67.5	194.73	0.78	291	55	84	88	2	4.0		18.67	**101.6**
	70	196.57	0.76	291	56	85	88	2	4.0		18.43	**99.1**
	72.5	198.43	0.74	291	55	85	88	2	4.0		18.19	**101.4**
11	75	200.28	0.68	282	55	85	88	2	4.0		17.33	**102.2**
	77.5	202.09	0.66	282	55	85	88	1.9	4.0		17.07	**103.6**
	80	203.87	0.67	282	56	86	88	1.9	4.0		17.20	**103.4**
12	82.5	205.68	0.61	282	56	86	89	1.9	4.0		16.41	**104.3**
	85	207.43	0.6	282	56	85	88	1.8	4.0		16.28	**105.6**
	87.5	209.13	0.61	282	56	85	89	1.7	4.0		16.41	**103.6**
	90	210.80										**100.8**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - Particulate & Metals
Date:	September 20, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.049	
NOZZLE DIAMETER	6.35	mm
DRY REF GAS VOLUME SAMPLED	3.581	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	142.7	°C
AVERAGE GAS MOISTURE BY VOLUME	17.6	%
AVERAGE GAS VELOCITY	17.94	m/s
BAROMETRIC PRESSURE (Station)	101.253	Kpa
STATIC PRESSURE	-2.709	Kpa
ABSOLUTE GAS PRESSURE	98.544	Kpa
OXYGEN CONCENTRATION	8.17	%
CARBON DIOXIDE CONCENTRATION	10.74	%
CARBON MONOXIDE CONCENTRATION	16.2	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.51	m^3/s
DRY REF GAS FLOWRATE	15.24	Rm^3/s
DRY ADJ GAS FLOWRATE	19.59	Rm^3/s
WET REF GAS FLOWRATE	18.49	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.9	mg
	-FILTER	0.8	mg
	-TOTAL	1.7	mg
DRY REF GAS VOLUME SAMPLED		3.581	m^3
PARTICULATE CONC. - ACTUAL		0.273	mg/m^3
PARTICULATE CONC. - DRY REF		0.475	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.369	mg/m^3
PARTICULATE CONC. - WET REF		0.391	mg/m^3
PARTICULATE EMISSION RATE		0.007234	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:	September 20, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0.8		
DGMCF	1.049	**Probe (mg)**	0.9		
Barometric Pressure	29.9 "Hg	**CWTR (g)**	538		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	23.4		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.4 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.17
CO2%	10.74
COppm	16.2

Measured H2O
17.6 %

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	94.23	0.84	287	74	76	77	1.8	4.0		19.23	
	2.5	96.01	0.87	286	74	76	77	1.9	4.0		19.56	**100.8**
	5	97.75	0.87	287	54	76	77	1.95	4.0		19.57	**96.8**
2	7.5	99.56	0.87	287	52	76	77	1.95	4.0		19.57	**100.8**
	10	101.39	0.88	287	52	76	77	1.95	4.0		19.69	**101.9**
	12.5	103.21	0.88	287	52	76	78	1.95	4.0		19.69	**100.8**
3	15	105.03	0.81	287	53	76	78	1.8	4.0		18.89	**100.7**
	17.5	106.78	0.81	287	53	77	79	1.8	4.0		18.89	**100.9**
	20	108.52	0.81	287	53	77	79	1.85	4.0		18.89	**100.1**
4	22.5	110.28	0.79	287	54	77	80	1.8	4.0		18.65	**101.3**
	25	112.03	0.76	288	54	77	80	1.7	4.0		18.31	**101.8**
	27.5	113.67	0.74	288	54	77	81	1.7	4.0		18.06	**97.4**
5	30	115.36	0.64	288	54	77	81	1.45	4.0		16.80	**101.6**
	32.5	116.93	0.66	288	54	77	81	1.5	4.0		17.06	**101.4**
	35	118.54	0.66	289	54	78	82	1.5	4.0		17.07	**102.4**
6	37.5	120.14	0.61	289	54	78	83	1.4	4.0		16.41	**101.7**
	40	121.69	0.61	289	55	78	83	1.4	4.0		16.41	**102.3**
	42.5	123.30	0.61	289	55	78	83	1.35	4.0		16.41	**106.3**
7	45	124.78	0.67	289	55	79	84	1.5	4.0		17.20	**97.7**
	47.5	126.37	0.67	290	55	79	84	1.5	4.0		17.21	**100.0**
	50	127.97	0.68	290	55	79	84	1.5	4.0		17.34	**100.7**
8	52.5	129.60	0.66	290	55	79	85	1.55	4.0		17.08	**101.8**
	55	131.22	0.71	290	54	80	85	1.6	4.0		17.72	**102.6**
	57.5	132.89	0.71	289	54	80	85	1.6	4.0		17.71	**101.9**
9	60	134.55	0.71	288	54	80	85	1.6	4.0		17.69	**101.2**
	62.5	136.21	0.7	288	54	80	85	1.55	4.0		17.57	**101.2**
	65	137.85	0.72	288	54	80	85	1.6	4.0		17.82	**100.7**
10	67.5	139.52	0.68	289	54	80	85	1.55	4.0		17.33	**101.1**
	70	141.15	0.68	289	54	81	86	1.55	4.0		17.33	**101.6**
	72.5	142.79	0.68	287	54	81	86	1.6	4.0		17.31	**102.0**
11	75	144.43	0.68	287	54	81	86	1.6	4.0		17.31	**101.9**
	77.5	146.08	0.57	287	54	81	86	1.3	4.0		15.84	**102.5**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	September 20, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0.8		
DGMCF	1.049	**Probe (mg)**	0.9		
Barometric Pressure	29.9 "Hg	**CWTR (g)**	538		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	23.4		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.4 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.17
CO2%	10.74
COppm	16.2

Measured H2O
17.6 %

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 %
	80	147.65	0.61	287	54	81	86	1.4	4.0		16.39	**106.4**
12	82.5	149.22	0.6	287	53	81	86	1.4	4.0		16.26	**102.9**
	85	150.78	0.6	285	54	81	86	1.35	4.0		16.23	**103.1**
	87.5	152.31	0.59	285	53	81	86	1.3	4.0		16.10	**101.0**
	90	153.82								0.4		**100.5**
1	0	154.22	0.84	287	62	82	85	1.8	4.0		19.23	
	2.5	156.00	0.91	290	54	82	85	2	4.0		20.06	**99.5**
	5	157.84	0.9	290	53	82	85	2	4.0		19.95	**99.1**
2	7.5	159.68	0.88	290	52	82	85	1.95	5.0		19.73	**99.7**
	10	161.52	0.88	290	52	82	85	1.95	5.0		19.73	**100.8**
	12.5	163.34	0.87	290	52	82	85	1.95	5.0		19.61	**99.7**
3	15	165.19	0.82	289	52	82	85	1.85	5.0		19.03	**101.9**
	17.5	166.97	0.84	289	53	82	86	1.95	5.0		19.26	**100.9**
	20	168.79	0.84	289	53	82	86	1.95	5.0		19.26	**101.9**
4	22.5	170.61	0.78	290	53	82	86	1.75	5.0		18.57	**101.9**
	25	172.37	0.79	290	53	82	86	1.75	5.0		18.69	**102.2**
	27.5	174.12	0.81	290	53	82	86	1.8	5.0		18.92	**101.0**
5	30	175.88	0.77	290	53	82	86	1.8	5.0		18.45	**100.3**
	32.5	177.63	0.77	291	53	82	86	1.8	5.0		18.46	**102.3**
	35	179.37	0.78	291	54	82	86	1.8	5.0		18.58	**101.8**
6	37.5	181.12	0.69	291	54	82	86	1.6	5.0		17.48	**101.7**
	40	182.78	0.68	291	54	82	86	1.55	4.5		17.35	**102.6**
	42.5	184.42	0.68	291	54	82	86	1.55	4.5		17.35	**102.0**
7	45	186.04	0.74	291	54	82	86	1.7	4.5		18.10	**100.8**
	47.5	187.74	0.74	291	54	82	86	1.7	4.5		18.10	**101.4**
	50	189.44	0.74	291	54	82	86	1.7	4.5		18.10	**101.4**
8	52.5	191.16	0.73	291	54	82	86	1.7	4.5		17.98	**102.6**
	55	192.87	0.73	291	54	82	86	1.7	4.5		17.98	**102.7**
	57.5	194.57	0.73	291	54	82	86	1.7	4.5		17.98	**102.1**
9	60	196.28	0.76	291	55	82	87	1.75	4.5		18.34	**102.7**
	62.5	198.02	0.79	291	55	82	87	1.8	4.5		18.70	**102.4**
	65	199.78	0.78	291	55	82	86	1.75	4.5		18.58	**101.6**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	September 20, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0.8		
DGMCF	1.049	**Probe (mg)**	0.9		
Barometric Pressure	29.9 "Hg	**CWTR (g)**	538		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	23.4		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.4 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.17
CO2%	10.74
COppm	16.2

Measured H2O
17.6 %

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 %
10	67.5	201.53	0.77	290	55	82	86	1.75	4.5		18.45	**101.7**
	70	203.26	0.78	288	55	82	86	1.75	4.5		18.55	**101.1**
	72.5	205.02	0.76	288	55	82	86	1.7	4.5		18.31	**102.1**
11	75	206.72	0.6	288	55	82	86	1.35	4.5		16.27	**99.9**
	77.5	208.25	0.6	288	56	82	86	1.3	4.5		16.27	**101.1**
	80	209.75	0.57	288	56	82	86	1.3	4.5		15.85	**99.1**
12	82.5	211.27	0.58	288	56	82	86	1.4	4.5		15.99	**103.0**
	85	212.81	0.58	288	56	82	86	1.4	4.5		15.99	**103.5**
	87.5	214.34	0.59	288	56	82	86	1.35	4.5		16.13	**102.8**
	90	215.86										**101.3**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 - Partculate & Metals
Date:	September 19, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.992	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	3.883	m^3
AVGERGE ISOKINETICITY	103.0	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	144.1	°C
AVERAGE GAS MOISTURE BY VOLUME	18.0	%
AVERAGE GAS VELOCITY	19.39	m/s
BAROMETRIC PRESSURE (Station)	100.576	Kpa
STATIC PRESSURE	-2.928	Kpa
ABSOLUTE GAS PRESSURE	97.647	Kpa
OXYGEN CONCENTRATION	8.29	%
CARBON DIOXIDE CONCENTRATION	10.76	%
CARBON MONOXIDE CONCENTRATION	5.0	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.65	m^3/s
DRY REF GAS FLOWRATE	16.16	Rm^3/s
DRY ADJ GAS FLOWRATE	20.59	Rm^3/s
WET REF GAS FLOWRATE	19.73	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.5	mg
	-FILTER	0.2	mg
	-TOTAL	1.7	mg
DRY REF GAS VOLUME SAMPLED		3.883	m^3
PARTICULATE CONC. - ACTUAL		0.247	mg/m^3
PARTICULATE CONC. - DRY REF		0.438	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.344	mg/m^3
PARTICULATE CONC. - WET REF		0.359	mg/m^3
PARTICULATE EMISSION RATE		0.007077	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:	September 19, 2023	**Operator:**	BP

Pitot Factor	0.848	**Filter (mg)**	0.2		
DGMCF	0.992	**Probe (mg)**	1.5		
Barometric Pressure	29.7 "Hg	**CWTR (g)**	602.7		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	25.7		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.59 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.29
CO2%	10.76
COppm	5.0

Measured H2O
18.0 %

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	76.83	0.9	283	62	68	68	2.2	3.5		20.08	
	2.5	78.78	0.88	289	53	66	67	2.2	3.5		19.94	**101.3**
	5	80.73	0.89	289	51	66	67	2.2	3.5		20.05	**103.2**
2	7.5	82.68	0.91	289	49	66	67	2.2	3.5		20.28	**102.6**
	10	84.62	0.92	289	49	66	68	2.2	3.5		20.39	**100.9**
	12.5	86.61	0.94	290	48	67	68	2.3	3.5		20.62	**102.9**
3	15	88.60	0.91	290	48	67	69	2.3	3.5		20.29	**101.8**
	17.5	90.59	0.93	290	49	67	70	2.3	3.5		20.51	**103.3**
	20	92.59	0.98	291	50	68	71	2.3	3.9		21.07	**102.6**
4	22.5	94.62	0.94	293	51	68	72	2.4	4.0		20.66	**101.3**
	25	96.64	0.93	293	51	68	72	2.4	4.0		20.55	**103.0**
	27.5	98.67	0.92	293	51	69	73	2.4	4.0		20.44	**104.1**
5	30	100.66	0.89	294	52	70	74	2.3	4.0		20.12	**102.4**
	32.5	102.61	0.83	295	51	69	73	2.2	3.9		19.44	**101.9**
	35	104.49	0.83	295	52	70	74	2.1	3.5		19.44	**101.9**
6	37.5	106.38	0.75	295	52	70	74	2.1	3.5		18.48	**102.3**
	40	108.22	0.74	295	52	70	75	2	3.5		18.36	**104.7**
	42.5	110.01	0.73	295	52	71	75	1.9	3.5		18.23	**102.5**
7	45	111.80	0.78	294	52	71	75	1.9	3.5		18.83	**103.0**
	47.5	113.65	0.8	294	52	71	75	2	3.5		19.07	**103.0**
	50	115.54	0.81	294	51	71	76	2.1	3.9		19.19	**103.9**
8	52.5	117.43	0.84	294	51	72	76	2.1	3.9		19.54	**103.2**
	55	119.37	0.82	294	52	72	77	2.2	4.0		19.31	**103.9**
	57.5	121.28	0.79	294	52	73	77	2.1	3.9		18.95	**103.5**
9	60	123.18	0.84	294	52	73	77	2.1	3.9		19.54	**104.7**
	62.5	125.12	0.82	293	52	73	77	2.2	4.0		19.30	**103.7**
	65	127.02	0.81	293	52	73	77	2.1	4.0		19.18	**102.7**
10	67.5	128.92	0.86	292	52	74	78	2.1	4.0		19.75	**103.4**
	70	130.85	0.82	293	52	74	78	2.2	4.0		19.30	**101.6**
	72.5	132.75	0.8	292	52	75	78	2.1	4.0		19.05	**102.6**
11	75	134.67	0.77	292	52	74	78	2.1	4.0		18.69	**104.7**
	77.5	136.52	0.75	285	54	75	79	2	3.5		18.36	**103.0**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	September 19, 2023	**Operator:**	BP

Pitot Factor	0.848	**Filter (mg)**	0.2		
DGMCF	0.992	**Probe (mg)**	1.5		
Barometric Pressure	29.7 "Hg	**CWTR (g)**	602.7		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	25.7		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.59 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.29
CO2%	10.76
COppm	5.0

Measured H2O
18.0 %

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 %
	80	138.36	0.79	285	56	76	80	2	3.5		18.84	**103.1**
12	82.5	140.24	0.67	285	53	75	78	2.1	4.0		17.35	**102.4**
	85	142.00	0.66	285	53	75	78	1.8	3.5		17.22	**104.4**
	87.5	143.73	0.66	285	53	76	80	1.8	3.5		17.22	**103.3**
	90	145.48								0.59		**104.2**
1	0	146.07	0.96	289	61	75	75	2.4	4.0		20.82	
	2.5	148.14	0.97	292	54	75	75	2.4	4.0		20.97	**103.2**
	5	150.18	0.96	292	52	75	76	2.4	4.0		20.87	**101.4**
2	7.5	152.23	1	292	52	75	76	2.4	4.0		21.30	**102.3**
	10	154.31	1	293	52	74	77	2.4	4.0		21.31	**101.7**
	12.5	156.38	1	293	52	75	77	2.5	4.0		21.31	**101.3**
3	15	158.48	0.96	293	52	75	78	2.5	4.0		20.88	**102.7**
	17.5	160.54	0.97	294	53	80	84	2.4	4.0		21.00	**102.7**
	20	162.58	1	296	52	80	84	2.4	4.0		21.35	**100.2**
4	22.5	164.60	1.1	296	59	83	86	2.4	4.0		22.40	**97.9**
	25	166.77	1	295	55	76	80	2.7	4.5		21.34	**99.8**
	27.5	168.81	0.91	295	56	76	79	2.5	4.5		20.36	**99.6**
5	30	170.88	0.79	296	56	76	80	2.3	4.5		18.98	**106.0**
	32.5	172.76	0.76	296	56	76	80	2	4.0		18.62	**103.2**
	35	174.62	0.77	295	56	76	80	2	4.0		18.72	**104.1**
6	37.5	176.47	0.66	294	56	76	80	2	4.0		17.32	**102.7**
	40	178.22	0.67	294	55	76	80	1.8	3.9		17.46	**104.9**
	42.5	179.97	0.65	294	55	77	80	1.8	3.9		17.19	**104.1**
7	45	181.68	0.78	293	55	76	80	1.7	3.9		18.82	**103.2**
	47.5	183.52	0.78	293	54	77	80	2	4.0		18.82	**101.3**
	50	185.42	0.79	293	54	77	81	2.1	4.0		18.94	**104.6**
8	52.5	187.32	0.78	292	53	77	81	2.1	4.0		18.81	**103.9**
	55	189.22	0.78	292	53	77	81	2.1	4.0		18.81	**104.5**
	57.5	191.11	0.78	292	53	77	81	2.1	4.0		18.81	**103.9**
9	60	193.01	0.79	292	53	77	81	2.1	4.0		18.93	**104.5**
	62.5	194.90	0.78	292	53	78	82	2.1	4.0		18.81	**103.3**
	65	196.78	0.81	291	53	78	81	2.1	4.0		19.15	**103.2**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	September 19, 2023	**Operator:**	BP

Pitot Factor	0.848	**Filter (mg)**	0.2		
DGMCF	0.992	**Probe (mg)**	1.5		
Barometric Pressure	29.7 "Hg	**CWTR (g)**	602.7		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	25.7		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.59 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.29
CO2%	10.76
COppm	5.0

Measured H2O
18.0 %

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 %
10	67.5	198.70	0.8	291	53	78	81	2.1	4.0		19.04	**103.4**
	70	200.61	0.81	290	53	78	82	2.1	4.0		19.14	**103.5**
	72.5	202.53	0.83	290	52	78	82	2.1	4.0		19.38	**103.3**
11	75	204.48	0.75	285	52	78	82	2.2	4.0		18.36	**103.6**
	77.5	206.35	0.76	285	52	78	82	2	4.0		18.48	**104.2**
	80	208.20	0.8	285	53	78	82	2	4.0		18.96	**102.4**
12	82.5	210.10	0.69	283	53	78	82	2.1	4.0		17.58	**102.5**
	85	211.91	0.69	284	54	79	82	1.9	4.0		17.60	**105.0**
	87.5	213.72	0.69	284	53	79	83	1.9	4.0		17.60	**104.9**
	90	215.49										**102.5**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - Partculate & Metals
Date:	September 19, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.992	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	3.768	m^3
AVGERGE ISOKINETICITY	102.6	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.6	°C
AVERAGE GAS MOISTURE BY VOLUME	17.5	%
AVERAGE GAS VELOCITY	18.69	m/s
BAROMETRIC PRESSURE (Station)	100.610	Kpa
STATIC PRESSURE	-2.928	Kpa
ABSOLUTE GAS PRESSURE	97.681	Kpa
OXYGEN CONCENTRATION	8.17	%
CARBON DIOXIDE CONCENTRATION	10.73	%
CARBON MONOXIDE CONCENTRATION	5.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.62	m^3/s
DRY REF GAS FLOWRATE	15.74	Rm^3/s
DRY ADJ GAS FLOWRATE	20.24	Rm^3/s
WET REF GAS FLOWRATE	19.10	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	3.6	mg
	-FILTER	0.2	mg
	-TOTAL	3.8	mg
DRY REF GAS VOLUME SAMPLED		3.768	m^3
PARTICULATE CONC. - ACTUAL		0.575	mg/m^3
PARTICULATE CONC. - DRY REF		1.009	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.784	mg/m^3
PARTICULATE CONC. - WET REF		0.832	mg/m^3
PARTICULATE EMISSION RATE		0.015878	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 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	September 19, 2023	**Operator:**	BP/TC

Pitot Factor	0.848	**Filter (mg)**	0.2		
DGMCF	0.992	**Probe (mg)**	3.6		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	562.8		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	26.2		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.39 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.17
CO2%	10.73
COppm	5.7

Measured H2O
17.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	15.85	0.88	285	68	75	75	2.3	4.0		19.86	
	2.5	17.87	0.87	289	64	75	75	2.3	4.0		19.80	**104.4**
	5	19.84	0.89	289	63	75	75	2.2	3.9		20.03	**102.7**
2	7.5	21.83	0.93	288	57	75	75	2.3	4.0		20.46	**102.5**
	10	23.86	0.92	288	55	75	76	2.4	4.0		20.35	**102.2**
	12.5	25.88	0.9	289	55	75	77	2.4	4.0		20.14	**102.2**
3	15	27.88	0.87	288	55	75	78	2.3	4.0		19.79	**102.3**
	17.5	29.85	0.9	288	55	76	78	2.2	4.0		20.13	**102.3**
	20	31.86	0.9	288	56	76	79	2.3	4.0		20.13	**102.5**
4	22.5	33.87	0.86	289	56	76	79	2.3	4.0		19.69	**102.4**
	25	35.83	0.87	289	56	77	80	2.2	4.0		19.80	**102.3**
	27.5	37.80	0.86	290	56	77	80	2.2	4.0		19.70	**102.0**
5	30	39.78	0.77	290	57	77	81	2.2	4.0		18.64	**103.1**
	32.5	41.65	0.76	290	56	77	81	2	3.9		18.52	**102.9**
	35	43.51	0.75	290	56	78	81	2	3.9		18.40	**102.9**
6	37.5	45.35	0.64	289	57	78	82	2	3.9		16.98	**102.4**
	40	47.07	0.62	288	57	78	82	1.7	3.5		16.71	**103.5**
	42.5	48.78	0.62	288	57	78	82	1.7	3.4		16.71	**104.4**
7	45	50.47	0.71	288	57	78	82	1.7	3.4		17.88	**103.1**
	47.5	52.19	0.7	288	57	79	82	1.75	3.5		17.75	**98.1**
	50	53.90	0.68	288	57	79	83	1.8	3.5		17.50	**98.1**
8	52.5	55.63	0.74	288	57	80	84	2	3.5		18.25	**100.6**
	55	57.44	0.77	288	57	79	83	2.1	3.5		18.62	**100.8**
	57.5	59.34	0.77	290	56	80	84	2.05	3.5		18.64	**104.0**
9	60	61.20	0.82	290	56	80	83	2.3	4.0		19.24	**101.7**
	62.5	63.17	0.82	290	56	80	84	2.25	4.0		19.24	**104.5**
	65	65.16	0.85	291	56	80	84	2.3	4.0		19.60	**105.5**
10	67.5	67.16	0.85	291	60	80	84	2.3	4.0		19.60	**104.2**
	70	69.16	0.83	282	56	80	84	2.3	4.0		19.25	**104.2**
	72.5	71.13	0.81	292	57	80	84	2.2	4.0		19.15	**103.3**
11	75	73.08	0.75	292	57	81	84	2.2	4.0		18.42	**104.1**
	77.5	74.94	0.72	288	57	81	84	2	4.0		18.00	**103.1**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	September 19, 2023	**Operator:**	BP/TC

Pitot Factor	0.848	**Filter (mg)**	0.2		
DGMCF	0.992	**Probe (mg)**	3.6		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	562.8		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	26.2		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.39 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.17
CO2%	10.73
COppm	5.7

Measured H2O
17.5 %

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 %
	80	76.77	0.75	288	57	81	84	2	4.0		18.37	**103.2**
12	82.5	78.60	0.46	287	57	81	85	2	4.0		14.38	**101.1**
	85	80.11	0.44	286	58	81	84	1.3	3.0		14.05	**106.4**
	87.5	81.54	0.41	286	58	81	84	1.2	3.0		13.57	**102.9**
	90	82.96								0.39		**105.8**
1	0	83.35	0.8	285	68	81	81	2.3	4.0		18.94	
	2.5	85.27	0.83	288	57	81	82	2.1	4.0		19.33	**102.9**
	5	87.23	0.87	288	53	81	82	2.2	4.0		19.79	**103.2**
2	7.5	89.68	0.86	289	51	82	81	2.2	4.0		19.69	**126.0**
	10	91.13	0.89	289	50	83	83	2.2	4.0		20.03	**75.1**
	12.5	93.12	0.85	289	50	87	84	2.3	4.0		19.57	**101.0**
3	15	95.13	0.88	289	50	89	84	2.2	4.0		19.92	**103.9**
	17.5	96.72	0.92	289	50	89	85	2.5	4.0		20.36	**80.6**
	20	99.20	0.9	290	50	89	85	2.3	4.0		20.15	**123.0**
4	22.5	101.22	0.9	290	50	88	85	2.3	4.0		20.15	**101.3**
	25	103.23	0.79	291	50	88	86	2.3	4.0		18.89	**100.9**
	27.5	105.22	0.79	291	50	85	87	2.3	4.0		18.89	**106.6**
5	30	107.19	0.76	290	50	94	87	2.2	4.0		18.52	**105.7**
	32.5	109.14	0.74	291	50	95	87	2.2	4.0		18.29	**105.7**
	35	111.16	0.73	290	50	90	87	2.1	4.0		18.15	**110.9**
6	37.5	112.93	0.66	305	50	71	87	2	4.0		17.43	**98.2**
	40	114.74	0.68	290	50	67	87	1.9	4.0		17.52	**108.6**
	42.5	116.53	0.68	290	48	69	87	1.9	4.0		17.52	**105.1**
7	45	118.32	0.77	290	48	70	87	1.9	4.0		18.64	**104.9**
	47.5	120.19	0.75	290	47	70	87	1.9	4.0		18.40	**102.9**
	50	121.87	0.76	290	47	75	87	2	4.0		18.52	**93.6**
8	52.5	123.69	0.78	290	47	80	87	2	4.0		18.76	**100.3**
	55	125.54	0.78	290	47	82	87	2.1	4.0		18.76	**100.2**
	57.5	127.40	0.79	290	47	84	87	2.1	4.0		18.88	**100.6**
9	60	129.26	0.8	290	48	83	87	2.1	4.0		19.00	**99.8**
	62.5	131.12	0.81	290	47	83	87	2.1	4.0		19.12	**99.2**
	65	133.04	0.82	291	48	84	87	2.1	4.0		19.25	**101.8**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	September 19, 2023	**Operator:**	BP/TC

Pitot Factor	0.848	**Filter (mg)**	0.2		
DGMCF	0.992	**Probe (mg)**	3.6		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	562.8		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	26.2		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.39 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.17
CO2%	10.73
COppm	5.7

Measured H2O
17.5 %

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 %
10	67.5	134.86	0.83	290	48	84	87	2.1	4.0		19.35	**95.9**
	70	136.74	0.82	290	48	85	87	2.1	4.0		19.24	**98.4**
	72.5	138.63	0.81	290	48	84	87	2.1	4.0		19.12	**99.4**
11	75	140.54	0.78	285	48	84	88	2.1	4.0		18.70	**101.2**
	77.5	142.40	0.8	285	48	84	88	2.1	4.0		18.94	**100.0**
	80	144.28	0.79	285	48	84	88	2.1	4.0		18.82	**99.8**
12	82.5	146.16	0.67	280	48	84	88	2.1	4.0		17.27	**100.4**
	85	148.04	0.66	280	48	84	88	2.1	4.0		17.14	**108.7**
	87.5	149.90	0.68	280	48	84	88	1.9	4.0		17.40	**108.3**
	90	151.78										**107.8**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - Particulate & Metals
Date:	September 19, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.049	
NOZZLE DIAMETER	6.35	mm
DRY REF GAS VOLUME SAMPLED	3.694	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	141.1	°C
AVERAGE GAS MOISTURE BY VOLUME	17.0	%
AVERAGE GAS VELOCITY	18.52	m/s
BAROMETRIC PRESSURE (Station)	100.643	Kpa
STATIC PRESSURE	-2.928	Kpa
ABSOLUTE GAS PRESSURE	97.715	Kpa
OXYGEN CONCENTRATION	8.32	%
CARBON DIOXIDE CONCENTRATION	10.50	%
CARBON MONOXIDE CONCENTRATION	6.6	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.37	m^3/s
DRY REF GAS FLOWRATE	15.76	Rm^3/s
DRY ADJ GAS FLOWRATE	20.03	Rm^3/s
WET REF GAS FLOWRATE	19.00	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.9	mg
	-FILTER	0.8	mg
	-TOTAL	2.7	mg
DRY REF GAS VOLUME SAMPLED		3.694	m^3
PARTICULATE CONC. - ACTUAL		0.421	mg/m^3
PARTICULATE CONC. - DRY REF		0.731	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.575	mg/m^3
PARTICULATE CONC. - WET REF		0.606	mg/m^3
PARTICULATE EMISSION RATE		0.011521	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	September 19, 2023	**Operator:**	0

Pitot Factor	0.843	**Filter (mg)**	0.8		
DGMCF	1.049	**Probe (mg)**	1.9		
Barometric Pressure	29.72 "Hg	**CWTR (g)**	530.2		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	27		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.47 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.32
CO2%	10.50
COppm	6.6

Measured H2O
17.0 %

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	49.16	0.98	284	53	74	74	2.15	4.5		20.81	
	2.5	51.05	1	287	51	75	76	2.3	4.0		21.06	**98.7**
	5	52.96	1.05	288	49	75	76	2.4	4.0		21.59	**98.7**
2	7.5	54.99	1.05	289	49	75	76	2.4	4.0		21.61	**102.5**
	10	56.99	1.05	289	48	75	77	2.4	4.0		21.61	**101.0**
	12.5	59.03	1	290	48	76	77	2.3	4.0		21.10	**103.0**
3	15	61.00	0.96	289	49	76	77	2.25	4.0		20.66	**101.8**
	17.5	62.94	0.88	289	50	76	78	2	4.0		19.78	**102.3**
	20	64.79	0.9	288	51	76	79	2	4.0		19.99	**101.7**
4	22.5	66.61	0.82	288	52	76	79	1.95	4.0		19.08	**98.8**
	25	68.41	0.82	287	53	76	80	1.95	4.0		19.07	**102.3**
	27.5	70.18	0.83	287	54	77	81	2	4.0		19.19	**100.5**
5	30	71.99	0.72	287	54	77	81	1.7	4.0		17.87	**101.9**
	32.5	73.71	0.74	286	55	77	82	1.8	4.0		18.10	**103.9**
	35	75.44	0.74	286	56	77	82	1.75	4.0		18.10	**103.0**
6	37.5	77.16	0.64	286	56	78	83	1.55	3.5		16.84	**102.4**
	40	78.79	1.1	286	57	78	83	2.4	4.0		22.07	**104.1**
	42.5	80.77	0.65	285	57	78	84	1.6	4.0		16.96	**96.6**
7	45	82.42	0.75	286	57	78	84	1.7	4.0		18.23	**104.4**
	47.5	84.13	0.74	286	58	79	84	1.65	3.5		18.10	**100.8**
	50	85.80	0.74	286	58	79	85	1.65	3.5		18.10	**99.0**
8	52.5	87.47	0.75	286	58	79	85	1.7	3.5		18.23	**98.9**
	55	89.18	0.74	286	57	80	85	1.65	3.5		18.10	**100.6**
	57.5	90.88	0.74	286	58	80	85	1.65	3.5		18.10	**100.6**
9	60	92.55	0.76	286	57	80	86	1.7	3.5		18.35	**98.8**
	62.5	94.27	0.76	287	58	80	86	1.7	3.5		18.36	**100.3**
	65	95.97	0.74	286	58	81	86	1.65	3.5		18.10	**99.2**
10	67.5	97.67	0.73	286	58	81	86	1.65	3.5		17.98	**100.4**
	70	99.34	0.75	285	58	81	86	1.7	3.5		18.21	**99.3**
	72.5	101.05	0.78	285	58	81	86	1.75	4.0		18.57	**100.3**
11	75	102.75	0.66	286	58	81	86	1.5	4.0		17.10	**97.7**
	77.5	104.35	0.66	287	58	81	87	1.5	4.0		17.11	**100.0**

ORTECH Environmental

Plant: Covanta DYEC
Test No.: 3 - Particulate & Metals
Date: September 19, 2023

Plant Location: Courtice, ON
Test Location: APC Outlet No. 1
Operator: 0

Pitot Factor	0.843	**Filter (mg)**	0.8		
DGMCF	1.049	**Probe (mg)**	1.9		
Barometric Pressure	29.72 "Hg	**CWTR (g)**	530.2		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	27		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.47 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.32
CO2%	10.50
COppm	6.6

Measured H2O
17.0 %

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 %
10	67.5	160.32	0.81	286	50	84	89	2	4.0		18.94	**103.7**
	70	162.17	0.84	287	50	85	89	1.9	4.0		19.30	**103.9**
	72.5	164.02	0.85	287	50	85	89	1.9	4.0		19.42	**102.0**
11	75	165.83	0.72	287	51	85	89	1.85	4.0		17.87	**99.2**
	77.5	167.57	0.74	286	51	85	89	1.7	4.0		18.10	**103.6**
	80	169.33	0.74	286	51	85	89	1.75	4.0		18.10	**103.3**
12	82.5	171.06	0.57	286	51	85	89	1.65	4.0		15.89	**101.5**
	85	172.63	0.55	286	51	85	89	1.35	4.0		15.61	**105.0**
	87.5	174.14	0.54	286	52	85	89	1.2	3.9		15.46	**102.7**
	90	175.59										**99.5**

APPENDIX 23

Particle Size Distribution Test Emission Calculations
(12 pages)

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	September 20, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 1

Project No.: 22235
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.963
Pitot Factor	0.844
Barometric Pressure (" Hg)	29.91
Static Pressure ("H_2O)	-10.20
Oxygen Content (%)	8.63
Carbon Dioxide Content (%)	10.48
Carbon Monoxide Content (PPM)	8.3
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.8 l/min*
Cyclone Qs_{actual}	0.59 ft^3/min	16.7 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.5 Rft^3*	1.174 Rm^3*
Average Cyclone I Cut Diameter		10.26 µm
Average Cyclone IV Cut Diameter		2.34 µm
Average Isokineticity		105.7 %
Stack Gas Physical Parameters		
B_{ws}	16.3 % v/v	
Average m	220.7 (dimensionless)	
M_d	30.02 lbs/lbs mole	
M_w	28.06 lbs/lbs mole	
Average T_s	286 °F	141 °C
Average U_s	54.0 ft/s	16.5 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	51634 ACFM	24.4 m^3/s
Wet Reference Q_s	36212 SCFM*	17.1 Rm^3/s*
Dry Reference Q_s	30303 SCFM*	14.3 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.70 mg/Rm^3*	0.0244 g/s
Total Part. (b)	4.60 mg/Rm^3*	0.066 g/s
PM_{10} Part. (b)	4.26 mg/Rm^3*	0.061 g/s
$PM_{2.5}$ Part. (b)	3.92 mg/Rm^3*	0.056 g/s
Cond. Part.	2.90 mg/Rm^3*	0.041 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	527.0	640.7	757.4	984.8	
final volume or weight (ml or mg)	688.0	640.7	756.8	992.8	
gain in volume or weight (ml or mg)	161.0	0.0	-0.6	8.0	0.0
				TOTAL	168.4

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.4	0.4	<0.4	<0.8	3.4

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: September 20, 2023	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22235
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	10.2	34.87	0.70	0.35	286	64	62	0.38	3.5	57.5	10.01	2.27	102.4
	2	10.2	10.1	38.56	0.67	0.35	286	64	62	0.38	3.5	56.3	10.18	2.34	102.2
	3	20.3	10.2	42.12	0.67	0.35	286	65	63	0.38	3.5	56.3	9.81	2.19	107.7
	4	30.5	10.0	45.90	0.62	0.35	287	67	64	0.38	3.5	54.2	10.25	2.37	105.3
	5	40.5	9.3	49.40	0.58	0.35	287	69	65	0.38	3.5	52.4	9.98	2.26	113.1
	6	49.8	9.3	52.81	0.57	0.35	288	70	66	0.38	3.5	52.0	10.20	2.35	110.7
		59.1		56.10											
1	1	0.00	11.0	56.10	0.70	0.35	287	70	66	0.38	3.5	57.6	10.21	2.35	99.6
	2	11.0	10.9	59.99	0.68	0.35	287	71	67	0.38	3.5	56.8	10.36	2.41	99.0
	3	21.9	10.6	63.79	0.64	0.35	286	72	68	0.38	3.5	55.0	10.39	2.42	101.5
	4	32.5	10.0	67.46	0.56	0.35	286	72	69	0.38	3.5	51.5	10.36	2.41	109.1
	5	42.5	9.3	70.94	0.53	0.35	285	72	69	0.38	3.5	50.0	10.34	2.40	112.2
	6	51.8	9.1	74.20	0.50	0.35	284	74	70	0.38	3.5	48.6	11.09	2.71	104.7
		60.9		77.10											
Averages					**0.62**		**286**	**67**		**0.38**		**54.0**	**10.26**	**2.34**	**105.7**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	September 20, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 1

Project No.: 22235
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.963
Pitot Factor	0.844
Barometric Pressure (" Hg)	29.89
Static Pressure ("H_2O)	-10.20
Oxygen Content (%)	8.18
Carbon Dioxide Content (%)	10.83
Carbon Monoxide Content (PPM)	6.7
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.8 l/min*
Cyclone Qs_{actual}	0.59 ft^3/min	16.7 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.5 Rft^3*	1.175 Rm^3*
Average Cyclone I Cut Diameter		10.29 µm
Average Cyclone IV Cut Diameter		2.39 µm
Average Isokineticity		96.1 %
Stack Gas Physical Parameters		
B_{ws}	15.8 % v/v	
Average m	222.1 (dimensionless)	
M_d	30.06 lbs/lbs mole	
M_w	28.15 lbs/lbs mole	
Average T_s	291 °F	144 °C
Average U_s	59.0 ft/s	18.0 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	56424 ACFM	26.6 m^3/s
Wet Reference Q_s	39277 SCFM*	18.5 Rm^3/s*
Dry Reference Q_s	33053 SCFM*	15.6 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.68 mg/Rm^3*	0.0106 g/s
Total Part. (b)	3.57 mg/Rm^3*	0.056 g/s
PM_{10} Part. (b)	3.23 mg/Rm^3*	0.050 g/s
$PM_{2.5}$ Part. (b)	3.15 mg/Rm^3*	0.049 g/s
Cond. Part.	2.89 mg/Rm^3*	0.045 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)	475.8	659.7	778.0	917.8	
final volume or weight (ml or mg)	633.5	660.2	774.0	926.4	
gain in volume or weight (ml or mg)	157.7	0.5	-4.0	8.6	0.0
				TOTAL	162.8

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.4	0.1	0.1	0.2	3.4

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: September 20, 2023	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 22235
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	10.7	77.56	0.85	0.35	289	72	71	0.38	3.0	63.5	10.14	2.32	91.6
	2	10.7	10.4	81.42	0.79	0.35	291	73	71	0.38	3.0	61.3	10.26	2.37	93.6
	3	21.1	10.4	85.14	0.79	0.35	291	74	72	0.38	3.0	61.3	10.24	2.36	93.9
	4	31.5	10.0	88.88	0.77	0.35	292	76	73	0.38	3.0	60.5	10.25	2.37	95.0
	5	41.5	9.7	92.48	0.65	0.35	292	76	73	0.38	3.0	55.6	10.17	2.34	104.5
	6	51.2	9.6	96.00	0.61	0.35	291	77	74	0.38	3.0	53.8	10.51	2.47	103.0
		60.8		99.34											
1	1	0.00	10.7	99.34	0.84	0.35	288	77	75	0.38	3.0	63.0	10.93	2.65	82.8
	2	10.7	10.5	102.84	0.84	0.35	291	77	75	0.38	3.0	63.2	10.19	2.35	91.6
	3	21.2	10.2	106.65	0.81	0.35	293	79	76	0.38	3.0	62.1	10.31	2.39	92.0
	4	31.3	9.5	110.30	0.73	0.35	293	79	76	0.38	3.0	59.0	10.13	2.32	99.3
	5	40.9	9.3	113.80	0.59	0.35	293	79	76	0.38	3.0	53.0	10.14	2.33	110.3
	6	50.1	9.0	117.20	0.57	0.35	292	80	76	0.38	3.0	52.1	10.15	2.33	112.0
		59.2		120.50											
Averages					**0.74**		**291**	**75**		**0.38**		**59.0**	**10.29**	**2.39**	**96.1**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	September 20, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 1

Project No.: 22235
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.963
Pitot Factor	0.844
Barometric Pressure (" Hg)	29.88
Static Pressure ("H_2O)	-10.20
Oxygen Content (%)	8.10
Carbon Dioxide Content (%)	10.86
Carbon Monoxide Content (PPM)	7.6
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.8 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	17.1 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.5 Rft^3*	1.175 Rm^3*
Average Cyclone I Cut Diameter		10.10 µm
Average Cyclone IV Cut Diameter		2.32 µm
Average Isokineticity		99.3 %
Stack Gas Physical Parameters		
B_{ws}	17.7 % v/v	
Average m	220.2 (dimensionless)	
M_d	30.06 lbs/lbs mole	
M_w	27.93 lbs/lbs mole	
Average T_s	290 °F	143 °C
Average U_s	58.4 ft/s	17.8 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	55842 ACFM	26.4 m^3/s
Wet Reference Q_s	38953 SCFM*	18.4 Rm^3/s*
Dry Reference Q_s	32055 SCFM*	15.1 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.53 mg/Rm^3*	0.0232 g/s
Total Part. (b)	5.36 mg/Rm^3*	0.081 g/s
PM_{10} Part. (b)	5.02 mg/Rm^3*	0.076 g/s
$PM_{2.5}$ Part. (b)	4.77 mg/Rm^3*	0.072 g/s
Cond. Part.	3.83 mg/Rm^3*	0.058 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	527.0	640.5	756.8	992.8	
final volume or weight (ml or mg)	705.0	640.5	756.1	1001.5	
gain in volume or weight (ml or mg)	178.0	0.0	-0.7	8.7	0.0
				TOTAL	**186.0**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.4	0.3	0.3	<0.8	4.5

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: September 20, 2023	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22235
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	10.7	20.65	0.78	0.35	293	77	78	0.38	4.0	61.2	9.82	2.21	99.6
	2	10.7	10.7	24.65	0.75	0.35	288	77	77	0.38	4.0	59.8	10.26	2.38	95.0
	3	21.4	10.5	28.40	0.72	0.35	286	79	77	0.38	4.0	58.5	10.14	2.33	98.4
	4	31.9	10.0	32.15	0.70	0.35	286	79	77	0.38	4.0	57.7	10.24	2.37	98.4
	5	41.9	9.0	35.66	0.59	0.35	286	79	77	0.38	4.0	53.0	10.37	2.42	105.3
	6	50.9	8.8	38.76	0.56	0.35	288	80	78	0.38	4.0	51.7	10.34	2.41	108.8
		59.7		41.83											
1	1	0.00	10.8	41.83	0.85	0.35	290	81	78	0.38	4.0	63.8	10.14	2.33	91.0
	2	10.8	10.4	45.69	0.80	0.35	291	81	78	0.38	4.0	61.9	10.08	2.31	94.6
	3	21.1	10.4	49.44	0.80	0.35	292	81	78	0.38	4.0	61.9	9.88	2.23	97.4
	4	31.5	10.2	53.30	0.78	0.35	292	81	79	0.38	4.0	61.2	9.91	2.24	98.3
	5	41.8	9.4	57.10	0.66	0.35	292	81	79	0.38	4.0	56.3	9.97	2.26	105.9
	6	51.2	9.1	60.56	0.61	0.35	290	82	79	0.38	4.0	54.0	10.02	2.28	109.1
		60.3		63.89											
Averages					**0.72**		**290**	**79**		**0.38**		**58.4**	**10.10**	**2.32**	**99.3**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	September 21, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 2

Project No.: 22235
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.963
Pitot Factor	0.844
Barometric Pressure (" Hg)	30.04
Static Pressure ("H_2O)	-11.10
Oxygen Content (%)	8.44
Carbon Dioxide Content (%)	10.63
Carbon Monoxide Content (PPM)	12.8
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}	42.1 Rft^3*	1.194 Rm^3*
Average Cyclone I Cut Diameter		10.02 µm
Average Cyclone IV Cut Diameter		2.27 µm
Average Isokineticity		104.3 %
Stack Gas Physical Parameters		
B_{ws}	17.6 % v/v	
Average m	220.2 (dimensionless)	
M_d	30.04 lbs/lbs mole	
M_w	27.92 lbs/lbs mole	
Average T_s	289 °F	143 °C
Average U_s	56.1 ft/s	17.1 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	53597 ACFM	25.3 m^3/s
Wet Reference Q_s	37549 SCFM*	17.7 Rm^3/s*
Dry Reference Q_s	30942 SCFM*	14.6 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.51 mg/Rm^3*	0.0220 g/s
Total Part. (b)	6.28 mg/Rm^3*	0.092 g/s
PM_{10} Part. (b)	6.12 mg/Rm^3*	0.089 g/s
$PM_{2.5}$ Part. (b)	5.78 mg/Rm^3*	0.084 g/s
Cond. Part.	4.78 mg/Rm^3*	0.070 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)	476.0	654.0	774.0	926.4	
final volume or weight (ml or mg)	656.0	654.0	773.5	934.4	
gain in volume or weight (ml or mg)	180.0	0.0	-0.5	8.0	0.0
				TOTAL	187.5

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.2	0.4	<0.4	<0.8	5.7

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: September 21, 2023	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22235
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.5	64.04	0.68	0.35	287	69	67	0.38	3.0	56.8	9.83	2.20	106.1
	2	10.5	10.8	67.89	0.69	0.35	288	69	68	0.38	3.0	57.3	9.88	2.22	104.6
	3	21.3	10.4	71.80	0.72	0.35	288	70	68	0.38	3.0	58.5	10.01	2.27	100.6
	4	31.7	10.2	75.52	0.70	0.35	289	72	68	0.38	3.0	57.7	9.84	2.21	104.6
	5	41.9	9.7	79.25	0.65	0.35	290	72	68	0.38	3.0	55.7	10.28	2.38	102.2
	6	51.5	9.0	82.59	0.58	0.35	290	74	70	0.38	3.0	52.6	9.97	2.26	112.9
		60.5		85.85											
2	1	0.00	10.9	85.85	0.73	0.35	288	74	71	0.38	3.0	58.9	10.22	2.36	97.1
	2	10.9	10.8	89.65	0.71	0.35	290	75	72	0.38	3.0	58.2	9.83	2.21	104.1
	3	21.6	9.9	93.63	0.68	0.35	289	76	73	0.38	3.0	56.9	9.94	2.25	104.6
	4	31.6	9.6	97.25	0.66	0.35	289	77	74	0.38	3.0	56.1	10.17	2.34	102.8
	5	41.2	9.4	100.65	0.61	0.35	288	78	74	0.38	3.0	53.9	10.11	2.32	107.7
	6	50.6	8.9	104.01	0.53	0.35	288	78	74	0.38	3.0	50.2	10.13	2.32	115.3
		59.5		107.17											
Averages					**0.66**		**289**	**72**		**0.38**		**56.1**	**10.02**	**2.27**	**104.3**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	September 21, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 2

Project No.: 22235
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.963
Pitot Factor	0.844
Barometric Pressure (" Hg)	30.05
Static Pressure ("H_2O)	-11.10
Oxygen Content (%)	8.54
Carbon Dioxide Content (%)	10.50
Carbon Monoxide Content (PPM)	11.7
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.9 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	16.9 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.1 Rft^3*	1.192 Rm^3*
Average Cyclone I Cut Diameter		10.16 µm
Average Cyclone IV Cut Diameter		2.34 µm
Average Isokineticity		95.2 %
Stack Gas Physical Parameters		
B_{ws}	16.2 % v/v	
Average m	220.9 (dimensionless)	
M_d	30.02 lbs/lbs mole	
M_w	28.07 lbs/lbs mole	
Average T_s	288 °F	142 °C
Average U_s	60.5 ft/s	18.4 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	57827 ACFM	27.3 m^3/s
Wet Reference Q_s	40580 SCFM*	19.2 Rm^3/s*
Dry Reference Q_s	33990 SCFM*	16.0 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.51 mg/Rm^3*	0.0242 g/s
Total Part. (b)	4.78 mg/Rm^3*	0.077 g/s
PM_{10} Part. (b)	4.45 mg/Rm^3*	0.071 g/s
$PM_{2.5}$ Part. (b)	4.28 mg/Rm^3*	0.069 g/s
Cond. Part.	3.27 mg/Rm^3*	0.052 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	527.5	640.5	756.1	1001.5	
final volume or weight (ml or mg)	689.5	640.5	754.1	1011.5	
gain in volume or weight (ml or mg)	162.0	0.0	-2.0	10.0	0.0
				TOTAL	170.0

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.4	0.2	<0.4	<0.8	3.9

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: September 21, 2023	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 22235
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.5	7.39	0.81	0.35	288	78	76	0.38	3.0	61.9	10.43	2.44	90.0
	2	10.5	10.4	11.06	0.86	0.35	287	77	75	0.38	3.0	63.7	10.08	2.30	91.6
	3	20.9	10.1	14.85	0.79	0.35	287	78	76	0.38	3.0	61.1	10.54	2.48	89.7
	4	31.0	10.0	18.34	0.78	0.35	288	79	76	0.38	3.0	60.7	10.09	2.30	96.1
	5	41.0	9.6	22.00	0.72	0.35	289	80	77	0.38	3.0	58.4	10.10	2.31	100.0
	6	50.6	9.0	25.52	0.59	0.35	289	80	77	0.38	3.0	52.9	9.89	2.22	113.8
		59.6		28.90											
2	1	0.00	10.1	28.90	0.81	0.35	286	81	77	0.38	3.0	61.8	10.44	2.44	89.8
	2	10.1	10.2	32.45	0.85	0.35	286	81	79	0.38	3.0	63.3	9.79	2.18	95.9
	3	20.4	10.4	36.37	0.84	0.35	286	82	79	0.38	3.0	63.0	10.30	2.39	89.8
	4	30.8	10.3	40.10	0.77	0.35	287	82	79	0.38	3.0	60.3	10.46	2.45	91.8
	5	41.1	9.9	43.70	0.77	0.35	289	83	80	0.38	3.0	60.4	9.98	2.26	98.4
	6	51.0	9.4	47.42	0.72	0.35	290	83	80	0.38	3.0	58.4	9.85	2.21	103.8
		60.4		51.00											
Averages					**0.78**		**288**	**79**		**0.38**		**60.5**	**10.16**	**2.34**	**95.2**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	September 21, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 2

Project No.: 22235
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.963
Pitot Factor	0.844
Barometric Pressure (" Hg)	30.02
Static Pressure ("H_2O)	-11.10
Oxygen Content (%)	8.56
Carbon Dioxide Content (%)	10.39
Carbon Monoxide Content (PPM)	18.7
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.9 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	16.9 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.9 Rft^3*	1.186 Rm^3*
Average Cyclone I Cut Diameter		10.10 µm
Average Cyclone IV Cut Diameter		2.30 µm
Average Isokineticity		103.8 %
Stack Gas Physical Parameters		
B_{ws}	17.1 % v/v	
Average m	219.7 (dimensionless)	
M_d	30.00 lbs/lbs mole	
M_w	27.95 lbs/lbs mole	
Average T_s	285 °F	141 °C
Average U_s	55.8 ft/s	17.0 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	53298 ACFM	25.2 m^3/s
Wet Reference Q_s	37498 SCFM*	17.7 Rm^3/s*
Dry Reference Q_s	31068 SCFM*	14.7 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.10 mg/Rm^3*	0.0161 g/s
Total Part. (b)	4.39 mg/Rm^3*	0.064 g/s
PM_{10} Part. (b)	4.13 mg/Rm^3*	0.061 g/s
$PM_{2.5}$ Part. (b)	4.05 mg/Rm^3*	0.059 g/s
Cond. Part.	3.29 mg/Rm^3*	0.048 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)	476.0	654.0	773.5	952.0	
final volume or weight (ml or mg)	647.5	654.0	771.0	963.5	
gain in volume or weight (ml or mg)	171.5	0.0	-2.5	11.5	0.0
				TOTAL	180.5

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.3	0.1	0.1	<0.8	3.9

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: September 21, 2023	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22235
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.2	51.19	0.73	0.35	283	82	80	0.38	4.0	58.7	9.82	2.20	102.2
	2	10.2	10.5	55.05	0.74	0.35	288	80	79	0.38	4.0	59.3	9.97	2.26	99.9
	3	20.8	10.1	58.94	0.67	0.35	284	81	79	0.38	4.0	56.3	9.82	2.20	106.9
	4	30.9	10.0	62.75	0.64	0.35	287	82	80	0.38	4.0	55.1	10.32	2.40	102.3
	5	40.9	9.6	66.29	0.57	0.35	281	83	80	0.38	4.0	51.8	10.06	2.29	111.7
	6	50.6	8.7	69.81	0.54	0.35	286	83	80	0.38	4.0	50.6	10.25	2.37	112.4
		59.3		72.92											
2	1	0.00	10.2	72.92	0.72	0.35	285	83	80	0.38	4.0	58.4	10.14	2.32	98.7
	2	10.2	10.5	76.62	0.75	0.35	286	84	81	0.38	4.0	59.6	10.21	2.35	95.8
	3	20.7	10.4	80.38	0.72	0.35	286	84	82	0.38	4.0	58.4	10.19	2.34	98.1
	4	31.1	10.0	84.13	0.66	0.35	287	84	82	0.38	4.0	56.0	10.04	2.28	104.8
	5	41.1	10.0	87.80	0.59	0.35	285	85	82	0.38	4.0	52.9	10.18	2.34	108.4
	6	51.1	9.6	91.40	0.57	0.35	282	85	82	0.38	4.0	51.9	10.24	2.36	109.1
		60.7		94.85											
Averages					**0.66**		**285**	**82**		**0.38**		**55.8**	**10.10**	**2.30**	**103.8**

APPENDIX 24

Acid Gases Test Emission Calculations
(12 pages)

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	1 - M26A
Date:	September 19,, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.049	
NOZZLE DIAMETER	6.35	mm
DRY REF GAS VOLUME SAMPLED	1.237	m^3
AVGERGE ISOKINETICITY	101.3	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.1	°C
AVERAGE GAS MOISTURE BY VOLUME	18.0	%
AVERAGE GAS VELOCITY	18.83	m/s
BAROMETRIC PRESSURE (Station)	100.576	Kpa
STATIC PRESSURE	-2.928	Kpa
ABSOLUTE GAS PRESSURE	97.647	Kpa
OXYGEN CONCENTRATION	8.5	%
CARBON DIOXIDE CONCENTRATION	10.62	%
CARBON MONOXIDE CONCENTRATION	5.8	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.82	m^3/s
DRY REF GAS FLOWRATE	15.79	Rm^3/s
DRY ADJ GAS FLOWRATE	19.77	Rm^3/s
WET REF GAS FLOWRATE	19.26	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.237	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No. 1
Date:	September 19,, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.049	**Probe (mg)**	0		
Barometric Pressure	29.7 "Hg	**CWTR (g)**	185.7		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	13.7		
Nozzle	0.2501 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%	8.5
CO2%	10.62
COppm	5.8

Measured H2O
18.0 %

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 %
4	0	21.37	0.73	282	61	64	65	1.4	3.0		17.97	
	5	24.42	0.76	285	48	4	65	1.5	3.0		18.37	**94.6**
	10	27.46	0.77	285	46	64	65	1.6	3.0		18.49	**98.2**
	15	30.64	0.8	286	46	65	66	1.8	3.0		18.86	**96.2**
	20	34.05	0.86	287	48	65	67	2.05	3.5		19.57	**101.2**
	25	37.67	0.84	289	50	65	69	2	3.5		19.37	**103.6**
	30	41.17	0.84	289	50	65	69	2	3.5		19.37	**101.3**
	35	44.42	0.81	290	54	66	71	2.05	4.0		19.03	**94.1**
	40	47.93	0.8	290	54	67	71	2.05	4.0		18.91	**103.2**
	45	51.41	0.8	290	54	67	72	2.05	4.0		18.91	**102.9**
	50	54.88	0.8	290	55	68	72	1.9	4.0		18.91	**102.5**
	55	58.67	0.74	290	56	68	73	1.8	4.0		18.19	**111.8**
	60	62.14										**106.3**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	2 - M26A
Date:	September 19, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.049	
NOZZLE DIAMETER	6.35	mm
DRY REF GAS VOLUME SAMPLED	1.277	m^3
AVGERGE ISOKINETICITY	103.1	%
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	142.9	°C
AVERAGE GAS MOISTURE BY VOLUME	18.4	%
AVERAGE GAS VELOCITY	19.27	m/s
BAROMETRIC PRESSURE (Station)	100.576	Kpa
STATIC PRESSURE	-2.928	Kpa
ABSOLUTE GAS PRESSURE	97.647	Kpa
OXYGEN CONCENTRATION	8.19	%
CARBON DIOXIDE CONCENTRATION	10.80	%
CARBON MONOXIDE CONCENTRATION	4.9	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.47	m^3/s
DRY REF GAS FLOWRATE	16.03	Rm^3/s
DRY ADJ GAS FLOWRATE	20.58	Rm^3/s
WET REF GAS FLOWRATE	19.66	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.277	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:	September 19, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.049	**Probe (mg)**	0		
Barometric Pressure	29.7 "Hg	**CWTR (g)**	200.9		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	11.4		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	8.19
CO2%	10.80
COppm	4.9

Measured H2O
18.4 %

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 %
4	0	62.53	0.81	285	63	69	70	2	4.0		18.98	
	5	66.13	0.83	288	46	69	71	2.05	4.0		19.25	**105.8**
	10	69.62	0.83	288	46	69	71	2.05	4.0		19.25	**101.5**
	15	73.37	0.84	290	42	69	70	1.9	4.0		19.39	**109.0**
	20	76.90	0.87	290	41	69	71	2	4.0		19.74	**102.2**
	25	80.48	0.87	291	41	69	72	2	4.0		19.75	**101.8**
	30	84.08	0.84	291	42	70	73	1.9	4.0		19.41	**102.3**
	35	87.63	0.84	291	42	70	74	1.9	4.0		19.41	**102.5**
	40	91.17	0.83	290	42	70	74	1.9	4.0		19.28	**102.1**
	45	94.70	0.8	289	43	71	75	1.85	4.0		18.91	**102.4**
	50	98.18	0.8	289	43	71	75	1.85	4.0		18.91	**102.5**
	55	101.66	0.8	288	45	71	76	1.85	4.0		18.90	**102.5**
	60	105.13										**102.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	3 - M26A
Date:	September 19, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.049	
NOZZLE DIAMETER	6.35	mm
DRY REF GAS VOLUME SAMPLED	1.249	m^3
AVGERGE ISOKINETICITY	102.4	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.5	°C
AVERAGE GAS MOISTURE BY VOLUME	17.8	%
AVERAGE GAS VELOCITY	18.79	m/s
BAROMETRIC PRESSURE (Station)	100.576	Kpa
STATIC PRESSURE	-2.928	Kpa
ABSOLUTE GAS PRESSURE	97.647	Kpa
OXYGEN CONCENTRATION	8.6	%
CARBON DIOXIDE CONCENTRATION	10.41	%
CARBON MONOXIDE CONCENTRATION	5.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.77	m^3/s
DRY REF GAS FLOWRATE	15.78	Rm^3/s
DRY ADJ GAS FLOWRATE	19.61	Rm^3/s
WET REF GAS FLOWRATE	19.20	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.249	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:	September 19, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.049	**Probe (mg)**	0		
Barometric Pressure	29.7 "Hg	**CWTR (g)**	185.1		
Static Pressure	-11.760 "H_2O	**WCBDA (g)**	13.4		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	8.6
CO2%	10.41
COppm	5.7

Measured H2O
17.8 %

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 %
4	0	5.45	0.81	288	60	72	74	1.9	4.0		19.00	
	5	9.01	0.84	289	53	72	74	1.95	4.0		19.37	**103.4**
	10	12.58	0.82	290	48	72	74	1.9	4.0		19.15	**101.9**
	15	16.13	0.79	290	47	72	75	1.85	3.5		18.79	**102.6**
	20	19.60	0.78	289	47	72	75	1.85	3.5		18.66	**102.1**
	25	23.08	0.78	289	48	73	76	1.85	3.5		18.66	**102.9**
	30	26.54	0.78	289	49	73	77	1.85	3.5		18.66	**102.2**
	35	30.01	0.79	289	50	73	78	1.85	3.5		18.78	**102.4**
	40	33.47	0.79	288	51	74	78	1.85	3.5		18.77	**101.3**
	45	36.96	0.78	288	52	74	79	1.85	3.5		18.65	**102.0**
	50	40.48	0.76	287	54	74	79	1.8	3.5		18.40	**103.5**
	55	43.92	0.78	287	57	75	79	1.85	3.5		18.64	**102.4**
	60	47.42										**102.7**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	1 - M26A
Date:	September 20, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.049	
NOZZLE DIAMETER	6.35	mm
DRY REF GAS VOLUME SAMPLED	1.166	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	139.4	°C
AVERAGE GAS MOISTURE BY VOLUME	17.2	%
AVERAGE GAS VELOCITY	17.45	m/s
BAROMETRIC PRESSURE (Station)	101.253	Kpa
STATIC PRESSURE	-2.709	Kpa
ABSOLUTE GAS PRESSURE	98.544	Kpa
OXYGEN CONCENTRATION	8.1	%
CARBON DIOXIDE CONCENTRATION	10.95	%
CARBON MONOXIDE CONCENTRATION	12.8	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.79	m^3/s
DRY REF GAS FLOWRATE	15.00	Rm^3/s
DRY ADJ GAS FLOWRATE	19.40	Rm^3/s
WET REF GAS FLOWRATE	18.13	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.166	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:	September 20, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.049	**Probe (mg)**	0		
Barometric Pressure	29.9 "Hg	**CWTR (g)**	166.5		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	12		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	8.1
CO2%	10.95
COppm	12.8

Measured H2O
17.2 %

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	76.08	0.7	277	53	61	61	1.5	3.0		17.42	
	5	79.12	0.7	282	44	61	62	1.5	3.0		17.48	**96.1**
	10	82.18	0.72	283	42	62	63	1.7	3.0		17.74	**97.0**
	15	85.43	0.72	283	42	62	64	1.7	3.0		17.74	**101.5**
	20	88.70	0.73	284	43	62	65	1.75	3.0		17.87	**102.0**
	25	92.05	0.71	284	44	62	67	1.55	3.0		17.63	**103.8**
	30	95.23	0.67	284	45	63	68	1.5	3.0		17.12	**99.7**
	35	98.35	0.67	283	46	64	69	1.55	3.0		17.11	**100.4**
	40	101.54	0.67	283	47	64	70	1.55	3.0		17.11	**102.5**
	45	104.69	0.69	283	48	65	70	1.6	3.0		17.36	**101.1**
	50	107.91	0.71	284	50	65	71	1.65	3.0		17.63	**101.7**
	55	111.16	0.68	284	51	66	72	1.55	3.0		17.25	**101.2**
	60	114.31										**100.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	2 - M26A
Date:	September 20, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.049	
NOZZLE DIAMETER	6.35	mm
DRY REF GAS VOLUME SAMPLED	1.185	m^3
AVGERGE ISOKINETICITY	101.0	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.9	°C
AVERAGE GAS MOISTURE BY VOLUME	16.6	%
AVERAGE GAS VELOCITY	17.58	m/s
BAROMETRIC PRESSURE (Station)	101.287	Kpa
STATIC PRESSURE	-2.709	Kpa
ABSOLUTE GAS PRESSURE	98.578	Kpa
OXYGEN CONCENTRATION	7.84	%
CARBON DIOXIDE CONCENTRATION	11.06	%
CARBON MONOXIDE CONCENTRATION	9.5	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.98	m^3/s
DRY REF GAS FLOWRATE	15.17	Rm^3/s
DRY ADJ GAS FLOWRATE	20.02	Rm^3/s
WET REF GAS FLOWRATE	18.20	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.185	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No. 2
Date:	September 20, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.049	**Probe (mg)**	0		
Barometric Pressure	29.91 "Hg	**CWTR (g)**	164.6		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	9		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	7.84
CO2%	11.06
COppm	9.5

Measured H2O
16.6 %

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 %
4	0	14.65	0.7	284	57	67	69	1.6	3.5		17.47	
	5	17.85	0.68	285	42	67	69	1.55	3.5		17.23	**99.8**
	10	21.03	0.68	285	41	67	69	1.55	3.5		17.23	**100.6**
	15	24.17	0.7	285	41	68	70	1.65	3.5		17.49	**99.4**
	20	27.43	0.7	285	42	68	72	1.65	3.5		17.49	**101.5**
	25	30.70	0.69	285	42	68	73	1.65	3.5		17.36	**101.6**
	30	33.93	0.76	285	43	69	74	1.8	3.5		18.22	**101.0**
	35	37.33	0.74	286	43	69	75	1.75	3.5		17.99	**101.2**
	40	40.70	0.71	287	44	70	76	1.7	4.0		17.63	**101.6**
	45	44.05	0.71	287	45	71	76	1.65	4.0		17.63	**103.0**
	50	47.34	0.71	287	46	71	77	1.65	4.0		17.63	**101.0**
	55	50.63	0.71	287	47	72	77	1.65	4.0		17.63	**100.9**
	60	53.92										**100.8**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	3 - M26A
Date:	September 20, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.049	
NOZZLE DIAMETER	6.35	mm
DRY REF GAS VOLUME SAMPLED	1.177	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	141.6	°C
AVERAGE GAS MOISTURE BY VOLUME	17.1	%
AVERAGE GAS VELOCITY	17.54	m/s
BAROMETRIC PRESSURE (Station)	101.253	Kpa
STATIC PRESSURE	-2.709	Kpa
ABSOLUTE GAS PRESSURE	98.544	Kpa
OXYGEN CONCENTRATION	7.99	%
CARBON DIOXIDE CONCENTRATION	10.88	%
CARBON MONOXIDE CONCENTRATION	12.2	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.92	m^3/s
DRY REF GAS FLOWRATE	15.01	Rm^3/s
DRY ADJ GAS FLOWRATE	19.58	Rm^3/s
WET REF GAS FLOWRATE	18.13	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.177	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:	September 20, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.049	**Probe (mg)**	0		
Barometric Pressure	29.9 "Hg	**CWTR (g)**	169.8		
Static Pressure	-10.880 "H_2O	**WCBDA (g)**	9.3		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	7.99
CO2%	10.88
COppm	12.2

Measured H2O
17.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
4	0	54.39	0.7	285	61	73	75	1.6	3.0		17.51	
	5	57.70	0.7	287	46	72	73	1.65	3.0		17.54	**102.6**
	10	60.93	0.71	287	43	72	74	1.65	3.0		17.66	**100.5**
	15	64.27	0.71	287	43	72	74	1.6	3.0		17.66	**103.1**
	20	67.54	0.7	287	44	73	76	1.6	3.0		17.54	**101.0**
	25	70.82	0.68	286	44	73	77	1.5	3.0		17.27	**101.7**
	30	74.00	0.74	286	45	74	78	1.7	3.0		18.02	**99.9**
	35	77.37	0.71	286	46	74	79	1.6	3.5		17.65	**101.3**
	40	80.67	0.71	287	47	75	80	1.6	3.5		17.66	**101.1**
	45	83.96	0.71	288	48	75	81	1.6	3.5		17.67	**100.7**
	50	87.27	0.67	288	50	76	82	1.5	3.5		17.17	**101.3**
	55	90.50	0.67	288	51	77	82	1.5	3.5		17.17	**101.6**
	60	93.76										**102.4**

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:	September 21, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.992	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	4.955	m^3
AVGERGE ISOKINETICITY	102.5	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	143.9	°C
AVERAGE GAS MOISTURE BY VOLUME	17.6	%
AVERAGE GAS VELOCITY	18.25	m/s
BAROMETRIC PRESSURE (Station)	101.761	Kpa
STATIC PRESSURE	-2.684	Kpa
ABSOLUTE GAS PRESSURE	99.077	Kpa
OXYGEN CONCENTRATION	8.1	%
CARBON DIOXIDE CONCENTRATION	10.96	%
CARBON MONOXIDE CONCENTRATION	8.4	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.97	m^3/s
DRY REF GAS FLOWRATE	15.54	Rm^3/s
DRY ADJ GAS FLOWRATE	20.09	Rm^3/s
WET REF GAS FLOWRATE	18.86	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.955	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:	September 21, 2023	**Operator:**	bp

Pitot Factor	0.848	**Filter (mg)**	0		
DGMCF	0.992	**Probe (mg)**	0		
Barometric Pressure	30.05 "Hg	**CWTR (g)**	757.8		
Static Pressure	-10.780 "H_2O	**WCBDA (g)**	18		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.35 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.1
CO2%	10.96
COppm	8.4

Measured H2O
17.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	11.32	0.86	285	63	69	69	2.1	6.5		19.49	
	5	15.05	0.85	290	64	69	69	2.1	6.5		19.44	**99.0**
2	10	18.80	0.87	291	58	69	70	2.1	7.0		19.68	**100.5**
	15	22.66	0.87	291	55	69	71	2.2	7.0		19.68	**102.2**
3	20	26.56	0.86	291	53	70	73	2.2	7.0		19.57	**103.2**
	25	30.42	0.86	292	51	71	74	2.15	7.0		19.58	**102.4**
4	30	34.25	0.82	292	51	71	75	2.15	7.0		19.12	**101.5**
	35	38.02	0.85	293	50	72	76	2	7.0		19.48	**102.2**
5	40	41.84	0.72	293	50	72	77	2.15	7.0		17.93	**101.6**
	45	45.42	0.73	293	50	73	77	1.9	6.5		18.05	**103.4**
6	50	49.04	0.65	293	50	74	78	1.9	6.5		17.03	**103.7**
	55	52.46	0.62	293	50	74	78	1.7	6.0		16.64	**103.6**
7	60	55.80	0.66	293	50	75	79	1.65	6.0		17.16	**103.5**
	65	59.23	0.69	293	50	76	79	1.75	6.0		17.55	**102.8**
8	70	62.73	0.71	293	50	76	80	1.8	6.0		17.80	**102.6**
	75	66.29	0.75	293	50	76	80	1.9	6.5		18.30	**102.8**
9	80	69.92	0.78	294	50	77	81	1.9	6.5		18.67	**102.0**
	85	73.60	0.72	294	50	77	81	2	7.0		17.94	**101.2**
10	90	77.19	0.72	293	50	77	81	1.9	6.5		17.93	**102.8**
	95	80.79	0.71	292	51	78	81	1.9	6.5		17.79	**103.0**
11	100	84.37	0.64	292	52	78	82	1.9	6.5		16.89	**103.0**
	105	87.77	0.68	286	52	78	82	1.7	6.0		17.34	**102.9**
12	110	91.30	0.58	286	52	79	82	1.8	6.0		16.01	**103.2**
	115	94.60	0.57	286	53	79	83	1.6	6.0		15.88	**104.4**
	120	97.86								0.35		**103.9**
1	0	98.21	0.81	287	61	79	81	2.1	7.5		18.94	
	5	102.01	0.84	293	50	79	81	2.1	7.5		19.36	**102.0**
2	10	105.90	0.84	293	49	79	82	2.2	8.0		19.36	**102.9**
	15	109.79	0.86	293	49	79	82	2.2	8.0		19.59	**102.9**
3	20	113.67	0.8	293	49	80	83	2.2	8.0		18.90	**101.4**
	25	117.47	0.79	292	49	80	83	2.1	7.5		18.77	**102.8**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	September 21, 2023	**Operator:**	bp

Pitot Factor	0.848	**Filter (mg)**	0		
DGMCF	0.992	**Probe (mg)**	0		
Barometric Pressure	30.05 "Hg	**CWTR (g)**	757.8		
Static Pressure	-10.780 "H_2O	**WCBDA (g)**	18		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.35 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%	8.1
CO2%	10.96
COppm	8.4

Measured H2O
17.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
4	30	121.22	0.79	292	49	80	84	2.1	7.5		18.77	**102.0**
	35	124.94	0.81	291	50	80	84	2.1	7.5		18.99	**101.1**
5	40	128.71	0.73	291	51	81	84	2.1	7.5		18.03	**101.1**
	45	132.37	0.72	292	51	81	84	1.9	7.0		17.91	**103.3**
6	50	136.01	0.68	292	49	82	88	1.9	7.0		17.41	**103.4**
	55	139.52	0.65	292	48	81	85	1.8	7.0		17.02	**102.2**
7	60	143.02	0.7	292	48	82	85	1.8	7.0		17.66	**104.5**
	65	146.57	0.71	292	48	82	85	1.9	7.0		17.79	**102.1**
8	70	150.14	0.74	292	47	82	85	1.9	7.0		18.16	**102.0**
	75	153.88	0.76	292	47	82	86	2	7.5		18.41	**104.6**
9	80	157.46	0.74	292	47	82	86	2	7.5		18.16	**98.8**
	85	161.14	0.75	292	47	82	86	2	7.5		18.28	**102.9**
10	90	164.84	0.78	291	45	83	86	2	7.5		18.63	**102.7**
	95	168.54	0.84	291	45	83	86	2.1	7.5		19.34	**100.6**
11	100	172.40	0.74	291	46	83	86	2.2	8.0		18.15	**101.2**
	105	176.10	0.73	284	47	83	86	2	7.5		17.94	**103.3**
12	110	179.85	0.85	284	46	83	87	2	7.5		19.36	**104.9**
	115	183.63	0.6	281	48	84	87	2.2	8.0		16.23	**97.9**
	120	187.11										**107.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - SVOC
Date:	September 21, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.049	
NOZZLE DIAMETER	6.35	mm
DRY REF GAS VOLUME SAMPLED	4.834	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	141.7	°C
AVERAGE GAS MOISTURE BY VOLUME	17.6	%
AVERAGE GAS VELOCITY	18.11	m/s
BAROMETRIC PRESSURE (Station)	101.659	Kpa
STATIC PRESSURE	-2.684	Kpa
ABSOLUTE GAS PRESSURE	98.975	Kpa
OXYGEN CONCENTRATION	8.07	%
CARBON DIOXIDE CONCENTRATION	10.86	%
CARBON MONOXIDE CONCENTRATION	9.2	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.77	m^3/s
DRY REF GAS FLOWRATE	15.47	Rm^3/s
DRY ADJ GAS FLOWRATE	20.05	Rm^3/s
WET REF GAS FLOWRATE	18.79	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.834	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:	September 21, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.049	**Probe (mg)**	0		
Barometric Pressure	30.02 "Hg	**CWTR (g)**	742.2		
Static Pressure	-10.780 "H_2O	**WCBDA (g)**	18.4		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.42 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%	8.07
CO2%	10.86
COppm	9.2

Measured H2O
17.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	16.42	0.86	281	72	76	78	1.8	6.5		19.34	
	5	19.82	0.91	287	57	76	77	2	7.5		19.97	**95.0**
2	10	23.42	0.91	287	55	76	77	2.1	8.0		19.97	**98.3**
	15	27.09	0.9	287	55	76	78	2.1	8.0		19.86	**100.2**
3	20	30.74	0.9	287	55	77	79	2.15	8.0		19.86	**100.1**
	25	34.49	0.86	288	56	77	80	2.05	8.0		19.43	**102.7**
4	30	38.16	0.81	288	56	78	80	1.8	8.0		18.86	**102.7**
	35	41.64	0.83	288	56	78	81	1.9	8.0		19.09	**100.2**
5	40	45.17	0.72	288	57	79	82	1.7	8.0		17.78	**100.4**
	45	48.54	0.72	289	57	79	82	1.65	8.0		17.79	**102.6**
6	50	51.84	0.63	289	58	79	83	1.45	7.0		16.64	**100.6**
	55	54.94	0.64	288	58	80	84	1.45	7.0		16.76	**100.9**
7	60	58.04	0.71	288	59	80	84	1.65	7.0		17.65	**99.8**
	65	61.31	0.71	289	58	80	85	1.7	7.0		17.67	**100.0**
8	70	64.67	0.74	289	55	81	86	1.75	7.0		18.04	**102.7**
	75	68.10	0.75	290	54	81	86	1.7	7.5		18.17	**102.6**
9	80	71.52	0.71	290	53	82	86	1.6	7.5		17.68	**101.6**
	85	74.82	0.71	289	53	82	86	1.65	7.5		17.67	**100.7**
10	90	78.15	0.72	288	53	82	86	1.65	7.5		17.78	**101.5**
	95	81.47	0.71	287	54	83	86	1.65	7.5		17.64	**100.5**
11	100	84.81	0.63	287	54	83	87	1.45	7.0		16.62	**101.6**
	105	87.97	0.63	286	55	83	87	1.45	7.0		16.61	**101.9**
12	110	91.08	0.64	286	55	83	87	1.5	6.5		16.74	**100.2**
	115	94.29	0.64	285	56	84	87	1.5	6.5		16.73	**102.7**
	120	97.44								0.42		**100.6**
1	0	97.86	0.92	285	68	84	87	2.15	9.0		20.06	
	5	101.55	0.92	289	54	84	86	2.15	9.0		20.11	**98.4**
2	10	105.34	0.91	289	50	84	86	2.15	9.0		20.00	**101.5**
	15	109.14	0.91	289	49	84	86	2.1	9.0		20.00	**102.3**
3	20	112.89	0.9	289	49	84	86	2.1	9.0		19.89	**100.9**
	25	116.58	0.88	289	48	84	86	1.95	9.0		19.67	**99.9**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	September 21, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.049	**Probe (mg)**	0		
Barometric Pressure	30.02 "Hg	**CWTR (g)**	742.2		
Static Pressure	-10.780 "H_2O	**WCBDA (g)**	18.4		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.42 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%	8.07
CO2%	10.86
COppm	9.2

Measured H2O
17.6 %

				Temperatures								
Point	**Time**	**DGM Reading**	**ΔP "H2O**	**Stack °F**	**Imp. Out °F**	**DGM Out °F**	**DGM In °F**	**ΔH "H2O**	**Vacuum "Hg**	**Leak Check Volume**	**Velocity m/s**	**Isokinetic %**
4	30	120.24	0.82	289	48	84	87	1.95	9.0		18.99	**100.1**
	35	123.83	0.79	289	49	84	87	1.85	8.5		18.63	**101.7**
5	40	127.39	0.71	287	49	84	87	1.8	8.0		17.64	**102.7**
	45	130.74	0.7	287	49	84	87	1.6	7.5		17.52	**101.8**
6	50	134.06	0.66	287	49	84	87	1.6	7.5		17.01	**101.5**
	55	137.34	0.65	286	50	84	88	1.5	7.0		16.87	**103.3**
7	60	140.53	0.72	286	50	84	87	1.45	7.0		17.75	**101.0**
	65	143.90	0.73	287	50	85	88	1.65	7.5		17.89	**101.5**
8	70	147.30	0.73	287	50	85	88	1.65	7.5		17.89	**101.6**
	75	150.68	0.72	286	50	85	87	1.65	7.5		17.75	**101.0**
9	80	154.06	0.72	286	51	85	89	1.65	7.5		17.75	**101.8**
	85	157.46	0.68	285	51	85	89	1.65	7.5		17.24	**102.2**
10	90	160.73	0.7	285	52	86	88	1.5	7.0		17.49	**101.1**
	95	164.05	0.73	285	52	86	89	1.6	7.5		17.87	**101.1**
11	100	167.42	0.62	285	52	86	89	1.65	7.5		16.46	**100.4**
	105	170.58	0.63	285	52	86	89	1.4	7.0		16.60	**102.2**
12	110	173.77	0.65	285	52	86	89	1.45	7.0		16.86	**102.3**
	115	176.98	0.68	285	53	86	89	1.5	7.0		17.24	**101.3**
	120	180.27										**101.5**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - SVOC
Date:	September 22, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.049	
NOZZLE DIAMETER	6.35	mm
DRY REF GAS VOLUME SAMPLED	4.748	m^3
AVGERGE ISOKINETICITY	101.8	%
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	142.0	°C
AVERAGE GAS MOISTURE BY VOLUME	17.1	%
AVERAGE GAS VELOCITY	17.53	m/s
BAROMETRIC PRESSURE (Station)	101.863	Kpa
STATIC PRESSURE	-2.684	Kpa
ABSOLUTE GAS PRESSURE	99.178	Kpa
OXYGEN CONCENTRATION	8.02	%
CARBON DIOXIDE CONCENTRATION	10.98	%
CARBON MONOXIDE CONCENTRATION	12.3	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.91	m^3/s
DRY REF GAS FLOWRATE	15.10	Rm^3/s
DRY ADJ GAS FLOWRATE	19.65	Rm^3/s
WET REF GAS FLOWRATE	18.22	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.748	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:	September 22, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.049	**Probe (mg)**	0		
Barometric Pressure	30.08 "Hg	**CWTR (g)**	700.6		
Static Pressure	-10.780 "H_2O	**WCBDA (g)**	18		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.28 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%	8.02
CO2%	10.98
COppm	12.3

Measured H2O
17.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	80.66	0.91	287	66	69	69	2.1	8.0		19.92	
	5	84.23	0.87	289	61	69	70	2.1	8.0		19.51	**98.4**
2	10	87.82	0.87	289	61	69	70	2.1	8.0		19.51	**101.3**
	15	91.43	0.87	289	61	70	71	2.05	8.0		19.51	**101.8**
3	20	95.04	0.81	289	56	70	72	1.95	9.0		18.82	**101.6**
	25	98.53	0.83	288	56	70	73	2	8.5		19.04	**101.7**
4	30	102.09	0.81	289	56	71	74	1.95	8.5		18.82	**102.3**
	35	105.63	0.76	288	55	71	75	1.85	8.5		18.22	**102.9**
5	40	109.10	0.76	288	55	72	75	1.75	8.5		18.22	**103.9**
	45	112.41	0.72	289	54	72	76	1.6	8.5		17.75	**99.0**
6	50	115.64	0.68	289	54	72	77	1.5	7.5		17.25	**99.2**
	55	118.75	0.59	289	54	73	77	1.4	7.0		16.06	**98.2**
7	60	121.76	0.6	289	54	73	78	1.45	7.0		16.20	**101.9**
	65	124.79	0.62	288	54	74	78	1.5	7.0		16.46	**101.6**
8	70	127.88	0.65	288	54	74	79	1.55	7.0		16.85	**101.8**
	75	131.02	0.66	288	60	74	79	1.5	7.0		16.98	**100.9**
9	80	134.10	0.66	287	55	75	81	1.6	7.5		16.97	**98.2**
	85	137.30	0.68	287	56	75	80	1.65	7.5		17.22	**101.7**
10	90	140.55	0.62	288	57	76	80	1.5	7.5		16.46	**101.9**
	95	143.69	0.64	286	57	76	81	1.4	7.0		16.70	**103.0**
11	100	146.76	0.65	286	56	76	81	1.4	7.0		16.83	**98.9**
	105	149.80	0.56	286	53	77	81	1.25	6.5		15.62	**97.2**
12	110	152.67	0.57	286	52	77	81	1.4	6.5		15.76	**98.7**
	115	155.65	0.57	286	51	77	82	1.4	6.5		15.76	**101.6**
	120	158.64								0.28		**101.9**
1	0	158.92	0.81	287	60	78	81	1.9	7.0		18.80	
	5	162.08	0.87	287	51	78	81	2.05	9.0		19.48	**90.5**
2	10	165.66	0.82	288	51	78	81	1.99	9.0		18.93	**99.0**
	15	169.05	0.81	288	51	78	81	1.9	9.0		18.81	**96.6**
3	20	172.62	0.81	288	52	78	81	1.9	9.0		18.81	**102.3**
	25	176.27	0.8	288	53	79	82	1.99	9.0		18.69	**104.6**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	September 22, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.049	**Probe (mg)**	0		
Barometric Pressure	30.08 "Hg	**CWTR (g)**	700.6		
Static Pressure	-10.780 "H_2O	**WCBDA (g)**	18		
Nozzle	0.2501 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.28 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%	8.02
CO2%	10.98
COppm	12.3

Measured H2O
17.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	30	179.69	0.73	288	53	79	82	1.9	9.0		17.86	**98.5**
	35	183.27	0.74	288	54	79	82	1.8	9.0		17.98	**107.9**
5	40	186.61	0.68	288	55	79	82	1.8	9.0		17.23	**99.9**
	45	190.01	0.72	288	55	79	82	1.7	8.5		17.73	**106.1**
6	50	193.42	0.64	289	56	79	83	1.8	8.5		16.73	**103.4**
	55	196.73	0.63	289	56	80	84	1.6	8.0		16.60	**106.5**
7	60	199.97	0.69	289	57	80	84	1.6	8.0		17.37	**104.8**
	65	203.30	0.69	289	57	80	84	1.7	8.0		17.37	**102.9**
8	70	206.76	0.74	289	57	81	85	1.7	8.0		17.99	**107.0**
	75	210.05	0.72	289	57	81	85	1.8	8.0		17.75	**98.0**
9	80	213.47	0.77	289	57	81	85	1.8	8.5		18.35	**103.3**
	85	216.98	0.74	289	56	81	85	1.9	9.0		17.99	**102.6**
10	90	220.49	0.71	289	56	82	85	1.9	9.0		17.62	**104.6**
	95	223.93	0.73	289	57	82	85	1.8	8.5		17.87	**104.6**
11	100	227.36	0.62	282	57	82	85	1.8	8.5		16.39	**102.8**
	105	230.59	0.63	282	58	82	86	1.6	8.0		16.52	**104.6**
12	110	233.82	0.47	282	59	82	86	1.6	8.0		14.27	**103.6**
	115	236.72	0.46	282	60	82	86	1.2	7.5		14.12	**107.7**
	120	239.52										**105.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - SVOC
Date:	October 3, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	0.992	
NOZZLE DIAMETER	6.34	mm
DRY REF GAS VOLUME SAMPLED	4.978	m^3
AVGERGE ISOKINETICITY	103.2	%
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	144.3	°C
AVERAGE GAS MOISTURE BY VOLUME	18.2	%
AVERAGE GAS VELOCITY	18.66	m/s
BAROMETRIC PRESSURE (Station)	101.253	Kpa
STATIC PRESSURE	-2.764	Kpa
ABSOLUTE GAS PRESSURE	98.489	Kpa
OXYGEN CONCENTRATION	8.27	%
CARBON DIOXIDE CONCENTRATION	10.72	%
CARBON MONOXIDE CONCENTRATION	7.0	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.57	m^3/s
DRY REF GAS FLOWRATE	15.65	Rm^3/s
DRY ADJ GAS FLOWRATE	19.97	Rm^3/s
WET REF GAS FLOWRATE	19.14	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.978	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:	October 3, 2023	**Operator:**	BP

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	0.992	**Probe (mg)**	0		
Barometric Pressure	29.9 "Hg	**CWTR (g)**	795.5		
Static Pressure	-11.100 "H_2O	**WCBDA (g)**	19.2		
Nozzle	0.2498 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.38 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%	8.27
CO2%	10.72
COppm	7.0

Measured H2O
18.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	35.36	0.95	289	68	78	78	2.35	6.0		20.52	
	5	39.37	0.98	294	54	77	78	2.35	6.0		20.91	**101.9**
2	10	43.43	0.99	295	52	77	78	2.4	6.0		21.03	**102.0**
	15	47.53	1	295	51	77	79	2.4	6.5		21.13	**102.6**
3	20	51.60	0.94	294	50	78	81	2.4	6.5		20.47	**101.2**
	25	55.61	0.93	293	50	78	82	2.3	6.5		20.35	**102.5**
4	30	59.60	0.88	292	50	79	83	2.3	6.5		19.78	**102.4**
	35	63.53	0.89	292	51	80	84	2.2	6.0		19.90	**103.4**
5	40	67.47	0.8	292	51	80	84	2.2	6.0		18.86	**102.8**
	45	71.24	0.84	292	51	81	85	2.05	6.0		19.33	**103.8**
6	50	75.09	0.76	292	52	82	86	2.1	6.0		18.39	**103.2**
	55	78.82	0.73	292	52	82	86	2	6.0		18.02	**105.0**
7	60	82.44	0.78	292	53	83	86	1.9	5.5		18.63	**103.9**
	65	86.12	0.79	292	54	83	87	2	5.5		18.75	**102.1**
8	70	89.83	0.78	292	54	84	87	2	6.0		18.63	**102.2**
	75	93.58	0.78	292	55	84	87	2.05	6.0		18.63	**103.8**
9	80	97.34	0.8	292	55	84	88	2	6.0		18.86	**104.1**
	85	101.10	0.81	292	55	84	88	2.05	6.0		18.98	**102.7**
10	90	104.89	0.81	292	55	85	88	2.1	6.0		18.98	**102.9**
	95	108.67	0.8	292	56	85	89	2.1	6.0		18.86	**102.6**
11	100	112.45	0.7	292	57	85	89	2.1	6.0		17.65	**103.1**
	105	116.05	0.7	290	58	86	89	1.85	5.5		17.62	**105.0**
12	110	119.61	0.6	290	58	86	89	1.85	5.5		16.31	**103.5**
	115	122.99	0.6	290	58	86	89	1.6	5.0		16.31	**106.1**
	120	126.33								0.38		**104.8**
1	0	126.71	0.96	289	71	87	87	2.4	6.5		20.62	
	5	130.80	0.96	292	61	87	88	2.4	7.0		20.66	**101.7**
2	10	134.91	0.95	292	58	86	88	2.4	7.0		20.56	**102.3**
	15	139.02	0.93	292	57	86	88	2.4	7.0		20.34	**102.9**
3	20	143.10	0.86	291	57	86	89	2.35	7.0		19.55	**103.3**
	25	147.08	0.87	291	57	86	89	2.2	6.5		19.66	**104.6**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	October 3, 2023	**Operator:**	BP

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	0.992	**Probe (mg)**	0		
Barometric Pressure	29.9 "Hg	**CWTR (g)**	795.5		
Static Pressure	-11.100 "H_2O	**WCBDA (g)**	19.2		
Nozzle	0.2498 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.38 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%	8.27
CO2%	10.72
COppm	7.0

Measured H2O
18.2 %

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	30	151.01	0.85	291	57	86	90	2.2	6.5		19.43	**102.6**
	35	154.93	0.85	291	58	86	90	2.2	6.5		19.43	**103.5**
5	40	158.82	0.77	291	57	87	90	2.2	6.5		18.49	**102.7**
	45	162.56	0.77	292	56	87	90	2	6.0		18.51	**103.6**
6	50	166.27	0.65	292	56	87	90	2	6.0		17.00	**102.8**
	55	169.71	0.66	292	56	87	90	1.7	5.5		17.13	**103.8**
7	60	173.20	0.72	293	56	87	90	1.8	5.5		17.91	**104.4**
	65	176.82	0.72	293	56	87	91	1.9	6.0		17.91	**103.8**
8	70	180.40	0.75	293	56	88	91	1.9	6.0		18.28	**102.6**
	75	184.10	0.74	292	56	88	91	2	6.0		18.14	**103.8**
9	80	187.76	0.71	292	57	88	91	2	6.0		17.77	**103.3**
	85	191.31	0.72	292	57	88	91	1.9	6.0		17.90	**102.3**
10	90	194.85	0.73	293	57	88	91	1.9	6.0		18.03	**101.3**
	95	198.46	0.71	292	57	88	91	1.9	6.0		17.77	**102.6**
11	100	202.06	0.6	291	57	88	91	1.9	6.0		16.33	**103.7**
	105	205.43	0.55	290	58	88	91	1.65	5.5		15.62	**105.5**
12	110	208.61	0.57	290	58	88	91	1.5	5.5		15.90	**103.9**
	115	211.79	0.57	290	59	88	91	1.5	5.5		15.90	**102.0**
	120	215.02										**103.6**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - SVOC
Date:	October 3, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.992	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	4.940	m^3
AVGERGE ISOKINETICITY	102.4	%
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	144.3	°C
AVERAGE GAS MOISTURE BY VOLUME	17.6	%
AVERAGE GAS VELOCITY	18.38	m/s
BAROMETRIC PRESSURE (Station)	101.118	Kpa
STATIC PRESSURE	-2.764	Kpa
ABSOLUTE GAS PRESSURE	98.354	Kpa
OXYGEN CONCENTRATION	8.26	%
CARBON DIOXIDE CONCENTRATION	10.77	%
CARBON MONOXIDE CONCENTRATION	9.3	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.15	m^3/s
DRY REF GAS FLOWRATE	15.51	Rm^3/s
DRY ADJ GAS FLOWRATE	19.80	Rm^3/s
WET REF GAS FLOWRATE	18.83	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.940	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. 2
Date:	October 3, 2023	**Operator:**	bp

Pitot Factor	0.848	**Filter (mg)**	0		
DGMCF	0.992	**Probe (mg)**	0		
Barometric Pressure	29.86 "Hg	**CWTR (g)**	759.3		
Static Pressure	-11.100 "H_2O	**WCBDA (g)**	17.8		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.31 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%	8.26
CO2%	10.77
COppm	9.3

Measured H2O
17.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	15.34	0.9	289	68	87	87	2.3	8.0		20.07	
	5	19.34	0.91	293	68	87	87	2.3	8.0		20.24	**100.5**
2	10	23.33	0.9	293	63	87	87	2.3	8.0		20.13	**99.9**
	15	27.35	0.89	293	61	87	88	2.3	8.0		20.01	**101.3**
3	20	31.38	0.87	292	57	88	89	2.3	8.0		19.77	**102.0**
	25	35.40	0.87	292	55	87	89	2.3	8.0		19.77	**102.6**
4	30	39.41	0.83	292	55	87	90	2.3	8.0		19.31	**102.5**
	35	43.36	0.83	292	55	87	90	2.2	8.0		19.31	**103.3**
5	40	47.29	0.75	292	55	87	91	2.2	8.0		18.36	**102.7**
	45	50.99	0.72	291	55	88	91	2	7.5		17.98	**101.6**
6	50	54.68	0.66	291	55	88	91	2	7.5		17.21	**103.2**
	55	58.23	0.67	292	56	88	91	1.8	7.0		17.35	**103.7**
7	60	61.75	0.67	291	56	88	92	1.8	7.0		17.34	**102.1**
	65	65.26	0.68	291	54	89	92	1.8	7.0		17.47	**101.6**
8	70	68.84	0.71	291	52	89	92	1.9	7.0		17.85	**102.8**
	75	72.48	0.7	291	51	89	92	1.9	7.0		17.73	**102.3**
9	80	76.12	0.72	291	51	89	93	1.9	7.0		17.98	**103.1**
	85	79.78	0.71	290	51	89	93	1.95	7.0		17.84	**102.1**
10	90	83.43	0.69	290	51	90	93	1.95	7.0		17.59	**102.5**
	95	87.08	0.74	290	52	90	93	1.9	7.0		18.21	**103.8**
11	100	90.76	0.73	290	52	90	93	2	7.0		18.09	**101.1**
	105	94.43	0.73	289	53	90	93	2	7.5		18.08	**101.5**
12	110	98.13	0.62	289	53	90	94	2	7.5		16.66	**102.3**
	115	101.59	0.61	289	54	91	94	1.7	7.0		16.53	**103.7**
	120	105.04								0.31		**104.1**
1	0	105.35	0.87	289	67	91	91	2.3	9.0		19.74	
	5	109.36	0.87	292	56	91	92	2.3	9.0		19.77	**101.7**
2	10	113.39	0.87	292	56	91	92	2.3	9.0		19.77	**102.3**
	15	117.40	0.92	292	56	90	92	2.3	9.0		20.34	**101.8**
3	20	121.52	0.88	293	57	91	93	2.4	10.0		19.90	**101.8**
	25	125.59	0.84	293	57	91	93	2.3	9.5		19.44	**102.8**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	October 3, 2023	**Operator:**	bp

Pitot Factor	0.848	**Filter (mg)**	0		
DGMCF	0.992	**Probe (mg)**	0		
Barometric Pressure	29.86 "Hg	**CWTR (g)**	759.3		
Static Pressure	-11.100 "H_2O	**WCBDA (g)**	17.8		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.31 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.26
CO2%	10.77
COppm	9.3

Measured H2O
17.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
4	30	129.57	0.81	292	58	90	93	2.2	9.0		19.08	**102.8**
	35	133.51	0.79	292	55	91	93	2.2	9.0		18.84	**103.7**
5	40	137.35	0.7	292	53	91	93	2.1	9.0		17.74	**102.2**
	45	141.02	0.76	293	52	91	94	1.9	8.0		18.49	**103.7**
6	50	144.73	0.67	293	52	91	94	2	8.0		17.37	**100.6**
	55	148.28	0.65	293	52	91	94	1.8	7.5		17.10	**102.5**
7	60	151.77	0.74	293	52	91	94	1.8	7.5		18.25	**102.3**
	65	155.45	0.74	294	52	92	95	2	8.0		18.26	**101.1**
8	70	159.16	0.74	295	52	92	94	2	8.0		18.27	**101.8**
	75	162.90	0.74	295	52	92	94	2	8.0		18.27	**102.8**
9	80	166.62	0.78	295	52	92	95	2	8.0		18.76	**102.3**
	85	170.42	0.77	294	52	92	95	2.1	9.0		18.63	**101.7**
10	90	174.20	0.75	294	52	92	95	2.1	9.0		18.38	**101.7**
	95	177.93	0.72	294	53	92	95	2	8.5		18.01	**101.7**
11	100	181.64	0.64	290	53	92	95	2	8.5		16.94	**103.2**
	105	185.15	0.61	290	53	92	95	1.8	8.0		16.54	**103.3**
12	110	188.58	0.61	290	53	92	95	1.7	7.5		16.54	**103.4**
	115	191.98	0.63	290	53	93	95	1.7	7.5		16.81	**102.4**
	120	195.48										**103.7**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - SVOC
Date:	October 4, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	0.992	
NOZZLE DIAMETER	6.34	mm
DRY REF GAS VOLUME SAMPLED	4.843	m^3
AVGERGE ISOKINETICITY	102.7	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	144.6	°C
AVERAGE GAS MOISTURE BY VOLUME	18.0	%
AVERAGE GAS VELOCITY	18.21	m/s
BAROMETRIC PRESSURE (Station)	101.185	Kpa
STATIC PRESSURE	-2.789	Kpa
ABSOLUTE GAS PRESSURE	98.396	Kpa
OXYGEN CONCENTRATION	8.32	%
CARBON DIOXIDE CONCENTRATION	10.80	%
CARBON MONOXIDE CONCENTRATION	10.6	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.91	m^3/s
DRY REF GAS FLOWRATE	15.30	Rm^3/s
DRY ADJ GAS FLOWRATE	19.44	Rm^3/s
WET REF GAS FLOWRATE	18.65	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.843	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:	October 4, 2023	**Operator:**	BP

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	0.992	**Probe (mg)**	0		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	761.2		
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	19.2		
Nozzle	0.2498 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.3 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%	8.32
CO2%	10.80
COppm	10.6

Measured H2O
18.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	96.43	0.83	291	67	78	78	2.1	6.0		19.20	
	5	100.21	0.85	293	66	78	78	2.1	6.0		19.45	**102.6**
2	10	103.96	0.84	292	54	78	79	2.1	6.0		19.32	**100.7**
	15	107.70	0.87	292	48	78	80	2.1	6.5		19.67	**100.9**
3	20	111.58	0.86	293	46	78	81	2.2	7.0		19.57	**102.8**
	25	115.45	0.85	293	45	79	82	2.15	7.0		19.45	**103.1**
4	30	119.29	0.8	293	45	79	83	2.15	7.0		18.87	**102.7**
	35	123.03	0.79	293	45	80	84	2.05	7.0		18.75	**103.0**
5	40	126.74	0.75	293	46	80	84	2.05	7.0		18.27	**102.6**
	45	130.36	0.75	294	46	81	85	1.95	6.5		18.28	**102.7**
6	50	133.98	0.69	294	47	81	85	1.95	6.5		17.54	**102.6**
	55	137.48	0.67	294	47	82	86	1.8	6.0		17.28	**103.4**
7	60	140.94	0.72	293	47	82	86	1.8	6.0		17.90	**103.5**
	65	144.49	0.74	293	47	83	87	1.9	6.0		18.15	**102.4**
8	70	148.09	0.77	294	48	83	87	1.95	6.5		18.53	**102.2**
	75	151.78	0.77	294	47	84	88	2	7.0		18.53	**102.8**
9	80	155.48	0.75	294	46	84	88	2	7.0		18.28	**102.9**
	85	159.15	0.75	294	46	84	89	1.95	6.5		18.28	**103.4**
10	90	162.78	0.75	293	46	85	90	1.95	6.5		18.27	**102.2**
	95	166.41	0.75	293	45	85	89	1.95	6.5		18.27	**102.0**
11	100	170.06	0.73	291	46	86	89	2	7.0		18.00	**102.6**
	105	173.70	0.72	291	47	86	90	1.95	7.0		17.88	**103.5**
12	110	177.29	0.61	290	47	86	90	1.9	6.5		16.45	**102.7**
	115	180.65	0.6	290	47	86	90	1.65	6.0		16.31	**104.3**
	120	184.04								0.3		**106.1**
1	0	184.34	0.9	290	63	87	87	2.3	8.0		19.98	
	5	188.31	0.91	293	48	87	89	2.3	8.0		20.13	**101.8**
2	10	192.31	0.88	293	49	87	89	2.3	8.0		19.79	**102.0**
	15	196.28	0.89	292	49	87	90	2.25	8.0		19.89	**102.9**
3	20	200.26	0.87	292	50	87	91	2.3	8.0		19.67	**102.4**
	25	204.20	0.87	293	51	87	90	2.25	8.0		19.68	**102.5**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	October 4, 2023	**Operator:**	BP

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	0.992	**Probe (mg)**	0		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	761.2		
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	19.2		
Nozzle	0.2498 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.3 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%	8.32
CO2%	10.80
COppm	10.6

Measured H2O
18.0 %

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 %
4	30	208.15	0.82	293	51	87	91	2.25	8.0		19.11	**102.9**
	35	212.02	0.8	294	51	88	91	2.15	7.5		18.88	**103.7**
5	40	215.83	0.7	292	50	88	91	2.1	7.0		17.64	**103.4**
	45	219.37	0.7	292	51	88	92	1.8	6.5		17.64	**102.5**
6	50	222.92	0.62	293	51	88	92	1.8	6.5		16.61	**102.6**
	55	226.29	0.62	293	51	89	92	1.7	6.0		16.61	**103.6**
7	60	229.65	0.67	292	51	89	92	1.7	6.0		17.26	**103.2**
	65	233.12	0.68	292	51	89	93	1.8	6.5		17.39	**102.4**
8	70	236.64	0.71	292	51	89	93	1.8	6.5		17.77	**103.1**
	75	240.23	0.7	292	51	89	93	1.9	7.0		17.64	**102.9**
9	80	243.80	0.71	292	52	90	93	1.85	7.0		17.77	**103.1**
	85	247.36	0.71	292	52	90	93	1.85	7.0		17.77	**101.9**
10	90	250.92	0.69	291	53	90	93	1.9	7.0		17.50	**101.9**
	95	254.48	0.68	291	53	90	93	1.9	7.0		17.38	**103.3**
11	100	258.01	0.62	290	53	90	93	1.85	7.0		16.58	**103.2**
	105	261.38	0.63	290	54	90	93	1.7	6.5		16.71	**103.1**
12	110	264.71	0.65	290	54	90	93	1.7	6.5		16.98	**101.0**
	115	268.11	0.67	290	54	90	94	1.75	6.5		17.24	**101.6**
	120	271.59										**102.3**

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 September 19, 2023		Test No. 2 September 19, 2023		Test No. 3 September 19, 2023	
	THC - 1 min	THC - 10 min Avg	THC - 1 min	THC - 10 min Avg	THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	ppm, dry	ppm, dry	ppm, dry	ppm, dry
10:40	0.6		11:53	0.2	14:45	0.0	
10:41	0.7		11:54	0.3	14:46	0.5	
10:42	0.9		11:55	0.7	14:47	1.6	
10:43	0.9		11:56	1.6	14:48	0.3	
10:44	1.0		11:57	1.7	14:49	0.0	
10:45	1.0		11:58	0.9	14:50	1.3	
10:46	1.1		11:59	1.5	14:51	5.0	
10:47	1.3		12:00	0.8	14:52	6.2	
10:48	1.2		12:01	0.0	14:53	9.7	
10:49	1.1	1.0	12:02	0.3	0.8	14:54	2.5	2.7
10:50	1.2	1.0	12:03	0.0	0.8	14:55	0.0	2.7
10:51	1.5	1.1	12:04	0.0	0.7	14:56	0.0	2.7
10:52	1.3	1.2	12:05	0.0	0.7	14:57	0.0	2.5
10:53	0.4	1.1	12:06	0.0	0.5	14:58	0.0	2.5
10:54	0.4	1.0	12:07	0.1	0.3	14:59	0.0	2.5
10:55	0.6	1.0	12:08	0.0	0.3	15:00	0.0	2.3
10:56	0.7	1.0	12:09	0.0	0.1	15:01	0.0	1.8
10:57	0.5	0.9	12:10	0.1	0.0	15:02	0.0	1.2
10:58	0.5	0.8	12:11	0.3	0.1	15:03	0.0	0.2
10:59	0.5	0.8	12:12	0.4	0.1	15:04	0.0	0.0
11:00	0.8	0.7	12:13	0.3	0.1	15:05	0.0	0.0
11:01	0.8	0.6	12:14	0.3	0.1	15:06	0.0	0.0
11:02	0.7	0.6	12:15	0.5	0.2	15:07	0.0	0.0
11:03	0.9	0.6	12:16	0.7	0.3	15:08	0.0	0.0
11:04	0.8	0.7	12:17	0.8	0.3	15:09	0.0	0.0
11:05	0.9	0.7	12:18	0.7	0.4	15:10	0.0	0.0
11:06	0.9	0.7	12:19	0.8	0.5	15:11	0.0	0.0
11:07	0.8	0.8	12:20	1.1	0.6	15:12	0.0	0.0
11:08	0.7	0.8	12:21	1.4	0.7	15:13	0.0	0.0
11:09	0.7	0.8	12:22	1.5	0.8	15:14	0.0	0.0
11:10	0.5	0.8	12:23	1.8	1.0	15:15	0.0	0.0
11:11	0.5	0.7	12:24	1.8	1.1	15:16	0.0	0.0
11:12	0.8	0.7	12:25	0.1	1.1	15:17	0.0	0.0
11:13	0.9	0.7	12:26	0.0	1.0	15:18	0.0	0.0
11:14	0.8	0.7	12:27	0.0	0.9	15:19	0.0	0.0
11:15	0.0	0.6	12:28	0.0	0.9	15:20	0.0	0.0
11:16	0.0	0.6	12:29	0.0	0.8	15:21	0.0	0.0
11:17	0.0	0.5	12:30	0.0	0.7	15:22	0.0	0.0
11:18	0.0	0.4	12:31	0.0	0.5	15:23	0.0	0.0
11:19	0.0	0.3	12:32	0.0	0.4	15:24	0.0	0.0
11:20	0.0	0.3	12:33	0.0	0.2	15:25	0.0	0.0
11:21	0.0	0.2	12:34	0.0	0.0	15:26	0.0	0.0
11:22	0.0	0.2	12:35	0.0	0.0	15:27	0.0	0.0
11:23	0.9	0.2	12:36	0.0	0.0	15:28	0.0	0.0
11:24	0.8	0.2	12:37	0.0	0.0	15:29	0.0	0.0
11:25	0.9	0.3	12:38	0.0	0.0	15:30	0.0	0.0
11:26	0.9	0.4	12:39	0.1	0.0	15:31	0.0	0.0
11:27	1.0	0.5	12:40	0.7	0.1	15:32	0.0	0.0
11:28	1.0	0.6	12:41	1.2	0.2	15:33	0.0	0.0
11:29	0.9	0.6	12:42	1.2	0.3	15:34	0.0	0.0
11:30	1.1	0.8	12:43	1.0	0.4	15:35	0.0	0.0
11:31	1.0	0.9	12:44	1.0	0.5	15:36	0.0	0.0
11:32	0.6	0.9	12:45	0.7	0.6	15:37	0.0	0.0
11:33	0.5	0.9	12:46	0.6	0.7	15:38	0.0	0.0
11:34	0.5	0.8	12:47	0.6	0.7	15:39	0.0	0.0
11:35	0.7	0.8	12:48	0.6	0.8	15:40	0.0	0.0
11:36	0.7	0.8	12:49	0.3	0.8	15:41	0.0	0.0
11:37	0.5	0.7	12:50	0.1	0.7	15:42	0.0	0.0
11:38	0.2	0.7	12:51	0.1	0.6	15:43	0.0	0.0
11:39	0.2	0.6	12:52	0.3	0.5	15:44	0.0	0.0
11:40	0.4	0.5	12:53	0.3	0.5	15:45	0.0	0.0
Min	0.0	0.2	Min	0.0	0.0	Min	0.0	0.0
Max	1.5	1.2	Max	1.8	1.1	Max	9.7	2.7
Avg	0.7	0.7	Avg	0.5	0.5	Avg	0.4	0.4

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 1 APC Outlet

Test No. 1 September 19, 2023			Test No. 2 September 19, 2023			Test No. 3 September 19, 2023		
	THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
10:40	0.0		11:53	0.0		14:45	0.0	
10:41	0.0		11:54	0.0		14:46	0.0	
10:42	0.0		11:55	0.0		14:47	0.0	
10:43	0.0		11:56	0.0		14:48	0.0	
10:44	0.0		11:57	0.0		14:49	0.0	
10:45	0.0		11:58	0.9		14:50	0.5	
10:46	0.0		11:59	0.1		14:51	3.8	
10:47	0.0		12:00	0.0		14:52	4.2	
10:48	0.0		12:01	0.0		14:53	3.5	
10:49	0.0	0.0	12:02	0.0	0.1	14:54	0.2	1.2
10:50	0.0	0.0	12:03	0.0	0.1	14:55	0.0	1.2
10:51	0.0	0.0	12:04	0.0	0.1	14:56	0.0	1.2
10:52	0.0	0.0	12:05	0.0	0.1	14:57	0.0	1.2
10:53	0.0	0.0	12:06	0.0	0.1	14:58	0.0	1.2
10:54	0.0	0.0	12:07	0.0	0.1	14:59	0.0	1.2
10:55	0.0	0.0	12:08	0.0	0.0	15:00	0.0	1.2
10:56	0.0	0.0	12:09	0.0	0.0	15:01	0.0	0.8
10:57	0.0	0.0	12:10	0.0	0.0	15:02	0.0	0.4
10:58	0.0	0.0	12:11	0.0	0.0	15:03	0.0	0.0
10:59	0.0	0.0	12:12	0.0	0.0	15:04	0.0	0.0
11:00	0.0	0.0	12:13	0.0	0.0	15:05	0.0	0.0
11:01	0.0	0.0	12:14	0.0	0.0	15:06	0.0	0.0
11:02	0.0	0.0	12:15	0.0	0.0	15:07	0.0	0.0
11:03	0.0	0.0	12:16	0.0	0.0	15:08	0.0	0.0
11:04	0.0	0.0	12:17	0.0	0.0	15:09	0.0	0.0
11:05	0.0	0.0	12:18	0.0	0.0	15:10	0.0	0.0
11:06	0.0	0.0	12:19	0.0	0.0	15:11	0.0	0.0
11:07	0.0	0.0	12:20	0.0	0.0	15:12	0.0	0.0
11:08	0.0	0.0	12:21	0.0	0.0	15:13	0.0	0.0
11:09	0.0	0.0	12:22	0.0	0.0	15:14	0.0	0.0
11:10	0.2	0.0	12:23	0.0	0.0	15:15	0.0	0.0
11:11	0.5	0.1	12:24	0.0	0.0	15:16	0.0	0.0
11:12	0.6	0.1	12:25	0.0	0.0	15:17	0.0	0.0
11:13	0.6	0.2	12:26	0.0	0.0	15:18	0.0	0.0
11:14	0.6	0.3	12:27	0.0	0.0	15:19	0.0	0.0
11:15	0.0	0.3	12:28	0.0	0.0	15:20	0.0	0.0
11:16	0.0	0.3	12:29	0.0	0.0	15:21	0.0	0.0
11:17	0.0	0.3	12:30	0.0	0.0	15:22	0.0	0.0
11:18	0.0	0.3	12:31	0.0	0.0	15:23	0.0	0.0
11:19	0.0	0.3	12:32	0.0	0.0	15:24	0.0	0.0
11:20	0.0	0.2	12:33	0.0	0.0	15:25	0.0	0.0
11:21	0.0	0.2	12:34	0.0	0.0	15:26	0.0	0.0
11:22	0.0	0.1	12:35	0.0	0.0	15:27	0.0	0.0
11:23	0.2	0.1	12:36	0.0	0.0	15:28	0.0	0.0
11:24	0.4	0.1	12:37	0.0	0.0	15:29	0.0	0.0
11:25	0.3	0.1	12:38	0.0	0.0	15:30	0.0	0.0
11:26	0.4	0.1	12:39	0.0	0.0	15:31	0.0	0.0
11:27	0.4	0.2	12:40	0.0	0.0	15:32	0.0	0.0
11:28	0.4	0.2	12:41	0.0	0.0	15:33	0.0	0.0
11:29	0.4	0.2	12:42	0.0	0.0	15:34	0.0	0.0
11:30	0.3	0.3	12:43	0.0	0.0	15:35	0.0	0.0
11:31	0.3	0.3	12:44	0.0	0.0	15:36	0.0	0.0
11:32	0.3	0.3	12:45	0.0	0.0	15:37	0.0	0.0
11:33	0.7	0.4	12:46	1.3	0.1	15:38	0.0	0.0
11:34	0.8	0.4	12:47	7.8	0.9	15:39	0.0	0.0
11:35	3.8	0.8	12:48	6.6	1.6	15:40	0.0	0.0
11:36	3.7	1.1	12:49	0.0	1.6	15:41	0.0	0.0
11:37	0.5	1.1	12:50	5.3	2.1	15:42	0.0	0.0
11:38	0.7	1.1	12:51	6.7	2.8	15:43	0.0	0.0
11:39	1.4	1.2	12:52	0.0	2.8	15:44	0.0	0.0
11:40	2.9	1.5	12:53	0.0	2.8	15:45	0.0	0.0
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	3.8	1.5	Max	7.8	2.8	Max	4.2	1.2
Avg	0.3	0.2	Avg	0.5	0.3	Avg	0.2	0.2

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet

	Test No. 1 September 20, 2023		Test No. 2 September 20, 2023			Test No. 3 September 20, 2023		
	THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
08:55	0.0		10:20	0.0		13:40	0.0	
08:56	0.0		10:21	0.0		13:41	0.0	
08:57	0.0		10:22	0.0		13:42	0.0	
08:58	0.1		10:23	0.0		13:43	0.0	
08:59	1.2		10:24	0.0		13:44	0.0	
09:00	1.5		10:25	0.0		13:45	0.0	
09:01	1.5		10:26	0.0		13:46	0.0	
09:02	1.8		10:27	0.0		13:47	0.0	
09:03	1.9		10:28	0.0		13:48	0.0	
09:04	0.3	0.8	10:29	0.0	0.0	13:49	0.0	0.0
09:05	0.8	0.9	10:30	0.0	0.0	13:50	0.0	0.0
09:06	0.9	1.0	10:31	0.0	0.0	13:51	0.0	0.0
09:07	1.3	1.1	10:32	0.0	0.0	13:52	0.0	0.0
09:08	0.5	1.2	10:33	0.0	0.0	13:53	0.0	0.0
09:09	0.0	1.1	10:34	0.0	0.0	13:54	0.0	0.0
09:10	0.0	0.9	10:35	0.0	0.0	13:55	0.0	0.0
09:11	0.0	0.8	10:36	0.0	0.0	13:56	0.0	0.0
09:12	0.0	0.6	10:37	0.0	0.0	13:57	0.0	0.0
09:13	0.0	0.4	10:38	0.0	0.0	13:58	0.0	0.0
09:14	0.0	0.4	10:39	0.0	0.0	13:59	0.0	0.0
09:15	0.9	0.4	10:40	0.0	0.0	14:00	0.0	0.0
09:16	2.3	0.5	10:41	0.0	0.0	14:01	0.0	0.0
09:17	0.0	0.4	10:42	0.0	0.0	14:02	0.0	0.0
09:18	0.7	0.4	10:43	0.0	0.0	14:03	0.0	0.0
09:19	1.9	0.6	10:44	0.0	0.0	14:04	0.0	0.0
09:20	0.9	0.7	10:45	0.4	0.0	14:05	0.0	0.0
09:21	17.2	2.4	10:46	0.0	0.0	14:06	0.0	0.0
09:22	6.0	3.0	10:47	3.0	0.3	14:07	0.0	0.0
09:23	0.0	3.0	10:48	4.8	0.8	14:08	0.0	0.0
09:24	0.5	3.0	10:49	2.4	1.0	14:09	0.0	0.0
09:25	0.0	2.9	10:50	0.0	1.0	14:10	0.0	0.0
09:26	0.1	2.7	10:51	0.0	1.0	14:11	0.0	0.0
09:27	0.0	2.7	10:52	0.0	1.0	14:12	0.0	0.0
09:28	0.0	2.7	10:53	0.0	1.0	14:13	0.0	0.0
09:29	0.0	2.5	10:54	0.0	1.0	14:14	0.0	0.0
09:30	0.0	2.4	10:55	0.0	1.0	14:15	0.0	0.0
09:31	0.0	0.7	10:56	0.0	1.0	14:16	0.0	0.0
09:32	0.0	0.1	10:57	0.0	0.7	14:17	0.0	0.0
09:33	0.0	0.1	10:58	0.0	0.2	14:18	0.0	0.0
09:34	0.0	0.0	10:59	0.0	0.0	14:19	0.0	0.0
09:35	0.0	0.0	11:00	0.0	0.0	14:20	0.0	0.0
09:36	0.0	0.0	11:01	0.0	0.0	14:21	0.0	0.0
09:37	0.1	0.0	11:02	0.0	0.0	14:22	0.0	0.0
09:38	0.4	0.0	11:03	0.0	0.0	14:23	0.0	0.0
09:39	0.4	0.1	11:04	0.0	0.0	14:24	0.0	0.0
09:40	0.3	0.1	11:05	0.0	0.0	14:25	0.0	0.0
09:41	0.2	0.1	11:06	0.0	0.0	14:26	0.0	0.0
09:42	1.3	0.3	11:07	0.0	0.0	14:27	0.0	0.0
09:43	5.1	0.8	11:08	0.0	0.0	14:28	0.0	0.0
09:44	0.5	0.8	11:09	0.0	0.0	14:29	0.0	0.0
09:45	0.8	0.9	11:10	0.0	0.0	14:30	0.0	0.0
09:46	0.4	0.9	11:11	0.0	0.0	14:31	0.0	0.0
09:47	0.1	0.9	11:12	0.0	0.0	14:32	0.0	0.0
09:48	0.0	0.9	11:13	0.0	0.0	14:33	0.0	0.0
09:49	0.0	0.9	11:14	1.4	0.1	14:34	0.0	0.0
09:50	0.0	0.8	11:15	2.2	0.4	14:35	0.0	0.0
09:51	0.0	0.8	11:16	1.0	0.5	14:36	0.0	0.0
09:52	0.0	0.7	11:17	0.4	0.5	14:37	0.0	0.0
09:53	0.0	0.2	11:18	0.0	0.5	14:38	0.0	0.0
09:54	0.0	0.1	11:19	0.6	0.6	14:39	0.0	0.0
09:55	0.0	0.0	11:20	0.0	0.6	14:40	0.0	0.0
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	17.2	3.0	Max	4.8	1.0	Max	0.0	0.0
Avg	0.8	1.0	Avg	0.3	0.3	Avg	0.0	0.0

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 2 APC Outlet

Test No. 1 September 20, 2023			Test No. 2 September 20, 2023			Test No. 3 September 20, 2023		
	THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
08:55	0.0		10:20	0.0		13:40	0.8	
08:56	0.0		10:21	0.0		13:41	1.0	
08:57	0.0		10:22	0.0		13:42	0.2	
08:58	0.0		10:23	0.0		13:43	0.0	
08:59	0.1		10:24	0.0		13:44	0.0	
09:00	0.3		10:25	0.0		13:45	0.0	
09:01	0.4		10:26	0.0		13:46	0.0	
09:02	0.5		10:27	0.0		13:47	0.0	
09:03	0.6		10:28	0.0		13:48	0.0	
09:04	0.6	0.3	10:29	0.0	0.0	13:49	0.0	0.2
09:05	0.7	0.3	10:30	0.0	0.0	13:50	11.1	1.2
09:06	0.6	0.4	10:31	0.0	0.0	13:51	11.4	2.3
09:07	0.6	0.4	10:32	0.0	0.0	13:52	3.7	2.6
09:08	0.7	0.5	10:33	0.0	0.0	13:53	0.6	2.7
09:09	0.7	0.6	10:34	0.0	0.0	13:54	0.0	2.7
09:10	0.6	0.6	10:35	0.0	0.0	13:55	0.0	2.7
09:11	0.6	0.6	10:36	0.0	0.0	13:56	0.0	2.7
09:12	0.7	0.6	10:37	0.0	0.0	13:57	0.0	2.7
09:13	0.7	0.6	10:38	0.0	0.0	13:58	0.0	2.7
09:14	0.5	0.6	10:39	0.0	0.0	13:59	0.0	2.7
09:15	0.4	0.6	10:40	0.0	0.0	14:00	0.0	1.6
09:16	0.4	0.6	10:41	0.0	0.0	14:01	0.0	0.4
09:17	0.4	0.6	10:42	0.0	0.0	14:02	0.0	0.1
09:18	0.4	0.5	10:43	0.0	0.0	14:03	0.0	0.0
09:19	0.4	0.5	10:44	0.6	0.1	14:04	0.0	0.0
09:20	0.3	0.5	10:45	0.1	0.1	14:05	0.0	0.0
09:21	0.2	0.4	10:46	2.8	0.3	14:06	0.0	0.0
09:22	0.1	0.4	10:47	4.8	0.8	14:07	0.0	0.0
09:23	0.2	0.3	10:48	2.8	1.1	14:08	9.3	0.9
09:24	0.1	0.3	10:49	1.1	1.2	14:09	4.7	1.4
09:25	0.1	0.3	10:50	0.1	1.2	14:10	0.0	1.4
09:26	0.2	0.2	10:51	0.0	1.2	14:11	0.0	1.4
09:27	0.2	0.2	10:52	0.0	1.2	14:12	0.0	1.4
09:28	0.0	0.2	10:53	17.1	2.9	14:13	0.0	1.4
09:29	0.0	0.1	10:54	72.4	10.1	14:14	0.0	1.4
09:30	0.0	0.1	10:55	11.4	11.2	14:15	0.0	1.4
09:31	0.1	0.1	10:56	5.7	11.5	14:16	0.0	1.4
09:32	0.1	0.1	10:57	4.7	11.5	14:17	0.0	1.4
09:33	0.0	0.1	10:58	0.5	11.3	14:18	0.0	0.5
09:34	0.0	0.1	10:59	0.0	11.2	14:19	0.0	0.0
09:35	0.0	0.1	11:00	0.0	11.2	14:20	0.0	0.0
09:36	0.0	0.0	11:01	0.0	11.2	14:21	0.0	0.0
09:37	0.0	0.0	11:02	0.0	11.2	14:22	0.0	0.0
09:38	0.0	0.0	11:03	0.0	9.5	14:23	0.0	0.0
09:39	0.0	0.0	11:04	0.0	2.2	14:24	0.0	0.0
09:40	0.0	0.0	11:05	0.0	1.1	14:25	0.0	0.0
09:41	0.0	0.0	11:06	0.0	0.5	14:26	0.0	0.0
09:42	0.0	0.0	11:07	0.0	0.0	14:27	0.0	0.0
09:43	0.0	0.0	11:08	0.0	0.0	14:28	0.0	0.0
09:44	0.0	0.0	11:09	0.0	0.0	14:29	0.0	0.0
09:45	0.0	0.0	11:10	0.0	0.0	14:30	0.0	0.0
09:46	0.1	0.0	11:11	0.0	0.0	14:31	0.0	0.0
09:47	0.7	0.1	11:12	0.0	0.0	14:32	0.0	0.0
09:48	2.1	0.3	11:13	32.9	3.3	14:33	0.0	0.0
09:49	1.7	0.5	11:14	26.0	5.9	14:34	0.0	0.0
09:50	0.9	0.5	11:15	0.2	5.9	14:35	10.7	1.1
09:51	0.6	0.6	11:16	28.3	8.7	14:36	7.7	1.8
09:52	0.5	0.7	11:17	5.1	9.3	14:37	2.8	2.1
09:53	0.7	0.7	11:18	0.0	9.3	14:38	0.0	2.1
09:54	0.5	0.8	11:19	0.0	9.3	14:39	0.0	2.1
09:55	0.5	0.8	11:20	0.0	9.3	14:40	0.0	2.1
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	2.1	0.8	Max	72.4	11.5	Max	11.4	2.7
Avg	0.3	0.3	Avg	3.5	3.6	Avg	1.0	1.0

APPENDIX 27

Dispersion Modelling Results
for the September/October 2023 Testing Program
(15 pages)

TECHNICAL MEMORANDUM

DATE December 22, 2023 **Project No.** 22515701

TO Supreet Kaur
Covanta Durham York Renewable Energy LP

CC Katie Armstrong

FROM Poornitha Suresh **EMAIL katherine.armstrong@wsp.com**

CALPUFF MODELLING FOR SEPTEMBER/OCTOBER 2023 COMPLIANCE SOURCE TESTING AT DURHARM 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 October/ November 2023 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 2023.

2.0 EMISSION RATES

Voluntary source testing was completed by Ortech Environmental in September and October 2023 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 $PM_{2.5}$ was used.

3.0 MODELLING

In response to an MECP request in 2020, the CALPUFF modelling software and CALMET meteorological data have been updated. The MECP reviewed and approved the meteorological data and modelling input files in May 2021, prior to model execution. The following models and pre- and post-processors were used in the assessment:

- CALMET diagnostic meteorological model (v. 6.5.0, level 150223);
- CALPUFF dispersion model (v. 7.2.1, level 150618);
- CALPOST post processor (v. 7.1.0, Level 141010);
- BPIP building downwash pre-processor (v. 04274);
- POSTUTIL post processor (v.7.0.0, Level 150207).

These model versions are updates from those used in the original 2011 ESDM report. Formal approval for their use was requested and approved under s7(1) and s13(1) of O.Reg. 419/05. 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 2022. 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)	53.18 (UPDATED)	23.43 (UPDATED)	415.96 (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]	48.08	34.97	29.14	1.24	0.17	0.06
Dispersion Factor with meteorological anomaly removal [µg/m³ per g/s]	17.20	12.51	10.43	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 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 2023, 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 October/November 2023 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 September/October 2023 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 2023 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.

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PS/KSA/lb

https://wsponlinecan.sharepoint.com/sites/ca-ca00079061462/shared documents/05. technical/2023 fall/report/final/22515701-tm-rev0-covanta updated modelling memo 21dec2023.docx

APPENDIX A

Site-Wide Emission Inventory

Appendix A
Site-Wide Emission Inventory

Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
1A	Main Stack - Fall 2023 Source Testing Conditions	53.18	142.81	1.7	87.6	(680538, 4860346)	1 – methylnaphthalene	90-12-0	2.36E-07	1,24, annual	ST	Above-Average	100%
							1,1,2-Trichloroethane	79-00-5	4.11E-05	1,24, annual	ST	Above-Average	100%
							1,2,3,4-tetrachlorobenzene	634-66-2	7.59E-08	1,24, annual	ST	Above-Average	100%
							1,2,3-trichlorobenzene	87-61-6	7.59E-08	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	120-82-1	1.74E-07	1,24, annual	ST	Above-Average	100%
							1,2,4,5-Tetrachlorobenzene	95-94-3	8.21E-08	1,24, annual	ST	Above-Average	100%
							1,2-Dichlorobenzene	95-50-1	5.41E-07	1,24, annual	ST	Above-Average	100%
							1,2-Dichloroethane	107-06-2	4.11E-05	1,24, annual	ST	Above-Average	100%
							1,2-Dichloropropane	78-87-5	4.11E-05	1,24, annual	ST	Above-Average	100%
							1,3,5-trichlorobenzene	108-70-3	8.20E-08	1,24, annual	ST	Above-Average	100%
							1,3-Butadiene	106-99-0	4.11E-05	1,24, annual	ST	Above-Average	100%
							1,3-Dichlorobenzene	541-73-1	7.32E-07	1,24, annual	ST	Above-Average	100%
							1,4-Dichlorobenzene	106-46-7	7.01E-07	1,24, annual	ST	Above-Average	100%
							1-Methylphenanthrene	832-69-9	7.59E-08	1,24, annual	ST	Above-Average	100%
							2 – methylnaphthalene	91-57-6	4.43E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,5-tetrachlorophenol	4901-51-3	1.14E-06	1,24, annual	ST	Above-Average	100%
							2,3,4,6-Tetrachlorophenol	58-90-2	7.61E-07	1,24, annual	ST	Above-Average	100%
							2,3,4-trichlorophenol	15950-66-0	7.61E-07	1,24, annual	ST	Above-Average	100%
							2,3,5,6-tetrachlorophenol	935-95-5	7.61E-07	1,24, annual	ST	Above-Average	100%
							2,3,5-trichlorophenol	933-78-8	7.61E-07	1,24, annual	ST	Above-Average	100%
							2,3,6-trichlorophenol	933-75-5	7.61E-07	1,24, annual	ST	Above-Average	100%
							2,3-dichlorophenol	576-24-9	7.61E-07	1,24, annual	ST	Above-Average	100%
							2,4,5-trichlorophenol	95-95-4	7.61E-07	1,24, annual	ST	Above-Average	100%
							2,4,6-Trichlorophenol	88-06-2	7.61E-07	1,24, annual	ST	Above-Average	100%
							2,4-Dichlorophenol	120-83-2	7.61E-07	1,24, annual	ST	Above-Average	100%
							2,6-dichlorophenol	87-65-0	7.61E-07	1,24, annual	ST	Above-Average	100%
							2-Butanone	78-93-3	4.81E-05	1,24, annual	ST	Above-Average	100%
							2-Chloronaphthalene	91-58-7	7.59E-08	1,24, annual	ST	Above-Average	100%
							2-Methylanthracene	613-12-7	1.83E-07	1,24, annual	ST	Above-Average	100%
							2-monochlorophenol	95-57-8	7.59E-07	1,24, annual	ST	Above-Average	100%
							3,4,5-trichlorophenol	609-19-8	2.66E-06	1,24, annual	ST	Above-Average	100%
							3,4-dichlorophenol	95-77-2	2.28E-06	1,24, annual	ST	Above-Average	100%
							3,5-dichlorophenol	591-35-5	7.61E-07	1,24, annual	ST	Above-Average	100%
							3-Methylcholanthrene	56-49-5	3.79E-07	1,24, annual	ST	Above-Average	100%
							3-monochlorophenol	108-43-0	7.59E-07	1,24, annual	ST	Above-Average	100%
							4-monochlorophenol	106-48-9	1.14E-06	1,24, annual	ST	Above-Average	100%
							7,12-Dimethylbenzo(a)anthracene	57-97-6	7.59E-08	1,24, annual	ST	Above-Average	100%
							9,10-Dimethylanthracene	781-43-1	7.59E-08	1,24, annual	ST	Above-Average	100%
							9-Methylphenanthrene	883-20-5	3.75E-07	1,24, annual	ST	Above-Average	100%
							Acenaphthene	83-32-9	7.59E-08	1,24, annual	ST	Above-Average	5%
							Acenaphthylene	208-96-8	1.58E-07	1,24, annual	ST	Above-Average	5%
							Acetaldehyde	75-07-0	8.32E-03	1,24, annual	ST	Above-Average	100%
							Acetone	67-64-1	1.31E-04	1,24, annual	ST	Above-Average	100%
							Acrolein	107-02-8	1.43E-04	1,24, annual	ST	Above-Average	98%
							Ammonia	7664-41-7	1.95E-02	1,24, annual	ST	Above-Average	100%
							Anthracene	120-12-7	9.79E-08	1,24, annual	ST	Above-Average	20%
							Antimony	7440-36-0	2.30E-06	1,24, annual	ST	Above-Average	100%
							Arsenic	7440-38-2	1.68E-06	1,24, annual	ST	Above-Average	100%
							Barium	7440-39-3	4.20E-05	1,24, annual	ST	Above-Average	100%
							Benzene	71-43-2	7.01E-05	1,24, annual	ST	Above-Average	22%
							Benzo(a)anthracene	56-55-3	8.47E-08	1,24, annual	ST	Above-Average	29%
							Benzo(a)fluorene	238-84-6	1.00E-07	1,24, annual	ST	Above-Average	100%
							Benzo(a)pyrene	50-32-8	7.59E-08	1,24, annual	ST	Above-Average	47%
							Benzo(b)fluoranthene	205-99-2	7.59E-08	1,24, annual	ST	Above-Average	17%
							Benzo(b)fluorene	243-17-4	7.59E-08	1,24, annual	ST	Above-Average	100%
							Benzo(e)pyrene	192-97-2	7.59E-08	1,24, annual	ST	Above-Average	100%
							Benzo(g,h,i)perylene	191-24-2	1.06E-07	1,24, annual	ST	Above-Average	100%
							Benzo(k)fluoranthene	207-08-9	7.59E-08	1,24, annual	ST	Above-Average	52%
							Beryllium	7440-41-7	1.68E-06	1,24, annual	ST	Above-Average	100%
							Biphenyl	92-51-3	1.97E-07	1,24, annual	ST	Above-Average	100%
							Bromodichloromethane	75-27-4	4.46E-05	1,24, annual	ST	Above-Average	100%
							Bromoform	75-25-2	4.11E-05	1,24, annual	ST	Above-Average	100%
							Bromomethane	74-83-9	9.92E-05	1,24, annual	ST	Above-Average	100%
							Cadmium	7440-43-9	2.39E-05	1,24, annual	ST	Above-Average	100%
							Carbon Monoxide	630-08-0	3.53E-01	1,24, annual	ST	Above-Average	58%
							Carbon tetrachloride	56-23-5	4.11E-05	1,24, annual	ST	Above-Average	100%
							Chlorobenzene	108-90-7	7.35E-06	1,24, annual	ST	Above-Average	100%
							Chloroform	67-66-3	6.12E-05	1,24, annual	ST	Above-Average	100%
							Chromium (hexavalent)	18540-29-9	5.06E-05	1,24, annual	ST	Above-Average	100%
							Chrysene	218-01-9	4.29E-07	1,24, annual	ST	Above-Average	46%
							Cobalt	7440-48-4	1.25E-06	1,24, annual	ST	Above-Average	100%
							Copper	7440-50-8	7.41E-05	1,24, annual	ST	Above-Average	100%
							Coronene	191-07-1	3.79E-07	1,24, annual	ST	Above-Average	100%
							Cumene (Isopropylbenzene)	98-82-8	4.84E-05	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,c)anthracene	215-58-7	7.59E-08	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,e)pyrene	192-65-4	3.79E-07	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,h)anthracene	53-70-3	7.59E-08	1,24, annual	ST	Above-Average	40%
							Dibromochloromethane	124-48-1	4.11E-05	1,24, annual	ST	Above-Average	100%
							Dichlorodifluoromethane	75-71-8	4.84E-05	1,24, annual	ST	Above-Average	100%
							Dichloroethene, 1,1 -	75-34-3	4.11E-05	1,24, annual	ST	Above-Average	100%
							Dichloromethane	75-09-2	2.25E-04	1,24, annual	ST	Above-Average	100%
							Dioxins, Furans end Dioxin- like PCBs	N/A	0.0003 µg TEQ/s	1,24, annual	ST	Above-Average	100%
							Ethylbenzene	100-41-4	4.11E-05	1,24, annual	ST	Above-Average	100%
							Ethylene Dibromide	106-93-4	4.84E-05	1,24, annual	ST	Above-Average	100%
							Fluoranthene	206-44-0	6.27E-07	1,24, annual	ST	Above-Average	32%
							Fluorides	7664-39-3	4.28E-03	1,24, annual	ST	Above-Average	100%
							Fluorene	86-73-7	1.39E-07	1,24, annual	ST	Above-Average	3%
							Formaldehyde	50-00-0	1.14E-02	1,24, annual	ST	Above-Average	100%
							Hexachlorobenzene	118-74-1	7.59E-08	1,24, annual	ST	Above-Average	100%
							Hydrogen Chloride	7647-01-0	1.40E-01	1,24, annual	ST	Above-Average	100%
							Indeno(1,2,3 – cd)pyrene	193-39-5	7.59E-08	1,24, annual	ST	Above-Average	36%
							Lead	7439-92-1	1.63E-05	1,24, annual	ST	Above-Average	100%
							M&P-Xylene	179601-23-1	8.95E-05	1,24, annual	ST	Above-Average	100%
							Mercury	7439-97-6	3.44E-06	1,24, annual	ST	Above-Average	100%
							Mesitylene (1,3,5-Trimethylbenzene)	108-67-8	4.84E-05	1,24, annual	ST	Above-Average	100%
							Molybdenum	7439-98-7	2.67E-04	1,24, annual	ST	Above-Average	100%
							m-Terphenyl	92-06-8	1.08E-07	1,24, annual	ST	Above-Average	100%
							Naphthalene	91-20-3	3.07E-06	1,24, annual	ST	Above-Average	7%
							Nickel	7440-02-0	3.30E-05	1,24, annual	ST	Above-Average	100%
							Nitrogen Oxides	10102-44-0	4.31E+00	1,24, annual	ST	Above-Average	44%
							Nitrogen Oxides	10102-44-0	4.31E+00	1,24, annual	ST	Above-Average	44%
							O-terphenyl	84-15-1	7.59E-08	1,24, annual	ST	Above-Average	100%
							O-Xylene	95-47-6	4.11E-05	1,24, annual	ST	Above-Average	100%
							Pentachlorobenzene	608-93-5	7.60E-08	1,24, annual	ST	Above-Average	100%
							Pentachlorophenol	87-86-5	3.81E-07	1,24, annual	ST	Above-Average	100%
							Perylene	198-55-0	7.59E-08	1,24, annual	ST	Above-Average	100%
							Phenanthrene	85-01-8	1.91E-06	1,24, annual	ST	Above-Average	13%
							Picene	213-46-7	3.79E-07	1,24, annual	ST	Above-Average	100%
							PM_{10} (Condensable and Filterable)	N/A	1.36E-01	1,24, annual	ST	Above-Average	69%
							PM_{10} (Filterable Only)	N/A	3.12E-02	1,24, annual	ST	Above-Average	100%
							$PM_{2.5}$ (Condensable and Filterable)	N/A	1.30E-01	1,24, annual	ST	Above-Average	68%
							$PM_{2.5}$ (Filterable Only)	N/A	2.49E-02	1,24, annual	ST	Above-Average	100%
							Polychlorinated Biphenyls (PCB)	N/A	2.96E-04	1,24, annual	ST	Above-Average	100%
							p-Terphenyl	92-94-4	8.47E-08	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 [%]
							Pyrene	129-00-0	4.86E-07	1,24, annual	ST	Above-Average	29%
							Selenium	7782-49-2	1.26E-05	1,24, annual	ST	Above-Average	100%
							Silver	7440-22-4	1.68E-06	1,24, annual	ST	Above-Average	100%
							Styrene	100-42-5	4.84E-05	1,24, annual	ST	Above-Average	100%
							Sulphur Dioxide	7446-09-5	5.80E-04	1,24, annual	ST	Above-Average	3%
							Tetrachloroethene	127-18-4	4.11E-05	1,24, annual	ST	Above-Average	100%
							Tetralin	119-64-2	2.00E-06	1,24, annual	ST	Above-Average	100%
							Thallium	7440-28-0	1.68E-06	1,24, annual	ST	Above-Average	100%
							Toluene	108-88-3	1.03E-04	1,24, annual	ST	Above-Average	53%
							Total Chromium (and compounds)	7440-47-3	5.06E-05	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Condensable and Filterable)	N/A	1.25E-01	1,24, annual	ST	Above-Average	62%
							Total Particulate Matter (Filterable Only)	N/A	1.99E-02	1,24, annual	ST	Above-Average	49%
							trans,1,2-Dichloroethene	156-60-5	4.11E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethane, 1,1,1 -	71-55-6	4.11E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethene	79-01-6	4.11E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethylene, 1,1,2 -	79-01-6	4.11E-05	1,24, annual	ST	Above-Average	100%
							Trichlorofluoromethane	75-69-4	4.84E-05	1,24, annual	ST	Above-Average	100%
							Trichlorotrifluoroethane	76-13-1	4.11E-05	1,24, annual	ST	Above-Average	100%
							Vanadium	7440-62-2	1.23E-06	1,24, annual	ST	Above-Average	100%
							Vinyl chloride	75-01-4	4.84E-05	1,24, annual	ST	Above-Average	100%
							Xylenes, m-, p- and o-	1330-20-7	1.31E-04	1,24, annual	ST	Above-Average	67%
							Zinc	7440-66-6	2.01E-04	1,24, annual	ST	Above-Average	100%
2	Silo Filling	0.31	Ambient	0.10	5.4864	(680551,4860359)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	5%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	5%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	6%
		0.31	Ambient	0.10	4.8768	(680513,4860332)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	5%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	5%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	6%
		0.31	Ambient	0.10	3.9624	(680517,4860333)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	5%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	5%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	6%
		0.31	Ambient	0.10	12.4	(680537,4860391)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	5%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	5%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	6%
3	Stand-by generator	1.16	265.85	0.2	3	(680475,4860419)	Carbon Monoxide	630-08-0	2.56E-01	½	EF	Marginal	42%
							Nitrogen Oxides	10102-44-0	1.12E+00	½	EF	Marginal	11%
							Sulphur Dioxide	7446-09-5	1.88E-02	½	EF	Above-Average	97%
							Total Particulate Matter	N/A	3.25E-02	½	EF	Above-Average	16%
							Filterable TSP	N/A	2.03E-02	½	EF	Above-Average	51%
							PM_{10}	N/A	1.88E-02	½	EF	Above-Average	9%
							$PM_{2.5}$	N/A	1.88E-02	¼	EF	Above-Average	10%
							Sulphuric Acid	7664-93-9	2.88E-04	½	EC	Above-Average	100%
							Benzene	71-43-2	2.54E-04	½	EF	Marginal	78%
							Toluene	108-88-3	9.21E-05	¼	EF	Marginal	47%
							Xylenes, m-, p- and o-	1330-20-7	6.32E-05	½	EF	Marginal	33%
							Propylene	115-07-1	9.14E-04	½	EF	Marginal	100%
							Formaldehyde	50-00-0	2.58E-05	½	EF	Marginal	<1%
							Acetaldehyde	75-07-0	8.26E-06	½	EF	Marginal	<1%
							Acrolein	107-02-8	2.58E-06	½	EF	Marginal	2%
							Naphthalene	91-20-3	4.26E-05	½	EF	Marginal	93%
							Acenaphthylene	208-96-8	3.02E-06	¼	EF	Marginal	95%
							Acenaphthene	83-32-9	1.53E-06	½	EF	Marginal	95%
							Fluorene	86-73-7	4.19E-06	½	EF	Marginal	97%
							Phenanthrene	85-01-8	1.34E-05	¼	EF	Marginal	87%
							Anthracene	120-12-7	4.03E-07	½	EF	Marginal	80%
							Fluoranthene	206-44-0	1.32E-06	½	EF	Marginal	68%
							Pyrene	129-00-0	1.22E-06	¼	EF	Marginal	71%
							Benzo(a)anthracene	56-55-3	2.04E-07	½	EF	Marginal	71%
							Chrysene	218-01-9	5.01E-07	½	EF	Marginal	54%
							Benzo(b)fluoranthene	205-99-2	3.64E-07	½	EF	Marginal	83%
							Benzo(k)fluoranthene	207-08-9	7.14E-08	½	EF	Marginal	48%
							Benzo(a)pyrene	50-32-8	8.42E-08	½	EF	Marginal	53%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.36E-07	½	EF	Marginal	64%
							Dibenzo(a,h)anthracene	53-70-3	1.13E-07	½	EF	Marginal	60%
							Benzo(ghi)perylene	191-24-2	1.82E-07	½	EF	Marginal	100%

APPENDIX B

Emission Summary Table

Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration Before Meteorological Anomaly Removal [µg/m³]	Maximum POI Concentration After Meteorological Anomaly Removal [µg/m³]	Averaging Period	MECP POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MECP Limit [%]	Notes	Version Date of ACB List (i.e. Version 2.0 - April 2018)
1 – methylnaphthalene	90-12-0	2.36E-07	CALPUFF	2.91E-07	2.75E-07	24-hour	35.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2022
1,2,4 – Trichlorobenzene	120-82-1	1.74E-07	CALPUFF	2.15E-07	2.03E-07	24-hour	400	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
1,2,4,5-Tetrachlorobenzene	95-94-3	8.21E-08	CALPUFF	1.01E-07	9.57E-08	24-hour	1	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
1,2-Dichlorobenzene	95-50-1	5.41E-07	CALPUFF	1.58E-05	5.64E-06	1-hour	30500	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
2 – methylnaphthalene	91-57-6	4.43E-07	CALPUFF	5.48E-07	5.17E-07	24-hour	35.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
2,3,4,6-Tetrachlorophenol	58-90-2	7.61E-07	CALPUFF	9.41E-07	8.87E-07	24-hour	0.75	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
2,4,6-Trichlorophenol	88-06-2	7.61E-07	CALPUFF	9.41E-07	8.87E-07	24-hour	1.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
2,4-Dichlorophenol	120-83-2	7.61E-07	CALPUFF	9.41E-07	8.87E-07	24-hour	33.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
3-Methylcholanthrene	56-49-5	3.79E-07	CALPUFF	4.69E-07	4.42E-07	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
7,12-Dimethylbenzo(a)anthracene	57-97-6	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Acenaphthene	83-32-9	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Acenaphthylene	208-96-8	1.58E-07	CALPUFF	1.95E-07	1.84E-07	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Acetaldehyde	75-07-0	8.32E-03	CALPUFF	1.03E-02	9.70E-03	24-hour	500	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Acetaldehyde	75-07-0	8.32E-03	CALPUFF	1.03E-02	9.70E-03	24-hour	5000	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Acrolein	107-02-8	1.43E-04	CALPUFF	1.77E-04	1.67E-04	24-hour	0.4	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Acrolein	107-02-8	1.43E-04	CALPUFF	4.17E-03	1.49E-03	1-hour	4.5	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Ammonia	7664-41-7	1.95E-02	CALPUFF	2.40E-02	2.27E-02	24-hour	100	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Ammonia	7664-41-7	1.95E-02	CALPUFF	2.40E-02	2.27E-02	24-hour	1000	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Anthracene	120-12-7	9.79E-08	CALPUFF	1.21E-07	1.14E-07	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Antimony	7440-36-0	2.30E-06	CALPUFF	2.84E-06	2.68E-06	24-hour	25	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Arsenic	7440-38-2	1.68E-06	CALPUFF	2.08E-06	1.96E-06	24-hour	0.3	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Barium	7440-39-3	4.20E-05	CALPUFF	5.19E-05	4.90E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Benzene	71-43-2	7.01E-05	CALPUFF	8.67E-05	8.18E-05	24-hour	0.45	Health	Sch. 3	Standard	B1	<1%	Note 7, Table 2, 3 URT - Note 8, Table 4	Version 3.0 April 2023
Benzene	71-43-2	7.01E-05	CALPUFF	8.67E-05	8.18E-05	24-hour	100	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Benzene	71-43-2	7.01E-05	CALPUFF	3.96E-06	3.96E-06	Annual	4.5	–	–	AAV	–	0%		Version 3.0 April 2023
Benzo(a)anthracene	56-55-3	8.47E-08	CALPUFF	1.05E-07	9.87E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Benzo(a)fluorene	238-84-6	1.00E-07	CALPUFF	1.24E-07	1.17E-07	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Benzo(a)pyrene	50-32-8	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.00001	Health	Sch. 3	Standard	B1	<1%	Notes 6, 7, Table 2, 3 URT - Note 8, Table 4	Version 3.0 April 2023
Benzo(a)pyrene	50-32-8	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.005	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Benzo(a)pyrene	50-32-8	7.59E-08	CALPUFF	4.28E-09	4.28E-09	Annual	0.0001	–	–	AAV	–	0%		Version 3.0 April 2023
Benzo(b)fluoranthene	205-99-2	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Benzo(b)fluorene	243-17-4	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Benzo(e)pyrene	192-97-2	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Benzo(g,h,i)perylene	191-24-2	1.06E-07	CALPUFF	1.31E-07	1.24E-07	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Benzo(k)fluoranthene	207-08-9	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Beryllium	7440-41-7	1.68E-06	CALPUFF	2.08E-06	1.96E-06	24-hour	0.01	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Biphenyl	92-51-3	1.97E-07	CALPUFF	2.44E-07	2.30E-07	24-hour	170	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Bromodichloromethane	75-27-4	4.46E-05	CALPUFF	5.51E-05	5.20E-05	24-hour	350	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Bromoform	75-25-2	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	55	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Bromomethane	74-83-9	9.92E-05	CALPUFF	1.23E-04	1.16E-04	24-hour	1350	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Cadmium	7440-43-9	2.39E-05	CALPUFF	2.96E-05	2.79E-05	24-hour	0.025	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Cadmium	7440-43-9	2.39E-05	CALPUFF	2.96E-05	2.79E-05	24-hour	0.25	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Carbon Monoxide	630-08-0	3.53E-01	CALPUFF	1.23E+01	4.41E+00	½-hour	6000	Health	Sch. 3	Standard	B1	<1%	Note 17	Version 3.0 April 2023
Carbon tetrachloride	56-23-5	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	2.4	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Carbon tetrachloride	56-23-5	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	24	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Chlorobenzene	108-90-7	7.35E-06	CALPUFF	2.14E-04	7.67E-05	1-hour	3500	Health Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11	Version 3.0 April 2023
Chlorobenzene	108-90-7	7.35E-06	CALPUFF	3.53E-04	1.26E-04	10-minute	4,500	Health Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11	Version 3.0 April 2023
Chloroform	67-66-3	6.12E-05	CALPUFF	7.56E-05	7.13E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Chloroform	67-66-3	6.12E-05	CALPUFF	7.56E-05	7.13E-05	24-hour	100	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Chromium (hexavalent)	18540-29-9	5.06E-05	CALPUFF	2.86E-06	2.86E-06	Annual	0.00014	Health	Sch. 3	Standard	B1	2%	Notes 7, 29, Tables 2, 3 URT - Note 8, Table 4	Version 3.0 April 2023
Chromium (hexavalent)	18540-29-9	5.06E-05	CALPUFF	6.25E-05	5.90E-05	24-hour	0.07	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Chromium (hexavalent)	18540-29-9	5.06E-05	CALPUFF	2.86E-06	2.86E-06	Annual	0.00014	–	–	AAV	–	0%		Version 3.0 April 2023
Chrysene	218-01-9	4.29E-07	CALPUFF	5.30E-07	5.00E-07	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Cobalt	7440-48-4	1.25E-06	CALPUFF	1.54E-06	1.46E-06	24-hour	0.1	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Copper	7440-50-8	7.41E-05	CALPUFF	9.16E-05	8.64E-05	24-hour	50	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Dibenzo(a,c)anthracene	215-58-7	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Dibenzo(a,h)anthracene	53-70-3	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Dichlorodifluoromethane	75-71-8	4.84E-05	CALPUFF	5.98E-05	5.64E-05	24-hour	500000	Health	Sch. 3	Guideline	B1	<1%	Note 15	Version 3.0 April 2023
Dichloroethene, 1,1 -	75-34-3	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	165	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Dichloroethene, 1,1 -	75-34-3	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	1650	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Dichloromethane	75-09-2	2.25E-04	CALPUFF	2.78E-04	2.63E-04	24-hour	120	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Dichloromethane	75-09-2	2.25E-04	CALPUFF	2.78E-04	2.63E-04	24-hour	22000	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Dioxins, Furans and Dioxin- like PCBs	N/A	0.0003 µg TEQ/s	CALPUFF	0.00037 pg TEQ/m³	0.00034 pg TEQ/m³	24-hour	0.1 pg TEQ/m³	–	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Ethylbenzene	100-41-4	4.11E-05	CALPUFF	1.98E-03	7.07E-04	10-minute	1900	Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11	Version 3.0 April 2023
Ethylbenzene	100-41-4	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	1000	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Ethylbenzene	100-41-4	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	10000	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Ethylene Dibromide	106-93-4	4.84E-05	CALPUFF	5.98E-05	5.64E-05	24-hour	3	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Fluoranthene	206-44-0	6.27E-07	CALPUFF	7.75E-07	7.31E-07	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Fluorene	86-73-7	1.39E-07	CALPUFF	1.72E-07	1.62E-07	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Fluorides	7664-39-3	4.28E-03	CALPUFF	5.29E-03	4.99E-03	24-hour	0.86	Vegetation	Sch. 3	Standard	B1	<1%	Notes 10, 24	Version 3.0 April 2023
Fluorides	7664-39-3	4.28E-03	CALPUFF	7.26E-04	7.26E-04	30-day	0.34	Vegetation	Sch. 3	Standard	B1	<1%	Notes 10, 24	Version 3.0 April 2023
Formaldehyde	50-00-0	1.14E-02	CALPUFF	1.40E-02	1.32E-02	24-hour	65	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Hexachlorobenzene	118-74-1	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.011	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Hexachlorobenzene	118-74-1	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.01	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Hydrogen Chloride	7647-01-0	1.40E-01	CALPUFF	1.72E-01	1.63E-01	24-hour	20	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Hydrogen Chloride	7647-01-0	1.40E-01	CALPUFF	1.72E-01	1.63E-01	24-hour	200	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Indeno(1,2,3 – cd)pyrene	193-39-5	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Lead	7439-92-1	1.63E-05	CALPUFF	2.01E-05	1.90E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Lead	7439-92-1	1.63E-05	CALPUFF	2.77E-06	2.77E-06	30-day	0.2	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Lead	7439-92-1	1.63E-05	CALPUFF	2.01E-05	1.90E-05	24-hour	2	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Mercury	7439-97-6	3.44E-06	CALPUFF	4.25E-06	4.01E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Mercury	7439-97-6	3.44E-06	CALPUFF	4.25E-06	4.01E-06	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Molybdenum	7439-98-7	2.87E-04	CALPUFF	3.55E-04	3.35E-04	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Naphthalene	91-20-3	3.07E-06	CALPUFF	3.79E-06	3.57E-06	24-hour	22.5	Health Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11	Version 3.0 April 2023
Naphthalene	91-20-3	3.07E-06	CALPUFF	1.47E-04	5.27E-05	10-minute	50	Health Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11	Version 3.0 April 2023
Nickel	7440-02-0	3.30E-05	CALPUFF	1.86E-06	1.86E-06	Annual	0.04	Health	Sch. 3	Standard	B1	<1%	Note 7, Table 2, 3 URT - Note 8, Table 4	Version 3.0 April 2023
Nickel	7440-02-0	3.30E-05	CALPUFF	4.07E-05	3.84E-05	24-hour	2	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Nickel	7440-02-0	3.30E-05	CALPUFF	1.86E-06	1.86E-06	Annual	0.4	–	–	AAV	–	0%		Version 3.0 April 2023
Nitrogen Oxides	10102-44-0	4.31E+00	CALPUFF	5.33E+00	5.03E+00	24-hour	200	Health	Sch. 3	Standard	B1	3%	Notes 10, 28	Version 3.0 April 2023
Nitrogen Oxides	10102-44-0	4.31E+00	CALPUFF	1.26E+02	4.50E+01	1-hour	400	Health	Sch. 3	Standard	B1	11%	Notes 10, 28	Version 3.0 April 2023
O-terphenyl	84-15-1	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Pentachlorobenzene	608-93-5	7.60E-08	CALPUFF	9.39E-08	8.86E-08	24-hour	80	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Pentachlorophenol	87-86-5	3.81E-07	CALPUFF	4.70E-07	4.44E-07	24-hour	20	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Perylene	198-55-0	7.59E-08	CALPUFF	9.37E-08	8.84E-08	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Phenanthrene	85-01-8	1.91E-06	CALPUFF	2.36E-06	2.23E-06	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
PM_{10} (Condensable and Filterable)	N/A	1.36E-01	CALPUFF	1.68E-01	1.59E-01	24-hour	50	Particulate	–	AAQC	–	<1%		Version 3.0 April 2023
PM_{10} (Filterable Only)	N/A	3.32E-02	CALPUFF	3.86E-02	3.64E-02	24-hour	50	Particulate	–	AAQC	–	<1%		Version 3.0 April 2023
$PM_{2.5}$ (Condensable and Filterable)	N/A	1.30E-01	CALPUFF	1.60E-01	1.51E-01	24-hour	27	Particulate	–	AAQC	–	1%		Version 3.0 April 2023
$PM_{2.5}$ (Filterable Only)	N/A	2.49E-02	CALPUFF	3.08E-02	2.90E-02	24-hour	27	Particulate	–	AAQC	–	<1%		Version 3.0 April 2023
Pyrene	129-00-0	4.86E-07	CALPUFF	6.01E-07	5.67E-07	24-hour	0.1	–	–	De Minimus	–	Below De Minimus		Version 3.0 April 2023
Selenium	7782-49-2	1.26E-05	CALPUFF	1.56E-05	1.47E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Silver	7440-22-4	1.68E-06	CALPUFF	2.08E-06	1.96E-06	24-hour	1	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Sulphur Dioxide	7446-09-5	5.80E-04	CALPUFF	1.69E-02	6.05E-03	1-hour	100	Health & Vegetation	Sch. 3	Standard	B1	<1%	Effective date - July 1, 2023 Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Sulphur Dioxide	7446-09-5	5.80E-04	CALPUFF	3.28E-05	3.28E-05	annual	10	Health & Vegetation	Sch. 3	Standard	B1	<1%	Effective date - July 1, 2023 Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Sulphur Dioxide	7446-09-5	5.80E-04	CALPUFF	1.69E-02	6.05E-03	1-hour	690	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Tetrachloroethene	127-18-4	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	360	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Tetrachloroethene	127-18-4	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	3600	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Tetralin	119-64-2	2.00E-06	CALPUFF	2.47E-06	2.33E-06	24-hour	151.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Thallium	7440-28-0	1.68E-06	CALPUFF	2.08E-06	1.96E-06	24-hour	0.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Toluene	108-88-3	1.03E-04	CALPUFF	1.27E-04	1.20E-04	24-hour	2000	Odour	Sch. 3	Guideline	B1	<1%	To be updated - Note 13	Version 3.0 April 2023
Total Chromium (and compounds)	7440-47-3	5.06E-05	CALPUFF	6.25E-05	5.90E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 22 URT - Note 8, Table 4	Version 3.0 April 2023
Total Chromium (and compounds)	7440-47-3	5.06E-05	CALPUFF	6.25E-05	5.90E-05	24-hour	5	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Total Particulate Matter (Condensable and Filterable)	N/A	1.25E-01	CALPUFF	1.54E-01	1.45E-01	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Total Particulate Matter (Filterable only)	N/A	1.99E-02	CALPUFF	2.46E-02	2.32E-02	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Trichloroethane, 1,1,1 -	71-55-6	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	115000	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Trichloroethene	79-01-6	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	12	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Trichloroethene	79-01-6	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	1200	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Trichloroethylene, 1,1,2 -	79-01-6	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	12	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Trichloroethylene, 1,1,2 -	79-01-6	4.11E-05	CALPUFF	5.08E-05	4.79E-05	24-hour	1200	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Trichlorofluoromethane	75-69-4	4.84E-05	CALPUFF	5.98E-05	5.64E-05	24-hour	6000	Health	Sch. 3	Guideline	B1	<1%	Note 15	Version 3.0 April 2023
Vanadium	7440-62-2	1.23E-06	CALPUFF	1.52E-06	1.44E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Vinyl chloride	75-01-4	4.84E-05	CALPUFF	5.98E-05	5.64E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Vinyl chloride	75-01-4	4.84E-05	CALPUFF	5.98E-05	5.64E-05	24-hour	100	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Xylenes, m-, p- and o-	1330-20-7	1.31E-04	CALPUFF	6.28E-03	2.25E-03	10-minute	3000	Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11, 19	Version 3.0 April 2023
Xylenes, m-, p- and o-	1330-20-7	1.31E-04	CALPUFF	1.61E-04	1.52E-04	24-hour	730	Health	Sch. 3	Standard	B1	<1%	Notes 10, 11, 19 URT - Note 8, Table 4	Version 3.0 April 2023
Xylenes, m-, p- and o-	1330-20-7	1.31E-04	CALPUFF	1.61E-04	1.52E-04	24-hour	7300	–	Sch. 6	URT	–	Below URT		Version 3.0 April 2023
Zinc	7440-66-6	2.01E-04	CALPUFF	2.48E-04	2.34E-04	24-hour	120	Particulate	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023

APPENDIX 28

DYEC CEMS 1-Hour Average Data
(3 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
19-Sep-23	8:00	8.60	5		0		104		2		0	8
19-Sep-23	9:00	8.06	4		0		109		0		1	7
19-Sep-23	10:00	8.20	4		0		112		1		0	7
19-Sep-23	11:00	8.73	5	4.5	0		107		2		1	8
19-Sep-23	12:00	8.07	5	4.5	0		108		1		0	7
19-Sep-23	13:00	8.32	4	4.5	0		114		1		1	8
19-Sep-23	14:00	8.42	6	5.0	0		103		1		0	8
19-Sep-23	15:00	8.36	5	5.0	0		111		1		1	8
19-Sep-23	16:00	8.36	5	5.0	0		117		1		1	8
19-Sep-23	17:00	8.32	8	6.0	0		104		1		1	8
19-Sep-23	18:00											
19-Sep-23	19:00	7.98	4		0		111		0		0	7
19-Sep-23	20:00	8.46	6		0		104		0		0	8
19-Sep-23	21:00	8.07	4		0		112		0		0	7
19-Sep-23	22:00	8.26	5	4.8	0		106		0		1	8
19-Sep-23	23:00	8.15	4	4.8	0		112		1		1	7
20-Sep-23	0:00	8.18	4	4.3	0		110		0		1	8
20-Sep-23	1:00	8.12	3	4.0	0		109		1		1	8
20-Sep-23	2:00	8.41	3	3.5	0		105		1		1	8
20-Sep-23	3:00	7.87	7	4.3	0		100		1		1	7
20-Sep-23	4:00	8.25	4	4.3	0		118		0		0	8
20-Sep-23	5:00	8.88	10	6.0	0		109		0		1	8
20-Sep-23	6:00	8.35	6	6.8	0		118		1		1	8
20-Sep-23	7:00	8.41	6	6.5	0		106		1		1	8
20-Sep-23	8:00	8.08	8	7.5	0		112		2		1	7
20-Sep-23	9:00	8.44	8	7.0	0		104		2		1	8
20-Sep-23	10:00	8.81	7	7.3	0		106		2		1	8
20-Sep-23	11:00	7.99	6	7.3	0		94		1		1	7
20-Sep-23	12:00	8.46	6	6.8	0		95		1		1	8
20-Sep-23	13:00	8.09	6	6.3	0		112		0		1	7
20-Sep-23	14:00	8.18	7	6.3	0		112		1		1	7
20-Sep-23	15:00	8.18	5	6.0	0		112		0		1	8
20-Sep-23	16:00	7.86	7	6.3	0		109		0		1	7
20-Sep-23	17:00	8.07	7	6.5	0		113		1		1	7
20-Sep-23	18:00	8.19	7	6.5	0	0.0	109	108	0	0.7	1	8
20-Sep-23	19:00	8.34	11	8.0	0	0.0	107	108	1	0.7	1	8
20-Sep-23	20:00	8.16	11	9.0	0	0.0	101	108	1	0.8	1	8
20-Sep-23	21:00	7.73	7	9.0	0	0.0	107	108	1	0.8	1	7
20-Sep-23	22:00	7.96	7	9.0	0	0.0	113	108	1	0.8	1	7
20-Sep-23	23:00	8.44	12	9.3	0	0.0	110	108	2	0.9	1	8
21-Sep-23	0:00	8.57	16	10.5	0	0.0	116	108	1	0.9	1	8
21-Sep-23	1:00	8.58	10	11.3	0	0.0	109	108	2	1.0	1	8
21-Sep-23	2:00	8.46	8	11.5	0	0.0	105	108	2	1.0	1	8
21-Sep-23	3:00	8.08	7	10.3	0	0.0	102	108	0	1.0	1	8
21-Sep-23	4:00	8.57	15	10.0	0	0.0	106	108	1	1.0	1	8
21-Sep-23	5:00	8.33	10	10.0	0	0.0	118	108	1	1.0	1	8
21-Sep-23	6:00	7.88	6	9.5	0	0.0	114	108	1	1.0	1	7
21-Sep-23	7:00	8.02	7	9.5	0	0.0	118	109	0	1.0	1	7
21-Sep-23	8:00	8.34	5	7.0	0	0.0	111	108	0	0.9	1	7
21-Sep-23	9:00	8.06	6	6.0	0	0.0	110	109	0	0.8	1	7
21-Sep-23	10:00	8.19	12	7.5	0	0.0	111	109	1	0.8	1	8
21-Sep-23	11:00	8.01	6	7.3	0	0.0	105	109	1	0.8	1	7
21-Sep-23	12:00	7.95	8	8.0	0	0.0	112	110	0	0.8	1	7
21-Sep-23	13:00	8.25	7	8.3	0	0.0	109	110	1	0.8	1	8
21-Sep-23	14:00	7.87	6	6.8	0	0.0	104	110	1	0.8	1	7
21-Sep-23	15:00	8.20	8	7.3	0	0.0	111	110	1	0.8	1	8
21-Sep-23	16:00	8.07	12	8.3	0	0.0	114	110	1	0.9	1	8
21-Sep-23	17:00	9.06	17	10.8	0	0.0	105	109	3	1.0	1	9
21-Sep-23	18:00	9.26	12	12.3	0	0.0	109	109	3	1.1	1	9
21-Sep-23	19:00	8.13	8	12.3	0	0.0	99	109	0	1.0	1	7
21-Sep-23	20:00	8.16	14	12.8	0	0.0	117	110	1	1.0	1	8
21-Sep-23	21:00	8.10	12	11.5	0	0.0	111	110	1	1.0	1	7
21-Sep-23	22:00	8.21	10	11.0	0	0.0	108	110	1	1.0	1	8
21-Sep-23	23:00	8.35	6	10.5	0	0.0	113	110	2	1.0	1	8
22-Sep-23	0:00	8.20	8	9.0	0	0.0	109	110	1	1.0	1	8
22-Sep-23	1:00	8.15	9	8.3	0	0.0	110	110	1	1.0	1	8
22-Sep-23	2:00	8.21	9	8.0	0	0.0	107	110	1	1.0	1	8
22-Sep-23	3:00	8.33	13	9.8	0	0.0	109	110	1	1.0	1	8
22-Sep-23	4:00	8.39	20	12.8	0	0.0	118	111	2	1.0	1	8
22-Sep-23	5:00	8.18	12	13.5	0	0.0	121	111	2	1.1	1	7
22-Sep-23	6:00	7.95	6	12.8	0	0.0	117	111	1	1.1	1	7
22-Sep-23	7:00	8.08	10	12.0	0	0.0	117	111	1	1.1	1	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
22-Sep-23	8:00	7.80	18	11.5	0	0.0	104	110	2	1.2	1	7
22-Sep-23	9:00	8.10	6	10.0	0	0.0	113	111	1	1.3	1	7
22-Sep-23	10:00	8.11	10	11.0	0	0.0	107	110	3	1.3	1	7
22-Sep-23	11:00	7.77	9	10.8	0	0.0	104	110	3	1.4	1	7
22-Sep-23	12:00	7.97	7	8.0	0	0.0	106	110	1	1.5	1	7
	Min	7.73	3	3.5	0	0	94	108	0	0.7	0	7
	Max	9.26	20	13.5	0	0	121	111	3	1.5	1	9
	Avg	8.23	8	8.1	0	0	109	109	1	1.0	0.9	8
	Std Dev	0.28	3.6	2.6	0	0	5.35	1.0	0.8	0.2	0	0.5

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

		BH Outlet										Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/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
20-Sep-23	8:00	8.12	11		0		112		2		0	7
20-Sep-23	9:00	8.06	14		0		111		3		0	7
20-Sep-23	10:00	7.86	8		0		110		3		0	7
20-Sep-23	11:00	7.92	8	10.3	0		108		3		0	7
20-Sep-23	12:00	7.90	8	9.5	0		113		3		0	7
20-Sep-23	13:00	7.93	8	8.0	0		108		3		0	7
20-Sep-23	14:00	8.07	14	9.5	0		110		3		0	7
20-Sep-23	15:00	7.83	10	10.0	0		107		3		0	7
20-Sep-23	16:00	8.04	11	10.8	0		113		3		0	7
20-Sep-23	17:00	8.06	21	14.0	0		109		3		0	7
20-Sep-23	18:00	8.10	9	12.8	0		109		3		0	7
20-Sep-23	19:00	8.27	15	14.0	0		108		3		0	8
20-Sep-23	20:00	8.69	12	14.3	0		109		3		0	8
20-Sep-23	21:00	8.23	10	11.5	0		110		3		0	8
20-Sep-23	22:00	8.43	12	12.3	0		110		3		0	8
20-Sep-23	23:00	8.54	11	11.3	0		104		3		0	8
21-Sep-23	0:00	8.14	12	11.3	0		111		3		0	7
21-Sep-23	1:00	8.57	14	12.3	0		112		3		0	8
21-Sep-23	2:00	8.34	9	11.5	0		108		3		0	8
21-Sep-23	3:00	8.68	11	11.5	0		117		3		0	8
21-Sep-23	4:00	8.62	11	11.3	0		114		3		0	8
21-Sep-23	5:00	8.34	11	10.5	0		121		4		0	7
21-Sep-23	6:00	8.33	9	10.5	0		117		3		0	7
21-Sep-23	7:00	8.18	7	9.5	0	0.0	110	111	3	3.0	0	7
21-Sep-23	8:00	8.33	10	9.3	0	0.0	108	111	3	3.0	0	8
21-Sep-23	9:00	8.39	8	8.5	0	0.0	108	111	3	3.0	0	8
21-Sep-23	10:00	8.49	16	10.3	0	0.0	112	111	3	3.0	0	8
21-Sep-23	11:00	8.72	10	11.0	0	0.0	112	111	2	3.0	0	8
21-Sep-23	12:00	8.53	12	11.5	0	0.0	108	111	3	3.0	0	8
21-Sep-23	13:00	8.47	7	11.3	0	0.0	108	111	3	3.0	0	8
21-Sep-23	14:00	8.13	10	9.8	0	0.0	108	111	2	3.0	0	7
21-Sep-23	15:00	8.69	14	10.8	0	0.0	106	111	3	3.0	0	8
21-Sep-23	16:00	8.54	20	12.8	0	0.0	118	111	3	3.0	0	8
3-Oct-23	8:00	8.48	6		0		109		2		0	8
3-Oct-23	9:00	8.30	7		0		108		3		0	8
3-Oct-23	10:00	8.27	7		0		111		3		0	8
3-Oct-23	11:00	8.11	6	6.5	0		109		3		0	8
3-Oct-23	12:00	8.25	8	7.0	0		110		3		0	8
3-Oct-23	13:00	8.15	11	8.0	0		107		3		0	8
3-Oct-23	14:00	8.22	8	8.3	0		111		3		0	8
3-Oct-23	15:00	8.46	7	8.5	0		110		4		0	8
3-Oct-23	16:00	8.22	8	8.5	0		108		3		0	8
3-Oct-23	17:00	8.39	6	7.3	0		111		3		0	8
3-Oct-23	18:00	8.43	5	6.5	0		111		3		0	8
3-Oct-23	19:00	8.72	7	6.5	0		110		3		0	8
3-Oct-23	20:00	8.18	7	6.3	0		113		3		0	8
3-Oct-23	21:00	8.54	7	6.5	0		107		3		0	8
3-Oct-23	22:00	8.31	10	7.8	0		115		3		0	8
3-Oct-23	23:00	8.55	8	8.0	0		100		3		0	8
4-Oct-23	0:00	8.34	10	8.8	0		116		3		0	8
4-Oct-23	1:00	8.58	12	10.0	0		108		4		0	8
4-Oct-23	2:00	8.45	10	10.0	0		112		4		0	8
4-Oct-23	3:00	7.92	7	9.8	0		104		4		0	7
4-Oct-23	4:00	8.60	11	10.0	2		117		5		0	8
4-Oct-23	5:00	8.61	8	9.0	0		107		4		0	8
4-Oct-23	6:00	9.56	9	8.8	0		121		3		12	8
4-Oct-23	7:00	8.26	10	9.5	0	0.1	116	110	3	3.3	16	8
4-Oct-23	8:00	8.50	11	9.5	0	0.1	107	110	3	3.3	16	8
4-Oct-23	9:00	8.08	10	10.0	0	0.1	110	110	3	3.3	16	7
4-Oct-23	10:00	8.52	11	10.5	0	0.1	112	111	3	3.3	16	8
4-Oct-23	11:00	8.40	9	10.3	0	0.1	107	110	3	3.3	15	8
4-Oct-23	12:00	8.04	6	9.0	0	0.1	115	111	3	3.3	15	7
	Min	7.83	5	6.3	0	0	100	110	2	3.0	0	7
	Max	9.56	21	14.3	2	0.1	121	111	5	3.3	16	8
	Avg	8.34	10	9.9	0.03	0.03	111	111	3	3.1	1.7	8
	Std Dev	0.28	3.1	1.9	0.3	0.0	3.90	0.1	0.5	0.1	5	0.5

Note: All times are Eastern Standard Time