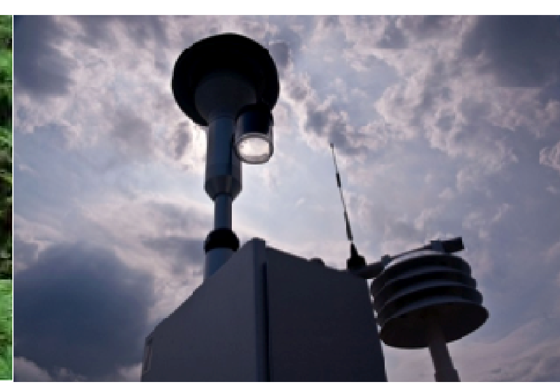
Report No. 22050

Report:

Covanta Durham York Renewable Energy Limited Partnership Durham York Energy Centre 2020 Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX

Date: March 8, 2022





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Revision History

Version	Date	Summary Changes/Purpose of Revision
1	January 19, 2021	None
2	March 8, 2022	Revised Aldehyde ad Acrolein Data – Analytical laboratory identified an error in the units shown in the report

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EXECUTIVE SUMMARY

NOTE: This report was updated on March 8, 2022. During the preparation of the 2021 compliance testing report (ORTECH Report No. 22085) an inconsistency was noted by ORTECH in regards to the units being used in the analytical reports for acetaldehyde, formaldehyde and acrolein. Upon review by ALS, the analytical laboratory, it was determined that the data for the 2021 compliance testing program was correct but there may have been an issue with the data reported for previous testing programs. ORTECH requested that all historical aldehyde data be reviewed by ALS to identify if an error in reporting had occurred. ALS determined that the units used to report the acetaldehyde, formaldehyde and acrolein data was incorrect for this, the 2020 compliance testing program. The data was previously reported as ng and should have been reported as µg and as a result the emission data for these parameters was previously under reported. ORTECH has revised this 2020 compliance testing report to correct the acetaldehyde, formaldehyde and acrolein emission data and dispersion modelling. As discussed below, this correction does not impact the compliance status of the facility.

ORTECH Consulting Inc. (ORTECH) completed the annual compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between November 9 and November 12, 2020. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter". This program is the eleventh comprehensive Schedule E source testing program conducted at the facility. A list of the test programs conducted by ORTECH to date is provided below:

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

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

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

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

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

Since relative accuracy and system bias testing was conducted in July 2020, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (November 9 to November 12, 2020) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on November 9, 2020 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

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

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

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

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1230	-
Steam (tonnes/day)*	-	-	-	806	-
MSW Combusted (tonnes/day)*	-	-	-	199	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	507	-
Carbon Injection (kg/day)*	-	-	-	133	-
Lime Injection (kg/day)*	-	-	-	4237	-
Filterable Particulate (mg/Rm^3) (1)	3.35	4.07	0.36	2.60	9
PM_{10} with Condensable (mg/Rm^3) (1)	<4.77	<5.15	<4.08	<4.67	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.90	<4.95	<3.94	<4.26	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.097	<0.10	<0.11	<0.10	-
Ammonia (mg/Rm^3) (1)	0.55	0.67	0.61	0.61	-
Cadmium (µg/Rm^3) (1)	0.093	0.075	0.058	0.075	7
Lead (µg/Rm^3) (1)	0.48	0.34	0.29	0.37	50
Mercury (µg/Rm^3) (1)	0.55	0.35	0.13	0.34	15
Antimony (µg/Rm^3) (1)	0.092	0.046	<0.040	<0.059	-
Arsenic (µg/Rm^3) (1)	<0.046	<0.045	<0.040	<0.044	-
Barium (µg/Rm^3) (1)	1.55	1.38	1.81	1.58	-
Beryllium (µg/Rm^3) (1)	<0.046	<0.045	<0.040	<0.044	-
Chromium (µg/Rm^3) (1)	1.41	1.00	0.65	1.02	-
Cobalt (µg/Rm^3) (1)	<0.046	<0.045	0.069	<0.053	-
Copper (µg/Rm^3) (1)	5.25	5.22	5.16	5.21	-
Molybdenum (µg/Rm^3) (1)	5.60	5.34	4.79	5.24	-
Nickel (µg/Rm^3) (1)	1.31	2.34	0.97	1.54	-
Selenium (µg/Rm^3) (1)	1.33	1.84	<0.20	<1.12	-
Silver (µg/Rm^3) (1)	<0.046	<0.045	<0.040	<0.044	-
Thallium (µg/Rm^3) (1)	0.22	0.091	<0.040	<0.12	-
Vanadium (µg/Rm^3) (1)	<0.023	<0.023	<0.020	<0.022	-
Zinc (µg/Rm^3) (1)	8.23	5.17	4.52	5.97	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<31.2	<31.0	<23.8	<28.7	60
Total Chlorobenzenes (ng/Rm^3) (1)	<761	<942	<848	<850	-
Total Chlorophenols (ng/Rm^3) (1)	<178	<185	<175	<180	-
Total PAHs (ng/Rm^3) (1)	<200	<515	<219	<311	-
VOCs (µg/Rm^3) (1)	<308	<267	<305	<293	-
Aldehydes (µg/Rm^3) (1)	<79.9	<60.5	<78.5	<73.0	-
Total VOCs (µg/Rm^3) (1) (4)	<388	<328	<384	<366	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.9	0.2	0.3	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)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1311	-
Steam (tonnes/day)*	-	-	-	805	-
MSW Combusted (tonnes/day)*	-	-	-	202	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	816	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	4233	-
Filterable Particulate (mg/Rm^3) (1)	2.72	0.76	2.52	2.00	9
PM_{10} with Condensable (mg/Rm^3) (1)	<4.96	<5.40	<4.68	<5.01	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<4.89	<5.27	<4.54	<4.90	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.10	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm^3) (1)	0.73	0.65	0.60	0.66	-
Cadmium (µg/Rm^3) (1)	0.054	0.034	0.078	0.056	7
Lead (µg/Rm^3) (1)	0.34	0.32	0.36	0.34	50
Mercury (µg/Rm^3) (1)	0.058	<0.033	<0.045	<0.045	15
Antimony (µg/Rm^3) (1)	<0.038	0.051	<0.045	<0.044	-
Arsenic (µg/Rm^3) (1)	<0.038	<0.045	<0.045	<0.042	-
Barium (µg/Rm^3) (1)	0.22	1.93	2.18	1.44	-
Beryllium (µg/Rm^3) (1)	<0.038	<0.045	<0.045	<0.042	-
Chromium (µg/Rm^3) (1)	0.75	0.85	0.74	0.78	-
Cobalt (µg/Rm^3) (1)	<0.038	<0.045	0.066	<0.050	-
Copper (µg/Rm^3) (1)	5.00	5.11	5.14	5.09	-
Molybdenum (µg/Rm^3) (1)	4.55	5.33	5.20	5.03	-
Nickel (µg/Rm^3) (1)	0.66	0.83	1.11	0.87	-
Selenium (µg/Rm^3) (1)	<0.19	0.68	<0.22	<0.37	-
Silver (µg/Rm^3) (1)	<0.038	<0.045	<0.045	<0.042	-
Thallium (µg/Rm^3) (1)	<0.038	0.058	0.16	<0.084	-
Vanadium (µg/Rm^3) (1)	<0.019	<0.022	0.061	<0.034	-
Zinc (µg/Rm^3) (1)	3.75	5.36	5.67	4.93	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<6.90	<8.31	<6.59	<7.26	60
Total Chlorobenzenes (ng/Rm^3) (1)	<440	<436	<337	<404	-
Total Chlorophenols (ng/Rm^3) (1)	<206	<173	<215	<198	-
Total PAHs (ng/Rm^3) (1)	<229	<311	<227	<256	-
VOCs (µg/Rm^3) (1)	<317	<400	<345	<354	-
Aldehydes (µg/Rm^3) (1)	<110	<81.1	<102	<97.7	-
Total VOCs (µg/Rm^3) (1) (4)	<427	<481	<447	<452	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	1.6	1.0	0.6	1.1	50

* based on process data provided by Covanta

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

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

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

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

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

Boiler No.	Parameter	Minimum	Average	Maximum	In-Stack Limit
Boiler No. 1	Carbon Monoxide (mg/Rm^3) (1)	7.8	11.4	16.8	40
	Hydrogen Chloride (mg/Rm^3) (2)	3.4	3.8	4.4	9
	Nitrogen Oxides (mg/Rm^3) (2)	109	110	110	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.1	0.5	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	10.8	14.1	20.8	40
	Hydrogen Chloride (mg/Rm^3) (2)	2.8	3.2	3.7	9
	Nitrogen Oxides (mg/Rm^3) (2)	110	110	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.1	0.5	35

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

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

The CALPUFF dispersion modelling (using Version 6.263 as requested by the MECP) for the November 2020 emission testing program was performed by Golder Associates. A summary of the results are provided in the tables appended to this report (Appendix 27) based on calculated ground level Point of Impingement (POI) concentrations for the average total Main Stack emissions. As shown in the tables, the calculated impingement concentrations for all of the contaminants were well below the relevant MECP standards.

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

- The facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation during the stack test periods. Testing was conducted at a steam production rate of greater than 803 tonnes of steam per day for each Boiler (approximately 99.0% of maximum continuous rating). The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler).
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in Schedule C of the ECA.
- Using CALPUFF dispersion modelling techniques, the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below all current standards in Regulation 419/05 under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

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

1. INTRODUCTION

ORTECH Consulting Inc. (ORTECH) completed the annual compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between November 9 and November 12, 2020. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter". This program is the eleventh comprehensive Schedule E source testing program conducted at the facility. A list of the test programs conducted by ORTECH to date is provided below:

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

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 was submitted to the MECP detailing the sampling and analytical methodology, and operating scenario proposed for the source testing. Provided in Appendix 3 is a copy of the Pre-Test Plan acceptance letter received from the MECP, dated October 14, 2020, indicating acceptance of the proposed sampling strategy. A copy of the Amended Environmental Compliance Approval, including amendment notices, is also provided in Appendix 3.

Triplicate emission tests were completed for each of the test parameters listed in Schedule D of the ECA between November 9 and November 12, 2020.

2. PROCESS DESCRIPTION

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

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

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

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

2.1 Control Equipment

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

2.2 Continuous Emission Monitoring Systems

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

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

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

3. SAMPLING LOCATIONS

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

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

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

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

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

The results for the cyclonic flow checks are summarized below:

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

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

4. SAMPLING PROCEDURES

4.1 General

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

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

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

Since relative accuracy and system bias testing was performed in July 2020, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (November 9 to November 12, 2020) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on November 9, 2020 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

4.2 Particulate and Metals

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

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

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

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

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

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

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

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

4.3 Particle Size Distribution

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

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

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

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

4.4 Semi-Volatile Organic Compounds

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

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

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

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

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

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

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

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

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

4.5 Acid Gases

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

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

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

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

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

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

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

4.6 Volatile Organic Compounds

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

During each test, a single forty minute run was completed at an approximate flowrate of 0.5 L/min. A fourth run was also conducted and the tube pair was archived in case a sample was lost during desorption or analysis. The analytical results from the three runs performed were combined and used to calculate test average results for the respective source.

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

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

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

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

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

4.7 Aldehydes

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

Major components of the test train were as follows:

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

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

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

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

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

4.8 Combustion Gases

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

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

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. The data measured by the DYEC CEMS, from November 9, 2020 at 00:00 to November 12, 2020 at 23:00, was used to assess against the in-stack emission limit stated in the ECA for each Boiler.

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

Total hydrocarbon concentrations were measured by ORTECH following the procedures detailed in US EPA Method 25A. Triplicate one-hour tests were conducted at the Quench Inlet and BH Outlet of each Boiler on November 9, 2020. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA.

5. SAMPLE RECOVERY AND ANALYSIS

All sample analysis was performed by ALS Canada Ltd. Copies of Sample Logs/Chain of Custody Forms for all samples submitted for chemical analysis are provided in Appendix 10.

5.1 Particulate and Metals

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

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

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

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

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

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

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

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

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

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

5.2 Particle Size Distribution

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

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

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

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

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

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

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

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

5.3 Semi-Volatile Organic Compounds

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

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

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

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

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

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

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

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

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

The SVOC analytical reports are provided in Appendix 15.

5.4 Acid Gases

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

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

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

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

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

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

5.5 Volatile Organics Train Recovery

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

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

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

The VOST analytical report is provided in Appendix 17.

5.6 Aldehydes

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

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

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

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

6. INTERNAL AND EXTERNAL QA/QC PROGRAM

6.1 General

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

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

6.2 Pre-Test Activities

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

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

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

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

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

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

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

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

6.3 Emission Testing QA/QC Results

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

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

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

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

6.4 Sample Recovery, Handling and Custody

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

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

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

6.5 Analytical Results

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

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

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

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

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

6.5.1 Metals Sample Analysis QA/QC

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

ICPMS Analysis

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

- One duplicate sample analysis was performed for the test program. The relative percent difference was less than 4.4% well within the acceptable limit of less than ±20%, for elements that are greater than 5 times the minimum detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 96-104%. The acceptable limit is 85-115% of the true value.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. All of the recovery results were between 83-101%. 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 and nickel were detected in the blank train at levels greater than the limit of reporting. Chromium, copper, molybdenum and nickel were observed by the analytical laboratory in the method blank at levels greater than the limit of reporting. The test sample data may be biased high for these compounds as a result of this potential background.

Mercury Analysis

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

- One duplicate sample analysis was performed for each fraction. The relative percent difference was less than 1.1% within the acceptable limit of less than ±20%, for fractions that are greater than 5 times the minimum detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 93-95% within the acceptable limit of 90-110% of the true value.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. All of the recovery results were between 88-99%, 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 4.0%, 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 97% for hydrogen chloride, 101% for hydrogen fluoride and 103% for ammonia, within the acceptable range of 90-110%.
- A matrix spike (spike confirmation) sample was analyzed with every 20 samples to confirm the identity of each peak. The recovery results of the matrix spike sample were 105% for hydrogen chloride, 95% for hydrogen fluoride and 101% for ammonia, within the acceptable range of 80-120%.

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

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

6.5.3 Aldehyde Sample Analysis QA/QC

Analysis for formaldehyde, acetaldehyde and acrolein was performed via GC/MS. Laboratory control samples were analyzed with the test samples. Two laboratory control samples were prepared by the analytical laboratory and analyzed with the test samples (5µg and 2.5 µg). The recovery for the 5µg sample was 119% for acetaldehyde, 75% for formaldehyde and 66% for acrolein. The recovery for the 2.5µg sample was 144% for acetaldehyde, 102% for formaldehyde and 25% for acrolein.

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

During the preparation of the 2021 compliance testing report (ORTECH Report No. 22085) an inconsistency was noted by ORTECH in regards to the units being used in the analytical reports for acetaldehyde, formaldehyde and acrolein. Upon review by ALS, it was determined that the data reported for the 2020 compliance testing program was incorrect. The data was reported as ng and should have been reported as µg; as a result the emission data in the original report, dated January 19, 2021, was incorrect for these compounds. ORTECH has revised this report to correct the acetaldehyde, formaldehyde and acrolein emission data and dispersion modelling.

6.5.4 SVOC Sample Analysis QA/QC

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

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

Recovery of the dioxin and furan field spike standards were between 75-123% 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 dioxin and furan analytical report, 123678-HxCDF showed the presence of a peak in the corresponding diphenylether channel on the field samples. Historical evidence has shown that this diphenylether is a false positive and the HxCDF value is considered real and unbiased. Also, the mass resolution deteriorated during the 12 hour run sequence with the resolution being slightly below 10,000 for selected functions at the end of the run sequence. There is no evidence for enhanced interferences or noise to negatively impact data quality.

Per the analytical report for chlorophenols, select C-13 extraction/internal standards were biased low and below the targeted 20% lower control limit. However, due to isotope dilution corrections the lower recoveries should not compromise the quantitation of positive target responses.

6.5.5 Volatile Organic Compound Analysis QA/QC

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

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

The analytical report includes the field standards, internal standards and surrogate standards used. The surrogate recoveries for each of the surrogates should be between 50-150%. The recoveries for each sample were between 71-116%.

7. RESULTS AND DISCUSSION

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

Combustion gases, including hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide were measured during the emission testing program (November 9 to November 12, 2020) by the DYEC CEMS. Total hydrocarbon concentrations were also measured at the BH Outlet and Quench Inlet by ORTECH on November 9, 2020.

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

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

7.1 Stack Gas Sampling Parameters

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

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

7.2 Stack Gas Physical Parameters

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

Stack Gas Parameter	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Gas Temperature (°C)	140	142
Moisture by Volume (%)	16.1	15.7
Velocity (m/s)	17.5	17.5
Static Pressure (kPa)	-2.34	-2.28
Absolute Pressure (kPa)	98.4	98.6
Carbon Dioxide by Volume (%)**	10.8	11.0
Oxygen by Volume (%)**	8.49	8.32

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

7.3 Volumetric Flowrate Data

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

Volumetric Flowrate	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Actual Flowrate (m^3/s)	25.8	25.8
Dry Reference Flowrate (Rm^3/s)**	15.2	15.2
Dry Adjusted Flowrate (Rm^3/s)***	19.0	19.3
Wet Reference Flowrate (Rm^3/s)**	18.1	18.0

* Excludes the isokinetic Acid Gases tests as testing was conducted on a single traverse of the duct

** at 25°C and 1 atmosphere

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

7.4 Particulate Emission Data

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

Particulate Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	1.90	1.49
Dry Reference Conc. (mg/Rm^3)*	3.19	2.54
Dry Adjusted Conc. (mg/Rm^3)**	2.60	2.00
Wet Reference Conc. (mg/Rm^3)*	2.70	2.14
Emission Rate (mg/s)	49.6	39.3

* 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 (2.60 mg/Rm^3, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (2.00 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 0.6 mg and 0.6 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 0.3 mg and <0.1 mg, respectively. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the particulate emission data.

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

PM_{10} and $PM_{2.5}$ Emission Parameter	PM_{10}		$PM_{2.5}$	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<0.46	<0.39	<0.17	<0.30
Dry Reference Conc. (mg/Rm^3)*	<0.79	<0.65	<0.28	<0.51
Dry Adjusted Conc. (mg/Rm^3)**	<0.63	<0.51	<0.22	<0.40
Wet Reference Conc. (mg/Rm^3)*	<0.66	<0.55	<0.24	<0.43
Emission Rate (mg/s)	<12.3	<10.0	<4.36	<7.86

* 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)	1.84	2.10	1.14	1.31
Dry Reference Conc. (mg/Rm^3)*	3.15	3.53	1.96	2.20
Dry Adjusted Conc. (mg/Rm^3)**	2.49	2.77	1.55	1.73
Wet Reference Conc. (mg/Rm^3)*	2.63	2.98	1.64	1.86
Emission Rate (mg/s)	47.9	53.3	29.7	33.2

* 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 1.4 mg for the inorganic fraction and 0.5 mg for the organic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 1.9 mg for the inorganic fraction and 0.6 mg for the organic fraction. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the condensable particulate emission data.

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

PM_{10} and $PM_{2.5}$ + Condensable Emission Parameter	PM_{10} + Condensable		$PM_{2.5}$ + Condensable	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<3.44	<3.79	<3.15	<3.71
Dry Reference Conc. (mg/Rm^3)*	<5.90	<6.38	<5.39	<6.24
Dry Adjusted Conc. (mg/Rm^3)**	<4.67	<5.01	<4.26	<4.90
Wet Reference Conc. (mg/Rm^3)*	<4.93	<5.38	<4.51	<5.27
Emission Rate (mg/s)	<88.9	<96.5	<82.0	<94.3

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

7.5 Acid Gases

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

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

Acid Gases Emission Parameter	Hydrogen Chloride		Hydrogen Fluoride		Ammonia	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (mg/m^3)	2.94	2.29	<0.075	<0.076	0.45	0.49
Dry Reference Conc. (mg/Rm^3)*	4.91	3.90	<0.13	<0.13	0.75	0.84
Dry Adjusted Conc. (mg/Rm^3)**	4.00	3.06	<0.10	<0.10	0.61	0.66
Wet Reference Conc. (mg/Rm^3)*	4.18	3.27	<0.11	<0.11	0.64	0.70
Emission Rate (mg/s)	76.2	60.8	<1.95	<2.02	11.6	13.1
Dry Adjusted Conc. (ppm)**	2.69	2.05	<0.13	<0.13	0.88	0.94

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

Hydrogen fluoride and ammonia were not detected in the blank samples in quantities greater than the detection limit. Hydrogen chloride was detected in Blank Train No. 2 in quantities greater than the detection limit. The blank analysis was not subtracted from the test sample analyses during calculation of the emission data.

7.6 Combustion Gas Emission Data

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

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. DYEC CEMS data was provided from November 9, 2020 at 00:00 to November 12, 2020 at 23:00 for each Boiler.

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

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

Combustion Gases Emission Parameter		In-Stack ECA Limit	Maximum Concentration	
			Boiler No. 1	Boiler No. 2
BH Outlet	Oxygen (%, 1-hr)	-	9.51	8.90
	Carbon Monoxide (mg/Rm^3, 4-hr)*	≤ 40	16.8	20.8
	Sulphur Dioxide (mg/Rm^3, 24-hr)*	≤ 35	0.5	0.5
	Nitrogen Oxides (mg/Rm^3, 24-hr)*	≤ 121	110	111
	Hydrogen Chloride (mg/Rm^3, 24-hr)*	≤ 9	4.4	3.7
	Total Hydrocarbons (mg/Rm^3, 1-hr)*	-	0	1
Quench Inlet	Oxygen (%, 1-hr)	≥ 6	9	9

* dry at reference conditions, adjusted to 11% oxygen

** dry at reference conditions

Total hydrocarbon concentration data was measured by ORTECH on November 9, 2020 at the Quench Inlet and BH Outlet sampling locations. The results of the total hydrocarbons tests are summarized in Table 10 (Appendix 1 and Appendix 2). The average THC concentration for each location, along with the in-stack limit stated in the ECA, is summarized in the following table.

Combustion Gases Emission Parameter		Limit	Average Concentration	
			Boiler No. 1	Boiler No. 2
BH Outlet	Total Hydrocarbons (1-minute)*	-	0.5	0.3
	Total Hydrocarbons (10-minute)**	-	0.5	0.3
Quench Inlet	Total Hydrocarbons (1-minute)*	-	0.5	1.1
	Total Hydrocarbons (10-minute)**	50	0.5	1.1

* 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)	0.055	0.041
Dry Reference Conc. (µg/Rm^3)*	0.093	0.071
Dry Adjusted Conc. (µg/Rm^3)**	0.075	0.056
Wet Reference Conc. (µg/Rm^3)*	0.079	0.060
Emission Rate (mg/s)	0.0014	0.0011

* 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)	0.27	0.25
Dry Reference Conc. (µg/Rm^3)*	0.46	0.43
Dry Adjusted Conc. (µg/Rm^3)**	0.37	0.34
Wet Reference Conc. (µg/Rm^3)*	0.39	0.36
Emission Rate (mg/s)	0.0071	0.0067

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

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

7.8 Mercury Emission Data

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

The average mercury emission data is summarized below:

Mercury Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	0.25	<0.034
Dry Reference Conc. (µg/Rm^3)*	0.42	<0.058
Dry Adjusted Conc. (µg/Rm^3)**	0.34	<0.045
Wet Reference Conc. (µg/Rm^3)*	0.36	<0.048
Emission Rate (mg/s)	0.0065	<0.00089

* 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)	1.29	0.30
Dry Reference Conc. (ng/Rm^3)*	2.20	0.52
Dry Adjusted Conc. (ng/Rm^3)**	1.75	0.41
Wet Reference Conc. (ng/Rm^3)*	1.84	0.44
Emission Rate (ng/s)	32.6	7.86

* 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)	0.38	<0.082
Dry Reference Conc. (ng/Rm^3)*	0.65	<0.14
Dry Adjusted Conc. (ng/Rm^3)**	0.52	<0.11
Wet Reference Conc. (ng/Rm^3)*	0.54	<0.12
Emission Rate (ng/s)	9.66	<2.12

* 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)	20.4	4.12
Dry Reference Conc. (pg TEQ/Rm^3)*	35.0	7.02
Dry Adjusted Conc. (pg TEQ/Rm^3)**	27.8	5.55
Wet Reference Conc. (pg TEQ/Rm^3)*	29.3	5.92
Emission Rate (ng TEQ/s)	0.52	0.11

* at 25°C and 1 atmosphere

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

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

Dioxin and Furan Isomer Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Dry Adjusted Conc. (pg TEQ/Rm^3)*	<28.7	<7.26

* 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)	<626	<300
Dry Reference Conc. (ng/Rm^3)*	<1069	<512
Dry Adjusted Conc. (ng/Rm^3)**	<850	<404
Wet Reference Conc. (ng/Rm^3)*	<895	<431
Emission Rate (µg/s)	<15.9	<7.73

* at 25°C and 1 atmosphere

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

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

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

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

The average total chlorophenol emission data is presented below:

Chlorophenol Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<132	<147
Dry Reference Conc. (ng/Rm^3)*	<226	<250
Dry Adjusted Conc. (ng/Rm^3)**	<180	<198
Wet Reference Conc. (ng/Rm^3)*	<189	<211
Emission Rate (µg/s)	<3.35	<3.77

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

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

7.9.3 Polycyclic Aromatic Hydrocarbon Emission Data

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

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

The average total PAH emission data is presented below:

Total PAH Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<229	<190
Dry Reference Conc. (ng/Rm^3)*	<391	<324
Dry Adjusted Conc. (ng/Rm^3)**	<311	<256
Wet Reference Conc. (ng/Rm^3)*	<328	<273
Emission Rate (µg/s)	<5.80	<4.89

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

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

7.10 Aldehydes

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

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

Aldehydes Emission Parameter	Acetaldehyde		Formaldehyde		Acrolein	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	25.3	37.8	26.8	32.2	<1.40	<1.86
Dry Reference Conc. (µg/Rm^3)*	43.4	65.1	46.1	55.3	<2.40	<3.20
Dry Adjusted Conc. (µg/Rm^3)**	34.5	51.4	36.6	43.7	<1.90	<2.52
Wet Reference Conc. (µg/Rm^3)*	36.3	54.6	38.5	46.4	<2.01	<2.68
Emission Rate (mg/s)	0.64	0.99	0.68	0.84	<0.035	<0.049

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

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

7.11 Volatile Organic Emission Data

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

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

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

VOC Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	<215	<261
Dry Reference Conc. (µg/Rm^3)*	<373	<448
Dry Adjusted Conc. (µg/Rm^3)**	<293	<354
Wet Reference Conc. (µg/Rm^3)*	<310	<376
Emission Rate (mg/s)	<5.51	<6.76

* at 25°C and 1 atmosphere

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

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

VOC Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Dry Reference Conc. (µg/Rm^3)*	<465	<572
Dry Adjusted Conc. (µg/Rm^3)**	<366	<452
Emission Rate (mg/s)	<6.87	<8.65

* at 25°C and 1 atmosphere

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

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

8. DISPERSION MODELLING

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

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

The predicted ground level Point of Impingement (POI) concentrations, calculated based on the average total emission rate, for each contaminant included in the November 2020 emission testing program was well below the applicable standard, guideline or upper risk threshold. The contaminant with the highest predicted concentration relative to the standard was nitrogen oxides (6% of the 1-hour standard and 2% of the 24-hour standard with meteorological anomaly removal), all other contaminants were less than 1% of the relevant standard with meteorological anomaly removal.

9. FACILITY PROCESS DATA

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

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

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. DYEC CEMS data was provided from November 9, 2020 at 00:00 to November 12, 2020 at 23:00 for each Boiler. A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limit stated in the ECA.

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

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

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

Test Date	Total Power Output* (MWh/d)	Aux. Fuel Combusted** (m^3/d)		Avg. Combustion Zone Temp. (°C)		Steam (tonnes/d)		MSW Combusted*** (tonnes/d)		NO_X Reagent Inj. Rate (liters/d)		Carbon Inj. Rate (kg/d)		Lime Inj. Rate (kg/d)	
		Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Nov 9/20	392	0	0	1230	1312	808	808	192	199	531	801	134	126	4393	4242
Nov 10/20	391	0	0	1226	1300	807	804	202	203	522	828	133	126	4208	4262
Nov 11/20	389	23	0	1235	1316	803	804	204	202	516	882	131	126	4182	4205
Nov 12/20	390	0	0	1227	1314	806	805	200	205	458	755	134	126	4167	4224
Average	391	6	0	1230	1311	806	805	199	202	507	816	133	126	4237	4233

* Gross turbine output

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

*** Calculated by crane scales.

10. CONCLUSIONS

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

- During the stack test periods the facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation. Testing was conducted at a steam production rate of greater than 803 tonnes of steam per day for each Boiler. The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler).
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in the ECA.
- Using CALPUFF dispersion modelling techniques (using Version 6.263 as requested by the MECP), the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below the current standards in Regulation 419/05 (Schedule 3) under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

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

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

Total hydrocarbon concentration data was measured by ORTECH on November 9, 2020 at the Quench Inlet and BH Outlet sampling locations. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was well below the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

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

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1230	-
Steam (tonnes/day)*	-	-	-	806	-
MSW Combusted (tonnes/day)*	-	-	-	199	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	507	-
Carbon Injection (kg/day)*	-	-	-	133	-
Lime Injection (kg/day)*	-	-	-	4237	-
Filterable Particulate (mg/Rm^3) (1)	3.35	4.07	0.36	2.60	9
PM_{10} with Condensable (mg/Rm^3) (1)	<4.77	<5.15	<4.08	<4.67	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.90	<4.95	<3.94	<4.26	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.097	<0.10	<0.11	<0.10	-
Ammonia (mg/Rm^3) (1)	0.55	0.67	0.61	0.61	-
Cadmium (µg/Rm^3) (1)	0.093	0.075	0.058	0.075	7
Lead (µg/Rm^3) (1)	0.48	0.34	0.29	0.37	50
Mercury (µg/Rm^3) (1)	0.55	0.35	0.13	0.34	15
Antimony (µg/Rm^3) (1)	0.092	0.046	<0.040	<0.059	-
Arsenic (µg/Rm^3) (1)	<0.046	<0.045	<0.040	<0.044	-
Barium (µg/Rm^3) (1)	1.55	1.38	1.81	1.58	-
Beryllium (µg/Rm^3) (1)	<0.046	<0.045	<0.040	<0.044	-
Chromium (µg/Rm^3) (1)	1.41	1.00	0.65	1.02	-
Cobalt (µg/Rm^3) (1)	<0.046	<0.045	0.069	<0.053	-
Copper (µg/Rm^3) (1)	5.25	5.22	5.16	5.21	-
Molybdenum (µg/Rm^3) (1)	5.60	5.34	4.79	5.24	-
Nickel (µg/Rm^3) (1)	1.31	2.34	0.97	1.54	-
Selenium (µg/Rm^3) (1)	1.33	1.84	<0.20	<1.12	-
Silver (µg/Rm^3) (1)	<0.046	<0.045	<0.040	<0.044	-
Thallium (µg/Rm^3) (1)	0.22	0.091	<0.040	<0.12	-
Vanadium (µg/Rm^3) (1)	<0.023	<0.023	<0.020	<0.022	-
Zinc (µg/Rm^3) (1)	8.23	5.17	4.52	5.97	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<31.2	<31.0	<23.8	<28.7	60
Total Chlorobenzenes (ng/Rm^3) (1)	<761	<942	<848	<850	-
Total Chlorophenols (ng/Rm^3) (1)	<178	<185	<175	<180	-
Total PAHs (ng/Rm^3) (1)	<200	<515	<219	<311	-
VOCs (µg/Rm^3) (1)	<308	<267	<305	<293	-
Aldehydes (µg/Rm^3) (1)	<79.9	<60.5	<78.5	<73.0	-
Total VOCs (µg/Rm^3) (1) (4)	<388	<328	<384	<366	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.9	0.2	0.3	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)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1311	-
Steam (tonnes/day)*	-	-	-	805	-
MSW Combusted (tonnes/day)*	-	-	-	202	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	816	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	4233	-
Filterable Particulate (mg/Rm^3) (1)	2.72	0.76	2.52	2.00	9
PM_{10} with Condensable (mg/Rm^3) (1)	<4.96	<5.40	<4.68	<5.01	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<4.89	<5.27	<4.54	<4.90	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.10	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm^3) (1)	0.73	0.65	0.60	0.66	-
Cadmium (µg/Rm^3) (1)	0.054	0.034	0.078	0.056	7
Lead (µg/Rm^3) (1)	0.34	0.32	0.36	0.34	50
Mercury (µg/Rm^3) (1)	0.058	<0.033	<0.045	<0.045	15
Antimony (µg/Rm^3) (1)	<0.038	0.051	<0.045	<0.044	-
Arsenic (µg/Rm^3) (1)	<0.038	<0.045	<0.045	<0.042	-
Barium (µg/Rm^3) (1)	0.22	1.93	2.18	1.44	-
Beryllium (µg/Rm^3) (1)	<0.038	<0.045	<0.045	<0.042	-
Chromium (µg/Rm^3) (1)	0.75	0.85	0.74	0.78	-
Cobalt (µg/Rm^3) (1)	<0.038	<0.045	0.066	<0.050	-
Copper (µg/Rm^3) (1)	5.00	5.11	5.14	5.09	-
Molybdenum (µg/Rm^3) (1)	4.55	5.33	5.20	5.03	-
Nickel (µg/Rm^3) (1)	0.66	0.83	1.11	0.87	-
Selenium (µg/Rm^3) (1)	<0.19	0.68	<0.22	<0.37	-
Silver (µg/Rm^3) (1)	<0.038	<0.045	<0.045	<0.042	-
Thallium (µg/Rm^3) (1)	<0.038	0.058	0.16	<0.084	-
Vanadium (µg/Rm^3) (1)	<0.019	<0.022	0.061	<0.034	-
Zinc (µg/Rm^3) (1)	3.75	5.36	5.67	4.93	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<6.90	<8.31	<6.59	<7.26	60
Total Chlorobenzenes (ng/Rm^3) (1)	<440	<436	<337	<404	-
Total Chlorophenols (ng/Rm^3) (1)	<206	<173	<215	<198	-
Total PAHs (ng/Rm^3) (1)	<229	<311	<227	<256	-
VOCs (µg/Rm^3) (1)	<317	<400	<345	<354	-
Aldehydes (µg/Rm^3) (1)	<110	<81.1	<102	<97.7	-
Total VOCs (µg/Rm^3) (1) (4)	<427	<481	<447	<452	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	1.6	1.0	0.6	1.1	50

* based on process data provided by Covanta

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

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

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

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

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

Boiler No.	Parameter	Minimum	Average	Maximum	In-Stack Limit
Boiler No. 1	Carbon Monoxide (mg/Rm^3) (1)	7.8	11.4	16.8	40
	Hydrogen Chloride (mg/Rm^3) (2)	3.4	3.8	4.4	9
	Nitrogen Oxides (mg/Rm^3) (2)	109	110	110	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.1	0.5	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	10.8	14.1	20.8	40
	Hydrogen Chloride (mg/Rm^3) (2)	2.8	3.2	3.7	9
	Nitrogen Oxides (mg/Rm^3) (2)	110	110	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.1	0.5	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
(92 pages)

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

Particulate and Metals Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 9, 2020	9:37	12:44	180
2	November 9, 2020	13:29	16:44	180
3	November 10, 2020	15:04	18:13	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 10, 2020	8:09	10:13	120
2	November 10, 2020	10:58	12:59	120
3	November 10, 2020	13:42	15:45	120

Acid Gases Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 9, 2020	9:31	10:31	60
2	November 9, 2020	11:44	12:44	60
3	November 9, 2020	13:09	14:09	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 11, 2020	8:23	12:30	240
2	November 11, 2020	13:27	18:26	240
3	November 12, 2020	8:20	12:32	240

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

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

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	November 11, 2020	11:38	12:38	60
2	November 11, 2020	12:42	13:42	60
3	November 11, 2020	13:45	15:35	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	November 11, 2020	8:19	8:59	40
2	November 11, 2020	9:04	9:44	40
3	November 11, 2020	9:48	10:28	40
4	November 11, 2020	10:34	11:14	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
BH Outlet	1	November 9, 2020	14:52	15:52	60
BH Outlet	2	November 9, 2020	15:58	16:58	60
BH Outlet	3	November 9, 2020	17:04	18:04	60
Quench Inlet	1	November 9, 2020	10:10	11:10	60
Quench Inlet	2	November 9, 2020	11:17	12:17	60
Quench Inlet	3	November 9, 2020	12:23	13:23	60

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

Particulate and Metals Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.851	0.999	6.38	3.521	97.5
2	0.851	0.999	6.38	3.600	98.3
3	0.848	1.004	6.73	3.969	101.2

Particle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	0.992	4.51	1.176	95.7
2	0.848	0.992	4.51	1.180	101.7
3	0.848	0.992	4.51	1.167	99.2

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	1.004	6.73	1.338	100.5
2	0.848	1.004	6.73	1.296	100.0
3	0.848	1.004	6.73	1.322	101.5

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	0.849	1.004	6.73	5.135	99.7
2	0.849	1.004	6.73	5.077	99.0
3	0.849	1.004	6.73	5.162	99.6

* Dry at 25°C and 1 atmosphere

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

Particulate and Metals Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	14.6	17.4	-2.22	99.3	10.7	8.74
2	142	15.8	17.9	-2.22	99.1	10.7	8.75
3	141	16.6	17.5	-2.33	98.0	10.8	8.39
Average	141	15.7	17.6	-2.26	98.8	10.7	8.63

Particle Size Distribution Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	142	16.7	18.3	-2.33	98.4	10.9	8.36
2	140	16.1	17.1	-2.33	98.3	11.0	8.37
3	141	16.6	17.6	-2.33	98.1	10.8	8.45
Average	141	16.5	17.7	-2.33	98.3	10.9	8.39

Acid Gases Trains **

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	140	14.4	17.2	-2.22	99.4	10.8	8.73
2	142	15.8	17.0	-2.22	99.3	10.8	8.59
3	143	17.6	17.6	-2.22	99.1	11.0	8.30
Average	142	15.9	17.3	-2.22	99.3	10.9	8.54

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	140	16.6	17.3	-2.37	97.6	10.8	8.34
2	139	16.2	17.1	-2.37	97.7	10.8	8.49
3	138	15.9	17.0	-2.51	98.7	11.0	8.49
Average	139	16.2	17.1	-2.42	98.0	10.9	8.44

* Dry basis, measured by the DYEC CEMS

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

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

Particulate and Metals Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.6	15.4	19.0	18.1
2	26.5	15.7	19.2	18.6
3	25.9	15.1	19.0	18.1
Average	26.0	15.4	19.1	18.2

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.1	15.7	19.9	18.9
2	25.3	14.9	18.9	17.7
3	26.0	15.1	19.0	18.1
Average	26.1	15.2	19.2	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	25.3	15.3	18.9	17.9
2	25.2	14.9	18.6	17.7
3	26.0	15.0	19.1	18.2
Average	25.5	15.1	18.8	18.0

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.6	14.8	18.8	17.8
2	25.3	14.8	18.5	17.6
3	25.2	14.9	18.7	17.8
Average	25.3	14.8	18.7	17.7

* At 25°C and 1 atmosphere

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

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

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

Test No.	Particulate Collected Probe Rinse mg	Main Filter mg	Total mg	Dry Gas Volume Sampled Rm³*	Particulate Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	Particulate Emission Rate mg/s
1	14.4	0.1	14.5	3.521	2.48	4.12	3.35	3.52	63.6
2	17.7	0.3	18.0	3.600	2.96	5.00	4.07	4.21	78.3
3	1.6	0.2	1.8	3.969	0.26	0.45	0.36	0.38	6.83
Average					1.90	3.19	2.60	2.70	49.6
Blank	0.6	0.6							

* At 25 °C and 1 atmosphere

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

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

$PM_{2.5}$

Test No.	Total Collected mg	Dry Volume Sampled Rm³*	$PM_{2.5}$ Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	Emission Rate mg/s
1	<0.5	1.176	<0.25	<0.43	<0.34	<0.35	<6.68
2	<0.2	1.180	<0.10	<0.17	<0.13	<0.14	<2.53
3	<0.3	1.167	<0.15	<0.26	<0.20	<0.21	<3.88
Average			<0.17	<0.28	<0.22	<0.24	<4.36
Blank	<0.2						

PM_{10}

Test No.	Total Collected mg	Dry Volume Sampled Rm³*	PM_{10} Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	Emission Rate mg/s
1	<1.8	1.176	<0.89	<1.53	<1.21	<1.27	<24.0
2	<0.5	1.180	<0.25	<0.42	<0.33	<0.36	<6.31
3	<0.5	1.167	<0.25	<0.43	<0.34	<0.36	<6.47
Average			<0.46	<0.79	<0.63	<0.66	<12.3
Blank	<0.3						

* At 25 °C and 1 atmosphere

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

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

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

Inorganic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Inorganic Condensable Particulate Concentration: Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	3.5	1.176	1.72	2.98	2.35	2.47	46.7
2	4.0	1.180	2.00	3.39	2.68	2.85	50.5
3	3.6	1.167	1.79	3.08	2.45	2.57	46.6
Average			1.84	3.15	2.49	2.63	47.9
Blank	1.4						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Organic Condensable Particulate Concentration: Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	1.8	1.176	0.89	1.53	1.21	1.27	24.0
2	3.2	1.180	1.60	2.71	2.14	2.28	40.4
3	1.9	1.167	0.95	1.63	1.29	1.36	24.6
Average			1.14	1.96	1.55	1.64	29.7
Blank	0.5						

* At 25 °C and 1 atmosphere

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

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

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Chloride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	6.56	1.338	2.95	4.90	3.99	4.18	75.7
2	6.76	1.296	3.14	5.22	4.25	4.45	80.5
3	6.11	1.322	2.73	4.62	3.77	3.89	72.3
Average			2.94	4.91	4.00	4.18	76.2
Blank	<0.157						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Fluoride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.160	1.338	<0.072	<0.12	<0.097	<0.10	<1.85
2	<0.161	1.296	<0.075	<0.12	<0.10	<0.11	<1.92
3	<0.176	1.322	<0.079	<0.13	<0.11	<0.11	<2.08
Average			<0.075	<0.13	<0.10	<0.11	<1.95
Blank	<0.107						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Ammonia Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	0.911	1.338	0.41	0.68	0.55	0.58	10.5
2	1.06	1.296	0.49	0.82	0.67	0.70	12.6
3	0.986	1.322	0.44	0.75	0.61	0.63	11.7
Average			0.45	0.75	0.61	0.64	11.6
Blank	<0.288						

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

* At 25 °C and 1 atmosphere

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

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

Data measured by the DYEC CEMS from November 9 to November 12, 2020

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.97	8.48	9.51
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	6	11	26
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	7.8	11.4	16.8
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.1	6.0
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.1	0.5
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	98	110	118
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	109	110	110
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	1	4	7
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	3.4	3.8	4.4
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	0
Quench Inlet	Oxygen (%, 1 hr Avg)	8	9	9

Data measured by the ORTECH CEMS on November 9, 2020

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.4	4.8
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.4	3.4
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.7	5.6
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.5	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0.3	0.9	4.6
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	1.3
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0.1	0.3	2.5
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.5	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0.4	1.0	2.2
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.2	0.4
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0.1	0.3	0.7
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 µg	Impingers & Rinses µg	Total Collected µg
Antimony	0.40	<0.1	0.40
Arsenic	<1	<0.2	<0.20
Barium	5.48	1.22	6.70
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.25	0.15	0.40
Chromium	5.34	0.74	6.08
Cobalt	<0.2	<0.1	<0.20
Copper	6.98	15.7	22.7
Lead	1.23	0.84	2.07
Mercury *	<0.015	2.38	2.38
Molybdenum	24.2	<0.1	24.2
Nickel	4.83	0.85	5.68
Selenium	<2	5.75	5.75
Silver	<0.2	<0.1	<0.20
Thallium	0.97	<0.05	0.97
Vanadium	<1	<0.1	<0.10
Zinc	25.2	10.4	35.6
Total			<114

* Includes the permanganate impingers

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	0.21	<0.1	0.21
Arsenic	<1	<0.2	<0.20
Barium	5.07	1.01	6.08
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.17	0.16	0.33
Chromium	3.85	0.58	4.43
Cobalt	<0.2	<0.1	<0.20
Copper	6.68	16.4	23.1
Lead	0.96	0.55	1.51
Mercury *	<0.015	1.55	1.55
Molybdenum	23.6	<0.1	23.6
Nickel	3.40	6.95	10.4
Selenium	<2	8.13	8.13
Silver	<0.2	<0.1	<0.20
Thallium	0.40	<0.05	0.40
Vanadium	<1	<0.1	<0.10
Zinc	16.8	6.05	22.9
Total			<103

* Includes the permanganate impingers

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	8.07	1.00	9.07
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.23	0.060	0.29
Chromium	2.76	0.49	3.25
Cobalt	0.35	<0.1	0.35
Copper	6.16	19.7	25.9
Lead	1.01	0.46	1.47
Mercury *	<0.015	0.64	0.64
Molybdenum	24.0	<0.1	24.0
Nickel	3.84	1.01	4.85
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	17.0	5.66	22.7
Total			<94.5

* Includes the permanganate impingers

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

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

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	0.40	0.068	0.11	0.092	0.096	0.0017
Arsenic	<0.20	<0.034	<0.057	<0.046	<0.048	<0.00088
Barium	6.70	1.15	1.90	1.55	1.62	0.029
Beryllium	<0.20	<0.034	<0.057	<0.046	<0.048	<0.00088
Cadmium	0.40	0.069	0.11	0.093	0.098	0.0018
Chromium	6.08	1.04	1.73	1.41	1.47	0.027
Cobalt	<0.20	<0.034	<0.057	<0.046	<0.048	<0.00088
Copper	22.7	3.88	6.44	5.25	5.50	0.099
Lead	2.07	0.35	0.59	0.48	0.50	0.0091
Mercury	2.38	0.41	0.68	0.55	0.58	0.010
Molybdenum	24.2	4.14	6.87	5.60	5.87	0.11
Nickel	5.68	0.97	1.61	1.31	1.38	0.025
Selenium	5.75	0.98	1.63	1.33	1.39	0.025
Silver	<0.20	<0.034	<0.057	<0.046	<0.048	<0.00088
Thallium	0.97	0.17	0.28	0.22	0.24	0.0043
Vanadium	<0.10	<0.017	<0.028	<0.023	<0.024	<0.00044
Zinc	35.6	6.09	10.1	8.23	8.63	0.16
Total	<114	<19.5	<32.3	<26.3	<27.6	<0.50

Dry Gas Volume Sampled (Rm^3*) :	3.521
Actual Flowrate (m^3/s) :	25.6
Dry Reference Flowrate (Rm^3/s*) :	15.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	18.1

* At 25°C and 1 atmosphere

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

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

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	0.21	0.034	0.057	0.046	0.048	0.00089
Arsenic	<0.20	<0.033	<0.056	<0.045	<0.047	<0.00087
Barium	6.08	1.00	1.69	1.38	1.42	0.026
Beryllium	<0.20	<0.033	<0.056	<0.045	<0.047	<0.00087
Cadmium	0.33	0.054	0.092	0.075	0.077	0.0014
Chromium	4.43	0.73	1.23	1.00	1.04	0.019
Cobalt	<0.20	<0.033	<0.056	<0.045	<0.047	<0.00087
Copper	23.1	3.79	6.41	5.22	5.40	0.10
Lead	1.51	0.25	0.42	0.34	0.35	0.0066
Mercury	1.55	0.25	0.43	0.35	0.36	0.0067
Molybdenum	23.6	3.87	6.56	5.34	5.52	0.10
Nickel	10.4	1.70	2.88	2.34	2.42	0.045
Selenium	8.13	1.33	2.26	1.84	1.90	0.035
Silver	<0.20	<0.033	<0.056	<0.045	<0.047	<0.00087
Thallium	0.40	0.066	0.11	0.091	0.094	0.0018
Vanadium	<0.10	<0.016	<0.028	<0.023	<0.023	<0.00043
Zinc	22.9	3.75	6.35	5.17	5.34	0.099
Total	<103	<17.0	<28.7	<23.4	<24.2	<0.45

Dry Gas Volume Sampled (Rm³*) :	3.600
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*) :	15.7
Dry Adjusted Flowrate (Rm³/s**) :	19.2
Wet Reference Flowrate (Rm³/s*) :	18.6

* At 25°C and 1 atmosphere

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

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

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.20	<0.029	<0.050	<0.040	<0.042	<0.00076
Arsenic	<0.20	<0.029	<0.050	<0.040	<0.042	<0.00076
Barium	9.07	1.33	2.29	1.81	1.91	0.034
Beryllium	<0.20	<0.029	<0.050	<0.040	<0.042	<0.00076
Cadmium	0.29	0.043	0.074	0.058	0.061	0.0011
Chromium	3.25	0.48	0.82	0.65	0.68	0.012
Cobalt	0.35	0.051	0.087	0.069	0.072	0.0013
Copper	25.9	3.79	6.52	5.16	5.43	0.098
Lead	1.47	0.22	0.37	0.29	0.31	0.0056
Mercury	0.64	0.094	0.16	0.13	0.14	0.0024
Molybdenum	24.0	3.52	6.05	4.79	5.04	0.091
Nickel	4.85	0.71	1.22	0.97	1.02	0.018
Selenium	<1.00	<0.15	<0.25	<0.20	<0.21	<0.0038
Silver	<0.20	<0.029	<0.050	<0.040	<0.042	<0.00076
Thallium	<0.20	<0.029	<0.050	<0.040	<0.042	<0.00076
Vanadium	<0.10	<0.015	<0.025	<0.020	<0.021	<0.00038
Zinc	22.7	3.32	5.71	4.52	4.76	0.086
Total	<94.5	<13.9	<23.8	<18.9	<19.9	<0.36

Dry Gas Volume Sampled (Rm³*) :	3.969
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	18.1

* At 25°C and 1 atmosphere

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

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

Metal	Actual Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	0.068	0.034	<0.029	<0.044	48.5
Arsenic	<0.034	<0.033	<0.029	<0.032	7.9
Barium	1.15	1.00	1.33	1.16	14.3
Beryllium	<0.034	<0.033	<0.029	<0.032	7.9
Cadmium	0.069	0.054	0.043	0.055	23.6
Chromium	1.04	0.73	0.48	0.75	37.7
Cobalt	<0.034	<0.033	0.051	<0.039	25.2
Copper	3.88	3.79	3.79	3.82	1.4
Lead	0.35	0.25	0.22	0.27	26.8
Mercury	0.41	0.25	0.094	0.25	62.0
Molybdenum	4.14	3.87	3.52	3.84	8.1
Nickel	0.97	1.70	0.71	1.13	45.4
Selenium	0.98	1.33	<0.15	<0.82	74.3
Silver	<0.034	<0.033	<0.029	<0.032	7.9
Thallium	0.17	0.066	<0.029	<0.087	81.1
Vanadium	<0.017	<0.016	<0.015	<0.016	7.9
Zinc	6.09	3.75	3.32	4.39	34.0
Total	<19.5	<17.0	<13.9	<16.8	16.8

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

Metal	Dry Reference Concentration Test No. 1 µg/Rm³*	Test No. 2 µg/Rm³*	Test No. 3 µg/Rm³*	Average µg/Rm³*	Coefficient of Variation %
Antimony	0.11	0.057	<0.050	<0.073	46.7
Arsenic	<0.057	<0.056	<0.050	<0.054	6.3
Barium	1.90	1.69	2.29	1.96	15.4
Beryllium	<0.057	<0.056	<0.050	<0.054	6.3
Cadmium	0.11	0.092	0.074	0.093	21.9
Chromium	1.73	1.23	0.82	1.26	36.0
Cobalt	<0.057	<0.056	0.087	<0.066	26.7
Copper	6.44	6.41	6.52	6.46	0.8
Lead	0.59	0.42	0.37	0.46	25.0
Mercury	0.68	0.43	0.16	0.42	60.7
Molybdenum	6.87	6.56	6.05	6.49	6.4
Nickel	1.61	2.88	1.22	1.90	45.4
Selenium	1.63	2.26	<0.25	<1.38	74.3
Silver	<0.057	<0.056	<0.050	<0.054	6.3
Thallium	0.28	0.11	<0.050	<0.15	79.7
Vanadium	<0.028	<0.028	<0.025	<0.027	6.3
Zinc	10.1	6.35	5.71	7.39	32.2
Total	<32.3	<28.7	<23.8	<28.3	15.1

* At 25°C and 1 atmosphere

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

Metal	Dry Adjusted Concentration				Coefficient
	Test No. 1 µg/Rm³**	Test No. 2 µg/Rm³**	Test No. 3 µg/Rm³**	Average µg/Rm³**	of Variation %
Antimony	0.092	0.046	<0.040	<0.059	47.7
Arsenic	<0.046	<0.045	<0.040	<0.044	7.8
Barium	1.55	1.38	1.81	1.58	13.8
Beryllium	<0.046	<0.045	<0.040	<0.044	7.8
Cadmium	0.093	0.075	0.058	0.075	23.1
Chromium	1.41	1.00	0.65	1.02	37.1
Cobalt	<0.046	<0.045	0.069	<0.053	24.9
Copper	5.25	5.22	5.16	5.21	0.9
Lead	0.48	0.34	0.29	0.37	26.1
Mercury	0.55	0.35	0.13	0.34	61.5
Molybdenum	5.60	5.34	4.79	5.24	7.9
Nickel	1.31	2.34	0.97	1.54	46.4
Selenium	1.33	1.84	<0.20	<1.12	74.8
Silver	<0.046	<0.045	<0.040	<0.044	7.8
Thallium	0.22	0.091	<0.040	<0.12	80.3
Vanadium	<0.023	<0.023	<0.020	<0.022	7.8
Zinc	8.23	5.17	4.52	5.97	33.2
Total	<26.3	<23.4	<18.9	<22.9	16.5

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

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

Metal	Wet Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	0.096	0.048	<0.042	<0.062	47.9
Arsenic	<0.048	<0.047	<0.042	<0.046	7.3
Barium	1.62	1.42	1.91	1.65	14.7
Beryllium	<0.048	<0.047	<0.042	<0.046	7.3
Cadmium	0.098	0.077	0.061	0.079	23.1
Chromium	1.47	1.04	0.68	1.06	37.2
Cobalt	<0.048	<0.047	0.072	<0.056	25.7
Copper	5.50	5.40	5.43	5.44	0.9
Lead	0.50	0.35	0.31	0.39	26.2
Mercury	0.58	0.36	0.14	0.36	61.6
Molybdenum	5.87	5.52	5.04	5.48	7.6
Nickel	1.38	2.42	1.02	1.61	45.4
Selenium	1.39	1.90	<0.21	<1.17	74.3
Silver	<0.048	<0.047	<0.042	<0.046	7.3
Thallium	0.24	0.094	<0.042	<0.12	80.7
Vanadium	<0.024	<0.023	<0.021	<0.023	7.3
Zinc	8.63	5.34	4.76	6.24	33.4
Total	<27.6	<24.2	<19.9	<23.9	16.2

* At 25°C and 1 atmosphere

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

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	0.0017	0.00089	<0.00076	<0.0011	47.1
Arsenic	<0.00088	<0.00087	<0.00076	<0.00084	7.9
Barium	0.029	0.026	0.034	0.030	13.4
Beryllium	<0.00088	<0.00087	<0.00076	<0.00084	7.9
Cadmium	0.0018	0.0014	0.0011	0.0014	22.9
Chromium	0.027	0.019	0.012	0.019	36.8
Cobalt	<0.00088	<0.00087	0.0013	<0.0010	24.7
Copper	0.099	0.10	0.098	0.099	1.1
Lead	0.0091	0.0066	0.0056	0.0071	25.7
Mercury	0.010	0.0067	0.0024	0.0065	61.1
Molybdenum	0.11	0.10	0.091	0.10	7.9
Nickel	0.025	0.045	0.018	0.029	47.1
Selenium	0.025	0.035	<0.0038	<0.021	75.1
Silver	<0.00088	<0.00087	<0.00076	<0.00084	7.9
Thallium	0.0043	0.0018	<0.00076	<0.0023	79.8
Vanadium	<0.00044	<0.00043	<0.00038	<0.00042	7.9
Zinc	0.16	0.099	0.086	0.11	32.7
Total	<0.50	<0.45	<0.36	<0.44	16.3

TABLE 22

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

Metal	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.044	<0.073	<0.059	<0.062	<0.0011
Arsenic	<0.032	<0.054	<0.044	<0.046	<0.00084
Barium	1.16	1.96	1.58	1.65	0.030
Beryllium	<0.032	<0.054	<0.044	<0.046	<0.00084
Cadmium	0.055	0.093	0.075	0.079	0.0014
Chromium	0.75	1.26	1.02	1.06	0.019
Cobalt	<0.039	<0.066	<0.053	<0.056	<0.0010
Copper	3.82	6.46	5.21	5.44	0.099
Lead	0.27	0.46	0.37	0.39	0.0071
Mercury	0.25	0.42	0.34	0.36	0.0065
Molybdenum	3.84	6.49	5.24	5.48	0.10
Nickel	1.13	1.90	1.54	1.61	0.029
Selenium	<0.82	<1.38	<1.12	<1.17	<0.021
Silver	<0.032	<0.054	<0.044	<0.046	<0.00084
Thallium	<0.087	<0.15	<0.12	<0.12	<0.0023
Vanadium	<0.016	<0.027	<0.022	<0.023	<0.00042
Zinc	4.39	7.39	5.97	6.24	0.11
Total	<16.8	<28.3	<22.9	<23.9	<0.44

* 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	7.18	0.78	7.96
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.44	0.36	2.80
Cobalt	<0.2	<0.1	<0.20
Copper	6.07	9.78	15.9
Lead	<0.5	0.42	0.42
Mercury *	<0.015	<0.15	<0.15
Molybdenum	23.3	<0.1	23.3
Nickel	2.30	0.28	2.58
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	<3	<6.00
Total			<61.5

* Includes the permanganate impingers.

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

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

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	436	0.049	0.085	0.067	0.071	1.26
Pentachlorodibenzo-p-dioxins	1700	0.19	0.33	0.26	0.28	4.90
Hexachlorodibenzo-p-dioxins	4780	0.54	0.93	0.73	0.77	13.8
Heptachlorodibenzo-p-dioxins	4350	0.49	0.85	0.67	0.70	12.5
Octachlorodibenzo-p-dioxin	1370	0.15	0.27	0.21	0.22	3.95
Total	12636	1.42	2.46	1.94	2.05	36.4

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	299	0.034	0.058	0.046	0.048	0.86
Pentachlorodibenzofurans	810	0.091	0.16	0.12	0.13	2.33
Hexachlorodibenzofurans	1220	0.14	0.24	0.19	0.20	3.52
Heptachlorodibenzofurans	981	0.11	0.19	0.15	0.16	2.83
Octachlorodibenzofuran	363	0.041	0.071	0.056	0.059	1.05
Total	3673	0.41	0.72	0.56	0.59	10.6

Dry Gas Volume Sampled (Rm³*) :	5.135
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

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

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

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	324	0.037	0.064	0.051	0.054	0.94
Pentachlorodibenzo-p-dioxins	1700	0.20	0.33	0.27	0.28	4.96
Hexachlorodibenzo-p-dioxins	4400	0.51	0.87	0.69	0.73	12.8
Heptachlorodibenzo-p-dioxins	4050	0.47	0.80	0.64	0.67	11.8
Octachlorodibenzo-p-dioxin	1260	0.15	0.25	0.20	0.21	3.67
Total	11734	1.35	2.31	1.85	1.94	34.2

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	289	0.033	0.057	0.046	0.048	0.84
Pentachlorodibenzofurans	797	0.092	0.16	0.13	0.13	2.32
Hexachlorodibenzofurans	1200	0.14	0.24	0.19	0.20	3.50
Heptachlorodibenzofurans	973	0.11	0.19	0.15	0.16	2.84
Octachlorodibenzofuran	330	0.038	0.065	0.052	0.055	0.96
Total	3589	0.41	0.71	0.57	0.59	10.5

Dry Gas Volume Sampled (Rm^3*) :	5.077
Actual Flowrate (m^3/s) :	25.3
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.5
Wet Reference Flowrate (Rm^3/s*) :	17.6

* At 25°C and 1 atmosphere

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

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

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

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	158	0.018	0.031	0.024	0.026	0.46
Pentachlorodibenzo-p-dioxins	1340	0.15	0.26	0.21	0.22	3.87
Hexachlorodibenzo-p-dioxins	3590	0.41	0.70	0.55	0.58	10.4
Heptachlorodibenzo-p-dioxins	3310	0.38	0.64	0.51	0.54	9.55
Octachlorodibenzo-p-dioxin	1040	0.12	0.20	0.16	0.17	3.00
Total	9438	1.08	1.83	1.46	1.53	27.2

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	132	0.015	0.026	0.020	0.021	0.38
Pentachlorodibenzofurans	578	0.066	0.11	0.089	0.094	1.67
Hexachlorodibenzofurans	928	0.11	0.18	0.14	0.15	2.68
Heptachlorodibenzofurans	794	0.091	0.15	0.12	0.13	2.29
Octachlorodibenzofuran	313	0.036	0.061	0.048	0.051	0.90
Total	2745	0.31	0.53	0.42	0.45	7.92

Dry Gas Volume Sampled (Rm³*) :	5.162
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	17.8

* At 25°C and 1 atmosphere

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

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

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

Dioxins

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.049	0.037	0.018	0.035	44.9
Pentachlorodibenzo-p-dioxins	0.19	0.20	0.15	0.18	12.9
Hexachlorodibenzo-p-dioxins	0.54	0.51	0.41	0.49	13.6
Heptachlorodibenzo-p-dioxins	0.49	0.47	0.38	0.45	13.1
Octachlorodibenzo-p-dioxin	0.15	0.15	0.12	0.14	13.1
Total	1.42	1.35	1.08	1.29	14.0

Furans

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzofurans	0.034	0.033	0.015	0.027	38.8
Pentachlorodibenzofurans	0.091	0.092	0.066	0.083	17.6
Hexachlorodibenzofurans	0.14	0.14	0.11	0.13	14.3
Heptachlorodibenzofurans	0.11	0.11	0.091	0.10	11.3
Octachlorodibenzofuran	0.041	0.038	0.036	0.038	6.6
Total	0.41	0.41	0.31	0.38	15.0

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

Dioxins

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.085	0.064	0.031	0.060	45.8
Pentachlorodibenzo-p-dioxins	0.33	0.33	0.26	0.31	13.7
Hexachlorodibenzo-p-dioxins	0.93	0.87	0.70	0.83	14.6
Heptachlorodibenzo-p-dioxins	0.85	0.80	0.64	0.76	14.1
Octachlorodibenzo-p-dioxin	0.27	0.25	0.20	0.24	14.1
Total	2.46	2.31	1.83	2.20	15.0

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.058	0.057	0.026	0.047	39.4
Pentachlorodibenzofurans	0.16	0.16	0.11	0.14	18.4
Hexachlorodibenzofurans	0.24	0.24	0.18	0.22	15.2
Heptachlorodibenzofurans	0.19	0.19	0.15	0.18	12.1
Octachlorodibenzofuran	0.071	0.065	0.061	0.065	7.7
Total	0.72	0.71	0.53	0.65	15.9

* 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	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
	Dry Adjusted Concentration				
Tetrachlorodibenzo-p-dioxins	0.067	0.051	0.024	0.047	45.2
Pentachlorodibenzo-p-dioxins	0.26	0.27	0.21	0.25	13.6
Hexachlorodibenzo-p-dioxins	0.73	0.69	0.55	0.66	14.2
Heptachlorodibenzo-p-dioxins	0.67	0.64	0.51	0.61	13.7
Octachlorodibenzo-p-dioxin	0.21	0.20	0.16	0.19	13.7
Total	1.94	1.85	1.46	1.75	14.6

Furans

Congener Group	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
	Dry Adjusted Concentration				
Tetrachlorodibenzofurans	0.046	0.046	0.020	0.037	39.2
Pentachlorodibenzofurans	0.12	0.13	0.089	0.11	18.2
Hexachlorodibenzofurans	0.19	0.19	0.14	0.17	15.0
Heptachlorodibenzofurans	0.15	0.15	0.12	0.14	11.9
Octachlorodibenzofuran	0.056	0.052	0.048	0.052	7.1
Total	0.56	0.57	0.42	0.52	15.7

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

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

Dioxins

Congener Group	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.071	0.054	0.026	0.050	45.5
Pentachlorodibenzo-p-dioxins	0.28	0.28	0.22	0.26	13.7
Hexachlorodibenzo-p-dioxins	0.77	0.73	0.58	0.69	14.4
Heptachlorodibenzo-p-dioxins	0.70	0.67	0.54	0.64	13.9
Octachlorodibenzo-p-dioxin	0.22	0.21	0.17	0.20	13.9
Total	2.05	1.94	1.53	1.84	14.8

Furans

Congener Group	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.048	0.048	0.021	0.039	39.4
Pentachlorodibenzofurans	0.13	0.13	0.094	0.12	18.4
Hexachlorodibenzofurans	0.20	0.20	0.15	0.18	15.1
Heptachlorodibenzofurans	0.16	0.16	0.13	0.15	12.1
Octachlorodibenzofuran	0.059	0.055	0.051	0.055	7.3
Total	0.59	0.59	0.45	0.54	15.8

* At 25°C and 1 atmosphere

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

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	1.26	0.94	0.46	0.89	45.6
Pentachlorodibenzo-p-dioxins	4.90	4.96	3.87	4.57	13.4
Hexachlorodibenzo-p-dioxins	13.8	12.8	10.4	12.3	14.3
Heptachlorodibenzo-p-dioxins	12.5	11.8	9.55	11.3	13.8
Octachlorodibenzo-p-dioxin	3.95	3.67	3.00	3.54	13.7
Total	36.4	34.2	27.2	32.6	14.7

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	0.86	0.84	0.38	0.70	39.2
Pentachlorodibenzofurans	2.33	2.32	1.67	2.11	18.1
Hexachlorodibenzofurans	3.52	3.50	2.68	3.23	14.8
Heptachlorodibenzofurans	2.83	2.84	2.29	2.65	11.8
Octachlorodibenzofuran	1.05	0.96	0.90	0.97	7.4
Total	10.6	10.5	7.92	9.66	15.6

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

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.035	0.060	0.047	0.050	0.89
Pentachlorodibenzo-p-dioxins	0.18	0.31	0.25	0.26	4.57
Hexachlorodibenzo-p-dioxins	0.49	0.83	0.66	0.69	12.3
Heptachlorodibenzo-p-dioxins	0.45	0.76	0.61	0.64	11.3
Octachlorodibenzo-p-dioxin	0.14	0.24	0.19	0.20	3.54
Total	1.29	2.20	1.75	1.84	32.6

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.027	0.047	0.037	0.039	0.70
Pentachlorodibenzofurans	0.083	0.14	0.11	0.12	2.11
Hexachlorodibenzofurans	0.13	0.22	0.17	0.18	3.23
Heptachlorodibenzofurans	0.10	0.18	0.14	0.15	2.65
Octachlorodibenzofuran	0.038	0.065	0.052	0.055	0.97
Total	0.38	0.65	0.52	0.54	9.66

* At 25°C and 1 atmosphere

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

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

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<4.3	<3.1
Pentachlorodibenzo-p-dioxins	<4.4	<3.1
Hexachlorodibenzo-p-dioxins	<4.0	<3.4
Heptachlorodibenzo-p-dioxins	47.9	<3.2
Octachlorodibenzo-p-dioxin	177	133
Total	<238	<146

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<3.3	<1.9
Pentachlorodibenzofurans	<2.6	<2.0
Hexachlorodibenzofurans	3.54	<3.3
Heptachlorodibenzofurans	<7.4	<9.5
Octachlorodibenzofuran	<19	31.5
Total	<35.8	<48.2

"<" 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 pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.2	<0.47	<0.82	<0.64	<0.68	<0.012
12378-pentachlorodibenzo-p-dioxin	<34	<3.83	<6.62	<5.21	<5.51	<0.098
123478-hexachlorodibenzo-p-dioxin	117	13.2	22.8	17.9	18.9	0.34
123678-hexachlorodibenzo-p-dioxin	331	37.3	64.5	50.7	53.6	0.95
123789-hexachlorodibenzo-p-dioxin	146	16.4	28.4	22.4	23.6	0.42
1234678-heptachlorodibenzo-p-dioxin	2100	236	409	322	340	6.05
Octachlorodibenzo-p-dioxin	1370	154	267	210	222	3.95
2378-tetrachlorodibenzofuran	7.87	0.89	1.53	1.21	1.27	0.023
12378-pentachlorodibenzofuran	22.8	2.57	4.44	3.50	3.69	0.066
23478-pentachlorodibenzofuran	78.6	8.85	15.3	12.0	12.7	0.23
123478-hexachlorodibenzofuran	102	11.5	19.9	15.6	16.5	0.29
123678-hexachlorodibenzofuran	116	13.1	22.6	17.8	18.8	0.33
234678-hexachlorodibenzofuran	230	25.9	44.8	35.3	37.2	0.66
123789-hexachlorodibenzofuran	<61	<6.87	<11.9	<9.35	<9.88	<0.18
1234678-heptachlorodibenzofuran	682	76.8	133	105	110	1.97
1234789-heptachlorodibenzofuran	117	13.2	22.8	17.9	18.9	0.34
Octachlorodibenzofuran	363	40.9	70.7	55.7	58.8	1.05
PCB 81	<27	<3.04	<5.26	<4.14	<4.37	<0.078
PCB 77	66.9	7.53	13.0	10.3	10.8	0.19
PCB 123	<27	<3.04	<5.26	<4.14	<4.37	<0.078
PCB 118	859	96.7	167	132	139	2.48
PCB 114	30.6	3.45	5.96	4.69	4.95	0.088
PCB 105	251	28.3	48.9	38.5	40.6	0.72
PCB 126	<25	<2.81	<4.87	<3.83	<4.05	<0.072
PCB 167	27.2	3.06	5.30	4.17	4.40	0.078
PCB 156/157	79.8	8.98	15.5	12.2	12.9	0.23
PCB 169	31.4	3.54	6.11	4.81	5.08	0.091
PCB 189	37.4	4.21	7.28	5.73	6.06	0.11
Total Dioxins & Furans Only	<5882	<662	<1146	<902	<952	<17.0
Total PCBs Only	<1462	<165	<285	<224	<237	<4.21
Total Dioxins & Furans and PCBs	<7345	<827	<1430	<1126	<1189	<21.2

Dry Gas Volume Sampled (Rm³*) :	5.135
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<2.5	<0.29	<0.49	<0.39	<0.41	<0.0073
12378-pentachlorodibenzo-p-dioxin	33.8	3.89	6.66	5.33	5.60	0.099
123478-hexachlorodibenzo-p-dioxin	107	12.3	21.1	16.9	17.7	0.31
123678-hexachlorodibenzo-p-dioxin	321	37.0	63.2	50.6	53.2	0.94
123789-hexachlorodibenzo-p-dioxin	152	17.5	29.9	24.0	25.2	0.44
1234678-heptachlorodibenzo-p-dioxin	1840	212	362	290	305	5.36
Octachlorodibenzo-p-dioxin	1260	145	248	199	209	3.67
2378-tetrachlorodibenzofuran	18.7	2.15	3.68	2.95	3.10	0.055
12378-pentachlorodibenzofuran	31.2	3.59	6.15	4.92	5.17	0.091
23478-pentachlorodibenzofuran	79.6	9.17	15.7	12.5	13.2	0.23
123478-hexachlorodibenzofuran	105	12.1	20.7	16.5	17.4	0.31
123678-hexachlorodibenzofuran	119	13.7	23.4	18.8	19.7	0.35
234678-hexachlorodibenzofuran	202	23.3	39.8	31.8	33.5	0.59
123789-hexachlorodibenzofuran	63.1	7.27	12.4	9.94	10.5	0.18
1234678-heptachlorodibenzofuran	633	72.9	125	99.7	105	1.85
1234789-heptachlorodibenzofuran	<99	<11.4	<19.5	<15.6	<16.4	<0.29
Octachlorodibenzofuran	330	38.0	65.0	52.0	54.7	0.96
PCB 81	<26	<3.00	<5.12	<4.10	<4.31	<0.076
PCB 77	213	24.5	42.0	33.6	35.3	0.62
PCB 123	135	15.6	26.6	21.3	22.4	0.39
PCB 118	6370	734	1255	1004	1055	18.6
PCB 114	181	20.9	35.7	28.5	30.0	0.53
PCB 105	2070	239	408	326	343	6.03
PCB 126	<35	<4.03	<6.89	<5.52	<5.80	<0.10
PCB 167	85.8	9.89	16.9	13.5	14.2	0.25
PCB 156/157	330	38.0	65.0	52.0	54.7	0.96
PCB 169	32.5	3.74	6.40	5.12	5.38	0.095
PCB 189	42.6	4.91	8.39	6.71	7.06	0.12
Total Dioxins & Furans Only	<5397	<622	<1063	<850	<894	<15.7
Total PCBs Only	<9521	<1097	<1875	<1500	<1577	<27.8
Total Dioxins & Furans and PCBs	<14918	<1719	<2938	<2351	<2471	<43.5

Dry Gas Volume Sampled (Rm³*) :	5.077
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.5
Wet Reference Flowrate (Rm³/s*) :	17.6

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.2	<0.48	<0.81	<0.65	<0.68	<0.012
12378-pentachlorodibenzo-p-dioxin	32.1	3.68	6.22	4.95	5.21	0.093
123478-hexachlorodibenzo-p-dioxin	81.9	9.38	15.9	12.6	13.3	0.24
123678-hexachlorodibenzo-p-dioxin	252	28.9	48.8	38.9	40.9	0.73
123789-hexachlorodibenzo-p-dioxin	106	12.1	20.5	16.4	17.2	0.31
1234678-heptachlorodibenzo-p-dioxin	1590	182	308	245	258	4.59
Octachlorodibenzo-p-dioxin	1040	119	201	161	169	3.00
2378-tetrachlorodibenzofuran	<5.6	<0.64	<1.08	<0.86	<0.91	<0.016
12378-pentachlorodibenzofuran	22.6	2.59	4.38	3.49	3.66	0.065
23478-pentachlorodibenzofuran	54.9	6.29	10.6	8.47	8.90	0.16
123478-hexachlorodibenzofuran	74.0	8.48	14.3	11.4	12.0	0.21
123678-hexachlorodibenzofuran	91.3	10.5	17.7	14.1	14.8	0.26
234678-hexachlorodibenzofuran	165	18.9	32.0	25.5	26.8	0.48
123789-hexachlorodibenzofuran	47.6	5.45	9.22	7.35	7.72	0.14
1234678-heptachlorodibenzofuran	513	58.8	99.4	79.2	83.2	1.48
1234789-heptachlorodibenzofuran	<77	<8.82	<14.9	<11.9	<12.5	<0.22
Octachlorodibenzofuran	313	35.9	60.6	48.3	50.8	0.90
PCB 81	<27	<3.09	<5.23	<4.17	<4.38	<0.078
PCB 77	<63	<7.22	<12.2	<9.72	<10.2	<0.18
PCB 123	<27	<3.09	<5.23	<4.17	<4.38	<0.078
PCB 118	1010	116	196	156	164	2.92
PCB 114	<22	<2.52	<4.26	<3.40	<3.57	<0.064
PCB 105	331	37.9	64.1	51.1	53.7	0.96
PCB 126	<27	<3.09	<5.23	<4.17	<4.38	<0.078
PCB 167	<17	<1.95	<3.29	<2.62	<2.76	<0.049
PCB 156/157	55.0	6.30	10.7	8.49	8.92	0.16
PCB 169	<23	<2.63	<4.46	<3.55	<3.73	<0.066
PCB 189	24.3	2.78	4.71	3.75	3.94	0.070
Total Dioxins & Furans Only	<4470	<512	<866	<690	<725	<12.9
Total PCBs Only	<1626	<186	<315	<251	<264	<4.69
Total Dioxins & Furans and PCBs	<6097	<698	<1181	<941	<989	<17.6

Dry Gas Volume Sampled (Rm³*) :	5.162
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	17.8

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Actual Concentration Test No. 1 pg/m³	Test No. 2 pg/m³	Test No. 3 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.47	<0.29	<0.48	<0.41	26.4
12378-pentachlorodibenzo-p-dioxin	<3.83	3.89	3.68	<3.80	2.9
123478-hexachlorodibenzo-p-dioxin	13.2	12.3	9.38	11.6	17.1
123678-hexachlorodibenzo-p-dioxin	37.3	37.0	28.9	34.4	13.9
123789-hexachlorodibenzo-p-dioxin	16.4	17.5	12.1	15.4	18.5
1234678-heptachlorodibenzo-p-dioxin	236	212	182	210	12.9
Octachlorodibenzo-p-dioxin	154	145	119	140	13.1
2378-tetrachlorodibenzofuran	0.89	2.15	<0.64	<1.23	66.2
12378-pentachlorodibenzofuran	2.57	3.59	2.59	2.92	20.1
23478-pentachlorodibenzofuran	8.85	9.17	6.29	8.10	19.5
123478-hexachlorodibenzofuran	11.5	12.1	8.48	10.7	18.1
123678-hexachlorodibenzofuran	13.1	13.7	10.5	12.4	13.9
234678-hexachlorodibenzofuran	25.9	23.3	18.9	22.7	15.6
123789-hexachlorodibenzofuran	<6.87	7.27	5.45	<6.53	14.6
1234678-heptachlorodibenzofuran	76.8	72.9	58.8	69.5	13.7
1234789-heptachlorodibenzofuran	13.2	<11.4	<8.82	<11.1	19.7
Octachlorodibenzofuran	40.9	38.0	35.9	38.2	6.6
PCB 81	<3.04	<3.00	<3.09	<3.04	1.6
PCB 77	7.53	24.5	<7.22	<13.1	75.7
PCB 123	<3.04	15.6	<3.09	<7.23	99.7
PCB 118	96.7	734	116	315	115
PCB 114	3.45	20.9	<2.52	<8.94	116
PCB 105	28.3	239	37.9	102	117
PCB 126	<2.81	<4.03	<3.09	<3.31	19.3
PCB 167	3.06	9.89	<1.95	<4.97	86.6
PCB 156/157	8.98	38.0	6.30	17.8	99.0
PCB 169	3.54	3.74	<2.63	<3.30	17.8
PCB 189	4.21	4.91	2.78	3.97	27.3
Total Dioxins & Furans Only	<662	<622	<512	<599	13.0
Total PCBs Only	<165	<1097	<186	<483	110
Total Dioxins & Furans and PCBs	<827	<1719	<698	<1081	51.4

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

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

Specific Isomer	Dry Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.82	<0.49	<0.81	<0.71	26.4
12378-pentachlorodibenzo-p-dioxin	<6.62	6.66	6.22	<6.50	3.7
123478-hexachlorodibenzo-p-dioxin	22.8	21.1	15.9	19.9	18.1
123678-hexachlorodibenzo-p-dioxin	64.5	63.2	48.8	58.8	14.8
123789-hexachlorodibenzo-p-dioxin	28.4	29.9	20.5	26.3	19.2
1234678-heptachlorodibenzo-p-dioxin	409	362	308	360	14.0
Octachlorodibenzo-p-dioxin	267	248	201	239	14.1
2378-tetrachlorodibenzofuran	1.53	3.68	<1.08	<2.10	66.1
12378-pentachlorodibenzofuran	4.44	6.15	4.38	4.99	20.1
23478-pentachlorodibenzofuran	15.3	15.7	10.6	13.9	20.3
123478-hexachlorodibenzofuran	19.9	20.7	14.3	18.3	18.9
123678-hexachlorodibenzofuran	22.6	23.4	17.7	21.2	14.6
234678-hexachlorodibenzofuran	44.8	39.8	32.0	38.8	16.6
123789-hexachlorodibenzofuran	<11.9	12.4	9.22	<11.2	15.3
1234678-heptachlorodibenzofuran	133	125	99.4	119	14.7
1234789-heptachlorodibenzofuran	22.8	<19.5	<14.9	<19.1	20.7
Octachlorodibenzofuran	70.7	65.0	60.6	65.4	7.7
PCB 81	<5.26	<5.12	<5.23	<5.20	1.4
PCB 77	13.0	42.0	<12.2	<22.4	75.7
PCB 123	<5.26	26.6	<5.23	<12.4	99.7
PCB 118	167	1255	196	539	115
PCB 114	5.96	35.7	<4.26	<15.3	115
PCB 105	48.9	408	64.1	174	117
PCB 126	<4.87	<6.89	<5.23	<5.66	19.1
PCB 167	5.30	16.9	<3.29	<8.50	86.5
PCB 156/157	15.5	65.0	10.7	30.4	98.9
PCB 169	6.11	6.40	<4.46	<5.66	18.6
PCB 189	7.28	8.39	4.71	6.79	27.8
Total Dioxins & Furans Only	<1146	<1063	<866	<1025	14.0
Total PCBs Only	<285	<1875	<315	<825	110
Total Dioxins & Furans and PCBs	<1430	<2938	<1181	<1850	51.4

* At 25°C and 1 atmosphere

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

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

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.64	<0.39	<0.65	<0.56	25.9
12378-pentachlorodibenzo-p-dioxin	<5.21	5.33	4.95	<5.16	3.7
123478-hexachlorodibenzo-p-dioxin	17.9	16.9	12.6	15.8	17.7
123678-hexachlorodibenzo-p-dioxin	50.7	50.6	38.9	46.7	14.5
123789-hexachlorodibenzo-p-dioxin	22.4	24.0	16.4	20.9	19.2
1234678-heptachlorodibenzo-p-dioxin	322	290	245	286	13.4
Octachlorodibenzo-p-dioxin	210	199	161	190	13.7
2378-tetrachlorodibenzofuran	1.21	2.95	<0.86	<1.67	66.8
12378-pentachlorodibenzofuran	3.50	4.92	3.49	3.97	20.7
23478-pentachlorodibenzofuran	12.0	12.5	8.47	11.0	20.1
123478-hexachlorodibenzofuran	15.6	16.5	11.4	14.5	18.8
123678-hexachlorodibenzofuran	17.8	18.8	14.1	16.9	14.6
234678-hexachlorodibenzofuran	35.3	31.8	25.5	30.9	16.1
123789-hexachlorodibenzofuran	<9.35	9.94	7.35	<8.88	15.3
1234678-heptachlorodibenzofuran	105	99.7	79.2	94.5	14.3
1234789-heptachlorodibenzofuran	17.9	<15.6	<11.9	<15.1	20.2
Octachlorodibenzofuran	55.7	52.0	48.3	52.0	7.1
PCB 81	<4.14	<4.10	<4.17	<4.13	0.9
PCB 77	10.3	33.6	<9.72	<17.8	76.3
PCB 123	<4.14	21.3	<4.17	<9.86	100
PCB 118	132	1004	156	430	115
PCB 114	4.69	28.5	<3.40	<12.2	116
PCB 105	38.5	326	51.1	139	117
PCB 126	<3.83	<5.52	<4.17	<4.51	19.8
PCB 167	4.17	13.5	<2.62	<6.77	87.1
PCB 156/157	12.2	52.0	8.49	24.2	99.5
PCB 169	4.81	5.12	<3.55	<4.50	18.5
PCB 189	5.73	6.71	3.75	5.40	27.9
Total Dioxins & Furans Only	<902	<850	<690	<814	13.6
Total PCBs Only	<224	<1500	<251	<658	111
Total Dioxins & Furans and PCBs	<1126	<2351	<941	<1473	52.0

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

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

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

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.68	<0.41	<0.68	<0.59	26.0
12378-pentachlorodibenzo-p-dioxin	<5.51	5.60	5.21	<5.44	3.8
123478-hexachlorodibenzo-p-dioxin	18.9	17.7	13.3	16.6	17.9
123678-hexachlorodibenzo-p-dioxin	53.6	53.2	40.9	49.2	14.7
123789-hexachlorodibenzo-p-dioxin	23.6	25.2	17.2	22.0	19.3
1234678-heptachlorodibenzo-p-dioxin	340	305	258	301	13.7
Octachlorodibenzo-p-dioxin	222	209	169	200	13.9
2378-tetrachlorodibenzofuran	1.27	3.10	<0.91	<1.76	66.6
12378-pentachlorodibenzofuran	3.69	5.17	3.66	4.17	20.6
23478-pentachlorodibenzofuran	12.7	13.2	8.90	11.6	20.3
123478-hexachlorodibenzofuran	16.5	17.4	12.0	15.3	18.9
123678-hexachlorodibenzofuran	18.8	19.7	14.8	17.8	14.7
234678-hexachlorodibenzofuran	37.2	33.5	26.8	32.5	16.3
123789-hexachlorodibenzofuran	<9.88	10.5	7.72	<9.35	15.4
1234678-heptachlorodibenzofuran	110	105	83.2	99.5	14.5
1234789-heptachlorodibenzofuran	18.9	<16.4	<12.5	<15.9	20.4
Octachlorodibenzofuran	58.8	54.7	50.8	54.7	7.3
PCB 81	<4.37	<4.31	<4.38	<4.35	0.9
PCB 77	10.8	35.3	<10.2	<18.8	76.1
PCB 123	<4.37	22.4	<4.38	<10.4	100
PCB 118	139	1055	164	453	115
PCB 114	4.95	30.0	<3.57	<12.8	116
PCB 105	40.6	343	53.7	146	117
PCB 126	<4.05	<5.80	<4.38	<4.74	19.6
PCB 167	4.40	14.2	<2.76	<7.12	86.9
PCB 156/157	12.9	54.7	8.92	25.5	99.3
PCB 169	5.08	5.38	<3.73	<4.73	18.6
PCB 189	6.06	7.06	3.94	5.68	28.0
Total Dioxins & Furans Only	<952	<894	<725	<857	13.8
Total PCBs Only	<237	<1577	<264	<692	111
Total Dioxins & Furans and PCBs	<1189	<2471	<989	<1550	51.9

* At 25°C and 1 atmosphere

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

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

Specific Isomer	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.012	<0.0073	<0.012	<0.011	26.5
12378-pentachlorodibenzo-p-dioxin	<0.098	0.099	0.093	<0.096	3.4
123478-hexachlorodibenzo-p-dioxin	0.34	0.31	0.24	0.30	17.8
123678-hexachlorodibenzo-p-dioxin	0.95	0.94	0.73	0.87	14.4
123789-hexachlorodibenzo-p-dioxin	0.42	0.44	0.31	0.39	18.9
1234678-heptachlorodibenzo-p-dioxin	6.05	5.36	4.59	5.34	13.7
Octachlorodibenzo-p-dioxin	3.95	3.67	3.00	3.54	13.7
2378-tetrachlorodibenzofuran	0.023	0.055	<0.016	<0.031	65.9
12378-pentachlorodibenzofuran	0.066	0.091	0.065	0.074	19.9
23478-pentachlorodibenzofuran	0.23	0.23	0.16	0.21	19.9
123478-hexachlorodibenzofuran	0.29	0.31	0.21	0.27	18.5
123678-hexachlorodibenzofuran	0.33	0.35	0.26	0.31	14.3
234678-hexachlorodibenzofuran	0.66	0.59	0.48	0.58	16.3
123789-hexachlorodibenzofuran	<0.18	0.18	0.14	<0.17	15.0
1234678-heptachlorodibenzofuran	1.97	1.85	1.48	1.76	14.3
1234789-heptachlorodibenzofuran	0.34	<0.29	<0.22	<0.28	20.4
Octachlorodibenzofuran	1.05	0.96	0.90	0.97	7.4
PCB 81	<0.078	<0.076	<0.078	<0.077	1.6
PCB 77	0.19	0.62	<0.18	<0.33	75.5
PCB 123	<0.078	0.39	<0.078	<0.18	99.5
PCB 118	2.48	18.6	2.92	7.99	115
PCB 114	0.088	0.53	<0.064	<0.23	115
PCB 105	0.72	6.03	0.96	2.57	117
PCB 126	<0.072	<0.10	<0.078	<0.084	18.9
PCB 167	0.078	0.25	<0.049	<0.13	86.3
PCB 156/157	0.23	0.96	0.16	0.45	98.7
PCB 169	0.091	0.095	<0.066	<0.084	18.2
PCB 189	0.11	0.12	0.070	0.10	27.5
Total Dioxins & Furans Only	<17.0	<15.7	<12.9	<15.2	13.7
Total PCBs Only	<4.21	<27.8	<4.69	<12.2	110
Total Dioxins & Furans and PCBs	<21.2	<43.5	<17.6	<27.4	51.2

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

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

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.41	<0.71	<0.56	<0.59	<0.011
12378-pentachlorodibenzo-p-dioxin	<3.80	<6.50	<5.16	<5.44	<0.096
123478-hexachlorodibenzo-p-dioxin	11.6	19.9	15.8	16.6	0.30
123678-hexachlorodibenzo-p-dioxin	34.4	58.8	46.7	49.2	0.87
123789-hexachlorodibenzo-p-dioxin	15.4	26.3	20.9	22.0	0.39
1234678-heptachlorodibenzo-p-dioxin	210	360	286	301	5.34
Octachlorodibenzo-p-dioxin	140	239	190	200	3.54
2378-tetrachlorodibenzofuran	<1.23	<2.10	<1.67	<1.76	<0.031
12378-pentachlorodibenzofuran	2.92	4.99	3.97	4.17	0.074
23478-pentachlorodibenzofuran	8.10	13.9	11.0	11.6	0.21
123478-hexachlorodibenzofuran	10.7	18.3	14.5	15.3	0.27
123678-hexachlorodibenzofuran	12.4	21.2	16.9	17.8	0.31
234678-hexachlorodibenzofuran	22.7	38.8	30.9	32.5	0.58
123789-hexachlorodibenzofuran	<6.53	<11.2	<8.88	<9.35	<0.17
1234678-heptachlorodibenzofuran	69.5	119	94.5	99.5	1.76
1234789-heptachlorodibenzofuran	<11.1	<19.1	<15.1	<15.9	<0.28
Octachlorodibenzofuran	38.2	65.4	52.0	54.7	0.97
PCB 81	<3.04	<5.20	<4.13	<4.35	<0.077
PCB 77	<13.1	<22.4	<17.8	<18.8	<0.33
PCB 123	<7.23	<12.4	<9.86	<10.4	<0.18
PCB 118	315	539	430	453	7.99
PCB 114	<8.94	<15.3	<12.2	<12.8	<0.23
PCB 105	102	174	139	146	2.57
PCB 126	<3.31	<5.66	<4.51	<4.74	<0.084
PCB 167	<4.97	<8.50	<6.77	<7.12	<0.13
PCB 156/157	17.8	30.4	24.2	25.5	0.45
PCB 169	<3.30	<5.66	<4.50	<4.73	<0.084
PCB 189	3.97	6.79	5.40	5.68	0.10
Total Dioxins & Furans Only	<599	<1025	<814	<857	<15.2
Total PCBs Only	<483	<825	<658	<692	<12.2
Total Dioxins & Furans and PCBs	<1081	<1850	<1473	<1550	<27.4

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<4.3	<3.1
12378-pentachlorodibenzo-p-dioxin	<4.4	<3.1
123478-hexachlorodibenzo-p-dioxin	<4.0	<3.4
123678-hexachlorodibenzo-p-dioxin	<3.5	<3.3
123789-hexachlorodibenzo-p-dioxin	<3.8	<3.3
1234678-heptachlorodibenzo-p-dioxin	47.9	<15
Octachlorodibenzo-p-dioxin	177	133
2378-tetrachlorodibenzofuran	<3.3	<1.9
12378-pentachlorodibenzofuran	<2.6	<2.0
23478-pentachlorodibenzofuran	<2.4	<1.9
123478-hexachlorodibenzofuran	<2.2	<2.7
123678-hexachlorodibenzofuran	<2.1	<2.6
234678-hexachlorodibenzofuran	<2.3	<2.9
123789-hexachlorodibenzofuran	<2.7	<3.3
1234678-heptachlorodibenzofuran	<9.8	<7.4
1234789-heptachlorodibenzofuran	<7.4	<9.5
Octachlorodibenzofuran	<19	31.5
PCB 81	<22	<12
PCB 77	<23	<12
PCB 123	<27	<14
PCB 118	61.5	18.3
PCB 114	<21	<14
PCB 105	<21	<14
PCB 126	<24	<17
PCB 167	<13	<11
PCB 156/157	<19	<16
PCB 169	<15	<13
PCB 189	<11	<10
Total Dioxins & Furans Only	<298.7	<229.9
Total PCBs Only	<258	<151
Total Dioxins & Furans and PCBs	<556	<381

"<" 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	<0.47	<0.29	<0.48	<0.41
12378-pentachlorodibenzo-p-dioxin	1.00000	<3.83	3.89	3.68	<3.80
123478-hexachlorodibenzo-p-dioxin	0.10000	1.32	1.23	0.94	1.16
123678-hexachlorodibenzo-p-dioxin	0.10000	3.73	3.70	2.89	3.44
123789-hexachlorodibenzo-p-dioxin	0.10000	1.64	1.75	1.21	1.54
1234678-heptachlorodibenzo-p-dioxin	0.01000	2.36	2.12	1.82	2.10
Octachlorodibenzo-p-dioxin	0.00030	0.046	0.044	0.036	0.042
2378-tetrachlorodibenzofuran	0.10000	0.089	0.22	<0.064	<0.12
12378-pentachlorodibenzofuran	0.03000	0.077	0.11	0.078	0.088
23478-pentachlorodibenzofuran	0.30000	2.65	2.75	1.89	2.43
123478-hexachlorodibenzofuran	0.10000	1.15	1.21	0.85	1.07
123678-hexachlorodibenzofuran	0.10000	1.31	1.37	1.05	1.24
234678-hexachlorodibenzofuran	0.10000	2.59	2.33	1.89	2.27
123789-hexachlorodibenzofuran	0.10000	<0.69	0.73	0.55	<0.65
1234678-heptachlorodibenzofuran	0.01000	0.77	0.73	0.59	0.69
1234789-heptachlorodibenzofuran	0.01000	0.13	<0.11	<0.088	<0.11
Octachlorodibenzofuran	0.00030	0.01	0.011	0.011	0.011
PCB 81	0.00030	<0.00091	<0.00090	<0.00093	<0.00091
PCB 77	0.00010	0.00075	0.0025	<0.00072	<0.0013
PCB 123	0.00003	<0.000091	0.00047	<0.000093	<0.00022
PCB 118	0.00003	0.0029	0.022	0.0035	0.0095
PCB 114	0.00003	0.00010	0.00063	<0.000076	<0.00027
PCB 105	0.00003	0.00085	0.0072	0.0011	0.0030
PCB 126	0.10000	<0.28	<0.40	<0.31	<0.33
PCB 167	0.00003	0.000092	0.00030	<0.000058	<0.00015
PCB 156/157	0.00003	0.00027	0.0011	0.00019	0.00053
PCB 169	0.03000	0.11	0.11	<0.079	<0.099
PCB 189	0.00003	0.00013	0.00015	0.000084	0.00012
Total Dioxins & Furans Only		<22.9	<22.6	<18.1	<21.2
Total PCBs Only		<0.39	<0.55	<0.40	<0.45
Total Dioxins & Furans and PCBs		<23.3	<23.1	<18.5	<21.6

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	<0.82	<0.49	<0.81	<0.71
12378-pentachlorodibenzo-p-dioxin	1.00000	<6.62	6.66	6.22	<6.50
123478-hexachlorodibenzo-p-dioxin	0.10000	2.28	2.11	1.59	1.99
123678-hexachlorodibenzo-p-dioxin	0.10000	6.45	6.32	4.88	5.88
123789-hexachlorodibenzo-p-dioxin	0.10000	2.84	2.99	2.05	2.63
1234678-heptachlorodibenzo-p-dioxin	0.01000	4.09	3.62	3.08	3.60
Octachlorodibenzo-p-dioxin	0.00030	0.080	0.074	0.060	0.072
2378-tetrachlorodibenzofuran	0.10000	0.15	0.37	<0.11	<0.21
12378-pentachlorodibenzofuran	0.03000	0.13	0.18	0.13	0.15
23478-pentachlorodibenzofuran	0.30000	4.59	4.70	3.19	4.16
123478-hexachlorodibenzofuran	0.10000	1.99	2.07	1.43	1.83
123678-hexachlorodibenzofuran	0.10000	2.26	2.34	1.77	2.12
234678-hexachlorodibenzofuran	0.10000	4.48	3.98	3.20	3.88
123789-hexachlorodibenzofuran	0.10000	<1.19	1.24	0.92	<1.12
1234678-heptachlorodibenzofuran	0.01000	1.33	1.25	0.99	1.19
1234789-heptachlorodibenzofuran	0.01000	0.23	<0.19	<0.15	<0.19
Octachlorodibenzofuran	0.00030	0.021	0.019	0.018	0.020
PCB 81	0.00030	<0.0016	<0.0015	<0.0016	<0.0016
PCB 77	0.00010	0.0013	0.0042	<0.0012	<0.0022
PCB 123	0.00003	<0.00016	0.00080	<0.00016	<0.00037
PCB 118	0.00003	0.0050	0.038	0.0059	0.016
PCB 114	0.00003	0.00018	0.0011	<0.00013	<0.00046
PCB 105	0.00003	0.0015	0.012	0.0019	0.0052
PCB 126	0.10000	<0.49	<0.69	<0.52	<0.57
PCB 167	0.00003	0.00016	0.00051	<0.000099	<0.00025
PCB 156/157	0.00003	0.00047	0.0019	0.00032	0.00091
PCB 169	0.03000	0.18	0.19	<0.13	<0.17
PCB 189	0.00003	0.00022	0.00025	0.00014	0.00020
Total Dioxins & Furans Only		<39.5	<38.6	<30.6	<36.3
Total PCBs Only		<0.68	<0.94	<0.67	<0.76
Total Dioxins & Furans and PCBs		<40.2	<39.6	<31.3	<37.0

* 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	<0.64	<0.39	<0.65	<0.56
12378-pentachlorodibenzo-p-dioxin	1.00000	<5.21	5.33	4.95	<5.16
123478-hexachlorodibenzo-p-dioxin	0.10000	1.79	1.69	1.26	1.58
123678-hexachlorodibenzo-p-dioxin	0.10000	5.07	5.06	3.89	4.67
123789-hexachlorodibenzo-p-dioxin	0.10000	2.24	2.40	1.64	2.09
1234678-heptachlorodibenzo-p-dioxin	0.01000	3.22	2.90	2.45	2.86
Octachlorodibenzo-p-dioxin	0.00030	0.063	0.060	0.048	0.057
2378-tetrachlorodibenzofuran	0.10000	0.12	0.29	<0.086	<0.17
12378-pentachlorodibenzofuran	0.03000	0.10	0.15	0.10	0.12
23478-pentachlorodibenzofuran	0.30000	3.61	3.76	2.54	3.31
123478-hexachlorodibenzofuran	0.10000	1.56	1.65	1.14	1.45
123678-hexachlorodibenzofuran	0.10000	1.78	1.88	1.41	1.69
234678-hexachlorodibenzofuran	0.10000	3.53	3.18	2.55	3.09
123789-hexachlorodibenzofuran	0.10000	<0.94	0.99	0.73	<0.89
1234678-heptachlorodibenzofuran	0.01000	1.05	1.00	0.79	0.94
1234789-heptachlorodibenzofuran	0.01000	0.18	<0.16	<0.12	<0.15
Octachlorodibenzofuran	0.00030	0.017	0.016	0.014	0.016
PCB 81	0.00030	<0.0012	<0.0012	<0.0013	<0.0012
PCB 77	0.00010	0.0010	0.0034	<0.00097	<0.0018
PCB 123	0.00003	<0.00012	0.00064	<0.00013	<0.00030
PCB 118	0.00003	0.0040	0.030	0.0047	0.013
PCB 114	0.00003	0.00014	0.00086	<0.00010	<0.00037
PCB 105	0.00003	0.0012	0.0098	0.0015	0.0042
PCB 126	0.10000	<0.38	<0.55	<0.42	<0.45
PCB 167	0.00003	0.00013	0.00041	<0.000079	<0.00020
PCB 156/157	0.00003	0.00037	0.0016	0.00025	0.00073
PCB 169	0.03000	0.14	0.15	<0.11	<0.13
PCB 189	0.00003	0.00017	0.00020	0.00011	0.00016
Total Dioxins & Furans Only		<31.1	<30.9	<24.4	<28.8
Total PCBs Only		<0.54	<0.75	<0.53	<0.61
Total Dioxins & Furans and PCBs		<31.7	<31.7	<24.9	<29.4

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

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.64	<0.39	<0.65	<0.56
12378-pentachlorodibenzo-p-dioxin	0.500	<2.61	2.66	2.48	<2.58
123478-hexachlorodibenzo-p-dioxin	0.100	1.79	1.69	1.26	1.58
123678-hexachlorodibenzo-p-dioxin	0.100	5.07	5.06	3.89	4.67
123789-hexachlorodibenzo-p-dioxin	0.100	2.24	2.40	1.64	2.09
1234678-heptachlorodibenzo-p-dioxin	0.010	3.22	2.90	2.45	2.86
Octachlorodibenzo-p-dioxin	0.001	0.21	0.20	0.16	0.19
2378-tetrachlorodibenzofuran	0.100	0.12	0.29	<0.086	<0.17
12378-pentachlorodibenzofuran	0.050	0.17	0.25	0.17	0.20
23478-pentachlorodibenzofuran	0.500	6.02	6.27	4.24	5.51
123478-hexachlorodibenzofuran	0.100	1.56	1.65	1.14	1.45
123678-hexachlorodibenzofuran	0.100	1.78	1.88	1.41	1.69
234678-hexachlorodibenzofuran	0.100	3.53	3.18	2.55	3.09
123789-hexachlorodibenzofuran	0.100	<0.94	0.99	0.73	<0.89
1234678-heptachlorodibenzofuran	0.010	1.05	1.00	0.79	0.94
1234789-heptachlorodibenzofuran	0.010	0.18	<0.16	<0.12	<0.15
Octachlorodibenzofuran	0.001	0.056	0.052	0.048	0.052
Total Dioxins & Furans		<31.2	<31.0	<23.8	<28.7
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	<0.68	<0.41	<0.68	<0.59
12378-pentachlorodibenzo-p-dioxin	1.00000	<5.51	5.60	5.21	<5.44
123478-hexachlorodibenzo-p-dioxin	0.10000	1.89	1.77	1.33	1.66
123678-hexachlorodibenzo-p-dioxin	0.10000	5.36	5.32	4.09	4.92
123789-hexachlorodibenzo-p-dioxin	0.10000	2.36	2.52	1.72	2.20
1234678-heptachlorodibenzo-p-dioxin	0.01000	3.40	3.05	2.58	3.01
Octachlorodibenzo-p-dioxin	0.00030	0.067	0.063	0.051	0.060
2378-tetrachlorodibenzofuran	0.10000	0.13	0.31	<0.091	<0.18
12378-pentachlorodibenzofuran	0.03000	0.11	0.16	0.11	0.13
23478-pentachlorodibenzofuran	0.30000	3.82	3.96	2.67	3.48
123478-hexachlorodibenzofuran	0.10000	1.65	1.74	1.20	1.53
123678-hexachlorodibenzofuran	0.10000	1.88	1.97	1.48	1.78
234678-hexachlorodibenzofuran	0.10000	3.72	3.35	2.68	3.25
123789-hexachlorodibenzofuran	0.10000	<0.99	1.05	0.77	<0.93
1234678-heptachlorodibenzofuran	0.01000	1.10	1.05	0.83	0.99
1234789-heptachlorodibenzofuran	0.01000	0.19	<0.16	<0.12	<0.16
Octachlorodibenzofuran	0.00030	0.018	0.016	0.015	0.016
PCB 81	0.00030	<0.0013	<0.0013	<0.0013	<0.0013
PCB 77	0.00010	0.0011	0.0035	<0.0010	<0.0019
PCB 123	0.00003	<0.00013	0.00067	<0.00013	<0.00031
PCB 118	0.00003	0.0042	0.032	0.0049	0.014
PCB 114	0.00003	0.00015	0.00090	<0.00011	<0.00039
PCB 105	0.00003	0.0012	0.010	0.0016	0.0044
PCB 126	0.10000	<0.40	<0.58	<0.44	<0.47
PCB 167	0.00003	0.00013	0.00043	<0.000083	<0.00021
PCB 156/157	0.00003	0.00039	0.0016	0.00027	0.00076
PCB 169	0.03000	0.15	0.16	<0.11	<0.14
PCB 189	0.00003	0.00018	0.00021	0.00012	0.00017
Total Dioxins & Furans Only		<32.9	<32.5	<25.6	<30.3
Total PCBs Only		<0.57	<0.79	<0.56	<0.64
Total Dioxins & Furans and PCBs		<33.4	<33.3	<26.2	<31.0

* 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	<0.012	<0.0073	<0.012	<0.011
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.098	0.099	0.093	<0.096
123478-hexachlorodibenzo-p-dioxin	0.10000	0.034	0.031	0.024	0.030
123678-hexachlorodibenzo-p-dioxin	0.10000	0.095	0.094	0.073	0.087
123789-hexachlorodibenzo-p-dioxin	0.10000	0.042	0.044	0.031	0.039
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.061	0.054	0.046	0.053
Octachlorodibenzo-p-dioxin	0.00030	0.0012	0.0011	0.00090	0.0011
2378-tetrachlorodibenzofuran	0.10000	0.0023	0.0055	<0.0016	<0.0031
12378-pentachlorodibenzofuran	0.03000	0.0020	0.0027	0.0020	0.0022
23478-pentachlorodibenzofuran	0.30000	0.068	0.070	0.048	0.062
123478-hexachlorodibenzofuran	0.10000	0.029	0.031	0.021	0.027
123678-hexachlorodibenzofuran	0.10000	0.033	0.035	0.026	0.031
234678-hexachlorodibenzofuran	0.10000	0.066	0.059	0.048	0.058
123789-hexachlorodibenzofuran	0.10000	<0.018	0.018	0.014	<0.017
1234678-heptachlorodibenzofuran	0.01000	0.020	0.018	0.015	0.018
1234789-heptachlorodibenzofuran	0.01000	0.0034	<0.0029	<0.0022	<0.0028
Octachlorodibenzofuran	0.00030	0.00031	0.00029	0.00027	0.00029
PCB 81	0.00030	<0.000023	<0.000023	<0.000023	<0.000023
PCB 77	0.00010	0.000019	0.000062	<0.000018	<0.000033
PCB 123	0.00003	<0.0000023	0.000012	<0.0000023	<0.0000055
PCB 118	0.00003	0.000074	0.00056	0.000087	0.00024
PCB 114	0.00003	0.0000026	0.000016	<0.0000019	<0.0000068
PCB 105	0.00003	0.000022	0.00018	0.000029	0.000077
PCB 126	0.10000	<0.0072	<0.010	<0.0078	<0.0084
PCB 167	0.00003	0.0000024	0.0000075	<0.0000015	<0.0000038
PCB 156/157	0.00003	0.0000069	0.000029	0.0000048	0.000014
PCB 169	0.03000	0.0027	0.0028	<0.0020	<0.0025
PCB 189	0.00003	0.0000032	0.0000037	0.0000021	0.0000030
Total Dioxins & Furans Only		<0.59	<0.57	<0.46	<0.54
Total PCBs Only		<0.010	<0.014	<0.010	<0.011
Total Dioxins & Furans and PCBs		<0.60	<0.59	<0.47	<0.55

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

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

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

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.41	<0.71	<0.56	<0.59	<0.011
12378-pentachlorodibenzo-p-dioxin	<3.80	<6.50	<5.16	<5.44	<0.096
123478-hexachlorodibenzo-p-dioxin	1.16	1.99	1.58	1.66	0.030
123678-hexachlorodibenzo-p-dioxin	3.44	5.88	4.67	4.92	0.087
123789-hexachlorodibenzo-p-dioxin	1.54	2.63	2.09	2.20	0.039
1234678-heptachlorodibenzo-p-dioxin	2.10	3.60	2.86	3.01	0.053
Octachlorodibenzo-p-dioxin	0.042	0.072	0.057	0.060	0.0011
2378-tetrachlorodibenzofuran	<0.12	<0.21	<0.17	<0.18	<0.0031
12378-pentachlorodibenzofuran	0.088	0.15	0.12	0.13	0.0022
23478-pentachlorodibenzofuran	2.43	4.16	3.31	3.48	0.062
123478-hexachlorodibenzofuran	1.07	1.83	1.45	1.53	0.027
123678-hexachlorodibenzofuran	1.24	2.12	1.69	1.78	0.031
234678-hexachlorodibenzofuran	2.27	3.88	3.09	3.25	0.058
123789-hexachlorodibenzofuran	<0.65	<1.12	<0.89	<0.93	<0.017
1234678-heptachlorodibenzofuran	0.69	1.19	0.94	0.99	0.018
1234789-heptachlorodibenzofuran	<0.11	<0.19	<0.15	<0.16	<0.0028
Octachlorodibenzofuran	0.011	0.020	0.016	0.016	0.00029
PCB 81	<0.00091	<0.0016	<0.0012	<0.0013	<0.000023
PCB 77	<0.0013	<0.0022	<0.0018	<0.0019	<0.000033
PCB 123	<0.00022	<0.00037	<0.00030	<0.00031	<0.0000055
PCB 118	0.0095	0.016	0.013	0.014	0.00024
PCB 114	<0.00027	<0.00046	<0.00037	<0.00039	<0.0000068
PCB 105	0.0030	0.0052	0.0042	0.0044	0.000077
PCB 126	<0.33	<0.57	<0.45	<0.47	<0.0084
PCB 167	<0.00015	<0.00025	<0.00020	<0.00021	<0.0000038
PCB 156/157	0.00053	0.00091	0.00073	0.00076	0.000014
PCB 169	<0.099	<0.17	<0.13	<0.14	<0.0025
PCB 189	0.00012	0.00020	0.00016	0.00017	0.0000030
Total Dioxins & Furans Only	<21.2	<36.3	<28.8	<30.3	<0.54
Total PCBs Only	<0.45	<0.76	<0.61	<0.64	<0.011
Total Dioxins & Furans and PCBs	<21.6	<37.0	<29.4	<31.0	<0.55

* At 25°C and 1 atmosphere

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

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

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

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

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.21	0.35	0.28	0.30	0.0053
12378-pentachlorodibenzo-p-dioxin	3.16	5.40	4.30	4.52	0.080
123478-hexachlorodibenzo-p-dioxin	1.16	1.99	1.58	1.66	0.030
123678-hexachlorodibenzo-p-dioxin	3.44	5.88	4.67	4.92	0.087
123789-hexachlorodibenzo-p-dioxin	1.54	2.63	2.09	2.20	0.039
1234678-heptachlorodibenzo-p-dioxin	2.10	3.60	2.86	3.01	0.053
Octachlorodibenzo-p-dioxin	0.042	0.072	0.057	0.060	0.0011
2378-tetrachlorodibenzofuran	0.11	0.19	0.15	0.16	0.0028
12378-pentachlorodibenzofuran	0.088	0.15	0.12	0.13	0.0022
23478-pentachlorodibenzofuran	2.43	4.16	3.31	3.48	0.062
123478-hexachlorodibenzofuran	1.07	1.83	1.45	1.53	0.027
123678-hexachlorodibenzofuran	1.24	2.12	1.69	1.78	0.031
234678-hexachlorodibenzofuran	2.27	3.88	3.09	3.25	0.058
123789-hexachlorodibenzofuran	0.54	0.92	0.73	0.77	0.014
1234678-heptachlorodibenzofuran	0.69	1.19	0.94	0.99	0.018
1234789-heptachlorodibenzofuran	0.078	0.13	0.11	0.11	0.0020
Octachlorodibenzofuran	0.011	0.020	0.016	0.016	0.00029
PCB 81	0.00046	0.00078	0.00062	0.00065	0.000012
PCB 77	0.0012	0.0020	0.0016	0.0017	0.000030
PCB 123	0.00019	0.00032	0.00025	0.00027	0.0000047
PCB 118	0.0095	0.016	0.013	0.014	0.00024
PCB 114	0.00026	0.00044	0.00035	0.00037	0.0000065
PCB 105	0.0030	0.0052	0.0042	0.0044	0.000077
PCB 126	0.17	0.28	0.23	0.24	0.0042
PCB 167	0.00014	0.00024	0.00019	0.00020	0.0000035
PCB 156/157	0.00053	0.00091	0.00073	0.00076	0.000014
PCB 169	0.086	0.15	0.12	0.12	0.0022
PCB 189	0.00012	0.00020	0.00016	0.00017	0.0000030
Total Dioxins & Furans Only	20.2	34.5	27.4	28.9	0.51
Total PCBs Only	0.27	0.46	0.36	0.38	0.0068
Total Dioxins & Furans and PCBs	20.4	35.0	27.8	29.3	0.52

* 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 ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	3120	351	608	478	505	8.99
1,3-Dichlorobenzene	588	66.2	115	90.1	95.2	1.69
1,4-Dichlorobenzene	419	47.2	81.6	64.2	67.8	1.21
1,2-Dichlorobenzene	485	54.6	94.4	74.4	78.5	1.40
Total Dichlorobenzene	1492	168	291	229	242	4.30
1,3,5-trichlorobenzene	64.6	7.27	12.6	9.90	10.5	0.19
1,2,4-trichlorobenzene	164	18.5	31.9	25.1	26.6	0.47
1,2,3-trichlorobenzene	49.7	5.60	9.68	7.62	8.05	0.14
Total Trichlorobenzene	278	31.3	54.2	42.7	45.1	0.80
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	37.3	4.20	7.26	5.72	6.04	0.11
1,2,3,4-tetrachlorobenzene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Total Tetrachlorobenzene	<49.3	<5.55	<9.60	<7.56	<7.98	<0.14
Pentachlorobenzene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Hexachlorobenzene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Total Chlorobenzenes	<4964	<559	<967	<761	<804	<14.3

Dry Gas Volume Sampled (Rm³*) :	5.135
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

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

TABLE 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	4210	485	829	663	697	12.3
1,3-Dichlorobenzene	564	65.0	111	88.9	93.4	1.64
1,4-Dichlorobenzene	360	41.5	70.9	56.7	59.6	1.05
1,2-Dichlorobenzene	474	54.6	93.4	74.7	78.5	1.38
Total Dichlorobenzene	1398	161	275	220	232	4.08
1,3,5-trichlorobenzene	65.0	7.49	12.8	10.2	10.8	0.19
1,2,4-trichlorobenzene	179	20.6	35.3	28.2	29.6	0.52
1,2,3-trichlorobenzene	51.4	5.92	10.1	8.10	8.51	0.15
Total Trichlorobenzene	295	34.0	58.2	46.5	48.9	0.86
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	36.5	4.21	7.19	5.75	6.05	0.11
1,2,3,4-tetrachlorobenzene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Total Tetrachlorobenzene	<48.5	<5.59	<9.55	<7.64	<8.03	<0.14
Pentachlorobenzene	13.2	1.52	2.60	2.08	2.19	0.038
Hexachlorobenzene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Total Chlorobenzenes	<5977	<689	<1177	<942	<990	<17.4

Dry Gas Volume Sampled (Rm³*) :	5.077
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.5
Wet Reference Flowrate (Rm³/s*) :	17.6

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

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

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	3240	371	628	500	525	9.35
1,3-Dichlorobenzene	722	82.7	140	111	117	2.08
1,4-Dichlorobenzene	443	50.7	85.8	68.4	71.8	1.28
1,2-Dichlorobenzene	586	67.1	114	90.5	95.0	1.69
Total Dichlorobenzene	1751	201	339	270	284	5.05
1,3,5-trichlorobenzene	82.1	9.40	15.9	12.7	13.3	0.24
1,2,4-trichlorobenzene	281	32.2	54.4	43.4	45.6	0.81
1,2,3-trichlorobenzene	59.0	6.76	11.4	9.11	9.57	0.17
Total Trichlorobenzene	422	48.3	81.8	65.2	68.4	1.22
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	43.4	4.97	8.41	6.70	7.04	0.13
1,2,3,4-tetrachlorobenzene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Total Tetrachlorobenzene	<55.4	<6.35	<10.7	<8.55	<8.98	<0.16
Pentachlorobenzene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Hexachlorobenzene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Total Chlorobenzenes	<5493	<629	<1064	<848	<891	<15.9

Dry Gas Volume Sampled (Rm³*) :	5.162
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	17.8

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

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

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Monochlorobenzene	351	485	371	402	17.9
1,3-Dichlorobenzene	66.2	65.0	82.7	71.3	13.9
1,4-Dichlorobenzene	47.2	41.5	50.7	46.5	10.1
1,2-Dichlorobenzene	54.6	54.6	67.1	58.8	12.3
Total Dichlorobenzene	168	161	201	177	11.9
1,3,5-trichlorobenzene	7.27	7.49	9.40	8.06	14.6
1,2,4-trichlorobenzene	18.5	20.6	32.2	23.8	31.1
1,2,3-trichlorobenzene	5.60	5.92	6.76	6.09	9.8
Total Trichlorobenzene	31.3	34.0	48.3	37.9	24.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	4.20	4.21	4.97	4.46	10.0
1,2,3,4-tetrachlorobenzene	<1.35	<1.38	<1.37	<1.37	1.2
Total Tetrachlorobenzene	<5.55	<5.59	<6.35	<5.83	7.7
Pentachlorobenzene	<1.35	1.52	<1.37	<1.42	6.5
Hexachlorobenzene	<1.35	<1.38	<1.37	<1.37	1.2
Total Chlorobenzenes	<559	<689	<629	<626	10.4

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

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	608	829	628	688	17.8
1,3-Dichlorobenzene	115	111	140	122	12.9
1,4-Dichlorobenzene	81.6	70.9	85.8	79.4	9.7
1,2-Dichlorobenzene	94.4	93.4	114	100	11.3
Total Dichlorobenzene	291	275	339	302	11.1
1,3,5-trichlorobenzene	12.6	12.8	15.9	13.8	13.5
1,2,4-trichlorobenzene	31.9	35.3	54.4	40.5	30.0
1,2,3-trichlorobenzene	9.68	10.1	11.4	10.4	8.7
Total Trichlorobenzene	54.2	58.2	81.8	64.7	23.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	7.26	7.19	8.41	7.62	9.0
1,2,3,4-tetrachlorobenzene	<2.34	<2.36	<2.32	<2.34	0.8
Total Tetrachlorobenzene	<9.60	<9.55	<10.7	<9.96	6.7
Pentachlorobenzene	<2.34	2.60	<2.32	<2.42	6.4
Hexachlorobenzene	<2.34	<2.36	<2.32	<2.34	0.8
Total Chlorobenzenes	<967	<1177	<1064	<1069	9.9

* At 25°C and 1 atmosphere

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

Specific Isomer	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Monochlorobenzene	478	663	500	547	18.5
1,3-Dichlorobenzene	90.1	88.9	111	96.8	13.1
1,4-Dichlorobenzene	64.2	56.7	68.4	63.1	9.4
1,2-Dichlorobenzene	74.4	74.7	90.5	79.8	11.5
Total Dichlorobenzene	229	220	270	240	11.2
1,3,5-trichlorobenzene	9.90	10.2	12.7	10.9	13.8
1,2,4-trichlorobenzene	25.1	28.2	43.4	32.2	30.3
1,2,3-trichlorobenzene	7.62	8.10	9.11	8.28	9.2
Total Trichlorobenzene	42.7	46.5	65.2	51.5	23.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	5.72	5.75	6.70	6.06	9.2
1,2,3,4-tetrachlorobenzene	<1.84	<1.89	<1.85	<1.86	1.4
Total Tetrachlorobenzene	<7.56	<7.64	<8.55	<7.92	7.0
Pentachlorobenzene	<1.84	2.08	<1.85	<1.92	7.0
Hexachlorobenzene	<1.84	<1.89	<1.85	<1.86	1.4
Total Chlorobenzenes	<761	<942	<848	<850	10.6

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

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

Specific Isomer	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Monochlorobenzene	505	697	525	576	18.3
1,3-Dichlorobenzene	95.2	93.4	117	102	12.9
1,4-Dichlorobenzene	67.8	59.6	71.8	66.4	9.4
1,2-Dichlorobenzene	78.5	78.5	95.0	84.0	11.3
Total Dichlorobenzene	242	232	284	252	11.0
1,3,5-trichlorobenzene	10.5	10.8	13.3	11.5	13.6
1,2,4-trichlorobenzene	26.6	29.6	45.6	33.9	30.1
1,2,3-trichlorobenzene	8.05	8.51	9.57	8.71	8.9
Total Trichlorobenzene	45.1	48.9	68.4	54.1	23.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	6.04	6.05	7.04	6.37	9.0
1,2,3,4-tetrachlorobenzene	<1.94	<1.99	<1.95	<1.96	1.3
Total Tetrachlorobenzene	<7.98	<8.03	<8.98	<8.33	6.8
Pentachlorobenzene	<1.94	2.19	<1.95	<2.03	6.9
Hexachlorobenzene	<1.94	<1.99	<1.95	<1.96	1.3
Total Chlorobenzenes	<804	<990	<891	<895	10.4

* At 25°C and 1 atmosphere

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

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Monochlorobenzene	8.99	12.3	9.35	10.2	17.6
1,3-Dichlorobenzene	1.69	1.64	2.08	1.81	13.3
1,4-Dichlorobenzene	1.21	1.05	1.28	1.18	10.0
1,2-Dichlorobenzene	1.40	1.38	1.69	1.49	11.7
Total Dichlorobenzene	4.30	4.08	5.05	4.48	11.5
1,3,5-trichlorobenzene	0.19	0.19	0.24	0.20	13.9
1,2,4-trichlorobenzene	0.47	0.52	0.81	0.60	30.4
1,2,3-trichlorobenzene	0.14	0.15	0.17	0.15	9.1
Total Trichlorobenzene	0.80	0.86	1.22	0.96	23.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.11	0.11	0.13	0.11	9.4
1,2,3,4-tetrachlorobenzene	<0.035	<0.035	<0.035	<0.035	0.6
Total Tetrachlorobenzene	<0.14	<0.14	<0.16	<0.15	7.1
Pentachlorobenzene	<0.035	0.038	<0.035	<0.036	6.2
Hexachlorobenzene	<0.035	<0.035	<0.035	<0.035	0.6
Total Chlorobenzenes	<14.3	<17.4	<15.9	<15.9	9.8

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	402	688	547	576	10.2
1,3-Dichlorobenzene	71.3	122	96.8	102	1.81
1,4-Dichlorobenzene	46.5	79.4	63.1	66.4	1.18
1,2-Dichlorobenzene	58.8	100	79.8	84.0	1.49
Total Dichlorobenzene	177	302	240	252	4.48
1,3,5-trichlorobenzene	8.06	13.8	10.9	11.5	0.20
1,2,4-trichlorobenzene	23.8	40.5	32.2	33.9	0.60
1,2,3-trichlorobenzene	6.09	10.4	8.28	8.71	0.15
Total Trichlorobenzene	37.9	64.7	51.5	54.1	0.96
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	4.46	7.62	6.06	6.37	0.11
1,2,3,4-tetrachlorobenzene	<1.37	<2.34	<1.86	<1.96	<0.035
Total Tetrachlorobenzene	<5.83	<9.96	<7.92	<8.33	<0.15
Pentachlorobenzene	<1.42	<2.42	<1.92	<2.03	<0.036
Hexachlorobenzene	<1.37	<2.34	<1.86	<1.96	<0.035
Total Chlorobenzenes	<626	<1069	<850	<895	<15.9

* At 25°C and 1 atmosphere

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

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

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

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

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

Specific Isomer	Total Collected ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
3-monochlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
4-monochlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Total Monochlorophenols	<180	<20.3	<35.1	<27.6	<29.1	<0.52
2,6-dichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,4 & 2,5-dichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
3,5-dichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,3-dichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
3,4-dichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Total Dichlorophenols	<300	<33.8	<58.4	<46.0	<48.6	<0.86
2,4,6-trichlorophenol	200	22.5	38.9	30.7	32.4	0.58
2,3,6-trichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,3,5-trichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,4,5-trichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,3,4-trichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
3,4,5-trichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Total Trichlorophenols	<500	<56.3	<97.4	<76.7	<81.0	<1.44
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,3,4,5-tetrachlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Total Tetrachlorophenols	<120	<13.5	<23.4	<18.4	<19.4	<0.35
Pentachlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Total Chlorophenols	<1160	<131	<226	<178	<188	<3.34

Dry Gas Volume Sampled (Rm^3*) :	5.135
Actual Flowrate (m^3/s) :	25.6
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.8

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
3-monochlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
4-monochlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Total Monochlorophenols	<180	<20.7	<35.5	<28.4	<29.8	<0.52
2,6-dichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,4 & 2,5-dichlorophenol	76.1	8.77	15.0	12.0	12.6	0.22
3,5-dichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,3-dichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
3,4-dichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Total Dichlorophenols	<316	<36.4	<62.3	<49.8	<52.4	<0.92
2,4,6-trichlorophenol	201	23.2	39.6	31.7	33.3	0.59
2,3,6-trichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,3,5-trichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,4,5-trichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,3,4-trichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
3,4,5-trichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Total Trichlorophenols	<501	<57.7	<98.7	<78.9	<83.0	<1.46
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,3,4,5-tetrachlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Total Tetrachlorophenols	<120	<13.8	<23.6	<18.9	<19.9	<0.35
Pentachlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Total Chlorophenols	<1177	<136	<232	<185	<195	<3.43

Dry Gas Volume Sampled (Rm³*) :	5.077
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.5
Wet Reference Flowrate (Rm³/s*) :	17.6

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
3-monochlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
4-monochlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Total Monochlorophenols	<180	<20.6	<34.9	<27.8	<29.2	<0.52
2,6-dichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,4 & 2,5-dichlorophenol	65.6	7.51	12.7	10.1	10.6	0.19
3,5-dichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,3-dichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
3,4-dichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Total Dichlorophenols	<306	<35.0	<59.2	<47.2	<49.6	<0.88
2,4,6-trichlorophenol	171	19.6	33.1	26.4	27.7	0.49
2,3,6-trichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,3,5-trichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,4,5-trichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,3,4-trichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
3,4,5-trichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Total Trichlorophenols	<471	<53.9	<91.2	<72.7	<76.4	<1.36
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,3,4,5-tetrachlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Total Tetrachlorophenols	<120	<13.7	<23.2	<18.5	<19.5	<0.35
Pentachlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Total Chlorophenols	<1137	<130	<220	<175	<184	<3.28

Dry Gas Volume Sampled (Rm³*) :	5.162
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	17.8

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

TABLE 64
Covanta - Durham York Energy Centre
Boiler No. 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	<6.76	<6.91	<6.87	<6.85	1.2
3-monochlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
4-monochlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
Total Monochlorophenols	<20.3	<20.7	<20.6	<20.5	1.2
2,6-dichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,4 & 2,5-dichlorophenol	<6.76	8.77	7.51	<7.68	13.2
3,5-dichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,3-dichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
3,4-dichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
Total Dichlorophenols	<33.8	<36.4	<35.0	<35.1	3.8
2,4,6-trichlorophenol	22.5	23.2	19.6	21.8	8.8
2,3,6-trichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,3,5-trichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,4,5-trichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,3,4-trichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
3,4,5-trichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
Total Trichlorophenols	<56.3	<57.7	<53.9	<56.0	3.4
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,3,4,5-tetrachlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
Total Tetrachlorophenols	<13.5	<13.8	<13.7	<13.7	1.2
Pentachlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
Total Chlorophenols	<131	<136	<130	<132	2.3

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

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
3-monochlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
4-monochlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
Total Monochlorophenols	<35.1	<35.5	<34.9	<35.1	0.8
2,6-dichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,4 & 2,5-dichlorophenol	<11.7	15.0	12.7	<13.1	12.9
3,5-dichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,3-dichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
3,4-dichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
Total Dichlorophenols	<58.4	<62.3	<59.2	<60.0	3.4
2,4,6-trichlorophenol	38.9	39.6	33.1	37.2	9.6
2,3,6-trichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,3,5-trichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,4,5-trichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,3,4-trichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
3,4,5-trichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
Total Trichlorophenols	<97.4	<98.7	<91.2	<95.8	4.1
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,3,4,5-tetrachlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
Total Tetrachlorophenols	<23.4	<23.6	<23.2	<23.4	0.8
Pentachlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
Total Chlorophenols	<226	<232	<220	<226	2.6

* At 25°C and 1 atmosphere

TABLE 66

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
3-monochlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
4-monochlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
Total Monochlorophenols	<27.6	<28.4	<27.8	<27.9	1.4
2,6-dichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,4 & 2,5-dichlorophenol	<9.20	12.0	10.1	<10.4	13.6
3,5-dichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,3-dichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
3,4-dichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
Total Dichlorophenols	<46.0	<49.8	<47.2	<47.7	4.1
2,4,6-trichlorophenol	30.7	31.7	26.4	29.6	9.5
2,3,6-trichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,3,5-trichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,4,5-trichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,3,4-trichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
3,4,5-trichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
Total Trichlorophenols	<76.7	<78.9	<72.7	<76.1	4.1
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,3,4,5-tetrachlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
Total Tetrachlorophenols	<18.4	<18.9	<18.5	<18.6	1.4
Pentachlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
Total Chlorophenols	<178	<185	<175	<180	2.9

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
3-monochlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
4-monochlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
Total Monochlorophenols	<29.1	<29.8	<29.2	<29.4	1.3
2,6-dichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,4 & 2,5-dichlorophenol	<9.72	12.6	10.6	<11.0	13.4
3,5-dichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,3-dichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
3,4-dichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
Total Dichlorophenols	<48.6	<52.4	<49.6	<50.2	3.9
2,4,6-trichlorophenol	32.4	33.3	27.7	31.1	9.6
2,3,6-trichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,3,5-trichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,4,5-trichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,3,4-trichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
3,4,5-trichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
Total Trichlorophenols	<81.0	<83.0	<76.4	<80.1	4.2
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,3,4,5-tetrachlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
Total Tetrachlorophenols	<19.4	<19.9	<19.5	<19.6	1.3
Pentachlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
Total Chlorophenols	<188	<195	<184	<189	2.9

* At 25°C and 1 atmosphere

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

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
3-monochlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
4-monochlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
Total Monochlorophenols	<0.52	<0.52	<0.52	<0.52	0.6
2,6-dichlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
2,4 & 2,5-dichlorophenol	<0.17	0.22	0.19	<0.19	12.8
3,5-dichlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
2,3-dichlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
3,4-dichlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
Total Dichlorophenols	<0.86	<0.92	<0.88	<0.89	3.3
2,4,6-trichlorophenol	0.58	0.59	0.49	0.55	9.2
2,3,6-trichlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
2,3,5-trichlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
2,4,5-trichlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
2,3,4-trichlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
3,4,5-trichlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
Total Trichlorophenols	<1.44	<1.46	<1.36	<1.42	3.8
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
2,3,4,5-tetrachlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
Total Tetrachlorophenols	<0.35	<0.35	<0.35	<0.35	0.6
Pentachlorophenol	<0.17	<0.17	<0.17	<0.17	0.6
Total Chlorophenols	<3.34	<3.43	<3.28	<3.35	2.3

TABLE 69

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
3-monochlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
4-monochlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
Total Monochlorophenols	<20.5	<35.1	<27.9	<29.4	<0.52
2,6-dichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,4 & 2,5-dichlorophenol	<7.68	<13.1	<10.4	<11.0	<0.19
3,5-dichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,3-dichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
3,4-dichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
Total Dichlorophenols	<35.1	<60.0	<47.7	<50.2	<0.89
2,4,6-trichlorophenol	21.8	37.2	29.6	31.1	0.55
2,3,6-trichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,3,5-trichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,4,5-trichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,3,4-trichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
3,4,5-trichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
Total Trichlorophenols	<56.0	<95.8	<76.1	<80.1	<1.42
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,3,4,5-tetrachlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
Total Tetrachlorophenols	<13.7	<23.4	<18.6	<19.6	<0.35
Pentachlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
Total Chlorophenols	<132	<226	<180	<189	<3.35

* At 25°C and 1 atmosphere

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

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

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

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

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

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Acenaphthylene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Anthracene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(a)Anthracene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(b)Fluoranthene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(k)Fluoranthene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(a)fluorene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(b)fluorene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(g,h,i)Perylene	96.3	10.8	18.8	14.8	15.6	0.28
Benzo(a)Pyrene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(e)Pyrene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Biphenyl	24.2	2.72	4.71	3.71	3.92	0.070
2-Chloronaphthalene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Chrysene/Triphenylene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Coronene	69.9	7.87	13.6	10.7	11.3	0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Dibenzo(a,e)pyrene	<60	<6.76	<11.7	<9.20	<9.72	<0.17
9,10-dimethylanthracene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
7,12-Dimethylbenzo(a)anthracene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Fluoranthene	26.1	2.94	5.08	4.00	4.23	0.075
Fluorene	12.0	1.35	2.34	1.84	1.94	0.035
Indeno(1,2,3-cd)Pyrene	13.0	1.46	2.53	1.99	2.10	0.037
2-methylanthracene	22.0	2.48	4.28	3.37	3.56	0.063
3-Methylcholanthrene	<60	<6.76	<11.7	<9.20	<9.72	<0.17
1-Methylnaphthalene	22.3	2.51	4.34	3.42	3.61	0.064
2-Methylnaphthalene	43.3	4.87	8.43	6.64	7.01	0.12
1-Methylphenanthrene	51.6	5.81	10.0	7.91	8.36	0.15
9-Methylphenanthrene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Naphthalene	207	23.3	40.3	31.7	33.5	0.60
Perylene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Phenanthrene	76.9	8.66	15.0	11.8	12.5	0.22
Picene	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Pyrene	32.2	3.63	6.27	4.94	5.21	0.093
Tetralin	188	21.2	36.6	28.8	30.4	0.54
m-terphenyl	<12	<1.35	<2.34	<1.84	<1.94	<0.035
o-Terphenyl	<12	<1.35	<2.34	<1.84	<1.94	<0.035
p-terphenyl	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Total	<1305	<147	<254	<200	<211	<3.76

Dry Gas Volume Sampled (Rm³*) :	5.135
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

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

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

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	87.1	10.0	17.2	13.7	14.4	0.25
Acenaphthylene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Anthracene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Benzo(a)Anthracene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Benzo(b)Fluoranthene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Benzo(k)Fluoranthene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Benzo(a)fluorene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Benzo(b)fluorene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Benzo(g,h,i)Perylene	24.4	2.81	4.81	3.84	4.04	0.071
Benzo(a)Pyrene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Benzo(e)Pyrene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Biphenyl	559	64.4	110	88.1	92.6	1.63
2-Chloronaphthalene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Chrysene/Triphenylene	21.9	2.52	4.31	3.45	3.63	0.064
Coronene	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Dibenzo(a,c/a,h)Anthracene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Dibenzo(a,e)pyrene	<60	<6.91	<11.8	<9.45	<9.94	<0.17
9,10-dimethylanthracene	26.7	3.08	5.26	4.21	4.42	0.078
7,12-Dimethylbenzo(a)anthracene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Fluoranthene	111	12.8	21.9	17.5	18.4	0.32
Fluorene	48.7	5.61	9.59	7.67	8.07	0.14
Indeno(1,2,3-cd)Pyrene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
2-methylanthracene	117	13.5	23.0	18.4	19.4	0.34
3-Methylcholanthrene	<60	<6.91	<11.8	<9.45	<9.94	<0.17
1-Methylnaphthalene	42.5	4.90	8.37	6.70	7.04	0.12
2-Methylnaphthalene	85.7	9.87	16.9	13.5	14.2	0.25
1-Methylphenanthrene	43.6	5.02	8.59	6.87	7.22	0.13
9-Methylphenanthrene	107	12.3	21.1	16.9	17.7	0.31
Naphthalene	524	60.4	103	82.6	86.8	1.53
Perylene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Phenanthrene	516	59.5	102	81.3	85.5	1.50
Picene	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Pyrene	83.2	9.59	16.4	13.1	13.8	0.24
Tetralin	355	40.9	69.9	55.9	58.8	1.03
m-terphenyl	33.8	3.89	6.66	5.33	5.60	0.099
o-Terphenyl	56.5	6.51	11.1	8.90	9.36	0.16
p-terphenyl	16.5	1.90	3.25	2.60	2.73	0.048
Total	<3268	<376	<644	<515	<541	<9.53

Dry Gas Volume Sampled (Rm³*) :	5.077
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.5
Wet Reference Flowrate (Rm³/s*) :	17.6

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

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

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Acenaphthylene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Anthracene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(a)Anthracene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(b)Fluoranthene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(k)Fluoranthene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(a)fluorene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(b)fluorene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(g,h,i)Perylene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(a)Pyrene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(e)Pyrene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Biphenyl	24.1	2.76	4.67	3.72	3.91	0.070
2-Chloronaphthalene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Chrysene/Triphenylene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Coronene	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Dibenzo(a,c/a,h)Anthracene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Dibenzo(a,e)pyrene	<60	<6.87	<11.6	<9.26	<9.73	<0.17
9,10-dimethylanthracene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
7,12-Dimethylbenzo(a)anthracene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Fluoranthene	13.9	1.59	2.69	2.15	2.25	0.040
Fluorene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Indeno(1,2,3-cd)Pyrene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
2-methylanthracene	21.1	2.42	4.09	3.26	3.42	0.061
3-Methylcholanthrene	<60	<6.87	<11.6	<9.26	<9.73	<0.17
1-Methylnaphthalene	21.8	2.50	4.22	3.36	3.54	0.063
2-Methylnaphthalene	29.7	3.40	5.75	4.58	4.82	0.086
1-Methylphenanthrene	25.5	2.92	4.94	3.94	4.14	0.074
9-Methylphenanthrene	13.3	1.52	2.58	2.05	2.16	0.038
Naphthalene	200	22.9	38.7	30.9	32.4	0.58
Perylene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Phenanthrene	59.5	6.82	11.5	9.18	9.65	0.17
Picene	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Pyrene	12.8	1.47	2.48	1.98	2.08	0.037
Tetralin	496	56.8	96.1	76.6	80.4	1.43
m-terphenyl	<12	<1.37	<2.32	<1.85	<1.95	<0.035
o-Terphenyl	<12	<1.37	<2.32	<1.85	<1.95	<0.035
p-terphenyl	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Total	<1422	<163	<275	<219	<231	<4.10

Dry Gas Volume Sampled (Rm³*) :	5.162
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	17.8

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

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

Compound	Actual Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<1.35	10.0	<1.37	<4.25	118
Acenaphthylene	<1.35	<1.38	<1.37	<1.37	1.2
Anthracene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(a)Anthracene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(b)Fluoranthene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(k)Fluoranthene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(a)fluorene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(b)fluorene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(g,h,i)Perylene	10.8	2.81	<1.37	<5.01	102
Benzo(a)Pyrene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(e)Pyrene	<1.35	<1.38	<1.37	<1.37	1.2
Biphenyl	2.72	64.4	2.76	23.3	153
2-Chloronaphthalene	<1.35	<1.38	<1.37	<1.37	1.2
Chrysene/Triphenylene	<1.35	2.52	<1.37	<1.75	38.3
Coronene	7.87	<6.91	<6.87	<7.22	7.8
Dibenzo(a,c/a,h)Anthracene	<1.35	<1.38	<1.37	<1.37	1.2
Dibenzo(a,e)pyrene	<6.76	<6.91	<6.87	<6.85	1.2
9,10-dimethylanthracene	<1.35	3.08	<1.37	<1.93	51.2
7,12-Dimethylbenzo(a)anthracene	<1.35	<1.38	<1.37	<1.37	1.2
Fluoranthene	2.94	12.8	1.59	5.77	106
Fluorene	1.35	5.61	<1.37	<2.78	88.3
Indeno(1,2,3-cd)Pyrene	1.46	<1.38	<1.37	<1.41	3.5
2-methylanthracene	2.48	13.5	2.42	6.12	104
3-Methylcholanthrene	<6.76	<6.91	<6.87	<6.85	1.2
1-Methylnaphthalene	2.51	4.90	2.50	3.30	41.8
2-Methylnaphthalene	4.87	9.87	3.40	6.05	56.1
1-Methylphenanthrene	5.81	5.02	2.92	4.58	32.6
9-Methylphenanthrene	<1.35	12.3	1.52	<5.07	124
Naphthalene	23.3	60.4	22.9	35.5	60.6
Perylene	<1.35	<1.38	<1.37	<1.37	1.2
Phenanthrene	8.66	59.5	6.82	25.0	120
Picene	<6.76	<6.91	<6.87	<6.85	1.2
Pyrene	3.63	9.59	1.47	4.89	86.0
Tetralin	21.2	40.9	56.8	39.6	45.1
m-terphenyl	<1.35	3.89	<1.37	<2.21	66.2
o-Terphenyl	<1.35	6.51	<1.37	<3.08	96.5
p-terphenyl	<1.35	1.90	<1.37	<1.54	20.2
Total	<147	<376	<163	<229	56.0

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

Compound	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.34	17.2	<2.32	<7.27	118
Acenaphthylene	<2.34	<2.36	<2.32	<2.34	0.8
Anthracene	<2.34	<2.36	<2.32	<2.34	0.8
Benzo(a)Anthracene	<2.34	<2.36	<2.32	<2.34	0.8
Benzo(b)Fluoranthene	<2.34	<2.36	<2.32	<2.34	0.8
Benzo(k)Fluoranthene	<2.34	<2.36	<2.32	<2.34	0.8
Benzo(a)fluorene	<2.34	<2.36	<2.32	<2.34	0.8
Benzo(b)fluorene	<2.34	<2.36	<2.32	<2.34	0.8
Benzo(g,h,i)Perylene	18.8	4.81	<2.32	<8.63	103
Benzo(a)Pyrene	<2.34	<2.36	<2.32	<2.34	0.8
Benzo(e)Pyrene	<2.34	<2.36	<2.32	<2.34	0.8
Biphenyl	4.71	110	4.67	39.8	153
2-Chloronaphthalene	<2.34	<2.36	<2.32	<2.34	0.8
Chrysene/Triphenylene	<2.34	4.31	<2.32	<2.99	38.3
Coronene	13.6	<11.8	<11.6	<12.4	8.9
Dibenzo(a,c/a,h)Anthracene	<2.34	<2.36	<2.32	<2.34	0.8
Dibenzo(a,e)pyrene	<11.7	<11.8	<11.6	<11.7	0.8
9,10-dimethylanthracene	<2.34	5.26	<2.32	<3.31	51.1
7,12-Dimethylbenzo(a)anthracene	<2.34	<2.36	<2.32	<2.34	0.8
Fluoranthene	5.08	21.9	2.69	9.88	106
Fluorene	2.34	9.59	<2.32	<4.75	88.2
Indeno(1,2,3-cd)Pyrene	2.53	<2.36	<2.32	<2.41	4.6
2-methylanthracene	4.28	23.0	4.09	10.5	104
3-Methylcholanthrene	<11.7	<11.8	<11.6	<11.7	0.8
1-Methylnaphthalene	4.34	8.37	4.22	5.65	41.8
2-Methylnaphthalene	8.43	16.9	5.75	10.4	56.1
1-Methylphenanthrene	10.0	8.59	4.94	7.86	33.5
9-Methylphenanthrene	<2.34	21.1	2.58	<8.66	124
Naphthalene	40.3	103	38.7	60.8	60.5
Perylene	<2.34	<2.36	<2.32	<2.34	0.8
Phenanthrene	15.0	102	11.5	42.7	120
Picene	<11.7	<11.8	<11.6	<11.7	0.8
Pyrene	6.27	16.4	2.48	8.38	85.8
Tetralin	36.6	69.9	96.1	67.5	44.1
m-terphenyl	<2.34	6.66	<2.32	<3.77	66.2
o-Terphenyl	<2.34	11.1	<2.32	<5.26	96.5
p-terphenyl	<2.34	3.25	<2.32	<2.64	20.1
Total	<254	<644	<275	<391	56.0

* At 25°C and 1 atmosphere

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

Compound	Dry Adjusted Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.84	13.7	<1.85	<5.81	118
Acenaphthylene	<1.84	<1.89	<1.85	<1.86	1.4
Anthracene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(a)Anthracene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(b)Fluoranthene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(k)Fluoranthene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(a)fluorene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(b)fluorene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(g,h,i)Perylene	14.8	3.84	<1.85	<6.82	102
Benzo(a)Pyrene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(e)Pyrene	<1.84	<1.89	<1.85	<1.86	1.4
Biphenyl	3.71	88.1	3.72	31.8	153
2-Chloronaphthalene	<1.84	<1.89	<1.85	<1.86	1.4
Chrysene/Triphenylene	<1.84	3.45	<1.85	<2.38	38.9
Coronene	10.7	<9.45	<9.26	<9.81	8.1
Dibenzo(a,c/a,h)Anthracene	<1.84	<1.89	<1.85	<1.86	1.4
Dibenzo(a,e)pyrene	<9.20	<9.45	<9.26	<9.30	1.4
9,10-dimethylanthracene	<1.84	4.21	<1.85	<2.63	51.8
7,12-Dimethylbenzo(a)anthracene	<1.84	<1.89	<1.85	<1.86	1.4
Fluoranthene	4.00	17.5	2.15	7.88	106
Fluorene	1.84	7.67	<1.85	<3.79	88.8
Indeno(1,2,3-cd)Pyrene	1.99	<1.89	<1.85	<1.91	3.8
2-methylanthracene	3.37	18.4	3.26	8.36	104
3-Methylcholanthrene	<9.20	<9.45	<9.26	<9.30	1.4
1-Methylnaphthalene	3.42	6.70	3.36	4.49	42.5
2-Methylnaphthalene	6.64	13.5	4.58	8.24	56.7
1-Methylphenanthrene	7.91	6.87	3.94	6.24	33.0
9-Methylphenanthrene	<1.84	16.9	2.05	<6.92	124
Naphthalene	31.7	82.6	30.9	48.4	61.2
Perylene	<1.84	<1.89	<1.85	<1.86	1.4
Phenanthrene	11.8	81.3	9.18	34.1	120
Picene	<9.20	<9.45	<9.26	<9.30	1.4
Pyrene	4.94	13.1	1.98	6.67	86.4
Tetralin	28.8	55.9	76.6	53.8	44.5
m-terphenyl	<1.84	5.33	<1.85	<3.01	66.8
o-Terphenyl	<1.84	8.90	<1.85	<4.20	97.0
p-terphenyl	<1.84	2.60	<1.85	<2.10	20.8
Total	<200	<515	<219	<311	56.7

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

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

Compound	Wet Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.94	14.4	<1.95	<6.11	118
Acenaphthylene	<1.94	<1.99	<1.95	<1.96	1.3
Anthracene	<1.94	<1.99	<1.95	<1.96	1.3
Benzo(a)Anthracene	<1.94	<1.99	<1.95	<1.96	1.3
Benzo(b)Fluoranthene	<1.94	<1.99	<1.95	<1.96	1.3
Benzo(k)Fluoranthene	<1.94	<1.99	<1.95	<1.96	1.3
Benzo(a)fluorene	<1.94	<1.99	<1.95	<1.96	1.3
Benzo(b)fluorene	<1.94	<1.99	<1.95	<1.96	1.3
Benzo(g,h,i)Perylene	15.6	4.04	<1.95	<7.19	102
Benzo(a)Pyrene	<1.94	<1.99	<1.95	<1.96	1.3
Benzo(e)Pyrene	<1.94	<1.99	<1.95	<1.96	1.3
Biphenyl	3.92	92.6	3.91	33.5	153
2-Chloronaphthalene	<1.94	<1.99	<1.95	<1.96	1.3
Chrysene/Triphenylene	<1.94	3.63	<1.95	<2.51	38.8
Coronene	11.3	<9.94	<9.73	<10.3	8.4
Dibenzo(a,c/a,h)Anthracene	<1.94	<1.99	<1.95	<1.96	1.3
Dibenzo(a,e)pyrene	<9.72	<9.94	<9.73	<9.79	1.3
9,10-dimethylanthracene	<1.94	4.42	<1.95	<2.77	51.6
7,12-Dimethylbenzo(a)anthracene	<1.94	<1.99	<1.95	<1.96	1.3
Fluoranthene	4.23	18.4	2.25	8.29	106
Fluorene	1.94	8.07	<1.95	<3.99	88.7
Indeno(1,2,3-cd)Pyrene	2.10	<1.99	<1.95	<2.01	4.1
2-methylanthracene	3.56	19.4	3.42	8.79	104
3-Methylcholanthrene	<9.72	<9.94	<9.73	<9.79	1.3
1-Methylnaphthalene	3.61	7.04	3.54	4.73	42.3
2-Methylnaphthalene	7.01	14.2	4.82	8.67	56.6
1-Methylphenanthrene	8.36	7.22	4.14	6.57	33.2
9-Methylphenanthrene	<1.94	17.7	2.16	<7.27	124
Naphthalene	33.5	86.8	32.4	50.9	61.0
Perylene	<1.94	<1.99	<1.95	<1.96	1.3
Phenanthrene	12.5	85.5	9.65	35.9	120
Picene	<9.72	<9.94	<9.73	<9.79	1.3
Pyrene	5.21	13.8	2.08	7.02	86.3
Tetralin	30.4	58.8	80.4	56.6	44.3
m-terphenyl	<1.94	5.60	<1.95	<3.16	66.7
o-Terphenyl	<1.94	9.36	<1.95	<4.42	96.9
p-terphenyl	<1.94	2.73	<1.95	<2.21	20.6
Total	<211	<541	<231	<328	56.5

* At 25°C and 1 atmosphere

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

Compound	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Acenaphthene	<0.035	0.25	<0.035	<0.11	118
Acenaphthylene	<0.035	<0.035	<0.035	<0.035	0.6
Anthracene	<0.035	<0.035	<0.035	<0.035	0.6
Benzo(a)Anthracene	<0.035	<0.035	<0.035	<0.035	0.6
Benzo(b)Fluoranthene	<0.035	<0.035	<0.035	<0.035	0.6
Benzo(k)Fluoranthene	<0.035	<0.035	<0.035	<0.035	0.6
Benzo(a)fluorene	<0.035	<0.035	<0.035	<0.035	0.6
Benzo(b)fluorene	<0.035	<0.035	<0.035	<0.035	0.6
Benzo(g,h,i)Perylene	0.28	0.071	<0.035	<0.13	103
Benzo(a)Pyrene	<0.035	<0.035	<0.035	<0.035	0.6
Benzo(e)Pyrene	<0.035	<0.035	<0.035	<0.035	0.6
Biphenyl	0.070	1.63	0.070	0.59	153
2-Chloronaphthalene	<0.035	<0.035	<0.035	<0.035	0.6
Chrysene/Triphenylene	<0.035	0.064	<0.035	<0.044	38.0
Coronene	0.20	<0.17	<0.17	<0.18	8.7
Dibenzo(a,c/a,h)Anthracene	<0.035	<0.035	<0.035	<0.035	0.6
Dibenzo(a,e)pyrene	<0.17	<0.17	<0.17	<0.17	0.6
9,10-dimethylanthracene	<0.035	0.078	<0.035	<0.049	50.9
7,12-Dimethylbenzo(a)anthracene	<0.035	<0.035	<0.035	<0.035	0.6
Fluoranthene	0.075	0.32	0.040	0.15	106
Fluorene	0.035	0.14	<0.035	<0.070	88.0
Indeno(1,2,3-cd)Pyrene	0.037	<0.035	<0.035	<0.036	4.3
2-methylanthracene	0.063	0.34	0.061	0.16	104
3-Methylcholanthrene	<0.17	<0.17	<0.17	<0.17	0.6
1-Methylnaphthalene	0.064	0.12	0.063	0.084	41.6
2-Methylnaphthalene	0.12	0.25	0.086	0.15	55.9
1-Methylphenanthrene	0.15	0.13	0.074	0.12	33.2
9-Methylphenanthrene	<0.035	0.31	0.038	<0.13	124
Naphthalene	0.60	1.53	0.58	0.90	60.3
Perylene	<0.035	<0.035	<0.035	<0.035	0.6
Phenanthrene	0.22	1.50	0.17	0.63	119
Picene	<0.17	<0.17	<0.17	<0.17	0.6
Pyrene	0.093	0.24	0.037	0.12	85.7
Tetralin	0.54	1.03	1.43	1.00	44.5
m-terphenyl	<0.035	0.099	<0.035	<0.056	66.0
o-Terphenyl	<0.035	0.16	<0.035	<0.078	96.3
p-terphenyl	<0.035	0.048	<0.035	<0.039	19.9
Total	<3.76	<9.53	<4.10	<5.80	55.8

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

Compound	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<4.25	<7.27	<5.81	<6.11	<0.11
Acenaphthylene	<1.37	<2.34	<1.86	<1.96	<0.035
Anthracene	<1.37	<2.34	<1.86	<1.96	<0.035
Benzo(a)Anthracene	<1.37	<2.34	<1.86	<1.96	<0.035
Benzo(b)Fluoranthene	<1.37	<2.34	<1.86	<1.96	<0.035
Benzo(k)Fluoranthene	<1.37	<2.34	<1.86	<1.96	<0.035
Benzo(a)fluorene	<1.37	<2.34	<1.86	<1.96	<0.035
Benzo(b)fluorene	<1.37	<2.34	<1.86	<1.96	<0.035
Benzo(g,h,i)Perylene	<5.01	<8.63	<6.82	<7.19	<0.13
Benzo(a)Pyrene	<1.37	<2.34	<1.86	<1.96	<0.035
Benzo(e)Pyrene	<1.37	<2.34	<1.86	<1.96	<0.035
Biphenyl	23.3	39.8	31.8	33.5	0.59
2-Chloronaphthalene	<1.37	<2.34	<1.86	<1.96	<0.035
Chrysene/Triphenylene	<1.75	<2.99	<2.38	<2.51	<0.044
Coronene	<7.22	<12.4	<9.81	<10.3	<0.18
Dibenzo(a,c/a,h)Anthracene	<1.37	<2.34	<1.86	<1.96	<0.035
Dibenzo(a,e)pyrene	<6.85	<11.7	<9.30	<9.79	<0.17
9,10-dimethylanthracene	<1.93	<3.31	<2.63	<2.77	<0.049
7,12-Dimethylbenzo(a)anthracene	<1.37	<2.34	<1.86	<1.96	<0.035
Fluoranthene	5.77	9.88	7.88	8.29	0.15
Fluorene	<2.78	<4.75	<3.79	<3.99	<0.070
Indeno(1,2,3-cd)Pyrene	<1.41	<2.41	<1.91	<2.01	<0.036
2-methylanthracene	6.12	10.5	8.36	8.79	0.16
3-Methylcholanthrene	<6.85	<11.7	<9.30	<9.79	<0.17
1-Methylnaphthalene	3.30	5.65	4.49	4.73	0.084
2-Methylnaphthalene	6.05	10.4	8.24	8.67	0.15
1-Methylphenanthrene	4.58	7.86	6.24	6.57	0.12
9-Methylphenanthrene	<5.07	<8.66	<6.92	<7.27	<0.13
Naphthalene	35.5	60.8	48.4	50.9	0.90
Perylene	<1.37	<2.34	<1.86	<1.96	<0.035
Phenanthrene	25.0	42.7	34.1	35.9	0.63
Picene	<6.85	<11.7	<9.30	<9.79	<0.17
Pyrene	4.89	8.38	6.67	7.02	0.12
Tetralin	39.6	67.5	53.8	56.6	1.00
m-terphenyl	<2.21	<3.77	<3.01	<3.16	<0.056
o-Terphenyl	<3.08	<5.26	<4.20	<4.42	<0.078
p-terphenyl	<1.54	<2.64	<2.10	<2.21	<0.039
Total	<229	<391	<311	<328	<5.80

* At 25°C and 1 atmosphere

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

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

Compound	Blank Train ng	Laboratory Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	<12	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	<12	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	164	190
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	181	276
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<957	<1078

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

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

Acetaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm³*	Acetaldehyde Concentration Actual µg/m³	Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Acetaldehyde Emission Rate mg/s
1	2.02	0.0428	27.4	47.2	37.2	39.4	0.70
2	1.63	0.0451	21.1	36.1	28.8	30.3	0.53
3	1.78	0.0379	27.4	47.0	37.4	39.3	0.69
Average			25.3	43.4	34.5	36.3	0.64
Blank	1.09						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm³*	Formaldehyde Concentration Actual µg/m³	Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Formaldehyde Emission Rate mg/s
1	2.22	0.0428	30.1	51.9	40.9	43.3	0.77
2	1.69	0.0451	21.9	37.5	29.9	31.4	0.55
3	1.85	0.0379	28.5	48.8	38.9	40.9	0.72
Average			26.8	46.1	36.6	38.5	0.68
Blank	1.27						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm³*	Acrolein Concentration Actual µg/m³	Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Acrolein Emission Rate mg/s
1	<0.1	0.0428	<1.36	<2.34	<1.84	<1.95	<0.035
2	<0.1	0.0451	<1.30	<2.22	<1.77	<1.86	<0.033
3	<0.1	0.0379	<1.54	<2.64	<2.10	<2.21	<0.039
Average			<1.40	<2.40	<1.90	<2.01	<0.035
Blank	<0.1						

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

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

* At 25 °C and 1 atmosphere

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

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

Compound	Total Collected µg	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3**	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Acetone	1.25	30.3	52.4	41.3	43.6	0.78
Benzene	0.30	7.28	12.6	9.92	10.5	0.19
Bromodichloromethane	0.050	1.21	2.10	1.65	1.75	0.031
Bromoform	<0.01	<0.24	<0.42	<0.33	<0.35	<0.0062
Bromomethane	<0.09	<2.18	<3.78	<2.98	<3.14	<0.056
1,3-Butadiene	<0.02	<0.49	<0.84	<0.66	<0.70	<0.012
2-Butanone	1.17	28.3	49.0	38.5	40.7	0.72
Carbon Tetrachloride	0.16	3.93	6.80	5.36	5.66	0.10
Chloroform	0.066	1.60	2.77	2.18	2.30	0.041
Cumene (Isopropylbenzene)	0.061	1.48	2.56	2.02	2.13	0.038
Dibromochloromethane	<0.01	<0.24	<0.42	<0.33	<0.35	<0.0062
Dichlorodifluoromethane	0.025	0.61	1.05	0.83	0.87	0.016
1,2-Dichloroethane	0.049	1.19	2.06	1.62	1.71	0.030
trans,1,2-Dichloroethene	0.027	0.66	1.13	0.89	0.94	0.017
1,1-Dichloroethene	<0.01	<0.24	<0.42	<0.33	<0.35	<0.0062
1,2-Dichloropropane	<0.01	<0.24	<0.42	<0.33	<0.35	<0.0062
Ethylbenzene	0.42	10.2	17.7	13.9	14.7	0.26
Ethylene Dibromide	<0.02	<0.49	<0.84	<0.66	<0.70	<0.012
Mesitylene (1,3,5-Trimethylbenzene)	0.44	10.6	18.3	14.4	15.2	0.27
Methylene Chloride	1.12	27.3	47.2	37.2	39.2	0.70
Styrene	0.23	5.56	9.62	7.57	8.00	0.14
Tetrachloroethene	<0.01	<0.24	<0.42	<0.33	<0.35	<0.0062
Toluene	1.63	39.6	68.4	53.9	56.9	1.01
1,1,1-Trichloroethane	<0.01	<0.24	<0.42	<0.33	<0.35	<0.0062
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.24	<0.42	<0.33	<0.35	<0.0062
Trichlorotrifluoroethane	<0.02	<0.49	<0.84	<0.66	<0.70	<0.012
Trichlorofluoromethane	0.068	1.65	2.86	2.25	2.37	0.042
M&P-Xylene	1.39	33.8	58.5	46.1	48.7	0.87
O-Xylene	0.62	15.1	26.1	20.5	21.7	0.39
Vinyl Chloride	<0.02	<0.49	<0.84	<0.66	<0.70	<0.012
Total	<9.32	<226	<391	<308	<325	<5.79

Dry Gas Volume Sampled (Rm^3*) :	0.0238
Actual Flowrate (m^3/s) :	25.6
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.8

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected µg	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3**	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Acetone	1.20	26.2	45.4	35.7	37.7	0.67
Benzene	0.29	6.28	10.9	8.55	9.03	0.16
Bromodichloromethane	0.048	1.05	1.82	1.43	1.51	0.027
Bromoform	<0.01	<0.22	<0.38	<0.30	<0.31	<0.0056
Bromomethane	<0.09	<1.97	<3.41	<2.68	<2.83	<0.050
1,3-Butadiene	<0.02	<0.44	<0.76	<0.60	<0.63	<0.011
2-Butanone	1.12	24.5	42.4	33.3	35.2	0.63
Carbon Tetrachloride	0.16	3.39	5.87	4.62	4.88	0.087
Chloroform	0.063	1.38	2.39	1.88	1.98	0.035
Cumene (Isopropylbenzene)	0.059	1.29	2.23	1.76	1.86	0.033
Dibromochloromethane	<0.01	<0.22	<0.38	<0.30	<0.31	<0.0056
Dichlorodifluoromethane	0.024	0.53	0.91	0.72	0.76	0.013
1,2-Dichloroethane	0.047	1.03	1.78	1.40	1.48	0.026
trans,1,2-Dichloroethene	0.026	0.57	0.98	0.77	0.82	0.015
1,1-Dichloroethene	<0.01	<0.22	<0.38	<0.30	<0.31	<0.0056
1,2-Dichloropropane	<0.01	<0.22	<0.38	<0.30	<0.31	<0.0056
Ethylbenzene	0.40	8.84	15.3	12.0	12.7	0.23
Ethylene Dibromide	<0.02	<0.44	<0.76	<0.60	<0.63	<0.011
Mesitylene (1,3,5-Trimethylbenzene)	0.42	9.15	15.8	12.5	13.2	0.23
Methylene Chloride	1.08	23.6	40.8	32.1	33.9	0.60
Styrene	0.22	4.82	8.33	6.56	6.92	0.12
Tetrachloroethene	<0.01	<0.22	<0.38	<0.30	<0.31	<0.0056
Toluene	1.56	34.2	59.2	46.6	49.2	0.88
1,1,1-Trichloroethane	<0.01	<0.22	<0.38	<0.30	<0.31	<0.0056
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.22	<0.38	<0.30	<0.31	<0.0056
Trichlorotrifluoroethane	<0.02	<0.44	<0.76	<0.60	<0.63	<0.011
Trichlorofluoromethane	0.065	1.42	2.46	1.94	2.05	0.036
M&P-Xylene	1.34	29.3	50.6	39.8	42.1	0.75
O-Xylene	0.60	13.0	22.6	17.8	18.8	0.33
Vinyl Chloride	<0.02	<0.44	<0.76	<0.60	<0.63	<0.011
Total	<8.95	<196	<339	<267	<282	<5.01

Dry Gas Volume Sampled (Rm^3*) :	0.0264
Actual Flowrate (m^3/s) :	25.6
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.8

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	1.34	30.1	52.1	41.0	43.3	0.77
Benzene	0.32	7.22	12.5	9.82	10.4	0.18
Bromodichloromethane	0.054	1.21	2.09	1.65	1.74	0.031
Bromoform	<0.01	<0.22	<0.39	<0.31	<0.32	<0.0057
Bromomethane	<0.09	<2.02	<3.49	<2.75	<2.90	<0.052
1,3-Butadiene	<0.02	<0.45	<0.78	<0.61	<0.64	<0.011
2-Butanone	1.26	28.1	48.6	38.3	40.4	0.72
Carbon Tetrachloride	0.17	3.90	6.74	5.31	5.61	0.10
Chloroform	0.071	1.59	2.75	2.17	2.29	0.041
Cumene (Isopropylbenzene)	0.066	1.48	2.56	2.01	2.13	0.038
Dibromochloromethane	<0.01	<0.22	<0.39	<0.31	<0.32	<0.0057
Dichlorodifluoromethane	<0.02	<0.45	<0.78	<0.61	<0.64	<0.011
1,2-Dichloroethane	0.053	1.19	2.05	1.62	1.71	0.030
trans,1,2-Dichloroethene	0.029	0.65	1.12	0.88	0.93	0.017
1,1-Dichloroethene	<0.01	<0.22	<0.39	<0.31	<0.32	<0.0057
1,2-Dichloropropane	<0.01	<0.22	<0.39	<0.31	<0.32	<0.0057
Ethylbenzene	0.45	10.2	17.6	13.8	14.6	0.26
Ethylene Dibromide	<0.02	<0.45	<0.78	<0.61	<0.64	<0.011
Mesitylene (1,3,5-Trimethylbenzene)	0.47	10.5	18.2	14.3	15.1	0.27
Methylene Chloride	1.21	27.1	46.9	36.9	39.0	0.69
Styrene	0.25	5.53	9.57	7.54	7.96	0.14
Tetrachloroethene	<0.01	<0.22	<0.39	<0.31	<0.32	<0.0057
Toluene	1.75	39.3	68.0	53.5	56.5	1.01
1,1,1-Trichloroethane	<0.01	<0.22	<0.39	<0.31	<0.32	<0.0057
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.22	<0.39	<0.31	<0.32	<0.0057
Trichlorotrifluoroethane	<0.02	<0.45	<0.78	<0.61	<0.64	<0.011
Trichlorofluoromethane	0.073	1.64	2.83	2.23	2.35	0.042
M&P-Xylene	1.50	33.6	58.1	45.8	48.3	0.86
O-Xylene	0.67	15.0	25.9	20.4	21.5	0.38
Vinyl Chloride	<0.02	<0.45	<0.78	<0.61	<0.64	<0.011
Total	<10.00	<224	<388	<305	<322	<5.74

Dry Gas Volume Sampled (Rm³*) :	0.0258
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected. 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
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	μg/m³	μg/m³	μg/m³	μg/m³	%
Acetone	30.3	26.2	30.1	28.9	8.0
Benzene	7.28	6.28	7.22	6.93	8.1
Bromodichloromethane	1.21	1.05	1.21	1.16	8.0
Bromoform	<0.24	<0.22	<0.22	<0.23	5.5
Bromomethane	<2.18	<1.97	<2.02	<2.06	5.5
1,3-Butadiene	<0.49	<0.44	<0.45	<0.46	5.5
2-Butanone	28.3	24.5	28.1	27.0	8.0
Carbon Tetrachloride	3.93	3.39	3.90	3.74	8.1
Chloroform	1.60	1.38	1.59	1.52	8.3
Cumene (Isopropylbenzene)	1.48	1.29	1.48	1.42	7.7
Dibromochloromethane	<0.24	<0.22	<0.22	<0.23	5.5
Dichlorodifluoromethane	0.61	0.53	<0.45	<0.53	15.1
1,2-Dichloroethane	1.19	1.03	1.19	1.14	8.1
trans,1,2-Dichloroethene	0.66	0.57	0.65	0.62	7.7
1,1-Dichloroethene	<0.24	<0.22	<0.22	<0.23	5.5
1,2-Dichloropropane	<0.24	<0.22	<0.22	<0.23	5.5
Ethylbenzene	10.2	8.84	10.2	9.74	8.0
Ethylene Dibromide	<0.49	<0.44	<0.45	<0.46	5.5
Mesitylene (1,3,5-Trimethylbenzene)	10.6	9.15	10.5	10.1	8.0
Methylene Chloride	27.3	23.6	27.1	26.0	8.0
Styrene	5.56	4.82	5.53	5.30	8.0
Tetrachloroethene	<0.24	<0.22	<0.22	<0.23	5.5
Toluene	39.6	34.2	39.3	37.7	8.0
1,1,1-Trichloroethane	<0.24	<0.22	<0.22	<0.23	5.5
Trichloroethene/1,1,2-Trichloroethene	<0.24	<0.22	<0.22	<0.23	5.5
Trichlorotrifluoroethane	<0.49	<0.44	<0.45	<0.46	5.5
Trichlorofluoromethane	1.65	1.42	1.64	1.57	8.1
M&P-Xylene	33.8	29.3	33.6	32.2	8.0
O-Xylene	15.1	13.0	15.0	14.4	8.0
Vinyl Chloride	<0.49	<0.44	<0.45	<0.46	5.5
Total	<226	<196	<224	<215	7.9

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/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%
Acetone	52.4	45.4	52.1	49.9	8.0
Benzene	12.6	10.9	12.5	12.0	8.1
Bromodichloromethane	2.10	1.82	2.09	2.00	8.0
Bromoform	<0.42	<0.38	<0.39	<0.40	5.5
Bromomethane	<3.78	<3.41	<3.49	<3.56	5.5
1,3-Butadiene	<0.84	<0.76	<0.78	<0.79	5.5
2-Butanone	49.0	42.4	48.6	46.7	8.0
Carbon Tetrachloride	6.80	5.87	6.74	6.47	8.1
Chloroform	2.77	2.39	2.75	2.64	8.3
Cumene (Isopropylbenzene)	2.56	2.23	2.56	2.45	7.7
Dibromochloromethane	<0.42	<0.38	<0.39	<0.40	5.5
Dichlorodifluoromethane	1.05	0.91	<0.78	<0.91	15.1
1,2-Dichloroethane	2.06	1.78	2.05	1.96	8.1
trans,1,2-Dichloroethene	1.13	0.98	1.12	1.08	7.7
1,1-Dichloroethene	<0.42	<0.38	<0.39	<0.40	5.5
1,2-Dichloropropane	<0.42	<0.38	<0.39	<0.40	5.5
Ethylbenzene	17.7	15.3	17.6	16.8	8.0
Ethylene Dibromide	<0.84	<0.76	<0.78	<0.79	5.5
Mesitylene (1,3,5-Trimethylbenzene)	18.3	15.8	18.2	17.4	8.0
Methylene Chloride	47.2	40.8	46.9	45.0	8.0
Styrene	9.62	8.33	9.57	9.17	8.0
Tetrachloroethene	<0.42	<0.38	<0.39	<0.40	5.5
Toluene	68.4	59.2	68.0	65.2	8.0
1,1,1-Trichloroethane	<0.42	<0.38	<0.39	<0.40	5.5
Trichloroethene/1,1,2-Trichloroethene	<0.42	<0.38	<0.39	<0.40	5.5
Trichlorotrifluoroethane	<0.84	<0.76	<0.78	<0.79	5.5
Trichlorofluoromethane	2.86	2.46	2.83	2.72	8.1
M&P-Xylene	58.5	50.6	58.1	55.8	8.0
O-Xylene	26.1	22.6	25.9	24.8	8.0
Vinyl Chloride	<0.84	<0.76	<0.78	<0.79	5.5
Total	<391	<339	<388	<373	7.9

* At 25°C and 1 atmosphere

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

Compound	Dry Adjusted Concentration Test No. 1 μg/Rm³*	Test No. 2 μg/Rm³*	Test No. 3 μg/Rm³*	Average μg/Rm³*	Coefficient of Variation %
Acetone	41.3	35.7	41.0	39.3	8.0
Benzene	9.92	8.55	9.82	9.43	8.1
Bromodichloromethane	1.65	1.43	1.65	1.58	8.0
Bromoform	<0.33	<0.30	<0.31	<0.31	5.5
Bromomethane	<2.98	<2.68	<2.75	<2.80	5.5
1,3-Butadiene	<0.66	<0.60	<0.61	<0.62	5.5
2-Butanone	38.5	33.3	38.3	36.7	8.0
Carbon Tetrachloride	5.36	4.62	5.31	5.09	8.1
Chloroform	2.18	1.88	2.17	2.08	8.3
Cumene (Isopropylbenzene)	2.02	1.76	2.01	1.93	7.7
Dibromochloromethane	<0.33	<0.30	<0.31	<0.31	5.5
Dichlorodifluoromethane	0.83	0.72	<0.61	<0.72	15.1
1,2-Dichloroethane	1.62	1.40	1.62	1.55	8.1
trans,1,2-Dichloroethene	0.89	0.77	0.88	0.85	7.7
1,1-Dichloroethene	<0.33	<0.30	<0.31	<0.31	5.5
1,2-Dichloropropane	<0.33	<0.30	<0.31	<0.31	5.5
Ethylbenzene	13.9	12.0	13.8	13.3	8.0
Ethylene Dibromide	<0.66	<0.60	<0.61	<0.62	5.5
Mesitylene (1,3,5-Trimethylbenzene)	14.4	12.5	14.3	13.7	8.0
Methylene Chloride	37.2	32.1	36.9	35.4	8.0
Styrene	7.57	6.56	7.54	7.22	8.0
Tetrachloroethene	<0.33	<0.30	<0.31	<0.31	5.5
Toluene	53.9	46.6	53.5	51.3	8.0
1,1,1-Trichloroethane	<0.33	<0.30	<0.31	<0.31	5.5
Trichloroethene/1,1,2-Trichloroethene	<0.33	<0.30	<0.31	<0.31	5.5
Trichlorotrifluoroethane	<0.66	<0.60	<0.61	<0.62	5.5
Trichlorofluoromethane	2.25	1.94	2.23	2.14	8.1
M&P-Xylene	46.1	39.8	45.8	43.9	8.0
O-Xylene	20.5	17.8	20.4	19.6	8.0
Vinyl Chloride	<0.66	<0.60	<0.61	<0.62	5.5
Total	<308	<267	<305	<293	7.9

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

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

Compound	Wet Reference Concentration Test No. 1 µg/Rm³*	Test No. 2 µg/Rm³*	Test No. 3 µg/Rm³*	Average µg/Rm³*	Coefficient of Variation %
Acetone	43.6	37.7	43.3	41.5	8.0
Benzene	10.5	9.03	10.4	9.96	8.1
Bromodichloromethane	1.75	1.51	1.74	1.67	8.0
Bromoform	<0.35	<0.31	<0.32	<0.33	5.5
Bromomethane	<3.14	<2.83	<2.90	<2.96	5.5
1,3-Butadiene	<0.70	<0.63	<0.64	<0.66	5.5
2-Butanone	40.7	35.2	40.4	38.8	8.0
Carbon Tetrachloride	5.66	4.88	5.61	5.38	8.1
Chloroform	2.30	1.98	2.29	2.19	8.3
Cumene (Isopropylbenzene)	2.13	1.86	2.13	2.04	7.7
Dibromochloromethane	<0.35	<0.31	<0.32	<0.33	5.5
Dichlorodifluoromethane	0.87	0.76	<0.64	<0.76	15.1
1,2-Dichloroethane	1.71	1.48	1.71	1.63	8.1
trans,1,2-Dichloroethene	0.94	0.82	0.93	0.90	7.7
1,1-Dichloroethene	<0.35	<0.31	<0.32	<0.33	5.5
1,2-Dichloropropane	<0.35	<0.31	<0.32	<0.33	5.5
Ethylbenzene	14.7	12.7	14.6	14.0	8.0
Ethylene Dibromide	<0.70	<0.63	<0.64	<0.66	5.5
Mesitylene (1,3,5-Trimethylbenzene)	15.2	13.2	15.1	14.5	8.0
Methylene Chloride	39.2	33.9	39.0	37.4	8.0
Styrene	8.00	6.92	7.96	7.63	8.0
Tetrachloroethene	<0.35	<0.31	<0.32	<0.33	5.5
Toluene	56.9	49.2	56.5	54.2	8.0
1,1,1-Trichloroethane	<0.35	<0.31	<0.32	<0.33	5.5
Trichloroethene/1,1,2-Trichloroethene	<0.35	<0.31	<0.32	<0.33	5.5
Trichlorotrifluoroethane	<0.70	<0.63	<0.64	<0.66	5.5
Trichlorofluoromethane	2.37	2.05	2.35	2.26	8.1
M&P-Xylene	48.7	42.1	48.3	46.4	8.0
O-Xylene	21.7	18.8	21.5	20.7	8.0
Vinyl Chloride	<0.70	<0.63	<0.64	<0.66	5.5
Total	<325	<282	<322	<310	7.9

* At 25°C and 1 atmosphere

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

Compound	Emission Rate Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	Coefficient of Variation %
Acetone	0.78	0.67	0.77	0.74	8.0
Benzene	0.19	0.16	0.18	0.18	8.1
Bromodichloromethane	0.031	0.027	0.031	0.030	8.0
Bromoform	<0.0062	<0.0056	<0.0057	<0.0059	5.5
Bromomethane	<0.056	<0.050	<0.052	<0.053	5.5
1,3-Butadiene	<0.012	<0.011	<0.011	<0.012	5.5
2-Butanone	0.72	0.63	0.72	0.69	8.0
Carbon Tetrachloride	0.10	0.087	0.10	0.096	8.1
Chloroform	0.041	0.035	0.041	0.039	8.3
Cumene (Isopropylbenzene)	0.038	0.033	0.038	0.036	7.7
Dibromochloromethane	<0.0062	<0.0056	<0.0057	<0.0059	5.5
Dichlorodifluoromethane	0.016	0.013	<0.011	<0.013	15.1
1,2-Dichloroethane	0.030	0.026	0.030	0.029	8.1
trans,1,2-Dichloroethene	0.017	0.015	0.017	0.016	7.7
1,1-Dichloroethene	<0.0062	<0.0056	<0.0057	<0.0059	5.5
1,2-Dichloropropane	<0.0062	<0.0056	<0.0057	<0.0059	5.5
Ethylbenzene	0.26	0.23	0.26	0.25	8.0
Ethylene Dibromide	<0.012	<0.011	<0.011	<0.012	5.5
Mesitylene (1,3,5-Trimethylbenzene)	0.27	0.23	0.27	0.26	8.0
Methylene Chloride	0.70	0.60	0.69	0.67	8.0
Styrene	0.14	0.12	0.14	0.14	8.0
Tetrachloroethene	<0.0062	<0.0056	<0.0057	<0.0059	5.5
Toluene	1.01	0.88	1.01	0.97	8.0
1,1,1-Trichloroethane	<0.0062	<0.0056	<0.0057	<0.0059	5.5
Trichloroethene/1,1,2-Trichloroethene	<0.0062	<0.0056	<0.0057	<0.0059	5.5
Trichlorotrifluoroethane	<0.012	<0.011	<0.011	<0.012	5.5
Trichlorofluoromethane	0.042	0.036	0.042	0.040	8.1
M&P-Xylene	0.87	0.75	0.86	0.83	8.0
O-Xylene	0.39	0.33	0.38	0.37	8.0
Vinyl Chloride	<0.012	<0.011	<0.011	<0.012	5.5
Total	<5.79	<5.01	<5.74	<5.51	7.9

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

Compound	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³*	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	28.9	49.9	39.3	41.5	0.74
Benzene	6.93	12.0	9.43	9.96	0.18
Bromodichloromethane	1.16	2.00	1.58	1.67	0.030
Bromoform	<0.23	<0.40	<0.31	<0.33	<0.0059
Bromomethane	<2.06	<3.56	<2.80	<2.96	<0.053
1,3-Butadiene	<0.46	<0.79	<0.62	<0.66	<0.012
2-Butanone	27.0	46.7	36.7	38.8	0.69
Carbon Tetrachloride	3.74	6.47	5.09	5.38	0.096
Chloroform	1.52	2.64	2.08	2.19	0.039
Cumene (Isopropylbenzene)	1.42	2.45	1.93	2.04	0.036
Dibromochloromethane	<0.23	<0.40	<0.31	<0.33	<0.0059
Dichlorodifluoromethane	<0.53	<0.91	<0.72	<0.76	<0.013
1,2-Dichloroethane	1.14	1.96	1.55	1.63	0.029
trans,1,2-Dichloroethene	0.62	1.08	0.85	0.90	0.016
1,1-Dichloroethene	<0.23	<0.40	<0.31	<0.33	<0.0059
1,2-Dichloropropane	<0.23	<0.40	<0.31	<0.33	<0.0059
Ethylbenzene	9.74	16.8	13.3	14.0	0.25
Ethylene Dibromide	<0.46	<0.79	<0.62	<0.66	<0.012
Mesitylene (1,3,5-Trimethylbenzene)	10.1	17.4	13.7	14.5	0.26
Methylene Chloride	26.0	45.0	35.4	37.4	0.67
Styrene	5.30	9.17	7.22	7.63	0.14
Tetrachloroethene	<0.23	<0.40	<0.31	<0.33	<0.0059
Toluene	37.7	65.2	51.3	54.2	0.97
1,1,1-Trichloroethane	<0.23	<0.40	<0.31	<0.33	<0.0059
Trichloroethene/1,1,2-Trichloroethene	<0.23	<0.40	<0.31	<0.33	<0.0059
Trichlorotrifluoroethane	<0.46	<0.79	<0.62	<0.66	<0.012
Trichlorofluoromethane	1.57	2.72	2.14	2.26	0.040
M&P-Xylene	32.2	55.8	43.9	46.4	0.83
O-Xylene	14.4	24.8	19.6	20.7	0.37
Vinyl Chloride	<0.46	<0.79	<0.62	<0.66	<0.012
Total	<215	<373	<293	<310	<5.51

* At 25°C and 1 atmosphere

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

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

Compound	Field Blank 1 Tube 5A/5B µg	Field Blank 2 Tube 11A/11B µg	Trip Blank Tube 12A/12B µg	Method Blank µg
Acetone	0.15	0.11	0.13	<0.1
Benzene	<0.05	<0.05	<0.05	<0.05
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01
Bromoform	<0.01	<0.01	<0.01	<0.01
Bromomethane	<0.09	<0.09	<0.09	<0.09
1,3-Butadiene	<0.02	<0.02	<0.02	<0.02
2-Butanone	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.02
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.01
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.01
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.01
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	<0.01	<0.01	<0.01	<0.01
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.02
Methylene Chloride	0.11	<0.1	<0.1	<0.1
Styrene	<0.02	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01	<0.01
Toluene	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.02	<0.02	<0.02
Trichlorotrifluoroethane	<0.02	<0.02	<0.02	<0.02
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.02
M&P-Xylene	<0.03	<0.03	<0.03	<0.03
O-Xylene	<0.01	<0.01	<0.01	<0.01
Vinyl Chloride	<0.02	<0.02	<0.02	<0.02
Total	<0.82	<0.77	<0.79	<0.76

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

APPENDIX 2

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

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

Particulate and Metals Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 9, 2020	17:02	20:08	180
2	November 10, 2020	7:59	11:05	180
3	November 10, 2020	11:36	14:43	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 9, 2020	9:39	11:45	120
2	November 9, 2020	12:54	14:55	120
3	November 9, 2020	15:43	17:46	120

Acid Gases Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 10, 2020	8:00	9:00	60
2	November 10, 2020	9:40	10:40	60
3	November 10, 2020	11:08	12:08	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 11, 2020	8:22	12:32	240
2	November 11, 2020	13:28	17:35	240
3	November 12, 2020	8:13	12:30	240

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

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

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	November 11, 2020	11:47	12:47	60
2	November 11, 2020	12:50	13:50	60
3	November 11, 2020	13:52	14:52	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	November 11, 2020	8:20	9:00	40
2	November 11, 2020	9:05	9:45	40
3	November 11, 2020	9:50	10:30	40
4	November 11, 2020	10:36	11:16	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period		Sampling Time
			Start	Finish	min
BH Outlet	1	November 9, 2020	14:52	15:52	60
BH Outlet	2	November 9, 2020	15:58	16:58	60
BH Outlet	3	November 9, 2020	17:04	18:04	60
Quench Inlet	1	November 9, 2020	10:10	11:10	60
Quench Inlet	2	November 9, 2020	11:17	12:17	60
Quench Inlet	3	November 9, 2020	12:23	13:23	60

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

Particulate and Metals Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	1.004	6.73	4.165	101.3
2	0.851	0.999	6.38	3.494	98.5
3	0.851	0.999	6.38	3.511	98.6

Particle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	0.992	4.51	1.185	103.0
2	0.848	0.992	4.51	1.181	103.1
3	0.848	0.992	4.51	1.174	94.4

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	1.004	6.73	1.319	100.9
2	0.848	1.004	6.73	1.324	100.8
3	0.848	1.004	6.73	1.320	99.6

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.851	0.999	6.38	4.590	97.3
2	0.851	0.999	6.38	4.662	97.3
3	0.851	0.999	6.38	4.448	96.7

* 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. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	142	16.2	18.2	-2.23	98.9	11.0	8.33
2	143	16.2	17.6	-2.40	98.3	11.1	8.20
3	142	15.6	17.6	-2.40	98.1	10.9	8.36
Average	142	16.0	17.8	-2.34	98.4	11.0	8.30

Particle Size Distribution Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	142	14.9	16.5	-2.04	99.6	11.1	8.43
2	142	16.1	16.8	-2.04	99.3	11.1	8.17
3	142	15.9	18.4	-2.23	99.0	11.0	8.28
Average	142	15.6	17.2	-2.11	99.3	11.1	8.29

Acid Gases Trains **

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	16.5	17.5	-2.40	98.3	11.2	7.90
2	142	16.3	17.5	-2.40	98.3	11.1	8.28
3	141	14.8	17.4	-2.40	98.2	10.7	8.66
Average	141	15.9	17.5	-2.40	98.3	11.0	8.28

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	140	15.8	17.5	-2.37	97.6	10.8	8.42
2	142	16.4	18.0	-2.37	97.7	10.9	8.33
3	142	14.4	16.6	-2.40	98.9	11.1	8.40
Average	141	15.5	17.4	-2.38	98.0	10.9	8.38

* Dry basis, measured by the DYEC CEMS

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

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

Particulate and Metals Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	26.9	15.8	20.0	18.8
2	26.0	15.2	19.5	18.1
3	26.0	15.2	19.3	18.0
Average	26.3	15.4	19.6	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	24.5	14.7	18.5	17.3
2	24.8	14.7	18.9	17.5
3	27.2	16.0	20.4	19.1
Average	25.5	15.1	19.3	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	25.8	15.1	19.8	18.0
2	25.9	15.1	19.3	18.1
3	25.7	15.3	18.9	17.9
Average	25.8	15.2	19.3	18.0

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.9	15.1	19.1	18.0
2	26.5	15.4	19.5	18.4
3	24.6	14.7	18.6	17.2
Average	25.7	15.1	19.1	17.9

* At 25°C and 1 atmosphere

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

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

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

Test No.	Particulate Collected Probe Rinse mg	Particulate Collected Main Filter mg	Particulate Collected Total mg	Dry Gas Volume Sampled Rm^3*	Particulate Concentration Actual mg/m^3	Particulate Concentration Dry Reference mg/Rm^3*	Particulate Concentration Dry Adjusted mg/Rm^3**	Particulate Concentration Wet Reference mg/Rm^3*	Particulate Emission Rate mg/s
1	14.1	0.3	14.4	4.165	2.03	3.46	2.72	2.90	54.6
2	2.6	0.8	3.4	3.494	0.57	0.97	0.76	0.82	14.8
3	10.5	0.7	11.2	3.511	1.87	3.19	2.52	2.69	48.6
Average					1.49	2.54	2.00	2.14	39.3
Blank	<0.1	0.3							

* 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*	Actual mg/m^3	$PM_{2.5}$ Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<0.3	1.185	<0.15	<0.25	<0.20	<0.22	<3.72
2	<0.5	1.181	<0.25	<0.42	<0.33	<0.36	<6.22
3	<1.0	1.174	<0.50	<0.85	<0.67	<0.71	<13.6
Average			<0.30	<0.51	<0.40	<0.43	<7.86
Blank	0.3						

PM_{10}

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	PM_{10} Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<0.4	1.185	<0.20	<0.34	<0.27	<0.29	<4.96
2	<0.7	1.181	<0.35	<0.59	<0.46	<0.50	<8.71
3	<1.2	1.174	<0.60	<1.02	<0.80	<0.86	<16.4
Average			<0.39	<0.65	<0.51	<0.55	<10.0
Blank	0.9						

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

Inorganic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Inorganic Condensable Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	4.5	1.185	2.28	3.80	3.01	3.23	55.8
2	4.3	1.181	2.16	3.64	2.83	3.06	53.5
3	3.7	1.174	1.85	3.15	2.47	2.64	50.4
Average			2.10	3.53	2.77	2.98	53.3
Blank	1.9						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Organic Condensable Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	2.5	1.185	1.27	2.11	1.67	1.79	31.0
2	3.2	1.181	1.61	2.71	2.11	2.28	39.8
3	2.1	1.174	1.05	1.79	1.40	1.50	28.6
Average			1.31	2.20	1.73	1.86	33.2
Blank	0.6						

* At 25 °C and 1 atmosphere

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

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

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm³*	Actual mg/m³	Hydrogen Chloride Concentration Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	HCl Emission Rate mg/s
1	5.37	1.319	2.39	4.07	3.21	3.41	64.2
2	5.11	1.324	2.27	3.86	3.04	3.23	60.9
3	4.98	1.320	2.20	3.77	2.94	3.16	57.2
Average			2.29	3.90	3.06	3.27	60.8
Blank	0.312						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm³*	Actual mg/m³	Hydrogen Fluoride Concentration Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	HF Emission Rate mg/s
1	<0.168	1.319	<0.075	<0.13	<0.10	<0.11	<2.01
2	<0.174	1.324	<0.077	<0.13	<0.10	<0.11	<2.07
3	<0.173	1.320	<0.076	<0.13	<0.10	<0.11	<1.99
Average			<0.076	<0.13	<0.10	<0.11	<2.02
Blank	<0.109						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm³*	Actual mg/m³	Ammonia Concentration Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	Ammonia Emission Rate mg/s
1	1.22	1.319	0.54	0.92	0.73	0.78	14.6
2	1.09	1.324	0.48	0.82	0.65	0.69	13.0
3	1.01	1.320	0.45	0.77	0.60	0.64	11.6
Average			0.49	0.84	0.66	0.70	13.1
Blank	<0.293						

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

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

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

Data measured by the DYEC CEMS from November 9 to November 12, 2020

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.88	8.39	8.90
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	8	14	25
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	10.8	14.1	20.8
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.2	6
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.1	0.5
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	100	110	122
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	110	110	111
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	2	3	4
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	2.8	3.2	3.7
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0.1	1
Quench Inlet	Oxygen (%, 1 hr Avg)	8	8	9

Data measured by the ORTECH CEMS on November 9, 2020

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	3.5
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	2.4
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.4	3.8
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.3	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	1.6	5.1
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	1.0	3.0
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.6	2.3
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		1.1	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0.6	1.4	3.2
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0.2	1.1	1.8
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.6	1.2
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		1.0	

* Reference conditions, dry basis adjusted to 11% oxygen

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

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	1.15	1.15
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.14	0.14	0.29
Chromium	3.06	0.89	3.95
Cobalt	<0.2	<0.1	<0.20
Copper	6.27	20.1	26.4
Lead	1.02	0.78	1.80
Mercury *	<0.015	0.30	0.30
Molybdenum	24.0	<0.1	24.0
Nickel	2.80	0.66	3.46
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	13.6	6.16	19.8
Total			<83.4

* Includes the permanganate impingers

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

TABLE 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	0.23	<0.1	0.23
Arsenic	<1	<0.2	<0.20
Barium	7.52	1.13	8.65
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.15	<0.05	0.15
Chromium	3.14	0.67	3.81
Cobalt	<0.2	<0.1	<0.20
Copper	6.42	16.5	22.9
Lead	1.00	0.41	1.41
Mercury *	<0.015	<0.15	<0.15
Molybdenum	23.9	<0.1	23.9
Nickel	3.07	0.67	3.74
Selenium	<2	3.07	3.07
Silver	<0.2	<0.1	<0.20
Thallium	0.26	<0.05	0.26
Vanadium	<1	<0.1	<0.10
Zinc	17.6	6.44	24.0
Total			<93.2

* 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 µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	8.27	1.47	9.74
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.27	0.084	0.35
Chromium	2.71	0.60	3.31
Cobalt	<0.2	0.30	0.30
Copper	7.12	15.8	22.9
Lead	1.01	0.61	1.62
Mercury *	<0.015	<0.2	<0.20
Molybdenum	23.2	<0.1	23.2
Nickel	4.34	0.59	4.93
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	0.70	<0.05	0.70
Vanadium	<1	0.27	0.27
Zinc	15.7	9.56	25.3
Total			<94.6

* 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. 2 BH Outlet
Metals Emission Data Test No. 1

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.20	<0.028	<0.048	<0.038	<0.040	<0.00076
Arsenic	<0.20	<0.028	<0.048	<0.038	<0.040	<0.00076
Barium	1.15	0.16	0.28	0.22	0.23	0.0044
Beryllium	<0.20	<0.028	<0.048	<0.038	<0.040	<0.00076
Cadmium	0.29	0.040	0.069	0.054	0.058	0.0011
Chromium	3.95	0.56	0.95	0.75	0.80	0.015
Cobalt	<0.20	<0.028	<0.048	<0.038	<0.040	<0.00076
Copper	26.4	3.72	6.33	5.00	5.32	0.10
Lead	1.80	0.25	0.43	0.34	0.36	0.0068
Mercury	0.30	0.043	0.073	0.058	0.061	0.0012
Molybdenum	24.0	3.38	5.76	4.55	4.84	0.091
Nickel	3.46	0.49	0.83	0.66	0.70	0.013
Selenium	<1.00	<0.14	<0.24	<0.19	<0.20	<0.0038
Silver	<0.20	<0.028	<0.048	<0.038	<0.040	<0.00076
Thallium	<0.20	<0.028	<0.048	<0.038	<0.040	<0.00076
Vanadium	<0.10	<0.014	<0.024	<0.019	<0.020	<0.00038
Zinc	19.8	2.79	4.74	3.75	3.99	0.075
Total	<83.4	<11.8	<20.0	<15.8	<16.8	<0.32

Dry Gas Volume Sampled (Rm³*) :	4.165
Actual Flowrate (m³/s) :	26.9
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	20.0
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

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

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	0.23	0.038	0.065	0.051	0.055	0.00099
Arsenic	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Barium	8.65	1.45	2.48	1.93	2.08	0.038
Beryllium	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Cadmium	0.15	0.026	0.044	0.034	0.037	0.00067
Chromium	3.81	0.64	1.09	0.85	0.92	0.017
Cobalt	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Copper	22.9	3.83	6.56	5.11	5.51	0.10
Lead	1.41	0.24	0.40	0.32	0.34	0.0061
Mercury	<0.15	<0.025	<0.043	<0.033	<0.036	<0.00065
Molybdenum	23.9	4.00	6.84	5.33	5.74	0.10
Nickel	3.74	0.63	1.07	0.83	0.90	0.016
Selenium	3.07	0.51	0.88	0.68	0.74	0.013
Silver	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Thallium	0.26	0.044	0.074	0.058	0.062	0.0011
Vanadium	<0.10	<0.017	<0.029	<0.022	<0.024	<0.00044
Zinc	24.0	4.02	6.88	5.36	5.78	0.10
Total	<93.2	<15.6	<26.7	<20.8	<22.4	<0.41

Dry Gas Volume Sampled (Rm³*) :	3.494
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.2
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	18.1

* 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. 2 BH Outlet
Metals Emission Data Test No. 3

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Arsenic	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Barium	9.74	1.62	2.77	2.18	2.34	0.042
Beryllium	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Cadmium	0.35	0.058	0.10	0.078	0.084	0.0015
Chromium	3.31	0.55	0.94	0.74	0.80	0.014
Cobalt	0.30	0.049	0.084	0.066	0.071	0.0013
Copper	22.9	3.82	6.53	5.14	5.51	0.099
Lead	1.62	0.27	0.46	0.36	0.39	0.0070
Mercury	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Molybdenum	23.2	3.86	6.61	5.20	5.58	0.10
Nickel	4.93	0.82	1.40	1.11	1.19	0.021
Selenium	<1.00	<0.17	<0.28	<0.22	<0.24	<0.0043
Silver	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Thallium	0.70	0.12	0.20	0.16	0.17	0.0030
Vanadium	0.27	0.045	0.078	0.061	0.066	0.0012
Zinc	25.3	4.21	7.19	5.67	6.08	0.11
Total	<94.6	<15.8	<26.9	<21.2	<22.8	<0.41

Dry Gas Volume Sampled (Rm³*) :	3.511
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

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

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

Metal	Actual Concentration Test No. 1 µg/m³	Test No. 2 µg/m³	Test No. 3 µg/m³	Average µg/m³	Coefficient of Variation %
Antimony	<0.028	0.038	<0.033	<0.033	14.7
Arsenic	<0.028	<0.033	<0.033	<0.032	9.4
Barium	0.16	1.45	1.62	1.08	74.0
Beryllium	<0.028	<0.033	<0.033	<0.032	9.4
Cadmium	0.040	0.026	0.058	0.041	39.2
Chromium	0.56	0.64	0.55	0.58	8.3
Cobalt	<0.028	<0.033	0.049	<0.037	29.5
Copper	3.72	3.83	3.82	3.79	1.6
Lead	0.25	0.24	0.27	0.25	6.7
Mercury	0.043	<0.025	<0.033	<0.034	26.4
Molybdenum	3.38	4.00	3.86	3.75	8.6
Nickel	0.49	0.63	0.82	0.64	25.9
Selenium	<0.14	0.51	<0.17	<0.27	76.1
Silver	<0.028	<0.033	<0.033	<0.032	9.4
Thallium	<0.028	0.044	0.12	<0.063	75.0
Vanadium	<0.014	<0.017	0.045	<0.025	68.4
Zinc	2.79	4.02	4.21	3.67	21.0
Total	<11.8	<15.6	<15.8	<14.4	15.7

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

Metal	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.048	0.065	<0.057	<0.057	15.0
Arsenic	<0.048	<0.057	<0.057	<0.054	9.7
Barium	0.28	2.48	2.77	1.84	74.1
Beryllium	<0.048	<0.057	<0.057	<0.054	9.7
Cadmium	0.069	0.044	0.10	0.071	39.2
Chromium	0.95	1.09	0.94	0.99	8.5
Cobalt	<0.048	<0.057	0.084	<0.063	29.6
Copper	6.33	6.56	6.53	6.47	1.9
Lead	0.43	0.40	0.46	0.43	6.7
Mercury	0.073	<0.043	<0.057	<0.058	26.1
Molybdenum	5.76	6.84	6.61	6.40	8.9
Nickel	0.83	1.07	1.40	1.10	26.1
Selenium	<0.24	0.88	<0.28	<0.47	76.2
Silver	<0.048	<0.057	<0.057	<0.054	9.7
Thallium	<0.048	0.074	0.20	<0.11	75.1
Vanadium	<0.024	<0.029	0.078	<0.043	68.5
Zinc	4.74	6.88	7.19	6.27	21.3
Total	<20.0	<26.7	<26.9	<24.5	16.0

* 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	<0.038	0.051	<0.045	<0.044	14.3
Arsenic	<0.038	<0.045	<0.045	<0.042	9.3
Barium	0.22	1.93	2.18	1.44	74.1
Beryllium	<0.038	<0.045	<0.045	<0.042	9.3
Cadmium	0.054	0.034	0.078	0.056	39.6
Chromium	0.75	0.85	0.74	0.78	7.7
Cobalt	<0.038	<0.045	0.066	<0.050	29.8
Copper	5.00	5.11	5.14	5.09	1.5
Lead	0.34	0.32	0.36	0.34	7.2
Mercury	0.058	<0.033	<0.045	<0.045	26.7
Molybdenum	4.55	5.33	5.20	5.03	8.3
Nickel	0.66	0.83	1.11	0.87	26.1
Selenium	<0.19	0.68	<0.22	<0.37	75.5
Silver	<0.038	<0.045	<0.045	<0.042	9.3
Thallium	<0.038	0.058	0.16	<0.084	75.4
Vanadium	<0.019	<0.022	0.061	<0.034	68.8
Zinc	3.75	5.36	5.67	4.93	20.9
Total	<15.8	<20.8	<21.2	<19.3	15.6

** 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	<0.040	0.055	<0.048	<0.048	14.9
Arsenic	<0.040	<0.048	<0.048	<0.046	9.8
Barium	0.23	2.08	2.34	1.55	74.1
Beryllium	<0.040	<0.048	<0.048	<0.046	9.8
Cadmium	0.058	0.037	0.084	0.060	39.5
Chromium	0.80	0.92	0.80	0.84	8.3
Cobalt	<0.040	<0.048	0.071	<0.053	30.0
Copper	5.32	5.51	5.51	5.45	2.0
Lead	0.36	0.34	0.39	0.36	7.0
Mercury	0.061	<0.036	<0.048	<0.048	26.1
Molybdenum	4.84	5.74	5.58	5.39	8.9
Nickel	0.70	0.90	1.19	0.93	26.4
Selenium	<0.20	0.74	<0.24	<0.39	76.0
Silver	<0.040	<0.048	<0.048	<0.046	9.8
Thallium	<0.040	0.062	0.17	<0.090	75.4
Vanadium	<0.020	<0.024	0.066	<0.037	68.9
Zinc	3.99	5.78	6.08	5.28	21.4
Total	<16.8	<22.4	<22.8	<20.7	16.1

* 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	<0.00076	0.00099	<0.00087	<0.00087	13.1
Arsenic	<0.00076	<0.00087	<0.00087	<0.00083	7.6
Barium	0.0044	0.038	0.042	0.028	73.6
Beryllium	<0.00076	<0.00087	<0.00087	<0.00083	7.6
Cadmium	0.0011	0.00067	0.0015	0.0011	38.7
Chromium	0.015	0.017	0.014	0.015	7.6
Cobalt	<0.00076	<0.00087	0.0013	<0.00097	28.2
Copper	0.10	0.10	0.099	0.10	0.4
Lead	0.0068	0.0061	0.0070	0.0067	6.9
Mercury	0.0012	<0.00065	<0.00087	<0.00089	28.2
Molybdenum	0.091	0.10	0.10	0.098	6.8
Nickel	0.013	0.016	0.021	0.017	24.5
Selenium	<0.0038	0.013	<0.0043	<0.0072	75.0
Silver	<0.00076	<0.00087	<0.00087	<0.00083	7.6
Thallium	<0.00076	0.0011	0.0030	<0.0016	74.0
Vanadium	<0.00038	<0.00044	0.0012	<0.00067	67.3
Zinc	0.075	0.10	0.11	0.096	19.4
Total	<0.32	<0.41	<0.41	<0.38	14.0

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

Metal	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.033	<0.057	<0.044	<0.048	<0.00087
Arsenic	<0.032	<0.054	<0.042	<0.046	<0.00083
Barium	1.08	1.84	1.44	1.55	0.028
Beryllium	<0.032	<0.054	<0.042	<0.046	<0.00083
Cadmium	0.041	0.071	0.056	0.060	0.0011
Chromium	0.58	0.99	0.78	0.84	0.015
Cobalt	<0.037	<0.063	<0.050	<0.053	<0.00097
Copper	3.79	6.47	5.09	5.45	0.10
Lead	0.25	0.43	0.34	0.36	0.0067
Mercury	<0.034	<0.058	<0.045	<0.048	<0.00089
Molybdenum	3.75	6.40	5.03	5.39	0.098
Nickel	0.64	1.10	0.87	0.93	0.017
Selenium	<0.27	<0.47	<0.37	<0.39	<0.0072
Silver	<0.032	<0.054	<0.042	<0.046	<0.00083
Thallium	<0.063	<0.11	<0.084	<0.090	<0.0016
Vanadium	<0.025	<0.043	<0.034	<0.037	<0.00067
Zinc	3.67	6.27	4.93	5.28	0.096
Total	<14.4	<24.5	<19.3	<20.7	<0.38

* At 25°C and 1 atmosphere

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	5.19	0.83	6.02
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.41	0.34	2.75
Cobalt	<0.2	<0.1	<0.20
Copper	9.00	8.33	17.3
Lead	0.50	0.52	1.03
Mercury *	<0.015	<0.15	<0.15
Molybdenum	22.3	<0.1	22.3
Nickel	2.09	0.28	2.37
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	<3	<6.00
Total			<60.4

* Includes the permanganate impingers.

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

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

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	113	0.014	0.025	0.019	0.021	0.37
Pentachlorodibenzo-p-dioxins	311	0.040	0.068	0.054	0.057	1.02
Hexachlorodibenzo-p-dioxins	779	0.099	0.17	0.13	0.14	2.56
Heptachlorodibenzo-p-dioxins	626	0.080	0.14	0.11	0.11	2.06
Octachlorodibenzo-p-dioxin	311	0.040	0.068	0.054	0.057	1.02
Total	2140	0.27	0.47	0.37	0.39	7.04

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	24.8	0.0032	0.0054	0.0043	0.0045	0.082
Pentachlorodibenzofurans	202	0.026	0.044	0.035	0.037	0.66
Hexachlorodibenzofurans	236	0.030	0.051	0.041	0.043	0.78
Heptachlorodibenzofurans	154	0.020	0.034	0.027	0.028	0.51
Octachlorodibenzofuran	<43	<0.0055	<0.0094	<0.0074	<0.0079	<0.14
Total	<660	<0.084	<0.14	<0.11	<0.12	<2.17

Dry Gas Volume Sampled (Rm^3*) :	4.590
Actual Flowrate (m^3/s) :	25.9
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	18.0

* At 25°C and 1 atmosphere

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

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

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

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	128	0.016	0.027	0.022	0.023	0.42
Pentachlorodibenzo-p-dioxins	418	0.052	0.090	0.071	0.075	1.38
Hexachlorodibenzo-p-dioxins	1030	0.13	0.22	0.17	0.18	3.40
Heptachlorodibenzo-p-dioxins	820	0.10	0.18	0.14	0.15	2.71
Octachlorodibenzo-p-dioxin	712	0.089	0.15	0.12	0.13	2.35
Total	3108	0.39	0.67	0.53	0.56	10.3

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	63	0.0078	0.013	0.011	0.011	0.21
Pentachlorodibenzofurans	85.9	0.011	0.018	0.015	0.015	0.28
Hexachlorodibenzofurans	232	0.029	0.050	0.039	0.042	0.77
Heptachlorodibenzofurans	230.0	0.029	0.049	0.039	0.041	0.76
Octachlorodibenzofuran	<88	<0.011	<0.019	<0.015	<0.016	<0.29
Total	<698	<0.087	<0.15	<0.12	<0.13	<2.31

Dry Gas Volume Sampled (Rm^3*) :	4.662
Actual Flowrate (m^3/s) :	26.5
Dry Reference Flowrate (Rm^3/s*) :	15.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	18.4

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

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

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	75.8	0.010	0.017	0.013	0.015	0.25
Pentachlorodibenzo-p-dioxins	267	0.036	0.060	0.047	0.051	0.88
Hexachlorodibenzo-p-dioxins	655	0.088	0.15	0.12	0.13	2.16
Heptachlorodibenzo-p-dioxins	576	0.077	0.13	0.10	0.11	1.90
Octachlorodibenzo-p-dioxin	326	0.044	0.073	0.058	0.063	1.08
Total	1900	0.26	0.43	0.34	0.37	6.28

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	36.9	0.0050	0.0083	0.0066	0.0071	0.12
Pentachlorodibenzofurans	128	0.017	0.029	0.023	0.025	0.42
Hexachlorodibenzofurans	172	0.023	0.039	0.031	0.033	0.57
Heptachlorodibenzofurans	180	0.024	0.040	0.032	0.035	0.59
Octachlorodibenzofuran	<49	<0.0066	<0.011	<0.0087	<0.0094	<0.16
Total	<566	<0.076	<0.13	<0.10	<0.11	<1.87

Dry Gas Volume Sampled (Rm³*) :	4.448
Actual Flowrate (m³/s) :	24.6
Dry Reference Flowrate (Rm³/s*) :	14.7
Dry Adjusted Flowrate (Rm³/s**) :	18.6
Wet Reference Flowrate (Rm³/s*) :	17.2

* 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 27
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.014	0.016	0.010	0.013	22.1
Pentachlorodibenzo-p-dioxins	0.040	0.052	0.036	0.042	20.1
Hexachlorodibenzo-p-dioxins	0.099	0.13	0.088	0.11	19.9
Heptachlorodibenzo-p-dioxins	0.080	0.10	0.077	0.086	15.9
Octachlorodibenzo-p-dioxin	0.040	0.089	0.044	0.057	47.6
Total	0.27	0.39	0.26	0.30	23.6

Furans

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0032	0.0078	0.0050	0.0053	44.1
Pentachlorodibenzofurans	0.026	0.011	0.017	0.018	42.0
Hexachlorodibenzofurans	0.030	0.029	0.023	0.027	13.5
Heptachlorodibenzofurans	0.020	0.029	0.024	0.024	18.9
Octachlorodibenzofuran	<0.0055	<0.011	<0.0066	<0.0077	37.9
Total	<0.084	<0.087	<0.076	<0.082	6.9

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

Dioxins

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.025	0.027	0.017	0.023	23.4
Pentachlorodibenzo-p-dioxins	0.068	0.090	0.060	0.072	21.2
Hexachlorodibenzo-p-dioxins	0.17	0.22	0.15	0.18	21.1
Heptachlorodibenzo-p-dioxins	0.14	0.18	0.13	0.15	17.0
Octachlorodibenzo-p-dioxin	0.068	0.15	0.073	0.098	48.5
Total	0.47	0.67	0.43	0.52	24.7

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0054	0.013	0.0083	0.0090	44.9
Pentachlorodibenzofurans	0.044	0.018	0.029	0.030	42.3
Hexachlorodibenzofurans	0.051	0.050	0.039	0.047	14.9
Heptachlorodibenzofurans	0.034	0.049	0.040	0.041	19.2
Octachlorodibenzofuran	<0.0094	<0.019	<0.011	<0.013	38.8
Total	<0.14	<0.15	<0.13	<0.14	8.3

* At 25°C and 1 atmosphere

TABLE 29

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Test No. 1 ng/Rm³*	Dry Adjusted Concentration Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.019	0.022	0.013	0.018	23.3
Pentachlorodibenzo-p-dioxins	0.054	0.071	0.047	0.057	21.2
Hexachlorodibenzo-p-dioxins	0.13	0.17	0.12	0.14	21.0
Heptachlorodibenzo-p-dioxins	0.11	0.14	0.10	0.12	16.9
Octachlorodibenzo-p-dioxin	0.054	0.12	0.058	0.077	48.5
Total	0.37	0.53	0.34	0.41	24.7

Furans

Congener Group	Test No. 1 ng/Rm³*	Dry Adjusted Concentration Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0043	0.011	0.0066	0.0071	44.8
Pentachlorodibenzofurans	0.035	0.015	0.023	0.024	42.4
Hexachlorodibenzofurans	0.041	0.039	0.031	0.037	14.9
Heptachlorodibenzofurans	0.027	0.039	0.032	0.032	19.2
Octachlorodibenzofuran	<0.0074	<0.015	<0.0087	<0.010	38.8
Total	<0.11	<0.12	<0.10	<0.11	8.3

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

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

Dioxins

Congener Group	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.021	0.023	0.015	0.019	22.4
Pentachlorodibenzo-p-dioxins	0.057	0.075	0.051	0.061	20.3
Hexachlorodibenzo-p-dioxins	0.14	0.18	0.13	0.15	20.2
Heptachlorodibenzo-p-dioxins	0.11	0.15	0.11	0.12	16.2
Octachlorodibenzo-p-dioxin	0.057	0.13	0.063	0.082	47.8
Total	0.39	0.56	0.37	0.44	23.9

Furans

Congener Group	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0045	0.011	0.0071	0.0076	44.3
Pentachlorodibenzofurans	0.037	0.015	0.025	0.026	42.1
Hexachlorodibenzofurans	0.043	0.042	0.033	0.039	13.9
Heptachlorodibenzofurans	0.028	0.041	0.035	0.035	19.0
Octachlorodibenzofuran	<0.0079	<0.016	<0.0094	<0.011	38.2
Total	<0.12	<0.13	<0.11	<0.12	7.2

* At 25°C and 1 atmosphere

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.37	0.42	0.25	0.35	25.4
Pentachlorodibenzo-p-dioxins	1.02	1.38	0.88	1.10	23.5
Hexachlorodibenzo-p-dioxins	2.56	3.40	2.16	2.71	23.3
Heptachlorodibenzo-p-dioxins	2.06	2.71	1.90	2.22	19.2
Octachlorodibenzo-p-dioxin	1.02	2.35	1.08	1.48	50.7
Total	7.04	10.3	6.28	7.86	26.9

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	0.082	0.21	0.12	0.14	46.6
Pentachlorodibenzofurans	0.66	0.28	0.42	0.46	42.1
Hexachlorodibenzofurans	0.78	0.77	0.57	0.70	16.7
Heptachlorodibenzofurans	0.51	0.76	0.59	0.62	20.7
Octachlorodibenzofuran	<0.14	<0.29	<0.16	<0.20	40.9
Total	<2.17	<2.31	<1.87	<2.12	10.6

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

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.013	0.023	0.018	0.019	0.35
Pentachlorodibenzo-p-dioxins	0.042	0.072	0.057	0.061	1.10
Hexachlorodibenzo-p-dioxins	0.11	0.18	0.14	0.15	2.71
Heptachlorodibenzo-p-dioxins	0.086	0.15	0.12	0.12	2.22
Octachlorodibenzo-p-dioxin	0.057	0.098	0.077	0.082	1.48
Total	0.30	0.52	0.41	0.44	7.86

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.0053	0.0090	0.0071	0.0076	0.14
Pentachlorodibenzofurans	0.018	0.030	0.024	0.026	0.46
Hexachlorodibenzofurans	0.027	0.047	0.037	0.039	0.70
Heptachlorodibenzofurans	0.024	0.041	0.032	0.035	0.62
Octachlorodibenzofuran	<0.0077	<0.013	<0.010	<0.011	<0.20
Total	<0.082	<0.14	<0.11	<0.12	<2.12

* At 25°C and 1 atmosphere

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

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<3.0	<3.1
Pentachlorodibenzo-p-dioxins	2.89	<3.1
Hexachlorodibenzo-p-dioxins	<3.2	<3.4
Heptachlorodibenzo-p-dioxins	<5.1	<3.2
Octachlorodibenzo-p-dioxin	<82	133
Total	<96.2	<146

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<1.8	<1.9
Pentachlorodibenzofurans	<1.7	<2.0
Hexachlorodibenzofurans	<2.2	<3.3
Heptachlorodibenzofurans	<2.5	<9.5
Octachlorodibenzofuran	17.9	31.5
Total	<26.1	<48.2

"<" 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. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.1	<0.52	<0.89	<0.71	<0.75	<0.013
12378-pentachlorodibenzo-p-dioxin	<6.7	<0.85	<1.46	<1.15	<1.22	<0.022
123478-hexachlorodibenzo-p-dioxin	18.2	2.31	3.97	3.13	3.33	0.060
123678-hexachlorodibenzo-p-dioxin	46.5	5.91	10.1	8.01	8.50	0.15
123789-hexachlorodibenzo-p-dioxin	19.3	2.45	4.20	3.32	3.53	0.063
1234678-heptachlorodibenzo-p-dioxin	284	36.1	61.9	48.9	51.9	0.93
Octachlorodibenzo-p-dioxin	311	39.5	67.8	53.6	56.8	1.02
2378-tetrachlorodibenzofuran	<5.8	<0.74	<1.26	<1.00	<1.06	<0.019
12378-pentachlorodibenzofuran	6.69	0.85	1.46	1.15	1.22	0.022
23478-pentachlorodibenzofuran	<17	<2.16	<3.70	<2.93	<3.11	<0.056
123478-hexachlorodibenzofuran	<20	<2.54	<4.36	<3.44	<3.66	<0.066
123678-hexachlorodibenzofuran	26.6	3.38	5.80	4.58	4.86	0.088
234678-hexachlorodibenzofuran	44.6	5.66	9.72	7.68	8.15	0.15
123789-hexachlorodibenzofuran	11.2	1.42	2.44	1.93	2.05	0.037
1234678-heptachlorodibenzofuran	116	14.7	25.3	20.0	21.2	0.38
1234789-heptachlorodibenzofuran	<18	<2.29	<3.92	<3.10	<3.29	<0.059
Octachlorodibenzofuran	<43	<5.46	<9.37	<7.41	<7.86	<0.14
PCB 81	<27	<3.43	<5.88	<4.65	<4.93	<0.089
PCB 77	70.8	8.99	15.4	12.2	12.9	0.23
PCB 123	25.7	3.26	5.60	4.43	4.70	0.085
PCB 118	1780	226	388	307	325	5.86
PCB 114	40.9	5.20	8.91	7.04	7.48	0.13
PCB 105	456	57.9	99.3	78.5	83.3	1.50
PCB 126	<15	<1.91	<3.27	<2.58	<2.74	<0.049
PCB 167	27.6	3.51	6.01	4.75	5.04	0.091
PCB 156/157	79.5	10.1	17.3	13.7	14.5	0.26
PCB 169	<8.3	<1.05	<1.81	<1.43	<1.52	<0.027
PCB 189	18.9	2.40	4.12	3.26	3.45	0.062
Total Dioxins & Furans Only	<999	<127	<218	<172	<183	<3.29
Total PCBs Only	<2550	<324	<555	<439	<466	<8.39
Total Dioxins & Furans and PCBs	<3548	<451	<773	<611	<649	<11.7

Dry Gas Volume Sampled (Rm³*) :	4.590
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<5.9	<0.74	<1.27	<1.00	<1.06	<0.019
12378-pentachlorodibenzo-p-dioxin	<7.0	<0.87	<1.50	<1.19	<1.26	<0.023
123478-hexachlorodibenzo-p-dioxin	<23	<2.87	<4.93	<3.90	<4.13	<0.076
123678-hexachlorodibenzo-p-dioxin	<51	<6.36	<10.9	<8.64	<9.16	<0.17
123789-hexachlorodibenzo-p-dioxin	<21	<2.62	<4.50	<3.56	<3.77	<0.069
1234678-heptachlorodibenzo-p-dioxin	333	41.5	71.4	56.4	59.8	1.10
Octachlorodibenzo-p-dioxin	712	88.8	153	121	128	2.35
2378-tetrachlorodibenzofuran	<13	<1.62	<2.79	<2.20	<2.33	<0.043
12378-pentachlorodibenzofuran	<8.6	<1.07	<1.84	<1.46	<1.54	<0.028
23478-pentachlorodibenzofuran	24.8	3.09	5.32	4.20	4.45	0.082
123478-hexachlorodibenzofuran	25.2	3.14	5.41	4.27	4.52	0.083
123678-hexachlorodibenzofuran	<20	<2.49	<4.29	<3.39	<3.59	<0.066
234678-hexachlorodibenzofuran	44.6	5.56	9.57	7.56	8.01	0.15
123789-hexachlorodibenzofuran	<12	<1.50	<2.57	<2.03	<2.15	<0.040
1234678-heptachlorodibenzofuran	155	19.3	33.2	26.3	27.8	0.51
1234789-heptachlorodibenzofuran	<17	<2.12	<3.65	<2.88	<3.05	<0.056
Octachlorodibenzofuran	<88	<11.0	<18.9	<14.9	<15.8	<0.29
PCB 81	<24	<2.99	<5.15	<4.07	<4.31	<0.079
PCB 77	226	28.2	48.5	38.3	40.6	0.75
PCB 123	84.7	10.6	18.2	14.3	15.2	0.28
PCB 118	4710	587	1010	798	846	15.6
PCB 114	118	14.7	25.3	20.0	21.2	0.39
PCB 105	1350	168	290	229	242	4.46
PCB 126	<26	<3.24	<5.58	<4.40	<4.67	<0.086
PCB 167	<50	<6.23	<10.7	<8.47	<8.98	<0.17
PCB 156/157	142	17.7	30.5	24.1	25.5	0.47
PCB 169	<17	<2.12	<3.65	<2.88	<3.05	<0.056
PCB 189	15.0	1.87	3.22	2.54	2.69	0.050
Total Dioxins & Furans Only	<1561	<195	<335	<264	<280	<5.16
Total PCBs Only	<6763	<843	<1451	<1146	<1214	<22.3
Total Dioxins & Furans and PCBs	<8324	<1038	<1785	<1410	<1494	<27.5

Dry Gas Volume Sampled (Rm³*) :	4.662
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	18.4

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

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

Specific Isomer	Total Collected pg	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.3	<0.58	<0.97	<0.76	<0.83	<0.014
12378-pentachlorodibenzo-p-dioxin	6.19	0.83	1.39	1.10	1.19	0.020
123478-hexachlorodibenzo-p-dioxin	<17	<2.28	<3.82	<3.02	<3.27	<0.056
123678-hexachlorodibenzo-p-dioxin	42.2	5.67	9.49	7.50	8.11	0.14
123789-hexachlorodibenzo-p-dioxin	<20	<2.69	<4.50	<3.55	<3.84	<0.066
1234678-heptachlorodibenzo-p-dioxin	263	35.3	59.1	46.7	50.5	0.87
Octachlorodibenzo-p-dioxin	326	43.8	73.3	57.9	62.6	1.08
2378-tetrachlorodibenzofuran	<4.0	<0.54	<0.90	<0.71	<0.77	<0.013
12378-pentachlorodibenzofuran	9.13	1.23	2.05	1.62	1.75	0.030
23478-pentachlorodibenzofuran	<14	<1.88	<3.15	<2.49	<2.69	<0.046
123478-hexachlorodibenzofuran	<19	<2.55	<4.27	<3.38	<3.65	<0.063
123678-hexachlorodibenzofuran	<18	<2.42	<4.05	<3.20	<3.46	<0.059
234678-hexachlorodibenzofuran	37.0	4.97	8.32	6.57	7.11	0.12
123789-hexachlorodibenzofuran	<23	<3.09	<5.17	<4.09	<4.42	<0.076
1234678-heptachlorodibenzofuran	104	14.0	23.4	18.5	20.0	0.34
1234789-heptachlorodibenzofuran	15.0	2.02	3.37	2.67	2.88	0.050
Octachlorodibenzofuran	<49	<6.58	<11.0	<8.71	<9.41	<0.16
PCB 81	<25	<3.36	<5.62	<4.44	<4.80	<0.083
PCB 77	194	26.1	43.6	34.5	37.3	0.64
PCB 123	76.9	10.3	17.3	13.7	14.8	0.25
PCB 118	5080	682	1142	903	976	16.8
PCB 114	144	19.3	32.4	25.6	27.7	0.48
PCB 105	2240	301	504	398	430	7.40
PCB 126	<39	<5.24	<8.77	<6.93	<7.49	<0.13
PCB 167	177	23.8	39.8	31.4	34.0	0.58
PCB 156/157	617	82.9	139	110	119	2.04
PCB 169	<18	<2.42	<4.05	<3.20	<3.46	<0.059
PCB 189	40.9	5.49	9.20	7.27	7.86	0.14
Total Dioxins & Furans Only	<971	<130	<218	<172	<187	<3.21
Total PCBs Only	<8652	<1162	<1945	<1537	<1662	<28.6
Total Dioxins & Furans and PCBs	<9623	<1293	<2163	<1710	<1849	<31.8

Dry Gas Volume Sampled (Rm^3*) :	4.448
Actual Flowrate (m^3/s) :	24.6
Dry Reference Flowrate (Rm^3/s*) :	14.7
Dry Adjusted Flowrate (Rm^3/s**) :	18.6
Wet Reference Flowrate (Rm^3/s*) :	17.2

* 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. 2 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.52	<0.74	<0.58	<0.61	18.2
12378-pentachlorodibenzo-p-dioxin	<0.85	<0.87	0.83	<0.85	2.4
123478-hexachlorodibenzo-p-dioxin	2.31	<2.87	<2.28	<2.49	13.2
123678-hexachlorodibenzo-p-dioxin	5.91	<6.36	5.67	<5.98	5.8
123789-hexachlorodibenzo-p-dioxin	2.45	<2.62	<2.69	<2.59	4.7
1234678-heptachlorodibenzo-p-dioxin	36.1	41.5	35.3	37.6	9.0
Octachlorodibenzo-p-dioxin	39.5	88.8	43.8	57.4	47.6
2378-tetrachlorodibenzofuran	<0.74	<1.62	<0.54	<0.96	59.7
12378-pentachlorodibenzofuran	0.85	<1.07	1.23	<1.05	18.0
23478-pentachlorodibenzofuran	<2.16	3.09	<1.88	<2.38	26.7
123478-hexachlorodibenzofuran	<2.54	3.14	<2.55	<2.74	12.5
123678-hexachlorodibenzofuran	3.38	<2.49	<2.42	<2.76	19.3
234678-hexachlorodibenzofuran	5.66	5.56	4.97	5.40	6.9
123789-hexachlorodibenzofuran	1.42	<1.50	<3.09	<2.00	47.0
1234678-heptachlorodibenzofuran	14.7	19.3	14.0	16.0	18.1
1234789-heptachlorodibenzofuran	<2.29	<2.12	2.02	<2.14	6.4
Octachlorodibenzofuran	<5.46	<11.0	<6.58	<7.67	37.9
PCB 81	<3.43	<2.99	<3.36	<3.26	7.2
PCB 77	8.99	28.2	26.1	21.1	49.9
PCB 123	3.26	10.6	10.3	8.05	51.5
PCB 118	226	587	682	499	48.3
PCB 114	5.20	14.7	19.3	13.1	55.1
PCB 105	57.9	168	301	176	69.2
PCB 126	<1.91	<3.24	<5.24	<3.46	48.5
PCB 167	3.51	<6.23	23.8	<11.2	98.5
PCB 156/157	10.1	17.7	82.9	36.9	108
PCB 169	<1.05	<2.12	<2.42	<1.86	38.5
PCB 189	2.40	1.87	5.49	3.26	60.1
Total Dioxins & Furans Only	<127	<195	<130	<151	25.3
Total PCBs Only	<324	<843	<1162	<776	54.5
Total Dioxins & Furans and PCBs	<451	<1038	<1293	<927	46.6

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

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

Specific Isomer	Dry Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.89	<1.27	<0.97	<1.04	18.9
12378-pentachlorodibenzo-p-dioxin	<1.46	<1.50	1.39	<1.45	3.8
123478-hexachlorodibenzo-p-dioxin	3.97	<4.93	<3.82	<4.24	14.3
123678-hexachlorodibenzo-p-dioxin	10.1	<10.9	9.49	<10.2	7.1
123789-hexachlorodibenzo-p-dioxin	4.20	<4.50	<4.50	<4.40	3.9
1234678-heptachlorodibenzo-p-dioxin	61.9	71.4	59.1	64.1	10.1
Octachlorodibenzo-p-dioxin	67.8	153	73.3	97.9	48.5
2378-tetrachlorodibenzofuran	<1.26	<2.79	<0.90	<1.65	60.7
12378-pentachlorodibenzofuran	1.46	<1.84	2.05	<1.78	16.9
23478-pentachlorodibenzofuran	<3.70	5.32	<3.15	<4.06	27.8
123478-hexachlorodibenzofuran	<4.36	5.41	<4.27	<4.68	13.5
123678-hexachlorodibenzofuran	5.80	<4.29	<4.05	<4.71	20.1
234678-hexachlorodibenzofuran	9.72	9.57	8.32	9.20	8.3
123789-hexachlorodibenzofuran	2.44	<2.57	<5.17	<3.39	45.3
1234678-heptachlorodibenzofuran	25.3	33.2	23.4	27.3	19.2
1234789-heptachlorodibenzofuran	<3.92	<3.65	3.37	<3.65	7.5
Octachlorodibenzofuran	<9.37	<18.9	<11.0	<13.1	38.8
PCB 81	<5.88	<5.15	<5.62	<5.55	6.7
PCB 77	15.4	48.5	43.6	35.8	49.8
PCB 123	5.60	18.2	17.3	13.7	51.3
PCB 118	388	1010	1142	847	47.6
PCB 114	8.91	25.3	32.4	22.2	54.2
PCB 105	99.3	290	504	298	68.0
PCB 126	<3.27	<5.58	<8.77	<5.87	47.0
PCB 167	6.01	<10.7	39.8	<18.8	97.1
PCB 156/157	17.3	30.5	139	62.2	107
PCB 169	<1.81	<3.65	<4.05	<3.17	37.7
PCB 189	4.12	3.22	9.20	5.51	58.5
Total Dioxins & Furans Only	<218	<335	<218	<257	26.3
Total PCBs Only	<555	<1451	<1945	<1317	53.5
Total Dioxins & Furans and PCBs	<773	<1785	<2163	<1574	45.7

* At 25°C and 1 atmosphere

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

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

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.71	<1.00	<0.76	<0.82	18.9
12378-pentachlorodibenzo-p-dioxin	<1.15	<1.19	1.10	<1.15	3.8
123478-hexachlorodibenzo-p-dioxin	3.13	<3.90	<3.02	<3.35	14.2
123678-hexachlorodibenzo-p-dioxin	8.01	<8.64	7.50	<8.05	7.1
123789-hexachlorodibenzo-p-dioxin	3.32	<3.56	<3.55	<3.48	3.8
1234678-heptachlorodibenzo-p-dioxin	48.9	56.4	46.7	50.7	10.0
Octachlorodibenzo-p-dioxin	53.6	121	57.9	77.4	48.5
2378-tetrachlorodibenzofuran	<1.00	<2.20	<0.71	<1.30	60.7
12378-pentachlorodibenzofuran	1.15	<1.46	1.62	<1.41	16.9
23478-pentachlorodibenzofuran	<2.93	4.20	<2.49	<3.21	27.8
123478-hexachlorodibenzofuran	<3.44	4.27	<3.38	<3.70	13.4
123678-hexachlorodibenzofuran	4.58	<3.39	<3.20	<3.72	20.1
234678-hexachlorodibenzofuran	7.68	7.56	6.57	7.27	8.3
123789-hexachlorodibenzofuran	1.93	<2.03	<4.09	<2.68	45.4
1234678-heptachlorodibenzofuran	20.0	26.3	18.5	21.6	19.1
1234789-heptachlorodibenzofuran	<3.10	<2.88	2.67	<2.88	7.5
Octachlorodibenzofuran	<7.41	<14.9	<8.71	<10.3	38.8
PCB 81	<4.65	<4.07	<4.44	<4.39	6.8
PCB 77	12.2	38.3	34.5	28.3	49.8
PCB 123	4.43	14.3	13.7	10.8	51.2
PCB 118	307	798	903	669	47.6
PCB 114	7.04	20.0	25.6	17.5	54.2
PCB 105	78.5	229	398	235	68.0
PCB 126	<2.58	<4.40	<6.93	<4.64	47.0
PCB 167	4.75	<8.47	31.4	<14.9	97.1
PCB 156/157	13.7	24.1	110	49.1	107
PCB 169	<1.43	<2.88	<3.20	<2.50	37.7
PCB 189	3.26	2.54	7.27	4.35	58.5
Total Dioxins & Furans Only	<172	<264	<172	<203	26.2
Total PCBs Only	<439	<1146	<1537	<1041	53.5
Total Dioxins & Furans and PCBs	<611	<1410	<1710	<1244	45.7

* 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	<0.75	<1.06	<0.83	<0.88	18.4
12378-pentachlorodibenzo-p-dioxin	<1.22	<1.26	1.19	<1.22	2.8
123478-hexachlorodibenzo-p-dioxin	3.33	<4.13	<3.27	<3.57	13.5
123678-hexachlorodibenzo-p-dioxin	8.50	<9.16	8.11	<8.59	6.2
123789-hexachlorodibenzo-p-dioxin	3.53	<3.77	<3.84	<3.71	4.4
1234678-heptachlorodibenzo-p-dioxin	51.9	59.8	50.5	54.1	9.2
Octachlorodibenzo-p-dioxin	56.8	128	62.6	82.4	47.8
2378-tetrachlorodibenzofuran	<1.06	<2.33	<0.77	<1.39	60.0
12378-pentachlorodibenzofuran	1.22	<1.54	1.75	<1.51	17.8
23478-pentachlorodibenzofuran	<3.11	4.45	<2.69	<3.42	27.0
123478-hexachlorodibenzofuran	<3.66	4.52	<3.65	<3.94	12.8
123678-hexachlorodibenzofuran	4.86	<3.59	<3.46	<3.97	19.5
234678-hexachlorodibenzofuran	8.15	8.01	7.11	7.76	7.3
123789-hexachlorodibenzofuran	2.05	<2.15	<4.42	<2.87	46.6
1234678-heptachlorodibenzofuran	21.2	27.8	20.0	23.0	18.4
1234789-heptachlorodibenzofuran	<3.29	<3.05	2.88	<3.07	6.7
Octachlorodibenzofuran	<7.86	<15.8	<9.41	<11.0	38.2
PCB 81	<4.93	<4.31	<4.80	<4.68	7.1
PCB 77	12.9	40.6	37.3	30.3	49.9
PCB 123	4.70	15.2	14.8	11.6	51.4
PCB 118	325	846	976	716	48.1
PCB 114	7.48	21.2	27.7	18.8	54.9
PCB 105	83.3	242	430	252	68.9
PCB 126	<2.74	<4.67	<7.49	<4.97	48.1
PCB 167	5.04	<8.98	34.0	<16.0	98.1
PCB 156/157	14.5	25.5	119	52.9	108
PCB 169	<1.52	<3.05	<3.46	<2.68	38.3
PCB 189	3.45	2.69	7.86	4.67	59.7
Total Dioxins & Furans Only	<183	<280	<187	<216	25.6
Total PCBs Only	<466	<1214	<1662	<1114	54.2
Total Dioxins & Furans and PCBs	<649	<1494	<1849	<1331	46.3

* At 25°C and 1 atmosphere

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

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

Specific Isomer	Emission Rate Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.013	<0.019	<0.014	<0.016	20.8
12378-pentachlorodibenzo-p-dioxin	<0.022	<0.023	0.020	<0.022	6.1
123478-hexachlorodibenzo-p-dioxin	0.060	<0.076	<0.056	<0.064	16.4
123678-hexachlorodibenzo-p-dioxin	0.15	<0.17	0.14	<0.15	9.4
123789-hexachlorodibenzo-p-dioxin	0.063	<0.069	<0.066	<0.066	4.4
1234678-heptachlorodibenzo-p-dioxin	0.93	1.10	0.87	0.97	12.3
Octachlorodibenzo-p-dioxin	1.02	2.35	1.08	1.48	50.7
2378-tetrachlorodibenzofuran	<0.019	<0.043	<0.013	<0.025	62.8
12378-pentachlorodibenzofuran	0.022	<0.028	0.030	<0.027	16.0
23478-pentachlorodibenzofuran	<0.056	0.082	<0.046	<0.061	30.0
123478-hexachlorodibenzofuran	<0.066	0.083	<0.063	<0.071	15.6
123678-hexachlorodibenzofuran	0.088	<0.066	<0.059	<0.071	20.6
234678-hexachlorodibenzofuran	0.15	0.15	0.12	0.14	10.3
123789-hexachlorodibenzofuran	0.037	<0.040	<0.076	<0.051	43.0
1234678-heptachlorodibenzofuran	0.38	0.51	0.34	0.41	21.4
1234789-heptachlorodibenzofuran	<0.059	<0.056	0.050	<0.055	9.0
Octachlorodibenzofuran	<0.14	<0.29	<0.16	<0.20	40.9
PCB 81	<0.089	<0.079	<0.083	<0.084	5.8
PCB 77	0.23	0.75	0.64	0.54	50.2
PCB 123	0.085	0.28	0.25	0.21	51.5
PCB 118	5.86	15.6	16.8	12.7	47.0
PCB 114	0.13	0.39	0.48	0.33	53.2
PCB 105	1.50	4.46	7.40	4.45	66.3
PCB 126	<0.049	<0.086	<0.13	<0.088	45.2
PCB 167	0.091	<0.17	0.58	<0.28	95.1
PCB 156/157	0.26	0.47	2.04	0.92	105
PCB 169	<0.027	<0.056	<0.059	<0.048	37.1
PCB 189	0.062	0.050	0.14	0.082	56.2
Total Dioxins & Furans Only	<3.29	<5.16	<3.21	<3.88	28.4
Total PCBs Only	<8.39	<22.3	<28.6	<19.8	52.3
Total Dioxins & Furans and PCBs	<11.7	<27.5	<31.8	<23.7	44.8

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

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

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.61	<1.04	<0.82	<0.88	<0.016
12378-pentachlorodibenzo-p-dioxin	<0.85	<1.45	<1.15	<1.22	<0.022
123478-hexachlorodibenzo-p-dioxin	<2.49	<4.24	<3.35	<3.57	<0.064
123678-hexachlorodibenzo-p-dioxin	<5.98	<10.2	<8.05	<8.59	<0.15
123789-hexachlorodibenzo-p-dioxin	<2.59	<4.40	<3.48	<3.71	<0.066
1234678-heptachlorodibenzo-p-dioxin	37.6	64.1	50.7	54.1	0.97
Octachlorodibenzo-p-dioxin	57.4	97.9	77.4	82.4	1.48
2378-tetrachlorodibenzofuran	<0.96	<1.65	<1.30	<1.39	<0.025
12378-pentachlorodibenzofuran	<1.05	<1.78	<1.41	<1.51	<0.027
23478-pentachlorodibenzofuran	<2.38	<4.06	<3.21	<3.42	<0.061
123478-hexachlorodibenzofuran	<2.74	<4.68	<3.70	<3.94	<0.071
123678-hexachlorodibenzofuran	<2.76	<4.71	<3.72	<3.97	<0.071
234678-hexachlorodibenzofuran	5.40	9.20	7.27	7.76	0.14
123789-hexachlorodibenzofuran	<2.00	<3.39	<2.68	<2.87	<0.051
1234678-heptachlorodibenzofuran	16.0	27.3	21.6	23.0	0.41
1234789-heptachlorodibenzofuran	<2.14	<3.65	<2.88	<3.07	<0.055
Octachlorodibenzofuran	<7.67	<13.1	<10.3	<11.0	<0.20
PCB 81	<3.26	<5.55	<4.39	<4.68	<0.084
PCB 77	21.1	35.8	28.3	30.3	0.54
PCB 123	8.05	13.7	10.8	11.6	0.21
PCB 118	499	847	669	716	12.7
PCB 114	13.1	22.2	17.5	18.8	0.33
PCB 105	176	298	235	252	4.45
PCB 126	<3.46	<5.87	<4.64	<4.97	<0.088
PCB 167	<11.2	<18.8	<14.9	<16.0	<0.28
PCB 156/157	36.9	62.2	49.1	52.9	0.92
PCB 169	<1.86	<3.17	<2.50	<2.68	<0.048
PCB 189	3.26	5.51	4.35	4.67	0.082
Total Dioxins & Furans Only	<151	<257	<203	<216	<3.88
Total PCBs Only	<776	<1317	<1041	<1114	<19.8
Total Dioxins & Furans and PCBs	<927	<1574	<1244	<1331	<23.7

* 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	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<3.0	<3.1
12378-pentachlorodibenzo-p-dioxin	<2.3	<3.1
123478-hexachlorodibenzo-p-dioxin	<3.2	<3.4
123678-hexachlorodibenzo-p-dioxin	<2.8	<3.3
123789-hexachlorodibenzo-p-dioxin	<3.1	<3.3
1234678-heptachlorodibenzo-p-dioxin	<16	<15
Octachlorodibenzo-p-dioxin	<82	133
2378-tetrachlorodibenzofuran	<1.8	<1.9
12378-pentachlorodibenzofuran	<1.7	<2.0
23478-pentachlorodibenzofuran	<1.6	<1.9
123478-hexachlorodibenzofuran	<1.8	<2.7
123678-hexachlorodibenzofuran	<1.8	<2.6
234678-hexachlorodibenzofuran	<1.9	<2.9
123789-hexachlorodibenzofuran	<2.2	<3.3
1234678-heptachlorodibenzofuran	<3.1	<7.4
1234789-heptachlorodibenzofuran	<2.5	<9.5
Octachlorodibenzofuran	17.9	31.5
PCB 81	<22	<12
PCB 77	33.2	<12
PCB 123	<29	<14
PCB 118	680	18.3
PCB 114	<23	<14
PCB 105	340	<14
PCB 126	<26	<17
PCB 167	51.4	<11
PCB 156/157	144	<16
PCB 169	<22	<13
PCB 189	20.2	<10
Total Dioxins & Furans Only	<148.7	<229.9
Total PCBs Only	<1391	<151
Total Dioxins & Furans and PCBs	<1540	<381

"<" 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	<0.52	<0.74	<0.58	<0.61
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.85	<0.87	0.83	<0.85
123478-hexachlorodibenzo-p-dioxin	0.10000	0.23	<0.29	<0.23	<0.25
123678-hexachlorodibenzo-p-dioxin	0.10000	0.59	<0.64	0.57	<0.60
123789-hexachlorodibenzo-p-dioxin	0.10000	0.25	<0.26	<0.27	<0.26
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.36	0.42	0.35	0.38
Octachlorodibenzo-p-dioxin	0.00030	0.012	0.027	0.013	0.017
2378-tetrachlorodibenzofuran	0.10000	<0.074	<0.16	<0.054	<0.096
12378-pentachlorodibenzofuran	0.03000	0.025	<0.032	0.037	<0.031
23478-pentachlorodibenzofuran	0.30000	<0.65	0.93	<0.56	<0.71
123478-hexachlorodibenzofuran	0.10000	<0.25	0.31	<0.26	<0.27
123678-hexachlorodibenzofuran	0.10000	0.34	<0.25	<0.24	<0.28
234678-hexachlorodibenzofuran	0.10000	0.57	0.56	0.50	0.54
123789-hexachlorodibenzofuran	0.10000	0.14	<0.15	<0.31	<0.20
1234678-heptachlorodibenzofuran	0.01000	0.15	0.19	0.14	0.16
1234789-heptachlorodibenzofuran	0.01000	<0.023	<0.021	0.020	<0.021
Octachlorodibenzofuran	0.00030	<0.0016	<0.0033	<0.0020	<0.0023
PCB 81	0.00030	<0.0010	<0.00090	<0.0010	<0.00098
PCB 77	0.00010	0.00090	0.0028	0.0026	0.0021
PCB 123	0.00003	0.000098	0.00032	0.00031	0.00024
PCB 118	0.00003	0.0068	0.018	0.020	0.015
PCB 114	0.00003	0.00016	0.00044	0.00058	0.00039
PCB 105	0.00003	0.0017	0.0050	0.0090	0.0053
PCB 126	0.10000	<0.19	<0.32	<0.52	<0.35
PCB 167	0.00003	0.00011	<0.00019	0.00071	<0.00034
PCB 156/157	0.00003	0.00030	0.00053	0.0025	0.0011
PCB 169	0.03000	<0.032	<0.064	<0.073	<0.056
PCB 189	0.00003	0.000072	0.000056	0.00016	0.000098
Total Dioxins & Furans Only		<5.03	<5.84	<4.96	<5.28
Total PCBs Only		<0.23	<0.42	<0.63	<0.43
Total Dioxins & Furans and PCBs		<5.26	<6.26	<5.59	<5.71

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	<0.89	<1.27	<0.97	<1.04
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.46	<1.50	1.39	<1.45
123478-hexachlorodibenzo-p-dioxin	0.10000	0.40	<0.49	<0.38	<0.42
123678-hexachlorodibenzo-p-dioxin	0.10000	1.01	<1.09	0.95	<1.02
123789-hexachlorodibenzo-p-dioxin	0.10000	0.42	<0.45	<0.45	<0.44
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.62	0.71	0.59	0.64
Octachlorodibenzo-p-dioxin	0.00030	0.020	0.046	0.022	0.029
2378-tetrachlorodibenzofuran	0.10000	<0.13	<0.28	<0.090	<0.165
12378-pentachlorodibenzofuran	0.03000	0.044	<0.055	0.062	<0.054
23478-pentachlorodibenzofuran	0.30000	<1.11	1.60	<0.94	<1.22
123478-hexachlorodibenzofuran	0.10000	<0.44	0.54	<0.43	<0.47
123678-hexachlorodibenzofuran	0.10000	0.58	<0.43	<0.40	<0.47
234678-hexachlorodibenzofuran	0.10000	0.97	0.96	0.83	0.92
123789-hexachlorodibenzofuran	0.10000	0.24	<0.26	<0.52	<0.34
1234678-heptachlorodibenzofuran	0.01000	0.25	0.33	0.23	0.27
1234789-heptachlorodibenzofuran	0.01000	<0.039	<0.036	0.034	<0.036
Octachlorodibenzofuran	0.00030	<0.0028	<0.0057	<0.0033	<0.0039
PCB 81	0.00030	<0.0018	<0.0015	<0.0017	<0.0017
PCB 77	0.00010	0.0015	0.0048	0.0044	0.0036
PCB 123	0.00003	0.00017	0.00055	0.00052	0.00041
PCB 118	0.00003	0.012	0.030	0.034	0.025
PCB 114	0.00003	0.00027	0.00076	0.00097	0.00067
PCB 105	0.00003	0.0030	0.0087	0.015	0.0089
PCB 126	0.10000	<0.33	<0.56	<0.88	<0.59
PCB 167	0.00003	0.00018	<0.00032	0.0012	<0.00057
PCB 156/157	0.00003	0.00052	0.00091	0.0042	0.0019
PCB 169	0.03000	<0.054	<0.11	<0.12	<0.095
PCB 189	0.00003	0.00012	0.000097	0.00028	0.00017
Total Dioxins & Furans Only		<8.63	<10.1	<8.30	<8.99
Total PCBs Only		<0.40	<0.72	<1.06	<0.73
Total Dioxins & Furans and PCBs		<9.03	<10.8	<9.36	<9.72

* 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	<0.71	<1.00	<0.76	<0.82
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.15	<1.19	1.10	<1.15
123478-hexachlorodibenzo-p-dioxin	0.10000	0.31	<0.39	<0.30	<0.34
123678-hexachlorodibenzo-p-dioxin	0.10000	0.80	<0.86	0.75	<0.80
123789-hexachlorodibenzo-p-dioxin	0.10000	0.33	<0.36	<0.36	<0.35
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.49	0.56	0.47	0.51
Octachlorodibenzo-p-dioxin	0.00030	0.016	0.036	0.017	0.023
2378-tetrachlorodibenzofuran	0.10000	<0.10	<0.22	<0.071	<0.13
12378-pentachlorodibenzofuran	0.03000	0.035	<0.044	0.049	<0.042
23478-pentachlorodibenzofuran	0.30000	<0.88	1.26	<0.75	<0.96
123478-hexachlorodibenzofuran	0.10000	<0.34	0.43	<0.34	<0.37
123678-hexachlorodibenzofuran	0.10000	0.46	<0.34	<0.32	<0.37
234678-hexachlorodibenzofuran	0.10000	0.77	0.76	0.66	0.73
123789-hexachlorodibenzofuran	0.10000	0.19	<0.20	<0.41	<0.27
1234678-heptachlorodibenzofuran	0.01000	0.20	0.26	0.18	0.22
1234789-heptachlorodibenzofuran	0.01000	<0.031	<0.029	0.027	<0.029
Octachlorodibenzofuran	0.00030	<0.0022	<0.0045	<0.0026	<0.0031
PCB 81	0.00030	<0.0014	<0.0012	<0.0013	<0.0013
PCB 77	0.00010	0.0012	0.0038	0.0034	0.0028
PCB 123	0.00003	0.00013	0.00043	0.00041	0.00032
PCB 118	0.00003	0.0092	0.024	0.027	0.020
PCB 114	0.00003	0.00021	0.00060	0.00077	0.00053
PCB 105	0.00003	0.0024	0.0069	0.012	0.0071
PCB 126	0.10000	<0.26	<0.44	<0.69	<0.46
PCB 167	0.00003	0.00014	<0.00025	0.00094	<0.00045
PCB 156/157	0.00003	0.00041	0.00072	0.0033	0.0015
PCB 169	0.03000	<0.043	<0.086	<0.096	<0.075
PCB 189	0.00003	0.000098	0.000076	0.00022	0.00013
Total Dioxins & Furans Only		<6.82	<7.94	<6.56	<7.11
Total PCBs Only		<0.32	<0.56	<0.84	<0.57
Total Dioxins & Furans and PCBs		<7.14	<8.50	<7.40	<7.68

* 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 46B
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.71	<1.00	<0.76	<0.82
12378-pentachlorodibenzo-p-dioxin	0.500	<0.58	<0.59	0.55	<0.57
123478-hexachlorodibenzo-p-dioxin	0.100	0.31	<0.39	<0.30	<0.34
123678-hexachlorodibenzo-p-dioxin	0.100	0.80	<0.86	0.75	<0.80
123789-hexachlorodibenzo-p-dioxin	0.100	0.33	<0.36	<0.36	<0.35
1234678-heptachlorodibenzo-p-dioxin	0.010	0.49	0.56	0.47	0.51
Octachlorodibenzo-p-dioxin	0.001	0.054	0.12	0.058	0.077
2378-tetrachlorodibenzofuran	0.100	<0.10	<0.22	<0.071	<0.13
12378-pentachlorodibenzofuran	0.050	0.058	<0.073	0.081	<0.071
23478-pentachlorodibenzofuran	0.500	<1.46	2.10	<1.24	<1.60
123478-hexachlorodibenzofuran	0.100	<0.34	0.43	<0.34	<0.37
123678-hexachlorodibenzofuran	0.100	0.46	<0.34	<0.32	<0.37
234678-hexachlorodibenzofuran	0.100	0.77	0.76	0.66	0.73
123789-hexachlorodibenzofuran	0.100	0.19	<0.20	<0.41	<0.27
1234678-heptachlorodibenzofuran	0.010	0.20	0.26	0.18	0.22
1234789-heptachlorodibenzofuran	0.010	<0.031	<0.029	0.027	<0.029
Octachlorodibenzofuran	0.001	<0.0074	<0.015	<0.0087	<0.010
Total Dioxins & Furans		<6.90	<8.31	<6.59	<7.26
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	<0.75	<1.06	<0.83	<0.88
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.22	<1.26	1.19	<1.22
123478-hexachlorodibenzo-p-dioxin	0.10000	0.33	<0.41	<0.33	<0.36
123678-hexachlorodibenzo-p-dioxin	0.10000	0.85	<0.92	0.81	<0.86
123789-hexachlorodibenzo-p-dioxin	0.10000	0.35	<0.38	<0.38	<0.37
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.52	0.60	0.51	0.54
Octachlorodibenzo-p-dioxin	0.00030	0.017	0.038	0.019	0.025
2378-tetrachlorodibenzofuran	0.10000	<0.11	<0.23	<0.077	<0.14
12378-pentachlorodibenzofuran	0.03000	0.037	<0.046	0.053	<0.045
23478-pentachlorodibenzofuran	0.30000	<0.93	1.34	<0.81	<1.02
123478-hexachlorodibenzofuran	0.10000	<0.37	0.45	<0.37	<0.39
123678-hexachlorodibenzofuran	0.10000	0.49	<0.36	<0.35	<0.40
234678-hexachlorodibenzofuran	0.10000	0.82	0.80	0.71	0.78
123789-hexachlorodibenzofuran	0.10000	0.20	<0.22	<0.44	<0.29
1234678-heptachlorodibenzofuran	0.01000	0.21	0.28	0.20	0.23
1234789-heptachlorodibenzofuran	0.01000	<0.033	<0.031	0.029	<0.031
Octachlorodibenzofuran	0.00030	<0.0024	<0.0047	<0.0028	<0.0033
PCB 81	0.00030	<0.0015	<0.0013	<0.0014	<0.0014
PCB 77	0.00010	0.0013	0.0041	0.0037	0.0030
PCB 123	0.00003	0.00014	0.00046	0.00044	0.00035
PCB 118	0.00003	0.0098	0.025	0.029	0.021
PCB 114	0.00003	0.00022	0.00064	0.00083	0.00056
PCB 105	0.00003	0.0025	0.0073	0.013	0.0076
PCB 126	0.10000	<0.27	<0.47	<0.75	<0.50
PCB 167	0.00003	0.00015	<0.00027	0.0010	<0.00048
PCB 156/157	0.00003	0.00044	0.00076	0.0036	0.0016
PCB 169	0.03000	<0.046	<0.092	<0.10	<0.080
PCB 189	0.00003	0.00010	0.000081	0.00024	0.00014
Total Dioxins & Furans Only		<7.24	<8.41	<7.09	<7.58
Total PCBs Only		<0.34	<0.60	<0.91	<0.61
Total Dioxins & Furans and PCBs		<7.57	<9.01	<8.00	<8.20

* 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	<0.013	<0.019	<0.014	<0.016
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.022	<0.023	0.020	<0.022
123478-hexachlorodibenzo-p-dioxin	0.10000	0.0060	<0.0076	<0.0056	<0.0064
123678-hexachlorodibenzo-p-dioxin	0.10000	0.015	<0.017	0.014	<0.015
123789-hexachlorodibenzo-p-dioxin	0.10000	0.0063	<0.0069	<0.0066	<0.0066
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.0093	0.011	0.0087	0.0097
Octachlorodibenzo-p-dioxin	0.00030	0.00031	0.00071	0.00032	0.00045
2378-tetrachlorodibenzofuran	0.10000	<0.0019	<0.0043	<0.0013	<0.0025
12378-pentachlorodibenzofuran	0.03000	0.00066	<0.00085	0.00091	<0.00081
23478-pentachlorodibenzofuran	0.30000	<0.017	0.025	<0.014	<0.018
123478-hexachlorodibenzofuran	0.10000	<0.0066	0.0083	<0.0063	<0.0071
123678-hexachlorodibenzofuran	0.10000	0.0088	<0.0066	<0.0059	<0.0071
234678-hexachlorodibenzofuran	0.10000	0.015	0.015	0.012	0.014
123789-hexachlorodibenzofuran	0.10000	0.0037	<0.0040	<0.0076	<0.0051
1234678-heptachlorodibenzofuran	0.01000	0.0038	0.0051	0.0034	0.0041
1234789-heptachlorodibenzofuran	0.01000	<0.00059	<0.00056	0.00050	<0.00055
Octachlorodibenzofuran	0.00030	<0.000042	<0.000087	<0.000049	<0.000059
PCB 81	0.00030	<0.000027	<0.000024	<0.000025	<0.000025
PCB 77	0.00010	0.000023	0.000075	0.000064	0.000054
PCB 123	0.00003	0.0000025	0.0000084	0.0000076	0.0000062
PCB 118	0.00003	0.00018	0.00047	0.00050	0.00038
PCB 114	0.00003	0.0000040	0.000012	0.000014	0.000010
PCB 105	0.00003	0.000045	0.00013	0.00022	0.00013
PCB 126	0.10000	<0.0049	<0.0086	<0.013	<0.0088
PCB 167	0.00003	0.0000027	<0.0000050	0.000018	<0.0000084
PCB 156/157	0.00003	0.0000078	0.000014	0.000061	0.000028
PCB 169	0.03000	<0.00082	<0.0017	<0.0018	<0.0014
PCB 189	0.00003	0.0000019	0.0000015	0.0000041	0.0000025
Total Dioxins & Furans Only		<0.13	<0.15	<0.12	<0.14
Total PCBs Only		<0.0060	<0.011	<0.016	<0.011
Total Dioxins & Furans and PCBs		<0.14	<0.17	<0.14	<0.15

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

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

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

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.61	<1.04	<0.82	<0.88	<0.016
12378-pentachlorodibenzo-p-dioxin	<0.85	<1.45	<1.15	<1.22	<0.022
123478-hexachlorodibenzo-p-dioxin	<0.25	<0.42	<0.34	<0.36	<0.0064
123678-hexachlorodibenzo-p-dioxin	<0.60	<1.02	<0.80	<0.86	<0.015
123789-hexachlorodibenzo-p-dioxin	<0.26	<0.44	<0.35	<0.37	<0.0066
1234678-heptachlorodibenzo-p-dioxin	0.38	0.64	0.51	0.54	0.0097
Octachlorodibenzo-p-dioxin	0.017	0.029	0.023	0.025	0.00045
2378-tetrachlorodibenzofuran	<0.096	<0.17	<0.13	<0.14	<0.0025
12378-pentachlorodibenzofuran	<0.031	<0.054	<0.042	<0.045	<0.00081
23478-pentachlorodibenzofuran	<0.71	<1.22	<0.96	<1.02	<0.018
123478-hexachlorodibenzofuran	<0.27	<0.47	<0.37	<0.39	<0.0071
123678-hexachlorodibenzofuran	<0.28	<0.47	<0.37	<0.40	<0.0071
234678-hexachlorodibenzofuran	0.54	0.92	0.73	0.78	0.014
123789-hexachlorodibenzofuran	<0.20	<0.34	<0.27	<0.29	<0.0051
1234678-heptachlorodibenzofuran	0.16	0.27	0.22	0.23	0.0041
1234789-heptachlorodibenzofuran	<0.021	<0.036	<0.029	<0.031	<0.00055
Octachlorodibenzofuran	<0.0023	<0.0039	<0.0031	<0.0033	<0.000059
PCB 81	<0.00098	<0.0017	<0.0013	<0.0014	<0.000025
PCB 77	0.0021	0.0036	0.0028	0.0030	0.000054
PCB 123	0.00024	0.00041	0.00032	0.00035	0.0000062
PCB 118	0.015	0.025	0.020	0.021	0.00038
PCB 114	0.00039	0.00067	0.00053	0.00056	0.000010
PCB 105	0.0053	0.0089	0.0071	0.0076	0.00013
PCB 126	<0.35	<0.59	<0.46	<0.50	<0.0088
PCB 167	<0.00034	<0.00057	<0.00045	<0.00048	<0.0000084
PCB 156/157	0.0011	0.0019	0.0015	0.0016	0.000028
PCB 169	<0.056	<0.095	<0.075	<0.080	<0.0014
PCB 189	0.000098	0.00017	0.00013	0.00014	0.0000025
Total Dioxins & Furans Only	<5.28	<8.99	<7.11	<7.58	<0.14
Total PCBs Only	<0.43	<0.73	<0.57	<0.61	<0.011
Total Dioxins & Furans and PCBs	<5.71	<9.72	<7.68	<8.20	<0.15

* At 25°C and 1 atmosphere

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

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

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

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.31	0.52	0.41	0.44	0.0079
12378-pentachlorodibenzo-p-dioxin	0.56	0.96	0.76	0.81	0.014
123478-hexachlorodibenzo-p-dioxin	0.16	0.28	0.22	0.234	0.0042
123678-hexachlorodibenzo-p-dioxin	0.49	0.84	0.66	0.71	0.013
123789-hexachlorodibenzo-p-dioxin	0.17	0.29	0.23	0.24	0.0044
1234678-heptachlorodibenzo-p-dioxin	0.38	0.64	0.51	0.54	0.0097
Octachlorodibenzo-p-dioxin	0.017	0.029	0.023	0.025	0.00045
2378-tetrachlorodibenzofuran	0.048	0.083	0.065	0.069	0.0013
12378-pentachlorodibenzofuran	0.026	0.044	0.035	0.037	0.00066
23478-pentachlorodibenzofuran	0.51	0.87	0.69	0.74	0.013
123478-hexachlorodibenzofuran	0.19	0.32	0.26	0.27	0.0049
123678-hexachlorodibenzofuran	0.19	0.33	0.26	0.28	0.0050
234678-hexachlorodibenzofuran	0.54	0.92	0.73	0.78	0.014
123789-hexachlorodibenzofuran	0.12	0.21	0.17	0.18	0.0032
1234678-heptachlorodibenzofuran	0.16	0.27	0.22	0.23	0.0041
1234789-heptachlorodibenzofuran	0.014	0.024	0.019	0.020	0.00036
Octachlorodibenzofuran	0.0012	0.0020	0.0016	0.0017	0.000030
PCB 81	0.00049	0.00083	0.00066	0.00070	0.000013
PCB 77	0.0021	0.0036	0.0028	0.0030	0.000054
PCB 123	0.00024	0.00041	0.00032	0.00035	0.0000062
PCB 118	0.015	0.025	0.020	0.021	0.00038
PCB 114	0.00039	0.00067	0.00053	0.00056	0.000010
PCB 105	0.0053	0.0089	0.0071	0.0076	0.00013
PCB 126	0.17	0.29	0.23	0.25	0.0044
PCB 167	0.00030	0.00051	0.00040	0.00044	0.0000076
PCB 156/157	0.0011	0.0019	0.0015	0.0016	0.000028
PCB 169	0.028	0.048	0.038	0.040	0.00071
PCB 189	0.000098	0.00017	0.00013	0.00014	0.0000025
Total Dioxins & Furans Only	3.90	6.64	5.25	5.60	0.10
Total PCBs Only	0.23	0.38	0.30	0.32	0.0058
Total Dioxins & Furans and PCBs	4.12	7.02	5.55	5.92	0.11

* At 25°C and 1 atmosphere

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

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

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

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

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	1950	248	425	336	356	6.42
1,3-Dichlorobenzene	188	23.9	41.0	32.4	34.4	0.62
1,4-Dichlorobenzene	133	16.9	29.0	22.9	24.3	0.44
1,2-Dichlorobenzene	141	17.9	30.7	24.3	25.8	0.46
Total Dichlorobenzene	462	58.7	101	79.6	84.4	1.52
1,3,5-trichlorobenzene	23.9	3.04	5.21	4.12	4.37	0.079
1,2,4-trichlorobenzene	42.9	5.45	9.35	7.39	7.84	0.14
1,2,3-trichlorobenzene	20.5	2.60	4.47	3.53	3.75	0.067
Total Trichlorobenzene	87.3	11.1	19.0	15.0	16.0	0.29
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	17.8	2.26	3.88	3.07	3.25	0.059
1,2,3,4-tetrachlorobenzene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Total Tetrachlorobenzene	<29.8	<3.79	<6.49	<5.13	<5.45	<0.098
Pentachlorobenzene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Hexachlorobenzene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Total Chlorobenzenes	<2553	<324	<556	<440	<467	<8.40

Dry Gas Volume Sampled (Rm³*) :	4.590
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

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

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

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	1970	246	423	334	354	6.51
1,3-Dichlorobenzene	198	24.7	42.5	33.5	35.5	0.65
1,4-Dichlorobenzene	128	16.0	27.5	21.7	23.0	0.42
1,2-Dichlorobenzene	148	18.4	31.7	25.1	26.6	0.49
Total Dichlorobenzene	474	59.1	102	80.3	85.1	1.57
1,3,5-trichlorobenzene	19.3	2.41	4.14	3.27	3.46	0.064
1,2,4-trichlorobenzene	45.1	5.62	9.67	7.64	8.10	0.15
1,2,3-trichlorobenzene	20.2	2.52	4.33	3.42	3.63	0.067
Total Trichlorobenzene	84.6	10.5	18.1	14.3	15.2	0.28
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.50	<2.57	<2.03	<2.15	<0.040
1,2,3,4-tetrachlorobenzene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Total Tetrachlorobenzene	<24.0	<2.99	<5.15	<4.07	<4.31	<0.079
Pentachlorobenzene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Hexachlorobenzene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Total Chlorobenzenes	<2577	<321	<553	<436	<463	<8.51

Dry Gas Volume Sampled (Rm³*) :	4.662
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	18.4

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	1430	192	321	254	275	4.73
1,3-Dichlorobenzene	144	19.3	32.4	25.6	27.7	0.48
1,4-Dichlorobenzene	91.8	12.3	20.6	16.3	17.6	0.30
1,2-Dichlorobenzene	109	14.6	24.5	19.4	20.9	0.36
Total Dichlorobenzene	345	46.3	77.5	61.3	66.3	1.14
1,3,5-trichlorobenzene	18.1	2.43	4.07	3.22	3.48	0.060
1,2,4-trichlorobenzene	35.0	4.70	7.87	6.22	6.72	0.12
1,2,3-trichlorobenzene	22.0	2.96	4.95	3.91	4.23	0.073
Total Trichlorobenzene	75.1	10.1	16.9	13.3	14.4	0.25
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.61	<2.70	<2.13	<2.31	<0.040
1,2,3,4-tetrachlorobenzene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Total Tetrachlorobenzene	<24.0	<3.22	<5.40	<4.26	<4.61	<0.079
Pentachlorobenzene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Hexachlorobenzene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Total Chlorobenzenes	<1898	<255	<427	<337	<365	<6.27

Dry Gas Volume Sampled (Rm³*) :	4.448
Actual Flowrate (m³/s) :	24.6
Dry Reference Flowrate (Rm³/s*) :	14.7
Dry Adjusted Flowrate (Rm³/s**) :	18.6
Wet Reference Flowrate (Rm³/s*) :	17.2

* 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. 2 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Monochlorobenzene	248	246	192	228	13.8
1,3-Dichlorobenzene	23.9	24.7	19.3	22.6	12.7
1,4-Dichlorobenzene	16.9	16.0	12.3	15.1	16.0
1,2-Dichlorobenzene	17.9	18.4	14.6	17.0	12.1
Total Dichlorobenzene	58.7	59.1	46.3	54.7	13.3
1,3,5-trichlorobenzene	3.04	2.41	2.43	2.62	13.6
1,2,4-trichlorobenzene	5.45	5.62	4.70	5.26	9.3
1,2,3-trichlorobenzene	2.60	2.52	2.96	2.69	8.6
Total Trichlorobenzene	11.1	10.5	10.1	10.6	4.7
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.26	<1.50	<1.61	<1.79	23.0
1,2,3,4-tetrachlorobenzene	<1.52	<1.50	<1.61	<1.54	3.9
Total Tetrachlorobenzene	<3.79	<2.99	<3.22	<3.33	12.2
Pentachlorobenzene	<1.52	<1.50	<1.61	<1.54	3.9
Hexachlorobenzene	<1.52	<1.50	<1.61	<1.54	3.9
Total Chlorobenzenes	<324	<321	<255	<300	13.0

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

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	425	423	321	390	15.1
1,3-Dichlorobenzene	41.0	42.5	32.4	38.6	14.1
1,4-Dichlorobenzene	29.0	27.5	20.6	25.7	17.3
1,2-Dichlorobenzene	30.7	31.7	24.5	29.0	13.5
Total Dichlorobenzene	101	102	77.5	93.3	14.6
1,3,5-trichlorobenzene	5.21	4.14	4.07	4.47	14.3
1,2,4-trichlorobenzene	9.35	9.67	7.87	8.96	10.7
1,2,3-trichlorobenzene	4.47	4.33	4.95	4.58	7.0
Total Trichlorobenzene	19.0	18.1	16.9	18.0	6.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.88	<2.57	<2.70	<3.05	23.6
1,2,3,4-tetrachlorobenzene	<2.61	<2.57	<2.70	<2.63	2.4
Total Tetrachlorobenzene	<6.49	<5.15	<5.40	<5.68	12.6
Pentachlorobenzene	<2.61	<2.57	<2.70	<2.63	2.4
Hexachlorobenzene	<2.61	<2.57	<2.70	<2.63	2.4
Total Chlorobenzenes	<556	<553	<427	<512	14.4

* At 25°C and 1 atmosphere

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

Specific Isomer	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Monochlorobenzene	336	334	254	308	15.1
1,3-Dichlorobenzene	32.4	33.5	25.6	30.5	14.1
1,4-Dichlorobenzene	22.9	21.7	16.3	20.3	17.3
1,2-Dichlorobenzene	24.3	25.1	19.4	22.9	13.5
Total Dichlorobenzene	79.6	80.3	61.3	73.7	14.6
1,3,5-trichlorobenzene	4.12	3.27	3.22	3.53	14.3
1,2,4-trichlorobenzene	7.39	7.64	6.22	7.08	10.7
1,2,3-trichlorobenzene	3.53	3.42	3.91	3.62	7.1
Total Trichlorobenzene	15.0	14.3	13.3	14.2	6.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.07	<2.03	<2.13	<2.41	23.6
1,2,3,4-tetrachlorobenzene	<2.07	<2.03	<2.13	<2.08	2.4
Total Tetrachlorobenzene	<5.13	<4.07	<4.26	<4.49	12.6
Pentachlorobenzene	<2.07	<2.03	<2.13	<2.08	2.4
Hexachlorobenzene	<2.07	<2.03	<2.13	<2.08	2.4
Total Chlorobenzenes	<440	<436	<337	<404	14.4

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

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

Specific Isomer	Wet Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	356	354	275	328	14.1
1,3-Dichlorobenzene	34.4	35.5	27.7	32.5	13.1
1,4-Dichlorobenzene	24.3	23.0	17.6	21.6	16.3
1,2-Dichlorobenzene	25.8	26.6	20.9	24.4	12.5
Total Dichlorobenzene	84.4	85.1	66.3	78.6	13.6
1,3,5-trichlorobenzene	4.37	3.46	3.48	3.77	13.7
1,2,4-trichlorobenzene	7.84	8.10	6.72	7.55	9.7
1,2,3-trichlorobenzene	3.75	3.63	4.23	3.87	8.2
Total Trichlorobenzene	16.0	15.2	14.4	15.2	5.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.25	<2.15	<2.31	<2.57	23.2
1,2,3,4-tetrachlorobenzene	<2.19	<2.15	<2.31	<2.22	3.5
Total Tetrachlorobenzene	<5.45	<4.31	<4.61	<4.79	12.3
Pentachlorobenzene	<2.19	<2.15	<2.31	<2.22	3.5
Hexachlorobenzene	<2.19	<2.15	<2.31	<2.22	3.5
Total Chlorobenzenes	<467	<463	<365	<431	13.4

* At 25°C and 1 atmosphere

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

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Monochlorobenzene	6.42	6.51	4.73	5.88	17.0
1,3-Dichlorobenzene	0.62	0.65	0.48	0.58	16.2
1,4-Dichlorobenzene	0.44	0.42	0.30	0.39	19.0
1,2-Dichlorobenzene	0.46	0.49	0.36	0.44	15.6
Total Dichlorobenzene	1.52	1.57	1.14	1.41	16.6
1,3,5-trichlorobenzene	0.079	0.064	0.060	0.067	14.7
1,2,4-trichlorobenzene	0.14	0.15	0.12	0.14	12.9
1,2,3-trichlorobenzene	0.067	0.067	0.073	0.069	4.7
Total Trichlorobenzene	0.29	0.28	0.25	0.27	7.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.059	<0.040	<0.040	<0.046	23.8
1,2,3,4-tetrachlorobenzene	<0.039	<0.040	<0.040	<0.040	0.3
Total Tetrachlorobenzene	<0.098	<0.079	<0.079	<0.086	12.6
Pentachlorobenzene	<0.039	<0.040	<0.040	<0.040	0.3
Hexachlorobenzene	<0.039	<0.040	<0.040	<0.040	0.3
Total Chlorobenzenes	<8.40	<8.51	<6.27	<7.73	16.3

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	228	390	308	328	5.88
1,3-Dichlorobenzene	22.6	38.6	30.5	32.5	0.58
1,4-Dichlorobenzene	15.1	25.7	20.3	21.6	0.39
1,2-Dichlorobenzene	17.0	29.0	22.9	24.4	0.44
Total Dichlorobenzene	54.7	93.3	73.7	78.6	1.41
1,3,5-trichlorobenzene	2.62	4.47	3.53	3.77	0.067
1,2,4-trichlorobenzene	5.26	8.96	7.08	7.55	0.14
1,2,3-trichlorobenzene	2.69	4.58	3.62	3.87	0.069
Total Trichlorobenzene	10.6	18.0	14.2	15.2	0.27
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.79	<3.05	<2.41	<2.57	<0.046
1,2,3,4-tetrachlorobenzene	<1.54	<2.63	<2.08	<2.22	<0.040
Total Tetrachlorobenzene	<3.33	<5.68	<4.49	<4.79	<0.086
Pentachlorobenzene	<1.54	<2.63	<2.08	<2.22	<0.040
Hexachlorobenzene	<1.54	<2.63	<2.08	<2.22	<0.040
Total Chlorobenzenes	<300	<512	<404	<431	<7.73

* At 25°C and 1 atmosphere

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

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorobenzene Blank Analyses

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

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

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

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
3-monochlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
4-monochlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Total Monochlorophenols	<180	<22.9	<39.2	<31.0	<32.9	<0.59
2,6-dichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,4 & 2,5-dichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
3,5-dichlorophenol	238	30.2	51.9	41.0	43.5	0.78
2,3-dichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
3,4-dichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Total Dichlorophenols	<478	<60.7	<104	<82.3	<87.4	<1.57
2,4,6-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,3,6-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,3,5-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,4,5-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,3,4-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
3,4,5-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Total Trichlorophenols	<360	<45.7	<78.4	<62.0	<65.8	<1.18
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,3,4,5-tetrachlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Total Tetrachlorophenols	<120	<15.2	<26.1	<20.7	<21.9	<0.39
Pentachlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Total Chlorophenols	<1198	<152	<261	<206	<219	<3.94

Dry Gas Volume Sampled (Rm³*) :	4.590
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
3-monochlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
4-monochlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Total Monochlorophenols	<180	<22.4	<38.6	<30.5	<32.3	<0.59
2,6-dichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,4 & 2,5-dichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
3,5-dichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,3-dichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
3,4-dichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Total Dichlorophenols	<300	<37.4	<64.4	<50.8	<53.9	<0.99
2,4,6-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,3,6-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,3,5-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,4,5-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,3,4-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
3,4,5-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Total Trichlorophenols	<360	<44.9	<77.2	<61.0	<64.6	<1.19
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,3,4,5-tetrachlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Total Tetrachlorophenols	<120	<15.0	<25.7	<20.3	<21.5	<0.40
Pentachlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Total Chlorophenols	<1020	<127	<219	<173	<183	<3.37

Dry Gas Volume Sampled (Rm³*) :	4.662
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	18.4

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

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

Specific Isomer	Total Collected ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
3-monochlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
4-monochlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Total Monochlorophenols	<180	<24.2	<40.5	<32.0	<34.6	<0.59
2,6-dichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,4 & 2,5-dichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
3,5-dichlorophenol	248	33.3	55.8	44.1	47.7	0.82
2,3-dichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
3,4-dichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Total Dichlorophenols	<488	<65.6	<110	<86.7	<93.8	<1.61
2,4,6-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,3,6-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,3,5-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,4,5-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,3,4-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
3,4,5-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Total Trichlorophenols	<360	<48.4	<80.9	<64.0	<69.2	<1.19
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,3,4,5-tetrachlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Total Tetrachlorophenols	<120	<16.1	<27.0	<21.3	<23.1	<0.40
Pentachlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Total Chlorophenols	<1208	<162	<272	<215	<232	<3.99

Dry Gas Volume Sampled (Rm^3*) :	4.448
Actual Flowrate (m^3/s) :	24.6
Dry Reference Flowrate (Rm^3/s*) :	14.7
Dry Adjusted Flowrate (Rm^3/s**) :	18.6
Wet Reference Flowrate (Rm^3/s*) :	17.2

* 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. 2 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
3-monochlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
4-monochlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
Total Monochlorophenols	<22.9	<22.4	<24.2	<23.2	3.9
2,6-dichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
2,4 & 2,5-dichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
3,5-dichlorophenol	30.2	<7.48	33.3	<23.7	59.6
2,3-dichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
3,4-dichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
Total Dichlorophenols	<60.7	<37.4	<65.6	<54.6	27.6
2,4,6-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
2,3,6-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
2,3,5-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
2,4,5-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
2,3,4-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
3,4,5-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
Total Trichlorophenols	<45.7	<44.9	<48.4	<46.3	3.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
2,3,4,5-tetrachlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
Total Tetrachlorophenols	<15.2	<15.0	<16.1	<15.4	3.9
Pentachlorophenol	<7.62	<7.48	<8.06	<7.72	3.9
Total Chlorophenols	<152	<127	<162	<147	12.3

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

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
3-monochlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
4-monochlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
Total Monochlorophenols	<39.2	<38.6	<40.5	<39.4	2.4
2,6-dichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,4 & 2,5-dichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
3,5-dichlorophenol	51.9	<12.9	55.8	<40.2	59.0
2,3-dichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
3,4-dichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
Total Dichlorophenols	<104	<64.4	<110	<92.7	26.7
2,4,6-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,3,6-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,3,5-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,4,5-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,3,4-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
3,4,5-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
Total Trichlorophenols	<78.4	<77.2	<80.9	<78.9	2.4
2,3,5,6/2,3,4,6-tetrachlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,3,4,5-tetrachlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
Total Tetrachlorophenols	<26.1	<25.7	<27.0	<26.3	2.4
Pentachlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
Total Chlorophenols	<261	<219	<272	<250	11.2

* At 25°C and 1 atmosphere

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

Specific Isomer	Dry Adjusted Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	%
2-monochlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
3-monochlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
4-monochlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
Total Monochlorophenols	<31.0	<30.5	<32.0	<31.2	2.4
2,6-dichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,4 & 2,5-dichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
3,5-dichlorophenol	41.0	<10.2	44.1	<31.7	59.1
2,3-dichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
3,4-dichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
Total Dichlorophenols	<82.3	<50.8	<86.7	<73.3	26.7
2,4,6-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,3,6-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,3,5-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,4,5-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,3,4-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
3,4,5-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
Total Trichlorophenols	<62.0	<61.0	<64.0	<62.3	2.4
2,3,5,6/2,3,4,6-tetrachlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,3,4,5-tetrachlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
Total Tetrachlorophenols	<20.7	<20.3	<21.3	<20.8	2.4
Pentachlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
Total Chlorophenols	<206	<173	<215	<198	11.2

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

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

Specific Isomer	Wet Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
3-monochlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
4-monochlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
Total Monochlorophenols	<32.9	<32.3	<34.6	<33.3	3.5
2,6-dichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,4 & 2,5-dichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
3,5-dichlorophenol	43.5	<10.8	47.7	<34.0	59.5
2,3-dichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
3,4-dichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
Total Dichlorophenols	<87.4	<53.9	<93.8	<78.3	27.4
2,4,6-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,3,6-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,3,5-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,4,5-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,3,4-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
3,4,5-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
Total Trichlorophenols	<65.8	<64.6	<69.2	<66.5	3.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,3,4,5-tetrachlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
Total Tetrachlorophenols	<21.9	<21.5	<23.1	<22.2	3.5
Pentachlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
Total Chlorophenols	<219	<183	<232	<211	12.0

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

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
3-monochlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
4-monochlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
Total Monochlorophenols	<0.59	<0.59	<0.59	<0.59	0.3
2,6-dichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,4 & 2,5-dichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
3,5-dichlorophenol	0.78	<0.20	0.82	<0.60	58.1
2,3-dichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
3,4-dichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
Total Dichlorophenols	<1.57	<0.99	<1.61	<1.39	25.0
2,4,6-trichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,3,6-trichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,3,5-trichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,4,5-trichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,3,4-trichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
3,4,5-trichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
Total Trichlorophenols	<1.18	<1.19	<1.19	<1.19	0.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,3,4,5-tetrachlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
Total Tetrachlorophenols	<0.39	<0.40	<0.40	<0.40	0.3
Pentachlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
Total Chlorophenols	<3.94	<3.37	<3.99	<3.77	9.2

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

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
3-monochlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
4-monochlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
Total Monochlorophenols	<23.2	<39.4	<31.2	<33.3	<0.59
2,6-dichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,4 & 2,5-dichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
3,5-dichlorophenol	<23.7	<40.2	<31.7	<34.0	<0.60
2,3-dichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
3,4-dichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
Total Dichlorophenols	<54.6	<92.7	<73.3	<78.3	<1.39
2,4,6-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,3,6-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,3,5-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,4,5-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,3,4-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
3,4,5-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
Total Trichlorophenols	<46.3	<78.9	<62.3	<66.5	<1.19
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,3,4,5-tetrachlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
Total Tetrachlorophenols	<15.4	<26.3	<20.8	<22.2	<0.40
Pentachlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
Total Chlorophenols	<147	<250	<198	<211	<3.77

* At 25°C and 1 atmosphere

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

TABLE 70
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Blank Analyses

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

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

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

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Acenaphthylene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Anthracene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Benzo(a)Anthracene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Benzo(b)Fluoranthene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Benzo(k)Fluoranthene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Benzo(a)fluorene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Benzo(b)fluorene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Benzo(g,h,i)Perylene	61.1	7.76	13.3	10.5	11.2	0.20
Benzo(a)Pyrene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Benzo(e)Pyrene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Biphenyl	32.0	4.06	6.97	5.51	5.85	0.11
2-Chloronaphthalene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Chrysene/Triphenylene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Coronene	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Dibenzo(a,e)pyrene	<60	<7.62	<13.1	<10.3	<11.0	<0.20
9,10-dimethylanthracene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Fluoranthene	19.4	2.46	4.23	3.34	3.55	0.064
Fluorene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Indeno(1,2,3-cd)Pyrene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
2-methylanthracene	21.6	2.74	4.71	3.72	3.95	0.071
3-Methylcholanthrene	<60	<7.62	<13.1	<10.3	<11.0	<0.20
1-Methylnaphthalene	22.3	2.83	4.86	3.84	4.08	0.073
2-Methylnaphthalene	39.1	4.97	8.52	6.73	7.15	0.13
1-Methylphenanthrene	36.4	4.62	7.93	6.27	6.65	0.12
9-Methylphenanthrene	13.1	1.66	2.85	2.26	2.39	0.043
Naphthalene	290	36.8	63.2	49.9	53.0	0.95
Perylene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Phenanthrene	78.5	9.97	17.1	13.5	14.3	0.26
Picene	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Pyrene	20.3	2.58	4.42	3.50	3.71	0.067
Tetralin	204	25.9	44.4	35.1	37.3	0.67
m-terphenyl	<12	<1.52	<2.61	<2.07	<2.19	<0.039
o-Terphenyl	<12	<1.52	<2.61	<2.07	<2.19	<0.039
p-terphenyl	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Total	<1330	<169	<290	<229	<243	<4.37

Dry Gas Volume Sampled (Rm³*) :	4.590
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

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

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

Compound	Total Collected ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
Acenaphthene	44.7	5.57	9.59	7.57	8.02	0.15
Acenaphthylene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Anthracene	12.4	1.55	2.66	2.10	2.23	0.041
Benzo(a)Anthracene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(b)Fluoranthene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(k)Fluoranthene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(a)fluorene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(b)fluorene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(g,h,i)Perylene	47.5	5.92	10.2	8.05	8.53	0.16
Benzo(a)Pyrene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(e)Pyrene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Biphenyl	57.4	7.16	12.3	9.72	10.3	0.19
2-Chloronaphthalene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Chrysene/Triphenylene	12.1	1.51	2.60	2.05	2.17	0.040
Coronene	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Dibenzo(a,e)pyrene	<60	<7.48	<12.9	<10.2	<10.8	<0.20
9,10-dimethylanthracene	21.1	2.63	4.53	3.57	3.79	0.070
7,12-Dimethylbenzo(a)anthracene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Fluoranthene	64.0	7.98	13.7	10.8	11.5	0.21
Fluorene	26.5	3.30	5.68	4.49	4.76	0.088
Indeno(1,2,3-cd)Pyrene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
2-methylanthracene	66.5	8.29	14.3	11.3	11.9	0.22
3-Methylcholanthrene	<60	<7.48	<12.9	<10.2	<10.8	<0.20
1-Methylnaphthalene	25.4	3.17	5.45	4.30	4.56	0.084
2-Methylnaphthalene	54.1	6.74	11.6	9.16	9.71	0.18
1-Methylphenanthrene	42.2	5.26	9.05	7.15	7.58	0.14
9-Methylphenanthrene	67.4	8.40	14.5	11.4	12.1	0.22
Naphthalene	277	34.5	59.4	46.9	49.7	0.92
Perylene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Phenanthrene	230	28.7	49.3	39.0	41.3	0.76
Picene	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Pyrene	66.2	8.25	14.2	11.2	11.9	0.22
Tetralin	278	34.7	59.6	47.1	49.9	0.92
m-terphenyl	25.0	3.12	5.36	4.24	4.49	0.083
o-Terphenyl	<12	<1.50	<2.57	<2.03	<2.15	<0.040
p-terphenyl	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Total	<1838	<229	<394	<311	<330	<6.07

Dry Gas Volume Sampled (Rm^3*) :	4.662
Actual Flowrate (m^3/s) :	26.5
Dry Reference Flowrate (Rm^3/s*) :	15.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	18.4

* At 25°C and 1 atmosphere

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

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

TABLE 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	<1.61	<2.70	<2.13	<2.31	<0.040
Acenaphthylene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Anthracene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Benzo(a)Anthracene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Benzo(b)Fluoranthene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Benzo(k)Fluoranthene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Benzo(a)fluorene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Benzo(b)fluorene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Benzo(g,h,i)Perylene	19.9	2.67	4.47	3.54	3.82	0.066
Benzo(a)Pyrene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Benzo(e)Pyrene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Biphenyl	29.6	3.98	6.65	5.26	5.69	0.098
2-Chloronaphthalene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Chrysene/Triphenylene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Coronene	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Dibenzo(a,e)pyrene	<60	<8.06	<13.5	<10.7	<11.5	<0.20
9,10-dimethylanthracene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
7,12-Dimethylbenzo(a)anthracene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Fluoranthene	27.2	3.65	6.12	4.83	5.23	0.090
Fluorene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Indeno(1,2,3-cd)Pyrene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
2-methylanthracene	21.6	2.90	4.86	3.84	4.15	0.071
3-Methylcholanthrene	<60	<8.06	<13.5	<10.7	<11.5	<0.20
1-Methylnaphthalene	22.0	2.96	4.95	3.91	4.23	0.073
2-Methylnaphthalene	32.5	4.37	7.31	5.77	6.24	0.11
1-Methylphenanthrene	21.1	2.83	4.74	3.75	4.05	0.070
9-Methylphenanthrene	14.5	1.95	3.26	2.58	2.79	0.048
Naphthalene	224	30.1	50.4	39.8	43.0	0.74
Perylene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Phenanthrene	66.1	8.88	14.9	11.7	12.7	0.22
Picene	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Pyrene	18.5	2.49	4.16	3.29	3.55	0.061
Tetralin	288	38.7	64.7	51.2	55.3	0.95
m-terphenyl	<12	<1.61	<2.70	<2.13	<2.31	<0.040
o-Terphenyl	<12	<1.61	<2.70	<2.13	<2.31	<0.040
p-terphenyl	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Total	<1277	<172	<287	<227	<245	<4.22

Dry Gas Volume Sampled (Rm³*) :	4.448
Actual Flowrate (m³/s) :	24.6
Dry Reference Flowrate (Rm³/s*) :	14.7
Dry Adjusted Flowrate (Rm³/s**) :	18.6
Wet Reference Flowrate (Rm³/s*) :	17.2

* 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. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Acenaphthene	<1.52	5.57	<1.61	<2.90	79.6
Acenaphthylene	<1.52	<1.50	<1.61	<1.54	3.9
Anthracene	<1.52	1.55	<1.61	<1.56	2.9
Benzo(a)Anthracene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(b)Fluoranthene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(k)Fluoranthene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(a)fluorene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(b)fluorene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(g,h,i)Perylene	7.76	5.92	2.67	5.45	47.2
Benzo(a)Pyrene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(e)Pyrene	<1.52	<1.50	<1.61	<1.54	3.9
Biphenyl	4.06	7.16	3.98	5.07	35.7
2-Chloronaphthalene	<1.52	<1.50	<1.61	<1.54	3.9
Chrysene/Triphenylene	<1.52	1.51	<1.61	<1.55	3.6
Coronene	<7.62	<7.48	<8.06	<7.72	3.9
Dibenzo(a,c/a,h)Anthracene	<1.52	<1.50	<1.61	<1.54	3.9
Dibenzo(a,e)pyrene	<7.62	<7.48	<8.06	<7.72	3.9
9,10-dimethylanthracene	<1.52	2.63	<1.61	<1.92	32.0
7,12-Dimethylbenzo(a)anthracene	<1.52	<1.50	<1.61	<1.54	3.9
Fluoranthene	2.46	7.98	3.65	4.70	61.7
Fluorene	<1.52	3.30	<1.61	<2.15	46.7
Indeno(1,2,3-cd)Pyrene	<1.52	<1.50	<1.61	<1.54	3.9
2-methylanthracene	2.74	8.29	2.90	4.64	68.0
3-Methylcholanthrene	<7.62	<7.48	<8.06	<7.72	3.9
1-Methylnaphthalene	2.83	3.17	2.96	2.98	5.7
2-Methylnaphthalene	4.97	6.74	4.37	5.36	23.1
1-Methylphenanthrene	4.62	5.26	2.83	4.24	29.7
9-Methylphenanthrene	1.66	8.40	1.95	4.00	95.2
Naphthalene	36.8	34.5	30.1	33.8	10.1
Perylene	<1.52	<1.50	<1.61	<1.54	3.9
Phenanthrene	9.97	28.7	8.88	15.8	70.2
Picene	<7.62	<7.48	<8.06	<7.72	3.9
Pyrene	2.58	8.25	2.49	4.44	74.4
Tetralin	25.9	34.7	38.7	33.1	19.7
m-terphenyl	<1.52	3.12	<1.61	<2.08	42.9
o-Terphenyl	<1.52	<1.50	<1.61	<1.54	3.9
p-terphenyl	<1.52	<1.50	<1.61	<1.54	3.9
Total	<169	<229	<172	<190	17.9

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	<2.61	9.59	<2.70	<4.97	80.6
Acenaphthylene	<2.61	<2.57	<2.70	<2.63	2.4
Anthracene	<2.61	2.66	<2.70	<2.66	1.6
Benzo(a)Anthracene	<2.61	<2.57	<2.70	<2.63	2.4
Benzo(b)Fluoranthene	<2.61	<2.57	<2.70	<2.63	2.4
Benzo(k)Fluoranthene	<2.61	<2.57	<2.70	<2.63	2.4
Benzo(a)fluorene	<2.61	<2.57	<2.70	<2.63	2.4
Benzo(b)fluorene	<2.61	<2.57	<2.70	<2.63	2.4
Benzo(g,h,i)Perylene	13.3	10.2	4.47	9.32	48.1
Benzo(a)Pyrene	<2.61	<2.57	<2.70	<2.63	2.4
Benzo(e)Pyrene	<2.61	<2.57	<2.70	<2.63	2.4
Biphenyl	6.97	12.3	6.65	8.65	36.8
2-Chloronaphthalene	<2.61	<2.57	<2.70	<2.63	2.4
Chrysene/Triphenylene	<2.61	2.60	<2.70	<2.64	2.1
Coronene	<13.1	<12.9	<13.5	<13.1	2.4
Dibenzo(a,c/a,h)Anthracene	<2.61	<2.57	<2.70	<2.63	2.4
Dibenzo(a,e)pyrene	<13.1	<12.9	<13.5	<13.1	2.4
9,10-dimethylanthracene	<2.61	4.53	<2.70	<3.28	32.9
7,12-Dimethylbenzo(a)anthracene	<2.61	<2.57	<2.70	<2.63	2.4
Fluoranthene	4.23	13.7	6.12	8.02	62.7
Fluorene	<2.61	5.68	<2.70	<3.67	47.7
Indeno(1,2,3-cd)Pyrene	<2.61	<2.57	<2.70	<2.63	2.4
2-methylanthracene	4.71	14.3	4.86	7.94	68.9
3-Methylcholanthrene	<13.1	<12.9	<13.5	<13.1	2.4
1-Methylnaphthalene	4.86	5.45	4.95	5.08	6.3
2-Methylnaphthalene	8.52	11.6	7.31	9.14	24.2
1-Methylphenanthrene	7.93	9.05	4.74	7.24	30.9
9-Methylphenanthrene	2.85	14.5	3.26	6.86	96.0
Naphthalene	63.2	59.4	50.4	57.7	11.4
Perylene	<2.61	<2.57	<2.70	<2.63	2.4
Phenanthrene	17.1	49.3	14.9	27.1	71.2
Picene	<13.1	<12.9	<13.5	<13.1	2.4
Pyrene	4.42	14.2	4.16	7.59	75.4
Tetralin	44.4	59.6	64.7	56.3	18.8
m-terphenyl	<2.61	5.36	<2.70	<3.56	43.9
o-Terphenyl	<2.61	<2.57	<2.70	<2.63	2.4
p-terphenyl	<2.61	<2.57	<2.70	<2.63	2.4
Total	<290	<394	<287	<324	18.9

* At 25°C and 1 atmosphere

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

Compound	Dry Adjusted Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.07	7.57	<2.13	<3.92	80.5
Acenaphthylene	<2.07	<2.03	<2.13	<2.08	2.4
Anthracene	<2.07	2.10	<2.13	<2.10	1.6
Benzo(a)Anthracene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(b)Fluoranthene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(k)Fluoranthene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(a)fluorene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(b)fluorene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(g,h,i)Perylene	10.5	8.05	3.54	7.37	48.1
Benzo(a)Pyrene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(e)Pyrene	<2.07	<2.03	<2.13	<2.08	2.4
Biphenyl	5.51	9.72	5.26	6.83	36.7
2-Chloronaphthalene	<2.07	<2.03	<2.13	<2.08	2.4
Chrysene/Triphenylene	<2.07	2.05	<2.13	<2.08	2.1
Coronene	<10.3	<10.2	<10.7	<10.4	2.4
Dibenzo(a,c/a,h)Anthracene	<2.07	<2.03	<2.13	<2.08	2.4
Dibenzo(a,e)pyrene	<10.3	<10.2	<10.7	<10.4	2.4
9,10-dimethylanthracene	<2.07	3.57	<2.13	<2.59	32.9
7,12-Dimethylbenzo(a)anthracene	<2.07	<2.03	<2.13	<2.08	2.4
Fluoranthene	3.34	10.8	4.83	6.34	62.6
Fluorene	<2.07	4.49	<2.13	<2.90	47.7
Indeno(1,2,3-cd)Pyrene	<2.07	<2.03	<2.13	<2.08	2.4
2-methylanthracene	3.72	11.3	3.84	6.27	68.9
3-Methylcholanthrene	<10.3	<10.2	<10.7	<10.4	2.4
1-Methylnaphthalene	3.84	4.30	3.91	4.02	6.2
2-Methylnaphthalene	6.73	9.16	5.77	7.22	24.2
1-Methylphenanthrene	6.27	7.15	3.75	5.72	30.8
9-Methylphenanthrene	2.26	11.4	2.58	5.42	96.0
Naphthalene	49.9	46.9	39.8	45.6	11.4
Perylene	<2.07	<2.03	<2.13	<2.08	2.4
Phenanthrene	13.5	39.0	11.7	21.4	71.1
Picene	<10.3	<10.2	<10.7	<10.4	2.4
Pyrene	3.50	11.2	3.29	6.00	75.3
Tetralin	35.1	47.1	51.2	44.5	18.7
m-terphenyl	<2.07	4.24	<2.13	<2.81	43.9
o-Terphenyl	<2.07	<2.03	<2.13	<2.08	2.4
p-terphenyl	<2.07	<2.03	<2.13	<2.08	2.4
Total	<229	<311	<227	<256	18.8

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

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

Compound	Wet Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.19	8.02	<2.31	<4.17	79.9
Acenaphthylene	<2.19	<2.15	<2.31	<2.22	3.5
Anthracene	<2.19	2.23	<2.31	<2.24	2.6
Benzo(a)Anthracene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(b)Fluoranthene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(k)Fluoranthene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(a)fluorene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(b)fluorene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(g,h,i)Perylene	11.2	8.53	3.82	7.84	47.4
Benzo(a)Pyrene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(e)Pyrene	<2.19	<2.15	<2.31	<2.22	3.5
Biphenyl	5.85	10.3	5.69	7.28	36.0
2-Chloronaphthalene	<2.19	<2.15	<2.31	<2.22	3.5
Chrysene/Triphenylene	<2.19	2.17	<2.31	<2.22	3.2
Coronene	<11.0	<10.8	<11.5	<11.1	3.5
Dibenzo(a,c/a,h)Anthracene	<2.19	<2.15	<2.31	<2.22	3.5
Dibenzo(a,e)pyrene	<11.0	<10.8	<11.5	<11.1	3.5
9,10-dimethylanthracene	<2.19	3.79	<2.31	<2.76	32.2
7,12-Dimethylbenzo(a)anthracene	<2.19	<2.15	<2.31	<2.22	3.5
Fluoranthene	3.55	11.5	5.23	6.75	62.0
Fluorene	<2.19	4.76	<2.31	<3.09	47.0
Indeno(1,2,3-cd)Pyrene	<2.19	<2.15	<2.31	<2.22	3.5
2-methylanthracene	3.95	11.9	4.15	6.68	68.2
3-Methylcholanthrene	<11.0	<10.8	<11.5	<11.1	3.5
1-Methylnaphthalene	4.08	4.56	4.23	4.29	5.8
2-Methylnaphthalene	7.15	9.71	6.24	7.70	23.4
1-Methylphenanthrene	6.65	7.58	4.05	6.09	30.0
9-Methylphenanthrene	2.39	12.1	2.79	5.76	95.4
Naphthalene	53.0	49.7	43.0	48.6	10.4
Perylene	<2.19	<2.15	<2.31	<2.22	3.5
Phenanthrene	14.3	41.3	12.7	22.8	70.5
Picene	<11.0	<10.8	<11.5	<11.1	3.5
Pyrene	3.71	11.9	3.55	6.38	74.7
Tetralin	37.3	49.9	55.3	47.5	19.5
m-terphenyl	<2.19	4.49	<2.31	<3.00	43.2
o-Terphenyl	<2.19	<2.15	<2.31	<2.22	3.5
p-terphenyl	<2.19	<2.15	<2.31	<2.22	3.5
Total	<243	<330	<245	<273	18.1

* At 25°C and 1 atmosphere

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

Compound	Emission Rate				Coefficient
	Test No. 1 μg/s	Test No. 2 μg/s	Test No. 3 μg/s	Average μg/s	of Variation %
Acenaphthene	<0.039	0.15	<0.040	<0.076	82.5
Acenaphthylene	<0.039	<0.040	<0.040	<0.040	0.3
Anthracene	<0.039	0.041	<0.040	<0.040	2.0
Benzo(a)Anthracene	<0.039	<0.040	<0.040	<0.040	0.3
Benzo(b)Fluoranthene	<0.039	<0.040	<0.040	<0.040	0.3
Benzo(k)Fluoranthene	<0.039	<0.040	<0.040	<0.040	0.3
Benzo(a)fluorene	<0.039	<0.040	<0.040	<0.040	0.3
Benzo(b)fluorene	<0.039	<0.040	<0.040	<0.040	0.3
Benzo(g,h,i)Perylene	0.20	0.16	0.066	0.14	48.8
Benzo(a)Pyrene	<0.039	<0.040	<0.040	<0.040	0.3
Benzo(e)Pyrene	<0.039	<0.040	<0.040	<0.040	0.3
Biphenyl	0.11	0.19	0.098	0.13	38.9
2-Chloronaphthalene	<0.039	<0.040	<0.040	<0.040	0.3
Chrysene/Triphenylene	<0.039	0.040	<0.040	<0.040	0.6
Coronene	<0.20	<0.20	<0.20	<0.20	0.3
Dibenzo(a,c/a,h)Anthracene	<0.039	<0.040	<0.040	<0.040	0.3
Dibenzo(a,e)pyrene	<0.20	<0.20	<0.20	<0.20	0.3
9,10-dimethylanthracene	<0.039	0.070	<0.040	<0.050	35.1
7,12-Dimethylbenzo(a)anthracene	<0.039	<0.040	<0.040	<0.040	0.3
Fluoranthene	0.064	0.21	0.090	0.12	64.7
Fluorene	<0.039	0.088	<0.040	<0.056	49.9
Indeno(1,2,3-cd)Pyrene	<0.039	<0.040	<0.040	<0.040	0.3
2-methylanthracene	0.071	0.22	0.071	0.12	71.0
3-Methylcholanthrene	<0.20	<0.20	<0.20	<0.20	0.3
1-Methylnaphthalene	0.073	0.084	0.073	0.077	8.2
2-Methylnaphthalene	0.13	0.18	0.11	0.14	26.5
1-Methylphenanthrene	0.12	0.14	0.070	0.11	32.8
9-Methylphenanthrene	0.043	0.22	0.048	0.10	97.8
Naphthalene	0.95	0.92	0.74	0.87	13.1
Perylene	<0.039	<0.040	<0.040	<0.040	0.3
Phenanthrene	0.26	0.76	0.22	0.41	73.2
Picene	<0.20	<0.20	<0.20	<0.20	0.3
Pyrene	0.067	0.22	0.061	0.12	77.4
Tetralin	0.67	0.92	0.95	0.85	18.1
m-terphenyl	<0.039	0.083	<0.040	<0.054	46.1
o-Terphenyl	<0.039	<0.040	<0.040	<0.040	0.3
p-terphenyl	<0.039	<0.040	<0.040	<0.040	0.3
Total	<4.37	<6.07	<4.22	<4.89	21.0

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

Compound	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<2.90	<4.97	<3.92	<4.17	<0.076
Acenaphthylene	<1.54	<2.63	<2.08	<2.22	<0.040
Anthracene	<1.56	<2.66	<2.10	<2.24	<0.040
Benzo(a)Anthracene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(b)Fluoranthene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(k)Fluoranthene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(a)fluorene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(b)fluorene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(g,h,i)Perylene	5.45	9.32	7.37	7.84	0.14
Benzo(a)Pyrene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(e)Pyrene	<1.54	<2.63	<2.08	<2.22	<0.040
Biphenyl	5.07	8.65	6.83	7.28	0.13
2-Chloronaphthalene	<1.54	<2.63	<2.08	<2.22	<0.040
Chrysene/Triphenylene	<1.55	<2.64	<2.08	<2.22	<0.040
Coronene	<7.72	<13.1	<10.4	<11.1	<0.20
Dibenzo(a,c/a,h)Anthracene	<1.54	<2.63	<2.08	<2.22	<0.040
Dibenzo(a,e)pyrene	<7.72	<13.1	<10.4	<11.1	<0.20
9,10-dimethylanthracene	<1.92	<3.28	<2.59	<2.76	<0.050
7,12-Dimethylbenzo(a)anthracene	<1.54	<2.63	<2.08	<2.22	<0.040
Fluoranthene	4.70	8.02	6.34	6.75	0.12
Fluorene	<2.15	<3.67	<2.90	<3.09	<0.056
Indeno(1,2,3-cd)Pyrene	<1.54	<2.63	<2.08	<2.22	<0.040
2-methylanthracene	4.64	7.94	6.27	6.68	0.12
3-Methylcholanthrene	<7.72	<13.1	<10.4	<11.1	<0.20
1-Methylnaphthalene	2.98	5.08	4.02	4.29	0.077
2-Methylnaphthalene	5.36	9.14	7.22	7.70	0.14
1-Methylphenanthrene	4.24	7.24	5.72	6.09	0.11
9-Methylphenanthrene	4.00	6.86	5.42	5.76	0.10
Naphthalene	33.8	57.7	45.6	48.6	0.87
Perylene	<1.54	<2.63	<2.08	<2.22	<0.040
Phenanthrene	15.8	27.1	21.4	22.8	0.41
Picene	<7.72	<13.1	<10.4	<11.1	<0.20
Pyrene	4.44	7.59	6.00	6.38	0.12
Tetralin	33.1	56.3	44.5	47.5	0.85
m-terphenyl	<2.08	<3.56	<2.81	<3.00	<0.054
o-Terphenyl	<1.54	<2.63	<2.08	<2.22	<0.040
p-terphenyl	<1.54	<2.63	<2.08	<2.22	<0.040
Total	<190	<324	<256	<273	<4.89

* At 25°C and 1 atmosphere

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

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

Compound	Blank Train ng	Laboratory Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	<12	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	<12	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	164	190
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	181	276
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<957	<1078

"<" 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	2.12	0.0329	37.6	64.4	51.1	54.2	0.97
2	1.83	0.0306	34.6	59.8	47.1	50.0	0.92
3	2.17	0.0305	41.2	71.2	56.1	59.5	1.09
Average			37.8	65.1	51.4	54.6	0.99
Blank	1.44						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Formaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Formaldehyde Emission Rate mg/s
1	2.36	0.0329	41.9	71.6	56.8	60.4	1.08
2	1.22	0.0306	23.1	39.9	31.4	33.3	0.61
3	1.66	0.0305	31.5	54.5	42.9	45.5	0.84
Average			32.2	55.3	43.7	46.4	0.84
Blank	0.98						

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	<1.78	<3.04	<2.41	<2.56	<0.046
2	<0.1	0.0306	<1.89	<3.27	<2.57	<2.73	<0.050
3	<0.1	0.0305	<1.90	<3.28	<2.59	<2.74	<0.050
Average			<1.86	<3.20	<2.52	<2.68	<0.049
Blank	<0.1						

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

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

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

TABLE 82
Covanta - Durham York Energy Centre
Boiler No. 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	1.36	37.3	64.0	50.6	53.7	0.97
Benzene	0.11	3.14	5.38	4.25	4.51	0.081
Bromodichloromethane	0.017	0.47	0.80	0.63	0.67	0.012
Bromoform	<0.01	<0.28	<0.47	<0.37	<0.40	<0.0071
Bromomethane	<0.09	<2.48	<4.25	<3.36	<3.56	<0.064
1,3-Butadiene	<0.02	<0.55	<0.94	<0.75	<0.79	<0.014
2-Butanone	1.15	31.5	54.0	42.7	45.3	0.82
Carbon Tetrachloride	0.031	0.85	1.46	1.16	1.23	0.022
Chloroform	0.094	2.59	4.44	3.51	3.72	0.067
Cumene (Isopropylbenzene)	0.033	0.91	1.56	1.23	1.31	0.024
Dibromochloromethane	<0.01	<0.28	<0.47	<0.37	<0.40	<0.0071
Dichlorodifluoromethane	<0.02	<0.55	<0.94	<0.75	<0.79	<0.014
1,2-Dichloroethane	0.017	0.47	0.80	0.63	0.67	0.012
trans,1,2-Dichloroethene	0.016	0.44	0.76	0.60	0.63	0.011
1,1-Dichloroethene	<0.01	<0.28	<0.47	<0.37	<0.40	<0.0071
1,2-Dichloropropane	<0.01	<0.28	<0.47	<0.37	<0.40	<0.0071
Ethylbenzene	0.20	5.39	9.25	7.31	7.76	0.14
Ethylene Dibromide	<0.02	<0.55	<0.94	<0.75	<0.79	<0.014
Mesitylene (1,3,5-Trimethylbenzene)	0.24	6.69	11.5	9.07	9.62	0.17
Methylene Chloride	0.70	19.4	33.2	26.3	27.9	0.50
Styrene	0.11	3.08	5.29	4.18	4.44	0.080
Tetrachloroethene	0.010	0.28	0.47	0.37	0.40	0.0071
Toluene	0.80	22.1	38.0	30.0	31.8	0.57
1,1,1-Trichloroethane	<0.01	<0.28	<0.47	<0.37	<0.40	<0.0071
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.28	<0.47	<0.37	<0.40	<0.0071
Trichlorotrifluoroethane	<0.02	<0.55	<0.94	<0.75	<0.79	<0.014
Trichlorofluoromethane	0.053	1.46	2.50	1.98	2.10	0.038
M&P-Xylene	2.49	68.5	118	92.9	98.6	1.77
O-Xylene	0.81	22.3	38.3	30.3	32.2	0.58
Vinyl Chloride	<0.02	<0.55	<0.94	<0.75	<0.79	<0.014
Total	<8.50	<234	<401	<317	<336	<6.06

Dry Gas Volume Sampled (Rm³*) :	0.0212
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

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

Note: "<" indicates that the analyte was not detected. 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	1.67	47.3	81.1	64.1	68.0	1.22
Benzene	0.14	3.99	6.84	5.41	5.74	0.10
Bromodichloromethane	0.022	0.62	1.07	0.84	0.90	0.016
Bromoform	<0.01	<0.28	<0.49	<0.38	<0.41	<0.0073
Bromomethane	<0.09	<2.55	<4.37	<3.45	<3.66	<0.066
1,3-Butadiene	<0.02	<0.57	<0.97	<0.77	<0.81	<0.015
2-Butanone	1.41	39.9	68.5	54.2	57.5	1.03
Carbon Tetrachloride	0.038	1.07	1.84	1.46	1.55	0.028
Chloroform	0.12	3.28	5.63	4.45	4.72	0.085
Cumene (Isopropylbenzene)	0.041	1.16	1.99	1.57	1.67	0.030
Dibromochloromethane	<0.01	<0.28	<0.49	<0.38	<0.41	<0.0073
Dichlorodifluoromethane	<0.02	<0.57	<0.97	<0.77	<0.81	<0.015
1,2-Dichloroethane	0.021	0.59	1.02	0.81	0.85	0.015
trans,1,2-Dichloroethene	0.020	0.57	0.97	0.77	0.81	0.015
1,1-Dichloroethene	<0.01	<0.28	<0.49	<0.38	<0.41	<0.0073
1,2-Dichloropropane	<0.01	<0.28	<0.49	<0.38	<0.41	<0.0073
Ethylbenzene	0.24	6.82	11.7	9.24	9.81	0.18
Ethylene Dibromide	<0.02	<0.57	<0.97	<0.77	<0.81	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	0.30	8.46	14.5	11.5	12.2	0.22
Methylene Chloride	0.87	24.5	42.1	33.3	35.3	0.64
Styrene	0.14	3.90	6.70	5.29	5.62	0.10
Tetrachloroethene	0.013	0.37	0.63	0.50	0.53	0.0095
Toluene	0.99	28.0	48.1	38.0	40.3	0.73
1,1,1-Trichloroethane	<0.01	<0.28	<0.49	<0.38	<0.41	<0.0073
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.28	<0.49	<0.38	<0.41	<0.0073
Trichlorotrifluoroethane	<0.02	<0.57	<0.97	<0.77	<0.81	<0.015
Trichlorofluoromethane	0.065	1.84	3.15	2.49	2.65	0.048
M&P-Xylene	3.07	86.8	149	118	125	2.25
O-Xylene	1.00	28.3	48.5	38.4	40.7	0.73
Vinyl Chloride	<0.02	<0.57	<0.97	<0.77	<0.81	<0.015
Total	<10.42	<295	<505	<400	<424	<7.63

Dry Gas Volume Sampled (Rm³*) :	0.0206
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	1.47	40.7	69.9	55.3	58.6	1.06
Benzene	0.12	3.42	5.87	4.64	4.92	0.089
Bromodichloromethane	0.019	0.53	0.91	0.72	0.76	0.014
Bromoform	<0.01	<0.28	<0.48	<0.38	<0.40	<0.0072
Bromomethane	<0.09	<2.50	<4.29	<3.39	<3.60	<0.065
1,3-Butadiene	<0.02	<0.56	<0.95	<0.75	<0.80	<0.014
2-Butanone	1.24	34.4	59.1	46.7	49.5	0.89
Carbon Tetrachloride	0.034	0.95	1.62	1.28	1.36	0.024
Chloroform	0.10	2.84	4.87	3.85	4.08	0.073
Cumene (Isopropylbenzene)	0.036	1.00	1.72	1.36	1.44	0.026
Dibromochloromethane	<0.01	<0.28	<0.48	<0.38	<0.40	<0.0072
Dichlorodifluoromethane	<0.02	<0.56	<0.95	<0.75	<0.80	<0.014
1,2-Dichloroethane	0.018	0.50	0.86	0.68	0.72	0.013
trans,1,2-Dichloroethene	0.017	0.47	0.81	0.64	0.68	0.012
1,1-Dichloroethene	<0.01	<0.28	<0.48	<0.38	<0.40	<0.0072
1,2-Dichloropropane	<0.01	<0.28	<0.48	<0.38	<0.40	<0.0072
Ethylbenzene	0.21	5.90	10.1	8.00	8.48	0.15
Ethylene Dibromide	<0.02	<0.56	<0.95	<0.75	<0.80	<0.014
Mesitylene (1,3,5-Trimethylbenzene)	0.26	7.29	12.5	9.88	10.5	0.19
Methylene Chloride	0.76	21.1	36.3	28.7	30.4	0.55
Styrene	0.12	3.37	5.77	4.56	4.84	0.087
Tetrachloroethene	0.011	0.31	0.52	0.41	0.44	0.0079
Toluene	0.87	24.1	41.4	32.7	34.7	0.63
1,1,1-Trichloroethane	<0.01	<0.28	<0.48	<0.38	<0.40	<0.0072
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.28	<0.48	<0.38	<0.40	<0.0072
Trichlorotrifluoroethane	<0.02	<0.56	<0.95	<0.75	<0.80	<0.014
Trichlorofluoromethane	0.057	1.59	2.72	2.15	2.28	0.041
M&P-Xylene	2.69	74.8	128	101	108	1.94
O-Xylene	0.88	24.4	41.8	33.1	35.1	0.63
Vinyl Chloride	<0.02	<0.56	<0.95	<0.75	<0.80	<0.014
Total	<9.16	<255	<437	<345	<367	<6.60

Dry Gas Volume Sampled (Rm³*) :	0.0210
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

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

Note: "<" indicates that the analyte was not detected. 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 Test No. 1 µg/m³	Test No. 2 µg/m³	Test No. 3 µg/m³	Average µg/m³	Coefficient of Variation %
Acetone	37.3	47.3	40.7	41.8	12.1
Benzene	3.14	3.99	3.42	3.52	12.3
Bromodichloromethane	0.47	0.62	0.53	0.54	14.4
Bromoform	<0.28	<0.28	<0.28	<0.28	1.4
Bromomethane	<2.48	<2.55	<2.50	<2.51	1.4
1,3-Butadiene	<0.55	<0.57	<0.56	<0.56	1.4
2-Butanone	31.5	39.9	34.4	35.3	12.1
Carbon Tetrachloride	0.85	1.07	0.95	0.96	11.6
Chloroform	2.59	3.28	2.84	2.90	12.1
Cumene (Isopropylbenzene)	0.91	1.16	1.00	1.02	12.4
Dibromochloromethane	<0.28	<0.28	<0.28	<0.28	1.4
Dichlorodifluoromethane	<0.55	<0.57	<0.56	<0.56	1.4
1,2-Dichloroethane	0.47	0.59	0.50	0.52	12.6
trans,1,2-Dichloroethene	0.44	0.57	0.47	0.49	13.2
1,1-Dichloroethene	<0.28	<0.28	<0.28	<0.28	1.4
1,2-Dichloropropane	<0.28	<0.28	<0.28	<0.28	1.4
Ethylbenzene	5.39	6.82	5.90	6.04	12.0
Ethylene Dibromide	<0.55	<0.57	<0.56	<0.56	1.4
Mesitylene (1,3,5-Trimethylbenzene)	6.69	8.46	7.29	7.48	12.0
Methylene Chloride	19.4	24.5	21.1	21.7	12.1
Styrene	3.08	3.90	3.37	3.45	12.1
Tetrachloroethene	0.28	0.37	0.31	0.32	14.9
Toluene	22.1	28.0	24.1	24.8	12.1
1,1,1-Trichloroethane	<0.28	<0.28	<0.28	<0.28	1.4
Trichloroethene/1,1,2-Trichloroethene	<0.28	<0.28	<0.28	<0.28	1.4
Trichlorotrifluoroethane	<0.55	<0.57	<0.56	<0.56	1.4
Trichlorofluoromethane	1.46	1.84	1.59	1.63	11.9
M&P-Xylene	68.5	86.8	74.8	76.7	12.1
O-Xylene	22.3	28.3	24.4	25.0	12.1
Vinyl Chloride	<0.55	<0.57	<0.56	<0.56	1.4
Total	<234	<295	<255	<261	11.8

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

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Acetone	64.0	81.1	69.9	71.7	12.1
Benzene	5.38	6.84	5.87	6.03	12.3
Bromodichloromethane	0.80	1.07	0.91	0.93	14.4
Bromoform	<0.47	<0.49	<0.48	<0.48	1.4
Bromomethane	<4.25	<4.37	<4.29	<4.30	1.4
1,3-Butadiene	<0.94	<0.97	<0.95	<0.96	1.4
2-Butanone	54.0	68.5	59.1	60.5	12.1
Carbon Tetrachloride	1.46	1.84	1.62	1.64	11.6
Chloroform	4.44	5.63	4.87	4.98	12.1
Cumene (Isopropylbenzene)	1.56	1.99	1.72	1.75	12.4
Dibromochloromethane	<0.47	<0.49	<0.48	<0.48	1.4
Dichlorodifluoromethane	<0.94	<0.97	<0.95	<0.96	1.4
1,2-Dichloroethane	0.80	1.02	0.86	0.89	12.6
trans,1,2-Dichloroethene	0.76	0.97	0.81	0.85	13.2
1,1-Dichloroethene	<0.47	<0.49	<0.48	<0.48	1.4
1,2-Dichloropropane	<0.47	<0.49	<0.48	<0.48	1.4
Ethylbenzene	9.25	11.7	10.1	10.4	12.0
Ethylene Dibromide	<0.94	<0.97	<0.95	<0.96	1.4
Mesitylene (1,3,5-Trimethylbenzene)	11.5	14.5	12.5	12.8	12.0
Methylene Chloride	33.2	42.1	36.3	37.2	12.1
Styrene	5.29	6.70	5.77	5.92	12.1
Tetrachloroethene	0.47	0.63	0.52	0.54	14.9
Toluene	38.0	48.1	41.4	42.5	12.1
1,1,1-Trichloroethane	<0.47	<0.49	<0.48	<0.48	1.4
Trichloroethene/1,1,2-Trichloroethene	<0.47	<0.49	<0.48	<0.48	1.4
Trichlorotrifluoroethane	<0.94	<0.97	<0.95	<0.96	1.4
Trichlorofluoromethane	2.50	3.15	2.72	2.79	11.9
M&P-Xylene	118	149	128	132	12.1
O-Xylene	38.3	48.5	41.8	42.9	12.1
Vinyl Chloride	<0.94	<0.97	<0.95	<0.96	1.4
Total	<401	<505	<437	<448	11.8

* At 25°C and 1 atmosphere

TABLE 87
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Acetone	50.6	64.1	55.3	56.7	12.1
Benzene	4.25	5.41	4.64	4.77	12.3
Bromodichloromethane	0.63	0.84	0.72	0.73	14.4
Bromoform	<0.37	<0.38	<0.38	<0.38	1.4
Bromomethane	<3.36	<3.45	<3.39	<3.40	1.4
1,3-Butadiene	<0.75	<0.77	<0.75	<0.76	1.4
2-Butanone	42.7	54.2	46.7	47.9	12.1
Carbon Tetrachloride	1.16	1.46	1.28	1.30	11.6
Chloroform	3.51	4.45	3.85	3.93	12.1
Cumene (Isopropylbenzene)	1.23	1.57	1.36	1.39	12.4
Dibromochloromethane	<0.37	<0.38	<0.38	<0.38	1.4
Dichlorodifluoromethane	<0.75	<0.77	<0.75	<0.76	1.4
1,2-Dichloroethane	0.63	0.81	0.68	0.71	12.6
trans,1,2-Dichloroethene	0.60	0.77	0.64	0.67	13.2
1,1-Dichloroethene	<0.37	<0.38	<0.38	<0.38	1.4
1,2-Dichloropropane	<0.37	<0.38	<0.38	<0.38	1.4
Ethylbenzene	7.31	9.24	8.00	8.18	12.0
Ethylene Dibromide	<0.75	<0.77	<0.75	<0.76	1.4
Mesitylene (1,3,5-Trimethylbenzene)	9.07	11.5	9.88	10.1	12.0
Methylene Chloride	26.3	33.3	28.7	29.4	12.1
Styrene	4.18	5.29	4.56	4.68	12.1
Tetrachloroethene	0.37	0.50	0.41	0.43	14.9
Toluene	30.0	38.0	32.7	33.6	12.1
1,1,1-Trichloroethane	<0.37	<0.38	<0.38	<0.38	1.4
Trichloroethene/1,1,2-Trichloroethene	<0.37	<0.38	<0.38	<0.38	1.4
Trichlorotrifluoroethane	<0.75	<0.77	<0.75	<0.76	1.4
Trichlorofluoromethane	1.98	2.49	2.15	2.21	11.9
M&P-Xylene	92.9	118	101	104	12.1
O-Xylene	30.3	38.4	33.1	33.9	12.1
Vinyl Chloride	<0.75	<0.77	<0.75	<0.76	1.4
Total	<317	<400	<345	<354	11.8

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

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

Compound	Wet Reference Concentration Test No. 1 µg/Rm³*	Test No. 2 µg/Rm³*	Test No. 3 µg/Rm³*	Average µg/Rm³*	Coefficient of Variation %
Acetone	53.7	68.0	58.6	60.1	12.1
Benzene	4.51	5.74	4.92	5.06	12.3
Bromodichloromethane	0.67	0.90	0.76	0.78	14.4
Bromoform	<0.40	<0.41	<0.40	<0.40	1.4
Bromomethane	<3.56	<3.66	<3.60	<3.61	1.4
1,3-Butadiene	<0.79	<0.81	<0.80	<0.80	1.4
2-Butanone	45.3	57.5	49.5	50.8	12.1
Carbon Tetrachloride	1.23	1.55	1.36	1.38	11.6
Chloroform	3.72	4.72	4.08	4.18	12.1
Cumene (Isopropylbenzene)	1.31	1.67	1.44	1.47	12.4
Dibromochloromethane	<0.40	<0.41	<0.40	<0.40	1.4
Dichlorodifluoromethane	<0.79	<0.81	<0.80	<0.80	1.4
1,2-Dichloroethane	0.67	0.85	0.72	0.75	12.6
trans,1,2-Dichloroethene	0.63	0.81	0.68	0.71	13.2
1,1-Dichloroethene	<0.40	<0.41	<0.40	<0.40	1.4
1,2-Dichloropropane	<0.40	<0.41	<0.40	<0.40	1.4
Ethylbenzene	7.76	9.81	8.48	8.69	12.0
Ethylene Dibromide	<0.79	<0.81	<0.80	<0.80	1.4
Mesitylene (1,3,5-Trimethylbenzene)	9.62	12.2	10.5	10.8	12.0
Methylene Chloride	27.9	35.3	30.4	31.2	12.1
Styrene	4.44	5.62	4.84	4.96	12.1
Tetrachloroethene	0.40	0.53	0.44	0.46	14.9
Toluene	31.8	40.3	34.7	35.6	12.1
1,1,1-Trichloroethane	<0.40	<0.41	<0.40	<0.40	1.4
Trichloroethene/1,1,2-Trichloroethene	<0.40	<0.41	<0.40	<0.40	1.4
Trichlorotrifluoroethane	<0.79	<0.81	<0.80	<0.80	1.4
Trichlorofluoromethane	2.10	2.65	2.28	2.34	11.9
M&P-Xylene	98.6	125	108	110	12.1
O-Xylene	32.2	40.7	35.1	36.0	12.1
Vinyl Chloride	<0.79	<0.81	<0.80	<0.80	1.4
Total	<336	<424	<367	<376	11.8

* At 25°C and 1 atmosphere

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

Compound	Emission Rate Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	Coefficient of Variation %
Acetone	0.97	1.22	1.06	1.08	12.1
Benzene	0.081	0.10	0.089	0.091	12.3
Bromodichloromethane	0.012	0.016	0.014	0.014	14.4
Bromoform	<0.0071	<0.0073	<0.0072	<0.0072	1.4
Bromomethane	<0.064	<0.066	<0.065	<0.065	1.4
1,3-Butadiene	<0.014	<0.015	<0.014	<0.014	1.4
2-Butanone	0.82	1.03	0.89	0.91	12.1
Carbon Tetrachloride	0.022	0.028	0.024	0.025	11.6
Chloroform	0.067	0.085	0.073	0.075	12.1
Cumene (Isopropylbenzene)	0.024	0.030	0.026	0.026	12.4
Dibromochloromethane	<0.0071	<0.0073	<0.0072	<0.0072	1.4
Dichlorodifluoromethane	<0.014	<0.015	<0.014	<0.014	1.4
1,2-Dichloroethane	0.012	0.015	0.013	0.013	12.6
trans,1,2-Dichloroethene	0.011	0.015	0.012	0.013	13.2
1,1-Dichloroethene	<0.0071	<0.0073	<0.0072	<0.0072	1.4
1,2-Dichloropropane	<0.0071	<0.0073	<0.0072	<0.0072	1.4
Ethylbenzene	0.14	0.18	0.15	0.16	12.0
Ethylene Dibromide	<0.014	<0.015	<0.014	<0.014	1.4
Mesitylene (1,3,5-Trimethylbenzene)	0.17	0.22	0.19	0.19	12.0
Methylene Chloride	0.50	0.64	0.55	0.56	12.1
Styrene	0.080	0.10	0.087	0.089	12.1
Tetrachloroethene	0.0071	0.0095	0.0079	0.0082	14.9
Toluene	0.57	0.73	0.63	0.64	12.1
1,1,1-Trichloroethane	<0.0071	<0.0073	<0.0072	<0.0072	1.4
Trichloroethene/1,1,2-Trichloroethene	<0.0071	<0.0073	<0.0072	<0.0072	1.4
Trichlorotrifluoroethane	<0.014	<0.015	<0.014	<0.014	1.4
Trichlorofluoromethane	0.038	0.048	0.041	0.042	11.9
M&P-Xylene	1.77	2.25	1.94	1.99	12.1
O-Xylene	0.58	0.73	0.63	0.65	12.1
Vinyl Chloride	<0.014	<0.015	<0.014	<0.014	1.4
Total	<6.06	<7.63	<6.60	<6.76	11.8

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

Compound	Actual Concentration $\mu g/m^3$	Dry Reference Concentration $\mu g/Rm^3$*	Dry Adjusted Concentration $\mu g/Rm^3$*	Wet Reference Concentration $\mu g/Rm^3$*	Emission Rate mg/s
Acetone	41.8	71.7	56.7	60.1	1.08
Benzene	3.52	6.03	4.77	5.06	0.091
Bromodichloromethane	0.54	0.93	0.73	0.78	0.014
Bromoform	<0.28	<0.48	<0.38	<0.40	<0.0072
Bromomethane	<2.51	<4.30	<3.40	<3.61	<0.065
1,3-Butadiene	<0.56	<0.96	<0.76	<0.80	<0.014
2-Butanone	35.3	60.5	47.9	50.8	0.91
Carbon Tetrachloride	0.96	1.64	1.30	1.38	0.025
Chloroform	2.90	4.98	3.93	4.18	0.075
Cumene (Isopropylbenzene)	1.02	1.75	1.39	1.47	0.026
Dibromochloromethane	<0.28	<0.48	<0.38	<0.40	<0.0072
Dichlorodifluoromethane	<0.56	<0.96	<0.76	<0.80	<0.014
1,2-Dichloroethane	0.52	0.89	0.71	0.75	0.013
trans,1,2-Dichloroethene	0.49	0.85	0.67	0.71	0.013
1,1-Dichloroethene	<0.28	<0.48	<0.38	<0.40	<0.0072
1,2-Dichloropropane	<0.28	<0.48	<0.38	<0.40	<0.0072
Ethylbenzene	6.04	10.4	8.18	8.69	0.16
Ethylene Dibromide	<0.56	<0.96	<0.76	<0.80	<0.014
Mesitylene (1,3,5-Trimethylbenzene)	7.48	12.8	10.1	10.8	0.19
Methylene Chloride	21.7	37.2	29.4	31.2	0.56
Styrene	3.45	5.92	4.68	4.96	0.089
Tetrachloroethene	0.32	0.54	0.43	0.46	0.0082
Toluene	24.8	42.5	33.6	35.6	0.64
1,1,1-Trichloroethane	<0.28	<0.48	<0.38	<0.40	<0.0072
Trichloroethene/1,1,2-Trichloroethene	<0.28	<0.48	<0.38	<0.40	<0.0072
Trichlorotrifluoroethane	<0.56	<0.96	<0.76	<0.80	<0.014
Trichlorofluoromethane	1.63	2.79	2.21	2.34	0.042
M&P-Xylene	76.7	132	104	110	1.99
O-Xylene	25.0	42.9	33.9	36.0	0.65
Vinyl Chloride	<0.56	<0.96	<0.76	<0.80	<0.014
Total	<261	<448	<354	<376	<6.76

* At 25°C and 1 atmosphere

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

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank 1 Tube 5A/5B	Field Blank 2 Tube 11A/11B	Trip Blank Tube 12A/12B	Method Blank
	µg	µg	µg	µg
Acetone	0.15	0.11	0.13	<0.1
Benzene	<0.05	<0.05	<0.05	<0.05
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01
Bromoform	<0.01	<0.01	<0.01	<0.01
Bromomethane	<0.09	<0.09	<0.09	<0.09
1,3-Butadiene	<0.02	<0.02	<0.02	<0.02
2-Butanone	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.02
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.01
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.01
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.01
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	<0.01	<0.01	<0.01	<0.01
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.02
Methylene Chloride	0.11	<0.1	<0.1	<0.1
Styrene	<0.02	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01	<0.01
Toluene	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.02	<0.02	<0.02
Trichlorotrifluoroethane	<0.02	<0.02	<0.02	<0.02
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.02
M&P-Xylene	<0.03	<0.03	<0.03	<0.03
O-Xylene	<0.01	<0.01	<0.01	<0.01
Vinyl Chloride	<0.02	<0.02	<0.02	<0.02
Total	<0.82	<0.77	<0.79	<0.76

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

APPENDIX 3

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

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Technical Assessment and Standards Development Branch
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Toronto ON M4V 1M2
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Ministère de l'Environnement, de la Protection de la nature et des Parcs
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Ontario

Via email: cbelore@ortech.ca
TSS File No.: CR:SA:109912:20

2020/10/14

Mr. Chris Belore
ORTECH Consulting Inc.
804 Southdown Rd.
Mississauga, Ontario
L5J 2Y4

Re.: Pre-test plan for source testing to be conducted at Durham-York Energy Centre. Environmental Compliance Approval No. 7306-8FDKNX.

Dear Mr. Belore:

We reviewed your letter, dated 2020/09/08, prepared and submitted on behalf of Covanta Durham York Renewable Energy L.P. (DYEC), and referring to source testing (ORTECH Project 22050) to be conducted at DYEC’s energy from waste facility, located at 72 Osbourne Rd., Clarington (Ontario).

The testing is an annual requirement by Condition 7(1) of the Environmental Compliance Approval No. 7306-8FDKNX, issued on 2011/06/28.

***Target Sources*:**

- Municipal Solid Waste Combustor Unit 1 (Baghouse Outlet Duct)
- Municipal Solid Waste Combustor Unit 2 (Baghouse Outlet Duct)
- Quench Inlet Unit 1 (Total Hydrocarbons only)
- Quench Inlet Unit 2 (Total Hydrocarbons only)

***Target contaminants*:**

- Total suspended particulate matter (TSP),
- PM_{10},
- $PM_{2.5}$,

- PM condensable,
- Metals (17 selected metals, as listed in the ECA's Schedule "D"),
- Semivolatile Organic Compounds (17 dioxins and furans isomers, 12 dioxin-like PCBs, 39 selected PAHs, 12 chlorobenzenes, and19 chlorophenols) – as listed in ECA's Schedule "D",
- Volatile Organic Compounds (33 selected VOCs, as listed in the ECA's Schedule "D"),
- Aldehydes (acetaldehyde, acrolein and formaldehyde),
- Halides (hydrogen fluoride and hydrogen chloride),
- Ammonia,
- Nitrogen oxides (NOx),
- Sulphur dioxide (SO_2),
- Combustion gases (oxygen, CO, and CO_2), and
- Total organic matter (THC).

***Reference methodologies*:**

- TSP: OSTC Method ON-5
- $PM_{2.5}$/PM_{10}: US EPA 40CFR60 Method 201A,
- PM condensable: US EPA 40CFR60 Method 202,
- Metals: US EPA 40CFR60 Method 29,
- SVOCs: Environment Canada's Report EPS 1/RM/2,
- VOCs: US EPA SW-846 Method 0030, (SLO-VOST)
- Aldehydes: NCASI Method ISS/FP-A105.01
- Halides & Ammonia: US EPA 40CFR60 Method 26A,
- NOx: DYEC CEM,
- SO_2: DYEC CEM,
- CO_2: DYEC CEM,
- O_2: DYEC CEM,
- CO: DYEC CEM,
- THC: US EPA 40CFR60 Method 25A, and
- Stack Gas Parameters: Ontario Source Testing Code's Method ON-1 to ON-4.

Note: *ORTECH has indicated its intention at using the DYEC CEM system to determine compliance of some of the target contaminants listed in the ECA's Schedule "D", a relative accuracy certification (RATA) of the parameters of interest need to be conducted to validate that the DYEC CEM's parameters of interest meet the minimum specification listed in the ECA's Schedule "F", if the last RATA conducted at the DYEC CEM system is older than 1 year. The RATA report is to be appended to the source testing report.*

DYEC CEMS data will also be used to determine the molecular weight of the gas stream and correct results to 11% oxygen, as necessary.

The following sampling modifications will be incorporated into the 2020 sampling program to enhance the collection efficiency and reliability of the specified targeted compounds.

- *<u>SVOC's</u> - ORTECH will now soak the 3 pieces of front sampling train glassware (filter bottom, filter bottom u-tube and trap inlet stem) per the Method, in lieu of their previous enhanced rinsing procedure. (Regional Municipality of Durham-York letter dated 2020/03/05)*

- *<u>VOC's</u> – sampling will be conducted at a reduced sampling rate of 0.5 litres per minute (lpm) or SLO VOST.*

- *<u>Aldehydes</u> - determined using NCASI Method ISS/FP-A105.01; replacing California Air Resources Board (CARB) Method 430 – Ashland Modification Procedure.*

***Brief Process Description*:**

The DYEC is an energy-from-waste facility built with a maximum thermal/combustion processing rate of 140,000 tonnes per year of municipals solid waste (MSW). The facility operates on a continuous basis, hours/day, 7 days/week, 365 days/year, with the waste delivered initially set at 6 days per week between 07:00 and 19:00 hours.

The facility consists of two thermal treatment lines, each equipped and operated independently operated boilers/furnaces and air pollution control equipment. Each thermal treatment line has a maximum continuous rating (MCR) of 218 t/d of MSW, with a heat content of 13 MJ/kg, and a steam MCR of 33.64 tonnes/hour, to generate 20 MW of electricity (nominal capacity).

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.

Each thermal treatment line is equipped with independent air pollution control equipment; consisting of a Selective Non-Catalytic Reduction System with ammonia injection (for NOx control), an activated carbon injection system (to reduce mercury and dioxins in flue gas), a dry recirculation lime injection scrubber (to control acid gases), and a pulse jet type baghouse (to control particulate emissions).

The treated exhaust gases from both lines are vented to the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

***Target Process Condition during the Source Testing Program*:**

It is stated in the pre-test plan states that during the source testing program, DYEC will target maximum load at each of the two thermal treatment lines.

DYEC's personnel will be responsible for the monitoring, collection, compilation and reporting of pertinent process data during the test program, in order to establish MSW processing levels that can be properly correlated to the magnitude of the emissions of the contaminants of interest being exhausted from the process.

The process parameters to be monitored and recorded include:

- Power output (MWh/d)
- Auxiliary fuel combusted (m^3/d)
- Average combustion zone temperature (ºC)
- Steam generated (t/d)
- MSW combusted (t/d)
- NOx reagent injection rate (L/d)
- Carbon injection rate (kg/d)
- Lime injection rate (kg/d)
- DYEC CEMs (printouts to be appended to the source testing report)
- Baghouses inlet temperature and pressure drop.
- Any upset conditions during the source testing program (including actions taken to correct it, if applicable).

Consistent with our request beginning with the 2017 compliance source testing program, we require digital data (in Excel) of DYEC and ORTECH's CEMS output. In the case of DYEC CEMS output, we require the 1-munute averages for the full days when source testing was conducted, to confirm that the in-stack emissions and process parameters were within the ECA requirements, in order to validate that the thermal treatment units and associated air pollution control equipment were operating as expected by the MECP.

Our review indicated that the pre-test plan is suitable for conducting the 2020 source testing program, as the proposed reference methodologies and process monitoring strategies are still appropriate for this program. The sampling strategies are considered acceptable; but in the case of those contaminants that will be monitored by the DYEC CEM system, a relative accuracy certification (not older than 1 year) is required to assure the quality of the data generated meet the MECP expectations.

We noted the sampling schedule is set to begin Monday November 9, 2020 and continue through Thursday November 12, 2020. If changes in the sampling schedule occur, please notify the MECP's York-Durham District Office, and the Technology Standards Section.

Just a reminder that the source testing report is required to be submitted only in electronic format to the Technology Standards Section; and in electronic and hardcopy formats to the MECP's York-Durham District Office.

If you have any questions with regard to this assessment, I can be reached by phone at 416-705-4660

Regards,

William Fullerton

Bill Fullerton
Source Assessment Specialist (A)
Technology Standards Section

cc: M. Neild – Covanta DYEC L.P. (via email: mneild@covanta.com)
R. Kohler – Covanta DYEC L.P. (via email: rkholer@covant.com)
A. Huxter – Covanta DYEC L.P. (via email: ahuxter@covanta.com)
M. Januszkiewicz – Durham Region (via email: mirka.januszkiewicz@durham.ca)
A. Evans – Durham Region (via email: andrew.evans@durham.ca)
G. Anello – Durham Region (via email: gioseph.anello@durham.ca)
M. Farid – York Region (via email: muneeb.farid@york.ca)
L. McDowell – York Region (via email: laura.mcdowell@york.ca)
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C. Dugas – MECP York-Durham D.O. (via email: celeste.dugas@ontario.ca
P. Dunn – MECP York-Durham D.O. (via email: philip.dunn@ontario.ca)
J. Butchart – MECP York-Durham D.O. (via email jeff.butchart@ontario.ca)
J. McKerrall – MECP TASDB TSS (via email: jeffrey.mckerrall@ontario.ca)
G. Azocar -MECP TASDB TSS (via email: guillermo.azocar@ontario.ca)

File AQ-02 (Durham-York Energy Centre – Clarington - 2020)

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. **<u>SIGNS and SITE SECURITY</u>**

(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. <u>SITE OPERATIONS</u>

(1) **Operating hours:**

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

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

(c) Emergency Receipt of Waste:

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

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

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

(2) **Incoming Waste receipt:**

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

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

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

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

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

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

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

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

(3) **Unacceptable Waste handling:**

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

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

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

(4) **Waste Sorting:**

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

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

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

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

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

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

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

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

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

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

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

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

(6) **Wastewater Management**

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

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

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

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

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

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

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

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

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

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

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

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

5. **<u>EQUIPMENT and SITE INSPECTIONS and MAINTENANCE</u>**

Operation and Maintenance

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

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

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

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

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

Critical Spare Parts

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

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

Inspections

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

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

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

Inspections and Maintenance of the Works

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

6. PERFORMANCE REQUIREMENTS

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

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

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

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

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

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

(ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000^{o}C (the Target Location) or by correlation of the required temperature of 1000^{o}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^{o}C and a reference pressure of 101.3 kilopascals, as measured and recorded by the CEM System, for the period from and including initial commissioning of the facility to twelve months following the completion of the first Source Testing program.

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

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

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

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

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

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

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

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

Residual Waste Compliance Criteria

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

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

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

7. **<u>TESTING, MONITORING</u>** <u>and</u> **<u>AUDITING</u>**

Source Testing

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

Continuous Monitoring

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

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

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

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

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

Long-Term Sampling for Dioxins and Furans

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

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

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

Ambient Air Monitoring

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

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

(c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

Residual Waste Testing

(7) (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg.* 347 and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.

(b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.

(c) The Testing Protocol shall include the rationale for the proposed methods and the following:

(i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;

(ii) sample(s) handling and preserving procedures;

(iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and

(iv) a testing protocol for the bottom ash during the Site commissioning period.

(d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.

(8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:

(a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;

(b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the “incinerator ash” definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

(c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the "incinerator ash" definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re – establish compliance with the "incinerator ash" definition from the *O. Reg. 347* and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and

(d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re – establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.

(9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347*.

(b) The Owner shall follow the following schedule for compliance testing:

(i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;

(ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and

(iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re – establish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

Soil Testing:

(10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.

(b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

Disposal of Residual Waste

(11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.

(12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347,* may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

(13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

Groundwater and Surface Water Monitoring

(14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

8. NUISANCE IMPACT CONTROL and HOUSEKEEPING

Odour Management

(1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.

(b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.

(ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained to maintain a negative air pressure atmosphere throughout the Tipping Building.

(c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.

(3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.

(4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.

(5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.

(6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.

(7) (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.

(ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.

(iii) These tests shall be repeated as directed or agreed by the District Manager.

(8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(9) (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:

(i) identification of all potential sources of odourous emissions;

(ii) description of the preventative and control measures to minimize odourous emissions from the identified sources;
(iii) procedures for the implementation of the Odour Management and Mitigation Plan;
(iv) inspection and maintenance procedures to ensure effective implementation of the Odour Management and Mitigation Plan; and
(v) procedures for verification and recording the progress of the implementation of the Odour Management and Mitigation Plan.

(b) The Owner shall continue to submit an updated Odour Management and Mitigation Plan until such time as the Regional Director notifies the Owner in writing that further submissions are no longer required.

Vehicles and Traffic

(10) (a) The Owner shall ensure that all vehicles transporting waste to and from the Site are not leaking or dripping waste when arriving at or leaving the Site.

(b) Should the Owner become aware that the truck(s) delivering waste to the Site have leaked wastewater on the municipal roadways, the Owner shall immediately report the violation to the owner of the vehicle(s) and to the District Manager.

(c) The Owner shall ensure that the exterior of all vehicles delivering Waste to the Site or hauling waste from the Site is washed prior to the trucks' departure from the Site, if necessary.

(d) Any necessary truck washing shall occur only in the designated wash down area of the Tipping Building or the Residue Building.

(11) The Owner shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Site on any roadway that is not a distinct part of the Site.

Litter

(12) The Owner shall:

(a) take all practical steps to prevent the escape of litter from the Site;
(b) pick up litter around the Site on a daily basis, or more frequently if necessary; and
(c) if necessary, erect litter fences around the areas causing a litter problem.

Dust

(13) The Owner shall ensure that all on-site roads and operations/yard areas are regularly swept/washed to prevent dust impacts off-Site.

Vermin and Vectors

(14) The Owner shall:

(a) implement necessary housekeeping procedures to eliminate sources and potential sources of attraction for vermin and vectors; and

(b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the Site. The pest control plan shall remain in place, and be updated from time to time as necessary, until the Site has been closed and this Certificate has been revoked.

Visual Screening

(15) The Owner shall provide visual screening for the Site in accordance with the documentation included in the attached Schedule "A".

9. **STAFF TRAINING**

(1) (a) The Owner shall ensure that all operators of the Site are trained with respect to the following, as per the specific job requirements of each individual operator:

(i) terms and conditions of this Certificate and the requirements of the EA Approval;
(ii) operation and management of the Site, or area(s) within the Site, as per the specific job requirements of each individual operator, and which may include procedures for receiving, screening and identifying Waste, refusal, handling, processing and temporarily storing wastes, operation of the Equipment, the APC Equipment, the CEM System and the Works;
(iii) testing, monitoring and operating requirements;
(iv) maintenance and inspection procedures;
(v) recording procedures;
(vi) nuisance impact control and housekeeping procedures;
(vii) procedures for recording and responding to public complaints;
(viii) an outline of the responsibilities of Site personnel including roles and responsibilities during emergency situations;
(ix) the Contingency and Emergency Response Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
(x) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
(xi) emergency first-aid information; and
(xii) relevant waste management legislation and regulations, including the *EPA,* the *OWRA,* the *O. Reg. 347,* the *O. Reg. 419/05* and the Ministry guidelines affecting thermal treatment facilities.

(2) The Owner shall ensure that all personnel are trained in the requirements of this Certificate relevant to the employee's position:

(a) upon commencing employment at the Site in a particular position;
(b) whenever items listed in Condition 9.(1) are changed or updated; and
(c) during the planned refresher training.

10. **<u>COMPLAINTS / ODOUR-CONTAMINANT EMISSIONS RESPONSE PROCEDURE</u>**

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

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

Step 1: Record of Complaint/Emission Event

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

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

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

Step 2: Investigation and Handling of Complaint/Emission Event

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

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

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

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

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

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

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

11. CONTINGENCY and EMERGENCY RESPONSE PLAN

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

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

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

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

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

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

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

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

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

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

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

12. **EMERGENCY SITUATION RESPONSE and REPORTING**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

14. RECORDS KEEPING

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

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

Daily Activities

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

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

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

Monitoring and Testing Records

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

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

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

(m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;
(n) results the negative pressure in the Tipping Building carried out, as required.

Inspections/Maintenance/Repairs

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

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

Emergency Situations

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

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

Complaints Response Records

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

Training

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

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

Reports

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

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

15. 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.

<u>**SCHEDULE**</u> <u>"A"</u>

Supporting Documentation

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

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

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

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

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

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

(c) Attachment #4 containing the Host Community Agreement

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

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

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

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

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

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

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

SCHEDULE "B"

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

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

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

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

One-hour Average To 10-minute Average Conversion

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

X10min = X60min*1.65

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

SCHEDULE "C"

PERFORMANCE REQUIREMENTS

In-Stack Emission Limits

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

		fifteen minutes

mg/Rm3- milligrams per reference cubic metre;

pg/Rm3 - picograms per reference cubic metre

ppmdv parts per million by dry volume,

µg/Rm3 - micrograms per reference cubic metre

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

SCHEDULE "D"

TEST CONTAMINANTS

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

Metals

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

Schedule "D" - Cont'd

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

Schedule "D" - Cont'd

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

Schedule "D" - Cont'd

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

SCHEDULE "E"

SOURCE TESTING PROCEDURES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(3) the Owner failed to provide a complete report on the Source Testing.

11. If the Director does not accept the results of the Source Testing, the Director may require re-testing.

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

PARAMETER:
Temperature

LOCATION:
The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000^{o}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:	$160^{o}C$ minimum
3.	Flame Temperature:	$1800\,^{o}C$ minimum at the corona of the hydrogen flame
4.	Range (parts per million, ppm):	0 to ≥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

<u>Selection and Installation</u>

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.

<u>Test Procedures</u>

The Owner shall verify compliance with the Design and Performance Specifications in accordance with 40 CFR 60, Appendix B, Specification 4, with the reference method for the relative accuracy test being Method 4. of the Source Testing Code.

In furtherance of, but without limiting the generality of the foregoing, the mean difference between the calibration gas value and the analyzer response value at each of the four test concentrations shall be less than 5 percent of the measurement range.

SCHEDULE "G"

A stormwater management facility to service a 10.0 ha drainage area of the Durham York Energy Centre located on the west side of Osbourne Road and north of the CN Rail, Lot 27, Concession Broken Front, Part, Municipality of Clarington, Regional Municipality of Durham, designed to provide quality and quantity control of stormwater run-off by attenuating runoff from storm events up to 1:100 years return frequency to or below the pre-development levels, consisting of:

East Stormwater Management Pond (East SWM Pond)

A stormwater management facility to service a 5.7 ha drainage area comprising of the eastern part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 128 m long drainage ditch collecting stormwater runoff from the north eastern part of the site, having an average horizontal slope of 1.56%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- one (1) approximately 199 m long drainage ditch collecting stormwater runoff from the eastern part of the site, having an average horizontal slope of 2.77%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately fourteen (14) catch basins/maintenance holes and a total of 466.8 m long 450 mm diameter and 34.6 m of 600 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the north and north eastern part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 11.0 m wide and 34.8 m long and depth of 1.0 m, equipped with 600 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south east part of the site, with approximate bottom dimensions of 21.0 m wide and 71.4 m long and a maximum depth of 2.7 m at 96.70 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent pool storage capacity of 1,008 m^3 at elevation 95.0 m masl, an active storage capacity of 3,099 m^3 at 96.70 m masl elevation, and total storage capacity of 4,107 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 97.0 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

West Stormwater Management Pond (West SWM Pond)

A stormwater management facility to service a 4.3 ha drainage area comprising of the western part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 296 m long drainage ditch collecting stormwater runoff from the north western part of the site, having an average horizontal slope of 1.0%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately five (5) catch basins/maintenance holes and a total of 272.2 m long 450 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the western part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 13.0 m wide and 26.0 m long and depth of 1.0 m, equipped with 450 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south western part of the site, with approximate bottom dimensions of 13.0 m wide and 58.0 m long and a maximum depth of 2.5 m at 96.5 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent storage capacity of 623 m^3 at elevation 95.0 m masl, an active storage capacity of 2,054 m^3 at 96.50 m masl elevation, and total storage capacity of 2,677 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 96.80 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

including all associated controls and appurtenances.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

Conditions 1.(1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), (17), (18) and (19) are included to clarify the legal rights and responsibilities of the Owner.

Conditions Nos.1.(3) and (4) are included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

Condition No. 1.(14) is included to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

Condition No.1.(15) is included to restrict potential transfer or encumbrance of the Site without the notification to the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate.

Condition No. 1.(16) is included to ensure that the appropriate Ministry staff has ready access to the operations of the Site which are approved under this Certificate. The Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.

SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

Condition No. 2. is included to specify the approved waste receipt rates, the approved waste types and the service area from which waste may be accepted at the Site based on the Owner's application and supporting documentation. Condition No. 2. is also included to specify the maximum amount of waste that is approved to be stored at the Site.

SIGNS and SITE SECURITY

Condition No. 3. is included to ensure that the Site's users, operators and the public are fully aware of important information and restrictions related to the operation of the Site. Condition No. 3. is also included to ensure that the Site is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site personnel is on duty.

SITE OPERATIONS

Condition No. 4. is included to outline the operational requirements for the Facility to ensure that the said operation does not result in an adverse effect or a hazard to the natural environment or any person.

EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Condition No. 5. is included to require the Site to be maintained and inspected thoroughly on a regular basis to ensure that the operations at the Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

PERFORMANCE REQUIREMENTS

Condition No. 6 is included to set out the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

TESTING, **MONITORING** and **AUDITING**

Condition No. 7. is to require the Owner to gather accurate information on the operation of the Facility so that the environmental impact and subsequent compliance with the *EPA*, the *OWRA*, their Regulations and this Certificate can be verified.

NUISANCE IMPACT CONTROL and HOUSEKEEPING

Condition No. 8. is included to ensure that the Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person. Condition No. 8 is also included to specify odour control measures to minimize a potential for odour emissions from the Site.

STAFF TRAINING

Condition No. 9. is included to ensure that staff are properly trained in the operation of the equipment and instrumentation used at the Site, in the emergency response procedures and on the requirements and restrictions related to the Site operations under this Certificate.

COMPLAINTS RECORDING PROCEDURE

Condition No.10. is included to require the Owner to respond to any environmental complaints resulting from the Facility appropriately and in a timely manner and that appropriate actions are taken to prevent any further incidents that may cause complaints in the future.

CONTINGENCY and EMERGENCY RESPONSE PLAN and EMERGENCY SITUATIONS RESPONSE AND REPORTING

Conditions Nos.11. and 12. are included to ensure that the Owner is prepared and properly equipped to take immediate action in the event of an emergency situation.

SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER

Condition No. 13. is included to set out the requirements for the submissions to the District Manager and the Regional Director regarding the operation of the Facility and the activities required by this Certificate.

RECORDS KEEPING

Condition No.14. is included to ensure that detailed records of Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

REPORTING

Condition No.15. is to ensure that regular review of site, operations and monitoring is carried out and findings documented by a third party for determining whether or not the Site is being operated in compliance with this Certificate of Approval, the EPA and its regulations and whether or not any changes should be considered.

PUBLIC ACCESS to DOCUMENTATION

Condition No.16. is included to ensure that the public has access to information on the operation of the Site in order to participate in the activities of the Advisory Committee in a meaningful and effective way.

ADVISORY COMMITTEE

Condition No.17. is included to require the Owner to establish a forum for the exchange of information and public dialogue on activities carried out at the Site and to ensure that the local residents are properly informed of the activities at the Site and that their concerns can be heard and acted upon , as necessary. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Site and protection of the natural environment. Condition 16. is also included to ensure that the requirements of the EA Approval are fulfilled.

CLOSURE of the SITE

Condition No.18. is included to ensure that the final closure of the Site is completed in accordance with Ministry's standards.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, and in accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written Notice served upon me, the Environmental Review Tribunal, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act and Section 101 of the

Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 9 and 39, *Environmental Protection Act*
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted site is approved under Section 9 and Section 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of June, 2011

Signature
Ian Parrott, P .Eng.
Director
Section 9, *EPA*
Section 39, *EPA*
Section 53, *OWRA*

MW,QN,SH/

c: District Manager, MOE York-Durham
Regional Director, MOE Central Region

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Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: August 12, 2014

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

and

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

and

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

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

1. The following definition has been added:

"Contingency and Emergency Response Plan" also means the document entitled "Spill Contingency and Emergency Response Plan";

2. The following Conditions are amended to read as follows:

2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

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

(i) The storage duration is limited to a maximum of seven (7) days.

(ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The notification shall include the duration of the extension and the reasons.

3. The following Conditions are added:

7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.

11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).

4. The following documents have been added to Schedule "A":

4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by by Golder Associates and dated June 2014.

5. Document entitled "Durham York Energy Centre, Spill Contingency & Emergency Response Plan" prepared by Covanta Durham York Renewable Energy Limited Partnership and dated January 13, 2014, excluding section entitled "Containment Evaluation".

6. Document entitled "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations", prepared by Covanta Durham York Renewable Energy Limited Partnership and dated June 2014.

7. Document entitled "Durham York Energy Centre, Noise Monitoring and Reporting Plan", prepared by Golder Associates and dated September 2011.

The reasons for this amendment to the Approval are as follows:

to approve the "Ash Sampling and Testing Protocol" as required Condition 7.(7)(a), the "Durham York Energy Centre, Spill Contingency & Emergency Response Plan", as required Condition 11.(3), "Durham York Energy Centre, Noise Monitoring and Reporting Plan" as required Condition 7.(5)(a) and "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations" as proposed by the applicant.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served *upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary***** Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 12th day of August, 2014

Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MOE York-Durham
n/a, The Regional Municipality of Durham

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Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: October 24, 2014

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

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

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

1. The address of the Site has been changed to read as follows:

Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

2. The following definitions have been added:

" **Operator** " means any person other than the Regions' employees, authorized by the Regions as having the charge, management or control of any aspect of the Site and includes TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change, and includes its successors and assignees, their successors and assignees;

" **Regions** " means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and it includes The Regional Municipality of Durham and The Regional Municipality of York, their successors and assignees;

2. The following definition has been amended to read as follows:

" **Site** " means the property referred to as Durham York Energy Centre where the Owner has located and operates the Facility and the Works and located at 1835 Energy Drive in the Municipality of Clarington, Regional Municipality of Durham;

" **Owner** " within the context of this Approval, means the Regions and the Operator;

3. The following Conditions have been amended to read as follows:

"General: Change of Ownership" Conditions 1.(14) and 1.(15):

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

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

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

"Service Area, Approved Waste Types, Rates And Storage: Storage Restrictions" Condition 2.(5)(e):

2.(5)(e) (i) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(ii) The storage duration of bottom ash in the bunkers is limited to a maximum of seven (7) days.

(iii) Should additional storage location(s) and a longer storage duration be required during testing, a minimum of forty eight (48) hours before the storage parameters are changed from those approved in Condition 2.(5)(e)(i) and (ii), the Owner shall notify the District Manager, in writing, of the proposed changes and provide the reasons for the changes.

"Site Operations: Residual Waste Handling and Disposal" Condition 4.(5)(b)(iii):

4.(5)(b)(iii) The Owner may use the equipment that comes in contact with the hazardous wastes to handle other wastes provided that prior to such use, the equipment has been cleaned, as confirmed by visual inspections, to ensure the removal of any hazardous waste residues and to prevent cross contamination.

"Closure of the Site" Conditions 18.(1) and 18.(2):

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

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

4. "Covanta Durham York Renewable Energy Limited Partnership" is replaced with "TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change and includes its successors and assignees", in the Environmental Compliance Approval dated June 28, 2011 and in the Notice of Amendment dated August 12, 2014.

5. The following documents are added to Schedule "A":

8. Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Matthew R. Mulcahy, Covanta Durham York Renewable Energy Limited Partnership, Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Cliff Curtis, The Regional Municipality of Durham and Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Laura McDowell, The Regional Municipality of York, including the following attached supporting documentation:

(a) revised Section 8.0 "Ash Handling and Associated System" and revised Section 10.0 "Potable Process and Wastewater" dated May 2014, of the document entitled "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.

(b) Drawing No. M-2530, entitled "Piping & Instrumentation Diagram Bottom Ash Lime Slurry System"

(c) Drawing No. 70258-1-ME-GA-SK-001, entitled "Covanta Durham York Hydrated Lime System for Boiler Bottom Ash"

9. E-mail dated September 10, 2014 (2:26 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Margaret Wojcik, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the proposal, including an attachment entitled "M-1500^0360 Highlighted for MOE.pdf".

10. E-mail dated October 13, 2014 (3:23 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Ricki Allum, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the legal name of the applicant,

including an attachment entitled "Partnership Legal Clarification.pdf".

The reasons for this amendment to the Approval are as follows:

to approve the proposed Bottom Ash Lime Conditioning System, to correct the typographical errors in the Notice of Amendment dated August 12, 2014, to clarify the intent of the Residual Waste equipment cleaning condition and to allow different bottom ash storage conditions during testing.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary***** Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of October, 2014

Tesfaye Gebrezghi, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

MW/
c: District Manager, MOE York-Durham
Leon Brasowski, Covanta Energy Corporation

Content Copy Of Original

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 3
Issue Date: December 23, 2015

The Regional Municipality of Durham
605 Rossland Road Level 5
Whitby, Ontario
L1N 6A3

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

The following Conditions are revoked:

7. TESTING, MONITORING and AUDITING

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment and

M5G 1E5

Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 23rd day of December, 2015

Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

HM/
c: District Manager, MOECC York-Durham
Kathryn Katsiroumpas, Valcoustics Canada Ltd.

Content Copy Of Original

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 4
Issue Date: February 24, 2016

The Regional Municipality of Durham
605 Rossland Road East, Level 5
Whitby, Ontario
L1N 6A3

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

TransRiver Canada Incorporated operating as Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for a Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

The following Conditions are revoked:

7. **TESTING** , **MONITORING** and **AUDITING**

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment and Climate Change 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of February, 2016

Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

HM/
c: District Manager, MOECC York-Durham
Kathryn Katsiroumpas, Valcoustics Canada Ltd.

Content Copy Of Original

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

APPENDIX 4

Particulate and Metals Field Data Sheets
(30 pages)

ORTECH Consulting Inc.

Plant		Covanta DYEC
Plant Location		Courtice, Ontario
Test No.:	#1	Particulate/Metals
Test Date	Nov 9, 2020	
Test Location		APC Outlet No. 1
Operator Signature	SB	

Project No.:	22050	
Page	1 of 5	
Probe No.:		
Meter Box No.:	Team 1	COE 20094
Impinger Box No.:	7	

Pitot Factor	.851	
DGMCF	.999	
Barometric Pressure	29.99	"Hg
Static Pressure	− 8.93	"H2O
Nozzle Size	.2573	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	0.1	mg
Probe	14.4	mg

Moisture Gain

CWTR	424.8	g
WCBDA	18.9	g

Combustion Gas Concentration

Oxygen	8.74	%
Carbon Dioxide	10.73	%
Carbon Monoxide	12.4	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	SB 203769
Trendicator	
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2570
2	.2515
3	.2570
4	.2575
Average:	.2513

Notes:

Field Data Sheet

Date: Nov 9, 2020	Plant:	Covanta DYEC	Test No.: 1	Particulate/Metals	Page 2 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	615.10	.75	.70	285	255	257	51	83	69	68	1.70	3
	2.5	616.85	.75	.70	284	254	256	50	226	69	68	1.70	3
	5	618.67	.77	.71	282	255	255	50	224	69	68	1.70	3
2	7.5	620.42	.80	.72	284	254	256	52	233	69	68	1.80	3
	10	622.18	.79	.71	283	253	255	53	232	69	68	1.80	3
	12.5	623.98	.78	.71	285	255	255	56	236	69	68	1.80	3
3	15	625.74	.79	.71	285	254	257	58	235	69	68	1.80	3
	17.5	627.55	.79	.71	285	254	255	57	234	69	68	1.80	3
	20	629.31	.77	.70	285	254	257	60	236	69	68	1.80	3
4	22.5	631.09	.75	.70	286	255	256	62	235	70	68	1.80	3
	25	632.87	.76	.70	285	254	255	63	234	70	68	1.80	3
	27.5	634.67	.73	.69	286	255	256	59	236	70	68	1.75	3
5	30	636.43	.68	.66	287	252	258	58	238	71	68	1.60	3
	32.5	638.14	.66	.65	287	246	258	58	237	70	69	1.50	3
	35	639.78	.65	.65	287	248	256	58	236	70	69	1.50	3
6	37.5	641.43	.65	.65	287	252	256	59	234	72	70	1.50	3
	40	643.05	.60	.62	287	254	257	57	234	72	70	1.45	3
	42.5	644.67	.60	.62	288	250	256	56	235	72	69	1.40	3
7	45	646.26	.64	.64	288	254	258	55	235	72	69	1.50	3
	47.5	647.91	.64	.64	288	256	258	55	236	72	69	1.50	3
	50	649.54	.65	.65	287	252	258	54	237	73	69	1.50	3

Traverse: 1					
Start Time: 9:37	Initial Leak Check:	.008	cfm@	20	"Hg
Finish Time:	Final Leak Check:		cfm@		"Hg

Project No.: 22050

Operator : JB

Field Data Sheet

Date: Nov 9, 2020	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
8	52.5	651.18	0.65	0.65	287	250	256	54	232	73	70	1.5	3
	55	652.81	.65	.65	287	252	254	53	236	73	70	1.5	3
	57.5	654.45	.66	.66	287	250	254	53	237	74	70	1.5	3
9	60	656.08	.66	.66	287	254	254	53	236	73	70	1.55	3
	62.5	657.77	.67	.66	287	252	255	53	234	73	70	1.55	3
	65	659.44	.67	.66	286	254	256	52	236	74	71	1.55	3
10	67.5	661.12	.65	.65	286	252	254	52	234	73	70	1.50	3
	70	662.78	.65	.65	286	250	254	52	236	74	71	1.50	3
	72.5	664.43	.67	.66	284	252	258	52	237	75	71	1.55	3
11	75	666.10	.65	.65	284	254	256	52	236	75	71	1.50	3
	77.5	667.76	.65	.66	276	253	254	52	238	75	71	1.50	3
	80	669.43	.65	.66	275	252	258	52	238	75	71	1.50	3
12	82.5	671.07	.64	.65	274	254	256	52	238	75	71	1.50	3
	85	672.73	.64	.65	274	254	254	52	236	75	72	1.50	3
	87.5	674.39	.64	.65	275	256	255	52	236	75	72	1.50	3
	90	676.04											

Traverse: 1		
Start Time:	Initial Leak Check: cfm@ "Hg	
Finish Time: 11:07	Final Leak Check: .006 cfm@ 18 "Hg	

Project No.: 22050

Operator : JR

Field Data Sheet

Date: Nov 9, 2020	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	676.44	.75	.70	285	252	256	52	236	75	71	1.80	3
	2.5	678.23	.75	.70	287	254	254	51	234	75	73	1.80	3
	5	680.06	.76	.71	287	256	254	51	236	75	73	1.80	3
2	7.5	681.90	.75	.70	288	252	260	57	230	75	73	1.80	3
	10	683.69	.75	.70	288	254	260	51	225	75	73	1.80	3
	12.5	685.48	.75	.70	288	254	259	51	228	75	73	1.80	3
3	15	687.28	.75	.70	288	255	259	52	225	75	72	1.80	3
	17.5	688.98	.70	.68	287	255	257	52	225	75	72	1.70	3
	20	690.83	.73	.69	287	255	260	52	225	75	73	1.80	3
4	22.5	692.61	.68	.67	287	254	260	52	225	75	73	1.80	3
	25	694.33	.68	.67	287	254	260	53	226	75	73	1.80	3
	27.5	696.07	.68	.67	287	255	260	52	227	76	74	1.60	3
5	30	697.87	.65	.65	287	255	260	52	227	76	74	1.50	3
	32.5	699.48	.65	.65	289	255	260	52	226	75	73	1.50	3
	35	701.15	.65	.65	286	255	261	53	225	75	73	1.50	3
6	37.5	702.81	.65	.65	289	255	266	53	226	75	73	1.50	3
	40	704.46	.62	.64	288	254	260	~~54~~	228	76	74	1.40	3
	42.5	706.09	.62	.64	288	256	258	54	230	76	74	1.40	3
7	45	707.70	.69	.67	289	254	260	53	240	76	74	1.70	3
	47.5	709.44	.68	.67	289	256	260	51	241	77	74	1.60	3
	50	711.14	.68	.67	290	254	260	50	241	77	74	1.60	3

Traverse: 2

Start Time: 11:14	Initial Leak Check: .006	cfm@	18	"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

Project No.: 22050

Operator: JB RW

Field Data Sheet

Date: Nov 9, 2020	Plant:	Covanta DYEC	Test No.:	Particulate/Metals	Page 5 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
8	52.5	712.84	.69	.67	290	252	261	50	244	77	74	1.60	3
	55	714.55	.69	.67	290	254	260	50	244	77	74	1.60	3
	57.5	716.25	.69	.67	289	254	261	50	241	77	74	1.60	3
9	60	717.94	.72	.69	289	252	260	50	240	77	74	1.80	3
	62.5	719.72	.71	.68	289	254	258	51	238	77	74	~~1.80~~ 1.72	3
	65	721.48	.71	.68	289	256	262	51	242	77	75	1.75	3
10	67.5	723.25	.72	.69	289	254	260	51	240	77	75	1.75	3
	70	725.00	.72	.69	289	254	258	51	241	77	75	1.75	3
	72.5	726.76	.72	.69	287	254	258	50	240	77	75	1.75	3
11	75	728.51	.63	.65	285	252	260	49	240	77	75	1.50	3
	77.5	730.17	.62	.64	285	254	260	49	240	77	75	1.40	3
	80	731.76	.61	.64	285	254	260	50	240	77	75	1.40	3
12	82.5	733.34	.61	.64	284	256	260	50	238	77	75	1.40	3
	85	734.93	.60	.64	284	258	260	50	246	77	75	1.40	3
	87.5	736.52	.60	.64	284	254	258	50	238	77	75	1.40	3
	90	738.14											

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 12:44	Final Leak Check: .006	cfm@ 18	"Hg

Project No.: 22050
Operator : JB

ORTECH Consulting Inc.

Plant		Covanta DYEC
Plant Location		Courtice, Ontario
Test No.:	#2	Particulate/Metals
Test Date	#	Nov. 9/2020
Test Location		APC Outlet No. 1
Operator Signature		

Project No.:	22050
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 1 COE 20094
Impinger Box No.:	9

Pitot Factor	.851	
DGMCF	.999	
Barometric Pressure	29.91	"Hg
Static Pressure	-8.93	"H2O
Nozzle Size	.2513	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	0.3	mg
Probe	17.7	mg

Moisture Gain

CWTR	473.1	g
WCBDA	22.2	g

Combustion Gas Concentration

Oxygen	8.75	%
Carbon Dioxide	10.67	%
Carbon Monoxide	10.2	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	S8B03769
Trendicator	
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1	2510
2	2515
3	2510
4	2515
Average:	.2513

Notes:

Field Data Sheet

Date: Nov. 9/2020	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 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	738.54	.90	.78	287	255	256	72	129	78	77	2.2	3
	2.5	740.47	.89	.77	288	255	259	57	205	77	77	2.2	3
	5	742.48	.89	.77	290	255	259	53	217	77	76	2.2	3
2	7.5	744.49	.89	.77	289	255	257	50	221	75	75	2.2	3
	10	746.50	.90	.77	290	255	258	49	224	75	75	2.1	3
	12.5	748.46	.90	.77	289	255	258	48	225	75	75	2.1	3
3	15	750.41	.88	.76	289	257	260	48	227	75	75	2.0	3
	17.5	752.31	.87	.76	289	255	258	48	228	75	75	2.0	3
	20	754.18	.87	.76	289	257	260	49	230	75	75	2.0	3
4	22.5	756.07	.81	.73	289	256	260	47	231	75	75	1.90	3
	25	757.94	.78	.72	289	260	261	47	231	75	75	1.80	3
	27.5	759.75	.78	.72	289	258	260	48	232	76	75	1.80	3
5	30	761.56	.70	.68	289	260	260	48	232	76	75	1.70	3
	32.5	763.31	.70	.68	289	258	259	48	230	76	75	1.70	3
	35	765.06	.71	.68	288	260	260	46	230	76	75	1.70	3
6	37.5	766.82	.65	.65	288	260	258	46	230	76	75	1.55	3
	40	768.57	.65	.65	288	258	258	46	230	76	75	1.55	3
	42.5	770.19	.65	.65	288	258	260	46	232	76	75	1.55	3
7	45	771.88	.68	.67	288	260	260	44	230	78	76	1.60	3
	47.5	773.58	.69	.68	288	280	260	44	232	78	76	1.60	3
	50	775.29	.69	.68	288	262	258	44	232	78	76	1.60	3

Traverse: 2			
Start Time: 13:29	Initial Leak Check: .006	cfm@ 17	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22050

Operator : R / JB

Field Data Sheet

Date: Nov 9, 2020	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	777.00	0.70	.68	288	252	256	44	230	79	77	1.6	3
	55	778.71	.70	.68	288	258	260	44	232	79	77	1.6	3
	57.5	780.43	.70	.68	288	260	262	44	230	79	77	1.6	3
9	60	782.15	.70	.68	288	260	262	44	232	79	77	1.6	3
	62.5	783.88	.71	.69	288	264	260	44	232	79	77	1.7	3
	65	785.63	.71	.69	288	264	261	44	232	79	76	1.7	3
10	67.5	787.39	.72	.69	288	264	262	44	232	79	76	1.7	3
	70	789.14	.72	.69	288	262	260	44	232	79	77	1.7	3
	72.5	790.90	.72	.69	286	264	261	43	232	80	77	1.7	3
11	75	792.66	.57	.62	286	264	261	43	232	80	77	1.4	3
	77.5	794.26	.57	.62	286	264	261	43	232	80	77	1.4	3
	80	795.87	.58	.62	284	263	261	46	232	80	77	1.4	3
12	82.5	797.48	.57	.62	284	263	261	46	232	80	77	1.4	3
	85	799.05	.57	.62	284	262	260	46	232	80	78	1.4	3
	87.5	800.63	.58	.62	284	260	261	46	232	81	78	1.4	3
	90	802.21											

Traverse: 2			
Start Time: ~~14:59~~	Initial Leak Check:	cfm@	"Hg
Finish Time: 14:59	Final Leak Check: .008	cfm@ 18	"Hg

Project No.: 22050

Operator : JB RW

Field Data Sheet

Date: Nov 9, 2020	Plant:	Covanta DYEC	Test No.: 2	Particulate/Metals	Page 4 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	802.61	0.86	0.76	286	262	265	63	142	81	79	1.9	3
	2.5	804.46	0.86	0.76	286	262	261	51	216	80	78	1.9	3
	5	806.33	0.90	0.78	286	261	261	46	228	80	79	2.1	3
2	7.5	808.29	.84	.75	287	262	260	44	232	80	78	1.8	3
	10	810.17	.84	.75	287	262	260	44	232	79	78	1.8	3
	12.5	811.98	.82	.74	287	262	260	43	232	80	78	1.8	3
3	15	813.78	.82	.74	287	263	260	44	232	80	78	1.9	3
	17.5	815.65	.82	.74	287	262	260	44	232	80	78	1.9	3
	20	817.49	.87	.76	287	262	260	44	234	80	78	2.1	3
4	22.5	819.44	.81	.74	287	263	260	44	235	80	78	1.9	3
	25	821.37	.81	.74	287	262	260	44	235	80	78	1.9	3
	27.5	823.19	.81	.74	287	263	260	44	236	80	78	1.9	3
5	30	825.07	.75	.71	287	263	260	44	234	80	79	1.8	3
	32.5	826.88	.75	.71	288	262	260	44	234	80	79	1.8	3
	35	828.68	.75	.71	289	263	261	45	236	81	79	1.8	3
6	37.5	830.48	.64	.66	289	263	261	45	234	81	79	1.5	3
	40	832.14	.64	.66	289	264	261	46	233	81	79	1.5	3
	42.5	833.79	.64	.66	289	263	260	47	234	81	79	1.5	3
7	45	835.43	.70	.69	289	262	262	47	232	81	79	1.7	3
	47.5	837.19	.72	.69	289	260	260	47	232	81	79	1.7	3
	50	838.95	.72	.69	290	263	261	46	235	81	79	1.7	3

Traverse: 1				
Start Time: 15:14	Initial Leak Check:	.004	cfm@ 17	"Hg
Finish Time:	Final Leak Check:		cfm@	"Hg

Project No.: 22050

Operator : JB R

Field Data Sheet

Date: Nov 9, 2020	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	840.71	.74	.70	290	260	261	46	232	81	79	1.75	3
	55	842.51	.73	.70	290	264	261	46	232	81	79	1.75	3
	57.5	844.31	.73	.70	290	264	261	46	232	81	79	1.75	3
9	60	846.11	.73	.70	290	264	261	45	235	81	79	1.75	3
	62.5	847.88	.73	.70	290	264	261	45	236	81	79	1.75	3
	65	849.65	.73	.70	290	264	261	45	236	81	79	1.75	3
10	67.5	851.44	.69	.68	290	264	261	46	235	81	79	1.7	3
	70	853.19	.69	.68	289	263	261	46	235	82	80	1.7	3
	72.5	854.94	.68	.68	289	264	261	46	236	82	80	1.7	3
11	75	856.68	.56	.61	289	264	261	46	236	82	80	1.35	3
	77.5	858.25	.56	.61	289	264	261	46	234	82	80	1.35	3
	80	859.81	.56	.61	289	263	260	46	232	82	80	1.35	3
12	82.5	861.35	.55	.61	289	264	261	46	234	82	80	1.35	3
	85	862.88	.55	.61	289	264	261	46	236	82	80	1.35	3
	87.5	864.44	.54	.60	289	263	261	47	231	82	80	1.30	3
	90	865.95											

Traverse: 1			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 16:44	Final Leak Check: .008	cfm@ 18	"Hg

Project No.: 22050

Operator : JB

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 3	Particulate/Metals	
Test Date	November 10 2020	
Test Location	APC Outlet No. 1	
Operator Signature		

Project No.:	22050	
Page	1 of 5	
Probe No.:	7 series	
Meter Box No.:	Team 4	
Impinger Box No.:		

Pitot Factor	.848	
DGMCF	1.004	
Barometric Pressure	29.64	"Hg
Static Pressure	-9.36	"H2O
Nozzle Size	.2651	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter	0.2	mg
Probe	1.6	mg

Moisture Gain

CWTR	556.1	g
WCBDA	24.6	g

Combustion Gas Concentration

Oxygen	8.39	%
Carbon Dioxide	10.79	%
Carbon Monoxide	11.7	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	B04011
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	B 03906

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

Nozzle Measurements	
1	.2635
2	.2635
3	.2650
4	.2685
Average:	.2651

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov. 10 2020	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 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	13.52	.71	.78	287	256	250	77	107	78	77	2.15	5.5
	2.5	15.54	.71	.78	287	261	250	64	208	77	77	2.15	5.5
	5	17.55	.71	.78	287	262	253	61	227	77	79	2.15	5.5
2	7.5	19.55	.70	.78	287	260	253	60	228	77	81	2.15	5.5
	10	21.56	.72	.79	284	259	250	58	229	77	84	2.2	5.5
	12.5	23.59	.71	.79	284	258	253	57	229	77	85	2.2	5.5
3	15	25.60	.72	.80	285	258	254	55	232	78	87	2.2	5.5
	17.5	27.62	.70	.79	285	258	252	54	228	78	88	2.1	5.5
	20	29.60	.68	.78	285	257	250	54	225	78	89	2.05	5.5
4	22.5	31.55	.70	.79	285	257	251	53	225	78	90	2.1	5.5
	25	33.51	.68	.78	284	257	250	53	223	79	91	2.05	5.5
	27.5	35.46	.68	.78	283	257	252	53	225	79	91	2.05	5.5
5	30	37.41	.68	.78	284	257	251	53	226	79	92	2.05	5.5
	32.5	39.36	.68	.78	283	257	251	53	226	79	92	2.05	5.5
	35	41.31	.65	.76	283	257	251	53	222	79	93	2.0	5.5
6	37.5	43.21	.65	.76	283	256	251	53	221	80	93	2.0	5.5
	40	45.12	.66	.77	283	257	252	53	224	80	93	2.05	5.5
	42.5	47.06	.66	.77	283	257	250	53	224	80	93	2.05	5.5
7	45	48.99	.62	.75	283	257	253	53	226	80	93	1.9	5.5
	47.5	50.87	.60	.73	283	257	252	53	218	80	93	1.7	5.5
	50	52.68	.58	.72	283	257	251	53	216	80	93	1.7	5.5

Traverse: 2		
Start Time: 15:04	Initial Leak Check: .002 cfm@ 19 "Hg	
Finish Time:	Final Leak Check: cfm@ "Hg	

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 10 2020	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
8	52.5	54.46	.58	.72	282	256	251	53	212	80	93	1.8	5.5
	55	56.28	.63	.75	282	257	254	53	220	80	93	2.0	5.5
	57.5	58.19	.62	.75	283	257	254	54	221	80	94	2.0	5.5
9	60	60.12	.72	.80	283	257	251	54	220	80	93	2.2	6
	62.5	62.13	.68	.78	283	257	251	53	223	80	92	2.1	6
	65	64.15	.68	.78	284	257	253	53	223	80	93	2.05	6
10	67.5	66.10	.71	.80	284	257	252	53	222	80	92	2.1	6
	70	68.10	.73	.81	284	257	249	53	223	80	92	2.2	6
	72.5	70.14	.73	.81	284	257	251	53	222	80	92	2.2	6
11	75	72.18	.76	.82	284	257	254	53	225	80	92	2.3	6
	77.5	74.27	.75	.82	284	257	254	53	226	80	92	2.3	6
	80	76.35	.75	.82	284	258	251	53	224	80	92	2.2	6
12	82.5	78.41	.72	.80	284	257	248	53	224	80	92	2.2	6
	85	80.44	.72	.80	284	258	253	54	223	80	92	2.2	6
	87.5	82.44	.72	.80	284	258	253	54	225	79	91	2.2	6
	90	84.50											

Traverse: 2	
Start Time: –	Initial Leak Check: – cfm@ – "Hg
Finish Time: 16:34	Final Leak Check: .004 cfm@ 14 "Hg

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 10 2020	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals	
	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	84.82	.77	.82	285	254	251	63	150	78	82	2.2	6
	2.5	86.86	.80	.84	286	258	249	58	210	78	84	2.3	6
	5	88.95	.80	.84	286	259	251	55	227	78	86	2.35	6
2	7.5	91.05	.78	.83	283	258	251	54	231	78	87	2.35	6
	10	93.15	.78	.83	283	258	250	55	229	78	88	2.35	6
	12.5	95.26	.78	.83	283	257	248	55	228	77	89	2.35	6
3	15	97.36	.75	.81	284	257	252	55	228	77	89	2.2	6
	17.5	99.42	.78	.83	285	257	251	56	227	77	90	2.35	6
	20	101.52	.78	.83	285	257	249	56	229	77	90	2.35	6
4	22.5	103.63	.72	.80	286	257	252	55	223	77	90	2.15	6
	25	105.66	.72	.80	286	257	252	54	223	77	90	2.1	6
	27.5	107.63	.72	.80	286	257	249	53	221	77	90	2.1	6
5	30	109.62	.66	.76	286	257	250	53	223	77	89	2	6
	32.5	111.54	.68	.77	286	257	252	52	223	77	89	2.05	6
	35	113.48	.68	.77	286	257	249	52	222	77	89	2.05	6
6	37.5	115.43	.70	.79	286	258	250	52	221	77	89	2.1	6
	40	117.39	.70	.79	286	257	251	52	223	77	89	2.1	6
	42.5	119.37	.70	.79	287	257	249	52	223	77	89	2.1	6
7	45	121.35	.66	.76	287	257	250	51	222	76	89	1.9	6
	47.5	123.24	.64	.75	287	257	250	51	223	76	89	1.9	6
	50	125.11	.64	.75	287	257	249	51	221	76	89	1.9	6

Traverse: 1					
Start Time: 16:41	Initial Leak Check:	.003	cfm@	14	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 10 2020	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
8	52.5	126.99	.64	.75	287	257	251	51	221	76	89	1.95	6
	55	128.89	.64	.75	287	257	249	51	221	76	89	1.95	6
	57.5	130.79	.64	.75	287	256	250	51	221	76	89	1.95	6
9	60	132.68	.66	.76	287	256	250	51	221	76	89	1.9	6
	62.5	134.56	.66	.76	287	256	248	51	221	76	88	2.0	6
	65	136.47	.66	.76	286	256	252	51	222	76	88	2.0	6
10	67.5	138.39	.66	.76	286	256	252	51	223	76	88	2	6
	70	140.31	.66	.76	284	256	249	51	220	76	88	2	6
	72.5	142.22	.66	.76	285	255	249	51	219	76	88	2	6
11	75	144.12	.68	.77	286	255	251	51	220	76	88	2.05	6
	77.5	146.06	.68	.77	286	255	250	52	223	76	88	2.05	6
	80	147.99	.68	.77	286	256	248	53	222	76	88	2.05	6
12	82.5	149.93	.66	.76	286	255	250	53	220	76	88	2	6
	85	151.86	.64	.75	286	256	251	54	221	76	88	1.95	6
	87.5	153.74	.64	.75	286	256	248	55	221	75	88	1.95	6
	90	155.63											

Traverse:	1				
Start Time:	—	Initial Leak Check:	— cfm@	—	"Hg
Finish Time:	18:13	Final Leak Check:	.002 cfm@	15	"Hg

Project No.: 22050

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Metals
Test Date	November 9 2020
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22050
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	.848	
DGMCF	1.004	
Barometric Pressure	29.86	"Hg
Static Pressure	- 8.97	"H2O
Nozzle Size	.2651	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	0.3	mg
Probe	14.1	mg

Moisture Gain

CWTR	565.8	g
WCBDA	24.4	g

Combustion Gas Concentration

Oxygen	8.33	%
Carbon Dioxide	10.97	%
Carbon Monoxide	15.1	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot SP4	B09011
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	B03906

Nozzle Measurements	
1	.2635
2	.2635
3	.2650
4	.2685
Average:	.2651

Notes:

Field Data Sheet

Date: Nov. 9 2020	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 ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	23.13	.77	.81	287	255	254	75	89	75	75	2.3	5
	2.5	25.19	.77	.81	287	255	254	75	89	75	75	2.3	5
	5	27.25	.72	.79	286	260	253	54	228	75	78	2.2	5
2	7.5	29.28	.72	.79	286	259	254	52	232	75	81	2.2	5
	10	31.29	.72	.79	287	258	251	51	232	75	83	2.2	5
	12.5	33.29	.76	.81	286	257	249	51	229	75	85	2.3	5
3	15	35.36	.73	.80	286	256	253	51	231	76	87	2.2	5
	17.5	37.39	.76	.82	287	256	252	51	231	76	88	2.3	5
	20	39.48	.76	.82	287	256	250	51	228	76	89	2.3	5
4	22.5	41.54	.76	.82	287	256	251	50	227	76	90	2.3	5
	25	43.59	.76	.82	288	256	252	50	227	77	91	2.3	5
	27.5	45.67	.76	.82	288	256	251	49	229	77	92	2.3	5
5	30	47.73	.73	.80	288	256	249	48	228	77	92	2.25	5
	32.5	49.79	.75	.81	289	256	252	48	229	77	92	2.3	5
	35	51.86	.75	.81	289	256	252	49	230	77	93	2.3	5
6	37.5	53.92	.74	.81	289	257	249	49	229	78	93	2.25	5
	40	55.98	.74	.81	290	256	250	48	229	78	93	2.25	5
	42.5	58.04	.72	.80	290	257	253	48	231	78	93	2.2	5
7	45	60.07	.64	.75	289	257	253	48	231	78	94	2.0	5
	47.5	61.99	.62	.74	289	257	250	48	228	78	94	1.9	5
	50	63.87	.64	.75	289	257	249	48	226	78	94	2.0	5

Traverse: 2				
Start Time: 17:02	Initial Leak Check: .002	cfm@	22	"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 9 2020	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	65.77	.71	.79	289	257	253	48	227	78	94	2.2	5
	55	67.79	.71	.79	289	257	255	48	230	78	94	2.2	5
	57.5	69.83	.72	.80	289	257	253	47	230	78	94	2.25	5
9	60	71.88	.81	.85	289	258	250	48	229	78	94	2.5	5.5
	62.5	74.03	.81	.85	289	257	248	48	227	78	94	2.5	5.5
	65	76.18	.81	.85	289	257	253	48	229	78	95	2.5	5.5
10	67.5	78.34	.84	.86	289	258	255	48	231	78	95	2.6	5.5
	70	80.53	.85	.88	280	258	254	48	228	79	95	2.6	5.5
	72.5	82.73	.85	.87	289	258	251	48	225	79	95	2.6	5.5
11	75	84.93	.87	.88	289	258	248	49	223	79	95	2.7	5.5
	77.5	87.17	.87	.88	288	258	251	48	223	78	95	2.7	5.5
	80	89.42	.85	.87	288	258	255	49	225	79	95	2.6	5.5
12	82.5	91.62	.85	.87	288	258	254	49	225	79	95	2.6	5.5
	85	93.82	.85	.87	288	258	252	49	224	79	95	2.6	5.5
	87.5	96.02	.85		288	258	248	49	222	79	95		
	90	98.22											

Traverse: 2		
Start Time: ~	Initial Leak Check: ~ cfm@ ~ "Hg	
Finish Time: 18:32	Final Leak Check: .003 cfm@ 17 "Hg	

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 9 2010	Plant:	Covanta DYEC	Test No.:	1	Particulate/Metals	Page 4 of 5
	Plant Location:	Courtice, Ontario	Test Location:		APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	98.62	.81	.83	288	255	251	58	164	77	83	2.5	5.5
	2.5	100.79	.82	.85	288	259	249	51	213	78	86	2.5	5.5
	5	102.93	.82	.85	287	259	253	49	223	77	88	2.5	5.5
2	7.5	105.08	.80	.84	287	260	252	49	226	77	90	2.45	5.5
	10	107.20	.85	0.87	287	259	250	49	223	77	92	2.5	5.5
	12.5	109.36	.85	0.87	287	259	251	48	221	77	93	2.5	6
3	15	111.52	.85	0.87	287	259	251	49	224	77	93	2.5	6
	17.5	113.69	.82	.85	287	259	249	48	230	77	93	2.5	6
	20	115.86	.82	.85	287	258	251	48	229	77	93	2.5	6
4	22.5	118.03	.75	.80	287	259	251	48	230	77	93	2.0	5.5
	25	119.93	.78	.83	287	259	249	48	228	78	93	2.2	5.5
	27.5	121.97	.78	.83	287	258	251	48	227	77	93	2.2	5.5
5	30	124.02	.75	.82	287	258	250	48	230	77	93	2.2	5.5
	32.5	126.06	.75	.82	287	259	249	48	230	77	93	2.2	5.5
	35	128.10	.74	.81	287	258	251	48	229	77	93	2.2	5.5
6	37.5	130.14	.65	.76	287	258	250	48	229	77	93	2.0	5.5
	40	132.07	.65	.76	287	258	249	48	227	77	93	2.0	5.5
	42.5	133.97	.65	.76	287	258	252	48	226	77	93	2.0	5.5
7	45	135.86	.65	.76	287	258	251	48	227	77	93	2.0	5.5
	47.5	137.75	.67	.77	287	258	248	48	226	77	93	2.1	5.5
	50	139.72	.67	.77	287	258	252	48	227	77	93	2.1	5.5

Traverse:					
Start Time: 18:38	Initial Leak Check:	.003	cfm@	16	"Hg
Finish Time: 20:08	Final Leak Check:	.003	cfm@	16	"Hg

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 9 2020	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 ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	141.66	.67	.77	288	258	251	49	228	77	93	2.1	5.5
	55	143.59	.68	.78	288	258	249	49	227	77	93	2.1	5.5
	57.5	145.53	.68	.78	288	257	251	48	226	77	93	2.1	5.5
9	60	147.47	.69	.78	287	258	251	49	227	77	93	2.1	5.5
	62.5	149.44	.70	.79	288	257	249	49	227	77	93	2.2	6
	65	151.49	.70	.79	287	257	250	49	227	77	93	2.2	6
10	67.5	153.49	.71	.79	287	257	249	49	227	77	93	2.2	6
	70	155.49	.72	.80	287	257	249	49	225	77	93	2.2	6
	72.5	157.49	.73	.80	287	257	252	49	226	77	93	2.2	6
11	75	159.49	.73	.80	287	257	251	49	226	77	93	2.2	6
	77.5	161.48	.71	.79	286	257	249	49	226	77	93	2.2	6
	80	163.47	.71	.79	286	257	253	50	226	77	93	2.2	6
12	82.5	165.46	.70	.79	286	257	251	50	227	77	93	2.2	6
	85	167.45	.70	.79	286	257	252	50	227	77	93	2.2	6
	87.5	169.42	.70	.79	286	256	250	50	225	77	92	2.2	6
	90	171.40			2								

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

Project No.: 22050

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date Nov 10, 2020	
Test Location	APC Outlet No. 2
Operator Signature JB	

Project No.:	22050
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 1 COE 20094
Impinger Box No.:	9

Pitot Factor	.851	
DGMCF	.999	
Barometric Pressure	29.74	"Hg
Static Pressure	-9.64	"H2O
Nozzle Size	.2573	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	0.8	mg
Probe	2.6	mg

Moisture Gain

CWTR	475.5	g
WCBDA	20.2	g

Combustion Gas Concentration

Oxygen	8.20	%
Carbon Dioxide	11.11	%
Carbon Monoxide	15.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	SBB03769
Trendicator	
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2570
2	.2575
3	.2570
4	.2575
Average:	.2573

Probe Liner Glass / Metal /Teflon / Other________

Nozzle Glass / Metal / Other________

Union None /Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov 10, 2020	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	866.44	0.80	.73	287	265	256	58	230	74	73	1.90	3.0
	2.5	868.28	0.81	.73	287	264	256	50	232	72	71	1.90	3.0
	5	870.12	.81	.73	288	262	256	47	210	72	71	1.90	5.0
2	7.5	871.97	.82	.73	288	262	257	46	190	71	71	1.90	3.0
	10	873.82	.82	.73	288	262	258	46	184	71	70	1.90	3.0
	12.5	875.66	.83	.73	288	262	258	45	184	71	70	1.90	3.0
3	15	877.48	.78	.71	290	262	257	44	188	70	70	1.80	3.0
	17.5	879.31	.78	.71	290	262	258	44	188	70	70	1.80	3.0
	20	881.09	.78	.71	290	260	260	44	186	70	70	1.80	3.0
4	22.5	882.87	.65	.65	290	260	260	44	188	71	70	1.50	3.0
	25	884.57	.65	.65	290	263	258	45	190	71	70	1.50	3.0
	27.5	886.24	.65	.65	290	263	259	45	190	72	70	1.50	3.0
5	30	887.82	.63	.64	290	264	260	45	190	72	70	1.45	3.0
	32.5	889.44	.63	.64	290	264	260	45	190	72	70	1.45	3.0
	35	891.03	.63	.64	290	264	258	45	190	72	71	1.45	3.0
6	37.5	892.61	.57	.61	290	264	262	45	190	72	71	1.40	3.0
	40	894.17	.59	.62	290	264	260	45	190	72	71	1.40	3.0
	42.5	895.75	.59	.62	290	263	259	45	192	73	71	1.40	3.0
7	45	897.31	.64	.65	290	264	260	45	190	73	71	1.50	3.0
	47.5	898.93	.64	.65	290	264	259	45	192	73	71	1.50	3.0
	50	900.54	.65	.65	290	264	260	45	192	75	71	1.50	3.0

Traverse: 2				
Start Time: 7:59	Initial Leak Check: .008	cfm@	18	"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

Project No.: 22050

Operator : JB

Field Data Sheet

Date: Nov 18, 2020	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 ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	902.16	.69	.67	290	263	259	45	194	74	71	1.60	3.0
	55	903.84	.70	.68	290	264	260	45	194	74	71	1.60	3.0
	57.5	905.53	.70	.68	290	264	262	45	194	74	71	1.60	3.0
9	60	907.23	.70	.68	290	264	260	45	194	74	71	1.60	3.0
	62.5	908.93	.72	.69	289	264	260	45	196	74	71	1.65	3.0
	65	910.64	.72	.69	289	264	260	45	196	74	71	1.65	3.0
10	67.5	912.33	.70	.68	289	264	260	45	196	74	71	1.65	3.0
	70	914.05	.70	.68	290	263	260	45	196	75	72	1.65	3.0
	72.5	915.77	.78	.69	290	264	260	45	196	75	72	1.70	3.0
11	75	917.52	.50	.57	290	264	258	45	196	75	72	1.20	3.0
	77.5	919.00	.48	.56	290	264	260	45	197	75	72	1.10	3.0
	80	920.44	.48	.56	288	264	261	45	195	76	73	1.10	3.0
12	82.5	921.87	.48	.56	288	264	261	45	194	76	73	1.10	3.0
	85	923.30	.47	.56	288	264	260	45	192	76	73	1.10	3.0
	87.5	924.71	.47	.56	288	263	260	46	192	76	73	1.10	3.0
	90	926.14	~~.46~~	~~.55~~	~~288~~	~~264~~	~~261~~	~~46~~	~~192~~	~~76~~	~~73~~	~~1.10~~	~~3.0~~

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 9:29	Final Leak Check: .008	cfm@ 18	"Hg

Project No.: 22050

Operator : JB

Field Data Sheet

Date: Nov 10, 2020	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	926.53	.85	.75	289	264	261	45	190	76	74	2.0	3.0
	2.5	928.43	.85	.75	288	264	260	48	182	76	74	2.0	3.0
	5	930.33	.85	.75	288	264	261	48	184	76	74	2.0	3.0
2	7.5	932.24	.85	.75	290	262	261	43	190	77	74	2.0	3.0
	10	934.16	.85	.75	290	260	260	43	190	77	74	2.0	3.0
	12.5	936.07	.85	.75	290	261	261	43	192	77	74	2.0	3.0
3	15	937.99	.80	.73	289	263	261	42	198	76	74	1.90	3.0
	17.5	939.83	.78	.72	289	264	261	42	198	76	74	1.90	3.0
	20	941.67	.79	.72	289	264	261	42	198	76	74	1.90	3.0
4	22.5	943.57	.74	.70	289	263	260	42	199	76	74	1.80	3.0
	25	945.29	.74	.70	289	263	260	42	199	76	74	1.80	3.0
	27.5	947.10	.74	.70	289	264	261	42	199	76	74	1.80	3.0
5	30	948.89	.69	.67	289	264	261	43	198	77	75	1.60	3.0
	32.5	950.59	.69	.67	289	264	261	43	199	77	75	1.60	3.0
	35	952.29	.69	.67	289	264	261	43	198	77	75	1.60	3.0
6	37.5	954.00	.65	.66	289	264	260	43	198	77	75	1.50	3.0
	40	955.64	.64	.65	289	264	260	43	199	77	75	1.50	3.0
	42.5	957.27	.64	.65	289	264	260	44	198	77	75	1.50	3.0
7	45	958.88	.70	.68	289	264	260	44	198	77	75	1.70	3.0
	47.5	960.61	.70	.68	289	264	261	44	199	77	75	1.70	3.0
	50	962.34	.70	.68	289	264	260	44	198	77	75	1.70	3.0

Traverse: 1				
Start Time: 9:35	Initial Leak Check: .006	cfm@	17	"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

Project No.: 22050

Operator : JB

Field Data Sheet

Date: Nov 10, 2020	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	964.07	.72	.69	289	264	260	44	198	77	75	1.70	3.0
	55	965.82	.72	.69	289	263	260	44	199	77	75	1.70	3.0
	57.5	967.57	.72	.69	289	264	261	44	199	77	75	1.70	3.0
9	60	969.33	.74	.70	289	264	261	44	199	77	75	1.80	3.0
	62.5	971.09	.74	.70	289	263	260	45	200	78	75	1.80	3.0
	65	972.85	.74	.70	289	264	260	45	200	78	75	1.80	3.0
10	67.5	974.63	.75	.71	288	264	261	46	200	78	76	1.80	3.0
	70	976.40	.75	.71	288	264	261	46	200	78	76	1.80	3.0
	72.5	978.18	.75	.71	288	263	261	46	200	78	76	1.80	3.0
11	75	979.94	.61	.64	287	264	261	46	201	79	76	1.50	3.0
	77.5	981.58	.61	.64	287	263	261	46	200	79	76	1.50	3.0
	80	983.24	.61	.64	287	264	260	46	200	79	76	1.50	3.0
12	82.5	984.89	.63	.65	287	264	260	46	200	79	76	1.50	3.0
	85	986.53	.62	.64	287	263	261	47	200	78	76	1.50	3.0
	87.5	988.19	.62	.64	287	264	261	47	199	78	76	1.50	3.0
	90	989.82											

Traverse: #1				
Start Time:	Initial Leak Check:	.006	cfm@ 17	"Hg
Finish Time: 11:05	Final Leak Check:		cfm@	"Hg

Project No.: 22050

Operator : JB

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date Nov 16, 2020	
Test Location	APC Outlet No. 2
Operator Signature SB RW	

Project No.:	22050
Page	1 of 5
Probe No.:	
Meter Box No.: Team 1 COE 20094	
Impinger Box No.: 7	

Pitot Factor .857		
DGMCF .999		
Barometric Pressure 29.69		"Hg
Static Pressure -9.64		"H2O
Nozzle Size .2573		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	0.7	mg
Probe	10.5	mg

Moisture Gain

CWTR	460.9	g
WCBDA	14.7	g

Combustion Gas Concentration

Oxygen	8.36	%
Carbon Dioxide	10.91	%
Carbon Monoxide	16.4	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	SBX03769
Trendicator	
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2570
2	.2575
3	.2570
4	.2575
Average:	.2573

Notes:

Field Data Sheet

Date: Nov 10, 2020	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	990.30	0.80	0.73	289	261	257	45	196	77	75	1.9	3
	2.5	992.17	0.80	0.73	290	260	258	42	205	80	79	1.9	3
	5	994.07	0.80	0.73	290	261	259	42	209	80	79	1.9	3
2	7.5	995.91	0.81	0.74	287	262	258	42	213	79	78	1.9	3
	10	997.78	0.80	0.73	287	261	257	42	214	79	78	1.9	3
	12.5	999.66	0.80	0.73	287	261	257	42	214	79	78	1.9	3
3	15	1001.50	0.800	0.73	287	261	257	41	214	80	79	1.9	3
	17.5	1003.36	0.8	0.73	287	263	259	41	217	78	77	1.9	3
	20	1005.22	0.8	0.73	287	262	259	41	221	78	77	1.9	3
4	22.5	1007.07	0.7	0.68	287	263	261	41	228	78	77	1.7	3
	25	1008.88	0.7	0.68	287	263	261	41	227	78	77	1.7	3
	27.5	1010.65	0.7	0.68	287	262	260	42	231	78	77	1.6	3
5	30	1012.39	0.7	0.68	287	262	260	42	231	78	77	1.6	3
	32.5	1014.11	0.7	0.68	287	262	260	43	231	78	77	1.6	3
	35	1015.84	0.7	0.68	287	263	260	43	231	79	77	1.6	3
6	37.5	1017.57	.60	.63	287	263	260	43	231	78	76	1.45	3
	40	1019.20	.60	.63	287	263	261	43	232	78	76	1.45	3
	42.5	1020.83	.60	.63	287	263	260	43	231	78	76	1.45	3
7	45	1022.44	.65	.66	287	264	263	44	230	79	78	1.60	3
	47.5	1024.14	.65	.66	287	264	262	45	218	79	78	1.60	3
	50	1025.82	.66	.66	287	264	263	46	220	79	78	1.60	3

Traverse: 1			
Start Time: 11:36	Initial Leak Check: .006	cfm@ 18	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22050

Operator : RW JR

Field Data Sheet

Date: Nov 16, 2020	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	1027.51	.67	.67	286	263	260	49	232	80	78	1.6	3
	55	1029.21	.66	.67	286	263	261	49	232	80	78	1.6	3
	57.5	1030.93	.67	.67	286	264	260	49	230	80	78	1.6	3
9	60	1032.63	.65	.66	286	263	261	49	232	80	78	1.6	3
	62.5	1034.32	.64	.66	285	263	261	49	231	80	77	1.55	3
	65	1035.99	.65	.66	285	263	261	49	232	80	77	1.55	3
10	67.5	1037.68	.66	.67	285	263	261	49	232	80	77	1.55	3
	70	1039.35	.67	.67	285	263	262	49	231	81	79	1.55	3
	72.5	1041.04	.67	.67	285	264	261	49	231	81	79	1.55	3
11	75	1042.73	.45	.55	285	263	262	48	231	80	78	1.05	3
	77.5	1044.14	.45	.55	285	264	261	47	232	80	78	1.05	3
	80	1045.56	.45	.55	285	264	262	47	231	80	78	1.05	~~1.05~~ 3
12	82.5	1047.01	.46	.56	285	264	261	47	231	80	78	1.05	3
	85	1048.43	.46	.56	285	264	261	47	231	81	78	1.05	2.8
	87.5	1049.85	.46	.56	285	263	261	47	232	81	78	1.05	2.8
	90	1051.28									~~79~~		

Traverse: 1			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 13:06	Final Leak Check: .006	cfm@ 18	"Hg

Project No.: 22050

Operator : JB RW

Field Data Sheet

Date: Nov 10, 2020	Plant:	Covanta DYEC	Test No.: 3	Particulate/Metals	Page 4 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	1051.70	.88	.77	285	264	258	46	230	81	86	2.10	3.0
	2.5	1053.66	.89	.77	288	260	260	48	228	82	80	2.10	3.0
	5	1055.62	.89	.77	288	260	261	48	228	82	80	2.10	3.0
2	7.5	1057.58	.89	.77	288	261	262	46	230	81	79	2.10	3.0
	10	1059.56	.89	.77	288	260	261	46	232	81	79	2.10	3.0
	12.5	1061.52	.89	.77	289	261	262	46	232	80	79	2.10	3.0
3	15	1063.46	.80	.73	289	261	262	46	232	80	79	1.90	3.0
	17.5	1065.34	.78	.72	287	260	262	46	232	80	79	1.9	3
	20	1067.21	.78	.72	289	262	261	46	233	81	79	1.9	3
4	22.5	1069.07	.80	.73	289	262	261	46	233	81	79	1.9	3
	25	1070.94	.80	.73	290	263	261	46	233	81	79	1.9	3
	27.5	1072.80	.80	.73	290	263	261	46	233	81	79	1.9	3
5	30	1074.65	.70	.69	290	263	259	46	233	81	80	1.7	3
	32.5	1076.43	.73	.70	290	263	259	46	233	81	80	1.7	3
	35	1078.18	.73	.70	290	263	259	46	233	81	80	1.7	3
6	37.5	1079.94	.64	.65	291	263	258	46	232	81	80	1.5	3
	40	1081.63	.63	.65	291	262	258	46	232	81	80	1.5	3
	42.5	1083.30	.65	.66	291	262	261	46	231	81	79	1.5	3
7	45	1084.98	.71	.69	291	263	261	47	231	82	80	1.7	3
	47.5	1086.70	.71	.69	291	263	260	47	231	82	80	1.7	3
	50	1088.43	.71	.69	291	264	261	47	232	82	80	1.7	3

Traverse: 2

Start Time: 13:13	Initial Leak Check: .006	cfm@ 19	"Hg
Finish Time: ~~13:43~~ 14:43	Final Leak Check: .004	cfm@ 17	"Hg

Project No.: 22050

Operator : JB RW

Field Data Sheet

Date: Nov 10, 2020	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 ΔP "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
8	52.5	1090.17	.71	.69	291	264	261	47	232	82	80	1.7	3
	55	1091.89	.74	.70	291	264	261	47	232	82	80	1.8	3
	57.5	1093.69	.73	.70	291	263	260	47	232	82	80	1.8	3
9	60	1095.51	.76	.71	291	263	261	46	231	82	80	1.8	3
	62.5	1097.30	.78	.72	289	263	260	47	231	82	80	1.8	3
	65	1099.11	.74	.71	289	263	260	47	231	82	80	1.8	3
10	67.5	1100.94	.70	.69	289	263	263	48	230	83	80	1.7	3
	70	1102.73	.70	.69	289	263	263	48	230	83	80	1.7	3
	72.5	1104.53	.70	.69	290	263	262	48	230	82	80	1.7	3
11	75	1106.31	.55	.61	290	262	262	48	230	82	80	1.4	3
	77.5	1107.93	.55	.61	290	263	262	48	228	83	81	1.3	3
	80	1109.57	.58	.63	290	263	262	48	228	83	81	1.3	3
12	82.5	1111.07	.55	.61	290	263	262	48	228	83	81	1.3	3
	85	1112.64	.55	.61	291	263	264	49	227	82	80	1.3	3
	87.5	1114.21	.55	.61	291	262	264	49	227	82	80	1.3	3
	90	1115.80			~~291~~								

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

Project No.: 22050

Operator : JB RW

APPENDIX 5

Particle Size Distribution Field Data Sheets
(12 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.:	1	Particle Size
Test Date	NOVEMBER 10, 2020	
Test Location	APC Outlet No. 1	
Operator Signature	[signature]	

Project No.:	22050	
Page	1	of
Probe No.:		
Meter Box No.:		
Impinger Box No.:		

Pitot Factor	0.848	
DGMCF	0.992	
Barometric Pressure	29.74	"Hg
Static Pressure	-9.36	"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	164.5	g
WCBDA	9.2	g

Combustion Gas Concentration

Oxygen	8.36	%
Carbon Dioxide	10.93	%
Carbon Monoxide	13.8	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	UNIT 2
Calipers	

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

Nozzle Measurements	
1	
2	
3	
4	
Average:	

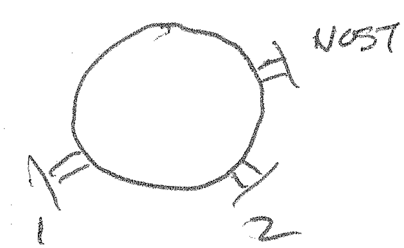
Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram



Notes: ready to test @ 745

Field Data Sheet

Date: NOV 10/20	Plant: Covanta DYEC	Test No.: 1	Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	0.0	.82	.35	287	263	245	69	68	70	71	.38	3
2	10.6	3.64	.77		286	258	249	54	58	71	72	.38	3
3	21.1	7.29	.71		287	261	249	53	60	71	73	.38	3
4	31.1	10.79	.68		287	261	250	52	59	72	74	.38	3
5	40.9	14.10	.60		286	264	249	54	60	73	74	.38	3
6	50.4	17.44	.60		287	263	250	54	60	73	74	.38	3
	59.7	20.54											
1	0	20.54	.90		286	261	247	59	67	74	75	.38	3
2	10.6	24.26	.86		288	263	249	61	60	74	76	.38	3
3	21.3	28.00	.85		288	249	249	62	61	75	76	.38	3
4	31.8	31.65	.83		288	250	249	61	61	75	76	.38	3
5	41.9	35.20	.74		289	250	249	61	61	75	76	.38	3
6	51.3	38.55	.68		289	250	249	61	60	75	76	.38	3
	60.3	41.90											

Traverse: 2				
Start Time: 809	Initial Leak Check:	.004	cfm@ 18	"Hg
Finish Time: 909	Final Leak Check:		cfm@	"Hg

Traverse: 1				
Start Time: 913	Initial Leak Check:		cfm @	"Hg
Finish Time: 1013	Final Leak Check:		cfm @	"Hg

-9.36 ″

Project No.: 22050

Operator : [signature]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	NOVEMBER 10, 2020
Test Location	APC Outlet No. 1
Operator Signature	[signature]

Project No.:	22050	
Page	1	of
Probe No.:	PM 10/2.5	
Meter Box No.:	T2	
Impinger Box No.:	8	

Pitot Factor	.846	
DGMCF	.992	
Barometric Pressure	29.72	"Hg
Static Pressure	-9.36	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	155.9	g
WCBDA	11.0	g

Combustion Gas Concentration

Oxygen	~~8.46~~ 8.37	%
Carbon Dioxide	~~10.86~~ 10.95	%
Carbon Monoxide	~~14.9~~ 15.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	T857
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	1
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: NOV 20/20	Plant: Covanta DYEC	Test No.: 2	Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H₂O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H₂O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
1	0	41.94	.82	.35	286	232	257	70	71	77	78	.38	4
2	10.4	45.60	.81		285	240	250	65	64	77	78	.38	4
3	20.6	49.20	.74		287	241	250	60	61	77	79	.38	4
4	30.3	52.60	.68		286	245	251	60	60	77	79	.38	4
5	39.8	55.90	.60		286	247	250	60	61	78	79	.38	4
6	48.7	59.02	.53		281	247	251	60	61	78	79	.38	4
	57.7	62.40											
1	0	62.40	.70		277	245	251	60	61	79	81	.38	4
2	10.9	66.23	.70		279	245	251	60	61	79	80	.38	4
3	21.8	70.00	.67		282 ~~271~~	271	251	60	60	79	80	.38	4
4	32.4	73.81	.63		282	269	251	60	61	80	81	.38	4
5	42.9	77.55	.56		283	270	251	60	60	80	81	.38	4
6	52.8	81.02	.52		283	270	251	60	60	81	82	.38	4
	62.3	84.35											

Traverse:			
Start Time: 1058	Initial Leak Check:	cfm@	"Hg
Finish Time: 1156	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time: 1159	Initial Leak Check:	cfm @	"Hg
Finish Time: 1259	Final Leak Check:	cfm @	"Hg

Project No.: 22050

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date	NOVEMBER
Test Location	APC Outlet No. 1
Operator Signature	D. [illegible]

Project No.:	22050	
Page	1 of	
Probe No.:	PM10/2.5	
Meter Box No.:	T2	
Impinger Box No.:	18	

Pitot Factor	.848	
DGMCF	0.992	
Barometric Pressure	29.67	"Hg
Static Pressure	-9.36	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	163.4	g
WCBDA	8.0	g

Combustion Gas Concentration

Oxygen	8.45	%
Carbon Dioxide	10.78	%
Carbon Monoxide	14.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	585
Trendicator	
Control Box	7837
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	1
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: NOV 10/20	Plant: Covanta DYEC	Test No.: 3	Particle Size	Page of
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0.0	84.52	.79	.35	286	270	250	70	75	80	82	.38	3
2	11.1	88.31	.76		285	270	250	58	63	80	81	.38	3
3	22.2	92.19	.68		286	269	257	56	63	80	82	.38	3
4	32.8	95.89	.63		286	260	258	57	60	81	83	.38	3
5	43.0	99.6	.60		287	260	259	57	58	81	83	.38	3
6	52.5	102.96	.60		286	265	255	57	57	81	83	.38	3
	61.5	106.09											
1	0	106.09	.81		285	270	251	61	68	82	84	.38	3
2	10.3	109.71	.79		287	269	252	60	68	82	84	.38	3
3	20.6	113.47	.75		287	267	253	61	59	82	84	.38	3
4	30.7	116.93	.71		287	259	252	67	60	83	84	.38	3
5	40.4	120.36	.62		287	263	252	66	64	83	84	.38	3
6	49.7	123.49	.59		287	261	251	65	64	83	84	.38	3
	58.5	126.79											

Traverse: 2				
Start Time: 1342	Initial Leak Check:	.003 cfm@	16	"Hg
Finish Time: 1444	Final Leak Check:	cfm@		"Hg

Traverse: 1				
Start Time: 1446	Initial Leak Check:	/	cfm @	"Hg
Finish Time: ~~1144~~ 1545	Final Leak Check:		cfm @	"Hg

Project No.: 22050

Operator : [signature]

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.:	1 Particle Size	
Test Date	NOVEMBER 9, 2020	
Test Location	APC Outlet No. 2	
Operator Signature	D J W	

Project No.:	22050	
Page	1 of	
Probe No.:	PM2.5/10	
Meter Box No.:	TEAM 2	
Impinger Box No.:	11	

Pitot Factor	0.849	
DGMCF	0.992	
Barometric Pressure	30.01	"Hg
Static Pressure	-8.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

Probe Liner Glass / Metal / Teflon / Other PFA

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

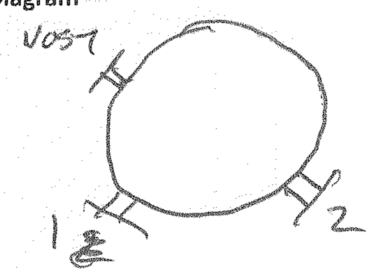
Moisture Gain

CWTR	141.6	g
WCBDA	10.7	g

Combustion Gas Concentration

Oxygen	8.43	%
Carbon Dioxide	11.07	%
Carbon Monoxide	19.7	ppm

Site Diagram



Measuring Device	MII Numbers
Probe / Pitot	PM10/2.5
Trendicator	
Control Box	COE2092
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV.CAN
Calipers	B03922

Nozzle Measurements

1	.1775
2	.1780
3	.1775
4	.1775
Average:	

Notes:

Field Data Sheet

Date: Nov 9/20	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 ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	72.71	.74	.35	289	264	251	68	69	69	70	0.38	3
2	10.5	76.39	.71		288	266	252	56	63	70	71	0.38	3
3	20.9	80.00	.61		287	245	252	58	58	70	72	0.38	3
4	31.1	83.55	.61		287	268	253	54	56	70	74	0.38	3
5	41.1	87.05	.54		287	253	252	54	56	72	75	.38	3
6	50.5	90.34	.49		286	262	253	54	57	73	75	.38	3
	59.5	93.49											
1	0	93.49	.67		285	268	250	55	61	73	76	.38	3
2	10.3	96.90	.72		286	266	254	54	58	74	76	.38	3
3	20.7	100.53	.67		287	260	254	54	57	75	76	.38	3
4	31.5	104.31	.62		287	260	254	56	57	75	77	.38	3
5	41.5	107.80	.59		287	268	254	54	57	75	77	.38	3
6	51.2	111.20	.52		287	260	255	54	57	75	77	.38	3
	60.5	114.43											

Traverse: 2		Traverse: 1	
Start Time: 939	Initial Leak Check: .003 cfm@ 21 "Hg	Start Time: 1045	Initial Leak Check: cfm @ "Hg
Finish Time: 1035	Final Leak Check: cfm@ "Hg	Finish Time: 1145	Final Leak Check: cfm @ "Hg

Project No.: 22050

Operator : D [illegible]

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 2	Particle Size	
Test Date	NOVEMBER 9, 2020	
Test Location	APC Outlet No. 2	
Operator Signature	[signature]	

Project No.:	22050	
Page	1 of	
Probe No.:	PM10/2.5	
Meter Box No.:	T2	
Impinger Box No.:	6	

Pitot Factor	0.848	
DGMCF	0.992	
Barometric Pressure	29.94	"Hg
Static Pressure	-8.3	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other________

Union None / Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	155.9	g
WCBDA	10.8	g

Combustion Gas Concentration

Oxygen	8.17	%
Carbon Dioxide	11.13	%
Carbon Monoxide	13.2	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	3EE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	|
Micromanometer	|
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Notes:

Field Data Sheet

Date: Nov 9/20	Plant: Covanta DYEC	Test No.: 2	Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	14.70	.73	.35	286	250	253	73	79	76	77	.38	4
2	10.9	18.50	.71	↓	288	250	253	64	61	77	78	.38	4
3	21.5	22.22	.65		290	250	255	63	62	77	78	.38	4
4	31.9	25.83	.61		287	250	255	62	61	77	78	.38	4
5	41.7	29.30	.59		287	251	254	61	61	78	79	.38	4
6	51.0	32.59	.53		288	252	253	60	61	78	79	.38	4
	59.8	35.70											
1	0	35.70	.72		287	260	254	64	82	78	80	.38	4
2	10.3	39.33	.72		289	258	255	63	63	79	80	.38	4
3	21.1	43.07	.67		289	258	255	63	63	80	81	.38	4
4	31.4	46.70	.62		280	258	255	62	63	80	81	.38	4
5	41.3	50.22	.60		286	258	256	63	61	80	81	.38	4
6	51.0	53.63	.53		286	257	255	61	60	80	81	.38	4
	60.7	56.81											

Traverse: 2		
Start Time: 1254	Initial Leak Check: .004	cfm@ 17 "Hg
Finish Time: 1354	Final Leak Check:	cfm@ "Hg

Traverse: 1		
Start Time: 1355	Initial Leak Check:	cfm @ "Hg
Finish Time: 1455	Final Leak Check:	cfm @ "Hg

Project No.: 22050

Operator : D [illegible]

-8.97

5.13

.175

ORTECH Consulting Inc.

Plant		Covanta DYEC
Plant Location		Courtice, Ontario
Test No.:	3	Particle Size
Test Date	NOV 9/20	
Test Location		APC Outlet No. 2
Operator Signature	D. Ous	

Project No.:		22050
Page		1 of
Probe No.:		PN10/2.5
Meter Box No.:		T2
Impinger Box No.:		11

Pitot Factor	.848	
DGMCF	.992	
Barometric Pressure	29.88	"Hg
Static Pressure	-8.97	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

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

Probe Liner Glass / Metal / Teflon / Other PFA

Nozzle Glass / Metal / Other________

Union None / Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	155.1	g
WCBDA	8.4	g

Combustion Gas Concentration

Oxygen	8.28	%
Carbon Dioxide	10.97	%
Carbon Monoxide	13.6	ppm

Site Diagram

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

Nozzle Measurements

1 ________
2 ________
3 ________
4 ________
Average:

Notes:

Field Data Sheet

Date: NOV 9/20	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 ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	57.61	.85	.35	288	265	232	75	78	81	82	.38	3
2	10.7	61.35	~~.81~~ .84		288	256	235	59	59	81	82	.38	3
3	21 ~~20.5~~	65.20	.76		289	257	234	59	59	81	82	.38	3
4	31.3 ~~30.1~~	68.73	.70		288	262	261	60	61	81	83	.38	3
5	41 ~~19.0~~	72.15	.63		287	261	261	60	61	81	83	.38	3
6	50.7	75.52	.54		286	261	260	60	55	81	83	.38	3
	59.8	78.71											
1	0	78.71	.89		287	260	258	63	87	82	84	.38	3
2	10.6	82.43	.87		280	260	258	60	55	82	84	.38	3
3	21.2	86.19	.85		288	261	257	59	59	82	84	.38	3
4	31.5	89.85	.84		288	259	257	59	59	82	82	.38	3
5	41.3	93.30	.77		288	258	261	61	55	82	82	.38	3
6	51.0	96.69	.70		289	259	260	60	60	82	82	.38	3
	60.2	99.80											

Traverse: 2				
Start Time: 1543	Initial Leak Check:	.004	cfm@ 12	"Hg
Finish Time: 1643	Final Leak Check:		cfm@	"Hg

Traverse: 1			
Start Time: 1646	Initial Leak Check:	cfm @	"Hg
Finish Time: 1746	Final Leak Check:	cfm @	"Hg

Project No.: 22050

Operator: RW

APPENDIX 6

SVOC Data Sheets
(30 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Semi-Volatile Organic Compounds
Test Date	November 11 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22050	
Page	1 of 5	
Probe No.:	7 series	
Meter Box No.:	Team 4	
Impinger Box No.:	13	

Pitot Factor	.849	
DGMCF	1.004	
Barometric Pressure	29.51	"Hg
Static Pressure	-9.52	"H2O
Nozzle Size	.2651	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	726.4	g
WCBDA	23.0	g

Combustion Gas Concentration

Oxygen	8.34	%
Carbon Dioxide	10.84	%
Carbon Monoxide	11.1	ppm

Measuring Device		MII Numbers
Probe / Pitot	574	COE 20112
Trendicator		COE 20090
Control Box		COE 20090
Incline Manometer		COE 20090
Comb.Gas.Analyzer		
Micromanometer		
Barometer		Env. Canada
Calipers		B

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

Nozzle Measurements	
1	.2635
2	.2635
3	.2650
4	.2685
Average:	.2651

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov. 11 2020	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter 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	55.93	.76	.79	285	256	253	71	37	70	70	2.2	7
	5	59.95	.77	.80	283	257	250	61	40	70	72	2.25	8
2	10	64.04	.77	.80	283	258	252	56	42	70	76	2.2	8
	15	68.08	.79	.82	281	258	254	54	42	71	79	2.3	8
3	20	72.24	.73	.79	280	258	253	53	42	71	81	2.1	8
	25	76.19	.75	.80	280	258	248	52	43	72	83	2.2	8
4	30	80.24	.72	.78	281	259	247	52	44	72	84	2.1	8
	35	84.16	.72	.78	282	259	251	52	43	73	85	2.1	8
5	40	88.09	.63	.73	283	259	253	52	44	73	85	1.9	8
	45	91.81	.65	.75	283	259	254	52	42	73	86	2.0	8
6	50	95.60	.61	.72	284	258	253	52	42	74	87	1.8	8
	55	99.22	.61	.72	284	258	248	52	41	74	87	1.8	8
7	60	102.83	.66	.75	284	259	248	53	42	74	87	2.0	8
	65	106.61	.64	.74	284	258	251	52	42	74	87	1.9	8
8	70	110.37	.64	.74	284	258	252	53	42	75	87	1.85	8
	75	114.07	.64	.74	284	258	254	53	42	75	88	1.9	8
9	80	117.77	.66	.70	288	258	254	53	43	75	88	1.7	8
	85	121.37	.67	.76	284	258	252	53	43	75	88	2.0	8
10	90	125.16	.65	.75	281	258	249	53	44	75	88	2.0	8
	95	128.97	.65	.75	283	258	248	53	46	76	88	2.0	8
11	100	134.84	.65	.76	283	258	250	54	47	76	88	2.0	8

Traverse: 2 ~~8:1~~ 8:27			Traverse:		
Start Time: ~~8:27~~	Initial Leak Check: .001 cfm@ 18 "Hg		Start Time:	Initial Leak Check: cfm @ "Hg	
Finish Time:	Final Leak Check: cfm@ "Hg		Finish Time:	Final Leak Check: cfm @ "Hg	

~~460.9~~ ~~564.5~~

~~14.7~~ ~~24.6~~

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 11 2020	Plant: Covanta DYEC	Test No.: 1 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	105	136.69	.68	.77	281	258	253	54	46	76	87	2	8
12	110	140.61	.55	.69	284	257	254	54	46	76	88	1.7	8
	115	144.21	.56	.69	284	257	254	54	45	76	88	1.5	
	120	147.46											

Traverse: 2		
Start Time: —	Initial Leak Check: — cfm@ —	"Hg
Finish Time: 10:23	Final Leak Check: .001 cfm@ 15	"Hg

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

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 11 2020	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 ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	147.72	.77	.81	284	256	253	61	40	75	78	2.2	9
	5	151.77	.78	.81	284	257	254	57	50	75	82	2.2	9
2	10	155.84	.78	.82	284	257	254	59	52	75	84	2.25	9
	15	159.96	.78	.82	284	257	249	55	53	75	85	2.25	9
3	20	164.08	.74	.80	284	257	250	51	54	75	85	2.15	9
	25	168.08	.77	.81	285	258	248	49	54	75	86	2.25	9
4	30	172.17	.71	.78	285	258	247	51	57	75	86	2.1	9
	35	176.12	.71	.78	285	258	248	51	55	75	86	2.1	9
5	40	180.07	.64	.74	285	258	249	51	54	75	87	1.9	9
	45	183.81	.64	.74	285	258	252	51	53	75	87	1.9	8.5
6	50	187.52	.61	.72	285	258	253	52	55	75	87	1.8	8.5
	55	191.18	.59	.71	285	258	254	52	57	75	87	1.75	8.5
7	60	194.78	.65	.75	285	258	253	52	59	75	87	1.95	8.5
	65	198.55	.65	.75	285	258	253	51	62	75	87	1.95	8.5
8	70	202.33	.66	.75	286	258	247	48	59	75	87	1.95	8.5
	75	206.12	.66	.75	285	258	248	46	54	75	87	1.95	8.5
9	80	209.92	.66	.75	283	258	250	45	53	75	87	1.95	8.5
	85	213.73	.64	.74	282	258	252	45	52	75	87	1.9	8.5
10	90	217.48	.66	.75	282	258	252	46	53	75	87	1.95	8.5
	95	221.27	.66	.75	283	257	253	46	54	75	87	1.95	8.5
11	100	225.06	.56	.69	281	257	253	46	54	75	87	1.7	8

Traverse: 1			
Start Time: 10:30	Initial Leak Check: .001	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.: 22050

Operator :

Field Data Sheet

Date: Nov. 11 2020	Plant: Covanta DYEC	Test No.: 1 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	105	228.65	.60	.72	281	256	253	46	54	75	87	1.8	9
12	110	232.30	.57	.70	281	256	251	46	55	75	87	1.6	8
	115	235.78	.60	.72	281	256	251	47	56	76	88	1.8	9
	120	239.23											

Traverse: 1	
Start Time: —	Initial Leak Check: — cfm@ — "Hg
Finish Time: 12:30	Final Leak Check: .002 cfm@ 14.5 "Hg

12:32

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

Project No.: 22050

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 2	Semi-Volatile Organic Compounds	
Test Date	November 11 2020	
Test Location	APC Outlet No. 1	
Operator Signature		

Project No.:	22050	
Page	1 of 5	
Probe No.:	7 Series	
Meter Box No.:	Team 4	
Impinger Box No.:		

Pitot Factor	.849	
DGMCF	1.004	
Barometric Pressure	29.55	"Hg
Static Pressure	-9.52	"H2O
Nozzle Size	.2651	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	699.9	g
WCBDA	20.7	g

Combustion Gas Concentration

Oxygen	8.49	%
Carbon Dioxide	10.81	%
Carbon Monoxide	14.0	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot S7A	
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements

1 __________
2 __________
3 __________
4 __________
Average:

Notes:

Field Data Sheet

Date: Nov. 11 2020	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	39.62	.71	.77	281	255	252	69	54	73	72	2	7
	5	43.47	.70	.77	279	257	245	56	47	73	75	2.05	7
2	10	47.30	.68	.76	278	257	247	53	49	73	80	2.05	8
	15	51.17	.68	.76	276	257	249	52	49	73	82	2.05	8
3	20	55.02	.64	.74	276	258	252	51	51	74	84	1.9	8
	25	58.75	.66	.76	275	258	248	51	51	74	85	2.05	8
4	30	62.46	.66	.76	275	258	249	51	52	74	86	2.05	8
	35	66.32	.68	.77	275	258	251	51	55	75	87	2.05	8
5	40	70.21	.65	.75	276	258	250	51	58	75	87	1.95	8.5
	45	74.03	.62	.73	275	256	247	50	54	75	87	1.9	8
6	50	77.76	.60	.71	282	258	244	50	45	73	74	1.65	8
	55	81.29	.58	.70	283	259	252	45	45	74	79	1.6	8
7	60	84.77	.64	.74	283	258	258	44	46	74	83	1.9	8
	65	88.39	.63	.73	282	259	248	44	47	75	85	1.9	8
8	70	92.13	.63	.74	281	258	253	44	48	75	87	1.95	8
	75	95.89	.63	.74	281	258	253	44	48	76	88	1.9	8
9	80	99.62	.70	.78	280	258	251	45	49	76	88	2.05	8
	85	103.50	.64	.75	281	258	248	45	50	77	89	2	9
10	90	107.33	.65	.75	280	258	250	45	51	77	89	1.95	9
	95	111.12	.62	.73	282	258	254	45	51	77	89	1.85	9.5
11	100	114.82	.52	.67	281	257	252	46	52	77	90	1.4	8

Traverse: 2		Traverse:	
Start Time: 13:27	Initial Leak Check: .001 cfm@ 16 "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: –	Final Leak Check: – cfm@ – "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Pump off at 14:15 47 minute mark 15:06 start up

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 11 2020	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	105	118.12	.52	.67	281	257	248	46	51	78	90	1.45	8
12	110	121.40	.52	.67	281	257	253	46	52	78	91	1.5	8
	115	124.73	.53	.68	279	257	255	46	52	78	91	1.6	8
	120	128.16											

Traverse: 2		Traverse:	
Start Time: —	Initial Leak Check: — cfm@ — "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 16:19	Final Leak Check: .001 cfm@ 15 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 11 2020	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	128.46	.84	.86	284	257	244	61	58	78	82	2.5	10
	5	132.65	.84	.86	285	257	256	50	61	78	85	2.5	10
2	10	136.96	.87	.87	286	256	249	50	58	78	87	2.55	10
	15	141.32	.84	.85	286	257	241	51	55	78	88	2.4	10
3	20	145.62	.80	.83	286	258	247	52	58	78	88	2.3	10
	25	149.78	.80	.83	286	258	247	52	58	78	88	2.3	10
4	30	153.97	.76	.81	286	258	254	53	59	78	89	2.2	10
	35	158.02	.74	.80	286	258	245	53	57	78	89	2.15	10
5	40	162.04	.66	.76	286	258	244	53	58	78	89	2.0	10
	45	165.86	.70	.78	287	258	253	53	59	77	89	2.1	10
6	50	169.76	.62	.73	287	258	252	52	60	77	89	1.8	9
	55	173.44	.60	.72	287	257	250	52	57	77	89	1.8	9
7	60	177.10	.66	.75	287	257	255	52	54	77	89	1.95	9.5
	65	180.89	.66	.75	287	257	250	51	53	77	88	1.95	9.5
8	70	184.67	.66	.75	287	257	252	51	53	77	88	1.95	9.5
	75	188.45	.65	.75	287	257	249	51	53	76	88	1.95	9.5
9	80	192.21	.65	.75	286	257	250	51	52	76	87	1.95	9.5
	85	195.98	.65	.75	285	256	253	51	53	76	87	1.95	9.5
10	90	199.74	.64	.74	284	257	251	51	55	76	87	1.9	9.5
	95	203.45	.64	.74	286	256	252	51	55	75	87	1.9	9.5
11	100	207.18	.58	.71	281	256	252	51	54	75	86	1.7	9.5

Traverse: 1			
Start Time: 16:26	Initial Leak Check: .001	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.: 22050

Operator :

Field Data Sheet

Date: Nov. 11 2020	Plant:	Covanta DYEC	Test No.:	2 SVOC	Page 5 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	105	210.74	.58	.71	278	250	251	51	~~7~~55	~~86~~75	86	1.7	9
12	110	214.29	.54	.68	278	255	249	51	52	75	86	1.5	8.5
	115	217.65	.58	.71	277	256	249	51	53	75	86	1.7	9
	120	221.12											

Traverse: 1
Start Time: – Initial Leak Check: – cfm@ – "Hg
Finish Time: 18:26 Final Leak Check: .002 cfm@ 15 "Hg

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

Project No.: 22050
Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	November 12 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22050
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	2

Pitot Factor	.849	
DGMCF	1.004	
Barometric Pressure	29.90	"Hg
Static Pressure	-10.07	"H2O
Nozzle Size	.2651	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	699.6	g
WCBDA	20.0	g

Combustion Gas Concentration

Oxygen	8.49	%
Carbon Dioxide	10.95	%
Carbon Monoxide	15.8	ppm

Measuring Device	MII Numbers
Probe / Pitot S7A	
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal/ Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov. 12 2020	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	* Dry Gas Meter ft^3	* Pitot ΔP "H_2O	* Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
1	0	21.42	.70	.75	275	257	248	61	46	59	59	1.95	7
	5	25.12	.70	.75	276	257	249	56	45	59	61	1.95	7
2	10	28.80	.68	.74	277	257	246	53	46	59	65	1.95	7
	15	32.49	.70	.75	279	257	246	52	46	60	68	2.0	7.5
3	20	36.24	.70	.75	281	258	245	51	48	60	70	2.0	7.5
	25	40.02	.72	.77	282	258	244	51	48	61	71	2.1	8
4	30	43.87	.68	.74	281	259	246	51	49	61	72	2.0	8
	35	47.66	.68	.74	282	258	248	51	48	61	73	1.9	8
5	40	51.36	.68	.74	283	258	248	52	48	62	74	1.9	8
	45	55.07	.65	.72	284	258	248	50	47	62	74	1.8	8
6	50	58.67	.60	.70	285	257	248	47	46	63	75	1.8	8
	55	62.21	.62	.71	285	257	247	46	46	63	76	1.8	8
7	60	65.79	.66	.73	286	257	248	45	47	63	76	1.9	7.5
	65	69.45	.68	.74	285	257	244	44	46	63	76	2.0	8
8	70	73.19	.68	.74	285	257	246	44	46	64	76	2.0	8
	75	76.95	.70	.75	286	257	247	44	48	64	76	2.05	8
9	80	80.78	.70	.75	284	257	248	44	48	64	76	2.0	8
	85	84.58	.66	.73	285	257	249	44	48	64	76	1.9	8
10	90	88.24	.64	.72	280	257	249	44	48	64	76	1.85	8
	95	91.87	.64	.72	285	257	248	44	49	64	77	1.85	8
11	100	95.51	.61	.70	285	257	245	44	48	65	77	1.8	8

Traverse: 2			
Start Time: 8:20	Initial Leak Check: .002	cfm@ 16	"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.: 22050

Operator :

Field Data Sheet

Date: Nov. 12 2020	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	105	99.08	.60	.70	279	256	248	44	48	65	77	1.8	8
12	110	102.63	.60	.70	278	256	248	44	48	65	77	1.8	8
	115	106.18	.60	.70	278	256	246	45	48	65	77	1.8	8
	120	109.73											

Traverse: 2		
Start Time:	Initial Leak Check:	cfm@ 1 "Hg
Finish Time: 10:20	Final Leak Check:	cfm@ .001 17 "Hg

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

Project No.: 22050

Operator :

Field Data Sheet

Date: Nov. 12 2010	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	110.11	.87	.83	284	258	246	55	46	64	66	2.4	9.5
	5	114.25	.82	.81	285	256	248	47	58	64	70	2.25	9.5
* 2	10	119.36	.82	.81	284	257	249	48	53	64	73	2.4	9.5
	15	~~124.~~ 123.04	.81	.81	284	258	249	49	59	65	74	3.4	12
3	20	127.37	.82	.82	284	258	250	52	58	65	74	2.3	9.5
	25	136.51	.74	.78	284	258	248	53	58	65	76	2.05	9
4	30	135.40	.70	.76	282	258	248	54	56	65	77	2.0	9
	35	139.21	.70	.76	281	258	246	52	55	66	78	2.0	9
5	40	142.97	.64	.73	280	257	248	49	52	66	79	1.9	9
	45	146.63	.64	.73	280	257	247	48	49	66	79	1.9	9
6	50	150.32	.60	.70	281	257	248	48	50	66	79	1.7	8.5
	55	153.85	.59	.70	282	258	244	47	48	66	79	1.7	8.5
7	60	157.35	.61	.71	283	258	248	46	47	66	79	1.8	8.5
	65	160.94	.61	.71	283	257	249	47	47	67	79	1.8	8.5
8	70	164.56	.61	.71	283	257	249	47	47	67	79	1.8	8.5
	75	168.14	.61	.71	282	257	247	46	48	67	79	1.8	8.5
9	80	171.71	.61	.71	279	257	249	46	47	67	79	1.8	8.5
	85	175.28	.64	.73	279	257	249	45	48	67	79	1.9	9
10	90	178.95	.60	.71	277	257	248	45	49	67	79	1.8	8.5
	95	182.59	.60	.71	277	257	246	46	49	67	79	1.8	8.5
11	100	186.14	.60	.71	271	256	247	46	49	67	79	1.8	8.5

Traverse: 10:32 1			
Start Time:	Initial Leak Check: .002	cfm@ 16.7	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

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

* wrong meter temp input causing incorrect sampling rate

Project No.: 22050

Operator : [signature]

Field Data Sheet

Date: Nov. 12 2020	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter 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	189.74	.56	.68	272	257	246	46	48	67	80	1.6	8.5
12	110	193.18	.56	.68	273	257	247	46	48	67	80	1.6	8.5
	115	196.61	.55	.68	273	256	249	46	47	67	80	1.6	8.5
	120	200.04											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 12:32	Final Leak Check:	cfm@ .002	"Hg 15

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

Project No.: 22050

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	Nov 11, 2020
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22050	
Page	1 of 5	
Probe No.:		
Meter Box No.:	Team 1	
Impinger Box No.:	14	

Pitot Factor	.851	
DGMCF	.999	
Barometric Pressure	29.51	"Hg
Static Pressure	-9.520	"H2O
Nozzle Size	.2513	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	617.7	g
WCBDA	13.4	g

Combustion Gas Concentration

Oxygen	8.42	%
Carbon Dioxide	10.78	%
Carbon Monoxide	13.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	SRB03769
Trendicator	
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

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

Nozzle Measurements	
1	.2570
2	.2575
3	.2570
4	.2575
Average:	.2573

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov 11, 2020	Plant: Covanta DYEC	Test No.: 1	SVOC	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	118.51	.85	.74	280	258	257	50	~~48~~ 45	74	73	2.0	3.5
	5	122.31	.86	.75	284	255	258	52	43	72	71	2.0	3.5
2	10	126.10	.84	.74	284	254	257	52	44	71	70	2.0	3.5
	15	129.84	.84	.74	284	258	259	49	46	71	70	2.0	3.5
3	20	133.57	.78	.71	284	256	257	46	47	71	70	1.8	3.5
	25	137.19	.76	.70	284	256	259	46	47	71	70	1.8	3.5
4	30	140.74	.77	.71	284	258	258	44	49	72	71	1.8	3.5
	35	144.28	.75	.70	284	256	258	44	50	72	71	1.75	3.5
5	40	147.81	.64	.67	284	255	258	44	48	73	71	1.6	3.5
	45	151.24	.71	.68	284	256	258	44	49	73	71	1.6	3.5
6	50	154.66	.66	.66	284	256	258	45	49	73	72	1.5	3.5
	55	157.92	.66	.66	284	254	258	45	49	74	72	1.5	3.5
7	60	161.19	.69	.67	283	259	258	46	50	75	72	1.6	3.5
	65	164.57	.69	.67	283	258	258	46	50	75	72	1.6	3.5
8	70	167.94	.69	.67	282	259	259	46	52	76	73	1.6	3.5
	75	171.33	.70	.68	282	259	258	46	52	76	73	1.6	3.5
9	80	174.73	.69	.67	282	258	258	46	52	76	73	1.6	3.5
	85	178.15	.68	.67	280	256	259	47	53	76	73	1.6	3.5
10	90	181.55	.58	.62	280	258	259	47	53	76	73	1.4	3.5
	95	184.74	.57	.61	280	256	260	47	54	77	74	1.4	3.5
11	100	187.92	.47	.53	280	256	258	47	54	77	74	1.0	3.5

Traverse: 2 8:22				
Start Time: ~~[illegible]~~	Initial Leak Check: .002	cfm@	19	"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

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

Project No.: 22050

Operator : JB RW

Field Data Sheet

Date: Nov 11, 2020	Plant: Covanta DYEC	Test No.: 1	SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	105	190.70	.43	.53	280	257	259	47	52	76	74	0.90	3.5
12	110	193.35	.42	.53	280	258	258	47	52	76	74	.90	3.0
	115	195.99	.42	.53	280	259	259	47	52	76	74	.90	3.0
	120	198.64											

Traverse: 2		
Start Time:	Initial Leak Check:	cfm@ "Hg
Finish Time: 10:22	Final Leak Check: .006	cfm@ 18 "Hg

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

Project No.: 22050

Operator : JB RW

Field Data Sheet

Date: Nov 11, 2020	Plant: Covanta DYEC	Test No.: 1	SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot 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	199.00	.78	.72	281	257	260	48	52	77	75	1.9	4.0
	5	202.64	.79	.72	285	256	260	49	53	77	75	1.9	4.0
2	10	206.31	.81	.73	285	256	258	49	52	77	75	1.9	4.0
	15	209.98	.81	.73	285	256	258	49	52	77	75	1.9	4.0
3	20	213.64	.79	.72	286	255	259	48	44	75	75	1.9	4.0
	25	217.31	.79	.72	287	256	258	49	43	76	75	1.9	4.0
4	30	220.95	.76	.70	287	258	260	49	44	75	74	1.8	4.0
	35	224.56	.75	.70	288	260	261	48	43	75	74	1.8	4.0
5	40	228.08	.73	.69	288	257	262	48	45	76	75	1.75	4.0
	45	231.61	.73	.69	288	256	259	47	44	75	74	1.75	4
6	50	235.16	.68	.67	289	256	260	48	45	75	75	1.6	4.5
	55	238.62	.66	.66	288	256	259	48	45	75	74	1.6	4.5
7	60	242.10	.70	.68	289	256	259	49	47	76	75	1.6	4.5
	65	245.57	~~.70~~	.68	289	256	260	48	48	76	75	1.6	4.5
8	70	249.05	.72	.69	289	257	262	44	45	76	75	1.65	4.5
	75	252.51	.72	.69	289	257	260	44	45	77	75	1.65	4.5
9	80	255.95	.71	.68	289	258	260	44	45	77	75	1.65	4.5
	85	259.43	.72	.69	288	259	262	42	45	77	75	1.65	4.5
10	90	262.89	.70	.68	288	258	261	43	45	77	75	1.60	4.5
	95	266.29	.71	.68	287	258	262	43	45	77	75	1.60	4.5
11	100	269.70	.55	.60	286	258	260	44	46	77	75	1.30	4.0

Traverse: 1			
Start Time: 10:32	Initial Leak Check: .006	cfm@ 18	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

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

Project No.: 22050

Operator : JB RW

Field Data Sheet

Date: Nov 11, 2020	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	105	272.75	.54	.60	287	256	260	44	45	77	75	1.30	4.0
12	110	275.78	.54	.60	286	258	258	44	45	77	75	1.30	4.0
	115	278.80	.53	.59	286	259	260	44	45	77	75	1.20	4.0
	120	281.79											

Traverse: 1		
Start Time:	Initial Leak Check:	cfm@ "Hg
Finish Time: 12:32	Final Leak Check: .006	cfm@ 20 "Hg

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

Project No.: 22050

Operator : JB RW

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date Nov 11, 2020	
Test Location	APC Outlet No. 2
Operator Signature	[signature]

Project No.:	22050	
Page	1 of 5	
Probe No.:		
Meter Box No.:	Team 1 COE 20094	
Impinger Box No.:	12	

Pitot Factor	.851	
DGMCF	.999	
Barometric Pressure	29.54	"Hg
Static Pressure	-9.520	"H2O
Nozzle Size	.2513	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	654.6	g
WCBDA	17.1	g

Combustion Gas Concentration

Oxygen	8.33	%
Carbon Dioxide	10.93	%
Carbon Monoxide	15.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	SB2003769
Trendicator	
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

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

Nozzle Measurements

1 .2510
2 .2515
3 .2510
4 .2515
Average: .2513

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: NOV 11, 2020	Plant: Covanta DYEC	Test No.: 2	SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	282.43	.80	.73	287	265	258	48	46	79	78	1.9	4.0
	5	286.12	.80	.73	285	261	256	50	46	76	76	1.9	4.0
2	10	289.77	.85	.75	286	260	259	50	43	76	75	2.0	4.0
	15	293.48	.84	.74	286	260	261	50	43	76	75	2.0	4.0
3	20	297.22	.78	.70	285	257	259	52	42	74	74	1.9	4.0
	25	300.95	.79	.72	285	258	260	51	42	74	74	1.8	4.0
4	30	304.59	.74	.70	286	257	260	52	45	75	74	1.7	4
	35	308.13	.74	.70	286	256	259	51	42	75	74	1.7	4
5	40	311.67	.70	.68	287	256	259	52	44	75	74	1.6	4
	45	315.16	.70	.68	287	256	259	52	44	75	74	1.6	4
6	50	318.64	.65	.65	288	257	260	51	44	76	74	1.5	4
	55	322.10	.65	.65	289	257	261	51	45	77	75	1.5	4.5
7	60	325.50	.76	.68	289	257	261	53	46	77	75	1.6	4.5
	65	328.88	.70	.68	288	257	261	53	46	77	75	1.6	4.5
8	70	332.26	.72	.69	288	257	261	52	47	77	75	1.6	4.5
	75	335.68	.70	.68	287	256	260	53	48	77	75	1.6	4.5
9	80	338.98	.70	.68	288	256	260	53	48	77	75	1.8	4.5
	85	342.57	.70	.68	287	257	262	54	48	78	76	1.7	4.5
10	90	346.04	.65	.65	287	257	262	54	45	77	75	1.6	4.5
	95	349.40	.65	.66	287	258	261	54	45	78	76	1.5	4.5
11	100	352.77	.60	.63	288	256	261	55	44	78	76	1.4	4.5

Traverse: 2		Traverse:	
Start Time: 13:28	Initial Leak Check: .004 cfm@ 18 "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 15:28	Final Leak Check: 0.002 cfm@ 17 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 22050

Operator : JB RW

Field Data Sheet

Date: Nov 11, 2020	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	105	355.98	.6	.63	288	257	262	56	44	78	76	1.4	4.5
12	110	359.14	.5	.57	288	256	261	55	44	78	76	1.1	4.0
	115	362.02	.5	.57	287	256	261	55	44	78	76	1.1	4.0
	120	364.92											

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

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

Project No.: 22050

Operator : JB RW

Field Data Sheet

Date: Nov 11, 2020	Plant: Covanta DYEC	Test No.: 2 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	365.30	.85	.75	288	257	263	61	46	79	78	1.8	5
	5	368.89	.85	.75	286	255	268	56	44	79	77	1.8	5
2	10	372.48	.89	.77	286	255	263	54	42	78	76	2	5
	15	376.28	.89	.77	286	255	261	54	42	78	76	2	5
3	20	380.01	.85	.75	286	256	260	56	43	78	77	1.9	5
	25	383.81	.85	.75	287	256	262	57	43	78	77	1.9	5.5
4	30	387.56	.85	.75	288	256	262	57	44	77	77	1.9	5.5
	35	391.29	.8	.73	288	256	261	58	45	77	76	1.8	5.5
5	40	394.96	.75	.7	288	256	262	59	47	78	77	1.7	5
	45	398.55	.7	.68	288	256	262	60	48	79	77	1.6	5
6	50	402.05	.68	.67	288	256	262	60	46	78	77	1.6	5
	55	405.43	.72	.69	288	256	263	57	41	78	77	1.6	5
7	60	408.82	.75	.70	288	257	262	54	42	79	77	1.7	5
	65	412.25	.75	.70	288	257	262	53	43	79	77	1.7	5
8	70	415.79	.75	.70	287	256	262	52	43	78	77	1.7	5
	75	419.31	.75	.70	287	256	262	52	44	78	77	1.7	5
9	80	422.83	.8	.73	287	257	262	52	46	79	78	1.8	5.5
	85	426.47	.8	.73	288	256	262	51	49	79	77	1.8	5.5
10	90	430.11	.7	.68	288	256	262	51	45	78	77	1.6	5.5
	95	433.60	.7	.68	288	256	262	51	41	78	77	1.6	5.5
11	100	437.08	.55	.60	288	255	262	51	41	78	77	1.1	5

Traverse: 1					
Start Time: 15:35	Initial Leak Check:	.003	cfm@	17	"Hg
Finish Time: 17:35	Final Leak Check:	<.002	cfm@	19	"Hg

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

Project No.: 22050

Operator : JB RW

Field Data Sheet

Date: Nov 11, 2020	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	* Dry Gas Meter 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	440.09	.55	.6	288	256	261	51	40	78	77	1.1	5
12	110	443.00	.5	.57	288	256	261	51	40	78	77	1.1	5
	115	445.92	.5	.57	288	256	252	52	41	78	77	1.1	5
	120	448.85											

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

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

Project No.: 22050

Operator : JB RW

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	Nov 12/2020
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22050	
Page	1 of 5	
Probe No.:		
Meter Box No.:	Team 1 COE 20094	
Impinger Box No.:	10	

Pitot Factor	.851	
DGMCF	.999	
Barometric Pressure	29.90	"Hg
Static Pressure	-9.62	"H2O
Nozzle Size	.2573	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	537.7	g
WCBDA	14.1	g

Combustion Gas Concentration

Oxygen	8.40	%
Carbon Dioxide	11.05	%
Carbon Monoxide	17.0	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	S8B03769
Trendicator	
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2510
2	.2515
3	.2510
4	.2515
Average:	.2513

Notes:

Field Data Sheet

Date: Nov 12/20	Plant: Covanta DYEC	Test No.: 3 SVOC
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	49.25	.75	.68	288	256	260	62	59	63	62	1.7	3.5
	5	52.70	.75	.68	288	256	259	50	42	61	61	1.7	3.5
2	10	56.12	.80	.70	287	254	258	48	42	61	60	1.8	4
	15	59.65	.79	.70	287	255	259	46	43	61	60	1.8	4
3	20	63.18	.75	.68	287	255	259	44	44	61	60	1.7	4
	25	66.60	.75	.68	287	255	259	44	44	61	60	1.7	4
4	30	70.04	.72	.67	288	255	260	43	44	62	61	1.7	4
	35	73.44	.72	.67	288	255	260	43	44	62	61	1.7	4
5	40	76.84	.70	.66	289	256	259	43	42	63	61	1.7	4
	45	80.24	.66	.64	289	256	259	43	42	63	61	1.6	4
6	50	83.58	.61	.62	289	256	260	43	41	63	61	1.4	4
	55	86.77	.62	.62	288	255	261	43	40	64	61	1.4	4
7	60	89.93	.64	.63	288	255	260	43	41	64	62	1.4	4
	65	93.06	.65	.64	288	255	260	43	42	64	62	1.4	4
8	70	96.18	.70	.66	288	256	261	43	42	64	62	1.7	4
	75	99.58	.69	.66	288	256	261	43	42	64	62	1.7	4
9	80	102.99	.68	.65	284	255	260	43	44	65	62	1.6	4
	85	106.37	.68	.66	284	255	260	44	45	66	63	1.6	4
10	90	109.76	.68	.66	285	255	261	44	46	66	63	1.6	4
	95	113.14	.69	.66	285	255	260	44	43	65	63	1.6	4
11	100	116.54	.55	.59	286	255	266	43	40	66	63	1.2	4

Traverse: 2		
Start Time: 8:13	Initial Leak Check: .005 cfm@ 19 "Hg	
Finish Time: 10:13	Final Leak Check: .006 cfm@ 16 "Hg	

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

Project No.: 22050

Operator : RW

Field Data Sheet

Date: Nov. 12	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	119.48	.54	.58	286	255	260	44	40	66	64	1.2	4
12	110	122.40	.55	.59	285	255	260	44	40	66	63	1.2	4
	115	125.31	.54	.58	285	255	260	44	40	66	64	1.2	4
	120	128.25											

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

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

Project No.: 22050

Operator : RJ

Field Data Sheet

Date: Nov. 12	Plant: Covanta DYEC	Test No.: 3 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	128.62	.68	.66	288	256	261	55	40	67	65	1.6	4
	5	131.93	.69	.66	287	255	260	44	42	66	65	1.6	4
2	10	135.26	.69	.66	288	256	261	44	44	66	65	1.6	4.5
	15	138.57	.69	.66	288	256	261	45	44	66	65	1.6	4.5
3	20	141.90	.65	.64	287	256	261	44	45	66	65	1.5	4.5
	25	145.11	.66	.65	287	257	261	45	46	67	65	1.5	4.5
4	30	148.32	.63	.63	287	257	261	46	48	66	65	1.5	4.5
	35	151.54	.62	.63	287	257	261	45	43	66	65	1.5	4.5
5	40	154.74	.6	.62	286	256	260	45	42	67	65	1.4	4.5
	45	157.95	.6	.62	287	257	261	46	41	67	65	1.4	4.5
6	50	161.10	.55	.59	287	257	260	46	41	67	65	1.2	4.5
	55	164.06	.56	.60	286	256	260	47	40	67	65	1.2	4.5
7	60	167.01	.58	.61	286	256	260	47	40	67	65	1.2	4.5
	65	169.96	.58	.61	287	257	260	48	41	67	65	1.3	4.5
8	70	172.98	.55	.59	287	257	261	48	41	67	66	1.3	4.5
	75	176.02	.54	.59	287	257	261	48	42	68	66	1.3	4.5
9	80	179.05	.55	.59	286	257	261	48	43	69	66	1.3	4.5
	85	182.08	.57	.60	286	257	261	49	44	69	66	1.3	4.5
10	90	185.09	.55	.59	286	257	260	49	46	69	66	1.3	4.5
	95	188.12	.55	.60	285	257	261	50	47	69	66	1.3	4.5
11	100	191.12	.55	.59	285	257	261	50	49	69	67	1.3	4.5

Traverse: 1			
Start Time: 10:30	Initial Leak Check: .002	cfm@ 17	"Hg
Finish Time: 12:30	Final Leak Check: .003	cfm@ 17	"Hg

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

Project No.: 22050

Operator : RV

Field Data Sheet

Date: Nov. 12	Plant: Covanta DYEC	Test No.: 3 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	105	194.15	.55	.59	285	257	261	50	50	69	67	1.3	4.5
12	110	197.16	.43	.52	285	257	261	50	42	69	67	1	4.5
	115	199.95	.43	.52	285	257	261	51	39	69	67	1	4.5
	120	202.69											

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

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

Project No.: 22050

Operator : RV

APPENDIX 7

Acid Gas Field Data Sheets
(12 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	M26A
Test Date	November 9 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22050
Page	1 of 2
Probe No.:	7 Series
Meter Box No.:	Team 4
Impinger Box No.:	1

Pitot Factor	.848	
DGMCF	1.004	
Barometric Pressure	30.01	"Hg
Static Pressure	- 8.93	"H2O
Nozzle Size	.2651	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	~~2~~ 1
Number of Points/Port	~~12~~ 1

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	151.2	g
WCBDA	14.6	g

Combustion Gas Concentration

Oxygen	8.73	%
Carbon Dioxide	10.78	%
Carbon Monoxide	13.9	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	B04011
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	B03906

Nozzle Measurements

1	.2635
2	.2635
3	.2650
4	.2685
Average:	.2651

Site Diagram

Notes:

Field Data Sheet

Date: Nov. 9 2020	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm .73	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	82.60	.64	~~.90~~	288	255	252	66	238	68	68	2.0	6
~~2~~	5	86.72	.66	.75	282	259	250	50	237	68	71	2.0	6.5
~~3~~	10	90.49	.66	.75	282	259	251	49	237	69	75	2.0	5
~~4~~	15	94.07	.66	.75	283	259	249	50	235	69	79	2.1	5
~~5~~	20	97.88	.68	.76	283	258	252	50	240	70	83	2.15	5.5
~~6~~	25	101.86	.66	.76	284	258	247	51	240	71	85	2.1	5.5
~~7~~	30	105.70	.72	.79	284	258	247	51	240	71	86	2.1	5.5
~~8~~	35	109.57	.68	.77	285	258	249	52	237	72	87	2.1	5.5
~~9~~	40	113.43	.70	.78	285	258	250	52	235	72	88	2.2	5.5
~~10~~	45	117.44	.70	.79	285	258	251	52	242	73	89	2.2	5.5
~~11~~	50	121.42	.69	.77	286	258	251	53	245	74	90	2.1	5.5
~~12~~	55	125.32	.68	.77	286	258	253	53	247	74	91	2.1	5.5
	60	129.24											

Traverse:				
Start Time: 9:31	Initial Leak Check:	.002	cfm@ 15	"Hg
Finish Time: 10:31	Final Leak Check:	.002	cfm@ 14	"Hg

Single Point
Point 4

Project No.: 22050
Operator :

9:37

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	November 9 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22050	
Page	1 of 2	
Probe No.:	7 series	
Meter Box No.:	Team 4	
Impinger Box No.:		

Pitot Factor	.848	
DGMCF	1.004	
Barometric Pressure	29.98	"Hg
Static Pressure	-8.93	"H2O
Nozzle Size	.2651	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	~~5~~	5
Number of Ports	~~2~~	1
Number of Points/Port	~~12~~	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	163.4	g
WCBDA	14.9	g

Combustion Gas Concentration

Oxygen	8.59	%
Carbon Dioxide	10.76	%
Carbon Monoxide	12.2	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot SP4	B04011
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	B03906

Nozzle Measurements	
1	.2635
2	.2635
3	.2650
4	.2685
Average:	.2651

Notes:

Field Data Sheet

Date: Nov. 9 2020	Plant: Covanta DYEC	Test No.: 2 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	29.77	.67	.75	288	256	252	73	125	72	72	2.05	5.5
~~2~~	5	33.63	.67	.75	287	260	255	60	212	72	77	2.0	5.5
~~3~~	10	37.40	.67	.75	288	258	248	58	214	72	83	2.0	5.5
~~4~~	15	41.17	.68	.76	288	257	255	60	219	73	86	2.1	5.5
~~5~~	20	44.99	.68	.76	288	256	248	59	218	73	88	2.1	5.5
~~6~~	25	48.93	.68	.77	288	257	255	59	224	74	90	2.0	5.5
~~7~~	30	52.77	.68	.77	288	256	250	58	224	75	91	2.05	5.5
~~8~~	35	56.61	.65	.75	288	257	250	58	225	75	92	1.9	5.5
~~9~~	40	60.32	.65	.75	288	256	255	56	225	76	92	1.95	5.5
~~10~~	45	64.09	.65	.75	288	256	249	56	224	76	93	1.95	5.5
~~11~~	50	67.86	.63	.74	288	257	252	56	227	77	93	1.9	5.5
~~12~~	55	71.57	.63	.74	287	256	254	56	226	77	93	1.9	5.5
	60	75.32											

Traverse: 1				
Start Time: 11:44	Initial Leak Check:	.002	cfm@ 16	"Hg
Finish Time: 12:44	Final Leak Check:	.002	cfm@ 14	"Hg

Single Point
Point 4

Project No.: 22050
Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	November 9 2020
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	22050	
Page	1 of 2	
Probe No.:		
Meter Box No.:		
Impinger Box No.:		

Pitot Factor	.848	
DGMCF	1.004	
Barometric Pressure	29.92	"Hg
Static Pressure	-8.93	"H2O
Nozzle Size	.2651	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5	5
Number of Ports	~~2~~	1
Number of Points/Port	~~12~~	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	195.3	g
WCBDA	12.4	g

Combustion Gas Concentration

Oxygen	8.30	%
Carbon Dioxide	11.01	%
Carbon Monoxide	12.5	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	
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: Nov. 9 2020	Plant: Covanta DYEC	Test No.: 3 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	75.65	.68	.75	288	255	248	74	131	75	75	2.0	4.5
2	5	79.45	.73	.79	288	260	259	52	225	75	79	2.1	4.5
3	10	83.37	.68	.76	288	258	249	49	224	75	84	2.05	4.5
4	15	87.22	.68	.76	289	257	256	50	226	75	86	2.05	4.5
5	20	91.03	.68	.77	289	257	254	50	224	76	89	2.05	4.5
6	25	94.93	.68	.77	289	257	254	50	226	76	89	2.05	4.5
7	30	98.77	.72	.79	289	256	251	50	223	76	90	2.1	4.5
8	35	102.65	.72	.79	289	257	252	51	225	77	91	2.15	5
9	40	106.64	.72	.79	289	256	255	52	225	77	91	2.15	5
10	45	110.64	.70	.78	289	257	250	54	225	78	91	2.1	5
11	50	114.55	.68	.77	288	257	256	56	226	78	91	2.05	5
12	55	118.43	.68	.77	288	257	249	57	223	78	92		
	60	122.29											

Traverse:		
Start Time: 13:09	Initial Leak Check: .002 cfm@ 16 "Hg	
Finish Time: 14:09	Final Leak Check: .002 cfm@ 22 "Hg	

Project No.: 22050

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 M26A
Test Date	November 10 2020
Test Location	APC Outlet No. 2
Operator Signature	[signature]

Project No.:	22050	
Page	1 of 2	
Probe No.:	7 Series	
Meter Box No.:	Team 4	
Impinger Box No.:		

Pitot Factor	.848	
DGMCF	1.004	
Barometric Pressure	29.74	"Hg
Static Pressure	-9.64	"H2O
Nozzle Size	.2651	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	~~5~~ 5
Number of Ports	~~2~~ 1
Number of Points/Port	~~12~~ 1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	176.8	g
WCBDA	14.6	g

Combustion Gas Concentration

Oxygen	7.90	%
Carbon Dioxide	11.21	%
Carbon Monoxide	16.7	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	Bottoll
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	B 03906

Nozzle Measurements	
1	.2635
2	.2635
3	.2650
4	.2685
Average:	.2651

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov. 10 2020	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/~~Trap~~ °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	171.77	.67	.74	269	253	246	67	237	70	69	2.0	4.5
2	5	175.51	.67	.74	285	258	250	51	201	69	71	2.0	4.5
3	10	179.25	.70	.76	287	257	250	51	208	69	75	2.1	4.5
4	15	183.09	.70	.77	287	256	251	54	212	70	79	2.1	4.5
5	20	186.99	.72	.78	287	256	250	57	215	70	82	2.2	5
6	25	190.97	.66	.75	287	256	250	60	216	71	83	2.0	4.5
7	30	194.78	.66	.75	286	256	250	61	215	72	85	2.0	4.5
8	35	198.55	.68	.76	287	256	249	60	216	72	86	2.05	4.5
9	40	202.39	.70	.78	287	256	249	58	217	73	87	2.15	5
10	45	206.37	.70	.78	287	257	248	56	218	73	88	2.15	5
11	50	210.32	.70	.78	288	257	249	55	218	74	88	2.15	5
12	55	214.23	.70	.78	288	256	250	55	219	74	89	2.15	5
	60	218.75											

Traverse: 1			
Start Time: 8:00	Initial Leak Check: .004	cfm@ 15	"Hg
Finish Time: 9:00	Final Leak Check: .003	cfm@ 17	"Hg

Single Point

Project No.: 22050

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	2 M26A
Test Date	November 10 2020
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22050	
Page	1 of 2	
Probe No.:	7 series	
Meter Box No.:	Team 4	
Impinger Box No.:		

Pitot Factor	.848	
DGMCF	1.004	
Barometric Pressure	29.74	"Hg
Static Pressure	-9.64	"H2O
Nozzle Size	.2651	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	~~5~~ 5
Number of Ports	~~2~~ 1
Number of Points/Port	~~12~~ 1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	178.4	g
WCBDA	11.7	g

Combustion Gas Concentration

Oxygen	8.28	%
Carbon Dioxide	11.10	%
Carbon Monoxide	16.5	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	B04011
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	B03906

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov. 10 2020	Plant: Covanta DYEC	Test No.: 2 M26A	
	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	218.65	.71	.78	286	254	254	69	220	72	72	2.15	5
~~2~~	5	222.62	.69	.76	286	259	253	52	227	73	79	2.05	4.5
~~3~~	10	226.48	.70	.77	287	258	251	50	221	73	85	2.1	5
~~4~~	15	230.38	.70	.78	287	256	250	50	222	74	89	2.15	5
~~5~~	20	234.32	.68	.77	286	256	249	50	223	75	91	2.1	5
~~6~~	25	238.19	.68	.77	286	256	248	51	225	75	92	2.1	5
~~7~~	30	242.06	.69	.78	286	256	248	52	227	76	92	2.15	5
~~8~~	35	246.03	.68	.77	287	256	250	52	231	77	93	2.05	5
~~9~~	40	249.92	.68	.77	287	256	250	52	227	77	93	2.05	5
~~10~~	45	253.78	.71	.79	287	256	250	53	225	78	94	2.15	5
~~11~~	50	257.77	.71	.79	288	256	250	54	227	78	94	2.15	5
~~12~~	55	261.76	.70	.78	288	256	252	55	223	78	94	2.1	5
	60	265.68											

Traverse: 2	
Start Time: 9:40	Initial Leak Check: .002 cfm@ 17 "Hg
Finish Time: 10:40	Final Leak Check: .003 cfm@ 14 "Hg

Single Point

Project No.: 22050

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	November 10 2020
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	22050	
Page	1 of 2	
Probe No.:	7 series	
Meter Box No.:	Team 4	
Impinger Box No.:		

Pitot Factor	.848	
DGMCF	1.004	
Barometric Pressure	29.71	"Hg
Static Pressure	-9.64	"H2O
Nozzle Size	.2651	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	~~5~~	5
Number of Ports	~~2~~	1
Number of Points/Port	~~12~~	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	157.4	g
WCBDA	11.8	g

Combustion Gas Concentration

Oxygen	8.66	%
Carbon Dioxide	10.65	%
Carbon Monoxide	18.3	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	
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: Nov. 10 2020	Plant: Covanta DYEC	Test No.: 3 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot 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	66.05	.74	.79	286	251	253	70	218	75	75	2.15	4.5
2	5	70.37	.69	.77	287	259	255	49	103	75	79	1.9	4.5
3	10	74.12	.68	.76	287	257	251	49	103	75	84	2.05	4.5
4	15	77.98	.68	.77	286	256	249	50	195	76	87	2.05	4.5
5	20	81.87	.68	.77	287	256	249	51	214	76	89	2.05	4.5
6	25	85.75	.66	.76	286	256	249	53	215	77	90	2	4.5
7	30	89.57	.68	.77	285	256	251	54	216	77	91	2.05	4.5
8	35	93.45	.68	.77	286	256	253	56	217	77	91	2.05	4.5
9	40	97.35	.70	.78	285	256	252	58	216	78	91	2.1	5
10	45	101.30	.68	.77	285	256	253	61	217	78	91	2.05	5
11	50	105.20	.68	.77	285	256	253	61	217	78	91	2.05	5
12	55	109.10	.68	.77	285	256	253	61	216	79	92	2.05	5
	60	112.99											

Traverse: 2				
Start Time: 11:08	Initial Leak Check:	.002	cfm@ 20	"Hg
Finish Time: 12:08	Final Leak Check:	.002	cfm@ 19	"Hg

Project No.: 22050

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	1.020	37.45	61.20	23.75	29.50	1.20	26.8	23.81	0.0238
2	1.020	61.65	88.10	26.45	29.49	1.20	27.9	26.41	0.0264
3	1.020	88.25	114.20	25.95	29.50	1.20	29.3	25.80	0.0258
4	1.020	15.90	42.50	26.60	29.52	1.20	28.0	26.58	0.0266

* Dry at 25°C and 1 atmosphere

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box: #2
Test location: APC Outlet No. 1	DGMCF: 1.02		Operator: JG
Date: November 11, 2020	Barometric Pressure: "Hg		Project No: 22050
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak		Field Blank Pair ID: 5A, 5B

PBAR 29.50

Test 1 Start Time: ~~0816~~ 0819		Initial Leak Check NDL @ 22 "Hg				Sample ID: 1A, 1B	
Test 1 End Time: 0859		Final Leak Check NDL @ 21 "Hg				Lab ID: L2514397-59	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	7837.75	140	139	16	22	1.2	1.0
5	7840.75	140	140	16	25	1.2	1.0
10	7843.95	141	140	10	25	1.2	1.0
15	7846.45	141	140	10	26	1.2	1.0
20	7850.40	141	139	10	28	1.2	1.0
25	7852.65	141	138	10	28	1.2	1.0
30	7854.85	141	138	10	29	1.2	1.0
35	7857.60	141	138	10	29	1.2	3.0
40	7861.20	141	138	10	29	1.2	3.0

PBAR 29.49

Test 2 Start Time: 0904		Initial Leak Check NDL @ 21 "Hg				Sample ID: 2A, 2B	
Test 2 End Time: 0944		Final Leak Check @ "Hg				Lab ID: L2514397-60	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	61.65	140	140	15	27	1.2	1.0
5	65.15	141	140	15	27	1.2	2.0
10	68.50	140	141	15	28	1.2	2.0
15	71.80	140	140	10	28	1.2	2.0
20	75.25	141	140	10	28	1.2	2.0
25	78.5	141	140	10	29	1.2	2.0
30	8[illegible].18	141	140	10	28	1.2	2.0
35	8[illegible].4	141	140	10	28	1.2	2.0
40	88.1	141	140	10	28	1.2	2.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC		
Plant Location: Courtice, ON	Test Condition:	Control Box #: Vost #2
Test location: APC Outlet No. 1	DGMCF: 1.020	Operator: JG
Date: Nov 11, 2020	Barometric Pressure: "Hg	Project No: 22050
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID:

PBAR 29.50

Test 3 Start Time: 0948	Initial Leak Check NDL @ 15 "Hg	Sample ID: 3A 3B
Test 3 End Time: 1028	Final Leak Check NDL @ 21 "Hg	Lab ID: L2514397-61

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	88.25	141	140	14	28	1.2	1.0
5	91.50	141	140	13	28	1.2	1.0
10	94.80	141	140	13	29	1.2	1.0
15	98.3	141	141	10	29	1.2	1.0
20	101.55	141	141	10	30	1.2	1.0
25	104.80	141	141	10	30	1.2	1.0
30	108.10	141	141	10	30	1.2	1.0
35	111.70	141	141	10	30	1.2	1.0
40	114.20	141	141	10	30	1.2	1.0

PBAR 29.52

Test 4 Start Time: 1034	Initial Leak Check NDL @ 21 "Hg	Sample ID: 4A, 4B
Test 4 End Time: 1114	Final Leak Check ND @ 21 "Hg	Lab ID: L2514397-62

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	15.9	141	140	14	28	1.2	2.0
5	19.3	141	140	13	28	1.2	2.0
10	23.1	141	140	10	28	1.2	2.0
15	26.6	141	141	10	28	1.2	2.0
20	30.1	140	140	10	28	1.2	2.0
25	33.4	141	140	10	28	1.2	2.0
30	36.6	141	141	10	28	1.2	2.0
35	39.9	141	141	10	28	1.2	4.0
40	42.5	141	141	10	28		

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	1.010	54.35	75.40	21.05	29.50	1.09	22.7	21.18	0.0212
2	1.010	75.70	96.30	20.60	29.49	1.10	24.3	20.61	0.0206
3	1.010	99.50	120.50	21.00	29.50	1.10	25.1	20.96	0.0210
4	1.010	21.50	41.50	20.00	29.52	1.09	24.6	20.01	0.0200

* Dry at 25°C and 1 atmosphere

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: Vost 5
Test location: APC Outlet No._______	DGMCF: 1.010		Operator: [illegible]
Date: November 11, 2020	Barometric Pressure: "Hg		Project No: 22050
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak		Field Blank Pair ID: 11A, B

PBAR 29.50

Test 3 Start Time: 950	Initial Leak Check NDL @ 14 "Hg		Sample ID: 9A, B
Test 3 End Time: 1030	Final Leak Check NDL @ 15 "Hg		Lab ID: L2514397-67

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	99.50	133	143	12	25	1.1	3
5	102.3	133	143	12	25	1.1	3
10	105.3	133	143	12	25	1.1	3
15	107.9	133	143	6	~~26~~ 26	1.1	3.5
20	110.3	132	143	6	25	1.1	3.5
25	113.0	133	143	6	25	1.1	3.5
30	115.5	133	142	5	25	1.1	3.5
35	117.9	133	142	5	25	1.1	3.5
40	120.5	133	142	5	25	1.1	3.5

PBAR 29.52

Test 4 Start Time: 1036	Initial Leak Check NDL @ 16 "Hg		Sample ID: L2514397-68
Test 4 End Time: 1116	Final Leak Check NDL @ 17 "Hg		Lab ID: 10A, B

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	21.5	133	141 ~~134~~	14	25	1.1	2
5	24.1	133	142	5	25	1.1	3
10	26.9	133	142	8	25	1.1	3
15	29.2	133	142	5	25	1.1	3
20	31.7	133	142	5	25	1.1	3
25	34.2	133	142	5	24	1.0	3.5
30	36.4	133	143	5	24	1.1	3.5
35	38.9	133	142	5	24	1.1	3.5
40	41.5	132	142	5	24	1.1	3.5

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC		
Plant Location: Courtice, ON	Test Condition:	Control Box ID: VOST5
Test location: APC Outlet No. 2	DGMCF: 1.010	Operator: DW
Date: NOVEMBER 11, 2020	Barometric Pressure: "Hg	Project No: 22050
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 11A,B

PBAR 29.50

Test 1 Start Time:	8:20	Initial Leak Check	NDL @ 21 "Hg			Sample ID: 7A,B	
Test 1 End Time:	9:00	Final Leak Check	NDL @ 14 "Hg			Lab ID: L2514397-65	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	54.35	123	141	20	20	1.2	5
5	57.0	133	141	3	22	1.2	5
10	60.8	133	141	3	22	1.0 ~~1.2~~	4.5
15	63.0	133	141	4	23	1.0	4.5
20	65.0	133	141	4	23	1.0	4.5
25	67.5	133	141	4	23	1.1	5
30	70.0	132	141	4	23	1.1	5
35	72.4	132	141	4	24	1.1	5
40	75.4	132	141	4	24	1.1	5

PBAR 29.49

Test 2 Start Time:	9:05	Initial Leak Check	NDL @ 14 "Hg			Sample ID: 8A,B	
Test 2 End Time:	9:45	Final Leak Check	NDL @ 13 "Hg			Lab ID: L2514397-66	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	75.7	133	142	5	24	1.1	3
5	78.7	133	142	5	24	1.1	3
10	80.7	132	142	5	24	1.1	3
15	83.1	132	142	5	24	1.1	3.5
20	85.5	133	142	5	24	1.1	3.5
25	87.3	132	142	6	24	1.1	6
30	91.0	133	143	7	25	1.1	6
35	93.5	133	143	7	25	1.1	6
40	96.3	132	142	8	25	1.1	6

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	1.020	44.30	87.20	42.90	29.52	1.20	28.5	42.79	0.0428
2	1.020	8.10	53.40	45.30	29.51	1.20	29.1	45.09	0.0451
3	1.020	34.50	72.60	38.10	29.51	1.20	29.2	37.91	0.0379

* 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:	November 11, 2020
Project No.:	22050

Measuring Device	MII Number
Control Module	Vaur # 2 A10117
Barometer	Env Canada

Barometric Pressure: 29.52 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	44.30	140	142	140	22	25	1.2	0.5
5	48.55	139	142	139	22	26	1.2	0.5
10	52.30	140	141	137	21	27	1.2	0.5
15	55.90	141	140	136	21	28	1.2	0.5
20	59.60	141	140	136	21	28	1.2	0.5
25	63.20	142	141	133	21	29	1.2	0.5
30	66.90	142	141	131	21	29	1.2	0.5
35	70.40	142	141	129	15	29	1.2	0.5
40	73.90	143	142	128	15	30	1.2	0.5
45	77.30	143	142	128	15	30	1.2	0.5
50	80.50	143	142	128	15	30	1.2	0.5
55	84.20	143	142	129	15	30	1.2	0.5
60	87.20	143	142	129	15	30	1.2	0.5

Start Time:	1138	
Finish Time:	1238	
Initial Leak Check:	<.01	Lpm @ 20 " Hg
Final Leak Check:	<.01	Lpm @ 15 " Hg

DGMCF:	1.020
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: [signature]

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 1
Date:	November 11, 2020
Project No.:	22050

Measuring Device	MII Number
Control Module	Jost #2 A10117.
Barometer	Env Canada

Barometric Pressure: 29.51 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	8.1	129	142	127	21	28	1.2	0.5
5		143	142	126	22	29	1.2	0.5
10	16.1	143	142	126	22	29	1.2	0.5
15		1'						
20	23.7	143	141	125	20	29	1.2	0.5
25	27.6	143	141	126	18	29	1.2	0.5
30	31.40	143	141	127	15	29	1.2	0.5
35	35.40	143	140	127	15	29	1.2	0.5
40		143	139	126	15	29	1.2	0.5
45	42.60	143	138	128	15	29	1.2	0.5
50	46.40	143	137	126	15	29	1.2	0.5
55	49.95	143	137	126	15	30	1.2	0.5
60	53.40	143	137	126	15	30		

Start Time:	1242		
Finish Time:	1342		
Initial Leak Check:	≤.01	Lpm @	15 "Hg
Final Leak Check:	≤.01	Lpm @	15 "Hg

DGMCF:	1.020
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. 1
Date:	NOVEMBER 11, 2020
Project No.:	22050

Measuring Device	MII Number
Control Module	Vost #2 A1011
Barometer	Env Canada

Barometric Pressure: 29.81 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	34.5	143	136	127	22	29	1.2	0.5
5	38.6	143	136	127	22	29	1.2	0.5
10	41.2	143	136	126	22	30	1.2	0.5
15	43.65	143	136	126	19	30	1.2	0.5
20	46.20	143	136	127	18	31	1.2	0.5
25	48.4	143	136	127	15	31	1.2	0.5
30	51.20	143	136	127	15	31	1.2	0.5
35	54.80	144	141	129	23	27	1.2	0.5
40	58.40	144	141	124	23	27	1.2	0.5
45	62.0	144	140	125	23	28	1.2	0.5
50	65.50	144	140	125	23	29	1.2	0.5
55	69.00	144	139	125	22	29	1.2	0.5
60	72.60	144	139	125	20	29	1.2	0.5

Start Time:	13:45	
Finish Time:	15:35	
Initial Leak Check:	<.01	Lpm @ 14 " Hg
Final Leak Check:	<.01	Lpm @ 14 " Hg

DGMCF:	1.020
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments: STOP @ 30 MIN OR 1415 DUE TO PROCESS

: sample @ ~0.5 lpm for 60 minutes.

Operator: [signature]

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	1.010	41.90	74.80	32.90	29.52	1.10	24.4	32.94	0.0329
2	1.010	75.20	105.85	30.65	29.51	1.10	25.1	30.61	0.0306
3	1.010	6.50	37.10	30.60	29.51	1.10	26.0	30.46	0.0305

* 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. 2
Date:	November 11, 2020
Project No.:	22050

Measuring Device	MII Number
Control Module	KOE 20018
Barometer	Env Canada

Barometric Pressure: 29.82 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	41.9	133	144	150	20	24	1.1	1
5	44.0	131	143	137	20	23	1.1	1
10	46.7	131	143	139	19	23	1.1	1
15	49.6	132	143	140	19	24	1.1	1
20	52.4	131	143	141	17	24	1.1	1
25	55.3	131	143	140	17	24	1.1	1
30	58.1	133	144	141	16	25	1.1	1
35	60.9	133	144	140	17	25	1.1	1
40	63.7	133	144	140	16	25	1.1	1
45	66.5	133	144	140	16	25	1.1	1
50	69.9	133	143	144	16	25	1.1	1
55	72.5	134	143	143	16	25	1.1	1
60	74.8	134	144	143	16	25	1.1	1
		~~134~~	~~144~~	~~143~~	~~16~~	~~25~~	~~1.1~~	~~1~~

Start Time:	1147		
Finish Time:	1247		
Initial Leak Check:	<.01	Lpm @	10 " Hg
Final Leak Check:	<.01	Lpm @	10 " Hg

DGMCF:	1.010
Sample Volume:	32.9
Average DGM Temp:	24.4
Average DGM Δ H:	1.1

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: DM

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:	Nov 11/20
Project No.:	22050

Measuring Device	MII Number
Control Module	COE 20018
Barometer	Env Canada

Barometric Pressure: 29.51 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	75.20	134	143	141	20	25	1.1	1
5	77.7	134	143	141	14	25	1.1	1
10	80.5	134	143	141	14	25	1.1	1
15	83.0	134	142	140	11	25	1.1	1
20	85.5	134	142	140	11	25	1.1	1
25	88.1	133	142	140	11	25	1.1	1
30	90.6	133	141	141	11	25	1.1	1
35	93.1	133	141	141	11	25	1.1	1
40	95.6	133	141	140	11	25	1.1	1
45	98.1	133	141	140	11	25	1.1	1
50	100.6	133	141	139	12	25	1.1	1
55	103.2	133	141	138	12	26	1.1	1
60	105.85	133	141	140	13	25	1.1	1

Start Time:	1250		
Finish Time:	1350		
Initial Leak Check:	<.01	Lpm @ 11	" Hg
Final Leak Check:	<.01	Lpm @ 10	" Hg

DGMCF:	1.010
Sample Volume:	30.65
Average DGM Temp:	250
Average DGM Δ H:	1.1

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: D. Ol

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 2
Date:	November 11, 2020
Project No.:	22050

Measuring Device	MII Number
Control Module	COE 80018
Barometer	Env Canada

Barometric Pressure: 29.51 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	6.5	133	142	142	22	26	1.1	1
5	9.0	133	142	140	20	26	1.1	1
10	11.5	132	140	141	19	26	1.1	1
15	14.1	132	138	141	18	26	1.1	1
20	16.6	133	137	142	17	26	1.1	1
25	19.1	133	133	140	16	26	1.1	1
30	21.7	133	134	140	16	26	1.1	1
35	24.2	134	143	143	16	26	1.1	1
40	26.7	134	143	143	16	26	1.1	1
45	29.3	134	143	143	16	26	1.1	1
50	31.9	134	143	143	16	26	1.1	1
55	34.5	133	143	142	17	26	1.1	1
60	37.1	13	143	141	18	26	1.1	1

Start Time:	1352		
Finish Time:	1452		
Initial Leak Check:	<.01	Lpm @ 10	" Hg
Final Leak Check:	<.01	Lpm @ 10	" Hg

DGMCF:	1.01
Sample Volume:	30.6
Average DGM Temp:	26.0
Average DGM Δ H:	1.1

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: DM

APPENDIX 10

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

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

Client: Covanta
Project Number: 22050
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22050-J2729

ORTECH Sample ID 20-22050-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
1	Nov 9, 20	#1 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
2				Probe Rinse Nitric	0.1N Nitric	Metals
3				Filter	Particulate	Particulate & Metals
4				Impinger 1-5 Solution	Nitric/Peroxide	Metals
5				Impinger 6-7 Solution	Acid. KMnO4	Mercury
6				Impinger 6-7 Rinse	8N HCl	Mercury
7	Nov 9, 20	#1 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
8				Probe Rinse Nitric	0.1N Nitric	Metals
9				Filter	Particulate	Particulate & Metals
10				Impinger 1-5 Solution	Nitric/Peroxide	Metals
11				Impinger 6-7 Solution	Acid. KMnO4	Mercury
12				Impinger 6-7 Rinse	8N HCl	Mercury
13	Nov 10, 20	#1 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
14				Probe Rinse Nitric	0.1N Nitric	Metals
15				Filter	Particulate	Particulate & Metals
16				Impinger 1-5 Solution	Nitric/Peroxide	Metals
17				Impinger 6-7 Solution	Acid. KMnO4	Mercury
18				Impinger 6-7 Rinse	8N HCl	Mercury
19	Nov 9, 20	Blank 1	Blank 1	Probe Rinse Acetone	Acetone	Particulate & Metals
20				Probe Rinse Nitric	0.1N Nitric	Metals
21				Filter	Particulate	Particulate & Metals
22				Impinger 1-5 Solution	Nitric/Peroxide	Metals
23				Impinger 6-7 Solution	Acid. KMnO4	Mercury
24				Impinger 6-7 Rinse	8N HCl	Mercury

Received 12-NOV-20 8 30 Am 6.4°C
by Bren

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

Client: Covanta
Project Number: 22050
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22050-J2729

ORTECH Sample ID 20-22050-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
25	Nov 10, 20	#2 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
26				Probe Rinse Nitric	0.1N Nitric	Metals
27				Filter	Particulate	Particulate & Metals
28				Impinger 1-5 Solution	Nitric/Peroxide	Metals
29				Impinger 6-7 Solution	Acid. KMnO4	Mercury
30				Impinger 6-7 Rinse	8N HCl	Mercury
31	Nov 10, 20	#2 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
32				Probe Rinse Nitric	0.1N Nitric	Metals
33				Filter	Particulate	Particulate & Metals
34				Impinger 1-5 Solution	Nitric/Peroxide	Metals
35				Impinger 6-7 Solution	Acid. KMnO4	Mercury
36				Impinger 6-7 Rinse	8N HCl	Mercury
37	Nov 10, 20	#2 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
38				Probe Rinse Nitric	0.1N Nitric	Metals
39				Filter	Particulate	Particulate & Metals
40				Impinger 1-5 Solution	Nitric/Peroxide	Metals
41				Impinger 6-7 Solution	Acid. KMnO4	Mercury
42				Impinger 6-7 Rinse	8N HCl	Mercury
43	Nov 10, 20	Blank 2	Blank 2	Probe Rinse Acetone	Acetone	Particulate & Metals
44				Probe Rinse Nitric	0.1N Nitric	Metals
45				Filter	Particulate	Particulate & Metals
46				Impinger 1-5 Solution	Nitric/Peroxide	Metals
47				Impinger 6-7 Solution	Acid. KMnO4	Mercury
48				Impinger 6-7 Rinse	8N HCl	Mercury

Relinquished By: Chris Belore Date: Nov. 12, 2020

Relinquished To: Date:

Recieved by BAmot 12-Nov-20 830 AM 6.4°C

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

Client: Covanta
Job/Report Number: 22050
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22050-J2729

ORTECH Sample ID 20-22050-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
36	NOV 9, 20	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	NOV 10, 20	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	NOV 10, 20	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: Chris Belore Date: Nov. 12, 2020

Received by B[illegible] 12-NOV-20 8:30AM 6.4°C

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

Client: Covanta
Job/Report Number: 22050
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22050-J2729

ORTECH Sample ID 20-22050-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
1	Nov 10, 20	1	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
2				PM 2.5 cyclone Rinse	Acetone	Particulate
3				PM 2.5 exit & connectors	Acetone	Particulate
4				Back up filter	filter	Particulate
5				Impinger Soln & rinse	Water	Particulate
6				Secondary Filter	Filter	Particulate*
7				Impinger Rinse	Acetone & Hexane	Particulate
8	Nov 10, 20	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	Nov 10, 20	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	Nov 9, 20	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	Nov 9, 20	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

Received by [illegible] 12-NOV-20 8:30 AM 6.4°C

ORTECH Consulting Inc. - Sample Log
Acid Gases
Covanta

Client: Covanta
Job/Report Number: 22050
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22050 - J2729

ORTECH Sample ID 20-22050-M26A-	Sample Date	Location	Sample Description	Media	Initial Volume(ml)	Final Volume(ml)	Sample Analysis
1	Nov 9, 20	APC Outlet # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	463	HCl, HF & Ammonia
2		APC Outlet # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	464	HCl, HF & Ammonia
3		APC Outlet # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	511	HCl, HF & Ammonia
4	Nov 10, 20	APC Outlet # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	480	HCl, HF & Ammonia
5		APC Outlet # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	510	HCl, HF & Ammonia
6		APC Outlet # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	498	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	306	HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By: Chris Belore Date: Nov. 12, 2020

Relinquished To: Date:

Recieved by B Burnett 12-Nov-20 8 30AM 6.4°C

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

Client: Covanta
Job/Report Number: 22050
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
PO: 22050 - J2729

ORTECH Sample ID 20-22050-SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
1	11-Nov-20	Test 1 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
2		Test 1 Filter		Particulate	SVOC
3		Test 1 XAD-II Trap		N.A.	SVOC
4		Test 1 Impinger Solution		Ethylene Glycol	SVOC
5		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
6	11-Nov-20	Test 2 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
7		Test 2 Filter		Particulate	SVOC
8		Test 2 XAD-II Trap		N.A.	SVOC
9		Test 2 Impinger Solution		Ethylene Glycol	SVOC
10		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
11	12-Nov-20	Test 3 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
12		Test 3 Filter		Particulate	SVOC
13		Test 3 XAD-II Trap		N.A.	SVOC
14		Test 3 Impinger Solution		Ethylene Glycol	SVOC
15		Test 3 Impinger Rinse		Hexane/Acetone	SVOC
16	12-Nov-20	Blank 1 Probe Rinse	Blank	Hexane/Acetone	SVOC
17		Blank 1 Filter		Particulate	SVOC
18		Blank 1 XAD-II Trap		N.A.	SVOC
19		Blank 1 Impinger Solution		Ethylene Glycol	SVOC
20		Blank 1 Impinger Rinse		Hexane/Acetone	SVOC

9:10

Relinquished To: Aaron Burton Date: 13-Nov-2020

Relinquished By: [signature] Date: Nov 13/20

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

Client: Covanta
Job/Report Number: 22050
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
PO: 22050 - J2729

ORTECH Sample ID 20-22050-SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
21	11-Nov-20	Test 1 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
22		Test 1 Filter		Particulate	SVOC
23		Test 1 XAD-II Trap		N.A.	SVOC
24		Test 1 Impinger Solution		Ethylene Glycol	SVOC
25		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
26	11-Nov-20	Test 2 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
27		Test 2 Filter		Particulate	SVOC
28		Test 2 XAD-II Trap		N.A.	SVOC
29		Test 2 Impinger Solution		Ethylene Glycol	SVOC
30		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
31	12-Nov-20	Test 3 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
32		Test 3 Filter		Particulate	SVOC
33		Test 3 XAD-II Trap		N.A.	SVOC
34		Test 3 Impinger Solution		Ethylene Glycol	SVOC
35		Test 3 Impinger Rinse		Hexane/Acetone	SVOC
36	12-Nov-20	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

Relinquished To: Adra Burton   Date: 13-Nov-2020 9:10
Relinquished By: [signature]   Date: Nov 13/20

ORTECH Consulting Inc. - Sample Log
VOCs

Client: Covanta
Project Number: 22050
Received By: C Belore
Job Assigned To: ALS
Quote / PO : 22050-J2729

Test Location	Test Number	ORTECH Sample ID 20-22050-VOST-	Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	1A,B	Nov 11/20	Tenax and Tenax/Charcoal	VOCs
	2	2A,B	"	Tenax and Tenax/Charcoal	VOCs
	3	3A,B	"	Tenax and Tenax/Charcoal	VOCs
	4	4A,B	"	Tenax and Tenax/Charcoal	VOCs
	Field Blank	5A,B	"	Tenax and Tenax/Charcoal	VOCs
	Combined Condesate			Archived @ ORTECH	
# 2 APC Outlet	1	7A,B	Nov 11/20	Tenax and Tenax/Charcoal	VOCs
	2	8A,B	"	Tenax and Tenax/Charcoal	VOCs
	3	9A,B	"	Tenax and Tenax/Charcoal	VOCs
	4	10A,B	"	Tenax and Tenax/Charcoal	VOCs
	Field Blank	11A,B	"	Tenax and Tenax/Charcoal	VOCs
	Trip Blank	12A,B	"	Tenax and Tenax/Charcoal	VOCs
	Combined Condesate		"	Archived @ ORTECH	

Custody Relinquished by: [signature] Date: Nov 13/20

" TO: Aaron Burton DATE: 13-NOV-2020 9:10

ORTECH Consulting Inc. Recovery & Sample Log

~~NCASI Method ISS/FP-A105.01~~

Client: Covanta DYEC
Job/Report Number: 22050
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22050 - J2729

Test Number	Test Location	ORTECH Sample ID 20-22050-	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	Nov 11/20	ALD-1	110.2	153.0	134.9	176.0	184.5
2	APC Outlet #1	ALD-2	"	ALD-2	110.0	153.1	166.1	174.8	186.1
3	APC Outlet #1	ALD-3	"	ALD-3	109.6	155.1	138.1	176.1	184.8
Blank 1	APC Outlet #1	Blank 1	"	ALD-4	110.0	154.9	134.9	175.5	188.0
1	APC Outlet #2	ALD-5	"	ALD-5	109.6	155.5	157.0	173.4	183.0
2	APC Outlet #2	ALD-6	"	ALD-6	110.2	155.1	157.0	172.0	183.0
3	APC Outlet #2	ALD-7	"	ALD-7	109.7	155.5	159.6	174.0	182.0
Blank 2	APC Outlet #2	Blank 2	"	~~ALD-8~~	~~109.9~~	~~155.5~~	155.5	176.1	187.5
				~~ALD-9~~	~~110.4~~	~~155.7~~			
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				~~ALD-10~~	~~110.2~~	~~156.1~~			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

~~-11 110.1 155.7~~
-12 110.0 ~~155.1~~

Relinquished by: [signature] Date: Nov 13/20

Relinquished to: Aaron Burton Date: 13-Nov-2020 9:10

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.: 22050
Date: Nov 20
Test No.: 1
Test Location: UNIT 1

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	328.7
After Act. Rinse:	414.7
Total TS1:	86.0

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	327.7
After 0.1N HNO_3 Rinse:	471.4
Total TS2:	143.7

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	QZ 8057
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	665.5
	Final Wt:	905.7
1	Gain:	240.2
	Colour:	clear

	Impinger #2 HNO_3/H_2O_2	
	Empty Wt:	672.7
	Initial Wt:	781.0
	Final Wt:	917.9
2	Gain:	136.9
	Colour:	clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	681.5
	Initial Wt:	783.4
	Final Wt:	823.9
3	Gain:	40.5
	Colour:	clear

	Impinger #4 Empty	
	Empty Wt:	616.4
	Final Wt:	619.2
4	Gain:	2.8
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	403.5
w/ Imp. 1-4 Soln:	1031.1
After HNO_3 Rinse:	1144.0
Total TS4:	740.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

	Impinger #5 $KMnO_4/H_2SO_4$	
	Empty Wt:	655.4
	Initial Wt:	765.5
	Final Wt:	768.4
5	Gain:	2.9
	Colour:	Purple

	Impinger # 6 $KMnO_4/H_2SO_4$	
	Empty Wt:	654.2
	Initial Wt:	769.8
	Final Wt:	771.3
6	Gain:	1.5
	Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	406.0
With Imp. 5&6 Soln:	632.0
After $KMnO_4$ Rinse:	747.0
After100g H_2O Rinse:	850.4
Total TS5-A:	444.4

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	280.0
With 150 mL DI H_2O:	430.0
After HCl Rinse:	452.3
After DI H_2O Rinse:	596.3
Total TS5-B:	316.3

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	903.7
	Final Wt:	922.6
7	Gain:	18.9

Impinger Box ID: 7

SAMPLE IDENTIFICATION	20-22050-PM-
TS1 (Probe Rinse-Acetone)	1
TS2 (Probe Rinse-0.1N HNO_3)	2
TS3 (Filter)	3
TS4 (Impinger 1-4 Sol'n-HNO_3)	4
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	5
TS5-B (Impinger 5,6 Rinse-HCl)	6

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

CWTR = 1 to 6: 424.8

WCBDA= 7: 18.9

Train Loaded By: DT
Train Recovered By: DT

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: NOV 9, 20
Test No.: 2
Test Location: UNIT 1

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	327.3
After Act. Rinse:	441.3
Total TS1:	114.0

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	327.9
After 0.1N HNO_3 Rinse:	451.2
Total TS2:	123.3

MARK FLUID LEVEL

SEAL AND LABEL TS2

SAMPLE IDENTIFICATION	20-22050-PM-
TS1 (Probe Rinse-Acetone)	7
TS2 (Probe Rinse-0.1N HNO_3)	8
TS3 (Filter)	9
TS4 (Impinger 1-4 Sol'n-HNO_3)	10
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	11
TS5-B (Impinger 5,6 Rinse-HCl)	12

Train Loaded By: DT
Train Recovered By: DT

Filter

CONTAINER TS3

Filter ID:	QZ8056
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	659.3
	Final Wt:	923.0
1	Gain:	263.7
	Colour:	clear

	Impinger #2 HNO_3/H_2O_2	
	Empty Wt:	641.8
	Initial Wt:	750.1
	Final Wt:	898.2
2	Gain:	148.1
	Colour:	clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	664.8
	Initial Wt:	767.8
	Final Wt:	817.6
3	Gain:	49.8
	Colour:	clear

	Impinger #4 Empty	
	Empty Wt:	626.4
	Final Wt:	629.6
4	Gain:	3.2
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	406.2
w/ Imp. 1-4 Soln:	1074.3
After HNO_3 Rinse:	1178.4
Total TS4:	772.2

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

	Impinger #5 $KMnO_4/H_2SO_4$	
	Empty Wt:	679.1
	Initial Wt:	793.4
	Final Wt:	796.3
5	Gain:	2.9
	Colour:	Purple

	Impinger # 6 $KMnO_4/H_2SO_4$	
	Empty Wt:	651.4
	Initial Wt:	763.8
	Final Wt:	769.2
6	Gain:	5.4
	Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	406.5
With Imp. 5&6 Soln:	637.0
After $KMnO_4$ Rinse:	749.7
After100g H_2O Rinse:	849.0
Total TS5-A:	442.5

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	280.5
With 150 mL DI H_2O:	430.5
After HCl Rinse:	464.4
After DI H_2O Rinse:	586.8
Total TS5-B:	306.3

MARK FLUID LEVEL

SEAL & LABEL TS5-B

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

CWTR = 1 to 6: 473.1 ✓

WCBDA= 7: 22.2

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	924.4
	Final Wt:	946.6
7	Gain:	22.2

Impinger Box ID: 9

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: NOV 10, 20
Test No.: 3
Test Location: UNIT 1

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	281.0
After Act. Rinse:	395.1
Total TS1:	114.1

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.0
After 0.1N HNO_3 Rinse:	425.8
Total TS2:	144.8

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	QZ3064
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	664.9
	Final Wt:	938.0
1	Gain:	273.1
	Colour:	clear

	Impinger #2 HNO_3/H_2O_2	
	Empty Wt:	547.3
	Initial Wt:	639.4
	Final Wt:	871.0
2	Gain:	231.6
	Colour:	clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	666.8
	Initial Wt:	786.7
	Final Wt:	831.2
3	Gain:	44.5
	Colour:	clear

	Impinger #4 Empty	
	Empty Wt:	485.3
	Final Wt:	488.4
4	Gain:	3.1
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	405.0
w/ Imp. 1-4 Soln:	1162.3
After HNO_3 Rinse:	1288.7
Total TS4:	883.7

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

	Impinger #5 $KMnO_4/H_2SO_4$	
	Empty Wt:	673.3
	Initial Wt:	789.0
	Final Wt:	791.7
5	Gain:	2.7
	Colour:	Purple

	Impinger # 6 $KMnO_4/H_2SO_4$	
	Empty Wt:	662.1
	Initial Wt:	772.2
	Final Wt:	773.3
6	Gain:	1.1
	Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	406.0
With Imp. 5&6 Soln:	631.9
After $KMnO_4$ Rinse:	744.6
After100g H_2O Rinse:	846.6
Total TS5-A:	440.6

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	280.0
With 150 mL DI H_2O:	432.0
After HCl Rinse:	478.3
After DI H_2O Rinse:	695.8
Total TS5-B:	415.8

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	1029.0
	Final Wt:	1053.6
7	Gain:	24.6

Impinger Box ID: 16

SAMPLE IDENTIFICATION	20-22050-PM-
TS1 (Probe Rinse-Acetone)	13
TS2 (Probe Rinse-0.1N HNO_3)	14
TS3 (Filter)	15
TS4 (Impinger 1-4 Sol'n-HNO_3)	16
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	17
TS5-B (Impinger 5,6 Rinse-HCl)	18

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

CWTR = 1 to 6: ~~565.5~~ 556.1

WCBDA= 7: 24.6

Train Loaded By: DT
Train Recovered By: DT

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: Nov 10, 20
Test No.: BLANK 1
Test Location:

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	281.9
After Act. Rinse:	557.0
Total TS1:	275.1

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.2
After 0.1N HNO_3 Rinse:	530.7
Total TS2:	249.5

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	82 8065
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:	406.0
w/ Imp. 1-4 Soln:	615.9
After HNO_3 Rinse:	719.9
Total TS4:	313.9

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:	406.0
With Imp. 5&6 Soln:	628.5
After $KMnO_4$ Rinse:	740.0
After100g H_2O Rinse:	841.0
Total TS5-A:	435.0

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:	463.1
After DI H_2O Rinse:	570.5
Total TS5-B:	289.5

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

SAMPLE IDENTIFICATION	20-22050-PM-
TS1 (Probe Rinse-Acetone)	19
TS2 (Probe Rinse-0.1N HNO_3)	20
TS3 (Filter)	21
TS4 (Impinger 1-4 Sol'n-HNO_3)	22
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	23
TS5-B (Impinger 5,6 Rinse-HCl)	24

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

CWTR = 1 to 6:

WCBDA= 7:

Train Loaded By: DT
Train Recovered By: DT

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: Nov 9, 20
Test No.: 1
Test Location: UNIT 2

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	327.8
After Act. Rinse:	435.0
Total TS1:	107.2

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	328.1
After 0.1N HNO_3 Rinse:	449.4
Total TS2:	121.3

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	QZ 8055
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	20-22050-PM-
TS1 (Probe Rinse-Acetone)	25
TS2 (Probe Rinse-0.1N HNO_3)	26
TS3 (Filter)	27
TS4 (Impinger 1-4 Sol'n-HNO_3)	28
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	29
TS5-B (Impinger 5,6 Rinse-HCl)	30

Train Loaded By: SI
Train Recovered By: SI

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	665.1
Final Wt:	916.3
1 Gain:	251.2
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	547.9
Initial Wt:	650.1
Final Wt:	837.7
2 Gain:	187.6
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	667.6
Initial Wt:	774.5
Final Wt:	876.1
3 Gain:	101.6
Colour:	clear

Impinger #4 Empty	
Empty Wt:	485.5
Final Wt:	505.0
4 Gain:	19.5
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	405.8
w/ Imp. 1-4 Soln:	1169.0
After HNO_3 Rinse:	1265.8
Total TS4:	860.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	673.1
Initial Wt:	782.7
Final Wt:	786.0
5 Gain:	3.3
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	662.4
Initial Wt:	778.8
Final Wt:	781.4
6 Gain:	2.6
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	406.1
With Imp. 5&6 Soln:	634.4
After $KMnO_4$ Rinse:	753.6
After100g H_2O Rinse:	855.5
Total TS5-A:	449.4

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.2
With 150 mL DI H_2O:	431.2
After HCl Rinse:	459.3
After DI H_2O Rinse:	627.4
Total TS5-B:	346.2

MARK FLUID LEVEL

SEAL & LABEL TS5-B

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

CWTR = 1 to 6:	565.8

WCBDA= 7:	24.4

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	910.7
Final Wt:	935.1
7 Gain:	24.4

Impinger Box ID: 16

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: NOV 10, 20
Test No.: 2
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:	399.4
Total TS1:	119.4

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	280.0
After 0.1N HNO_3 Rinse:	394.1
Total TS2:	114.1

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	QZ 8063
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	659.3
	Final Wt:	924.4
1	Gain:	265.1
	Colour:	clear

	Impinger #2 HNO_3/H_2O_2	
	Empty Wt:	640.9
	Initial Wt:	750.5
	Final Wt:	911.0
2	Gain:	160.5
	Colour:	clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	665.1
	Initial Wt:	766.6
	Final Wt:	805.3
3	Gain:	38.7
	Colour:	clear

	Impinger #4 Empty	
	Empty Wt:	626.2
	Final Wt:	630.6
4	Gain:	4.4
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	406.8
w/ Imp. 1-4 Soln:	1079.3
After HNO_3 Rinse:	1209.7
Total TS4:	802.9

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

	Impinger #5 $KMnO_4/H_2SO_4$	
	Empty Wt:	679.2
	Initial Wt:	789.8
	Final Wt:	794.3
5	Gain:	4.5
	Colour:	Purple

	Impinger # 6 $KMnO_4/H_2SO_4$	
	Empty Wt:	658.1
	Initial Wt:	763.4
	Final Wt:	765.7
6	Gain:	2.3
	Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	405.0
With Imp. 5&6 Soln:	630.7
After $KMnO_4$ Rinse:	739.0
After100g H_2O Rinse:	840.0
Total TS5-A:	435.0

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.5
With 150 mL DI H_2O:	434.1
After HCl Rinse:	464.3
After DI H_2O Rinse:	570.0
Total TS5-B:	288.5

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	905.3
	Final Wt:	925.5
7	Gain:	20.2

Impinger Box ID: 9

SAMPLE IDENTIFICATION	20-22050-PM-
TS1 (Probe Rinse-Acetone)	31
TS2 (Probe Rinse-0.1N HNO_3)	32
TS3 (Filter)	33
TS4 (Impinger 1-4 Sol'n-HNO_3)	34
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	35
TS5-B (Impinger 5,6 Rinse-HCl)	36

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

CWTR = 1 to 6: 475.5 ✓

WCBDA= 7: 20.2

Train Loaded By: DT
Train Recovered By: DT

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	22050
Date:	Nov 10, 20
Test No.:	3
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:	391.5
Total TS1:	110.5

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	280.0
After 0.1N HNO_3 Rinse:	414.0
Total TS2:	134.0

MARK FLUID LEVEL

SEAL AND LABEL TS2

SAMPLE IDENTIFICATION	20-22050-PM-
TS1 (Probe Rinse-Acetone)	37
TS2 (Probe Rinse-0.1N HNO_3)	38
TS3 (Filter)	39
TS4 (Impinger 1-4 Sol'n-HNO_3)	40
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	41
TS5-B (Impinger 5,6 Rinse-HCl)	42

Train Loaded By: DT

Train Recovered By: DT

Filter

CONTAINER TS3

Filter ID:	QZ8062
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	665.5
Final Wt:	922.3
1 Gain:	256.8
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	673.1
Initial Wt:	777.4
Final Wt:	937.7
2 Gain:	160.3
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	680.5
Initial Wt:	787.8
Final Wt:	826.3
3 Gain:	38.5
Colour:	clear

Impinger #4 Empty	
Empty Wt:	615.3
Final Wt:	617.1
4 Gain:	1.8
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	406.4
w/ Imp. 1-4 Soln:	1075.2
After HNO_3 Rinse:	1187.8
Total TS4:	781.4

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	654.3
Initial Wt:	769.5
Final Wt:	770.8
5 Gain:	1.3
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	655.3
Initial Wt:	765.3
Final Wt:	767.5
6 Gain:	2.2
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	405.3
With Imp. 5&6 Soln:	630.6
After $KMnO_4$ Rinse:	756.0
After100g H_2O Rinse:	857.0
Total TS5-A:	451.7

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.7
With 150 mL DI H_2O:	431.7
After HCl Rinse:	459.1
After DI H_2O Rinse:	626.9
Total TS5-B:	345.2

MARK FLUID LEVEL

SEAL & LABEL TS5-B

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

CWTR = 1 to 6:	460.9
WCBDA= 7:	14.7

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	922.5
Final Wt:	937.2
7 Gain:	14.7

Impinger Box ID: 7

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: NOV 10, 20
Test No.: BLANK 2
Test Location:

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

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.0
After Act. Rinse:	510.0
Total TS1:	230.0

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.0
After 0.1N HNO_3 Rinse:	588.4
Total TS2:	307.4

MARK FLUID LEVEL

SEAL AND LABEL TS2

SAMPLE IDENTIFICATION	20-22050-PM-
TS1 (Probe Rinse-Acetone)	43
TS2 (Probe Rinse-0.1N HNO_3)	44
TS3 (Filter)	45
TS4 (Impinger 1-4 Sol'n-HNO_3)	46
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	47
TS5-B (Impinger 5,6 Rinse-HCl)	48

Train Loaded By:
Train Recovered By: [signature]

Filter

CONTAINER TS3

Filter ID:	828066
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:	406.0
w/ Imp. 1-4 Soln:	616.4
After HNO_3 Rinse:	718.2
Total TS4:	312.2

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:	406.6
With Imp. 5&6 Soln:	~~[illegible]~~ 622.3
After $KMnO_4$ Rinse:	734.4
After100g H_2O Rinse:	846.7
Total TS5-A:	440.1

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:	466.9
After DI H_2O Rinse:	573.2
Total TS5-B:	292.2

MARK FLUID LEVEL

SEAL & LABEL TS5-B

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

CWTR = 1 to 6:

WCBDA= 7:

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	
	Final Wt:	
7	Gain:	

Impinger Box ID:

ORTECH
a Kontrol Technologies Company

APPENDIX 12

Inorganics Analytical Reports
(28 pages)

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2528486		
Date of Report	26-Nov-20		
Date of Sample Receipt	12-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 5 (TPH 26-NOV-2020)

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(7 THRU 12) TEST#2 APC OUTLET #1	20-22050-PM-(13 THRU 18) TEST#3 APC OUTLET #1	20-22050-PM-(19 THRU 24) BLANK 1	20-22050-PM-(25 THRU 30) TEST#1 APC OUTLET #2
ALS Sample ID		L2528486-1	L2528486-2	L2528486-3	L2528486-4	L2528486-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		9-Nov-20	9-Nov-20	10-Nov-20	9-Nov-20	10-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis	**LOR**					
Method 5	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	0.1 J	0.3 J	0.2 J	0.6 J	0.3 J
Acetone Particulate Matter	0.4	14.4	17.7	1.6	0.6	14.1
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	83.2	110	112	275	101

ALS Environmental

Sample Analysis Summary Report

Sample Name		20-22050-PM-(31 THRU 36) TEST#2 APC OUTLET #2		20-22050-PM-(37 THRU 42) TEST#3 APC OUTLET #2		20-22050-PM-(43 THRU 48) BLANK 2		MB	
ALS Sample ID		L2528486-6		L2528486-7		L2528486-8		L2528486-MB	
Matrix		Stack		Stack		Stack		n/a	
Analysis type		Sample		Sample		Sample		Sample	
Sampling Date/Time		10-Nov-20		10-Nov-20		10-Nov-20		n/a	
Date of Receipt		12-Nov-20		12-Nov-20		12-Nov-20		n/a	
PM via Gravimetric Analysis	**LOR**								
Method 5	**mg**	**mg**		**mg**		**mg**		**mg**	
Filter Particulate Matter	0.8	0.8		0.7	J	0.3	J	0.2	J
Acetone Particulate Matter	0.4	2.6		10.5		<0.1		<0.1	
	g	g		g		g		g	
Acetone Mass	0.02	118		110		227		30.2	

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2528499		Mississauga, ON L5J 2Y4
Date of Report	30-Nov-20		Canada
Date of Sample Receipt	12-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 201A (TPH 30-NOV-2020)
Sample Particulate Analysis via Gravimetric USEPA Method 202 (TPH 30-NOV-2020)

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		20-22050-M201A-1 TEST#1 APC OUTLET #1	20-22050-M201A-2 TEST#1 APC OUTLET #1	20-22050-M201A-3 TEST#1 APC OUTLET #1	20-22050-M201A-4 TEST#1 APC OUTLET #1	20-22050-M201A-(5-7) TEST#1 APC OUTLET #1
ALS Sample ID		L2528499-1	L2528499-2	L2528499-3	L2528499-4	L2528499-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis Method 201A	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.5	1.3	0.4	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	33.5	28.6	6.0	-	-
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.8
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.5
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	273

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Sample Analysis Summary Report

Sample Name		20-22050-M201A-8 TEST#2 APC OUTLET #1	20-22050-M201A-9 TEST#2 APC OUTLET #1	20-22050-M201A-10 TEST#2 APC OUTLET #1	20-22050-M201A-11 TEST#2 APC OUTLET #1	20-22050-M201A-(12-14) TEST#2 APC OUTLET #1
ALS Sample ID		L2528499-6	L2528499-7	L2528499-8	L2528499-9	L2528499-10
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis Method 201A	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.2 J	0.3 J	0.1 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	33.5	22.5	14.8	-	-
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	3.2
Non-Extractable Condensable Particulates	0.4	-	-	-	-	4.0
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	222

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Sample Analysis Summary Report

Sample Name		20-22050-M201A-15 TEST#3 APC OUTLET #1	20-22050-M201A-16 TEST#3 APC OUTLET #1	20-22050-M201A-17 TEST#3 APC OUTLET #1	20-22050-M201A-18 TEST#3 APC OUTLET #1	20-22050-M201A-(19-21) TEST#3 APC OUTLET #1
ALS Sample ID		L2528499-11	L2528499-12	L2528499-13	L2528499-14	L2528499-15
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis Method 201A	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.5	0.2 J	0.2 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	34.5	27.1	11.9	-	-
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.9
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.6
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	201

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Sample Analysis Summary Report

Sample Name		20-22050-M201A-22 TEST#1 APC OUTLET #2	20-22050-M201A-23 TEST#1 APC OUTLET #2	20-22050-M201A-24 TEST#1 APC OUTLET #2	20-22050-M201A-25 TEST#1 APC OUTLET #2	20-22050-M201A-(26-28) TEST#1 APC OUTLET #2
ALS Sample ID		L2528499-16	L2528499-17	L2528499-18	L2528499-19	L2528499-20
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis Method 201A	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	<0.1	0.1 J	0.2 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	29.7	30.3	10.5	-	-
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	2.5
Non-Extractable Condensable Particulates	0.4	-	-	-	-	4.5
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	219

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Sample Analysis Summary Report

Sample Name		20-22050-M201A-29 TEST#2 APC OUTLET #2	20-22050-M201A-30 TEST#2 APC OUTLET #2	20-22050-M201A-31 TEST#2 APC OUTLET #2	20-22050-M201A-32 TEST#2 APC OUTLET #2	20-22050-M201A-(33-35) TEST#2 APC OUTLET #2
ALS Sample ID		L2528499-21	L2528499-22	L2528499-23	L2528499-24	L2528499-25
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis	**LOR**					
Method 201A	**mg**	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.8	0.2 J	0.4	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	47.5	21.3	11.1	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	3.2
Non-Extractable Condensable Particulates	0.4	-	-	-	-	4.3
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	249

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Sample Analysis Summary Report

Sample Name		20-22050-M201A-36 TEST#3 APC OUTLET #2		20-22050-M201A-37 TEST#3 APC OUTLET #2		20-22050-M201A-38 TEST#3 APC OUTLET #2	20-22050-M201A-39 TEST#3 APC OUTLET #2	20-22050-M201A-(40-42) TEST#3 APC OUTLET #2
ALS Sample ID		L2528499-26		L2528499-27		L2528499-28	L2528499-29	L2528499-30
Matrix		Stack		Stack		Stack	Stack	Stack
Analysis type		Sample		Sample		Sample	Sample	Sample
Sampling Date/Time		9-Nov-20		9-Nov-20		9-Nov-20	9-Nov-20	9-Nov-20
Date of Receipt		12-Nov-20		12-Nov-20		12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis Method 201A	**LOR mg**	**mg**		**mg**		**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-		-		-	<0.1	-
Acetone Particulate Matter	0.4	0.5		0.2	J	0.9	-	-
	g	**g**		**g**		**g**	**g**	**g**
Acetone Mass	0.02	41.3		39.8		17.6	-	-
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**		**mg**		**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-		-		-	-	2.1
Non-Extractable Condensable Particulates	0.4	-		-		-	-	3.7
	g	**g**		**g**		**g**	**g**	**g**
Water Mass	0.02	-		-		-	-	230

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Sample Analysis Summary Report

Sample Name		20-22050-M201A-43 BLANK APC OUTLET #1	20-22050-M201A-44 BLANK APC OUTLET #1	20-22050-M201A-45 BLANK APC OUTLET #1	20-22050-M201A-46 BLANK APC OUTLET #1	20-22050-M201A-(47-49) BLANK APC OUTLET #1
ALS Sample ID		L2528499-31	L2528499-32	L2528499-33	L2528499-34	L2528499-35
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis	**LOR**					
Method 201A	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.2 J	0.1 J	<0.1	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	20.7	22.6	21.9	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	0.5
Non-Extractable Condensable Particulates	0.4	-	-	-	-	1.4
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	173

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Sample Analysis Summary Report

Sample Name		20-22050-M201A-50 BLANK APC OUTLET #2	20-22050-M201A-51 BLANK APC OUTLET #2	20-22050-M201A-52 BLANK APC OUTLET #2	20-22050-M201A-53 BLANK APC OUTLET #2	20-22050-M201A-(54-56) BLANK APC OUTLET #2
ALS Sample ID		L2528499-36	L2528499-37	L2528499-38	L2528499-39	L2528499-40
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis	**LOR**					
Method 201A	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	0.2 J	-
Acetone Particulate Matter	0.4	0.5	0.6	0.1 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	56.4	48.1	52.2	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	0.6
Non-Extractable Condensable Particulates	0.4	-	-	-	-	1.9
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	113

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Sample Analysis Summary Report

Sample Name		MB		MB
ALS Sample ID		L2528499-MB		L2528499-MB2
Matrix		n/a		n/a
Analysis type		Sample		Sample
Sampling Date/Time		n/a		n/a
Date of Receipt		n/a		n/a
PM via Gravimetric Analysis	**LOR**			
Method 201A	**mg**	**mg**		**mg**
Filter Particulate Matter	0.8	0.4	J	-
Acetone Particulate Matter	0.4	0.2	J	<0.1
	g	**g**		**g**
Acetone Mass	0.02	34.0		30.2
PM via Gravimetric Analysis	**LOR**			
Method 202	**mg**	**mg**		**mg**
Extractable Condensable Particulates	0.4	0.1	J	-
Non-Extractable Condensable Particulates	0.4	1.7		-
	g	**g**		**g**
Water Mass	0.02	199		-

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
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Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2528478		
Date of Report	23-Nov-20		
Date of Sample Receipt	12-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS:

F as HF Anion Analyzed via Ion Chromatography USEPA Method 26A (GN 19-Nov-20)
Cl as HCl Anion Analyzed via Ion Chromatography USEPA Method 26A (GN 19-Nov-20)
Ammonia, Total (as NH_3) via Ion Chromatography USEPA Method CTM-027 (GN 16-Nov-20)

ANALYST COMMENTS:

Low levels of chloride and fluoride observed in the method blank (MB) slightly above their LORs. Sample data is well beyond this potential background. No impact to data quality is suspected. **PE 20-Nov-2020**

LOR = Limit of Reporting
MB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: 90-110%)
MS = Matrix Spike Sample (limits: 90-110%, NH_3: 85-115%)
RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)

Certified by: L. Wrona

Lynne Wrona
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	20-22050-M26A-1 APC OUTLET #1	20-22050-M26A-2 APC OUTLET #1	20-22050-M26A-3 APC OUTLET #1	20-22050-M26A-4 APC OUTLET #2	20-22050-M26A-5 APC OUTLET #2
ALS Sample ID	L2528478-1	L2528478-2	L2528478-3	L2528478-4	L2528478-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	9-Nov-20	9-Nov-20	9-Nov-20	10-Nov-20	10-Nov-20
Date of Receipt	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
Ion Chromatography Analysis					
USEPA Method 26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.160	<0.161	<0.176	<0.168	<0.174
Analysis 1	<0.160	<0.161	<0.176	<0.168	<0.174
Analysis 2	<0.160	<0.161	<0.176	<0.168	<0.174
Total Cl^- as HCl (ave)	6.56	6.76	6.11	5.37	5.11
Analysis 1	6.68	6.73	6.16	5.26	5.16
Analysis 2	6.45	6.78	6.06	5.47	5.06
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**mg**	**mg**
Total Ammonia as NH_3	0.911	1.06	0.986	1.22	1.09

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Sample Analysis Summary Report

Sample Name	20-22050-M26A-6 APC OUTLET #2	20-22050-M26A-BLANK 1 APC OUTLET #1	20-22050-M26A-BLANK 2 APC OUTLET #2
ALS Sample ID	L2528478-6	L2528478-7	L2528478-8
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	10-Nov-20	10-Nov-20	10-Nov-20
Date of Receipt	12-Nov-20	12-Nov-20	12-Nov-20
Ion Chromatography Analysis			
USEPA Method 26A	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.173	<0.107	<0.109
Analysis 1	<0.173	<0.107	<0.109
Analysis 2	<0.173	<0.107	<0.109
Total Cl^- as HCl (ave)	4.98	<0.157	0.312
Analysis 1	4.98	<0.157	0.307
Analysis 2	4.98	<0.157	0.316
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**
Total Ammonia as NH_3	1.01	<0.288	<0.293

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Sample QC Summary Report

Sample Name	MB	LCS	LCS
ALS Sample ID	MB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	n/a	n/a	n/a
Date of Receipt	n/a	n/a	n/a
Ion Chromatography Analysis			
USEPA Method 26A	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	0.00512	0.0585	101%
Analysis 1	0.00510	0.0587	
Analysis 2	0.00514	0.0583	
Total Cl^- as HCl (ave)	0.00299	0.0778	97%
Analysis 1	0.00298	0.0781	
Analysis 2	0.00300	0.0775	
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	<0.00472	0.0486	103%

ALS Environmental

Sample QC Summary Report

Sample Name	20-22050-M26A-1 APC OUTLET #1	20-22050-M26A-1 APC OUTLET #1	20-22050-M26A-1 APC OUTLET #1	20-22050-M26A-1 APC OUTLET #1
ALS Sample ID	L2528478-1	L2528478-1DUP	L2528478-1MS	L2528478-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20
Date of Receipt	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
Ion Chromatography Analysis				
USEPA Method 26A	**mg**	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	<0.160	<0.160	5.00	95%
Analysis 1	<0.160	<0.160	5.01	
Analysis 2	<0.160	<0.160	5.00	
Total Cl^- as HCl (ave)	6.56	6.57	14.4	105%
Analysis 1	6.68	6.60	14.4	
Analysis 2	6.45	6.54	14.4	
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	0.911	0.887	5.32	101%

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2528486		
Date of Report	3-Dec-20		
Date of Sample Receipt	12-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS:

Metals analysed via ICP-MS Method USEPA 6020B (SA 26-Nov-20 and 30-Nov-20)

Sample Preparation via USEPA Method 29 (26-Nov-20)

ANALYST COMMENTS:

Cu, Mo, Ni observed in the 1A method blank (MB) at levels significantly above their LORs. Data for these analytes may be biased high as a result of these background contributions.

Ag recovery in the FH LCSD is outside ALS DQOs (found: 59%, limits: 85-115%). LCS, MS, and MSD recoveries are all within ranges. This is likely due to silver binding other elements in solution. The presence of the filter matrix has been observed to effectively counteract this process. Impact to data quality is expected to be negligible. **PE 2-Dec-2020**

LCB = Laboratory Control Blank
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(7 THRU 12) TEST#2 APC OUTLET #1	20-22050-PM-(13 THRU 18) TEST#3 APC OUTLET #1	20-22050-PM-(19 THRU 24) BLANK 1	20-22050-PM-(25 THRU 30) TEST#1 APC OUTLET #2	20-22050-PM-(31 THRU 36) TEST#2 APC OUTLET #2
ALS Sample ID		L2528486-1	L2528486-2	L2528486-3	L2528486-4	L2528486-5	L2528486-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		9-Nov-20	9-Nov-20	10-Nov-20	9-Nov-20	10-Nov-20	10-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Front Half HF Fraction 1A							
Antimony	0.2	0.397	0.205	<	<	<	0.227
Arsenic	1	<	<	<	<	<	<
Barium	5	5.48	5.07	8.07	7.18	<	7.52
Beryllium	0.2	<	<	<	<	<	<
Cadmium	0.1	0.253	0.174	0.232	<	0.143	0.154
Chromium	1	5.34	3.85	2.76	2.44	3.06	3.14
Cobalt	0.2	<	<	0.345	<	<	<
Copper	1	6.98	6.68	6.16	6.07	6.27	6.42
Lead	0.5	1.23	0.958	1.01	<	1.02	1.00
Molybdenum	0.2	24.2	23.6	24.0	23.3	24.0	23.9
Nickel	0.2	4.83	3.40	3.84	2.30	2.80	3.07
Selenium	2	<	<	<	<	<	<
Silver	0.2	<	<	<	<	<	<
Thallium	0.2	0.971	0.404	<	<	<	0.260
Vanadium	1	<	<	<	<	<	<
Zinc	6	25.2	16.8	17.0	<	13.6	17.6
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	<	<	<	<
Arsenic	0.2	<	<	<	<	<	<
Barium	0.5	1.22	1.01	1.00	0.776	1.15	1.13
Beryllium	0.1	<	<	<	<	<	<
Cadmium	0.05	0.150	0.157	0.0603	<	0.144	<
Chromium	0.15	0.735	0.581	0.493	0.355	0.892	0.673
Cobalt	0.1	<	<	<	<	<	<
Copper	0.3	15.7	16.4	19.7	9.78	20.1	16.5
Lead	0.05	0.844	0.550	0.460	0.421	0.779	0.412
Molybdenum	0.1	<	<	<	<	<	<
Nickel	0.1	0.849	0.695	1.01	0.280	0.660	0.668
Selenium	1	5.75	8.13	<	<	<	3.07
Silver	0.1	<	<	<	<	<	<
Thallium	0.05	<	<	<	<	<	<
Vanadium	0.1	<	<	<	<	<	<
Zinc	3	10.4	6.05	5.66	<	6.16	6.44

ALS Environmental

Sample Analysis Summary Report

Sample Name		**20-22050-PM-(37 THRU 42) TEST#3 APC OUTLET #2**	**20-22050-PM-(43 THRU 48) BLANK 2**	**MB**
ALS Sample ID		L2528486-7	L2528486-8	L2528486-MB
Matrix		Stack	Stack	n/a
Analysis Type		Sample	Sample	Sample
Sampling Date		10-Nov-20	10-Nov-20	n/a
Date of Receipt		12-Nov-20	12-Nov-20	n/a
Multi-Metals via ICP-MS	**LOR**			
	ug	**ug**	**ug**	**ug**
Front Half HF Fraction 1A				
Antimony	0.2	<	<	<
Arsenic	1	<	<	<
Barium	5	8.27	5.19	<
Beryllium	0.2	<	<	<
Cadmium	0.1	0.266	<	<
Chromium	1	2.71	2.41	2.04
Cobalt	0.2	<	<	<
Copper	1	7.12	9.00	5.79
Lead	0.5	1.01	0.503	<
Molybdenum	0.2	23.2	22.3	23.2
Nickel	0.2	4.34	2.09	2.23
Selenium	2	<	<	<
Silver	0.2	<	<	<
Thallium	0.2	0.697	<	<
Vanadium	1	<	<	<
Zinc	6	15.7	<	<
Back Half (HNO3 / H2O2) Fraction 2A				
Antimony	0.1	<	<	-
Arsenic	0.2	<	<	-
Barium	0.5	1.47	0.834	-
Beryllium	0.1	<	<	-
Cadmium	0.05	0.0836	<	-
Chromium	0.15	0.600	0.341	-
Cobalt	0.1	0.295	<	-
Copper	0.3	15.8	8.33	-
Lead	0.05	0.613	0.523	-
Molybdenum	0.1	<	<	-
Nickel	0.1	0.588	0.279	-
Selenium	1	<	<	-
Silver	0.1	<	<	-
Thallium	0.05	<	<	-
Vanadium	0.1	0.273	<	-
Zinc	3	9.56	<	-

ALS Environmental

Sample QC Summary Report

Sample Name		RB	LCS	LCS	LCSD	LCSD
ALS Sample ID		RB	LCS	LCS	LCSD	LCSD
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis Type		Blank	LCS	LCS	LCS	LCS
Sampling Date		n/a	n/a	n/a	n/a	n/a
Date of Receipt		n/a	n/a	n/a	n/a	n/a
Multi-Metals via ICP-MS	**LOR**					
	ug	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A						
Antimony	0.2	<	11.9	99	11.5	96
Arsenic	1	<	59.8	100	58.3	97
Barium	5	<	58.3	97	57.7	96
Beryllium	0.2	<	59.9	100	58.4	97
Cadmium	0.1	<	29.9	100	28.8	96
Chromium	1	<	58.8	98	57.8	96
Cobalt	0.2	<	59.1	99	57.8	96
Copper	1	<	60.2	100	59.0	98
Lead	0.5	<	61.1	102	59.2	99
Molybdenum	0.2	<	29.2	97	27.8	93
Nickel	0.2	<	59.4	99	58.1	97
Selenium	2	<	60.1	100	58.9	98
Silver	0.2	<	30.1	100	17.6	59
Thallium	0.2	<	61.2	102	59.3	99
Vanadium	1	<	58.6	98	57.9	96
Zinc	6	<	119	99	115	95
Back Half (HNO3 / H2O2) Fraction 2A						
Antimony	0.1	<	5.92	99	5.83	97
Arsenic	0.2	<	29.6	99	30.0	100
Barium	0.5	<	30.3	101	29.2	97
Beryllium	0.1	<	29.1	97	29.4	98
Cadmium	0.05	<	15.5	104	15.7	105
Chromium	0.15	<	29.7	99	30.2	101
Cobalt	0.1	<	29.9	100	30.3	101
Copper	0.3	<	30.1	100	30.4	101
Lead	0.05	<	30.1	100	30.5	101
Molybdenum	0.1	<	14.6	97	14.6	97
Nickel	0.1	<	29.9	99	30.4	101
Selenium	1	<	28.7	96	29.5	98
Silver	0.1	<	14.4	96	14.4	96
Thallium	0.05	<	29.7	99	30.3	101
Vanadium	0.1	<	29.9	100	29.9	100
Zinc	3	<	59.1	98	59.4	98

ALS Environmental

Sample QC Summary Report

Sample Name		20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-220 PM-(1 T 6) TES APC OUT
ALS Sample ID		L2528486-1	L2528486-1	MS	MS	MSD	
Matrix		Stack	Stack	Stack	Stack	Stack	S
Analysis Type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike
Sampling Date		9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**%**
Front Half HF Fraction 1A							
Antimony	0.2	0.397	0.368	23.7	97	24.2	
Arsenic	1	<	<	112	93	114	
Barium	5	5.48	5.42	116	92	121	
Beryllium	0.2	<	<	116	97	119	
Cadmium	0.1	0.253	0.249	59.1	98	58.5	
Chromium	1	5.34	5.27	115	91	116	
Cobalt	0.2	<	<	111	93	112	
Copper	1	6.98	6.93	120	94	120	
Lead	0.5	1.23	1.27	118	97	120	
Molybdenum	0.2	24.2	24.3	81.1	95	82.4	
Nickel	0.2	4.83	4.99	116	92	117	
Selenium	2	<	<	115	96	116	
Silver	0.2	<	<	57.1	95	58.2	
Thallium	0.2	0.971	0.996	121	100	121	
Vanadium	1	<	<	110	92	111	
Zinc	6	25.2	25.3	254	95	254	
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	11.6	96	11.5	
Arsenic	0.2	<	<	56.9	95	57.2	
Barium	0.5	1.22	1.23	51.2	83	51.5	
Beryllium	0.1	<	<	57.2	95	57.4	
Cadmium	0.05	0.150	0.141	30.5	101	31.4	
Chromium	0.15	0.735	0.752	59.0	97	58.8	
Cobalt	0.1	<	<	58.5	97	59.4	
Copper	0.3	15.7	15.4	74.1	97	74.9	
Lead	0.05	0.844	0.838	57.5	94	57.8	
Molybdenum	0.1	<	<	28.6	95	28.6	
Nickel	0.1	0.849	0.830	59.5	98	60.1	
Selenium	1	5.75	5.51	60.3	91	62.4	
Silver	0.1	<	<	27.9	93	28.0	
Thallium	0.05	<	<	58.3	97	58.2	
Vanadium	0.1	<	<	58.4	97	58.3	
Zinc	3	10.4	10.1	126	96	127	

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	Client Name:	ORTECH Environmental
ALS Project ID:	ORT100	Client Address:	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2528486		
Date of Report	30-Nov-20		
Date of Sample Receipt	12-Nov-20	Client Contact:	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS:

Sample Preparation via USEPA Method 29 (AB 23,24,27-NOV-2020)
Mercury Analysis via CVAA using Method USEPA 7470A (AB 24,27-NOV-2020)

LOR = Limit of Reporting
LCB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: hivol, solids: 85-115%, stack: 90-110%)
MS = Matrix Spike Sample (limits: 75-125%)
RPD = Relative Percent Difference (limits: <20%)
CCV/CVS = Calibration Verification Standard (limits: 85-115%)

Certified by: L. Wrona

Lynne Wrona
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name			20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(7 THRU 12) TEST#2 APC OUTLET #1	20-22050-PM-(13 THRU 18) TEST#3 APC OUTLET #1	20-22050-PM-(19 THRU 24) BLANK 1	20-22050-PM-(25 THRU 30) TEST#1 APC OUTLET #2
ALS Sample ID			L2528486-1	L2528486-2	L2528486-3	L2528486-4	L2528486-5
Matrix			Stack	Stack	Stack	Stack	Stack
Analysis type			Sample	Sample	Sample	Sample	Sample
Sampling Date/Time			9-Nov-20	9-Nov-20	10-Nov-20	9-Nov-20	10-Nov-20
Date of Receipt			12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
Mercury via CVAA		LOR					
	Method 29	ug	ug	ug	ug	ug	ug
	Analytical Fraction 1B	0.015	<0.015	<0.015	<0.015	<0.015	<0.015
	Analytical Fraction 2B	0.050	1.91	1.15	0.644	<0.148	<0.425
	Analytical Fraction 3B	0.025	<0.0225	<0.0225	<0.0225	<0.0225	<0.0225
	Analytical Fraction 3C	0.25	0.468	0.399	<0.225	<0.15	0.304

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Sample Analysis Summary Report

Sample Name		20-22050-PM-(31 THRU 36) TEST#2 APC OUTLET #2	20-22050-PM-(37 THRU 42) TEST#3 APC OUTLET #2	20-22050-PM-(43 THRU 48) BLANK 2
ALS Sample ID		L2528486-6	L2528486-7	L2528486-8
Matrix		Stack	Stack	Stack
Analysis type		Sample	Sample	Sample
Sampling Date/Time		10-Nov-20	10-Nov-20	10-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20
Mercury via CVAA	**LOR**			
Method 29	**ug**	**ug**	**ug**	**ug**
Analytical Fraction 1B	0.015	<0.015	<0.015	<0.015
Analytical Fraction 2B	0.050	<0.395	<0.385	<0.15
Analytical Fraction 3B	0.025	<0.0225	<0.0225	<0.0225
Analytical Fraction 3C	0.25	<0.15	<0.2	<0.15

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Sample QC Summary Report

	LOR					
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	0.282	94%	0.280	94%
Analytical Fraction 2B	0.050	<0.05	0.933	93%	0.954	95%
Analytical Fraction 3B	0.025	<0.025	0.474	95%	0.481	96%
Analytical Fraction 3C	0.25	<0.25	4.65	93%	4.57	91%

ALS Environmental

Sample QC Summary Report

Sample Name		20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050-PM-(1 THRU 6) TEST#1 APC OUTLET #1
ALS Sample ID		L2528486-1	L2528486-1DUP	L2528486-1MS	L2528486-1MS	L2528486-1MSD	L2528486-1MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date/Time		9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
Mercury via CVAA	LOR						
Method 29	ug	ug	ug	ug	% Rec	ug	% Rec
Analytical Fraction 1B	0.015	<0.015	<0.015	0.300	99%	0.288	95%
Analytical Fraction 2B	0.050	1.91	1.89	8.71	95%	8.64	94%
Analytical Fraction 3B	0.025	<0.0225	<0.0225	0.398	88%	0.401	89%
Analytical Fraction 3C	0.250	0.468	0.489	3.21	91%	3.33	95%

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.: 22050
Date: NOV 10, 20

Test No.: 1
Test Location: UNIT 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
			Filter ID: QZ8017
			Colour: WHITE
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1	Knock Out
Empty Wt:	517.5
Final Wt:	682.7
1 Gain:	165.2
Colour:	clean

Impinger #2	Empty
Empty Wt:	658.3
Final Wt:	658.3
2 Gain:	—
Colour:	—

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	675.3
Initial Wt:	773.8
Final Wt:	773.1
3 Gain:	-0.7
Colour:	clean

Impinger #4 Silica Gel	
Initial Wt:	871.5
Final Wt:	880.7
4 Gain:	9.2
% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	10:30
Purge Off:	11:30

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3: 164.5

WCBDA=4: 9.2

SAMPLE IDENTIFICATION	20-22050-M201A-
TS1 (Part. > 10)	1
TS2 (Part. > 2.5)	2
TS3 (Part. < 2.5)	3
TS4 (Back Up Filter, <2.5)	4
TS5 (Imp 2 H_2O and rinse)	5
TS6 (Secondary Filter)	6
TS7 (Acetone / Hexane rinse)	7

Train Loaded By: DT/DU
Train Recovered By: DT/DU

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ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: NOV 10, 20

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	CONTAINER TS4
			Filter ID: QZ8018 Colour: WHITE
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	491.1
	Final Wt:	647.8
1	Gain:	156.7
	Colour:	clear

	Impinger #2 Empty	
	Empty Wt:	672.0
	Final Wt:	672.0
2	Gain:	~~0.9~~
	Colour:	clear

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	684.0
	Initial Wt:	782.7
	Final Wt:	781.9
3	Gain:	-0.8
	Colour:	clear

	Impinger #4 Silica Gel	
	Initial Wt:	925.5
	Final Wt:	936.5
4	Gain:	11.0
	% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	13:10
Purge Off:	14:10

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

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

SAMPLE IDENTIFICATION	20-22050-M201A-
TS1 (Part. > 10)	8
TS2 (Part. > 2.5)	9
TS3 (Part. < 2.5)	10
TS4 (Back Up Filter, <2.5)	11
TS5 (Imp 2 H_2O and rinse)	12
TS6 (Secondary Filter)	13
TS7 (Acetone / Hexane rinse)	14

Train Loaded By: DT / BU
Train Recovered By: DT / BU

CWTR=1+2+3: 155.9

WCBDA=4: 11.0

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ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: NOV 10, 20

Test No.: 3
Test Location: UNIT 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

Mark Fluid Level and
Seal and label container TS1

PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem

CONTAINER TS2

Mark Fluid Level and
Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top

CONTAINER TS3

Mark Fluid Level and
Seal and label container TS3

Back-Up Filter

CONTAINER TS4

Filter ID: Q250 12
Colour: WHITE

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	517.5
Final Wt:	680.3
1 Gain:	162.8
Colour:	Clear

Impinger #2 Empty	
Empty Wt:	658.3
Final Wt:	659.9
2 Gain:	1.6
Colour:	Clear

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	675.3
Initial Wt:	773.1
Final Wt:	772.1
3 Gain:	-1.0
Colour:	Clear

Impinger #4 Silica Gel	
Initial Wt:	880.7
Final Wt:	888.7
4 Gain:	8
% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	15:50
Purge Off:	16:50

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and
Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and
Seal and Label Container

CWTR=1+2+3: 163.4 ✓

WCBDA=4: 8.0

SAMPLE IDENTIFICATION	20-22050-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: DT/DY
Train Recovered By: DT/DY

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ORTECH Consulting Inc.
PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: NOV 10, 20

Test No.: BLANK 1
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem
CONTAINER TS1
Mark Fluid Level and
Seal and label container TS1

PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem
CONTAINER TS2
Mark Fluid Level and
Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top
CONTAINER TS3
Mark Fluid Level and
Seal and label container TS3

Back-Up Filter
CONTAINER TS4
Filter ID: QZ8019
Colour: WHITE
Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 Empty	
Empty Wt:	
Final Wt:	
2 Gain:	
Colour:	

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	
% Spent:	

CONTAINER TS5 & TS6
Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:
Purge Off:

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and
Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7
Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and
Seal and Label Container

CWTR=1+2+3:

WCBDA=4:

SAMPLE IDENTIFICATION	20-22050-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: DT
Train Recovered By: DT

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC

Project No.: 22050

Date: NOV 9, 20

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
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

Filter ID: QZ 8010

Colour: WHITE

Impingers 1, 2, 3, 4

Impinger #1	Knock Out
Empty Wt:	517.5
Final Wt:	658.2
1 Gain:	140.7
Colour:	clear

658.1

Impinger #2	Empty
Empty Wt:	~~517.5~~ 658.1
Final Wt:	660.3
2 Gain:	1.2 2.1
Colour:	clear

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	675.3
Initial Wt:	775.0
Final Wt:	774.7
3 Gain:	-0.3
Colour:	clear

Impinger #4	Silica Gel
Initial Wt:	852.4
Final Wt:	863.1
4 Gain:	10.7
% Spent:	—

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)

** if there is no gain purge is not required.*

Purge On:	12:00
Purge Off:	1300

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5

Mark Fluid Level and Seal and Label Container

CONTAINER TS6

Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3: ~~140.8~~ 141.6 ✓

WCBDA=4: 10.7

SAMPLE IDENTIFICATION	20-22050-M201A-
TS1 (Part. > 10)	22
TS2 (Part. > 2.5)	23
TS3 (Part. < 2.5)	24
TS4 (Back Up Filter, <2.5)	25
TS5 (Imp 2 H_2O and rinse)	26
TS6 (Secondary Filter)	27
TS7 (Acetone / Hexane rinse)	28

Train Loaded By: DU

Train Recovered By: DT/DU

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ORTECH

ORTECH Consulting Inc.

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: Nov 9, 20

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
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
			Filter ID: QZ8015
			Colour: WHITE
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	491.1
Final Wt:	649.4
1 Gain:	158.3
Colour:	Clear

Impinger #2 Empty	
Empty Wt:	673.0
Final Wt:	672.0
2 Gain:	-1.0
Colour:	clear

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	684.0
Initial Wt:	784.1
Final Wt:	782.7
3 Gain:	-1.4
Colour:	clear

Impinger #4 Silica Gel	
Initial Wt:	914.7
Final Wt:	925.5
4 Gain:	10.8
% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	15:00
Purge Off:	16:00

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

✓

CWTR=1+2+3: 155.9

WCBDA=4: 10.8

SAMPLE IDENTIFICATION	20-22050-M201A-
TS1 (Part. > 10)	29
TS2 (Part. > 2.5)	30
TS3 (Part. < 2.5)	31
TS4 (Back Up Filter, <2.5)	32
TS5 (Imp 2 H_2O and rinse)	33
TS6 (Secondary Filter)	34
TS7 (Acetone / Hexane rinse)	35

Train Loaded By: DU
Train Recovered By: DU/DT

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: NOV 9, 20

Test No.: 3
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem
CONTAINER TS1
Mark Fluid Level and
Seal and label container TS1

PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem
CONTAINER TS2
Mark Fluid Level and
Seal and label container TS2

Exit Stem, and Connecting Tubing to Filter, and Filter Top
CONTAINER TS3
Mark Fluid Level and
Seal and label container TS3

Back-Up Filter
CONTAINER TS4
Filter ID: QZ 8016
Colour: WHITE
Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1	Knock Out
Empty Wt:	517.5
Final Wt:	674.3
1 Gain:	156.8
Colour:	clear

Impinger #2	Empty
Empty Wt:	659.1
Final Wt:	658.3
2 Gain:	−0.8
Colour:	—

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	675.3
Initial Wt:	774.7
Final Wt:	773.8
3 Gain:	−0.9
Colour:	clear

Impinger #4 Silica Gel	
Initial Wt:	863.1
Final Wt:	871.5
4 Gain:	8.4
% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On: 17:55
Purge Off: 18:55

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and
Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and
Seal and Label Container

CWTR=1+2+3: 155.1
WCBDA=4: 8.4

SAMPLE IDENTIFICATION	20-22050-M201A-
TS1 (Part. > 10)	36
TS2 (Part. > 2.5)	37
TS3 (Part. < 2.5)	38
TS4 (Back Up Filter, <2.5)	39
TS5 (Imp 2 $H_2$0 and rinse)	40
TS6 (Secondary Filter)	41
TS7 (Acetone / Hexane rinse)	42

Train Loaded By: DT/DU
Train Recovered By: DT/DU

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ORTECH

ORTECH Consulting Inc.

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22050
Date: NOV 10, 20

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
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
			Filter ID: QZ8011
			Colour: WHITE
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	
	Final Wt:	
1	Gain:	
	Colour:	

	Impinger #2 Empty	
	Empty Wt:	
	Final Wt:	
2	Gain:	
	Colour:	

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
3	Gain:	
	Colour:	

	Impinger #4 Silica Gel	
	Initial Wt:	
	Final Wt:	
4	Gain:	
	% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)

** if there is no gain purge is not required.*

Purge On:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3:	
WCBDA=4:	

SAMPLE IDENTIFICATION	20-22050-M201A-
TS1 (Part. > 10)	50
TS2 (Part. > 2.5)	51
TS3 (Part. < 2.5)	52
TS4 (Back Up Filter, <2.5)	53
TS5 (Imp 2 $H_2$0 and rinse)	54
TS6 (Secondary Filter)	55
TS7 (Acetone / Hexane rinse)	56

Train Loaded By: BT
Train Recovered By: BT

APPENDIX 14

SVOC Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22050
Sample Batch No.: 20-22050-SVOC-

Test No.: 1
Test Date: NOV 11, 20
Test Location: UNIT 1

Sample ID 1
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser
CONTAINER TS1

Empty Wt:	405.0
After Acetone/ Hexane Rinse:	702.3
Total TS1:	297.3

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 2
Filter
CONTAINER TS2

Colour:	WHITE

FOLD IN FOIL
SEAL AND LABEL CONTAINER TS2

Sample ID 3
XAD-II Trap
CONTAINER TS3

Initial Wt:	359.0
Final Wt:	366.5
1 Gain:	7.5
Colour:	WHITE

SEAL TRAP
WRAP IN FOIL
LABEL AS CONTAINER TS3

Sample ID 4
Impingers 1, 2 & 3
CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	665.1
Final Wt:	1010.3
2 Gain:	345.2
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	548.0
Initial Wt:	650.7
Final Wt:	818.6
3 Gain:	167.9
Colour:	clear

Impinger #3 Empty	
Empty Wt:	612.6
Final Wt:	818.4
4 Gain:	205.8
Colour:	clear

Container TS4 Weights	
Empty Wt:	405.0
With Imp Soln:	1213.5
After ~100g H_2O Rinse:	1340.3
Total TS4:	935.3

CWTR = 1 + 2 + 3 + 4: ~~[illegible]~~ 726.4

WCBDA=5: 23.0

Sample ID 5
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS5

Empty Wt:	404.5
After Acetone/ Hexane Rinse:	577.6
Total TS5:	173.1

Impinger Box ID: 13

Impinger 4 Silica Gel
CONTAINER TS6 (Impinger)

Initial Wt:	906.1
Final Wt:	929.1
5 Gain:	23.0
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	7
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	198612
Hexane Batch No.:	105523
Acetone Batch No.:	105639

Train Loaded By: DT
Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22050
Sample Batch No.: 20-22050-SVOC-

Test No.: 2
Test Date: NOV 11, 20
Test Location: UNIT 1

Sample ID 6 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	405.0
After Acetone/ Hexane Rinse:	756.9
Total TS1:	351.9

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 7 — Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 8 — XAD-II Trap

CONTAINER TS3

Initial Wt:	393.3
Final Wt:	397.7
1 Gain:	4.4
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 9 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	660.5
Final Wt:	968.7
2 Gain:	308.2
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	552.8
Initial Wt:	650.0
Final Wt:	936.3
3 Gain:	286.3
Colour:	clear

Impinger #3 Empty	
Empty Wt:	520.4
Final Wt:	621.4
4 Gain:	101.0
Colour:	

Container TS4 Weights	
Empty Wt:	403.0
With Imp Soln:	1184.5
After ~100g H_2O Rinse:	1317.2
Total TS4:	914.2

CWTR = 1 + 2 + 3 + 4: 699.9

WCBDA=5: 20.7

Sample ID 10 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	403.5
After Acetone/ Hexane Rinse:	670.2
Total TS5:	266.7

Impinger Box ID: 4

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	924.3
Final Wt:	945.0
5 Gain:	20.7
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	12
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By: DT

✓ TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22050
Sample Batch No.: 20-22050-SVOC-

Test No.: 3
Test Date: NOV 12 20
Test Location: UNIT 1

Sample ID 11
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser
CONTAINER TS1

Empty Wt:	403.0
After Acetone/ Hexane Rinse:	707.9
Total TS1:	304.9

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 12
Filter
CONTAINER TS2
Colour: WHITE
FOLD IN FOIL
SEAL AND LABEL CONTAINER TS2

Sample ID 13
XAD-II Trap
CONTAINER TS3

Initial Wt:	413.9
Final Wt:	420.9
Gain:	7.0
Colour:	WHITE

1

SEAL TRAP
WRAP IN FOIL
LABEL AS CONTAINER TS3

Sample ID 14
Impingers 1, 2 & 3
CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	585.2
Final Wt:	960.4
Gain:	375.2
Colour:	Clear

2

Impinger #2 Ethylene Glycol	
Empty Wt:	649.2
Initial Wt:	752.8
Final Wt:	960.4
Gain:	207.6
Colour:	Clear

3

Impinger #3 Empty	
Empty Wt:	596.9
Final Wt:	706.7
Gain:	109.8
Colour:	Clear

4

Container TS4 Weights	
Empty Wt:	406.0
With Imp Soln:	1184.0
After ~100g H_2O Rinse:	1312.5
Total TS4:	

CWTR = 1 + 2 + 3 + 4: ~~[illegible]~~ 699.6
WCBDA=5: 20.0

Sample ID 15
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS5

Empty Wt:	406.5
After Acetone/ Hexane Rinse:	599.1
Total TS5:	192.6

Impinger Box ID: 2

Impinger 4 Silica Gel
CONTAINER TS6 (Impinger)

Initial Wt:	937.0
Final Wt:	957.0
Gain:	20.0
% Spent:	

5

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	6
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: ST
Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22050
Sample Batch No.: 20-22050-SVOC-

Test No.: BLANK 1
Test Date: NOV 17/20
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:	403.0
After Acetone/ Hexane Rinse:	572.5
Total TS1:	169.5

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:	~~377.6~~ 398.4
Final Wt:	398.4
1 Gain:	—
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 19 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	655.3
Final Wt:	655.3
2 Gain:	—
Colour:	—

Impinger #2 Ethylene Glycol	
Empty Wt:	564.5
Initial Wt:	661.9
Final Wt:	661.9
3 Gain:	—
Colour:	clear

Impinger #3 Empty	
Empty Wt:	479.3
Final Wt:	479.3
4 Gain:	—
Colour:	—

Container TS4 Weights	
Empty Wt:	403.5
With Imp Soln:	500.0
After ~100g H_2O Rinse:	650.5
Total TS4:	247.0

CWTR = 1 + 2 + 3 + 4: —

WCBDA=5: —

Sample ID 20 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	404.0
After Acetone/ Hexane Rinse:	616.5
Total TS5:	212.5

Impinger Box ID: 5

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	914.1
Final Wt:	914.1
5 Gain:	—
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	~~5~~ 10
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22050
Sample Batch No.: 20-22050-SVOC-

Test No.: 1
Test Date: NOV 11, 20
Test Location: UNIT 2

Sample ID 21
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser
CONTAINER TS1

Empty Wt:	403.0
After Acetone/ Hexane Rinse:	686.7
Total TS1:	283.7

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 22
Filter
CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 23
XAD-II Trap
CONTAINER TS3

Initial Wt:	389.8
Final Wt:	400.5
1 Gain:	10.7
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 24
Impingers 1, 2 & 3
CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	529.8
Final Wt:	878.0
2 Gain:	348.2
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	553.7
Initial Wt:	655.5
Final Wt:	879.5
3 Gain:	224.0
Colour:	clear

Impinger #3 Empty	
Empty Wt:	608.0
Final Wt:	842.8
4 Gain:	34.8
Colour:	clear

Container TS4 Weights	
Empty Wt:	405.0
With Imp Soln:	1100.5
After ~100g H_2O Rinse:	1245.7
Total TS4:	840.7

Sample ID 25
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS5

Empty Wt:	404.5
After Acetone/ Hexane Rinse:	647.8
Total TS5:	243.3

Impinger 4 Silica Gel
CONTAINER TS6 (Impinger)

Initial Wt:	856.6
Final Wt:	870.0
5 Gain:	13.4
% Spent:	

Impinger Box ID: 14

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	9
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: BT
Train Recovered By: DT

CWTR = 1 + 2 + 3 + 4: 617.7
WCBDA=5: 13.4

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.: 22050
Sample Batch No.: 20-22050-SVOC-

Test No.: 2
Test Date: Nov 11, 20
Test Location: UNIT 2

Sample ID 26 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	405.0
After Acetone/ Hexane Rinse:	723.5
Total TS1:	318.5

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 27 — Filter — CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 28 — XAD-II Trap — CONTAINER TS3

Initial Wt:	358.7
Final Wt:	366.0
1 Gain:	7.3
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 29 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	654.2
Final Wt:	949.5
2 Gain:	295.3
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	556.6
Initial Wt:	670.0
Final Wt:	900.7
3 Gain:	230.7
Colour:	clear

Impinger #3 Empty	
Empty Wt:	605.7
Final Wt:	727.0
4 Gain:	121.3
Colour:	clear

Container TS4 Weights	
Empty Wt:	404.0
With Imp Soln:	1151.5
After ~100g H_2O Rinse:	1321.3
Total TS4:	917.3

CWTR = 1 + 2 + 3 + 4: 654.6

WCBDA=5: 17.1

Sample ID 30 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	403.5
After Acetone/ Hexane Rinse:	651.8
Total TS5:	248.3

Impinger Box ID: 12

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	925.7
Final Wt:	942.8
5 Gain:	17.1
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	8
Trap ID:	8
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	198612
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22050
Sample Batch No.: 20-22050-SVOC-

Test No.: 3
Test Date: NOV 12, 20
Test Location: UNIT 2

Sample ID 31 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	405.0
After Acetone/ Hexane Rinse:	812.5
Total TS1:	407.5

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 32 — Filter — CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 33 — XAD-II Trap — CONTAINER TS3

Initial Wt:	345.4
Final Wt:	351.2
1 Gain:	5.8
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 34 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	676.5
Final Wt:	997.6
2 Gain:	321.1
Colour:	clean

Impinger #2 Ethylene Glycol	
Empty Wt:	660.5
Initial Wt:	762.1
Final Wt:	964.7
3 Gain:	202.6
Colour:	clean

Impinger #3 Empty	
Empty Wt:	591.0
Final Wt:	~~964.7~~ 599.2
4 Gain:	8.2
Colour:	clean

Container TS4 Weights	
Empty Wt:	406.5
With Imp Soln:	1024.2
After ~100g H_2O Rinse:	1195.0
Total TS4:	788.5

CWTR = 1 + 2 + 3 + 4: 537.7

WCBDA=5: 14.1

Sample ID 35 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	406.0
After Acetone/ Hexane Rinse:	586.1
Total TS5:	180.1

Impinger Box ID: 10

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	952.8
Final Wt:	966.9
5 Gain:	14.1
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	3
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By: DT

✓TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22050
Sample Batch No.: 20-22050-SVOC-

Test No.: BLANK 2
Test Date: NOV 12, 20
Test Location:

Sample ID 36
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser
CONTAINER TS1

Empty Wt:	407.0
After Acetone/ Hexane Rinse:	625.7
Total TS1:	218.7

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 37
Filter
CONTAINER TS2
Colour: WHITE
FOLD IN FOIL
SEAL AND LABEL CONTAINER TS2

Sample ID 38
XAD-II Trap
CONTAINER TS3

Initial Wt:	392.7
Final Wt:	392.7
1 Gain:	—
Colour:	WHITE

SEAL TRAP
WRAP IN FOIL
LABEL AS CONTAINER TS3

Sample ID 39
Impingers 1, 2 & 3
CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	654.3
Final Wt:	654.3
2 Gain:	—
Colour:	—

Impinger #2 Ethylene Glycol	
Empty Wt:	555.0
Initial Wt:	668.5
Final Wt:	668.5
3 Gain:	—
Colour:	clear

Impinger #3 Empty	
Empty Wt:	605.5
Final Wt:	605.5
4 Gain:	—
Colour:	—

Container TS4 Weights	
Empty Wt:	404.0
With Imp Soln:	515.3
After ~100g H_2O Rinse:	682.5
Total TS4:	278.5

CWTR = 1 + 2 + 3 + 4:
WCBDA=5:

Sample ID 40
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS5

Empty Wt:	406.0
After Acetone/ Hexane Rinse:	622.0
Total TS5:	216.0

Impinger Box ID: 4

Impinger 4 Silica Gel
CONTAINER TS6 (Impinger)

Initial Wt:	940.0
Final Wt:	940.0
5 Gain:	—
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	4
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: [signature]
Train Recovered By: [signature]

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

APPENDIX 15

SVOC Analytical Report
(70 pages)

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2529311		Mississauga, ON L5J 2Y4
Date of Report	15-Dec-20		Canada
Date of Sample Receipt	13-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **PCDD/F by EPA M23**

123678-HxCDF showed the presence of a peak in the corresponding diphenylether channel on the field samples. Historical evidence has shown that this diphenylether is a false positive and the HxCDF value is considered real and unbiased.

Mass resolution deteriorated during the 12 hour run sequence with the resolution being slightly below 10,000 for selected functions at the end of the run sequence. There is no evidence for enhanced interferences or noise to negatively impact data quality has been observed.

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

ALS Life Sciences

Sample Analysis summary Report

Sample Name	**20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	**20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	**20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	**20-22050-SVOC-(16 THRU 20) BLANK#1**	**20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	**20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**
ALS Sample ID	L2529311-1	L2529311-2	L2529311-3	L2529311-4	L2529311-5	L2529311-6
Sample Size	1	1	1	1	1	1
Sample size units	sample	sample	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	11-Nov-20	11-Nov-20	12-Nov-20	12-Nov-20	11-Nov-20	11-Nov-20
Extraction Date	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20
Target Analytes	pg	pg	pg	pg	pg	pg
2,3,7,8-TCDD	<4.2	<2.5	<4.2	<4.3	<4.1	<5.9
1,2,3,7,8-PeCDD	<34	33.8	32.1	<4.4	<6.7	<7.0
1,2,3,4,7,8-HxCDD	117	107	81.9	<4.0	18.2	<23
1,2,3,6,7,8-HxCDD	331	321	252	<3.5	46.5	<51
1,2,3,7,8,9-HxCDD	146	152	106	<3.8	19.3	<21
1,2,3,4,6,7,8-HpCDD	2100	1840	1590	47.9	284	333
OCDD	1370	1260	1040	177	311	712
2,3,7,8-TCDF	7.87	18.7	<5.6	<3.3	<5.8	<13
1,2,3,7,8-PeCDF	22.8	31.2	22.6	<2.6	6.69	<8.6
2,3,4,7,8-PeCDF	78.6	79.6	54.9	<2.4	<17	24.8
1,2,3,4,7,8-HxCDF	102	105	74.0	<2.2	<20	25.2
1,2,3,6,7,8-HxCDF	116	119	91.3	<2.1	26.6	<20
2,3,4,6,7,8-HxCDF	230	202	165	<2.3	44.6	44.6
1,2,3,7,8,9-HxCDF	<61	63.1	47.6	<2.7	11.2	<12
1,2,3,4,6,7,8-HpCDF	682	633	513	<9.8	116	155
1,2,3,4,7,8,9-HpCDF	117	<99	<77	<7.4	<18	<17
OCDF	363	330	313	<19	<43	<88
Field Spike Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
37Cl4-2,3,7,8-TCDD	89	85	92	92	90	81
13C12-1,2,3,4,7,8-HxCDD	105	102	107	105	104	96
13C12-2,3,4,7,8-PeCDF	123	109	115	114	114	95
13C12-1,2,3,4,7,8-HxCDF	104	103	105	106	104	95
13C12-1,2,3,4,7,8,9-HpCDF	95	90	93	90	94	75
Extraction Standards						
13C12-2,3,7,8-TCDD	34	45	35	29	32	28
13C12-1,2,3,7,8-PeCDD	39	46	35	27	32	29
13C12-1,2,3,6,7,8-HxCDD	44	56	40	32	39	34
13C12-1,2,3,4,6,7,8-HpCDD	41	42	34	25	34	26
13C12-OCDD	34	33	29	19	29	18
13C12-2,3,7,8-TCDF	36	45	34	27	32	27
13C12-1,2,3,7,8-PeCDF	32	40	30	23	27	24
13C12-1,2,3,6,7,8-HxCDF	39	48	36	29	33	32
13C12-1,2,3,4,6,7,8-HpCDF	37	41	33	24	32	27
Homologue Group Totals	pg	pg	pg	pg	pg	pg
Total-TCDD	436	324	158	<4.3	113	128
Total-PeCDD	1700	1700	1340	<4.4	311	418
Total-HxCDD	4780	4400	3590	<4.0	779	1030
Total-HpCDD	4350	4050	3310	47.9	626	820
Total-TCDF	299	289	132	<3.3	24.8	62.5
Total-PeCDF	810	797	578	<2.6	202	85.9
Total-HxCDF	1220	1200	928	3.54	236	232
Total-HpCDF	981	973	794	<7.4	154	230
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)	159	193	152	0.532	20.9	19.5
Mid Point PCDD/F TEQ (WHO 2005)	201	195	156	6.62	37.3	41.5
Upper Bound PCDD/F TEQ (WHO 2005)	203	196	158	12.6	39.6	46.9

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Sample Analysis summary Report

Sample Name	20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	20-22050-SVOC-(36 THRU 40) BLANK#2
ALS Sample ID	L2529311-7	L2529311-8
Sample Size	1	1
Sample size units	sample	sample
Percent Moisture	n/a	n/a
Sample Matrix	Stack	Stack
Sampling Date	12-Nov-20	12-Nov-20
Extraction Date	25-Nov-20	25-Nov-20
Target Analytes	pg	pg
2,3,7,8-TCDD	<4.3	<3.0
1,2,3,7,8-PeCDD	6.19	<2.3
1,2,3,4,7,8-HxCDD	<17	<3.2
1,2,3,6,7,8-HxCDD	42.2	<2.8
1,2,3,7,8,9-HxCDD	<20	<3.1
1,2,3,4,6,7,8-HpCDD	263	<16
OCDD	326	<82
2,3,7,8-TCDF	<4.0	<1.8
1,2,3,7,8-PeCDF	9.13	<1.7
2,3,4,7,8-PeCDF	<14	<1.6
1,2,3,4,7,8-HxCDF	<19	<1.8
1,2,3,6,7,8-HxCDF	<18	<1.8
2,3,4,6,7,8-HxCDF	37.0	<1.9
1,2,3,7,8,9-HxCDF	<23	<2.2
1,2,3,4,6,7,8-HpCDF	104	<3.1
1,2,3,4,7,8,9-HpCDF	15.0	<2.5
OCDF	<49	17.9
Field Spike Standards	% Rec	% Rec
37Cl4-2,3,7,8-TCDD	86	90
13C12-1,2,3,4,7,8-HxCDD	100	102
13C12-2,3,4,7,8-PeCDF	105	108
13C12-1,2,3,4,7,8-HxCDF	98	101
13C12-1,2,3,4,7,8,9-HpCDF	85	91
Extraction Standards		
13C12-2,3,7,8-TCDD	34	35
13C12-1,2,3,7,8-PeCDD	32	32
13C12-1,2,3,6,7,8-HxCDD	39	38
13C12-1,2,3,4,6,7,8-HpCDD	31	34
13C12-OCDD	24	28
13C12-2,3,7,8-TCDF	33	34
13C12-1,2,3,7,8-PeCDF	28	29
13C12-1,2,3,6,7,8-HxCDF	37	35
13C12-1,2,3,4,6,7,8-HpCDF	32	33
Homologue Group Totals	pg	pg
Total-TCDD	75.8	<3.0
Total-PeCDD	267	2.89
Total-HxCDD	655	<3.2
Total-HpCDD	576	<5.1
Total-TCDF	36.9	<1.8
Total-PeCDF	128	<1.7
Total-HxCDF	172	<2.2
Total-HpCDF	180	<2.5
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	18.3	0.00537
Mid Point PCDD/F TEQ (WHO 2005)	31.6	4.08
Upper Bound PCDD/F TEQ (WHO 2005)	36.9	7.94

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Quality Control Summary Report

Sample Name	Method Media Blank	Laboratory Control Sample
ALS Sample ID	WG3444637-1	WG3444637-2
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	25-Nov-20	25-Nov-20
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<3.1	82
1,2,3,7,8-PeCDD	<3.1	98
1,2,3,4,7,8-HxCDD	<3.4	93
1,2,3,6,7,8-HxCDD	<3.3	91
1,2,3,7,8,9-HxCDD	<3.3	95
1,2,3,4,6,7,8-HpCDD	<15	92
OCDD	133	92
2,3,7,8-TCDF	<1.9	88
1,2,3,7,8-PeCDF	<2.0	88
2,3,4,7,8-PeCDF	<1.9	88
1,2,3,4,7,8-HxCDF	<2.7	84
1,2,3,6,7,8-HxCDF	<2.6	89
2,3,4,6,7,8-HxCDF	<2.9	91
1,2,3,7,8,9-HxCDF	<3.3	89
1,2,3,4,6,7,8-HpCDF	<7.4	87
1,2,3,4,7,8,9-HpCDF	<9.5	85
OCDF	31.5	79
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	36	39
13C12-1,2,3,7,8-PeCDD	36	42
13C12-1,2,3,6,7,8-HxCDD	39	43
13C12-1,2,3,4,6,7,8-HpCDD	33	37
13C12-OCDD	22	29
13C12-2,3,7,8-TCDF	35	37
13C12-1,2,3,7,8-PeCDF	31	34
13C12-1,2,3,6,7,8-HxCDF	35	36
13C12-1,2,3,4,6,7,8-HpCDF	32	32
Homologue Group Totals	**pg**	
Total-TCDD	<3.1	
Total-PeCDD	<3.1	
Total-HxCDD	<3.4	
Total-HpCDD	<3.2	
Total-TCDF	<1.9	
Total-PeCDF	<2.0	
Total-HxCDF	<3.3	
Total-HpCDF	<9.5	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.0494	
Mid Point PCDD/F TEQ (WHO 2005)	5.03	
Upper Bound PCDD/F TEQ (WHO 2005)	9.54	

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-1	Extraction Date	25-Nov-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
N Ashtari
--e-signature--
15-Dec-2020

Run Information	**Run 1**
Filename	7-201214A06
Run Date	14-Dec-20 17:07
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUS0287846H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<4.2	4.2	U		30
1,2,3,7,8-PeCDD	1	31.78	<34	2.9	M,J,R	34	150
1,2,3,4,7,8-HxCDD	0.1	33.94	117	7.2	J		150
1,2,3,6,7,8-HxCDD	0.1	34.00	331	6.4			150
1,2,3,7,8,9-HxCDD	0.1	34.12	146	7.0	J		150
1,2,3,4,6,7,8-HpCDD	0.01	35.59	2100	8.4			150
OCDD	0.0003	37.05	1370	9.6			300
2,3,7,8-TCDF	0.1	26.16	7.87	3.5	J		30
1,2,3,7,8-PeCDF	0.03	30.75	22.8	6.9	J		150
2,3,4,7,8-PeCDF	0.3	31.55	78.6	6.4	J		150
1,2,3,4,7,8-HxCDF	0.1	33.43	102	7.1	J		150
1,2,3,6,7,8-HxCDF	0.1	33.50	116	6.8	J		150
2,3,4,6,7,8-HxCDF	0.1	33.84	230	7.4			150
1,2,3,7,8,9-HxCDF	0.1	34.28	<61	8.5	J,R	61	150
1,2,3,4,6,7,8-HpCDF	0.01	35.04	682	5.3			150
1,2,3,4,7,8,9-HpCDF	0.01	35.83	117	6.8	J		150
OCDF	0.0003	37.13	363	6.0			300

Field Spike Standards	pg	% Rec
37Cl4-2,3,7,8-TCDD	0	
13C12-1,2,3,4,7,8-HxCDD	0	
13C12-2,3,4,7,8-PeCDF	0	
13C12-1,2,3,4,7,8-HxCDF	0	
13C12-1,2,3,4,7,8,9-HpCDF	0	

Extraction Standards				
13C12-2,3,7,8-TCDD	19920	27.05	34	40-130
13C12-1,2,3,7,8-PeCDD	19920	31.77	39	40-130
13C12-1,2,3,6,7,8-HxCDD	19920	33.99	44	40-130
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.59	41	25-130
13C12-OCDD	39840	37.04	34	25-130
13C12-2,3,7,8-TCDF	19920	26.14	36	40-130
13C12-1,2,3,7,8-PeCDF	19920	30.74	32	40-130
13C12-1,2,3,6,7,8-HxCDF	19920	33.49	39	40-130
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.03	37	25-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	7	436	4.2	30
Total-PeCDD	7	1700	2.9	150
Total-HxCDD	8	4780	7.2	150
Total-HpCDD	2	4350	8.4	150
Total-TCDF	13	299	3.5	30
Total-PeCDF	11	810	6.9	150
Total-HxCDF	10	1220	8.5	150
Total-HpCDF	3	981	6.8	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	159
Mid Point PCDD/F TEQ (WHO 2005)	201
Upper Bound PCDD/F TEQ (WHO 2005)	203

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	20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-2	Extraction Date	25-Nov-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
N Ashtari
--e-signature--
15-Dec-2020

Run Information	**Run 1**
Filename	7-201214A08
Run Date	14-Dec-20 18:31
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUS0287846H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<2.5	2.5	U		30
1,2,3,7,8-PeCDD	1	31.79	33.8	2.5	J		150
1,2,3,4,7,8-HxCDD	0.1	33.95	107	6.4	J		150
1,2,3,6,7,8-HxCDD	0.1	34.00	321	5.6			150
1,2,3,7,8,9-HxCDD	0.1	34.13	152	6.2			150
1,2,3,4,6,7,8-HpCDD	0.01	35.60	1840	12			150
OCDD	0.0003	37.05	1260	14	B		300
2,3,7,8-TCDF	0.1	26.16	18.7	6.6	J		30
1,2,3,7,8-PeCDF	0.03	30.76	31.2	11	J		150
2,3,4,7,8-PeCDF	0.3	31.55	79.6	9.8	J		150
1,2,3,4,7,8-HxCDF	0.1	33.43	105	5.2	J		150
1,2,3,6,7,8-HxCDF	0.1	33.50	119	5.0	J		150
2,3,4,6,7,8-HxCDF	0.1	33.84	202	5.5			150
1,2,3,7,8,9-HxCDF	0.1	34.29	63.1	6.3	J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.04	633	4.2			150
1,2,3,4,7,8,9-HpCDF	0.01	35.83	<99	5.3	M,J,R	99	150
OCDF	0.0003	37.14	330	8.6			300

Field Spike Standards	pg	% Rec
37Cl4-2,3,7,8-TCDD	0	
13C12-1,2,3,4,7,8-HxCDD	0	
13C12-2,3,4,7,8-PeCDF	0	
13C12-1,2,3,4,7,8-HxCDF	0	
13C12-1,2,3,4,7,8,9-HpCDF	0	

Extraction Standards	pg	Ret. Time	% Rec	Limits
13C12-2,3,7,8-TCDD	19920	27.05	45	40-130
13C12-1,2,3,7,8-PeCDD	19920	31.77	46	40-130
13C12-1,2,3,6,7,8-HxCDD	19920	33.99	56	40-130
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.59	42	25-130
13C12-OCDD	39840	37.04	33	25-130
13C12-2,3,7,8-TCDF	19920	26.14	45	40-130
13C12-1,2,3,7,8-PeCDF	19920	30.74	40	40-130
13C12-1,2,3,6,7,8-HxCDF	19920	33.50	48	40-130
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.04	41	25-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	5	324	2.5	30
Total-PeCDD	10	1700	2.5	150
Total-HxCDD	8	4400	6.4	150
Total-HpCDD	2	4050	12	150
Total-TCDF	12	289	6.6	30
Total-PeCDF	15	797	11	150
Total-HxCDF	10	1200	6.3	150
Total-HpCDF	3	973	5.3	150

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	193
Mid Point PCDD/F TEQ (WHO 2005)	195
Upper Bound PCDD/F TEQ (WHO 2005)	196

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-3	Extraction Date	25-Nov-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
N Ashtari
--e-signature--
15-Dec-2020

Run Information	**Run 1**
Filename	7-201214A09
Run Date	14-Dec-20 19:12
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUS0287846H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<4.2	4.2	U		30
1,2,3,7,8-PeCDD	1	31.78	32.1	2.8	J		150
1,2,3,4,7,8-HxCDD	0.1	33.93	81.9	7.0	J		150
1,2,3,6,7,8-HxCDD	0.1	33.99	252	6.2			150
1,2,3,7,8,9-HxCDD	0.1	34.12	106	6.7	J		150
1,2,3,4,6,7,8-HpCDD	0.01	35.59	1590	11			150
OCDD	0.0003	37.04	1040	17	B		300
2,3,7,8-TCDF	0.1	NotFnd	<5.6	5.6	U		30
1,2,3,7,8-PeCDF	0.03	30.74	22.6	6.2	J		150
2,3,4,7,8-PeCDF	0.3	31.54	54.9	5.8	J		150
1,2,3,4,7,8-HxCDF	0.1	33.42	74.0	13	J		150
1,2,3,6,7,8-HxCDF	0.1	33.49	91.3	13	J		150
2,3,4,6,7,8-HxCDF	0.1	33.83	165	14			150
1,2,3,7,8,9-HxCDF	0.1	34.28	47.6	16	M,J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.03	513	6.1			150
1,2,3,4,7,8,9-HpCDF	0.01	35.82	<77	7.9	M,J,R	77	150
OCDF	0.0003	37.13	313	7.8	B		300

Field Spike Standards	pg	% Rec
37Cl4-2,3,7,8-TCDD	0	
13C12-1,2,3,4,7,8-HxCDD	0	
13C12-2,3,4,7,8-PeCDF	0	
13C12-1,2,3,4,7,8-HxCDF	0	
13C12-1,2,3,4,7,8,9-HpCDF	0	

Extraction Standards	pg	Ret. Time	% Rec	Limits
13C12-2,3,7,8-TCDD	19920	27.04	35	40-130
13C12-1,2,3,7,8-PeCDD	19920	31.76	35	40-130
13C12-1,2,3,6,7,8-HxCDD	19920	33.98	40	40-130
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.58	34	25-130
13C12-OCDD	39840	37.04	29	25-130
13C12-2,3,7,8-TCDF	19920	26.13	34	40-130
13C12-1,2,3,7,8-PeCDF	19920	30.73	30	40-130
13C12-1,2,3,6,7,8-HxCDF	19920	33.48	36	40-130
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.03	33	25-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	6	158	4.2	30
Total-PeCDD	8	1340	2.8	150
Total-HxCDD	7	3590	7.0	150
Total-HpCDD	2	3310	11	150
Total-TCDF	10	132	5.6	30
Total-PeCDF	11	578	6.2	150
Total-HxCDF	11	928	16	150
Total-HpCDF	3	794	7.9	150

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	152
Mid Point PCDD/F TEQ (WHO 2005)	156
Upper Bound PCDD/F TEQ (WHO 2005)	158

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J Indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-4	Extraction Date	25-Nov-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
N Ashtari
--e-signature--
15-Dec-2020

Run Information	**Run 1**
Filename	7-201214A10
Run Date	14-Dec-20 19:54
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUS0287846H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<4.3	4.3	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<4.4	4.4	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<4.0	4.0	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<3.5	3.5	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<3.8	3.8	U		150
1,2,3,4,6,7,8-HpCDD	0.01	35.61	47.9	5.3	J		150
OCDD	0.0003	37.06	177	17	J,B		300
2,3,7,8-TCDF	0.1	NotFnd	<3.3	3.3	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<2.6	2.6	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<2.4	2.4	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<2.2	2.2	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<2.1	2.1	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<2.3	2.3	U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<2.7	2.7	U		150
1,2,3,4,6,7,8-HpCDF	0.01	35.04	<9.8	5.8	J,R	9.8	150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<7.4	7.4	U		150
OCDF	0.0003	37.14	<19	11	J,R	19	300

Field Spike Standards	pg	% Rec
37Cl4-2,3,7,8-TCDD	0	
13C12-1,2,3,4,7,8-HxCDD	0	
13C12-2,3,4,7,8-PeCDF	0	
13C12-1,2,3,4,7,8-HxCDF	0	
13C12-1,2,3,4,7,8,9-HpCDF	0	

Extraction Standards	pg	Ret. Time	% Rec	Limits
13C12-2,3,7,8-TCDD	19920	27.05	29	40-130
13C12-1,2,3,7,8-PeCDD	19920	31.78	27	40-130
13C12-1,2,3,6,7,8-HxCDD	19920	34.00	32	40-130
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.60	25	25-130
13C12-OCDD	39840	37.05	19	25-130
13C12-2,3,7,8-TCDF	19920	26.14	27	40-130
13C12-1,2,3,7,8-PeCDF	19920	30.75	23	40-130
13C12-1,2,3,6,7,8-HxCDF	19920	33.50	29	40-130
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.04	24	25-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	Flags	LQL
Total-TCDD	0	<4.3	4.3	U	30
Total-PeCDD	0	<4.4	4.4	U	150
Total-HxCDD	0	<4.0	4.0	U	150
Total-HpCDD	1	47.9	5.3		150
Total-TCDF	0	<3.3	3.3	U	30
Total-PeCDF	0	<2.6	2.6	U	150
Total-HxCDF	1	3.54	2.7		150
Total-HpCDF	0	<7.4	7.4	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.532
Mid Point PCDD/F TEQ (WHO 2005)	6.62
Upper Bound PCDD/F TEQ (WHO 2005)	12.6

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	11-Nov-20	
ALS Sample ID	L2529311-5	Extraction Date	25-Nov-20	Approved:
Analysis Method	EPA M23	Sample Size	1 sample	*N Ashtari*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	15-Dec-2020

Run Information	**Run 1**
Filename	7-201214A11
Run Date	14-Dec-20 20:35
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUS0287846H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<4.1	4.1	U		30
1,2,3,7,8-PeCDD	1	31.77	<6.7	3.7	J,R	6.7	150
1,2,3,4,7,8-HxCDD	0.1	33.94	18.2	4.1	M,J		150
1,2,3,6,7,8-HxCDD	0.1	33.99	46.5	3.6	M,J		150
1,2,3,7,8,9-HxCDD	0.1	34.12	19.3	3.9	J		150
1,2,3,4,6,7,8-HpCDD	0.01	35.59	284	3.7			150
OCDD	0.0003	37.04	311	6.9	B		300
2,3,7,8-TCDF	0.1	26.13	<5.8	5.8	M,U		30
1,2,3,7,8-PeCDF	0.03	30.75	6.69	6.5	J		150
2,3,4,7,8-PeCDF	0.3	31.54	<17	6.1	M,J,R	17	150
1,2,3,4,7,8-HxCDF	0.1	33.42	<20	7.0	M,J,R	20	150
1,2,3,6,7,8-HxCDF	0.1	33.50	26.6	6.7	M,J		150
2,3,4,6,7,8-HxCDF	0.1	33.84	44.6	7.4	J		150
1,2,3,7,8,9-HxCDF	0.1	34.29	11.2	8.4	M,J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.04	116	3.9	J		150
1,2,3,4,7,8,9-HpCDF	0.01	35.82	<18	5.0	J,R	18	150
OCDF	0.0003	37.13	<43	7.8	M,J,R	43	300

Field Spike Standards	**pg**	**% Rec**
37Cl4-2,3,7,8-TCDD	0	
13C12-1,2,3,4,7,8-HxCDD	0	
13C12-2,3,4,7,8-PeCDF	0	
13C12-1,2,3,4,7,8-HxCDF	0	
13C12-1,2,3,4,7,8,9-HpCDF	0	

Extraction Standards				
13C12-2,3,7,8-TCDD	19920	27.04	32	40-130
13C12-1,2,3,7,8-PeCDD	19920	31.77	32	40-130
13C12-1,2,3,6,7,8-HxCDD	19920	33.99	39	40-130
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.58	34	25-130
13C12-OCDD	39840	37.04	29	25-130
13C12-2,3,7,8-TCDF	19920	26.13	32	40-130
13C12-1,2,3,7,8-PeCDF	19920	30.74	27	40-130
13C12-1,2,3,6,7,8-HxCDF	19920	33.49	33	40-130
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.03	32	25-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	5	113	4.1	30
Total-PeCDD	5	311	3.7	150
Total-HxCDD	7	779	4.1	150
Total-HpCDD	2	626	3.7	150
Total-TCDF	4	24.8	5.8	30
Total-PeCDF	8	202	6.5	150
Total-HxCDF	8	236	8.4	150
Total-HpCDF	2	154	5.0	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	20.9
Mid Point PCDD/F TEQ (WHO 2005)	37.3
Upper Bound PCDD/F TEQ (WHO 2005)	39.6

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-6	Extraction Date	25-Nov-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
N Ashtari
--e-signature--
15-Dec-2020

Run Information	**Run 1**
Filename	7-201214A12
Run Date	14-Dec-20 21:17
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUS0287846H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<5.9	5.9	U		30
1,2,3,7,8-PeCDD	1	31.78	<7.0	5.3	M,J,R	7.0	150
1,2,3,4,7,8-HxCDD	0.1	33.94	<23	22	J,R	23	150
1,2,3,6,7,8-HxCDD	0.1	33.99	<51	19	J,R	51	150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<21	21	U		150
1,2,3,4,6,7,8-HpCDD	0.01	35.59	333	21			150
OCDD	0.0003	37.04	712	20	M,B		300
2,3,7,8-TCDF	0.1	26.16	<13	13	M,U		30
1,2,3,7,8-PeCDF	0.03	30.74	<8.6	8.6	U	6.4	150
2,3,4,7,8-PeCDF	0.3	31.54	24.8	8.0	J		150
1,2,3,4,7,8-HxCDF	0.1	33.42	25.2	10	M,J		150
1,2,3,6,7,8-HxCDF	0.1	33.49	<20	9.6	M,J,R	20	150
2,3,4,6,7,8-HxCDF	0.1	33.84	44.6	11	M,J		150
1,2,3,7,8,9-HxCDF	0.1	34.29	<12	12	U		150
1,2,3,4,6,7,8-HpCDF	0.01	35.03	155	5.8			150
1,2,3,4,7,8,9-HpCDF	0.01	35.83	<17	7.4	J,R	17	150
OCDF	0.0003	37.14	<88	21	M,J,R	88	300

Field Spike Standards	**pg**		**% Rec**	
37Cl4-2,3,7,8-TCDD	0			
13C12-1,2,3,4,7,8-HxCDD	0			
13C12-2,3,4,7,8-PeCDF	0			
13C12-1,2,3,4,7,8-HxCDF	0			
13C12-1,2,3,4,7,8,9-HpCDF	0			
Extraction Standards				
13C12-2,3,7,8-TCDD	19920	27.04	28	40-130
13C12-1,2,3,7,8-PeCDD	19920	31.77	29	40-130
13C12-1,2,3,6,7,8-HxCDD	19920	33.98	34	40-130
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.58	26	25-130
13C12-OCDD	39840	37.04	18	25-130
13C12-2,3,7,8-TCDF	19920	26.13	27	40-130
13C12-1,2,3,7,8-PeCDF	19920	30.73	24	40-130
13C12-1,2,3,6,7,8-HxCDF	19920	33.48	32	40-130
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.03	27	25-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	2	128	5.9	30
Total-PeCDD	5	418	5.3	150
Total-HxCDD	5	1030	22	150
Total-HpCDD	2	820	21	150
Total-TCDF	7	62.5	13	30
Total-PeCDF	4	85.9	8.6	150
Total-HxCDF	6	232	12	150
Total-HpCDF	3	230	7.4	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	19.5
Mid Point PCDD/F TEQ (WHO 2005)	41.5
Upper Bound PCDD/F TEQ (WHO 2005)	46.9

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-7	Extraction Date	25-Nov-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
N Ashtari
--e-signature--
15-Dec-2020

Run Information	**Run 1**
Filename	7-201214A13
Run Date	14-Dec-20 21:59
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUS0287846H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	27.02	<4.3	4.3	U	1.1	30
1,2,3,7,8-PeCDD	1	31.78	6.19	3.8	M,J		150
1,2,3,4,7,8-HxCDD	0.1	33.95	<17	5.1	J,R	17	150
1,2,3,6,7,8-HxCDD	0.1	34.00	42.2	4.5	J		150
1,2,3,7,8,9-HxCDD	0.1	34.14	<20	4.9	M,J,R	20	150
1,2,3,4,6,7,8-HpCDD	0.01	35.60	263	9.4			150
OCDD	0.0003	37.06	326	11	M,B		300
2,3,7,8-TCDF	0.1	26.14	<4.0	4.0	M,U	2.8	30
1,2,3,7,8-PeCDF	0.03	30.75	9.13	5.3	M,J		150
2,3,4,7,8-PeCDF	0.3	31.55	<14	4.9	M,J,R	14	150
1,2,3,4,7,8-HxCDF	0.1	33.43	<19	19	M,U		150
1,2,3,6,7,8-HxCDF	0.1	33.50	<18	18	M,U	17	150
2,3,4,6,7,8-HxCDF	0.1	33.84	37.0	20	J		150
1,2,3,7,8,9-HxCDF	0.1	34.29	<23	23	M,U	6.0	150
1,2,3,4,6,7,8-HpCDF	0.01	35.04	104	1.9	J		150
1,2,3,4,7,8,9-HpCDF	0.01	35.83	15.0	2.5	J		150
OCDF	0.0003	37.15	<49	7.4	M,J,R	49	300

Field Spike Standards	pg	% Rec
37Cl4-2,3,7,8-TCDD	0	
13C12-1,2,3,4,7,8-HxCDD	0	
13C12-2,3,4,7,8-PeCDF	0	
13C12-1,2,3,4,7,8-HxCDF	0	
13C12-1,2,3,4,7,8,9-HpCDF	0	

Extraction Standards	pg	Ret. Time	% Rec	
13C12-2,3,7,8-TCDD	19920	27.05	34	40-130
13C12-1,2,3,7,8-PeCDD	19920	31.78	32	40-130
13C12-1,2,3,6,7,8-HxCDD	19920	33.99	39	40-130
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.59	31	25-130
13C12-OCDD	39840	37.05	24	25-130
13C12-2,3,7,8-TCDF	19920	26.14	33	40-130
13C12-1,2,3,7,8-PeCDF	19920	30.74	28	40-130
13C12-1,2,3,6,7,8-HxCDF	19920	33.50	37	40-130
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.04	32	25-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	LQL
Total-TCDD	4	75.8	4.3	30
Total-PeCDD	6	267	3.8	150
Total-HxCDD	4	655	5.1	150
Total-HpCDD	2	576	9.4	150
Total-TCDF	6	36.9	4.0	30
Total-PeCDF	6	128	5.3	150
Total-HxCDF	4	172	23	150
Total-HpCDF	4	180	2.5	150

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	18.3
Mid Point PCDD/F TEQ (WHO 2005)	31.6
Upper Bound PCDD/F TEQ (WHO 2005)	36.9

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor — TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	20-22050-SVOC-(36 THRU 40) BLANK#2	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-8	Extraction Date	25-Nov-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
N Ashtari
--e-signature--
15-Dec-2020

Run Information	**Run 1**
Filename	7-201214A14
Run Date	14-Dec-20 22:40
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUS0287846H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<3.0	3.0	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<2.3	2.3	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<3.2	3.2	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<2.8	2.8	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<3.1	3.1	U		150
1,2,3,4,6,7,8-HpCDD	0.01	35.59	<16	5.1	J,R	16	150
OCDD	0.0003	37.05	<82	7.6	M,J,R	82	300
2,3,7,8-TCDF	0.1	NotFnd	<1.8	1.8	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	<1.6	1.6	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<1.8	1.8	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<1.8	1.8	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<1.9	1.9	U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<2.2	2.2	U		150
1,2,3,4,6,7,8-HpCDF	0.01	35.03	<3.1	2.0	M,J,R	3.1	150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<2.5	2.5	U		150
OCDF	0.0003	37.14	17.9	6.0	M,J,B		300

Field Spike Standards	pg	% Rec
37Cl4-2,3,7,8-TCDD	0	
13C12-1,2,3,4,7,8-HxCDD	0	
13C12-2,3,4,7,8-PeCDF	0	
13C12-1,2,3,4,7,8-HxCDF	0	
13C12-1,2,3,4,7,8,9-HpCDF	0	

Extraction Standards	pg	Ret. Time	% Rec	Limits
13C12-2,3,7,8-TCDD	19920	27.04	35	40-130
13C12-1,2,3,7,8-PeCDD	19920	31.76	32	40-130
13C12-1,2,3,6,7,8-HxCDD	19920	33.99	38	40-130
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.58	34	25-130
13C12-OCDD	39840	37.04	28	25-130
13C12-2,3,7,8-TCDF	19920	26.13	34	40-130
13C12-1,2,3,7,8-PeCDF	19920	30.73	29	40-130
13C12-1,2,3,6,7,8-HxCDF	19920	33.48	35	40-130
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.03	33	25-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	Flags	LQL
Total-TCDD	0	<3.0	3.0	U	30
Total-PeCDD	1	2.89	2.3		150
Total-HxCDD	0	<3.2	3.2	U	150
Total-HpCDD	0	<5.1	5.1	U	150
Total-TCDF	0	<1.8	1.8	U	30
Total-PeCDF	0	<1.7	1.7	U	150
Total-HxCDF	0	<2.2	2.2	U	150
Total-HpCDF	0	<2.5	2.5	U	150

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	0.00537
Mid Point PCDD/F TEQ (WHO 2005)	4.08
Upper Bound PCDD/F TEQ (WHO 2005)	7.94

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor — TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a	Approved:
ALS Sample ID	WG3444637-1	Extraction Date	25-Nov-20	*N Ashtari*
Analysis Method	EPA M23	Sample Size	1 sample	--e-signature--
Analysis Type	Blank	Percent Moisture	n/a	15-Dec-2020
Sample Matrix	QC	Split Ratio	6	

Run Information	**Run 1**
Filename	7-201214A05
Run Date	14-Dec-20 16:26
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUS0287846H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<3.1	3.1	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<3.1	3.1	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<3.4	3.4	U		150
1,2,3,6,7,8-HxCDD	0.1	33.99	<3.3	3.0	J,R	3.3	150
1,2,3,7,8,9-HxCDD	0.1	34.13	<3.3	3.3	M,U	1.1	150
1,2,3,4,6,7,8-HpCDD	0.01	35.60	<15	3.2	J,R	15	150
OCDD	0.0003	37.05	133	8.9	J		300
2,3,7,8-TCDF	0.1	NotFnd	<1.9	1.9	U		30
1,2,3,7,8-PeCDF	0.03	30.75	<2.0	2.0	U	1.6	150
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.9	1.9	U		150
1,2,3,4,7,8-HxCDF	0.1	33.42	<2.7	2.7	M,U	1.1	150
1,2,3,6,7,8-HxCDF	0.1	33.48	<2.6	2.6	M,U	1.3	150
2,3,4,6,7,8-HxCDF	0.1	33.85	<2.9	2.9	U	1.7	150
1,2,3,7,8,9-HxCDF	0.1	34.27	<3.3	3.3	U	1.4	150
1,2,3,4,6,7,8-HpCDF	0.01	35.04	<7.4	7.4	M,U		150
1,2,3,4,7,8,9-HpCDF	0.01	35.84	<9.5	9.5	U	3.5	150
OCDF	0.0003	37.14	31.5	9.1	M,J		300

Field Spike Standards	**pg**	**% Rec**
37Cl4-2,3,7,8-TCDD	0	
13C12-1,2,3,4,7,8-HxCDD	0	
13C12-2,3,4,7,8-PeCDF	0	
13C12-1,2,3,4,7,8-HxCDF	0	
13C12-1,2,3,4,7,8,9-HpCDF	0	

Extraction Standards				
13C12-2,3,7,8-TCDD	19920	27.04	36	40-130
13C12-1,2,3,7,8-PeCDD	19920	31.77	36	40-130
13C12-1,2,3,6,7,8-HxCDD	19920	33.99	39	40-130
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.59	33	25-130
13C12-OCDD	39840	37.05	22	25-130
13C12-2,3,7,8-TCDF	19920	26.14	35	40-130
13C12-1,2,3,7,8-PeCDF	19920	30.74	31	40-130
13C12-1,2,3,6,7,8-HxCDF	19920	33.49	35	40-130
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.04	32	25-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<3.1	3.1	U	30
Total-PeCDD	0	<3.1	3.1	U	150
Total-HxCDD	0	<3.4	3.4	U	150
Total-HpCDD	0	<3.2	3.2	U	150
Total-TCDF	0	<1.9	1.9	U	30
Total-PeCDF	0	<2.0	2.0	U	150
Total-HxCDF	0	<3.3	3.3	U	150
Total-HpCDF	0	<9.5	9.5	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.0494
Mid Point PCDD/F TEQ (WHO 2005)	5.03
Upper Bound PCDD/F TEQ (WHO 2005)	9.54

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

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3444637-2	Extraction Date	25-Nov-20
Analysis Method	EPA M23	Sample Size	1 sample
Analysis Type	LCS	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	6

Approved:
N Ashtari
--e-signature--
15-Dec-2020

Run Information	**Run 1**
Filename	7-201214A02
Run Date	14-Dec-20 14:22
Final Volume	10 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-7 DB5MSUS0287846H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1200	27.10	82	70-130	
1,2,3,7,8-PeCDD	6000	31.80	98	70-130	
1,2,3,4,7,8-HxCDD	6000	33.95	93	70-130	
1,2,3,6,7,8-HxCDD	6000	34.01	91	70-130	
1,2,3,7,8,9-HxCDD	6000	34.14	95	70-130	
1,2,3,4,6,7,8-HpCDD	6000	35.61	92	70-130	
OCDD	12000	37.06	92	70-130	
2,3,7,8-TCDF	1200	26.19	88	70-130	
1,2,3,7,8-PeCDF	6000	30.77	88	70-130	
2,3,4,7,8-PeCDF	6000	31.57	88	70-130	
1,2,3,4,7,8-HxCDF	6000	33.44	84	70-130	
1,2,3,6,7,8-HxCDF	6000	33.51	89	70-130	
2,3,4,6,7,8-HxCDF	6000	33.86	91	70-130	
1,2,3,7,8,9-HxCDF	6000	34.28	89	70-130	
1,2,3,4,6,7,8-HpCDF	6000	35.06	87	70-130	
1,2,3,4,7,8,9-HpCDF	6000	35.84	85	70-130	
OCDF	12000	37.15	79	70-130	
Field Spike Standards	**pg**		**% Rec**		
37Cl4-2,3,7,8-TCDD	0				
13C12-1,2,3,4,7,8-HxCDD	0				
13C12-2,3,4,7,8-PeCDF	0				
13C12-1,2,3,4,7,8-HxCDF	0				
13C12-1,2,3,4,7,8,9-HpCDF	0				
Extraction Standards					
13C12-2,3,7,8-TCDD	19920	27.08	39	40-130	
13C12-1,2,3,7,8-PeCDD	19920	31.79	42	40-130	
13C12-1,2,3,6,7,8-HxCDD	19920	34.00	43	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.60	37	25-130	
13C12-OCDD	39840	37.05	29	25-130	
13C12-2,3,7,8-TCDF	19920	26.17	37	40-130	
13C12-1,2,3,7,8-PeCDF	19920	30.76	34	40-130	
13C12-1,2,3,6,7,8-HxCDF	19920	33.50	36	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.04	32	25-130	

ALS Life Sciences

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2529311		Mississauga
Date of Report	11-Dec-20		ON L5J 2Y4
Date of Sample Receipt	13-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **PCB Congeners by EPA 1668C**

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1	20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1	20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1	20-22050-SVOC-(16 THRU 20) BLANK#1	20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2
ALS Sample ID	L2529311-1	L2529311-2	L2529311-3	L2529311-4	L2529311-5	L2529311-6
Sample Size	1	1	1	1	1	1
Sample size units	sample	sample	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	11-Nov-20	11-Nov-20	12-Nov-20	12-Nov-20	11-Nov-20	11-Nov-20
Extraction Date	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20
Target Analytes	pg	pg	pg	pg	pg	pg
PCB-081	<27	<26	<27	<22	<27	<24
PCB-077	66.9	213	<63	<23	70.8	226
PCB-123	<27	135	<27	<27	25.7	84.7
PCB-118	859	6370	1010	61.5	1780	4710
PCB-114	30.6	181	<22	<21	40.9	118
PCB-105	251	2070	331	<21	456	1350
PCB-126	<25	<35	<27	<24	<15	<26
PCB-167	27.2	85.8	<17	<13	27.6	<50
PCB-156/157	79.8	330	55.0	<19	79.5	142
PCB-169	31.4	32.5	<23	<15	<8.3	<17
PCB-189	37.4	42.6	24.3	<11	18.9	15.0
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
13C12-PCB-081	74	93	54	68	79	70
13C12-PCB-077	75	96	55	71	82	73
13C12-PCB-123	73	92	55	69	82	71
13C12-PCB-118	72	93	52	67	79	69
13C12-PCB-114	85	108	62	81	97	82
13C12-PCB-105	87	107	61	82	96	82
13C12-PCB-126	93	113	67	92	99	88
13C12-PCB-167	77	95	56	68	87	75
13C12-PCB-156/157	75	98	55	68	87	74
13C12-PCB-169	88	112	64	75	100	86
13C12-PCB-189	88	114	62	79	99	83
Field Spike Standards						
13C12-PCB-031	89	94	92	119	93	84
13C12-PCB-095	95	84	94	87	89	91
13C12-PCB-153	85	89	88	92	91	86
Cleanup Standards						
13C12-PCB-028	50	56	41	64	46	42
13C12-PCB-111	64	73	53	77	73	64
13C12-PCB-178	66	88	54	67	85	66
Toxic Equivalency - (WHO 2005)	pg	pg	pg	pg	pg	pg
Lower Bound PCB TEQ	0.987	1.27	0.0426	0.00185	0.0799	0.215
Mid Point PCB TEQ	2.24	3.03	2.09	1.43	0.958	1.78
Upper Bound PCB TEQ	3.50	4.78	3.45	2.86	1.84	3.33

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Sample Analysis Summary Report

Sample Name	20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	20-22050-SVOC-(36 THRU 40) BLANK#2
ALS Sample ID	L2529311-7	L2529311-8
Sample Size	1	1
Sample size units	sample	sample
Percent Moisture	n/a	n/a
Sample Matrix	Stack	Stack
Sampling Date	12-Nov-20	12-Nov-20
Extraction Date	25-Nov-20	25-Nov-20
Target Analytes	**pg**	**pg**
PCB-081	<25	<22
PCB-077	194	33.2
PCB-123	76.9	<29
PCB-118	5080	680
PCB-114	144	<23
PCB-105	2240	304
PCB-126	<39	<26
PCB-167	177	51.4
PCB-156/157	617	144
PCB-169	<18	<22
PCB-189	40.9	20.2
Extraction Standards	**% Rec**	**% Rec**
13C12-PCB-081	64	70
13C12-PCB-077	65	69
13C12-PCB-123	64	70
13C12-PCB-118	64	68
13C12-PCB-114	73	83
13C12-PCB-105	72	83
13C12-PCB-126	81	90
13C12-PCB-167	67	69
13C12-PCB-156/157	66	69
13C12-PCB-169	73	79
13C12-PCB-189	77	81
Field Spike Standards		
13C12-PCB-031	88	95
13C12-PCB-095	88	85
13C12-PCB-153	82	92
Cleanup Standards		
13C12-PCB-028	44	49
13C12-PCB-111	59	64
13C12-PCB-178	64	59
Toxic Equivalency - (WHO 2005)	**pg**	**pg**
Lower Bound PCB TEQ	0.271	0.0393
Mid Point PCB TEQ	2.49	1.67
Upper Bound PCB TEQ	4.72	3.31

ALS Life Sciences

Quality Control Summary Report

Sample Name	**Method Media Blank**
ALS Sample ID	WG3444637-1
Sample Size	1
Sample size units	sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	25-Nov-20

Target Analytes	pg
PCB-081	<12
PCB-077	<12
PCB-123	<14
PCB-118	18.3
PCB-114	<14
PCB-105	<14
PCB-126	<17
PCB-167	<11
PCB-156/157	<16
PCB-169	<13
PCB-189	<10
Extraction Standards	**% Rec**
13C12-PCB-081	89
13C12-PCB-077	92
13C12-PCB-123	87
13C12-PCB-118	83
13C12-PCB-114	90
13C12-PCB-105	94
13C12-PCB-126	94
13C12-PCB-167	79
13C12-PCB-156/157	77
13C12-PCB-169	84
13C12-PCB-189	75
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	70
13C12-PCB-111	77
13C12-PCB-178	72

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.000549
Mid Point PCB TEQ	1.05
Upper Bound PCB TEQ	2.10

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Sample Analysis Summary Report

Sample Name	Laboratory Control Sample
ALS Sample ID	WG3444637-2
Sample Size	1
Sample size units	n/a
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	25-Nov-20

Target Analytes	**% Rec**
PCB-081	95
PCB-077	94
PCB-123	95
PCB-118	95
PCB-114	91
PCB-105	89
PCB-126	94
PCB-167	91
PCB-156/157	93
PCB-169	94
PCB-189	97
Extraction Standards	**% Rec**
13C12-PCB-081	81
13C12-PCB-077	84
13C12-PCB-123	90
13C12-PCB-118	90
13C12-PCB-114	93
13C12-PCB-105	96
13C12-PCB-126	99
13C12-PCB-167	96
13C12-PCB-156/157	98
13C12-PCB-169	125
13C12-PCB-189	135
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	62
13C12-PCB-111	74
13C12-PCB-178	75

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Sample Analysis Report

Sample Name	**20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-1	Extraction Date	25-Nov-20
Analysis Method	EPA 1668C	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	12

Approved:
S. Jin
--e-signature--
11-Dec-2020

Run Information	**Run 1**
Filename	5-201210A09
Run Date	10-Dec-20 21:13
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOctyl 256001-01

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	NotFnd	<27	27	U		300
PCB-077	0.0001	22.13	66.9	28	M,J		300
PCB-123	0.00003	NotFnd	<27	27	U		300
PCB-118	0.00003	23.26	859	26			300
PCB-114	0.00003	23.55	30.6	22	M,J		300
PCB-105	0.00003	23.91	251	22	J		300
PCB-126	0.1	NotFnd	<25	25	U		300
PCB-167	0.00003	26.39	27.2	16	J		300
PCB-156/157	0.00003	27.00	79.8	23	M,J		600
PCB-169	0.03	28.67	31.4	17	M,J		300
PCB-189	0.00003	29.95	37.4	11	J		300

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.81	74	10-145
13C12-PCB-077	12000	22.11	75	10-145
13C12-PCB-123	12000	23.07	73	10-145
13C12-PCB-118	12000	23.24	72	10-145
13C12-PCB-114	12000	23.55	85	10-145
13C12-PCB-105	12000	23.90	87	10-145
13C12-PCB-126	12000	25.50	93	10-145
13C12-PCB-167	12000	26.37	77	10-145
13C12-PCB-156/157	24000	27.01	75	10-145
13C12-PCB-169	12000	28.66	88	10-145
13C12-PCB-189	12000	29.93	88	10-145
Field Spike Standards				
13C12-PCB-031	10000	15.81	89	70-130
13C12-PCB-095	10000	19.11	95	70-130
13C12-PCB-153	10000	24.16	85	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.99	50	5-145
13C12-PCB-111	12000	22.00	64	10-145
13C12-PCB-178	12000	25.04	66	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.987
Mid Point PCB TEQ	2.24
Upper Bound PCB TEQ	3.50

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor — TEQ: Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
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

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Sample Analysis Report

Sample Name	**20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	11-Nov-20	
ALS Sample ID	L2529311-2	Extraction Date	25-Nov-20	Approved:
Analysis Method	EPA 1668C	Sample Size	1 sample	*S. Jin*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	12	11-Dec-2020

Run Information	**Run 1**
Filename	5-201210A10
Run Date	10-Dec-20 21:55
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOctyl 256001-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<26	26	U		300
PCB-077	0.0001	22.13	213	27	J		300
PCB-123	0.00003	23.07	135	35	M,J		300
PCB-118	0.00003	23.26	6370	32			300
PCB-114	0.00003	23.56	181	29	M,J		300
PCB-105	0.00003	23.93	2070	30			300
PCB-126	0.1	25.52	<35	35	M,U	27	300
PCB-167	0.00003	26.38	85.8	19	J		300
PCB-156/157	0.00003	27.01	330	26	J		600
PCB-169	0.03	28.69	32.5	20	M,J		300
PCB-189	0.00003	29.96	42.6	12	J		300

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.81	93	10-145
13C12-PCB-077	12000	22.12	96	10-145
13C12-PCB-123	12000	23.08	92	10-145
13C12-PCB-118	12000	23.25	93	10-145
13C12-PCB-114	12000	23.55	108	10-145
13C12-PCB-105	12000	23.91	107	10-145
13C12-PCB-126	12000	25.51	113	10-145
13C12-PCB-167	12000	26.38	95	10-145
13C12-PCB-156/157	24000	27.02	98	10-145
13C12-PCB-169	12000	28.67	112	10-145
13C12-PCB-189	12000	29.93	114	10-145
Field Spike Standards				
13C12-PCB-031	10000	15.82	94	70-130
13C12-PCB-095	10000	19.12	84	70-130
13C12-PCB-153	10000	24.17	89	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.99	56	5-145
13C12-PCB-111	12000	22.01	73	10-145
13C12-PCB-178	12000	25.04	88	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	1.27
Mid Point PCB TEQ	3.03
Upper Bound PCB TEQ	4.78

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

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Sample Analysis Report

Sample Name	**20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	12-Nov-20	
ALS Sample ID	L2529311-3	Extraction Date	25-Nov-20	Approved:
Analysis Method	EPA 1668C	Sample Size	1 sample	*S. Jin*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	12	11-Dec-2020

Run Information	**Run 1**
Filename	5-201210A11
Run Date	10-Dec-20 22:38
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOctyl 256001-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<27	27	U		300
PCB-077	0.0001	22.14	<63	28	M,J,R	63	300
PCB-123	0.00003	23.07	<27	27	M,U		300
PCB-118	0.00003	23.26	1010	26			300
PCB-114	0.00003	NotFnd	<22	22	U		300
PCB-105	0.00003	23.93	331	25			300
PCB-126	0.1	NotFnd	<27	27	U		300
PCB-167	0.00003	NotFnd	<17	17	U		300
PCB-156/157	0.00003	27.03	55.0	24	M,J		600
PCB-169	0.03	28.66	<23	19	M,J,R	23	300
PCB-189	0.00003	29.96	24.3	15	J		300

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.81	54	10-145
13C12-PCB-077	12000	22.12	55	10-145
13C12-PCB-123	12000	23.08	55	10-145
13C12-PCB-118	12000	23.25	52	10-145
13C12-PCB-114	12000	23.55	62	10-145
13C12-PCB-105	12000	23.91	61	10-145
13C12-PCB-126	12000	25.50	67	10-145
13C12-PCB-167	12000	26.37	56	10-145
13C12-PCB-156/157	24000	27.02	55	10-145
13C12-PCB-169	12000	28.67	64	10-145
13C12-PCB-189	12000	29.93	62	10-145
Field Spike Standards				
13C12-PCB-031	10000	15.82	92	70-130
13C12-PCB-095	10000	19.12	94	70-130
13C12-PCB-153	10000	24.17	88	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.00	41	5-145
13C12-PCB-111	12000	22.00	53	10-145
13C12-PCB-178	12000	25.04	54	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0426
Mid Point PCB TEQ	2.09
Upper Bound PCB TEQ	3.45

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
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

Sample Analysis Report

Sample Name	**20-22050-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	12-Nov-20	
ALS Sample ID	L2529311-4	Extraction Date	25-Nov-20	Approved:
Analysis Method	EPA 1668C	Sample Size	1 sample	*S. Jin*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	12	11-Dec-2020

Run Information	**Run 1**
Filename	5-201210A07
Run Date	10-Dec-20 19:49
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOctyl 256001-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<22	22	U		300
PCB-077	0.0001	NotFnd	<23	23	U		300
PCB-123	0.00003	NotFnd	<27	27	U		300
PCB-118	0.00003	23.26	61.5	26	M,J,B		300
PCB-114	0.00003	NotFnd	<21	21	U		300
PCB-105	0.00003	NotFnd	<21	21	U		300
PCB-126	0.1	NotFnd	<24	24	U		300
PCB-167	0.00003	NotFnd	<13	13	U		300
PCB-156/157	0.00003	NotFnd	<19	19	U		600
PCB-169	0.03	NotFnd	<15	15	U		300
PCB-189	0.00003	NotFnd	<11	11	U		300

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.82	68	10-145	
13C12-PCB-077	12000	22.13	71	10-145	
13C12-PCB-123	12000	23.08	69	10-145	
13C12-PCB-118	12000	23.25	67	10-145	
13C12-PCB-114	12000	23.55	81	10-145	
13C12-PCB-105	12000	23.91	82	10-145	
13C12-PCB-126	12000	25.51	92	10-145	
13C12-PCB-167	12000	26.38	68	10-145	
13C12-PCB-156/157	24000	27.02	68	10-145	
13C12-PCB-169	12000	28.67	75	10-145	M
13C12-PCB-189	12000	29.93	79	10-145	
Field Spike Standards					
13C12-PCB-031	10000	15.82	119	70-130	
13C12-PCB-095	10000	19.12	87	70-130	
13C12-PCB-153	10000	24.17	92	70-130	
Cleanup Standards					
13C12-PCB-028	12000	16.00	64	5-145	
13C12-PCB-111	12000	22.01	77	10-145	
13C12-PCB-178	12000	25.05	67	10-145	

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00185
Mid Point PCB TEQ	1.43
Upper Bound PCB TEQ	2.86

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor — TEQ: Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-5	Extraction Date	25-Nov-20
Analysis Method	EPA 1668C	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	12

Approved:
S. Jin
--e-signature--
11-Dec-2020

Run Information	**Run 1**
Filename	5-201210A12
Run Date	10-Dec-20 23:20
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOctyl 256001-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<27	27	U		300
PCB-077	0.0001	22.13	70.8	28	J		300
PCB-123	0.00003	23.09	25.7	16	M,J		300
PCB-118	0.00003	23.26	1780	15			300
PCB-114	0.00003	23.55	40.9	13	M,J		300
PCB-105	0.00003	23.91	456	14			300
PCB-126	0.1	25.52	<15	15	M,U	9.3	300
PCB-167	0.00003	26.39	27.6	8.0	J		300
PCB-156/157	0.00003	27.01	79.5	11	J		600
PCB-169	0.03	28.70	<8.3	8.3	M,U	7.1	300
PCB-189	0.00003	29.95	18.9	6.6	M,J		300

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.81	79	10-145
13C12-PCB-077	12000	22.11	82	10-145
13C12-PCB-123	12000	23.08	82	10-145
13C12-PCB-118	12000	23.25	79	10-145
13C12-PCB-114	12000	23.55	97	10-145
13C12-PCB-105	12000	23.90	96	10-145
13C12-PCB-126	12000	25.50	99	10-145
13C12-PCB-167	12000	26.38	87	10-145
13C12-PCB-156/157	24000	27.02	87	10-145
13C12-PCB-169	12000	28.67	100	10-145
13C12-PCB-189	12000	29.93	99	10-145
Field Spike Standards				
13C12-PCB-031	10000	15.82	93	70-130
13C12-PCB-095	10000	19.11	89	70-130
13C12-PCB-153	10000	24.17	91	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.99	46	5-145
13C12-PCB-111	12000	22.00	73	10-145
13C12-PCB-178	12000	25.04	85	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0799
Mid Point PCB TEQ	0.958
Upper Bound PCB TEQ	1.84

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

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Sample Analysis Report

Sample Name	**20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-6	Extraction Date	25-Nov-20
Analysis Method	EPA 1668C	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	12

Approved:
S. Jin
--e-signature--
11-Dec-2020

Run Information	**Run 1**
Filename	5-201210A13
Run Date	11-Dec-20 00:02
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOctyl 256001-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<24	24	U		300
PCB-077	0.0001	22.10	226	25	M,J		300
PCB-123	0.00003	23.06	84.7	26	M,J		300
PCB-118	0.00003	23.25	4710	25			300
PCB-114	0.00003	23.55	118	22	J		300
PCB-105	0.00003	23.91	1350	22			300
PCB-126	0.1	NotFnd	<26	26	U		300
PCB-167	0.00003	26.38	<50	16	J,R	50	300
PCB-156/157	0.00003	27.01	142	23	J		600
PCB-169	0.03	NotFnd	<17	17	U		300
PCB-189	0.00003	29.93	15.0	12	M,J		300

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.80	70	10-145
13C12-PCB-077	12000	22.11	73	10-145
13C12-PCB-123	12000	23.07	71	10-145
13C12-PCB-118	12000	23.24	69	10-145
13C12-PCB-114	12000	23.54	82	10-145
13C12-PCB-105	12000	23.90	82	10-145
13C12-PCB-126	12000	25.50	88	10-145
13C12-PCB-167	12000	26.37	75	10-145
13C12-PCB-156/157	24000	27.01	74	10-145
13C12-PCB-169	12000	28.66	86	10-145
13C12-PCB-189	12000	29.92	83	10-145
Field Spike Standards				
13C12-PCB-031	10000	15.81	84	70-130
13C12-PCB-095	10000	19.10	91	70-130
13C12-PCB-153	10000	24.16	86	70-130
Cleanup Standards				
13C12-PCB-028	12000	15.98	42	5-145
13C12-PCB-111	12000	21.99	64	10-145
13C12-PCB-178	12000	25.04	66	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.215
Mid Point PCB TEQ	1.78
Upper Bound PCB TEQ	3.33

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor; TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-7	Extraction Date	25-Nov-20
Analysis Method	EPA 1668C	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	12

Approved:
S. Jin
--e-signature--
11-Dec-2020

Run Information	**Run 1**
Filename	5-201210A14
Run Date	11-Dec-20 00:44
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOctyl 256001-01

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-081	0.0003	NotFnd	<25	25	U		300
PCB-077	0.0001	22.12	194	26	J		300
PCB-123	0.00003	23.09	76.9	42	J		300
PCB-118	0.00003	23.25	5080	38	M		300
PCB-114	0.00003	23.55	144	35	M,J		300
PCB-105	0.00003	23.91	2240	36			300
PCB-126	0.1	NotFnd	<39	39	U		300
PCB-167	0.00003	26.38	177	16	J		300
PCB-156/157	0.00003	27.01	617	23			600
PCB-169	0.03	28.66	<18	18	M,U	14	300
PCB-189	0.00003	29.93	40.9	12	M,J		300

Extraction Standards	pg	Time	% Rec	Limits	
13C12-PCB-081	12000	21.80	64	10-145	
13C12-PCB-077	12000	22.11	65	10-145	
13C12-PCB-123	12000	23.07	64	10-145	
13C12-PCB-118	12000	23.24	64	10-145	
13C12-PCB-114	12000	23.54	73	10-145	
13C12-PCB-105	12000	23.90	72	10-145	
13C12-PCB-126	12000	25.50	81	10-145	
13C12-PCB-167	12000	26.37	67	10-145	
13C12-PCB-156/157	24000	27.01	66	10-145	
13C12-PCB-169	12000	28.66	73	10-145	M
13C12-PCB-189	12000	29.93	77	10-145	
Field Spike Standards					
13C12-PCB-031	10000	15.81	88	70-130	
13C12-PCB-095	10000	19.11	88	70-130	
13C12-PCB-153	10000	24.16	82	70-130	
Cleanup Standards					
13C12-PCB-028	12000	15.99	44	5-145	
13C12-PCB-111	12000	21.99	59	10-145	
13C12-PCB-178	12000	25.04	64	10-145	

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.271
Mid Point PCB TEQ	2.49
Upper Bound PCB TEQ	4.72

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-8	Extraction Date	25-Nov-20
Analysis Method	EPA 1668C	Sample Size	1 sample
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	12

Approved:
S. Jin
--e-signature--
11-Dec-2020

Run Information	**Run 1**
Filename	5-201210A08
Run Date	10-Dec-20 20:31
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOctyl 256001-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<22	22	U		300
PCB-077	0.0001	22.14	33.2	23	M,J		300
PCB-123	0.00003	NotFnd	<29	29	U		300
PCB-118	0.00003	23.26	680	28			300
PCB-114	0.00003	NotFnd	<23	23	U		300
PCB-105	0.00003	23.93	304	23			300
PCB-126	0.1	NotFnd	<26	26	U		300
PCB-167	0.00003	26.39	51.4	20	M,J		300
PCB-156/157	0.00003	27.01	144	28	J		600
PCB-169	0.03	NotFnd	<22	22	U		300
PCB-189	0.00003	29.93	20.2	8.9	J		300

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.82	70	10-145
13C12-PCB-077	12000	22.12	69	10-145
13C12-PCB-123	12000	23.08	70	10-145
13C12-PCB-118	12000	23.25	68	10-145
13C12-PCB-114	12000	23.55	83	10-145
13C12-PCB-105	12000	23.91	83	10-145
13C12-PCB-126	12000	25.51	90	10-145
13C12-PCB-167	12000	26.38	69	10-145
13C12-PCB-156/157	24000	27.02	69	10-145
13C12-PCB-169	12000	28.67	79	10-145
13C12-PCB-189	12000	29.93	81	10-145
Field Spike Standards				
13C12-PCB-031	10000	15.82	95	70-130
13C12-PCB-095	10000	19.12	85	70-130
13C12-PCB-153	10000	24.17	92	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.00	49	5-145
13C12-PCB-111	12000	22.01	64	10-145
13C12-PCB-178	12000	25.05	59	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0393
Mid Point PCB TEQ	1.67
Upper Bound PCB TEQ	3.31

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
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

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a	
ALS Sample ID	WG3444637-1	Extraction Date	25-Nov-20	
Analysis Method	EPA 1668C	Sample Size	1	sample
Analysis Type	Blank	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	12	

Approved:
S. Jin
--e-signature--
11-Dec-2020

Run Information	**Run 1**
Filename	5-201211A05
Run Date	11-Dec-20 10:37
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOctyl 256001-01

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<12	12	U		300
PCB-077	0.0001	NotFnd	<12	12	U		300
PCB-123	0.00003	NotFnd	<14	14	U		300
PCB-118	0.00003	23.27	18.3	14	M,J		300
PCB-114	0.00003	NotFnd	<14	14	U		300
PCB-105	0.00003	NotFnd	<14	14	U		300
PCB-126	0.1	NotFnd	<17	17	U		300
PCB-167	0.00003	NotFnd	<11	11	U		300
PCB-156/157	0.00003	NotFnd	<16	16	U		600
PCB-169	0.03	NotFnd	<13	13	U		300
PCB-189	0.00003	NotFnd	<10	10	U		300

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.82	89	10-145
13C12-PCB-077	12000	22.13	92	10-145
13C12-PCB-123	12000	23.09	87	10-145
13C12-PCB-118	12000	23.26	83	10-145
13C12-PCB-114	12000	23.56	90	10-145
13C12-PCB-105	12000	23.93	94	10-145
13C12-PCB-126	12000	25.52	94	10-145
13C12-PCB-167	12000	26.38	79	10-145
13C12-PCB-156/157	24000	27.03	77	10-145
13C12-PCB-169	12000	28.69	84	10-145
13C12-PCB-189	12000	29.95	75	10-145
Field Spike Standards				
13C12-PCB-031			NS	70-130
13C12-PCB-095			NS	70-130
13C12-PCB-153			NS	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.01	70	5-145
13C12-PCB-111	12000	22.02	77	10-145
13C12-PCB-178	12000	25.05	72	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.000549
Mid Point PCB TEQ	1.05
Upper Bound PCB TEQ	2.10

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.
NS	Indicates that this compound was not added.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3444637-2	Extraction Date	25-Nov-20
Analysis Method	EPA 1668C	Sample Size	1 n/a
Analysis Type	LCS	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	1

Approved:
S. Jin
--e-signature--
11-Dec-2020

Run Information	**Run 1**
Filename	5-201210A03
Run Date	10-Dec-20 17:00
Final Volume	25 ul
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-5 SPBOctyl 256001-01

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
PCB-081	6000	21.84	95	60-135	
PCB-077	6000	22.15	94	60-135	
PCB-123	6000	23.10	95	60-135	
PCB-118	6000	23.27	95	60-135	
PCB-114	6000	23.58	91	60-135	
PCB-105	6000	23.94	89	60-135	
PCB-126	6000	25.53	94	60-135	
PCB-167	6000	26.40	91	60-135	
PCB-156/157	12000	27.04	93	60-135	
PCB-169	6000	28.70	94	60-135	
PCB-189	6000	29.96	97	60-135	
Extraction Standards		**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.83	81	40-145	
13C12-PCB-077	12000	22.13	84	40-145	
13C12-PCB-123	12000	23.09	90	40-145	
13C12-PCB-118	12000	23.26	90	40-145	
13C12-PCB-114	12000	23.56	93	40-145	
13C12-PCB-105	12000	23.93	96	40-145	
13C12-PCB-126	12000	25.52	99	40-145	
13C12-PCB-167	12000	26.39	96	40-145	
13C12-PCB-156/157	24000	27.03	98	40-145	
13C12-PCB-169	12000	28.69	125	40-145	
13C12-PCB-189	12000	29.95	135	40-145	
Field Spike Standards					
13C12-PCB-031			NS	70-130	
13C12-PCB-095			NS	70-130	
13C12-PCB-153			NS	70-130	
Cleanup Standards					
13C12-PCB-028	12000	16.01	62	15-145	
13C12-PCB-111	12000	22.02	74	40-145	
13C12-PCB-178	12000	25.06	75	40-145	

NS Indicates that this compound was not added.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2529311		Mississauga, ON L5J 2Y4
Date of Report	8-Dec-20		Canada
Date of Sample Receipt	13-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: CB by LRGC/MS - Isotope dilution

Certified by: ______________________

Ron McLeod, Ph.D,
Technical Director

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank (Media)		20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		20-22050-SVOC-(16 THRU 20) BLANK#1	
ALS Sample ID	WG3444637-1		L2529311-1		L2529311-2		L2529311-3		L2529311-4	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		11-Nov-20		11-Nov-20		12-Nov-20		12-Nov-20	
Extraction Date	25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Chlorobenzene	<12	U	3120		4210		3240		<12	U
1,3-Dichlorobenzene	<12	U	588		564		722		<12	U
1,4-Dichlorobenzene	<12	U	419		360		443		<12	U
1,2-Dichlorobenzene	<12	U	485		474		586		<12	U
1,3,5-Trichlorobenzene	<12	U	64.6		65	M	82.1		<12	U
1,2,4-Trichlorobenzene	<12	U	164		179		281		<12	U
1,2,3-Trichlorobenzene	<12	U	49.7		51.4		59		<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12	U	37.3		36.5		43.4		<12	U
1,2,3,4-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Pentachlorobenzene	<12	U	<12	U	13.2		<12	U	<12	U
Hexachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	NS		107		99		110		107	
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
13C6-Chlorobenzene	31		19		19		23		27	
13C6-1,4-Dichlorobenzene	57		48		55		46		51	
13C6-1,2,3-Trichlorobenzene	65		58		69		58		62	
13C6-1,2,3,4-Tetrachlorobenzene	77		66		67		69		76	
13C6-Pentachlorobenzene	87		66		76		77		83	
13C6-Hexachlorobenzene	101		70		79		80		91	

U — Indicates that this compound was not detected above the LOD.
M — Indicates that a peak has been manually integrated.
NS — Indicates that this compound was not spiked in
R — Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	20-22050-SVOC- (21 THRU 25) TEST#1 APC OUTLET #2		20-22050-SVOC- (26 THRU 30) TEST#2 APC OUTLET #2		20-22050-SVOC- (31 THRU 35) TEST#3 APC OUTLET #2		20-22050-SVOC- (36 THRU 40) BLANK#2		Laboratory Control Sample (300ng)	Laboratory Control Sample (30ng)
ALS Sample ID	L2529311-5		L2529311-6		L2529311-7		L2529311-8		WG3444637-2	WG3444637-5
Sample Size	1		1		1		1		1	1
Sample units	sample		sample		sample		sample		n/a	n/a
Moisture Content	n/a		n/a		n/a		n/a		n/a	n/a
Matrix	Stack		Stack		Stack		Stack		QC	QC
Sampling Date	11-Nov-20		11-Nov-20		12-Nov-20		12-Nov-20		n/a	n/a
Extraction Date	25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20	25-Nov-20
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**	**% Recovery**
Chlorobenzene	1950		1970		1430		<12	U	NS	NS
1,3-Dichlorobenzene	188		198		144		<12	U	113	120
1,4-Dichlorobenzene	133		128		91.8		<12	U	108	111
1,2-Dichlorobenzene	141		148		109		<12	U	115	116
1,3,5-Trichlorobenzene	23.9		19.3		18.1		<12	U	94	109
1,2,4-Trichlorobenzene	42.9		45.1		35		<12	U	90	103
1,2,3-Trichlorobenzene	20.5		20.2		22	M	<12	U	93	109
1,2,3,5/1,2,4,5-Tetrachlorobenzene	17.8	M	<12	U	<12	U	<12	U	111	135
1,2,3,4-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	110	111
Pentachlorobenzene	<12	U	<12	U	<12	U	<12	U	115	103
Hexachlorobenzene	<12	U	<12	U	<12	U	<12	U	113	103
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	**%Rec**
1-Bromo-2,3-Dichlorobenzene	100		95		93		102		NS	NS
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	**%Rec**
13C6-Chlorobenzene	22		29		31		26		24	30
13C6-1,4-Dichlorobenzene	51		58		63		52		58	47
13C6-1,2,3-Trichlorobenzene	65		69		73		65		80	56
13C6-1,2,3,4-Tetrachlorobenzene	82		69		77		74		86	59
13C6-Pentachlorobenzene	91		76		84		81		90	66
13C6-Hexachlorobenzene	93		77		86		88		111	89

U Indicates that this compound was not detected above the LOD.
M Indicates that a peak has been manually integrated.
NS Indicates that this compound was not spiked in

ALS Life Sciences

Sample Analysis Report

Sample Name	**Method Blank (Media)**	Sampling Date	n/a
ALS Sample ID	WG3444637-1	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120706.D
Run Date	12/7/2020 15:39
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		NotFnd	<12	U
1,3-Dichlorobenzene		NotFnd	<12	U
1,4-Dichlorobenzene		6.88	<12	U
1,2-Dichlorobenzene		NotFnd	<12	U
1,3,5-Trichlorobenzene		NotFnd	<12	U
1,2,4-Trichlorobenzene		NotFnd	<12	U
1,2,3-Trichlorobenzene		NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene		NotFnd	<12	U
Pentachlorobenzene		NotFnd	<12	U
Hexachlorobenzene		NotFnd	<12	U
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.59	31	
13C6-1,4-Dichlorobenzene	300	6.88	57	
13C6-1,2,3-Trichlorobenzene	300	9.26	65	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	77	
13C6-Pentachlorobenzene	300	12.33	87	
13C6-Hexachlorobenzene	300	13.97	101	

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-1	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120710.D
Run Date	12/7/2020 17:03
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.58	3120	
1,3-Dichlorobenzene		6.81	588	
1,4-Dichlorobenzene		6.89	419	
1,2-Dichlorobenzene		7.17	485	
1,3,5-Trichlorobenzene		8.34	64.6	
1,2,4-Trichlorobenzene		8.86	164	
1,2,3-Trichlorobenzene		9.27	49.7	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.48	37.3	
1,2,3,4-Tetrachlorobenzene		10.98	<12	U
Pentachlorobenzene		12.32	<12	U
Hexachlorobenzene		13.95	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.28	107	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.58	19	M
13C6-1,4-Dichlorobenzene	300	6.89	48	
13C6-1,2,3-Trichlorobenzene	300	9.26	58	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	66	
13C6-Pentachlorobenzene	300	12.32	66	
13C6-Hexachlorobenzene	300	13.96	70	

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	**20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-2	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120711.D
Run Date	12/7/2020 17:23
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.58	4210	
1,3-Dichlorobenzene		6.81	564	
1,4-Dichlorobenzene		6.89	360	
1,2-Dichlorobenzene		7.18	474	
1,3,5-Trichlorobenzene		8.34	65	M
1,2,4-Trichlorobenzene		8.86	179	
1,2,3-Trichlorobenzene		9.27	51.4	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.48	36.5	
1,2,3,4-Tetrachlorobenzene		10.98	<12	U
Pentachlorobenzene		12.32	13.2	
Hexachlorobenzene		13.96	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.28	99	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.58	19	M
13C6-1,4-Dichlorobenzene	300	6.89	55	
13C6-1,2,3-Trichlorobenzene	300	9.26	69	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	67	
13C6-Pentachlorobenzene	300	12.32	76	
13C6-Hexachlorobenzene	300	13.96	79	

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	**20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-3	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120712.D
Run Date	12/7/2020 17:44
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.63	3240	
1,3-Dichlorobenzene		6.81	722	
1,4-Dichlorobenzene		6.89	443	
1,2-Dichlorobenzene		7.18	586	
1,3,5-Trichlorobenzene		8.34	82.1	
1,2,4-Trichlorobenzene		8.86	281	
1,2,3-Trichlorobenzene		9.27	59	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.48	43.4	
1,2,3,4-Tetrachlorobenzene		10.98	<12	U
Pentachlorobenzene		12.32	<12	U
Hexachlorobenzene		NotFnd	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.28	110	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.62	23	
13C6-1,4-Dichlorobenzene	300	6.89	46	
13C6-1,2,3-Trichlorobenzene	300	9.27	58	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	69	
13C6-Pentachlorobenzene	300	12.32	77	
13C6-Hexachlorobenzene	300	13.96	80	

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-4	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120708.D
Run Date	12/7/2020 16:21
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		NotFnd	<12	U
1,3-Dichlorobenzene		NotFnd	<12	U
1,4-Dichlorobenzene		NotFnd	<12	U
1,2-Dichlorobenzene		NotFnd	<12	U
1,3,5-Trichlorobenzene		NotFnd	<12	U
1,2,4-Trichlorobenzene		NotFnd	<12	U
1,2,3-Trichlorobenzene		NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene		NotFnd	<12	U
Pentachlorobenzene		NotFnd	<12	U
Hexachlorobenzene		NotFnd	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.28	107	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.60	27	
13C6-1,4-Dichlorobenzene	300	6.91	51	
13C6-1,2,3-Trichlorobenzene	300	9.27	62	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	76	
13C6-Pentachlorobenzene	300	12.32	83	
13C6-Hexachlorobenzene	300	13.97	91	

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-5	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120713.D
Run Date	12/7/2020 18:05
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.59	1950	
1,3-Dichlorobenzene		6.81	188	
1,4-Dichlorobenzene		6.89	133	
1,2-Dichlorobenzene		7.18	141	
1,3,5-Trichlorobenzene		8.34	23.9	
1,2,4-Trichlorobenzene		8.86	42.9	
1,2,3-Trichlorobenzene		9.26	20.5	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.49	17.8 M	
1,2,3,4-Tetrachlorobenzene		10.94	<12	U
Pentachlorobenzene		12.19	<12	U
Hexachlorobenzene		13.59	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.28	100	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.59	22	
13C6-1,4-Dichlorobenzene	300	6.89	51	
13C6-1,2,3-Trichlorobenzene	300	9.27	65	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	82	
13C6-Pentachlorobenzene	300	12.32	91	
13C6-Hexachlorobenzene	300	13.96	93	

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	**20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-6	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120714.D
Run Date	12/7/2020 18:26
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.60	1970	
1,3-Dichlorobenzene		6.81	198	
1,4-Dichlorobenzene		6.89	128	
1,2-Dichlorobenzene		7.18	148	
1,3,5-Trichlorobenzene		8.34	19.3	
1,2,4-Trichlorobenzene		8.86	45.1	
1,2,3-Trichlorobenzene		9.27	20.2	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.48	<12	U
1,2,3,4-Tetrachlorobenzene		10.98	<12	U
Pentachlorobenzene		12.32	<12	U
Hexachlorobenzene		NotFnd	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.28	95	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.59	29	
13C6-1,4-Dichlorobenzene	300	6.89	58	
13C6-1,2,3-Trichlorobenzene	300	9.26	69	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	69	
13C6-Pentachlorobenzene	300	12.32	76	
13C6-Hexachlorobenzene	300	13.96	77	

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-7	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120715.D
Run Date	12/7/2020 18:46
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		4.59	1430	
1,3-Dichlorobenzene		6.82	144	
1,4-Dichlorobenzene		6.90	91.8	
1,2-Dichlorobenzene		7.19	109	
1,3,5-Trichlorobenzene		8.34	18.1	
1,2,4-Trichlorobenzene		8.86	35	
1,2,3-Trichlorobenzene		9.27	22 M	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.47	<12	U
1,2,3,4-Tetrachlorobenzene		NotFnd	<12	U
Pentachlorobenzene		NotFnd	<12	U
Hexachlorobenzene		NotFnd	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.28	93	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.59	31	
13C6-1,4-Dichlorobenzene	300	6.90	63	
13C6-1,2,3-Trichlorobenzene	300	9.27	73	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	77	
13C6-Pentachlorobenzene	300	12.32	84	
13C6-Hexachlorobenzene	300	13.96	86	

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	**20-22050-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-8	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120709.D
Run Date	12/7/2020 16:42
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		NotFnd	<12	U
1,3-Dichlorobenzene		NotFnd	<12	U
1,4-Dichlorobenzene		6.90	<12	U
1,2-Dichlorobenzene		NotFnd	<12	U
1,3,5-Trichlorobenzene		NotFnd	<12	U
1,2,4-Trichlorobenzene		NotFnd	<12	U
1,2,3-Trichlorobenzene		NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene		NotFnd	<12	U
Pentachlorobenzene		NotFnd	<12	U
Hexachlorobenzene		NotFnd	<12	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.28	102	M
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.59	26	
13C6-1,4-Dichlorobenzene	300	6.90	52	
13C6-1,2,3-Trichlorobenzene	300	9.27	65	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	74	
13C6-Pentachlorobenzene	300	12.32	81	
13C6-Hexachlorobenzene	300	13.97	88	

M Indicates that a peak has been manually integrated.
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	WG3444637-2		Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS			
Analysis Type	LCS			
Sample Matrix	QC			
Sample Size	1	n/a		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**	
Filename	20120704.D	
Run Date	12/7/2020 14:58	
Final Volume	1	mL
Dilution Factor	1	
Analysis Units	%	
Instrument	MSD-2	
Column	HP-5MS US0411816H	

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene				
1,3-Dichlorobenzene	300	6.84	113	
1,4-Dichlorobenzene	300	6.92	108	
1,2-Dichlorobenzene	300	7.20	115	
1,3,5-Trichlorobenzene	300	8.35	94	
1,2,4-Trichlorobenzene	300	8.87	90	
1,2,3-Trichlorobenzene	300	9.28	93	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	600	10.49	111	
1,2,3,4-Tetrachlorobenzene	300	10.98	110	
Pentachlorobenzene	300	12.32	115	
Hexachlorobenzene	300	13.97	113	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.57	24	
13C6-1,4-Dichlorobenzene	300	6.92	58	
13C6-1,2,3-Trichlorobenzene	300	9.27	80	R
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	86	
13C6-Pentachlorobenzene	300	12.32	90	
13C6-Hexachlorobenzene	300	13.97	111	

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3444637-5	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120703.D
Run Date	12/7/2020 14:37
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS US0411816H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene				
1,3-Dichlorobenzene	30	6.81	120	
1,4-Dichlorobenzene	30	6.89	111	
1,2-Dichlorobenzene	30	7.18	116	
1,3,5-Trichlorobenzene	30	8.35	109	
1,2,4-Trichlorobenzene	30	8.87	103	
1,2,3-Trichlorobenzene	30	9.27	109	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	60	10.50	135	
1,2,3,4-Tetrachlorobenzene	30	10.99	111	
Pentachlorobenzene	30	12.35	103	
Hexachlorobenzene	30	13.98	103	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.61	30	
13C6-1,4-Dichlorobenzene	300	6.89	47	
13C6-1,2,3-Trichlorobenzene	300	9.27	56	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	59	
13C6-Pentachlorobenzene	300	12.34	66	
13C6-Hexachlorobenzene	300	13.98	89	

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2529311		
Date of Report	8-Dec-20		
Date of Sample Receipt	13-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Selected C-13 extraction/internal standards were biased low and below the targeted 20% lower control limit. Due to isotope dilution corrections such lower recoveries will not compromise the quantitation of postive target responses.

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank (Media)		20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		20-22050-SVOC-(16 THRU 20) BLANK#1	
ALS Sample ID	WG3444637-1		L2529311-1		L2529311-2		L2529311-3		L2529311-4	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		11-Nov-20		11-Nov-20		12-Nov-20		12-Nov-20	
Extraction Date	25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
2-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
4-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,6-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4/2,5-Dichlorophenol	<60	U	<60	U	76.1	M	65.6	M	<60	U
3,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3,4-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4,6-Trichlorophenol	<60	U	200	M	201	M	171		<60	U
2,3,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,4-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,4,5-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
Pentachlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	12	M	52		29		25		49	
13C6-2,4-Dichlorophenol (ES)	4		38		34		41		49	
13C6-2,4,5-Trichlorophenol (ES)	21		10		27		33		47	
13C6-2,3,4,5-Tetrachlorophenol (ES)	35	M	5		32		31		53	
13C6-Pentachlorophenol (ES)	26		4	M	25		6		46	

U — Indicates that this compound was not detected above the LOR.

M — Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Summary Report

Sample Name	20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2	20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	20-22050-SVOC-(36 THRU 40) BLANK#2	Laboratory Control Sample (1.2ug)	Laboratory Control Sample (0.12ug)
ALS Sample ID	L2529311-5	L2529311-6	L2529311-7	L2529311-8	WG3444637-2	WG3444637-5
Sample Size	1	1	1	1	1	1
Sample units	sample	sample	sample	sample	n/a	n/a
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	Stack	Stack	Stack	Stack	QC	QC
Sampling Date	11-Nov-20	11-Nov-20	12-Nov-20	12-Nov-20	n/a	n/a
Extraction Date	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20
Target Analytes	**n/a**	**ng/sample**	**ng/sample**	**ng/sample**	**% Recovery**	**% Recovery**
2-Chlorophenol	<60 U	<60 U	<60 U	<60 U	109 M	87 M
3-Chlorophenol	<60 U	<60 U	<60 U	<60 U		
4-Chlorophenol	<60 U	<60 U	<60 U	<60 U		
2,6-Dichlorophenol	<60 U	<60 U	<60 U	<60 U	89 M	86 M
2,4/2,5-Dichlorophenol	<60 U	<60 U	<60 U	<60 U	105	83 M
3,5-Dichlorophenol	238 M	<60 U	248 M	<60 U		
2,3-Dichlorophenol	<60 U	<60 U	<60 U	<60 U		
3,4-Dichlorophenol	<60 U	<60 U	<60 U	<60 U		
2,4,6-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	100	79 M
2,3,6-Trichlorophenol	<60 U	<60 U	<60 U	<60 U		
2,3,5-Trichlorophenol	<60 U	<60 U	<60 U	<60 U		
2,4,5-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	117	96 M
2,3,4-Trichlorophenol	<60 U	<60 U	<60 U	<60 U		
3,4,5-Trichlorophenol	<60 U	<60 U	<60 U	<60 U		
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60 U	<60 U	<60 U	<60 U	96 M	88 M
2,3,4,5-Tetrachlorophenol	<60 U	<60 U	<60 U	<60 U	108	90
Pentachlorophenol	<60 U	<60 U	<60 U	<60 U	102	99
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C6-4-Chlorophenol (ES)	42	21	30	29	54	36
13C6-2,4-Dichlorophenol (ES)	30	13	16	12	56	33
13C6-2,4,5-Trichlorophenol (ES)	42	19	23	25	47	34
13C6-2,3,4,5-Tetrachlorophenol (ES)	44	27	16	39	44	40
13C6-Pentachlorophenol (ES)	38	10	23	44	28	35

U Indicates that this compound was not detected above the LOR.
M Indicates that a peak has been manually integrated.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank (Media)**		Sampling Date	n/a
ALS Sample ID	WG3444637-1		Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS			
Analysis Type	blank			
Sample Matrix	QC			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120724.D
Run Date	12/7/2020 22:09
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0411816H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	12	M	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	4		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.99	21		20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.60	35	M	20-150
13C6-Pentachlorophenol (ES)	1200	13.57	26		20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**		Sampling Date	11-Nov-20
ALS Sample ID	L2529311-1		Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120728.D
Run Date	12/7/2020 23:44
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	
2-Chlorophenol		NotFnd	<60	U	
3-Chlorophenol		NotFnd	<60	U	
4-Chlorophenol		NotFnd	<60	U	
2,6-Dichlorophenol		NotFnd	<60	U	
2,4/2,5-Dichlorophenol		9.52	<60	U	
3,5-Dichlorophenol		NotFnd	<60	U	
2,3-Dichlorophenol		NotFnd	<60	U	
3,4-Dichlorophenol		NotFnd	<60	U	
2,4,6-Trichlorophenol		10.44	200	M	
2,3,6-Trichlorophenol		NotFnd	<60	U	
2,3,5-Trichlorophenol		NotFnd	<60	U	
2,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,4-Trichlorophenol		NotFnd	<60	U	
3,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<60	U	
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U	
Pentachlorophenol		NotFnd	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	52		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	38		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	10		20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.59	5		20-150
13C6-Pentachlorophenol (ES)	1200	13.57	4	M	20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-2	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120729.D
Run Date	12/8/2020 0:08
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0411816H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	9.52	76.1	M
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	10.44	201	M
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.35	29	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	34	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	27	20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.59	32	20-150
13C6-Pentachlorophenol (ES)	1200	13.56	25	20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**		Sampling Date	12-Nov-20
ALS Sample ID	L2529311-3		Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**	
Filename	20120730.D	
Run Date	12/8/2020 0:32	
Final Volume	1	mL
Dilution Factor	1	
Analysis Units	ng/sample	
Instrument	MSD-2	
Column	HP5MS US0411816H	

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	9.52	65.6	M
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	10.44	171	
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.35	25	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	41	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	33	20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.59	31	20-150
13C6-Pentachlorophenol (ES)	1200	13.56	6	20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22050-SVOC-(16 THRU 20) BLANK#1**		Sampling Date	12-Nov-20
ALS Sample ID	L2529311-4		Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120726.D
Run Date	12/7/2020 22:57
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0411816H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	10.44	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.35	49	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	49	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	47	20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.59	53	20-150
13C6-Pentachlorophenol (ES)	1200	13.56	46	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-5	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120731.D
Run Date	12/8/2020 0:56
Final Volume	1 mL
Dilution Factor	1
Analysis Units	n/a
Instrument	MSD-2
Column	HP5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration n/a**	**Flags**	
2-Chlorophenol		NotFnd	<60	U	
3-Chlorophenol		NotFnd	<60	U	
4-Chlorophenol		NotFnd	<60	U	
2,6-Dichlorophenol		NotFnd	<60	U	
2,4/2,5-Dichlorophenol		NotFnd	<60	U	
3,5-Dichlorophenol		9.64	238	M	
2,3-Dichlorophenol		NotFnd	<60	U	
3,4-Dichlorophenol		NotFnd	<60	U	
2,4,6-Trichlorophenol		10.44	<60	U	
2,3,6-Trichlorophenol		NotFnd	<60	U	
2,3,5-Trichlorophenol		NotFnd	<60	U	
2,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,4-Trichlorophenol		NotFnd	<60	U	
3,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<60	U	
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U	
Pentachlorophenol		NotFnd	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	42		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	30		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	42		20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.59	44		20-150
13C6-Pentachlorophenol (ES)	1200	13.56	38		20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-6	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120732.D
Run Date	12/8/2020 1:20
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	
2-Chlorophenol		NotFnd	<60	U	
3-Chlorophenol		NotFnd	<60	U	
4-Chlorophenol		NotFnd	<60	U	
2,6-Dichlorophenol		NotFnd	<60	U	
2,4/2,5-Dichlorophenol		9.52	<60	U	
3,5-Dichlorophenol		NotFnd	<60	U	
2,3-Dichlorophenol		NotFnd	<60	U	
3,4-Dichlorophenol		NotFnd	<60	U	
2,4,6-Trichlorophenol		NotFnd	<60	U	
2,3,6-Trichlorophenol		NotFnd	<60	U	
2,3,5-Trichlorophenol		NotFnd	<60	U	
2,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,4-Trichlorophenol		NotFnd	<60	U	
3,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<60	U	
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U	
Pentachlorophenol		NotFnd	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	21		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	13		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	19		20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.59	27		20-150
13C6-Pentachlorophenol (ES)	1200	13.56	10		20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-7	Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120733.D
Run Date	12/8/2020 1:43
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	
2-Chlorophenol		NotFnd	<60	U	
3-Chlorophenol		NotFnd	<60	U	
4-Chlorophenol		NotFnd	<60	U	
2,6-Dichlorophenol		NotFnd	<60	U	
2,4/2,5-Dichlorophenol		NotFnd	<60	U	
3,5-Dichlorophenol		9.65	248 M		
2,3-Dichlorophenol		NotFnd	<60	U	
3,4-Dichlorophenol		NotFnd	<60	U	
2,4,6-Trichlorophenol		NotFnd	<60	U	
2,3,6-Trichlorophenol		NotFnd	<60	U	
2,3,5-Trichlorophenol		NotFnd	<60	U	
2,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,4-Trichlorophenol		NotFnd	<60	U	
3,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<60	U	
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U	
Pentachlorophenol		NotFnd	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.36	30		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	16		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	23		20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.59	16		20-150
13C6-Pentachlorophenol (ES)	1200	13.57	23		20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**20-22050-SVOC-(36 THRU 40) BLANK#2**		Sampling Date	12-Nov-20
ALS Sample ID	L2529311-8		Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120727.D
Run Date	12/7/2020 23:20
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5MS US0411816H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	
2-Chlorophenol		NotFnd	<60	U	
3-Chlorophenol		NotFnd	<60	U	
4-Chlorophenol		NotFnd	<60	U	
2,6-Dichlorophenol		NotFnd	<60	U	
2,4/2,5-Dichlorophenol		NotFnd	<60	U	
3,5-Dichlorophenol		NotFnd	<60	U	
2,3-Dichlorophenol		NotFnd	<60	U	
3,4-Dichlorophenol		NotFnd	<60	U	
2,4,6-Trichlorophenol		NotFnd	<60	U	
2,3,6-Trichlorophenol		NotFnd	<60	U	
2,3,5-Trichlorophenol		NotFnd	<60	U	
2,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,4-Trichlorophenol		NotFnd	<60	U	
3,4,5-Trichlorophenol		NotFnd	<60	U	
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<60	U	
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U	
Pentachlorophenol		NotFnd	<60	U	
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	29		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	12		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	25		20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.59	39		20-150
13C6-Pentachlorophenol (ES)	1200	13.57	44		20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**		Sampling Date	n/a
ALS Sample ID	WG3444637-2		Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS			
Analysis Type	LCS			
Sample Matrix	QC			
Sample Size	1	n/a		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120722.D
Run Date	12/7/2020 21:21
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP5MS US0411816H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	1200	8.00	109	M	211-124
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	1200	9.31	89	M	10-110
2,4/2,5-Dichlorophenol	1200	9.52	105		35-98
3,5-Dichlorophenol					
2,3-Dichlorophenol					
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	1200	10.44	100		10-102
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	1200	10.99	117		45-95
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	2400	12.10	96	M	30-109
2,3,4,5-Tetrachlorophenol	1200	12.60	108		44-103
Pentachlorophenol	1200	13.57	102		32-121
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	54		50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	56		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.99	47		50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.60	44		50-150
13C6-Pentachlorophenol (ES)	1200	13.57	28		50-150

M Indicates that a peak has been manually integrated.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (Low Level)**		Sampling Date	n/a
ALS Sample ID	WG3444637-5		Extraction Date	25-Nov-20
Analysis Method	SIM GC/MS			
Analysis Type	LCS			
Sample Matrix	QC			
Sample Size	1	n/a		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	20120721.D
Run Date	12/7/2020 20:57
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP5MS US0411816H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	120	8.01	87	M	212-124
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	120	9.31	86	M	10-110
2,4/2,5-Dichlorophenol	120	9.52	83	M	35-98
3,5-Dichlorophenol					
2,3-Dichlorophenol					
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	120	10.44	79	M	10-102
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	120	11.00	96	M	45-95
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	240	12.10	88	M	30-109
2,3,4,5-Tetrachlorophenol	120	12.60	90		44-103
Pentachlorophenol	120	13.57	99		32-121
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	36		50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	33		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.00	34		50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.60	40		50-150
13C6-Pentachlorophenol (ES)	1200	13.57	35		50-150

M Indicates that a peak has been manually integrated.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2529311		Mississauga, ON L5J 2Y4
Date of Report	8-Dec-20		Canada
Date of Sample Receipt	13-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Certified by: [signature]

Ron McLeod, Ph.D.
Technical Director

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank (Media)		20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		20-22050-SVOC-(16 THRU 20) BLANK#1	
ALS Sample ID	WG3444637-1		L2529311-1		L2529311-2		L2529311-3		L2529311-4	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		11-Nov-20		11-Nov-20		12-Nov-20		12-Nov-20	
Extraction Date	25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20	
Target Analytes	ng/sample		ng/sample		ng/sample		ng/sample		ng/sample	
Naphthalene	190	M,R	207	M,R,B	524	M,R,B	200	M,R,B	164	M,R,B
2-Methylnaphthalene	<12	U	43.3		85.7	R	29.7		<12	U
1-Methylnaphthalene	<12	U	22.3		42.5		21.8		<12	U
Acenaphthylene	<12	U	<12	U	<12	U	<12	U	<12	U
Acenaphthene	<12	U	<12	U	87.1	R	<12	U	<12	U
Fluorene	<12	U	12.0		48.7	R	<12	U	<12	U
Phenanthrene	<12	U	76.9		516		59.5		<12	U
Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Fluoranthene	<12	U	26.1		111		13.9		<12	U
Pyrene	<12	U	32.2	R	83.2	R	12.8	R	<12	U
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Chrysene/Triphenylene	<12	U	<12	U	21.9		<12	U	<12	U
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(k/j)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(e)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Perylene	<12	U	<12	U	<12	U	<12	U	<12	U
Indeno(1,2,3-cd)Pyrene	<12	U	13.0	R	<12	U	<12	U	<12	U
Dibenzo(a,h/a,c)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(g,h,i)Perylene	<12	U	96.3		24.4	R	<12	U	<12	U
Additional Analytes										
Tetralin	276		188	M,R,B	355	M,R,B	496	B	181	M,R,B
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U
Biphenyl	<12	U	24.2	R	559		24.1	R	<12	U
o-Terphenyl	<12	U	<12	U	56.5	M	<12	U	<12	U
1-Methylphenanthrene	<12	U	51.6	R	43.6	M,R	25.5	R	<12	U
9-Methylphenanthrene	<12	U	<12	U	107	M,R	13.3	R	<12	U
2-methylanthracene	<12	U	22.0	R	117	M	21.1	M	<12	U
9,10-dimethylanthracene	<12	U	<12	U	26.7	M,R	<12	U	<12	U
m-terphenyl	<12	U	<12	U	33.8	M,R	<12	U	<12	U
p-terphenyl	<12	U	<12	U	16.5	M,R	<12	U	<12	U
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U	<60	U
Picene	<60	U	<60	U	<60	U	<60	U	<60	U
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U	<60	U
Coronene	<60	U	69.9		<60	U	<60	U	<60	U
Field Sampling Standards	% Rec		% Rec		% Rec		% Rec		% Rec	
1-Methylnaphthalene-D10	NS		92.4		88.3		94.7		89.4	
Fluorene D10	NS		102.5		110.2		100.9		77.9	
Terphenyl D14(Surr.)	NS		83.7		83.8		81.3		86.6	
Extraction Standards	% Rec		% Rec		% Rec		% Rec		% Rec	
Naphthalene D8	90.9		66.4		72.5		75.2		79.9	
2-Methylnaphthalene-D10	78.8		56.4		69.0		62.1		66.4	
Acenaphthylene D8	81.8		70.1		79.5		87.3		81.5	
Phenanthrene D10	98.5		66.3		44.2		76.2		88.0	
Anthracene-D10	76.9		65.0		52.8		81.4		81.8	
Fluoranthene D10	104.2		71.5		50.1		88.1		93.2	
Benz(a)Anthracene-D12	107.3		81.3		54.1		109.2		110.9	
Chrysene D12	100.7		66.1		45.5		85.0		90.4	
Benzo(b)Fluoranthene-D12	100.2		79.0		102.1		101.4		97.0	
Benzo(k)Fluoranthene-D12	87.0		65.8		79.6		85.8		84.7	
Benzo(a)Pyrene D12	82.0		88.3		97.5	R	120.3		108.6	
Perylene D12	83.6		76.6		87.6		106.0		90.9	
Indeno(1,2,3,cd)Pyrene-D12	94.5		77.7		113.3		119.8		91.4	
Dibenz(a,h)Anthracene-D14	89.2		72.1		110.3		110.6		85.8	
Benzo(g,h,i)Perylene D12	84.2		65.7		94.0		94.9		78.2	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this compound was not spiked in

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2		20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2		20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2		20-22050-SVOC-(36 THRU 40) BLANK#2		Laboratory Control Sample	
ALS Sample ID	L2529311-5		L2529311-6		L2529311-7		L2529311-8		WG3444637-2	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		n/a	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	Stack		Stack		Stack		Stack		QC	
Sampling Date	11-Nov-20		11-Nov-20		12-Nov-20		12-Nov-20		n/a	
Extraction Date	25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**%**	
Naphthalene	290	M,R,B	277	M,R,B	224	M,R,B	172	M,R,B	113.9	M,R,B
2-Methylnaphthalene	39.1		54.1	R	32.5		<12	U	104.3	
1-Methylnaphthalene	22.3	R	25.4		22.0	R	<12	U	123	
Acenaphthylene	<12	U	<12	U	<12	U	<12	U	93.6	
Acenaphthene	<12	U	44.7	R	<12	U	<12	U	90.8	
Fluorene	<12	U	26.5		<12	U	<12	U	83.6	
Phenanthrene	78.5		230		66.1		<12	U	90.4	
Anthracene	<12	U	12.4		<12	U	<12	U	94.1	
Fluoranthene	19.4		64.0	R	27.2		<12	U	85.9	
Pyrene	20.3	R	66.2	R	18.5	R	<12	U	85.6	
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	82.7	
Chrysene/Triphenylene	<12	U	12.1	R	<12	U	<12	U	88.3	
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	82.3	
Benzo(k/j)Fluoranthene	<12	U	<12	U	<12	U	<12	U	82.2	
Benzo(e)Pyrene	<12	U	<12	U	<12	U	<12	U	99.1	
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	77.3	
Perylene	<12	U	<12	U	<12	U	<12	U	82.9	
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	76.9	
Dibenzo(a,h/a,c)Anthracene	<12	U	<12	U	<12	U	<12	U	81.2	
Benzo(g,h,i)Perylene	61.1		47.5	R	19.9	R	<12	U	81.9	
Additional Analytes										
Tetralin	204	M,R,B	278	M,R,B	288	M,B	129	M,R,B		
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U		
Biphenyl	32.0	R	57.4	R	29.6		<12	U		
o-Terphenyl	<12	U	<12	U	<12	U	<12	U		
1-Methylphenanthrene	36.4	R	42.2	R	21.1	R	<12	U		
9-Methylphenanthrene	13.1		67.4	M,R	14.5	R	<12	U		
2-methylanthracene	21.6		66.5	M	21.6	M	<12	U		
9,10-dimethylanthracene	<12	U	21.1	R	<12	U	<12	U		
m-terphenyl	<12	U	25.0	R	<12	U	<12	U		
p-terphenyl	<12	U	<12	U	<12	U	<12	U		
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U		
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U		
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U		
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U		
Picene	<60	U	<60	U	<60	U	<60	U		
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U		
Coronene	<60	U	<60	U	<60	U	<60	U		
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	84.1		80.8		90.4		94.5		NS	
Fluorene D10	91.3		119.3		96.9		75.5		NS	
Terphenyl D14(Surr.)	83		88.9		80.3		84.3		NS	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	72.5		84.8		77.2		82.4		87.7	
2-Methylnaphthalene-D10	64.7		69.8		68.4		68.9		76.5	
Acenaphthylene D8	68.9		85.7		81.0		91.3		85.2	
Phenanthrene D10	78.4		72.8		80.0		89.5		100.4	
Anthracene-D10	66.0		74.4		73.4		85.5		87.9	
Fluoranthene D10	85.5		82.8		89.2		99.0		104.0	
Benz(a)Anthracene-D12	94.8		96.8		104.7		122.7		114.1	
Chrysene D12	79.5		77.1		82.7		98.2		106.7	
Benzo(b)Fluoranthene-D12	95.2		107.2		101.0		105.9		103.0	
Benzo(k)Fluoranthene-D12	81.0		86.7		86.3		88.5		91.9	
Benzo(a)Pyrene D12	91.0		101.0		102.6		118.3		110.9	
Perylene D12	87.0		97.4		98.2		100.8		95.1	
Indeno(1,2,3,cd)Pyrene-D12	99.9		123.9		113.2		108.3		96.2	
Dibenz(a,h)Anthracene-D14	92.5		114.4		104.1		101.9		96.7	
Benzo(g,h,i)Perylene D12	81.5		98.9		88.9		91.9		89.0	

U Indicates that this compound was not detected above the LOD.
M Indicates that a peak has been manually integrated.
B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS Indicates that this compound was not spiked in.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank (Media)**	Sampling Date	n/a
ALS Sample ID	WG3444637-1	Extraction Date	25-Nov-20
Analysis Method	PAH by CARB 429		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3444637

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	201207A07.D
Run Date	12/7/2020 18:59
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS US0179454H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.78	190 M	R
2-Methylnaphthalene	3.40	<12	U
1-Methylnaphthalene	3.52	<12	U
Acenaphthylene	NotFnd	<12	U
Acenaphthene	NotFnd	<12	U
Fluorene	NotFnd	<12	U
Phenanthrene	8.09	<12	U
Anthracene	8.21	<12	U
Fluoranthene	11.56	<12	U
Pyrene	12.22	<12	U
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene	NotFnd	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,h)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	2.66	276	
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.95	<12	U
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	9.68	<12	U
9-Methylphenanthrene	NotFnd	<12	U
2-methylanthracene	NotFnd	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	NotFnd	<12	U
p-terphenyl	NotFnd	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	NotFnd	<60	U

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.77	90.9	50-150
2-Methylnaphthalene-D10	600	3.37	78.8	50-150
Acenaphthylene D8	600	4.56	81.8	50-150
Phenanthrene D10	600	8.03	98.5	50-150
Anthracene-D10	600	8.16	76.9	50-150
Fluoranthene D10	600	11.51	104.2	50-150
Benz(a)Anthracene-D12	600	16.12	107.3	50-150
Chrysene D12	600	16.24	100.7	50-150
Benzo(b)Fluoranthene-D12	600	19.52	100.2	50-150
Benzo(k)Fluoranthene-D12	600	19.60	87.0	50-150
Benzo(a)Pyrene D12	600	20.42	82.0	50-150
Perylene D12	600	20.67	83.6	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.38	94.5	50-150
Dibenz(a,h)Anthracene-D14	600	24.55	89.2	50-150
Benzo(g,h,i)Perylene D12	600	25.43	84.2	50-150

M — Indicates that a peak has been manually integrated.
U — Indicates that this compound was not detected above the MDL.

R — Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-1	Extraction Date	25-Nov-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3444637

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	201207A11.D
Run Date	12/7/2020 21:31
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS US0179454H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.78	207 M	R B
2-Methylnaphthalene	3.40	43.3	
1-Methylnaphthalene	3.51	22.3	
Acenaphthylene	4.58	<12	U
Acenaphthene	4.88	<12	U
Fluorene	5.83	12.0	
Phenanthrene	8.09	76.9	
Anthracene	8.21	<12	U
Fluoranthene	11.56	26.1	
Pyrene	12.22	32.2	R
Benzo(a)Anthracene	16.19	<12	U
Chrysene	16.31	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	24.48	13.0	R
Dibenzo(a,h)Anthracene	24.70	<12	U
Benzo(g,h,i)Perylene	25.55	96.3	
Additional Analytes			
Tetralin	2.71	188 M	R B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.95	24.2	R
o-Terphenyl	9.39	<12	U
1-Methylphenanthrene	9.68	51.6	R
9-Methylphenanthrene	9.80	<12	U
2-methylanthracene	9.86	22.0	R
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.60	<12	U
p-terphenyl	13.10	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	30.15	69.9	

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.48	92.4	
Fluorene D10	600	5.78	102.5	
Terphenyl D14(Surr.)	600	13.02	83.7	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.77	66.4	50-150
2-Methylnaphthalene-D10	600	3.36	56.4	50-150
Acenaphthylene D8	600	4.56	70.1	50-150
Phenanthrene D10	600	8.03	66.3	50-150
Anthracene-D10	600	8.16	65.0	50-150
Fluoranthene D10	600	11.50	71.5	50-150
Benz(a)Anthracene-D12	600	16.12	81.3	50-150
Chrysene D12	600	16.23	66.1	50-150
Benzo(b)Fluoranthene-D12	600	19.52	79.0	50-150
Benzo(k)Fluoranthene-D12	600	19.60	65.8	50-150
Benzo(a)Pyrene D12	600	20.42	88.3	50-150
Perylene D12	600	20.67	76.6	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.38	77.7	50-150
Dibenz(a,h)Anthracene-D14	600	24.55	72.1	50-150
Benzo(g,h,i)Perylene D12	600	25.42	65.7	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-2	Extraction Date	25-Nov-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3444637

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	201207A12.D
Run Date	12/7/2020 22:09
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS US0179454H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.78	524 M	R B
2-Methylnaphthalene	3.40	85.7	R
1-Methylnaphthalene	3.51	42.5	
Acenaphthylene	4.57	<12	U
Acenaphthene	4.88	87.1	R
Fluorene	5.83	48.7	R
Phenanthrene	8.09	516	
Anthracene	8.21	<12	U
Fluoranthene	11.56	111	
Pyrene	12.22	83.2	R
Benzo(a)Anthracene	16.20	<12	U
Chrysene	16.31	21.9	
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,h)Anthracene	24.71	<12	U
Benzo(g,h,i)Perylene	25.55	24.4	R
Additional Analytes			
Tetralin	2.71	355 M	R B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.95	559	
o-Terphenyl	9.39	56.5 M	
1-Methylphenanthrene	9.68	43.6 M	R
9-Methylphenanthrene	9.82	107 M	R
2-methylanthracene	9.85	117 M	
9,10-dimethylanthracene	12.48	26.7 M	R
m-terphenyl	12.60	33.8 M	R
p-terphenyl	13.10	16.5 M	R
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	30.14	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.48	88.3
Fluorene D10	600	5.78	110.2
Terphenyl D14(Surr.)	600	13.02	83.8

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.77	72.5		50-150
2-Methylnaphthalene-D10	600	3.36	69.0		50-150
Acenaphthylene D8	600	4.56	79.5		50-150
Phenanthrene D10	600	8.03	44.2		50-150
Anthracene-D10	600	8.16	52.8		50-150
Fluoranthene D10	600	11.50	50.1		50-150
Benz(a)Anthracene-D12	600	16.12	54.1		50-150
Chrysene D12	600	16.23	45.5		50-150
Benzo(b)Fluoranthene-D12	600	19.52	102.1		50-150
Benzo(k)Fluoranthene-D12	600	19.60	79.6		50-150
Benzo(a)Pyrene D12	600	20.42	97.5	R	50-150
Perylene D12	600	20.67	87.6		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.38	113.3		50-150
Dibenz(a,h)Anthracene-D14	600	24.55	110.3		50-150
Benzo(g,h,i)Perylene D12	600	25.42	94.0		50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-3	Extraction Date	25-Nov-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3444637

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	201207A13.D
Run Date	12/7/2020 22:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS US0179454H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.78	200 M	R B
2-Methylnaphthalene	3.40	29.7	
1-Methylnaphthalene	3.51	21.8	
Acenaphthylene	4.58	<12	U
Acenaphthene	4.88	<12	U
Fluorene	5.83	<12	U
Phenanthrene	8.08	59.5	
Anthracene	8.21	<12	U
Fluoranthene	11.56	13.9	
Pyrene	12.21	12.8	R
Benzo(a)Anthracene	16.23	<12	U
Chrysene	16.29	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	24.38	<12	U
Dibenzo(a,h)Anthracene	24.70	<12	U
Benzo(g,h,i)Perylene	25.54	<12	U
Additional Analytes			
Tetralin	2.66	496	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.95	24.1	R
o-Terphenyl	9.39	<12	U
1-Methylphenanthrene	9.68	25.5	R
9-Methylphenanthrene	9.81	13.3	R
2-methylanthracene	9.86	21.1 M	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.60	<12	U
p-terphenyl	13.10	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	30.15	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.47	94.7	
Fluorene D10	600	5.78	100.9	
Terphenyl D14(Surr.)	600	13.02	81.3	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.77	75.2	50-150
2-Methylnaphthalene-D10	600	3.36	62.1	50-150
Acenaphthylene D8	600	4.56	87.3	50-150
Phenanthrene D10	600	8.03	76.2	50-150
Anthracene-D10	600	8.16	81.4	50-150
Fluoranthene D10	600	11.50	88.1	50-150
Benz(a)Anthracene-D12	600	16.12	109.2	50-150
Chrysene D12	600	16.23	85.0	50-150
Benzo(b)Fluoranthene-D12	600	19.51	101.4	50-150
Benzo(k)Fluoranthene-D12	600	19.60	85.8	50-150
Benzo(a)Pyrene D12	600	20.41	120.3	50-150
Perylene D12	600	20.66	106.0	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.38	119.8	50-150
Dibenz(a,h)Anthracene-D14	600	24.54	110.6	50-150
Benzo(g,h,i)Perylene D12	600	25.42	94.9	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-4	Extraction Date	25-Nov-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3444637

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	201207A09.D
Run Date	12/7/2020 20:15
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS US0179454H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.78	164 M	R B
2-Methylnaphthalene	3.40	<12	U
1-Methylnaphthalene	3.52	<12	U
Acenaphthylene	4.57	<12	U
Acenaphthene	NotFnd	<12	U
Fluorene	5.82	<12	U
Phenanthrene	8.09	<12	U
Anthracene	8.20	<12	U
Fluoranthene	11.56	<12	U
Pyrene	12.21	<12	U
Benzo(a)Anthracene	16.23	<12	U
Chrysene	NotFnd	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,h)Anthracene	24.71	<12	U
Benzo(g,h,i)Perylene	25.54	<12	U
Additional Analytes			
Tetralin	2.71	181 M	R B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.93	<12	U
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	9.68	<12	U
9-Methylphenanthrene	NotFnd	<12	U
2-methylanthracene	NotFnd	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	NotFnd	<12	U
p-terphenyl	NotFnd	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**	**Limits**
1-Methylnaphthalene-D10	600	3.48	89.4	
Fluorene D10	600	5.78	77.9	
Terphenyl D14(Surr.)	600	13.02	86.6	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.77	79.9	50-150
2-Methylnaphthalene-D10	600	3.37	66.4	50-150
Acenaphthylene D8	600	4.56	81.5	50-150
Phenanthrene D10	600	8.03	88.0	50-150
Anthracene-D10	600	8.16	81.8	50-150
Fluoranthene D10	600	11.50	93.2	50-150
Benz(a)Anthracene-D12	600	16.12	110.9	50-150
Chrysene D12	600	16.23	90.4	50-150
Benzo(b)Fluoranthene-D12	600	19.52	97.0	50-150
Benzo(k)Fluoranthene-D12	600	19.60	84.7	50-150
Benzo(a)Pyrene D12	600	20.42	108.6	50-150
Perylene D12	600	20.66	90.9	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.38	91.4	50-150
Dibenz(a,h)Anthracene-D14	600	24.55	85.8	50-150
Benzo(g,h,i)Perylene D12	600	25.43	78.2	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-5	Extraction Date	25-Nov-20
Analysis Method	PAH by CARB 429		
Analysis Type	Blank		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3444637

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	201207A14.D
Run Date	12/7/2020 23:25
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS US0179454H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.78	290 M	R B
2-Methylnaphthalene	3.40	39.1	
1-Methylnaphthalene	3.51	22.3	R
Acenaphthylene	4.57	<12	U
Acenaphthene	4.88	<12	U
Fluorene	5.83	<12	U
Phenanthrene	8.09	78.5	
Anthracene	8.20	<12	U
Fluoranthene	11.56	19.4	
Pyrene	12.21	20.3	R
Benzo(a)Anthracene	16.23	<12	U
Chrysene	16.31	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	24.48	<12	U
Dibenzo(a,h)Anthracene	24.70	<12	U
Benzo(g,h,i)Perylene	25.55	61.1	
Additional Analytes			
Tetralin	2.71	204 M	R B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.94	32.0	R
o-Terphenyl	9.38	<12	U
1-Methylphenanthrene	9.68	36.4	R
9-Methylphenanthrene	9.80	13.1	
2-methylanthracene	9.86	21.6	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.60	<12	U
p-terphenyl	13.04	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	30.14	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.48	84.1	
Fluorene D10	600	5.78	91.3	
Terphenyl D14(Surr.)	600	13.02	83	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.77	72.5	50-150
2-Methylnaphthalene-D10	600	3.36	64.7	50-150
Acenaphthylene D8	600	4.56	68.9	50-150
Phenanthrene D10	600	8.03	78.4	50-150
Anthracene-D10	600	8.16	66.0	50-150
Fluoranthene D10	600	11.50	85.5	50-150
Benz(a)Anthracene-D12	600	16.12	94.8	50-150
Chrysene D12	600	16.23	79.5	50-150
Benzo(b)Fluoranthene-D12	600	19.51	95.2	50-150
Benzo(k)Fluoranthene-D12	600	19.60	81.0	50-150
Benzo(a)Pyrene D12	600	20.41	91.0	50-150
Perylene D12	600	20.66	87.0	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.38	99.9	50-150
Dibenz(a,h)Anthracene-D14	600	24.54	92.5	50-150
Benzo(g,h,i)Perylene D12	600	25.42	81.5	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	11-Nov-20
ALS Sample ID	L2529311-6	Extraction Date	25-Nov-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3444637

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	201207A15.D
Run Date	12/8/2020 0:03
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS US0179454H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.78	277 M	R B
2-Methylnaphthalene	3.40	54.1	R
1-Methylnaphthalene	3.51	25.4	
Acenaphthylene	4.57	<12	U
Acenaphthene	4.88	44.7	R
Fluorene	5.83	26.5	
Phenanthrene	8.09	230	
Anthracene	8.21	12.4	
Fluoranthene	11.56	64.0	R
Pyrene	12.21	66.2	R
Benzo(a)Anthracene	16.21	<12	U
Chrysene	16.31	12.1	R
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	24.48	<12	U
Dibenzo(a,h)Anthracene	24.70	<12	U
Benzo(g,h,i)Perylene	25.55	47.5	R
Additional Analytes			
Tetralin	2.71	278 M	R B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.95	57.4	R
o-Terphenyl	9.39	<12	U
1-Methylphenanthrene	9.68	42.2	R
9-Methylphenanthrene	9.82	67.4 M	R
2-methylanthracene	9.85	66.5 M	
9,10-dimethylanthracene	12.46	21.1	R
m-terphenyl	12.60	25.0	R
p-terphenyl	13.10	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	30.14	<60	U

Field Sampling Standards	***ng spiked***		**% Rec**	
1-Methylnaphthalene-D10	600	3.48	80.8	
Fluorene D10	600	5.78	119.3	
Terphenyl D14(Surr.)	600	13.02	88.9	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.77	84.8	50-150
2-Methylnaphthalene-D10	600	3.36	69.8	50-150
Acenaphthylene D8	600	4.56	85.7	50-150
Phenanthrene D10	600	8.03	72.8	50-150
Anthracene-D10	600	8.16	74.4	50-150
Fluoranthene D10	600	11.50	82.8	50-150
Benz(a)Anthracene-D12	600	16.12	96.8	50-150
Chrysene D12	600	16.23	77.1	50-150
Benzo(b)Fluoranthene-D12	600	19.52	107.2	50-150
Benzo(k)Fluoranthene-D12	600	19.60	86.7	50-150
Benzo(a)Pyrene D12	600	20.42	101.0	50-150
Perylene D12	600	20.66	97.4	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.38	123.9	50-150
Dibenz(a,h)Anthracene-D14	600	24.55	114.4	50-150
Benzo(g,h,i)Perylene D12	600	25.42	98.9	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-7	Extraction Date	25-Nov-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3444637

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	201207A16.D
Run Date	12/8/2020 0:41
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS US0179454H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.78	224 M	R B
2-Methylnaphthalene	3.40	32.5	
1-Methylnaphthalene	3.51	22.0	R
Acenaphthylene	4.57	<12	U
Acenaphthene	4.88	<12	U
Fluorene	5.83	<12	U
Phenanthrene	8.09	66.1	
Anthracene	8.20	<12	U
Fluoranthene	11.56	27.2	
Pyrene	12.21	18.5	R
Benzo(a)Anthracene	16.19	<12	U
Chrysene	16.31	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	24.46	<12	U
Dibenzo(a,h)Anthracene	24.71	<12	U
Benzo(g,h,i)Perylene	25.54	19.9	R
Additional Analytes			
Tetralin	2.66	288 M	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.93	29.6	
o-Terphenyl	9.39	<12	U
1-Methylphenanthrene	9.68	21.1	R
9-Methylphenanthrene	9.81	14.5	R
2-methylanthracene	9.86	21.6 M	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.60	<12	U
p-terphenyl	13.10	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	30.14	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.48	90.4
Fluorene D10	600	5.78	96.9
Terphenyl D14(Surr.)	600	13.02	80.3

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.77	77.2	50-150
2-Methylnaphthalene-D10	600	3.36	68.4	50-150
Acenaphthylene D8	600	4.56	81.0	50-150
Phenanthrene D10	600	8.03	80.0	50-150
Anthracene-D10	600	8.15	73.4	50-150
Fluoranthene D10	600	11.50	89.2	50-150
Benz(a)Anthracene-D12	600	16.12	104.7	50-150
Chrysene D12	600	16.23	82.7	50-150
Benzo(b)Fluoranthene-D12	600	19.52	101.0	50-150
Benzo(k)Fluoranthene-D12	600	19.60	86.3	50-150
Benzo(a)Pyrene D12	600	20.41	102.6	50-150
Perylene D12	600	20.66	98.2	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.38	113.2	50-150
Dibenz(a,h)Anthracene-D14	600	24.55	104.1	50-150
Benzo(g,h,i)Perylene D12	600	25.42	88.9	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	12-Nov-20
ALS Sample ID	L2529311-8	Extraction Date	25-Nov-20
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3444637

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**
Filename	201207A10.D
Run Date	12/7/2020 20:53
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP5MS US0179454H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.78	172	M R B
2-Methylnaphthalene	3.40	<12	U
1-Methylnaphthalene	3.52	<12	U
Acenaphthylene	4.58	<12	U
Acenaphthene	NotFnd	<12	U
Fluorene	NotFnd	<12	U
Phenanthrene	8.09	<12	U
Anthracene	8.20	<12	U
Fluoranthene	11.56	<12	U
Pyrene	12.21	<12	U
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene	NotFnd	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,h)Anthracene	24.71	<12	U
Benzo(g,h,i)Perylene	25.53	<12	U
Additional Analytes			
Tetralin	2.71	129	M R B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.95	<12	U
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	9.68	<12	U
9-Methylphenanthrene	NotFnd	<12	U
2-methylanthracene	NotFnd	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.60	<12	U
p-terphenyl	13.10	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.48	94.5
Fluorene D10	600	5.78	75.5
Terphenyl D14(Surr.)	600	13.02	84.3

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.77	82.4	50-150
2-Methylnaphthalene-D10	600	3.37	68.9	50-150
Acenaphthylene D8	600	4.56	91.3	50-150
Phenanthrene D10	600	8.03	89.5	50-150
Anthracene-D10	600	8.16	85.5	50-150
Fluoranthene D10	600	11.50	99.0	50-150
Benz(a)Anthracene-D12	600	16.12	122.7	50-150
Chrysene D12	600	16.23	98.2	50-150
Benzo(b)Fluoranthene-D12	600	19.52	105.9	50-150
Benzo(k)Fluoranthene-D12	600	19.60	88.5	50-150
Benzo(a)Pyrene D12	600	20.42	118.3	50-150
Perylene D12	600	20.66	100.8	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.38	108.3	50-150
Dibenz(a,h)Anthracene-D14	600	24.55	101.9	50-150
Benzo(g,h,i)Perylene D12	600	25.42	91.9	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**		Sampling Date	n/a
ALS Sample ID	WG3444637-2		Extraction Date	25-Nov-20
Analysis Method	PAH by CARB 429			
Analysis Type	LCS			
Sample Matrix	QC			
Sample Size	1	n/a		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3444637

Approved:
Andrew Reid
--e-signature--
08-Dec-2020

Run Information	**Run 1**	
Filename	201207A05.D	
Run Date	12/7/2020 17:43	
Final Volume	1	mL
Dilution Factor	1	
Analysis Units	%	
Instrument	MSD-5	
Column	HP5MS US0179454H	

Target Analytes	**ng spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	2.79	113.9 M	R	50-150
2-Methylnaphthalene	600	3.40	104.3		50-150
1-Methylnaphthalene	600	3.52	123		50-150
Acenaphthylene	600	4.58	93.6		50-150
Acenaphthene	600	4.88	90.8		50-150
Fluorene	600	5.83	83.6		50-150
Phenanthrene	600	8.09	90.4		50-150
Anthracene	600	8.21	94.1		50-150
Fluoranthene	600	11.56	85.9		50-150
Pyrene	600	12.22	85.6		50-150
Benzo(a)Anthracene	600	16.19	82.7		50-150
Chrysene	600	16.32	88.3		50-150
Benzo(b)Fluoranthene	600	19.58	82.3		50-150
Benzo(k)Fluoranthene	600	19.66	82.2		50-150
Benzo(e)Pyrene	600	20.34	99.1		50-150
Benzo(a)Pyrene	600	20.48	77.3		50-150
Perylene	600	20.73	82.9		50-150
Indeno(1,2,3-cd)Pyrene	600	24.48	76.9		50-150
Dibenzo(a,h)Anthracene	600	24.68	81.2		50-150
Benzo(g,h,i)Perylene	600	25.55	81.9		50-150
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.77	87.7		30-150
2-Methylnaphthalene-D10	600	3.37	76.5		30-150
Acenaphthylene D8	600	4.56	85.2		30-150
Phenanthrene D10	600	8.03	100.4		50-150
Anthracene-D10	600	8.16	87.9		50-150
Fluoranthene D10	600	11.51	104.0		50-150
Benz(a)Anthracene-D12	600	16.12	114.1		50-150
Chrysene D12	600	16.24	106.7		50-150
Benzo(b)Fluoranthene-D12	600	19.52	103.0		50-150
Benzo(k)Fluoranthene-D12	600	19.60	91.9		50-150
Benzo(a)Pyrene D12	600	20.42	110.9		30-150
Perylene D12	600	20.67	95.1		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.38	96.2		50-150
Dibenz(a,h)Anthracene-D14	600	24.55	96.7		50-150
Benzo(g,h,i)Perylene D12	600	25.43	89.0		50-150

M Indicates that a peak has been manually integrated.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

APPENDIX 16

Acid Gas Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22050
Date:	Nov 9, 2020
Test No.:	1
Test Location:	UNIT 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

Impinger #1 0.1 N H_2SO4	
Empty Wt:	572.8
Initial Wt:	678.1
Final Wt:	783.5
Gain:	105.4
Colour:	clear

1

Impinger #4 Silica Gel	
Initial Wt:	947.0
Final Wt:	961.6
Gain:	14.6

4

Impinger #2 0.1 N H_2SO4	
Empty Wt:	543.0
Initial Wt:	652.8
Final Wt:	693.6
Gain:	40.8
Colour:	clear

2

Box ID: 1

Impinger #3 EMPTY	
Empty Wt:	620.7
Final Wt:	625.7
Gain:	5.0
Colour:	clear

3

CWTR = 1+2+3:	151.2
WCBDA= 4:	14.6

✓

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.1
With Imp. 1,2,3 Soln:	639.4
After Rinse:	744.5
Total TS3:	463.4

SAMPLE ID: 20-22050-M26A- 1

Train Loaded By: DT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 22050
Date: Nov 9, 20
Test No.: 2
Test Location: UNIT 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	670.3
Initial Wt:	772.1
Final Wt:	881.0
Gain:	108.9
Colour:	clear

1

Impinger #2 0.1 N H_2SO4	
Empty Wt:	652.3
Initial Wt:	754.7
Final Wt:	802.2
Gain:	47.5
Colour:	clear

2

Impinger #3 EMPTY	
Empty Wt:	635.6
Final Wt:	642.6
Gain:	7.0
Colour:	clear

3

CONTAINER TS3 WEIGHTS	
Empty Wt:	280.8
With Imp. 1,2,3 Soln:	650.0
After Rinse:	744.6
Total TS3:	463.8

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	942.6
Final Wt:	957.5
Gain:	14.9

4

Box ID: 15

CWTR = 1+2+3:	163.4

WCBDA= 4:	14.9

SAMPLE ID: 20-22050-M26A- 2

Train Loaded By: BT
Train Recovered By: BT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 22050
Date: NOV 9, 20
Test No.: 3
Test Location: UNIT 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	572.8
	Initial Wt:	677.4
	Final Wt:	831.4
1	Gain:	154.0
	Colour:	clear

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	~~57~~ 543.0
	Initial Wt:	645.2
	Final Wt:	680.2
2	Gain:	35.0
	Colour:	clear

	Impinger #3 EMPTY	
	Empty Wt:	620.7
	Final Wt:	627.0
3	Gain:	6.3
	Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	280.0
With Imp. 1,2,3 Soln:	677.1
After Rinse:	790.7
Total TS3:	510.7

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	919.0
	Final Wt:	931.4
4	Gain:	12.4

Box ID:

CWTR = 1+2+3:	195.3 ✓
WCBDA= 4:	12.4

SAMPLE ID: 20-22050-M26A- 3

Train Loaded By: JT
Train Recovered By: JT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 22050
Date: Nov 10, 20
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:	572.8
Initial Wt:	675.1
Final Wt:	800.0
1 Gain:	124.9
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	543.0
Initial Wt:	646.0
Final Wt:	690.7
2 Gain:	44.7
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	620.7
Final Wt:	627.9
3 Gain:	7.2
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.4
With Imp. 1,2,3 Soln:	659.2
After Rinse:	761.8
Total TS3:	480.4

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	931.4
Final Wt:	946.0
4 Gain:	14.6

Box ID:

CWTR = 1+2+3: 176.8 ✓

WCBDA= 4: 14.6

SAMPLE ID: 20-22050-M26A- 4

Train Loaded By: DT
Train Recovered By: DT

ORTECH

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22050
Date:	Nov 10, 20
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:	670.3
Initial Wt:	772.5
Final Wt:	914.7
Gain:	142.2
Colour:	clear

1

Impinger #2 0.1 N H_2SO4	
Empty Wt:	652.3
Initial Wt:	761.5
Final Wt:	791.7
Gain:	30.2
Colour:	clear

2

Impinger #3 EMPTY	
Empty Wt:	635.6
Final Wt:	641.6
Gain:	6.0
Colour:	clear

3

CONTAINER TS3 WEIGHTS	
Empty Wt:	280.8
With Imp. 1,2,3 Soln:	670.6
After Rinse:	791.2
Total TS3:	510.4

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	898.8
Final Wt:	910.5
Gain:	11.7

4

Box ID:

CWTR = 1+2+3:	178.4 ✓
WCBDA= 4:	11.7

SAMPLE ID: 20-22050-M26A- 5

Train Loaded By: SP

Train Recovered By: ST

ORTECH

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22050

Date: N/a/12, 20

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:	572.6
	Initial Wt:	675.5
	Final Wt:	804.7
1	Gain:	129.2
	Colour:	clear

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	543.0
	Initial Wt:	644.4
	Final Wt:	668.7
2	Gain:	24.3
	Colour:	clear

	Impinger #3 EMPTY	
	Empty Wt:	619.7
	Final Wt:	623.6
3	Gain:	3.9
	Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	280.7
With Imp. 1,2,3 Soln:	635.7
After Rinse:	779.0
Total TS3:	498.3

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	946.0
	Final Wt:	957.8
4	Gain:	11.8

Box ID:

CWTR = 1+2+3:	157.4

WCBDA= 4:	11.8

SAMPLE ID: 20-22050-M26A-	6

Train Loaded By: ST

Train Recovered By: ST

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22050
Date:	NOV 10, 20
Test No.:	BLANK 1
Test Location:	

Filter is used but not recovered as sample

Impingers 1, 2, 3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
1	Gain:	
	Colour:	

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
2	Gain:	
	Colour:	

	Impinger #3 EMPTY	
	Empty Wt:	
	Final Wt:	
3	Gain:	
	Colour:	

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.5
With Imp. 1,2,3 Soln:	488.1
After Rinse:	582.1
Total TS3:	300.6

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	
	Final Wt:	
4	Gain:	

Box ID:

CWTR = 1+2+3:	
WCBDA= 4:	

SAMPLE ID: 20-22050-M26A- BLANK 1

Train Loaded By: DT

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22050
Date:	Nov 10/20
Test No.:	BLANK 2
Test Location:	

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.5
With Imp. 1,2,3 Soln:	485.6
After Rinse:	587.7
Total TS3:	306.2

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

Box ID:

CWTR = 1+2+3:	
WCBDA= 4:	

SAMPLE ID: 20-22050-M26A- BLANK 2

Train Loaded By: DT

Train Recovered By: DT

APPENDIX 17

VOST Analytical Report
(4 pages)

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	ORT100	**Client Name:**	ORTECH Environmental
ALS Project ID:	Lynne Wrona	**Client Address:**	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2529317		
Date of Report	27-Nov-20		
Date of Sample Receipt	13-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260C**

Ketone data by VOST analyses are estimated values only

Certified by:

Ron McLeod, Ph.D.
Technical Director

ALS Environmental

Sample Analysis Summary Report

Sample Name	20-22050-VOST (1A,1B) TEST#1 APC OUTLET #1		20-22050-VOST (2A,2B) TEST#2 APC OUTLET #1		20-22050-VOST (3A,3B) TEST#3 APC OUTLET #1		20-22050-VOST (4A,4B) TEST#4 APC OUTLET #1		20-22050-VOST (5A,5B) FIELD BLANK APC OUTLET #1		20-22050-VOST (7A,7B) TEST#1 APC OUTLET #2	
ALS Sample ID	L2529317-1		L2529317-2		L2529317-3		L2529317-4		L2529317-5		L2529317-6	
Sample units	sample		sample		sample		sample		sample		sample	
Matrix	VOST		VOST		VOST		VOST		VOST		VOST	
Sampling Date	11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20	
Extraction Date	23-Nov-20		23-Nov-20		23-Nov-20		23-Nov-20		23-Nov-20		24-Nov-20	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	0.025		0.024		<0.02	U	0.029		<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U	<0.09	U	<0.09	U	<0.09	U	<0.09	U
Trichlorofluoromethane	0.068		0.065		0.073		0.079		<0.02	U	0.053	
1,1-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Acetone	1.25		1.20		1.34		1.46		0.146		1.36	M
Methylene Chloride	1.12		1.08		1.21		1.31		0.113		0.704	
trans,1,2-Dichloroethene	0.027		0.026		0.029		0.031		<0.01	U	0.016	
2-Butanone	1.17		1.12		1.26		1.36		<0.01	U	1.15	
Chloroform	0.066		0.063		0.071		0.077		<0.01	U	0.094	
1,1,1-Trichloroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Carbon Tetrachloride	0.162		0.155		0.174		0.189		<0.01	U	0.031	
Benzene	0.3		0.287		0.322		0.35		<0.05	U	0.114	
1,2-Dichloroethane	0.049		0.047		0.053		0.057		<0.01	U	0.017	
Trichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Bromodichloromethane	0.05		0.048		0.054		0.058		<0.01	U	0.017	
Toluene	1.63		1.56		1.75		1.90		<0.05	U	0.804	
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Tetrachloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	0.01	
Chlorodibromomethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Ethylbenzene	0.421		0.404		0.453		0.492		<0.01	U	0.196	
M&P-Xylene	1.39		1.34		1.50		1.63		<0.03	U	2.49	
O-Xylene	0.621		0.596		0.668		0.725		<0.01	U	0.812	
Styrene	0.229		0.22		0.247		0.268		<0.02	U	0.112	
Bromoform	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Isopropylbenzene	0.061		0.059		0.066		0.072		<0.02	U	0.033	
1,3,5-Trimethylbenzene	0.436		0.418		0.469		0.509		<0.02	U	0.243	
1,3-Butadiene	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Field Standard	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	64		61		65		64		83		119	
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	110		106		113		110		102		94	
d8-Toluene(SURR)	74		71		75		74		102		118	
4-Bromofluorobenzene(SURR)	107		102		109		107		116		128	
Internal Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Bromochloromethane	82		75		90		66		77		82	
1,4-Difluorobenzene	101		91		110		81		114		144	
d5-Chlorobenzene	108		97		118		86		100		89	

U Indicates that this compound was not detected above the RL.
M Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Summary Report

Sample Name	20-22050-VOST (8A,8B) TEST#2 APC OUTLET #2		20-22050-VOST (9A,9B) TEST#3 APC OUTLET #2		20-22050-VOST (10A,10B) TEST#4 APC OUTLET #2		20-22050-VOST (11A,11B) FIELD BLANK APC OUTLET #2		20-22050-VOST (12A,12B) TRIP BLANK	
ALS Sample ID	L2529317-7		L2529317-8		L2529317-9		L2529317-10		L2529317-11	
Sample units	sample		sample		sample		sample		sample	
Matrix	VOST		VOST		VOST		VOST		VOST	
Sampling Date	11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20	
Extraction Date	24-Nov-20		24-Nov-20		24-Nov-20		24-Nov-20		23-Nov-20	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U	<0.09	U	<0.09	U	<0.09	U
Trichlorofluoromethane	0.065		0.057		0.049		<0.02	U	<0.02	U
1,1-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Acetone	1.67	M	1.47	M	1.27	M	0.105		0.128	
Methylene Chloride	0.867		0.76		0.661		<0.1	U	<0.1	U
trans,1,2-Dichloroethene	0.02		0.017		0.015		<0.01	U	<0.01	U
2-Butanone	1.41		1.24		1.08		<0.01	U	<0.01	U
Chloroform	0.116		0.102		0.089		<0.01	U	<0.01	U
1,1,1-Trichloroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Carbon Tetrachloride	0.038		0.034		0.029		<0.01	U	<0.01	U
Benzene	0.141		0.123		0.107		<0.05	U	<0.05	U
1,2-Dichloroethane	0.021		0.018		0.016		<0.01	U	<0.01	U
Trichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Bromodichloromethane	0.022		0.019		0.016		<0.01	U	<0.01	U
Toluene	0.991		0.868		0.755		<0.05	U	<0.05	U
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Tetrachloroethene	0.013		0.011		<0.01	U	<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Ethylbenzene	0.241		0.212		0.184		<0.01	U	<0.01	U
M&P-Xylene	3.07		2.69		2.34		<0.03	U	<0.03	U
O-Xylene	1.00		0.877		0.763		<0.01	U	<0.01	U
Styrene	0.138		0.121		0.105		<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Isopropylbenzene	0.041		0.036		0.031		<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	0.299		0.262		0.228		<0.02	U	<0.02	U
1,3-Butadiene	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Field Standard	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	98		97		103		69		80	
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	77		76		81		84		98	
d8-Toluene(SURR)	97		96		102		85		99	
4-Bromofluorobenzene(SURR)	106		104		111		96		112	
Internal Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Bromochloromethane	97		76		87		82		79	
1,4-Difluorobenzene	136		133		62		61		118	
d5-Chlorobenzene	84		82		95		54		103	

U Indicates that this compound was not detected above the RL.
M Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank (Nov 23)		Method Blank (Nov 24)		Laboratory Control Sample (Nov 23)	Laboratory Control Sample (Nov 24)
ALS Sample ID	WG3449722-1		WG3449722-3		WG3449722-2	WG3449722-4
Sample units	sample		sample		n/a	n/a
Matrix	QC		QC		QC	QC
Sampling Date	n/a		n/a		n/a	n/a
Extraction Date	23-Nov-20		24-Nov-20		23-Nov-20	24-Nov-20
Target Analytes	**ug/sample**		**ug/sample**		**% Rec**	**% Rec**
Dichlorodifluoromethane	<0.02	U	<0.02	U	97.4	91.6
Vinyl Chloride	<0.02	U	<0.02	U	104.5	99.2
Bromomethane	<0.09	U	<0.09	U	97.1	95.7
Trichlorofluoromethane	<0.02	U	<0.02	U	120.8	105.9
1,1-Dichloroethene	<0.01	U	<0.01	U	99.7	90.2
Acetone	<0.1	U	<0.1	U	118.4	118.5
Methylene Chloride	<0.1	U	<0.1	U	110.4	108.8
trans,1,2-Dichloroethene	<0.01	U	<0.01	U	89.2	105.1
2-Butanone	<0.01	U	<0.01	U	82.2	99.6
Chloroform	<0.01	U	<0.01	U	91.6	100.1
1,1,1-Trichloroethane	<0.01	U	<0.01	U	86.3	99.2
Carbon Tetrachloride	<0.01	U	<0.01	U	91.1	110.1
Benzene	<0.05	U	<0.05	U	112.8	100.7
1,2-Dichloroethane	<0.01	U	<0.01	U	80.9	80.9
Trichloroethene	<0.01	U	<0.01	U	116.9	111.3
1,2-Dichloropropane	<0.01	U	<0.01	U	109	114.8
Bromodichloromethane	<0.01	U	<0.01	U	98.2	105.6
Toluene	<0.05	U	<0.05	U	84.9	103.7
1,1,2-Trichloroethane	<0.02	U	<0.02	U	88	108.9
Tetrachloroethene	<0.01	U	<0.01	U	81.4	111.4
Chlorodibromomethane	<0.01	U	<0.01	U	82.6	111.9
Ethylene Dibromide	<0.02	U	<0.02	U	90.4	113.6
Ethylbenzene	<0.01	U	<0.01	U	102	96.1
M&P-Xylene	<0.03	U	<0.03	U	108.3	90.4
O-Xylene	<0.01	U	<0.01	U	105.4	89.1
Styrene	<0.02	U	<0.02	U	106.3	92.8
Bromoform	<0.01	U	<0.01	U	103.6	105.8
Isopropylbenzene	<0.02	U	<0.02	U	100.7	86.5
1,3,5-Trimethylbenzene	<0.02	U	<0.02	U	107.9	97.1
1,3-Butadiene	<0.02	U	<0.02	U		
Trichlorotrifluoroethane	<0.02	U	<0.02	U		
Field Standard	**% Rec**		**% Rec**		**% Rec**	**% Rec**
d10-Ethylbenzene(SPK)	87		72		80	88
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**	**% Rec**
d4-1,2-Dichloroethane(SURR)	104		86		100	98
d8-Toluene(SURR)	101		84		65	106
4-Bromofluorobenzene(SURR)	125		104		133	96
Internal Standards	**% Rec**		**% Rec**		**% Rec**	**% Rec**
Bromochloromethane	92		80		94	106
1,4-Difluorobenzene	141		119		99	151
d5-Chlorobenzene	140		114		126	140

U Indicates that this compound was not detected above the RL.

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: 22050
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22050 - J2729

Test Number	Test Location	ORTECH Sample ID 20-22050-	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		ALD-1	110.2	153.0	154.9	176.0	184.5
2	APC Outlet #1	ALD-2		ALD-2	110.0	153.1	155.1	174.8	186.1
3	APC Outlet #1	ALD-3		ALD-3	109.6	155.1	158.1	176.1	184.8
Blank 1	APC Outlet #1	Blank 1		ALD-4	110.0	154.9	154.9	175.5	188.0
1	APC Outlet #2	ALD-5		ALD-5	109.6	155.5	157.0	173.4	183.0
2	APC Outlet #2	ALD-6		ALD-6	110.2	155.1	157.0	172.0	183.0
3	APC Outlet #2	ALD-7		ALD-7	109.7	155.5	159.6	174.0	182.0
Blank 2	APC Outlet #2	Blank 2		ALD-8	109.9	155.5	155.5	176.1	187.5
				~~ALD-9~~	~~110.4~~	~~155.7~~			
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				~~ALD-10~~	~~110.2~~	~~156.1~~			

~~-11 110.1 155.7~~
~~-12 110.0 155.1~~

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: ______________________ Date: ______________

Relinquished to: ______________________ Date: ______________

APPENDIX 19

Aldehydes Analytical Report
(14 pages)

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2529296 Revision 1		Mississauga, ON L5J 2Y4
Date of Report Revision	10-Jan-22		Canada
Date of Sample Receipt	13-Nov-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **Aldehydes as benzyloxime derivatives by SIM GC/MS**
REVISED REPORT: Revised to provide data in the correct units

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		20-22050-ALD-1 TEST#1 APC OUTLET #1 (ALD-1)		20-22050-ALD-2 TEST#2 APC OUTLET #1 (ALD-2)		20-22050-ALD-3 TEST#3 APC OUTLET #1 (ALD-3)		20-22050-ALD-BLANK1 APC OUTLET #1 (ALD-4)		20-22050-ALD-5 TEST#1 APC OUTLET #2 (ALD-5)	
ALS Sample ID	WG3444795-1		L2529296-1		L2529296-2		L2529296-3		L2529296-4		L2529296-5	
Sample Size	1		1		1		1		1		1	
Sample units	Sample		Train		Train		Train		Train		Train	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		Stack	
Sampling Date	n/a		11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20	
Extraction Date	26-Nov-20		26-Nov-20		26-Nov-20		26-Nov-20		26-Nov-20		26-Nov-20	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Formaldehyde	0.69		2.22		1.69		1.85		1.27		2.36	
Acetaldehyde	<0.1	U	2.02		1.63		1.78		1.09		2.12	
Propionaldehyde	<0.1	U	0.91		0.73		0.9		0.91		1.08	
Acrolein	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U

U Indicates that this compound was not detected above the LOD.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	**20-22050-ALD-6 TEST#2 APC OUTLET #2 (ALD-6)**		**20-22050-ALD-7 TEST#3 APC OUTLET #2 (ALD-7)**		**20-22050-ALD-BLANK2 APC OUTLET #2 (ALD-8)**		**Laboratory Control Sample (5ug)**	**Laboratory Control Sample (2.5ug)**
ALS Sample ID	L2529296-6		L2529296-7		L2529296-8		WG3444795-2	WG3444795-4
Sample Size	1		1		1		1	1
Sample units	Train		Train		Train		n/a	n/a
Moisture Content	n/a		n/a		n/a		n/a	n/a
Matrix	Stack		Stack		Stack		QC	QC
Sampling Date	11-Nov-20		11-Nov-20		11-Nov-20		n/a	n/a
Extraction Date	26-Nov-20		26-Nov-20		26-Nov-20		26-Nov-20	26-Nov-20
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**% Rec**	**% Rec**
Formaldehyde	1.22		1.66		0.98		75	102
Acetaldehyde	1.83		2.17		1.44		119	144
Propionaldehyde	0.85		1.11		0.79		75	104
Acrolein	<0.1	U	<0.1	U	<0.1	U	66	25

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3444795-1	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120207.D
Run Date	12/3/2020 9:45
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.51	0.69		
Acetaldehyde (B)	14.71	<0.1	U	
Acetaldehyde (A)	15.05	<0.1	U	
Propionaldehyde (A)	NotFnd	<0.1	U	
Propionaldehyde (B)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.69
Acetaldehyde	<0.1
Propionaldehyde	<0.1
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-ALD-1 TEST#1 APC OUTLET #1 (ALD-1)**	Sampling Date	11-Nov-20
ALS Sample ID	L2529296-1	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120210.D
Run Date	12/3/2020 11:46
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.58	2.22		
Acetaldehyde (B)	14.76	0.91		
Acetaldehyde (A)	15.10	1.11		
Propionaldehyde (A)	18.94	0.42		
Propionaldehyde (B)	19.51	0.49		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	2.22
Acetaldehyde	2.02
Propionaldehyde	0.91
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-ALD-2 TEST#2 APC OUTLET #1 (ALD-2)**	Sampling Date	11-Nov-20
ALS Sample ID	L2529296-2	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120211.D
Run Date	12/3/2020 12:26
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.55	1.69		
Acetaldehyde (B)	14.72	0.69		
Acetaldehyde (A)	15.06	0.94		
Propionaldehyde (A)	18.91	0.32		
Propionaldehyde (B)	19.49	0.41		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	1.69
Acetaldehyde	1.63
Propionaldehyde	0.73
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-ALD-3 TEST#3 APC OUTLET #1 (ALD-3)**	Sampling Date	11-Nov-20
ALS Sample ID	L2529296-3	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120212.D
Run Date	12/3/2020 13:06
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.55	1.85		
Acetaldehyde (B)	14.72	0.74		
Acetaldehyde (A)	15.07	1.04		
Propionaldehyde (A)	18.92	0.34		
Propionaldehyde (B)	19.50	0.56		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	1.85
Acetaldehyde	1.78
Propionaldehyde	0.9
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-ALD-BLANK1 APC OUTLET #1 (ALD-4)**	Sampling Date	11-Nov-20
ALS Sample ID	L2529296-4	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120208.D
Run Date	12/3/2020 10:25
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.58	1.27	M	
Acetaldehyde (B)	14.77	0.47	M	
Acetaldehyde (A)	15.12	0.62	M	
Propionaldehyde (A)	18.95	0.34		
Propionaldehyde (B)	19.52	0.57		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	1.27
Acetaldehyde	1.09
Propionaldehyde	0.91
Acrolein	<0.1

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	**20-22050-ALD-5 TEST#1 APC OUTLET #2 (ALD-5)**	Sampling Date	11-Nov-20
ALS Sample ID	L2529296-5	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120213.D
Run Date	12/3/2020 13:46
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.56	2.36		
Acetaldehyde (B)	14.76	0.91		
Acetaldehyde (A)	15.10	1.21		
Propionaldehyde (A)	18.93	0.44		
Propionaldehyde (B)	19.51	0.64		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	2.36
Acetaldehyde	2.12
Propionaldehyde	1.08
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-ALD-6 TEST#2 APC OUTLET #2 (ALD-6)**	Sampling Date	11-Nov-20
ALS Sample ID	L2529296-6	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120214.D
Run Date	12/3/2020 14:27
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.55	1.22		
Acetaldehyde (B)	14.72	0.76		
Acetaldehyde (A)	15.07	1.07		
Propionaldehyde (A)	18.91	0.35		
Propionaldehyde (B)	19.49	0.5		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	1.22
Acetaldehyde	1.83
Propionaldehyde	0.85
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-ALD-7 TEST#3 APC OUTLET #2 (ALD-7)**	Sampling Date	11-Nov-20
ALS Sample ID	L2529296-7	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120215.D
Run Date	12/3/2020 15:07
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.55	1.66		
Acetaldehyde (B)	14.73	0.93		
Acetaldehyde (A)	15.08	1.24		
Propionaldehyde (A)	18.92	0.46		
Propionaldehyde (B)	19.50	0.65		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	1.66
Acetaldehyde	2.17
Propionaldehyde	1.11
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**20-22050-ALD-BLANK2 APC OUTLET #2 (ALD-8)**	Sampling Date	11-Nov-20
ALS Sample ID	L2529296-8	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120209.D
Run Date	12/3/2020 11:05
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.57	0.98	M	
Acetaldehyde (B)	14.75	0.63		
Acetaldehyde (A)	15.10	0.81		
Propionaldehyde (A)	18.94	0.32		
Propionaldehyde (B)	19.51	0.47		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.98
Acetaldehyde	1.44
Propionaldehyde	0.79
Acrolein	<0.1

M Indicates that a peak has been manually integrated.
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	WG3444795-2	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120204.D
Run Date	12/3/2020 7:45
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	5	9.54	75		
Acetaldehyde (B)	5	14.73	51		
Acetaldehyde (A)	5	15.07	68		
Propionaldehyde (A)	5	18.90	32		
Propionaldehyde (B)	5	19.47	43		
Acrolein (A)	5	19.26	34		
Acrolein (B)	5	20.37	32		
Total Aldehydes					
Formaldehyde			75		70-130
Acetaldehyde			119		70-130
Propionaldehyde			75		70-130
Acrolein			66		70-130

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3444795-4	Extraction Date	26-Nov-20
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
04-Dec-2020

Run Information	**Run 1**
Filename	20120203.D
Run Date	12/3/2020 7:04
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	2.5	9.59	102		
Acetaldehyde (B)	2.5	14.77	63		
Acetaldehyde (A)	2.5	15.11	81 M		
Propionaldehyde (A)	2.5	18.93	43		
Propionaldehyde (B)	2.5	19.50	61		
Acrolein (A)	2.5	19.30	13		
Acrolein (B)	2.5	20.40	12		
Total Aldehydes					
Formaldehyde			102		70-130
Acetaldehyde			144		70-130
Propionaldehyde			104		70-130
Acrolein			25		70-130

M Indicates that a peak has been manually integrated.

ORTECH
a Kontrol Technologies Company

APPENDIX 20

SVOC and VOST Proof Data
(15 pages)

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2514397		Mississauga, ON L5J 2Y4
Date of Report	30-Oct-20		Canada
Date of Sample Receipt	8-Oct-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **CB by LRGC/MS - Isotope dilution**

Certified by: R.A. McLeod

Ron McLeod, Ph.D.
Technical Director

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3433983-1		L2514397-57	
Sample Size	1		1	
Sample units	sample		sample	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	28-Oct-20		28-Oct-20	
Target Analytes	**ng/sample**		**ng/sample**	
1,3-Dichlorobenzene	<10	U	<10	U
1,4-Dichlorobenzene	<10	U	<10	U
1,2-Dichlorobenzene	<10	U	<10	U
1,3,5-Trichlorobenzene	<10	U	<10	U
1,2,4-Trichlorobenzene	<10	U	<10	U
1,2,3-Trichlorobenzene	<10	U	<10	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<10	U	<10	U
1,2,3,4-Tetrachlorobenzene	<10	U	<10	U
Pentachlorobenzene	<10	U	<10	U
Hexachlorobenzene	<10	U	<10	U
Extraction Standards	**%Rec**		**%Rec**	
13C6-1,4-Dichlorobenzene	97		93	
13C6-1,2,3-Trichlorobenzene	99		114	
13C6-1,2,3,4-Tetrachlorobenzene	132		125	
13C6-Pentachlorobenzene	140		131	
13C6-Hexachlorobenzene	134		108	

U Indicates that this compound was not detected above the LOD.
M Indicates that a peak has been manually integrated.

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#:	L2514397		MIssissauga, ON L5J 2Y4
Date of Report	2-Nov-20		Canada
Date of Sample Receipt	8-Oct-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3433983-1		L2514397-57	
Sample Size	1		1	
Sample units	sample		sample	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	28-Oct-20		28-Oct-20	
Target Analytes	**ng/sample**		**ng/sample**	
2-Chlorophenol	<50	U	<50	U
3-Chlorophenol	<50	U	<50	U
4-Chlorophenol	<50	U	<50	U
2,6-Dichlorophenol	<50	U	<50	U
2,4/2,5-Dichlorophenol	<50	U	<50	U
3,5-Dichlorophenol	<50	U	<50	U
2,3-Dichlorophenol	<50	U	<50	U
3,4-Dichlorophenol	<50	U	<50	U
2,4,6-Trichlorophenol	<50	U	<50	U
2,3,6-Trichlorophenol	<50	U	<50	U
2,3,5-Trichlorophenol	<50	U	<50	U
2,4,5-Trichlorophenol	<50	U	<50	U
2,3,4-Trichlorophenol	<50	U	<50	U
3,4,5-Trichlorophenol	<50	U	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<50	U	<50	U
2,3,4,5-Tetrachlorophenol	<50	U	<50	U
Pentachlorophenol	<50	U	<50	U
Extraction Standards	**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	130		120	
13C6-2,4-Dichlorophenol (ES)	128		109	
13C6-2,4,5-Trichlorophenol (ES)	78		73	
13C6-2,3,4,5-Tetrachlorophenol (ES)	72		68	
13C6-Pentachlorophenol (ES)	57		60	

U Indicates that this compound was not detected above the LOR.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2514397		Mississauga, ON L5J 2Y4
Date of Report	11-Nov-20		Canada
Date of Sample Receipt	8-Oct-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **PCDD/F by EPA M23**

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

ALS Life Sciences

Sample Analysis summary Report

Sample Name	**GLASSWARE PROOF**
ALS Sample ID	L2514397-57
Sample Size	1
Sample size units	Proof
Percent Moisture	n/a
Sample Matrix	Media Prep
Sampling Date	n/a
Extraction Date	28-Oct-20

Target Analytes	**pg**
2,3,7,8-TCDD	<2.3
1,2,3,7,8-PeCDD	<2.2
1,2,3,4,7,8-HxCDD	<4.9
1,2,3,6,7,8-HxCDD	<4.3
1,2,3,7,8,9-HxCDD	<4.7
1,2,3,4,6,7,8-HpCDD	<11
OCDD	284
2,3,7,8-TCDF	<2.4
1,2,3,7,8-PeCDF	<1.5
2,3,4,7,8-PeCDF	<1.4
1,2,3,4,7,8-HxCDF	<1.9
1,2,3,6,7,8-HxCDF	<1.8
2,3,4,6,7,8-HxCDF	<2.0
1,2,3,7,8,9-HxCDF	<2.3
1,2,3,4,6,7,8-HpCDF	<35
1,2,3,4,7,8,9-HpCDF	<45
OCDF	<25
Extraction Standards	
13C12-2,3,7,8-TCDD	74
13C12-1,2,3,7,8-PeCDD	61
13C12-1,2,3,6,7,8-HxCDD	79
13C12-1,2,3,4,6,7,8-HpCDD	55
13C12-OCDD	42
13C12-2,3,7,8-TCDF	77
13C12-1,2,3,7,8-PeCDF	65
13C12-1,2,3,6,7,8-HxCDF	84
13C12-1,2,3,4,6,7,8-HpCDF	63
Homologue Group Totals	**pg**
Total-TCDD	<2.3
Total-PeCDD	<2.2
Total-HxCDD	<4.9
Total-HpCDD	17.9
Total-TCDF	9.50
Total-PeCDF	<1.5
Total-HxCDF	<2.3
Total-HpCDF	<45
Toxic Equivalency - (WHO 2005)	
Lower Bound PCDD/F TEQ (WHO 2005)	0.0852
Mid Point PCDD/F TEQ (WHO 2005)	4.30
Upper Bound PCDD/F TEQ (WHO 2005)	8.40

ALS Life Sciences

Quality Control Summary Report

Sample Name	**Method Blank**
ALS Sample ID	WG3433983-1
Sample Size	1
Sample size units	Proof
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	28-Oct-20

Target Analytes	**pg**
2,3,7,8-TCDD	<4.1
1,2,3,7,8-PeCDD	<3.3
1,2,3,4,7,8-HxCDD	<9.9
1,2,3,6,7,8-HxCDD	<8.7
1,2,3,7,8,9-HxCDD	<9.5
1,2,3,4,6,7,8-HpCDD	<5.2
OCDD	<33
2,3,7,8-TCDF	<2.3
1,2,3,7,8-PeCDF	<2.8
2,3,4,7,8-PeCDF	<2.6
1,2,3,4,7,8-HxCDF	<4.8
1,2,3,6,7,8-HxCDF	<4.5
2,3,4,6,7,8-HxCDF	<5.0
1,2,3,7,8,9-HxCDF	<5.7
1,2,3,4,6,7,8-HpCDF	<6.7
1,2,3,4,7,8,9-HpCDF	<3.8
OCDF	<28
Extraction Standards	
13C12-2,3,7,8-TCDD	61
13C12-1,2,3,7,8-PeCDD	59
13C12-1,2,3,6,7,8-HxCDD	64
13C12-1,2,3,4,6,7,8-HpCDD	51
13C12-OCDD	36
13C12-2,3,7,8-TCDF	60
13C12-1,2,3,7,8-PeCDF	59
13C12-1,2,3,6,7,8-HxCDF	66
13C12-1,2,3,4,6,7,8-HpCDF	59
Homologue Group Totals	**pg**
Total-TCDD	<4.1
Total-PeCDD	<3.3
Total-HxCDD	<9.9
Total-HpCDD	<5.2
Total-TCDF	<2.3
Total-PeCDF	<2.8
Total-HxCDF	<5.7
Total-HpCDF	<3.8
Toxic Equivalency - (WHO 2005)	
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	6.77
Upper Bound PCDD/F TEQ (WHO 2005)	13.5

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L2514397		
Date of Report	20-Nov-20		
Date of Sample Receipt	8-Oct-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Low levels of fluorene and tetralin were detected in the proof. The ion abundance ratios were outside the control limits and the peaks detected are likely due to interferences.

The glassware is approved for the collection of samples for PAH analysis.

Certified by: Kennedy

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3433983-1		L2514397-57	
Sample Size	1		1	
Sample units	Sample		Sample	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	28-Oct-20		28-Oct-20	
Target Analytes	**ng**		**ng**	
Naphthalene	<10	U	<10	U
2-Methylnaphthalene	<10	U	<10	U
1-Methylnaphthalene	<10	U	<10	U
Acenaphthylene	<10	U	<10	U
Acenaphthene	<10	U	<10	U
Fluorene	30.4	R	33.3	R
Phenanthrene	<10	U	<10	U
Anthracene	10.5		<10	U
Fluoranthene	<10	U	<10	U
Pyrene	<10	U	<10	U
Benzo(a)Anthracene	<10	U	<10	U
Chrysene	<10	U	<10	U
Benzo(b)Fluoranthene	<10	U	<10	U
Benzo(k)Fluoranthene	<10	U	<10	U
Benzo(e)Pyrene	<10	U	<10	U
Benzo(a)Pyrene	<10	U	<10	U
Perylene	<10	U	<10	U
Indeno(1,2,3-cd)Pyrene	<10	U	<10	U
Dibenzo(a,h)Anthracene	<10	U	<10	U
Benzo(g,h,i)Perylene	<10	U	<10	U
Additional Analytes				
Tetralin			58.5	R
Quinoline			<10	U
2-Chloronaphthalene			<10	U
Biphenyl			<10	U
o-Terphenyl			<10	U
1-Methylphenanthrene			<10	U
9-Methylphenanthrene			<10	U
2-methylanthracene			<10	U
9,10-dimethylanthracene			<10	U
m-terphenyl			<10	U
p-terphenyl			<10	U
Benzo(a)fluorene			<10	U
Benzo(b)fluorene			<10	U
Benzo(b)anthracene			<10	U
Benzo(j)fluoranthene			<10	U
7,12-Dimethylbenzo(a)anthracene			<10	U
3-Methylcholanthrene			<50	U
Dibenz(a,j)acridine			<50	U
7H-Dibenzo(c,g)carbazole			<50	U
Picene			<50	U
Dibenzo(a,e)pyrene			<50	U
dibenzo(a,i)pyrene			<50	U
Coronene			<50	U
Extraction Standards	**% Rec**		**% Rec**	
Naphthalene D8	39.9	R	39.4	R
2-Methylnaphthalene-D10	64.5		61.9	
Acenaphthylene D8	57.2		57.2	
Phenanthrene D10	60.6		57.8	
Anthracene-D10	32.5		32.2	
Fluoranthene D10	59.8		60.1	
Benz(a)Anthracene-D12	53.7		57.3	
Chrysene D12	59.4		58.7	
Benzo(b)Fluoranthene-D12	74.9		78.7	
Benzo(k)Fluoranthene-D12	76.7		80.7	
Benzo(a)Pyrene D12	77		83.3	
Perylene D12	71.1		77.7	
Indeno(1,2,3,cd)Pyrene-D12	67.4		74.4	
Dibenz(a,h)Anthracene-D14	68.6		73.9	
Benzo(g,h,i)Perylene D12	77.7		79.7	

U Indicates that this compound was not detected above the LOD.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, 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#:	L2514397		Mississauga, ON L5J 2Y4
Date of Report	10-Nov-20		Canada
Date of Sample Receipt	8-Oct-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 Covanta

COMMENTS: **PCB Congeners by EPA 1668C**

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	**GLASSWARE PROOF**
ALS Sample ID	L2514397-57
Sample Size	1
Sample size units	Sample
Percent Moisture	n/a
Sample Matrix	Media Prep
Sampling Date	n/a
Extraction Date	28-Oct-20

Target Analytes	**pg**
PCB-081	<2.4
PCB-077	<2.4
PCB-123	<1.4
PCB-118	10.5
PCB-114	<1.3
PCB-105	3.64
PCB-126	<1.4
PCB-167	<1.1
PCB-156/157	<1.4
PCB-169	<1.2
PCB-189	<1.4
Extraction Standards	**% Rec**
13C12-PCB-081	78
13C12-PCB-077	76
13C12-PCB-123	75
13C12-PCB-118	74
13C12-PCB-114	75
13C12-PCB-105	77
13C12-PCB-126	78
13C12-PCB-167	77
13C12-PCB-156/157	79
13C12-PCB-169	80
13C12-PCB-189	51

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.000424
Mid Point PCB TEQ	0.0890
Upper Bound PCB TEQ	0.178

ALS Life Sciences

Quality Control Summary Report

Sample Name	**Method Blank**
ALS Sample ID	WG3433983-1
Sample Size	1
Sample size units	Sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	28-Oct-20

Target Analytes	**pg**
PCB-081	<3.5
PCB-077	<3.6
PCB-123	<1.5
PCB-118	<1.5
PCB-114	<1.4
PCB-105	<1.5
PCB-126	<1.5
PCB-167	<1.1
PCB-156/157	<1.4
PCB-169	<1.1
PCB-189	<1.1
Extraction Standards	**% Rec**
13C12-PCB-081	62
13C12-PCB-077	60
13C12-PCB-123	60
13C12-PCB-118	61
13C12-PCB-114	60
13C12-PCB-105	62
13C12-PCB-126	65
13C12-PCB-167	64
13C12-PCB-156/157	66
13C12-PCB-169	73
13C12-PCB-189	69

Toxic Equivalency - (WHO 2005)	
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.0924
Upper Bound PCB TEQ	0.185

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2514397		Mississauga, ON L5J 2Y4
Date of Report	29-Oct-20		CANADA
Date of Sample Receipt	8-Oct-20	**Client Contact:**	Chris Belore
		Client Project ID:	22050 COVANTA

COMMENTS: **VOCs via SW846 Method 5041A/8260C**

Ketone data by VOST analyses are estimated values only

Certified by:

Ron McLeod, Ph.D,
Technical Director

ALS Environmental

Sample Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3434617-1	Extraction Date	29-Oct-20
Analysis Method	VOCs by 5041A/8260C		
Analysis Type	sample		
Sample Matrix	QC		
Split Ratio	1	Workgroup	WG3434617

Approved:
Andrew Reid
--e-signature--
29-Oct-2020

Run Information	**Run 1**
Filename	20102905.D
Run Date	10/29/2020 7:22
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		1.33	<0.02	U
Vinyl Chloride		2.12	<0.02	U
Bromomethane		2.42	<0.09	U
Trichlorofluoromethane		2.84	<0.02	U
1,1-Dichloroethene		3.47	<0.01	U
Acetone		3.51	<0.1	U
Methylene Chloride		4.48	<0.1	U
trans,1,2-Dichloroethene		4.63	<0.01	U
2-Butanone		6.14	<0.01	U
Chloroform		6.70	<0.01	U
1,1,1-Trichloroethane		7.36	<0.01	U
Carbon Tetrachloride		7.49	<0.01	U
Benzene		7.99	<0.05	U
1,2-Dichloroethane		8.11	<0.01	U
Trichloroethene		9.18	<0.01	U
1,2-Dichloropropane		9.36	<0.01	U
Bromodichloromethane		10.12	<0.01	U
Toluene		11.29	<0.05	U
1,1,2-Trichloroethane		12.03	<0.02	U
Tetrachloroethene		11.97	<0.01	U
Chlorodibromomethane		12.36	<0.01	U
Ethylene Dibromide		12.59	<0.02	U
Ethylbenzene		13.17	<0.01	U
M&P-Xylene		13.31	<0.03	U
O-Xylene		13.73	<0.01	U
Styrene		13.77	<0.02	U
Bromoform		13.97	<0.01	U
Isopropylbenzene		14.12	<0.02	U
1,3,5-Trimethylbenzene		14.90	<0.02	U
Trichlorotrifluoroethane		NotFnd	<0.02	U
1,3-Butadiene		NotFnd	<0.02	U
Field Standard	**ug spiked**		**% Rec**	**Limits**
d10-Ethylbenzene(SPK)	0.2	13.09	83.7	
Surrogate Standards			**% Rec**	**Limits**
d4-1,2-Dichloroethane(SURR)	0.25	7.97	103.3	50-150
d8-Toluene(SURR)	0.25	11.20	91.8	50-150
4-Bromofluorobenzene(SURR)	0.25	14.30	73.5	50-150
Internal Standards			**% Rec**	**Limits**
Bromochloromethane	1	6.89	96.3	50-200
1,4-Difluorobenzene	1	8.81	90.2	50-200
d5-Chlorobenzene	1	13.02	86.8	50-200

U Indicates that this compound was not detected above the RL.

ALS Environmental

Sample Analysis Report

Sample Name	**VOST PROOF**	Sampling Date	n/a
ALS Sample ID	L2514397-71	Extraction Date	29-Oct-20
Analysis Method	VOCs by 5041A/8260C		
Analysis Type	sample		
Sample Matrix	Media Prep		
Split Ratio	1	Workgroup	WG3434617

Approved:
Andrew Reid
--e-signature--
29-Oct-2020

Run Information	**Run 1**
Filename	20102906.D
Run Date	10/29/2020 7:56
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	NotFnd	<0.02	U
Vinyl Chloride	NotFnd	<0.02	U
Bromomethane	2.39	<0.09	U
Trichlorofluoromethane	NotFnd	<0.02	U
1,1-Dichloroethene	3.42	<0.01	U
Acetone	3.48	<0.1	U
Methylene Chloride	4.14	<0.1	U
trans,1,2-Dichloroethene	4.64	<0.01	U
2-Butanone	6.56	<0.01	U
Chloroform	7.30	<0.01	U
1,1,1-Trichloroethane	7.36	<0.01	U
Carbon Tetrachloride	NotFnd	<0.01	U
Benzene	7.93	<0.05	U
1,2-Dichloroethane	NotFnd	<0.01	U
Trichloroethene	NotFnd	<0.01	U
1,2-Dichloropropane	NotFnd	<0.01	U
Bromodichloromethane	NotFnd	<0.01	U
Toluene	11.25	<0.05	U
1,1,2-Trichloroethane	NotFnd	<0.02	U
Tetrachloroethene	NotFnd	<0.01	U
Chlorodibromomethane	NotFnd	<0.01	U
Ethylene Dibromide	NotFnd	<0.02	U
Ethylbenzene	NotFnd	<0.01	U
M&P-Xylene	NotFnd	<0.03	U
O-Xylene	NotFnd	<0.01	U
Styrene	NotFnd	<0.02	U
Bromoform	NotFnd	<0.01	U
Isopropylbenzene	NotFnd	<0.02	U
1,3,5-Trimethylbenzene	NotFnd	<0.02	U
Trichlorotrifluoroethane	NotFnd	<0.02	U
1,3-Butadiene	NotFnd	<0.02	U

Field Standard	**ug spiked**		**% Rec**	**Limits**
d10-Ethylbenzene(SPK)	0.2	13.06	86.0	
Surrogate Standards			**% Rec**	**Limits**
d4-1,2-Dichloroethane(SURR)	0.25	7.92	110.6	50-150
d8-Toluene(SURR)	0.25	11.16	91.2	50-150
4-Bromofluorobenzene(SURR)	0.25	14.27	79.6	50-150
Internal Standards			**% Rec**	**Limits**
Bromochloromethane	1	6.84	88.7	50-200
1,4-Difluorobenzene	1	8.77	87.7	50-200
d5-Chlorobenzene	1	12.99	93.4	50-200

U Indicates that this compound was not detected above the RL.

APPENDIX 21

ORTECH Equipment Calibration Data
(29 pages)

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test 1	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.45 B1	0.995 C		
High	89.4 A2	89.38 B2			
Mid	51.6 A4	51.3 B4		51.3 D4	-0.1 E4
Low	30.51 A3	30.88 B3		30.3 D3	1.7 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	0.1	-0.1
Mid	30.88	30.3	0.6

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test 2	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.45 B1	0.995 C		
High	89.4 A2	89.38 B2			
Mid	51.6 A4	51.3 B4		51.3 D4	-0.1 E4
Low	30.51 A3	30.88 B3		30.3 D3	1.7 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	0.1	0.55	-0.45
Mid	30.3	30.3	0.0

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test 3	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.45 B1	0.995 C		
High	89.4 A2	89.38 B2			
Mid	51.6 A4	51.3 B4		51.3 D4	-0.1 E4
Low	30.51 A3	30.88 B3		30.3 D3	1.7 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	0.55	0.5	0.05
Mid	30.33	30.3	0.0

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench Inlet	Test 1	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.07 B1	0.998 C		
High	89.4 A2	89.28 B2			
Mid	51.6 A4	51.13 B4		51.5 D4	-0.7 E4
Low	30.51 A3	30.13 B3		30.4 D3	-1.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.07	0.45	-0.38
Mid	30.13	30.8	-0.6

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench Inlet	Test 2	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.07 B1	0.998 C		
High	89.4 A2	89.28 B2			
Mid	51.6 A4	51.13 B4		51.5 D4	-0.7 E4
Low	30.51 A3	30.13 B3		30.4 D3	-1.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.45	0.47	-0.02
Mid	30.8	30.8	0.1

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench Inlet	Test 3	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.07 B1	0.998 C		
High	89.4 A2	89.28 B2			
Mid	51.6 A4	51.13 B4		51.5 D4	-0.7 E4
Low	30.51 A3	30.13 B3		30.4 D3	-1.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.47	0.2	0.27
Mid	30.75	30.8	0.0

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		15

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC Outlet	Test 1	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0 B1	1.007 C		
High	89.4 A2	90 B2			
Mid	51.6 A4	50.6 B4		51.9 D4	-2.6 E4
Low	30.51 A3	29.8 B3		30.7 D3	-3.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0.5	-0.5
Mid	29.8	31.0	-1.2

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC Outlet	Test 2	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0 B1	1.007 C		
High	89.4 A2	90 B2			
Mid	51.6 A4	50.6 B4		51.9 D4	-2.6 E4
Low	30.51 A3	29.8 B3		30.7 D3	-3.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.5	0.6	-0.1
Mid	31	31.0	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	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC Outlet	Test 3	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0 B1	1.007 C		
High	89.4 A2	90 B2			
Mid	51.6 A4	50.6 B4		51.9 D4	-2.6 E4
Low	30.51 A3	29.8 B3		30.7 D3	-3.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.6	0.3	0.3
Mid	31	30.0	1.0

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test 1	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0 B1	1.007 C		
High	89.4 A2	90 B2			
Mid	51.6 A4	50.3 B4		51.9 D4	-3.2 E4
Low	30.51 A3	30 B3		30.7 D3	-2.3 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	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	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22050	Date:	November 9, 2020
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0 B1	1.007 C		
High	89.4 A2	90 B2			
Mid	51.6 A4	50.3 B4		51.9 D4	-3.2 E4
Low	30.51 A3	30 B3		30.7 D3	-2.3 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	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	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		**15**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number: 22050		Date:	November 9, 2020
Company: COVANTA		Operator:	J. Grollman
Location: DYEC		Analyzer ID	VIG
Test Location: Unit 2 - APC Outlet		Test 3	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0 B1	1.007 C		
High	89.4 A2	90 B2			
Mid	51.6 A4	50.3 B4		51.9 D4	-3.2 E4
Low	30.51 A3	30 B3		30.7 D3	-2.3 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	0.7	-0.7
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	10		15
Run 2	10		15
Run 3	10		15
Average	**10**		15

ORTECH
Pitot Tube Calibration

Date	February 4, 2020
Probe/Pitot ID	S8
MII Number	B03769
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.53	0.137	0.190	0.849	0.0023
(0.25")	9.32	0.210	0.290	0.851	0.0004
	11.68	0.330	0.450	0.856	0.0049
	13.94	0.470	0.650	0.850	0.0011
	15.75	0.600	0.830	0.850	0.0012
			Mean	0.851	0.0020

Without Nozzle	7.33	0.130	0.180	0.849	0.0003
	9.32	0.210	0.290	0.851	0.0014
	11.14	0.300	0.420	0.845	0.0044
	13.79	0.460	0.630	0.854	0.0050
	15.88	0.610	0.850	0.847	0.0024
			Mean	0.849	0.0027

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH
Pitot Tube Calibration

Date	February 4, 2020
Probe/Pitot ID	SP4
MII Number	B04011
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.53	0.137	0.190	0.849	0.0011
(0.25")	9.65	0.225	0.310	0.851	0.0039
	11.50	0.320	0.450	0.843	0.0048
	13.79	0.460	0.640	0.847	0.0003
	15.62	0.590	0.820	0.848	0.0002
			Mean	0.848	0.0020
Without Nozzle	7.47	0.135	0.190	0.842	0.0053
	9.32	0.210	0.295	0.843	0.0045
	11.32	0.310	0.430	0.849	0.0009
	14.09	0.480	0.660	0.852	0.0046
	16.08	0.625	0.860	0.852	0.0043
			Mean	0.848	0.0039

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH
Pitot Tube Calibration

Date	February 4, 2020
Probe/Pitot ID	S7A
Mil Number	COE20112
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.33	0.130	0.180	0.849	0.0003
(0.25")	9.32	0.210	0.290	0.851	0.0014
	11.14	0.300	0.420	0.845	0.0044
	13.79	0.460	0.630	0.854	0.0050
	15.88	0.610	0.850	0.847	0.0024
			Mean	0.849	0.0027

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
Without Nozzle	7.33	0.130	0.180	0.849	0.0023
	9.32	0.210	0.295	0.843	0.0038
	11.32	0.310	0.430	0.849	0.0016
	14.38	0.500	0.700	0.845	0.0024
	16.39	0.650	0.900	0.849	0.0023
			Mean	0.847	0.0025

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH
Pitot Tube Calibration

Date	February 5, 2020
Probe/Pitot ID	PM 10 2.5
MII Number	COE 20132
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Nozzle Size inches	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
NA	7.33	0.130	0.180	0.849	0.0014
	9.09	0.200	0.280	0.845	0.0033
	11.50	0.320	0.440	0.852	0.0044
	13.49	0.440	0.620	0.842	0.0060
	15.69	0.595	0.820	0.851	0.0034
			Mean	0.848	0.0037

Note: Pitots must always be used in the orientation that they are calibrated in.

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 2
Date	November 3, 2020
Barometric Pressure	29.50
System Leak Check	NDL Lpm @ 22 "Hg

MII NUMBERS	
DGM	A10117
Gasometer	A01463
Barometer	COE20028

Calibrated By	J. Grollman
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^{\circ}F+460}{Tstd\ ^{\circ}F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C	Factor	min.	lpm
59.90	50.50	9.40	0.442	21.0	122.920	135.600	0.448	27.0	1.2	27.0	1.005	21	0.6
53.80	41.60	12.20	0.574	21.0	91.980	108.050	0.568	26.5	1.2	26.0	1.027	27	0.6
71.20	59.90	11.30	0.532	21.0	108.050	122.920	0.525	26.5	1.2	26.0	1.028	25	0.6

Acceptance Criteria:

Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE

0.5 Lpm 1.020

ORTECH

Trendicator Calibration

Calibration Procedure	03-J005
Trendicator Type	Nutech
MII	A10117
Date	November 3, 2020
Calibrated By	J. Grohman
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	Tredicator Display Value		Percent Difference
	Before Adjustment (°C)	After Adjustment (°C)	(%)
0	0	NA	0.0
10	10		0.0
20	20		0.0
50	50		0.0
75	75		0.0
100	101		-1.0
125	125		0.0
150	151		-0.7
200	200		0.0
300	301		-0.3
400	400		0.0
500	501		-0.2
600	602		-0.3

$$\% \text{ Difference} = \frac{\text{micromite - after adjustment reading}}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 5
Date	November 2, 2020
Barometric Pressure	29.41
System Leak Check	NDL lpm @ 22 "Hg

MII NUMBERS	
DGM	COE 20018
Gasometer	A01463
Barometer	COE 20028

Calibrated By	J. Grollman
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C		min.	lpm
69.40	63.30	6.10	0.287	21.0	29.61	37.55	0.280	17.5	1.2	16.0	1.008	15	0.5
63.30	56.20	7.10	0.334	21.0	37.55	46.87	0.329	20.0	1.2	18.0	1.008	17	0.5
56.20	51.80	4.40	0.207	21.0	46.87	52.63	0.203	21.0	1.2	19.0	1.014	10	0.6

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 1.010

ORTECH

Trendicator Calibration

Calibration Procedure	03-J005
Trendicator Type	Jenco 765
MII	COE 20018
Date	November 2, 2020
Calibrated By	J. Grollman
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	Tredicator Display Value		Percent Difference
	Before Adjustment (°C)	After Adjustment (°C)	(%)
0	0	NA	0.0
10	10		0.0
20	20		0.0
50	50		0.0
75	75		0.0
100	100		0.0
125	125		0.0
150	150		0.0
200	200		0.0
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

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	28.29	in Hg
Theoretical Critical Vacuum	13.4	in Hg
System Leak Check	<0.001 cfm @ 26" Hg	
Calibration Date	October 30, 2020	
Calibration Technician	J. Grollman	
Reviewed and Accepted By	Chris Belore	

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
13.0	0.26	768.945	772.910	67.5	70.5	UR-40	0.2352	69.8	70.7	24.0
12.0	0.59	772.910	778.048	69.5	69.5	UR-48	0.3308	70.7	70.7	23.5
19.0	1.20	778.048	789.200	69.5	69.5	UR-55	0.4520	70.7	70.7	22.0
18.0	2.00	789.200	802.969	69.5	69.5	UR-63	0.5874	70.7	70.7	20.0
15.0	3.80	802.969	818.777	70.5	70.5	UR-73	0.8107	70.7	70.7	16.0

Results								
Standardized Data				Dry Gas Meter				
Dry Gas Meter		Critical Orifice		Calibration Factor		Flowrate	DH @	
				Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
3.744	0.288	3.756	0.289	1.003	0.004	0.289	1.752	-0.277
4.852	0.404	4.875	0.406	1.005	0.005	0.406	2.011	-0.018
10.547	0.555	10.546	0.555	1.000	0.001	0.555	2.191	0.162
13.049	0.725	12.984	0.721	0.995	-0.004	0.721	2.162	0.133
15.023	1.002	14.933	0.996	0.994	-0.005	0.996	2.157	0.128
			DGMCF	0.999			2.029	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	October 1, 2020
Calibrated By	J. Grollman
Reviewed and Accepted By	CHRIS BELORE

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA	0.0
70	70		0.0
100	100		0.0
200	202		-1.0
250	251		-0.4
300	303		-1.0
400	401		-0.3
500	500		0.0
600	601		-0.2
700	700		0.0
800	801		-0.1
900	901		-0.1
1000	1001		-0.1
1100	1102		-0.2
1200	1201		-0.1
1250	1250		0.0

$$\% \text{ Difference} = \frac{\text{(calibrator - after adjustment reading)}}{\text{calibrator}} \times 100$$

Acceptance Criteria:
'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.
(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH

Manometer Calibration Data

Date	October 1, 2020	Calibrated By	J. Grollman
Manometer Number	Team 1	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	CHRIS BELORE
Calibrated Against	Dual 3		
MII Number	COE 20008		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.930	NA	0.930	0.0
0-1.0	0.560		0.561	0.2
	0.152		0.156	2.6
	9.20		9.20	0.0
1.0-10.0	5.39		5.36	-0.6
	1.92		1.91	-0.5

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 2
Meter MII Number	COE 20092
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.68	in Hg
Theoretical Critical Vacuum	14.0	in Hg
System Leak Check	<0.001 cfm @ 25" Hg	
Calibration Date	November 4, 2020	
Calibration Technician	Thomas Timar	
Reviewed and Accepted By	Chris Beloius	

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
17.0	0.28	326.300	331.570	69.0	70.5	UR-40	0.2352	69.8	69.8	21.0
10.0	0.59	332.200	336.560	70.5	70.5	UR-48	0.3308	69.8	69.8	20.5
10.0	1.20	337.500	343.430	70.5	71.0	UR-55	0.4520	69.8	69.8	19.0
10.0	1.90	344.850	352.540	70.5	70.5	UR-63	0.5874	69.8	69.8	18.0
18.0	3.70	353.500	372.430	70.5	70.5	UR-73	0.8107	69.8	69.8	16.5

Results								
Standardized Data				Dry Gas Meter				
Dry Gas Meter		Critical Orifice		Calibration Factor		Flowrate	DH @	
				Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
5.214	0.307	5.156	0.303	0.989	-0.004	0.303	1.712	-0.134
4.311	0.431	4.266	0.427	0.989	-0.003	0.427	1.824	-0.023
5.869	0.587	5.828	0.583	0.993	0.001	0.583	1.987	0.140
7.628	0.763	7.574	0.757	0.993	0.001	0.757	1.863	0.016
18.861	1.048	18.817	1.045	0.998	0.005	1.045	1.905	0.058
			DGMCF	0.992			1.847	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	November 4, 2020
Calibrated By	Thomas Timar
Reviewed and Accepted By	CHRIS BELORE

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	251		-0.4
300	301		-0.3
400	400		0.0
500	501		-0.2
600	601		-0.2
700	700		0.0
800	801		-0.1
900	901		-0.1
1000	1001		-0.1
1100	1101		-0.1
1200	1201		-0.1
1250	1251		-0.1

$$\% \text{ Difference} = \frac{(\text{calibrator - after adjustment reading})}{\text{calibrator}} \times 100$$

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	November 4, 2020	Calibrated By	Thomas Timar
Manometer Number	Team 2	Signature	
Manometer MII Number	COE 20092	Reviewed/Accepted By	CHRIS BELORE
Calibrated Against	Hand held		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.290	NA	0.290	0.0
0-1.0	0.500		0.510	2.0
	0.870		0.880	1.1
	2.90		2.90	0.0
1.0-10.0	5.75		5.82	1.2
	9.90		9.94	0.4

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 4
Meter MII Number	COE 20090
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.44	in Hg
Theoretical Critical Vacuum	13.9	in Hg
System Leak Check	<.001 @ 28"	
Calibration Date	November 4, 2020	
Calibration Technician	Thomas Timar	
Reviewed and Accepted By	CHRIS BELOTTE	

Factors/Conversions		
Std Temp	528	^oR
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice DH	Volume Initial	Volume Final	Avg. DGM Temp Initial	Avg. DGM Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Q)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	^oF	^oF			^oF	^oF	in Hg
11.0	0.31	801.200	804.510	67.5	67.5	UR-40	0.2352	70.7	70.7	25.0
10.0	0.61	805.050	809.320	67.5	67.5	UR-48	0.3308	70.7	70.7	23.0
10.0	1.20	810.050	815.900	69.0	69.5	UR-55	0.4520	70.7	70.7	22.0
11.0	2.00	816.650	825.020	70.0	70.0	UR-63	0.5874	70.7	70.7	20.5
11.0	3.70	826.200	837.730	70.0	70.5	UR-73	0.8107	70.7	70.7	17.5

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	
3.263	0.297	3.306	0.301	1.013	0.009	0.301	1.930	-0.037
4.212	0.421	4.227	0.423	1.004	-0.001	0.423	1.920	-0.047
5.760	0.576	5.776	0.578	1.003	-0.001	0.578	2.023	0.056
8.246	0.750	8.257	0.751	1.001	-0.003	0.751	1.996	0.029
11.401	1.036	11.396	1.036	1.000	-0.005	1.036	1.939	-0.028
			DGMCF	1.004			1.967	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 20090
Date	November 4, 2020
Calibrated By	Thomas Timar
Reviewed and Accepted By	CHRIS BELORE

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA	0.0
70	70		0.0
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	700		0.0
800	800		0.0
900	900		0.0
1000	1000		0.0
1100	1100		0.0
1200	1200		0.0
1250	1249		0.1

$$\% \text{ Difference} = \frac{(\text{calibrator - after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH

Manometer Calibration Data

Date	November 4, 2020	Calibrated By	Thomas Timar
Manometer Number	Team 4	Signature	
Manometer MII Number	COE 20090	Reviewed/Accepted By	CHRIS BELCORE
Calibrated Against	Omega		
MII Number	B02679		
Calibration Procedure	03 - J010		

<u>Front Leg</u>

Manometer Scale "H_2O	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.270	NA	0.270	0.0
0-1.0	0.610		0.610	0.0
	0.910		0.910	0.0
	2.60		2.65	1.9
1.0-10.0	6.00		6.00	0.0
	9.30		9.35	0.5

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

APPENDIX 22

Particulate and Metals Test Emission Calculations
(24 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	1 - Particulate & Metals
Date:	November 9, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	3.521 m^3
AVGERGE ISOKINETICITY	97.5 %
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	141.0 °C
AVERAGE GAS MOISTURE BY VOLUME	14.6 %
AVERAGE GAS VELOCITY	17.35 m/s
BAROMETRIC PRESSURE (Station)	101.558 Kpa
STATIC PRESSURE	-2.224 Kpa
ABSOLUTE GAS PRESSURE	99.334 Kpa
OXYGEN CONCENTRATION	8.74 %
CARBON DIOXIDE CONCENTRATION	10.73 %
CARBON MONOXIDE CONCENTRATION	12.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.63 m^3/s
DRY REF GAS FLOWRATE	15.44 Rm^3/s
DRY ADJ GAS FLOWRATE	18.96 Rm^3/s
WET REF GAS FLOWRATE	18.09 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	14.4 mg
	-FILTER	0.1 mg
	-TOTAL	14.5 mg
DRY REF GAS VOLUME SAMPLED		3.521 m^3
PARTICULATE CONC. - ACTUAL		2.480 mg/m^3
PARTICULATE CONC. - DRY REF		4.118 mg/m^3
PARTICULATE CONC. - DRY ADJ		3.353 mg/m^3
PARTICULATE CONC. - WET REF		3.516 mg/m^3
PARTICULATE EMISSION RATE		0.063574 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 9, 2020	**Operator:**	JB

Pitot Factor	0.851	**Filter (mg)**	0.1
DGMCF	0.999	**Probe (mg)**	14.4
Barometric Pressure	29.99 "Hg	**CWTR (g)**	424.8
Static Pressure	-8.930 "H_2O	**WCBDA (g)**	18.9
Nozzle	0.2513 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%	8.74
CO2%	10.73
COppm	12.4

Measured H2O
14.6 %

				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 %
1	0	615.10	0.75	285	51	69	68	1.7	3.0		18.13	
	2.5	616.85	0.75	284	50	69	68	1.7	3.0		18.12	**96.5**
	5	618.67	0.77	282	50	69	68	1.7	3.0		18.33	**100.3**
2	7.5	620.42	0.8	284	52	69	68	1.8	3.0		18.71	**95.0**
	10	622.18	0.79	283	53	69	68	1.8	3.0		18.58	**93.9**
	12.5	623.98	0.78	285	56	69	68	1.8	3.0		18.49	**96.6**
3	15	625.74	0.79	285	58	69	68	1.8	3.0		18.60	**95.2**
	17.5	627.55	0.79	285	59	69	68	1.8	3.0		18.60	**97.3**
	20	629.31	0.77	285	60	69	68	1.8	3.0		18.37	**94.6**
4	22.5	631.09	0.75	286	62	70	68	1.8	3.0		18.14	**96.9**
	25	632.87	0.76	285	63	70	68	1.8	3.0		18.25	**98.1**
	27.5	634.67	0.73	286	59	70	68	1.75	3.0		17.90	**98.5**
5	30	636.43	0.68	287	58	71	68	1.6	3.0		17.28	**98.3**
	32.5	638.14	0.66	287	58	70	69	1.5	3.0		17.03	**98.9**
	35	639.78	0.65	287	58	70	69	1.5	3.0		16.90	**96.3**
6	37.5	641.43	0.65	287	59	72	70	1.5	3.0		16.90	**97.6**
	40	643.05	0.6	287	57	72	70	1.45	3.0		16.24	**95.6**
	42.5	644.67	0.6	288	56	72	70	1.4	3.0		16.25	**99.5**
7	45	646.26	0.64	288	55	72	69	1.5	3.0		16.78	**97.7**
	47.5	647.91	0.64	288	55	72	69	1.5	3.0		16.78	**98.3**
	50	649.54	0.65	287	54	73	69	1.5	3.0		16.90	**97.1**
8	52.5	651.18	0.65	287	54	73	70	1.5	3.0		16.90	**96.7**
	55	652.81	0.65	287	53	73	70	1.5	3.0		16.90	**96.1**
	57.5	654.45	0.66	287	53	74	70	1.5	3.0		17.03	**96.7**
9	60	656.08	0.66	287	53	73	70	1.55	3.0		17.03	**95.2**
	62.5	657.77	0.67	287	53	73	70	1.55	3.0		17.16	**98.9**
	65	659.44	0.67	286	52	74	71	1.55	3.0		17.15	**97.0**
10	67.5	661.12	0.65	286	52	73	70	1.5	3.0		16.89	**97.3**
	70	662.78	0.65	286	52	74	71	1.5	3.0		16.89	**97.8**
	72.5	664.43	0.67	284	52	75	71	1.55	3.0		17.12	**97.0**
11	75	666.10	0.65	284	52	75	71	1.5	3.0		16.86	**96.5**

ORTECH Environmental

Plant:	Covanta DYEC	Plant Location:	Courtice, Ontario
Test No.:	1 - Particulate & Metals	Test Location:	APC Outlet No. 1
Date:	November 9, 2020	Operator:	JB

Pitot Factor	0.851	Filter (mg)	0.1
DGMCF	0.999	Probe (mg)	14.4
Barometric Pressure	29.99 "Hg	CWTR (g)	424.8
Static Pressure	-8.930 "H_2O	WCBDA (g)	18.9
Nozzle	0.2513 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%	8.74
CO2%	10.73
COppm	12.4

Measured H2O
14.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	667.76	0.65	276	52	75	71	1.5	3.0		16.77	97.4
	80	669.43	0.65	275	52	75	71	1.5	3.0		16.76	97.4
12	82.5	671.07	0.64	274	52	75	71	1.5	3.0		16.62	95.6
	85	672.73	0.64	274	52	75	72	1.5	3.0		16.62	97.5
	87.5	674.39	0.64	275	52	75	72	1.5	3.0		16.63	97.4
	90	676.04								0.4		96.8
1	0	676.44	0.75	285	52	75	71	1.8	3.0		18.13	
	2.5	678.23	0.75	287	51	75	73	1.8	3.0		18.15	97.9
	5	680.06	0.76	287	51	75	73	1.8	3.0		18.27	100.0
2	7.5	681.90	0.75	288	51	75	73	1.8	3.0		18.16	99.9
	10	683.69	0.75	288	51	75	73	1.8	3.0		18.16	97.9
	12.5	685.48	0.75	288	51	75	73	1.8	3.0		18.16	97.9
3	15	687.28	0.75	288	52	75	72	1.8	3.0		18.16	98.4
	17.5	688.98	0.7	287	52	75	72	1.7	3.0		17.54	93.1
	20	690.83	0.73	287	52	75	73	1.8	3.0		17.91	104.7
4	22.5	692.61	0.68	287	52	75	73	1.6	3.0		17.28	98.6
	25	694.33	0.68	287	53	75	73	1.6	3.0		17.28	98.7
	27.5	696.07	0.68	287	52	76	74	1.6	3.0		17.28	99.8
5	30	697.81	0.65	287	52	76	74	1.5	3.0		16.90	99.6
	32.5	699.48	0.65	289	52	75	73	1.5	3.0		16.92	97.8
	35	701.15	0.65	288	53	75	73	1.5	3.0		16.91	98.1
6	37.5	702.81	0.65	289	53	75	73	1.5	3.0		16.92	97.4
	40	704.46	0.62	288	54	76	74	1.4	3.0		16.52	96.9
	42.5	706.09	0.62	288	54	76	74	1.4	3.0		16.52	97.8
7	45	707.70	0.69	289	53	76	74	1.7	3.0		17.43	96.6
	47.5	709.44	0.68	289	51	77	74	1.6	3.0		17.31	99.1
	50	711.14	0.68	290	50	77	74	1.6	3.0		17.32	97.4
8	52.5	712.84	0.69	290	50	77	74	1.6	3.0		17.45	97.4
	55	714.55	0.69	290	50	77	74	1.6	3.0		17.45	97.3
	57.5	716.25	0.69	289	50	77	74	1.6	3.0		17.43	96.7
9	60	717.94	0.72	289	50	77	74	1.8	3.0		17.81	96.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 9, 2020	**Operator:**	JB

Pitot Factor	0.851	**Filter (mg)**	0.1
DGMCF	0.999	**Probe (mg)**	14.4
Barometric Pressure	29.99 "Hg	**CWTR (g)**	424.8
Static Pressure	-8.930 "H_2O	**WCBDA (g)**	18.9
Nozzle	0.2513 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%	8.74
CO2%	10.73
COppm	12.4

Measured H2O
14.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	719.72	0.71	289	51	77	74	1.75	3.0		17.69	**99.1**
	65	721.48	0.71	289	51	77	75	1.75	3.0		17.69	**98.7**
10	67.5	723.25	0.72	289	51	77	75	1.75	3.0		17.81	**99.2**
	70	725.00	0.72	289	51	77	75	1.75	3.0		17.81	**97.4**
	72.5	726.76	0.72	287	50	77	75	1.75	3.0		17.79	**97.9**
11	75	728.51	0.63	285	49	77	75	1.5	3.0		16.61	**97.2**
	77.5	730.17	0.62	285	49	77	75	1.4	3.0		16.48	**98.4**
	80	731.76	0.61	285	50	77	75	1.4	3.0		16.35	**95.0**
12	82.5	733.34	0.61	284	50	77	75	1.4	3.0		16.34	**95.2**
	85	734.93	0.6	281	50	77	75	1.4	3.0		16.17	**95.7**
	87.5	736.52	0.6	284	50	77	75	1.4	3.0		16.20	**96.3**
	90	738.14										**98.3**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	2 - Particulate & Metals
Date:	November 9, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	3.600 m^3
AVGERGE ISOKINETICITY	98.3 %
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	142.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.8 %
AVERAGE GAS VELOCITY	17.92 m/s
BAROMETRIC PRESSURE (Station)	101.287 Kpa
STATIC PRESSURE	-2.224 Kpa
ABSOLUTE GAS PRESSURE	99.063 Kpa
OXYGEN CONCENTRATION	8.75 %
CARBON DIOXIDE CONCENTRATION	10.67 %
CARBON MONOXIDE CONCENTRATION	10.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.48 m^3/s
DRY REF GAS FLOWRATE	15.65 Rm^3/s
DRY ADJ GAS FLOWRATE	19.21 Rm^3/s
WET REF GAS FLOWRATE	18.59 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	17.7 mg
	-FILTER	0.3 mg
	-TOTAL	18 mg
DRY REF GAS VOLUME SAMPLED		3.600 m^3
PARTICULATE CONC. - ACTUAL		2.955 mg/m^3
PARTICULATE CONC. - DRY REF		5.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		4.074 mg/m^3
PARTICULATE CONC. - WET REF		4.212 mg/m^3
PARTICULATE EMISSION RATE		0.078259 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 9, 2020	**Operator:**	JB

Pitot Factor	0.851	**Filter (mg)**	0.3
DGMCF	0.999	**Probe (mg)**	17.7
Barometric Pressure	29.91 "Hg	**CWTR (g)**	473.1
Static Pressure	-8.930 "H_2O	**WCBDA (g)**	22.2
Nozzle	0.2513 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%	8.75
CO2%	10.67
COppm	10.2

Measured H2O
15.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	738.54	0.9	287	72	78	77	2.2	3.0		19.96	
	2.5	740.47	0.89	288	57	77	77	2.2	3.0		19.87	96.7
	5	742.48	0.89	290	53	77	76	2.2	3.0		19.89	101.4
2	7.5	744.49	0.89	289	50	75	75	2.2	3.0		19.88	101.6
	10	746.50	0.9	290	49	75	75	2.1	3.0		20.00	101.8
	12.5	748.46	0.9	289	48	75	75	2.1	3.0		19.99	98.8
3	15	750.41	0.88	289	48	75	75	2	3.0		19.77	98.2
	17.5	752.31	0.87	289	48	75	75	2	3.0		19.65	96.8
	20	754.18	0.87	289	49	75	75	2	3.0		19.65	95.8
4	22.5	756.07	0.81	289	47	75	75	1.9	3.0		18.96	96.8
	25	757.94	0.78	289	47	75	75	1.8	3.0		18.61	99.2
	27.5	759.75	0.78	289	48	76	75	1.8	3.0		18.61	97.9
5	30	761.56	0.7	289	48	76	75	1.7	3.0		17.63	97.8
	32.5	763.31	0.7	289	48	76	75	1.7	3.0		17.63	99.8
	35	765.06	0.71	288	46	76	75	1.7	3.0		17.74	99.8
6	37.5	766.82	0.65	288	46	76	75	1.55	3.0		16.98	99.6
	40	768.51	0.65	288	46	76	75	1.55	3.0		16.98	99.9
	42.5	770.19	0.65	288	46	76	75	1.55	3.0		16.98	99.3
7	45	771.88	0.68	288	44	78	76	1.6	3.0		17.36	99.9
	47.5	773.58	0.69	288	44	78	76	1.6	3.0		17.49	98.0
	50	775.29	0.69	288	44	78	76	1.6	3.0		17.49	97.8
8	52.5	777.00	0.7	288	44	79	77	1.6	3.0		17.62	97.8
	55	778.71	0.7	288	44	79	77	1.6	3.0		17.62	96.9
	57.5	780.43	0.7	288	44	79	77	1.6	3.0		17.62	97.5
9	60	782.15	0.7	288	44	79	77	1.6	3.0		17.62	97.5
	62.5	783.88	0.71	288	44	79	77	1.7	3.0		17.74	98.1
	65	785.63	0.71	288	44	79	76	1.7	3.0		17.74	98.5
10	67.5	787.39	0.72	288	44	79	76	1.7	3.0		17.87	99.2
	70	789.14	0.72	288	44	79	77	1.7	3.0		17.87	97.9
	72.5	790.90	0.72	286	43	80	77	1.7	3.0		17.84	98.4
11	75	792.66	0.57	286	43	80	77	1.4	3.0		15.88	98.2

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 9, 2020	**Operator:**	JB

Pitot Factor	0.851	Filter (mg)	0.3
DGMCF	0.999	Probe (mg)	17.7
Barometric Pressure	29.91 "Hg	CWTR (g)	473.1
Static Pressure	-8.930 "H_2O	WCBDA (g)	22.2
Nozzle	0.2513 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%	8.75
CO2%	10.67
COppm	10.2

Measured H2O
15.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	794.26	0.57	286	43	80	77	1.4	3.0		15.88	100.2
	80	795.87	0.58	284	46	80	77	1.4	3.0		15.99	100.9
12	82.5	797.48	0.57	284	46	80	77	1.4	3.0		15.86	99.9
	85	799.05	0.57	284	46	81	78	1.4	3.0		15.86	98.2
	87.5	800.63	0.58	284	46	81	78	1.4	3.0		15.99	98.7
	90	802.21								0.4		97.8
1	0	802.61	0.86	286	63	81	79	1.9	3.0		19.50	
	2.5	804.46	0.86	286	51	80	78	1.9	3.0		19.50	94.2
	5	806.33	0.9	286	46	80	79	2.1	3.0		19.95	95.4
2	7.5	808.29	0.84	287	44	80	78	1.8	3.0		19.29	97.7
	10	810.17	0.84	287	44	79	78	1.8	3.0		19.29	97.1
	12.5	811.98	0.82	287	43	80	78	1.8	3.0		19.06	93.6
3	15	813.78	0.82	287	44	80	78	1.9	3.0		19.06	94.1
	17.5	815.65	0.82	287	44	80	78	1.9	3.0		19.06	97.8
	20	817.49	0.87	287	44	80	78	2.1	3.0		19.63	96.2
4	22.5	819.44	0.81	287	44	80	78	1.9	3.0		18.94	99.0
	25	821.31	0.81	287	44	80	78	1.9	3.0		18.94	98.4
	27.5	823.19	0.81	287	44	80	78	1.9	3.0		18.94	98.9
5	30	825.07	0.75	287	44	80	79	1.8	3.0		18.22	98.9
	32.5	826.88	0.75	288	44	80	79	1.8	3.0		18.24	98.8
	35	828.68	0.75	289	45	81	79	1.8	3.0		18.25	98.4
6	37.5	830.48	0.64	289	45	81	79	1.5	3.0		16.86	98.3
	40	832.14	0.64	289	46	81	79	1.5	3.0		16.86	98.1
	42.5	833.79	0.64	289	47	81	79	1.5	3.0		16.86	97.5
7	45	835.43	0.7	289	47	81	79	1.7	3.0		17.63	96.9
	47.5	837.19	0.72	289	47	81	79	1.7	3.0		17.88	99.5
	50	838.95	0.72	290	46	81	79	1.7	3.0		17.89	98.1
8	52.5	840.71	0.74	290	46	81	79	1.75	3.0		18.14	98.2
	55	842.51	0.73	290	46	81	79	1.75	3.0		18.02	99.0
	57.5	844.31	0.73	290	46	81	79	1.75	3.0		18.02	99.7
9	60	846.11	0.73	290	45	81	79	1.75	3.0		18.02	99.7

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 9, 2020	**Operator:**	JB

Pitot Factor	0.851	**Filter (mg)**	0.3
DGMCF	0.999	**Probe (mg)**	17.7
Barometric Pressure	29.91 "Hg	**CWTR (g)**	473.1
Static Pressure	-8.930 "H_2O	**WCBDA (g)**	22.2
Nozzle	0.2513 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%	8.75
CO2%	10.67
COppm	10.2

Measured H2O
15.8 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	847.88	0.73	290	45	81	79	1.75	3.0		18.02	98.1
	65	849.65	0.73	290	45	81	79	1.75	3.0		18.02	98.1
10	67.5	851.44	0.69	290	46	81	79	1.7	3.0		17.51	99.2
	70	853.19	0.69	289	46	82	80	1.7	3.0		17.50	99.7
	72.5	854.94	0.68	289	46	82	80	1.7	3.0		17.38	99.5
11	75	856.68	0.56	289	46	82	80	1.35	3.0		15.77	99.6
	77.5	858.25	0.56	289	46	82	80	1.35	3.0		15.77	99.0
	80	859.81	0.56	289	46	82	80	1.35	3.0		15.77	98.3
12	82.5	861.35	0.55	289	46	82	80	1.35	3.0		15.63	97.1
	85	862.88	0.55	289	46	82	80	1.35	3.0		15.63	97.3
	87.5	864.44	0.54	289	47	82	80	1.3	3.0		15.48	99.2
	90	865.95										96.9

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - Particulate & Metals
Date:	November 10, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	3.969 m^3
AVGERGE ISOKINETICITY	101.2 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.5 °C
AVERAGE GAS MOISTURE BY VOLUME	16.6 %
AVERAGE GAS VELOCITY	17.52 m/s
BAROMETRIC PRESSURE (Station)	100.373 Kpa
STATIC PRESSURE	-2.331 Kpa
ABSOLUTE GAS PRESSURE	98.042 Kpa
OXYGEN CONCENTRATION	8.39 %
CARBON DIOXIDE CONCENTRATION	10.79 %
CARBON MONOXIDE CONCENTRATION	11.7 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.89 m^3/s
DRY REF GAS FLOWRATE	15.06 Rm^3/s
DRY ADJ GAS FLOWRATE	19.03 Rm^3/s
WET REF GAS FLOWRATE	18.06 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.6 mg
	-FILTER	0.2 mg
	-TOTAL	1.8 mg
DRY REF GAS VOLUME SAMPLED		3.969 m^3
PARTICULATE CONC. - ACTUAL		0.264 mg/m^3
PARTICULATE CONC. - DRY REF		0.454 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.359 mg/m^3
PARTICULATE CONC. - WET REF		0.378 mg/m^3
PARTICULATE EMISSION RATE		0.006830 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:	November 10, 2020	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0.2
DGMCF	1.004	**Probe (mg)**	1.6
Barometric Pressure	29.64 "Hg	**CWTR (g)**	556.1
Static Pressure	-9.360 "H_2O	**WCBDA (g)**	24.6
Nozzle	0.2651 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.32 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%	8.39
CO2%	10.79
COppm	11.7

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 %
1	0	13.52	0.71	287	77	78	77	2.15	5.5		17.79	
	2.5	15.54	0.71	287	64	77	77	2.15	5.5		17.79	**103.7**
	5	17.55	0.71	287	61	77	79	2.15	5.5		17.79	**103.3**
2	7.5	19.55	0.7	287	60	77	81	2.15	5.5		17.67	**102.6**
	10	21.56	0.72	284	58	77	84	2.2	5.5		17.88	**103.6**
	12.5	23.59	0.71	284	57	77	85	2.2	5.5		17.76	**102.7**
3	15	25.60	0.72	285	55	78	87	2.2	5.5		17.89	**102.3**
	17.5	27.62	0.7	285	54	78	88	2.1	5.5		17.64	**101.9**
	20	29.60	0.68	285	54	78	89	2.05	5.5		17.39	**101.2**
4	22.5	31.55	0.7	285	53	78	90	2.1	5.5		17.64	**101.0**
	25	33.51	0.68	284	53	79	91	2.05	5.5		17.38	**100.0**
	27.5	35.46	0.68	283	53	79	91	2.05	5.5		17.36	**100.6**
5	30	37.41	0.68	284	53	79	92	2.05	5.5		17.38	**100.6**
	32.5	39.36	0.68	283	53	79	92	2.05	5.5		17.36	**100.5**
	35	41.31	0.65	283	53	79	93	2	5.5		16.98	**100.5**
6	37.5	43.21	0.65	283	53	80	93	2	5.5		16.98	**100.0**
	40	45.12	0.66	283	53	80	93	2.05	5.5		17.11	**100.5**
	42.5	47.06	0.66	283	53	80	93	2.05	5.5		17.11	**101.3**
7	45	48.99	0.62	283	53	80	93	1.9	5.5		16.58	**100.7**
	47.5	50.87	0.6	283	53	80	93	1.7	5.5		16.31	**101.2**
	50	52.68	0.58	283	53	80	93	1.7	5.5		16.04	**99.0**
8	52.5	54.46	0.58	282	53	80	93	1.8	5.5		16.03	**99.0**
	55	56.28	0.63	282	53	80	93	2	5.5		16.70	**101.2**
	57.5	58.19	0.62	283	54	80	94	2	5.5		16.58	**102.0**
9	60	60.12	0.72	283	54	80	93	2.2	6.0		17.87	**103.8**
	62.5	62.13	0.68	283	53	80	92	2.1	6.0		17.36	**100.5**
	65	64.15	0.68	284	53	80	93	2.05	6.0		17.38	**104.0**
10	67.5	66.10	0.71	284	53	80	92	2.1	6.0		17.76	**100.4**
	70	68.10	0.73	284	53	80	92	2.2	6.0		18.00	**100.8**
	72.5	70.14	0.73	284	53	80	92	2.2	6.0		18.00	**101.5**
11	75	72.18	0.76	284	53	80	92	2.3	6.0		18.37	**101.5**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 10, 2020	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0.2
DGMCF	1.004	**Probe (mg)**	1.6
Barometric Pressure	29.64 "Hg	**CWTR (g)**	556.1
Static Pressure	-9.360 "H_2O	**WCBDA (g)**	24.6
Nozzle	0.2651 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.32 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%	8.39
CO2%	10.79
COppm	11.7

Measured H2O
16.6 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	74.27	0.75	284	53	80	92	2.3	6.0		18.25	**101.9**
	80	76.35	0.75	284	53	80	92	2.2	6.0		18.25	**102.1**
12	82.5	78.41	0.72	284	53	80	92	2.2	6.0		17.88	**101.1**
	85	80.44	0.72	284	54	80	92	2.2	6.0		17.88	**101.7**
	87.5	82.44	0.72	284	54	79	91	2.2	6.0		17.88	**100.2**
	90	84.50								0.32		**103.3**
1	0	84.82	0.77	285	63	78	82	2.2	6.0		18.50	
	2.5	86.86	0.8	286	58	78	84	2.3	6.0		18.87	**100.0**
	5	88.95	0.8	286	55	78	86	2.35	6.0		18.87	**100.4**
2	7.5	91.05	0.78	283	54	78	87	2.35	6.0		18.60	**100.7**
	10	93.15	0.78	283	55	78	88	2.35	6.0		18.60	**101.7**
	12.5	95.26	0.78	283	55	77	89	2.35	6.0		18.60	**102.0**
3	15	97.36	0.75	284	55	77	89	2.2	6.0		18.25	**101.6**
	17.5	99.42	0.78	285	56	77	90	2.35	6.0		18.62	**101.6**
	20	101.52	0.78	285	56	77	90	2.35	6.0		18.62	**101.6**
4	22.5	103.63	0.72	286	55	77	90	2.15	6.0		17.90	**102.1**
	25	105.66	0.72	286	54	77	90	2.1	6.0		17.90	**102.2**
	27.5	107.63	0.72	286	53	77	90	2.1	6.0		17.90	**99.2**
5	30	109.62	0.66	286	53	77	89	2	6.0		17.14	**100.2**
	32.5	111.54	0.68	286	52	77	89	2.05	6.0		17.40	**101.1**
	35	113.48	0.68	286	52	77	89	2.05	6.0		17.40	**100.6**
6	37.5	115.43	0.7	286	52	77	89	2.1	6.0		17.65	**101.1**
	40	117.39	0.7	286	52	77	89	2.1	6.0		17.65	**100.2**
	42.5	119.37	0.7	287	52	77	89	2.1	6.0		17.67	**101.2**
7	45	121.35	0.66	287	51	76	89	1.9	6.0		17.15	**101.3**
	47.5	123.24	0.64	287	51	76	89	1.9	6.0		16.89	**99.6**
	50	125.11	0.64	287	51	76	89	1.9	6.0		16.89	**100.1**
8	52.5	126.99	0.64	287	51	76	89	1.95	6.0		16.89	**100.6**
	55	128.89	0.64	287	51	76	89	1.95	6.0		16.89	**101.7**
	57.5	130.79	0.64	287	51	76	89	1.95	6.0		16.89	**101.7**
9	60	132.68	0.66	287	51	76	89	1.9	6.0		17.15	**101.2**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 10, 2020	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0.2
DGMCF	1.004	**Probe (mg)**	1.6
Barometric Pressure	29.64 "Hg	**CWTR (g)**	556.1
Static Pressure	-9.360 "H_2O	**WCBDA (g)**	24.6
Nozzle	0.2651 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.32 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%	8.39
CO2%	10.79
COppm	11.7

Measured H2O
16.6 %

				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 %
	62.5	134.56	0.66	287	51	76	88	2	6.0		17.15	99.1
	65	136.47	0.66	286	51	76	88	2	6.0		17.14	100.8
10	67.5	138.39	0.66	286	51	76	88	2	6.0		17.14	101.3
	70	140.31	0.66	284	51	76	88	2	6.0		17.12	101.3
	72.5	142.22	0.66	285	51	76	88	2	6.0		17.13	100.6
11	75	144.12	0.68	286	51	76	88	2.05	6.0		17.40	100.1
	77.5	146.06	0.68	286	52	76	88	2.05	6.0		17.40	100.8
	80	147.99	0.68	286	53	76	88	2.05	6.0		17.40	100.3
12	82.5	149.93	0.66	286	53	76	88	2	6.0		17.14	100.8
	85	151.86	0.64	286	54	76	88	1.95	6.0		16.88	101.8
	87.5	153.74	0.64	286	55	75	88	1.95	6.0		16.88	100.7
	90	155.63										101.3

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - Particulate & Metals
Date:	November 9, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	4.165 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	141.9 ^oC
AVERAGE GAS MOISTURE BY VOLUME	16.2 %
AVERAGE GAS VELOCITY	18.18 m/s
BAROMETRIC PRESSURE (Station)	101.118 Kpa
STATIC PRESSURE	-2.234 Kpa
ABSOLUTE GAS PRESSURE	98.884 Kpa
OXYGEN CONCENTRATION	8.33 %
CARBON DIOXIDE CONCENTRATION	10.97 %
CARBON MONOXIDE CONCENTRATION	15.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.86 m^3/s
DRY REF GAS FLOWRATE	15.78 Rm^3/s
DRY ADJ GAS FLOWRATE	20.04 Rm^3/s
WET REF GAS FLOWRATE	18.83 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	14.1 mg
	-FILTER	0.3 mg
	-TOTAL	14.4 mg
DRY REF GAS VOLUME SAMPLED		4.165 m^3
PARTICULATE CONC. - ACTUAL		2.032 mg/m^3
PARTICULATE CONC. - DRY REF		3.458 mg/m^3
PARTICULATE CONC. - DRY ADJ		2.723 mg/m^3
PARTICULATE CONC. - WET REF		2.899 mg/m^3
PARTICULATE EMISSION RATE		0.054569 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 9, 2020	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0.3
DGMCF	1.004	**Probe (mg)**	14.1
Barometric Pressure	29.86 "Hg	**CWTR (g)**	565.8
Static Pressure	-8.970 "H_2O	**WCBDA (g)**	24.4
Nozzle	0.2651 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.4 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.33
CO2%	10.97
COppm	15.1

Measured H2O
16.2 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	23.13	0.77	287	75	75	75	2.3	5.0		18.42	
	2.5	25.19	0.77	287	75	75	75	2.3	5.0		18.42	102.0
	5	27.25	0.72	286	54	75	78	2.2	5.0		17.80	102.0
2	7.5	29.28	0.72	286	52	75	81	2.2	5.0		17.80	103.5
	10	31.29	0.72	287	51	75	83	2.2	5.0		17.82	102.2
	12.5	33.29	0.76	286	51	75	85	2.3	5.0		18.29	101.6
3	15	35.36	0.73	286	51	76	87	2.2	5.0		17.93	102.1
	17.5	37.39	0.76	287	51	76	88	2.3	5.0		18.30	101.9
	20	39.48	0.76	287	51	76	89	2.3	5.0		18.30	102.8
4	22.5	41.54	0.76	287	50	76	90	2.3	5.0		18.30	101.2
	25	43.59	0.76	288	50	77	91	2.3	5.0		18.32	100.6
	27.5	45.67	0.76	288	49	77	92	2.3	5.0		18.32	102.0
5	30	47.73	0.73	288	48	77	92	2.25	5.0		17.95	100.9
	32.5	49.79	0.75	289	48	77	92	2.3	5.0		18.21	102.9
	35	51.86	0.75	289	49	77	93	2.3	5.0		18.21	102.1
6	37.5	53.92	0.74	289	49	78	93	2.25	5.0		18.09	101.5
	40	55.98	0.74	290	48	78	93	2.25	5.0		18.10	102.1
	42.5	58.04	0.72	290	48	78	93	2.2	5.0		17.85	102.2
7	45	60.07	0.64	289	48	78	94	2	5.0		16.82	102.1
	47.5	61.99	0.62	289	48	78	94	1.9	5.0		16.55	102.2
	50	63.87	0.64	289	48	78	94	2	5.0		16.82	101.6
8	52.5	65.77	0.71	289	48	78	94	2.2	5.0		17.72	101.1
	55	67.79	0.71	289	48	78	94	2.2	5.0		17.72	102.1
	57.5	69.83	0.72	289	47	78	94	2.25	5.0		17.84	103.1
9	60	71.88	0.81	289	48	78	94	2.5	5.5		18.92	102.9
	62.5	74.03	0.81	289	48	78	94	2.5	5.5		18.92	101.8
	65	76.18	0.81	289	48	78	95	2.5	5.5		18.92	101.8
10	67.5	78.34	0.84	289	48	78	95	2.6	5.5		19.27	102.2
	70	80.53	0.85	280	48	79	95	2.6	5.5		19.27	101.8
	72.5	82.73	0.85	289	48	79	95	2.6	5.5		19.38	101.0
11	75	84.93	0.87	289	49	79	95	2.7	5.5		19.61	101.6

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 9, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0.3
DGMCF	1.004	Probe (mg)	14.1
Barometric Pressure	29.86 "Hg	CWTR (g)	565.8
Static Pressure	-8.970 "H_2O	WCBDA (g)	24.4
Nozzle	0.2651 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.4 ft^3
Length	0.000 ft	Reading Interval	2.5 minutes
Width	0.000 ft	Number of Ports	2
		Number of points / Port	12

Combustion Gases	
O2%	8.33
CO2%	10.97
COppm	15.1

Measured H2O
16.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	87.17	0.87	288	48	78	95	2.7	5.5		19.60	102.2
	80	89.42	0.85	288	49	79	95	2.6	5.5		19.37	102.7
12	82.5	91.62	0.85	288	49	79	95	2.6	5.5		19.37	101.5
	85	93.82	0.85	288	49	79	95	2.6	5.5		19.37	101.5
	87.5	96.02	0.85	288	49	79	95	2.6	5.5		19.37	101.5
	90	98.22								0.4		101.5
1	0	98.62	0.81	288	58	77	83	2.5	5.5		18.91	
	2.5	100.79	0.82	288	51	78	86	2.5	5.5		19.03	103.9
	5	102.93	0.82	287	49	77	88	2.5	5.5		19.01	101.4
2	7.5	105.08	0.8	287	49	77	90	2.45	5.5		18.78	101.7
	10	107.20	0.85	287	49	77	92	2.5	5.5		19.36	101.4
	12.5	109.36	0.85	287	48	77	93	2.5	6.0		19.36	100.0
3	15	111.52	0.85	287	49	77	93	2.5	6.0		19.36	99.9
	17.5	113.69	0.82	287	48	77	93	2.5	6.0		19.01	100.4
	20	115.86	0.82	287	48	77	93	2.5	6.0		19.01	102.2
4	22.5	118.03	0.75	287	48	77	93	2	5.5		18.18	102.2
	25	119.93	0.78	287	48	78	93	2.2	5.5		18.54	93.5
	27.5	121.97	0.78	287	48	77	93	2.2	5.5		18.54	98.4
5	30	124.02	0.75	287	48	77	93	2.2	5.5		18.18	98.9
	32.5	126.06	0.75	287	48	77	93	2.2	5.5		18.18	100.4
	35	128.10	0.74	287	48	77	93	2.2	5.5		18.06	100.4
6	37.5	130.14	0.65	287	48	77	93	2	5.5		16.93	101.1
	40	132.07	0.65	287	48	77	93	2	5.5		16.93	102.0
	42.5	133.97	0.65	287	48	77	93	2	5.5		16.93	100.4
7	45	135.86	0.65	287	48	77	93	2	5.5		16.93	99.9
	47.5	137.75	0.67	287	48	77	93	2.1	5.5		17.19	99.9
	50	139.72	0.67	287	48	77	93	2.1	5.5		17.19	102.6
8	52.5	141.66	0.67	288	49	77	93	2.1	5.5		17.20	101.0
	55	143.59	0.68	288	49	77	93	2.1	5.5		17.33	100.5
	57.5	145.53	0.68	288	48	77	93	2.1	5.5		17.33	100.3
9	60	147.47	0.69	287	49	77	93	2.1	5.5		17.44	100.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 9, 2020	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0.3
DGMCF	1.004	**Probe (mg)**	14.1
Barometric Pressure	29.86 "Hg	**CWTR (g)**	565.8
Static Pressure	-8.970 "H_2O	**WCBDA (g)**	24.4
Nozzle	0.2651 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.4 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.33
CO2%	10.97
COppm	15.1

Measured H2O
16.2 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	149.44	0.7	288	49	77	93	2.2	6.0		17.58	101.1
	65	151.49	0.7	287	49	77	93	2.2	6.0		17.57	104.5
10	67.5	153.49	0.71	287	49	77	93	2.2	6.0		17.69	101.9
	70	155.49	0.72	287	49	77	93	2.2	6.0		17.82	101.2
	72.5	157.49	0.73	287	49	77	93	2.2	6.0		17.94	100.5
11	75	159.49	0.73	287	49	77	93	2.2	6.0		17.94	99.8
	77.5	161.48	0.71	286	49	77	93	2.2	6.0		17.68	99.3
	80	163.47	0.71	286	50	77	93	2.2	6.0		17.68	100.6
12	82.5	165.46	0.7	286	50	77	93	2.2	6.0		17.55	100.6
	85	167.45	0.7	286	50	77	93	2.2	6.0		17.55	101.3
	87.5	169.42	0.7	286	50	77	92	2.2	6.0		17.55	100.3
	90	171.40										100.9

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	2 - Particulate & Metals
Date:	November 10, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	3.494 m^3
AVGERGE ISOKINETICITY	98.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.8 °C
AVERAGE GAS MOISTURE BY VOLUME	16.2 %
AVERAGE GAS VELOCITY	17.60 m/s
BAROMETRIC PRESSURE (Station)	100.711 Kpa
STATIC PRESSURE	-2.400 Kpa
ABSOLUTE GAS PRESSURE	98.311 Kpa
OXYGEN CONCENTRATION	8.2 %
CARBON DIOXIDE CONCENTRATION	11.11 %
CARBON MONOXIDE CONCENTRATION	15.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.01 m^3/s
DRY REF GAS FLOWRATE	15.16 Rm^3/s
DRY ADJ GAS FLOWRATE	19.45 Rm^3/s
WET REF GAS FLOWRATE	18.09 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.6 mg
	-FILTER	0.8 mg
	-TOTAL	3.4 mg
DRY REF GAS VOLUME SAMPLED		3.494 m^3
PARTICULATE CONC. - ACTUAL		0.567 mg/m^3
PARTICULATE CONC. - DRY REF		0.973 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.759 mg/m^3
PARTICULATE CONC. - WET REF		0.816 mg/m^3
PARTICULATE EMISSION RATE		0.014754 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 10, 2020	**Operator:**	JB

Pitot Factor	0.851	Filter (mg)	0.8
DGMCF	0.999	Probe (mg)	2.6
Barometric Pressure	29.74 "Hg	CWTR (g)	475.5
Static Pressure	-9.640 "H_2O	WCBDA (g)	20.2
Nozzle	0.2513 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%	8.2
CO2%	11.11
COppm	15.1

Measured H2O
16.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	866.44	0.8	287	58	74	73	1.9	3.0		18.90	
	2.5	868.28	0.81	287	50	72	71	1.9	3.0		19.01	98.7
	5	870.12	0.81	288	47	72	71	1.9	3.0		19.03	98.4
2	7.5	871.97	0.82	288	46	71	71	1.9	3.0		19.14	99.0
	10	873.82	0.82	288	46	71	70	1.9	3.0		19.14	98.5
	12.5	875.66	0.83	288	46	71	70	1.9	3.0		19.26	98.1
3	15	877.48	0.78	290	44	70	70	1.8	3.0		18.70	96.4
	17.5	879.31	0.78	290	44	70	70	1.8	3.0		18.70	100.2
	20	881.09	0.78	290	44	70	70	1.8	3.0		18.70	97.5
4	22.5	882.87	0.65	290	44	71	70	1.5	3.0		17.07	97.5
	25	884.57	0.65	290	45	71	70	1.5	3.0		17.07	101.8
	27.5	886.24	0.65	290	45	72	70	1.5	3.0		17.07	100.0
5	30	887.82	0.63	290	45	72	70	1.45	3.0		16.80	94.6
	32.5	889.44	0.63	290	45	72	70	1.45	3.0		16.80	98.5
	35	891.03	0.63	290	45	72	71	1.45	3.0		16.80	96.6
6	37.5	892.61	0.57	290	45	72	71	1.4	3.0		15.98	95.9
	40	894.17	0.59	290	45	72	71	1.4	3.0		16.26	99.6
	42.5	895.75	0.59	290	45	73	71	1.4	3.0		16.26	99.1
7	45	897.31	0.64	290	45	73	71	1.5	3.0		16.94	97.8
	47.5	898.93	0.64	290	45	73	71	1.5	3.0		16.94	97.5
	50	900.54	0.65	290	45	73	71	1.5	3.0		17.07	96.9
8	52.5	902.16	0.69	290	45	74	71	1.6	3.0		17.58	96.8
	55	903.84	0.7	290	45	74	71	1.6	3.0		17.71	97.3
	57.5	905.53	0.7	290	45	74	71	1.6	3.0		17.71	97.2
9	60	907.23	0.7	290	45	74	71	1.6	3.0		17.71	97.8
	62.5	908.93	0.72	289	45	74	71	1.65	3.0		17.95	97.8
	65	910.64	0.72	289	45	74	71	1.65	3.0		17.95	96.9
10	67.5	912.33	0.7	289	45	74	71	1.65	3.0		17.70	95.8
	70	914.05	0.7	290	45	75	72	1.65	3.0		17.71	98.9
	72.5	915.77	0.73	290	45	75	72	1.7	3.0		18.09	98.8
11	75	917.52	0.5	290	45	75	72	1.2	3.0		14.97	98.4

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 10, 2020	**Operator:**	JB

Pitot Factor	0.851	Filter (mg)	0.8
DGMCF	0.999	Probe (mg)	2.6
Barometric Pressure	29.74 "Hg	CWTR (g)	475.5
Static Pressure	-9.640 "H_2O	WCBDA (g)	20.2
Nozzle	0.2513 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%	8.2
CO2%	11.11
COppm	15.1

Measured H2O
16.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	919.00	0.48	290	45	75	72	1.1	3.0		14.67	100.4
	80	920.44	0.48	288	45	76	73	1.1	3.0		14.65	99.7
12	82.5	921.87	0.48	288	45	76	73	1.1	3.0		14.65	98.7
	85	923.30	0.47	288	45	76	73	1.1	3.0		14.49	98.7
	87.5	924.71	0.47	288	46	76	73	1.1	3.0		14.49	98.4
	90	926.14								0.39		99.7
1	0	926.53	0.85	289	45	76	74	2	3.0		19.50	
	2.5	928.43	0.85	288	48	76	74	2	3.0		19.49	98.7
	5	930.33	0.85	288	48	76	74	2	3.0		19.49	98.7
2	7.5	932.24	0.85	290	43	77	74	2	3.0		19.52	99.2
	10	934.16	0.85	290	43	77	74	2	3.0		19.52	99.8
	12.5	936.07	0.85	290	43	77	74	2	3.0		19.52	99.2
3	15	937.99	0.8	289	42	76	74	1.9	3.0		18.92	99.8
	17.5	939.83	0.78	289	42	76	74	1.9	3.0		18.68	98.5
	20	941.67	0.79	289	42	76	74	1.9	3.0		18.80	99.8
4	22.5	943.51	0.74	289	42	76	74	1.8	3.0		18.20	99.2
	25	945.29	0.74	289	42	76	74	1.8	3.0		18.20	99.1
	27.5	947.10	0.74	289	42	76	74	1.8	3.0		18.20	100.8
5	30	948.89	0.69	289	43	77	75	1.6	3.0		17.57	99.7
	32.5	950.59	0.69	289	43	77	75	1.6	3.0		17.57	97.8
	35	952.29	0.69	289	43	77	75	1.6	3.0		17.57	97.8
6	37.5	954.00	0.65	289	43	77	75	1.5	3.0		17.06	98.4
	40	955.64	0.64	289	43	77	75	1.5	3.0		16.92	97.2
	42.5	957.27	0.64	289	44	77	75	1.5	3.0		16.92	97.3
7	45	958.88	0.7	289	44	77	75	1.7	3.0		17.70	96.1
	47.5	960.61	0.7	289	44	77	75	1.7	3.0		17.70	98.8
	50	962.34	0.7	289	44	77	75	1.7	3.0		17.70	98.8
8	52.5	964.07	0.72	289	44	77	75	1.7	3.0		17.95	98.8
	55	965.82	0.72	289	44	77	75	1.7	3.0		17.95	98.6
	57.5	967.57	0.72	289	44	77	75	1.7	3.0		17.95	98.6
9	60	969.33	0.74	289	44	77	75	1.8	3.0		18.20	99.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 10, 2020	**Operator:**	JB

Pitot Factor	0.851	**Filter (mg)**	0.8
DGMCF	0.999	**Probe (mg)**	2.6
Barometric Pressure	29.74 "Hg	**CWTR (g)**	475.5
Static Pressure	-9.640 "H_2O	**WCBDA (g)**	20.2
Nozzle	0.2513 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%	8.2
CO2%	11.11
COppm	15.1

Measured H2O
16.2 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	971.09	0.74	289	45	78	75	1.8	3.0		18.20	97.8
	65	972.85	0.74	289	45	78	75	1.8	3.0		18.20	97.7
10	67.5	974.63	0.75	288	46	78	76	1.8	3.0		18.31	98.8
	70	976.40	0.75	288	46	78	76	1.8	3.0		18.31	97.5
	72.5	978.18	0.75	288	46	78	76	1.8	3.0		18.31	98.0
11	75	979.94	0.61	287	46	79	76	1.5	3.0		16.50	96.9
	77.5	981.58	0.61	287	46	79	76	1.5	3.0		16.50	99.9
	80	983.24	0.61	287	46	79	76	1.5	3.0		16.50	101.1
12	82.5	984.89	0.63	287	47	79	76	1.5	3.0		16.77	100.5
	85	986.53	0.62	287	47	78	76	1.5	3.0		16.64	98.3
	87.5	988.19	0.62	287	47	78	76	1.5	3.0		16.64	100.4
	90	989.82										98.6

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	3 - Particulate & Metals
Date:	November 10, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	3.511 m^3
AVGERGE ISOKINETICITY	98.6 %
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	142.3 ^oC
AVERAGE GAS MOISTURE BY VOLUME	15.6 %
AVERAGE GAS VELOCITY	17.56 m/s
BAROMETRIC PRESSURE (Station)	100.542 Kpa
STATIC PRESSURE	-2.400 Kpa
ABSOLUTE GAS PRESSURE	98.142 Kpa
OXYGEN CONCENTRATION	8.36 %
CARBON DIOXIDE CONCENTRATION	10.91 %
CARBON MONOXIDE CONCENTRATION	16.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.95 m^3/s
DRY REF GAS FLOWRATE	15.23 Rm^3/s
DRY ADJ GAS FLOWRATE	19.29 Rm^3/s
WET REF GAS FLOWRATE	18.04 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	10.5 mg
	-FILTER	0.7 mg
	-TOTAL	11.2 mg
DRY REF GAS VOLUME SAMPLED		3.511 m^3
PARTICULATE CONC. - ACTUAL		1.872 mg/m^3
PARTICULATE CONC. - DRY REF		3.190 mg/m^3
PARTICULATE CONC. - DRY ADJ		2.518 mg/m^3
PARTICULATE CONC. - WET REF		2.694 mg/m^3
PARTICULATE EMISSION RATE		0.048577 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 10, 2020	**Operator:**	JB RW

Pitot Factor	0.851	**Filter (mg)**	0.7
DGMCF	0.999	**Probe (mg)**	10.5
Barometric Pressure	29.69 "Hg	**CWTR (g)**	460.9
Static Pressure	-9.640 "H_2O	**WCBDA (g)**	14.7
Nozzle	0.2513 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.42 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%	8.36
CO2%	10.91
COppm	16.4

Measured H2O
15.6 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	990.30	0.8	289	45	77	75	1.9	3.0		18.92	
	2.5	992.17	0.8	290	42	80	79	1.9	3.0		18.93	99.2
	5	994.04	0.8	292	42	80	79	1.9	3.0		18.96	98.7
2	7.5	995.91	0.81	287	42	79	78	1.9	3.0		19.01	98.8
	10	997.78	0.8	287	42	79	78	1.9	3.0		18.89	98.0
	12.5	999.66	0.8	287	42	79	78	1.9	3.0		18.89	99.2
3	15	1001.50	0.8	287	41	80	79	1.9	3.0		18.89	97.1
	17.5	1003.36	0.8	287	41	78	77	1.9	3.0		18.89	97.9
	20	1005.22	0.8	287	41	78	77	1.9	3.0		18.89	98.3
4	22.5	1007.07	0.7	287	41	78	77	1.7	3.0		17.67	97.8
	25	1008.88	0.7	287	41	78	77	1.7	3.0		17.67	102.2
	27.5	1010.65	0.7	287	42	78	77	1.6	3.0		17.67	100.0
5	30	1012.39	0.7	287	42	78	77	1.6	3.0		17.67	98.2
	32.5	1014.11	0.7	287	43	78	77	1.6	3.0		17.67	97.1
	35	1015.84	0.7	287	43	79	77	1.6	3.0		17.67	97.7
6	37.5	1017.57	0.6	287	43	78	76	1.45	3.0		16.36	97.6
	40	1019.20	0.6	287	43	78	76	1.45	3.0		16.36	99.5
	42.5	1020.83	0.6	287	43	78	76	1.45	3.0		16.36	99.5
7	45	1022.44	0.65	287	44	79	78	1.6	3.0		17.03	98.2
	47.5	1024.14	0.65	287	45	79	78	1.6	3.0		17.03	99.4
	50	1025.82	0.66	287	46	79	78	1.6	3.0		17.16	98.3
8	52.5	1027.51	0.67	286	49	80	78	1.6	3.0		17.28	98.1
	55	1029.21	0.66	286	49	80	78	1.6	3.0		17.15	97.8
	57.5	1030.93	0.67	286	49	80	78	1.6	3.0		17.28	99.7
9	60	1032.63	0.65	286	49	80	78	1.6	3.0		17.02	97.8
	62.5	1034.32	0.64	285	49	80	77	1.6	3.0		16.88	98.7
	65	1035.99	0.65	285	49	80	77	1.55	3.0		17.01	98.3
10	67.5	1037.68	0.66	285	49	80	77	1.55	3.0		17.14	98.7
	70	1039.35	0.67	285	49	81	79	1.55	3.0		17.27	96.8
	72.5	1041.04	0.67	285	49	81	79	1.55	3.0		17.27	96.9
11	75	1042.73	0.45	285	48	80	78	1.05	3.0		14.15	96.9

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 10, 2020	**Operator:**	JB RW

Pitot Factor	0.851	**Filter (mg)**	0.7
DGMCF	0.999	**Probe (mg)**	10.5
Barometric Pressure	29.69 "Hg	**CWTR (g)**	460.9
Static Pressure	-9.640 "H_2O	**WCBDA (g)**	14.7
Nozzle	0.2513 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.42 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%	8.36
CO2%	10.91
COppm	16.4

Measured H2O
15.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	1044.14	0.45	285	47	80	78	1.05	3.0		14.15	98.7
	80	1045.56	0.45	285	47	80	78	1.05	3.0		14.15	99.4
12	82.5	1047.01	0.46	285	47	80	78	1.05	3.0		14.31	101.5
	85	1048.43	0.46	285	47	81	78	1.05	2.8		14.31	98.4
	87.5	1049.85	0.46	285	47	81	78	1.05	2.8		14.31	98.3
	90	1051.28								0.42		99.0
1	0	1051.70	0.88	285	46	80	78	2.1	3.0		19.79	
	2.5	1053.66	0.89	288	48	82	80	2.1	3.0		19.94	98.4
	5	1055.62	0.89	288	48	82	80	2.1	3.0		19.94	97.7
2	7.5	1057.58	0.89	288	46	81	79	2.1	3.0		19.94	97.7
	10	1059.56	0.89	288	46	81	79	2.1	3.0		19.94	98.9
	12.5	1061.52	0.89	289	46	80	79	2.1	3.0		19.96	97.9
3	15	1063.46	0.8	289	46	80	79	1.9	3.0		18.92	97.0
	17.5	1065.34	0.78	289	46	80	79	1.9	3.0		18.68	99.1
	20	1067.21	0.78	289	46	81	79	1.9	3.0		18.68	99.9
4	22.5	1069.07	0.8	289	46	81	79	1.9	3.0		18.92	99.2
	25	1070.94	0.8	290	46	81	79	1.9	3.0		18.93	98.5
	27.5	1072.80	0.8	290	46	81	79	1.9	3.0		18.93	98.0
5	30	1074.65	0.7	290	46	81	80	1.7	3.0		17.71	97.5
	32.5	1076.43	0.73	290	46	81	80	1.7	3.0		18.09	100.2
	35	1078.18	0.73	290	46	81	80	1.7	3.0		18.09	96.4
6	37.5	1079.94	0.64	291	46	81	80	1.5	3.0		16.95	97.0
	40	1081.63	0.63	291	46	81	80	1.5	3.0		16.81	99.5
	42.5	1083.30	0.65	291	46	81	79	1.5	3.0		17.08	99.1
7	45	1084.98	0.71	291	47	82	80	1.7	3.0		17.85	98.2
	47.5	1086.70	0.71	291	47	82	80	1.7	3.0		17.85	96.1
	50	1088.43	0.71	291	47	82	80	1.7	3.0		17.85	96.6
8	52.5	1090.17	0.71	291	47	82	80	1.7	3.0		17.85	97.2
	55	1091.89	0.74	291	47	82	80	1.8	3.0		18.22	96.1
	57.5	1093.69	0.73	291	47	82	80	1.8	3.0		18.10	98.5
9	60	1095.51	0.76	291	46	82	80	1.8	3.0		18.47	100.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 10, 2020	**Operator:**	JB RW

Pitot Factor	0.851	Filter (mg)	0.7
DGMCF	0.999	Probe (mg)	10.5
Barometric Pressure	29.69 "Hg	CWTR (g)	460.9
Static Pressure	-9.640 "H_2O	WCBDA (g)	14.7
Nozzle	0.2513 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.42 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%	8.36
CO2%	10.91
COppm	16.4

Measured H2O
15.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	1097.30	0.78	289	47	82	80	1.8	3.0		18.68	96.7
	65	1099.11	0.74	289	47	82	80	1.8	3.0		18.20	96.4
10	67.5	1100.94	0.7	289	48	83	80	1.7	3.0		17.70	100.0
	70	1102.73	0.7	289	48	83	80	1.7	3.0		17.70	100.5
	72.5	1104.53	0.7	290	48	82	80	1.7	3.0		17.71	101.0
11	75	1106.31	0.55	290	48	82	80	1.4	3.0		15.70	100.1
	77.5	1107.93	0.55	290	48	83	81	1.3	3.0		15.70	102.7
	80	1109.51	0.58	290	48	83	81	1.3	3.0		16.12	99.9
12	82.5	1111.07	0.55	290	48	83	81	1.3	3.0		15.70	96.1
	85	1112.64	0.55	291	49	82	80	1.3	3.0		15.71	99.3
	87.5	1114.21	0.55	291	49	82	80	1.3	3.0		15.71	99.5
	90	1115.80										100.8

APPENDIX 23

Particle Size Distribution Test Emission Calculations
(12 pages)

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 10, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 1

Project No.: 22050
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	0.992
Pitot Factor	0.848
Barometric Pressure (" Hg)	29.74
Static Pressure ("H_2O)	-9.36
Oxygen Content (%)	8.36
Carbon Dioxide Content (%)	10.93
Carbon Monoxide Content (PPM)	13.8
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	16.9 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.5 Rft^3*	1.176 Rm^3*
Average Cyclone I Cut Diameter		10.17 µm
Average Cyclone IV Cut Diameter		2.35 µm
Average Isokineticity		95.7 %
Stack Gas Physical Parameters		
B_{ws}	16.7 % v/v	
Average m	220.4 (dimensionless)	
M_d	30.08 lbs/lbs mole	
M_w	28.06 lbs/lbs mole	
Average T_s	287 °F	142 °C
Average U_s	60.1 ft/s	18.3 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	57426 ACFM	27.1 m^3/s
Wet Reference Q_s	40071 SCFM*	18.9 Rm^3/s*
Dry Reference Q_s	33369 SCFM*	15.7 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.96 mg/Rm^3*	0.0308 g/s
Total Part. (b)	6.46 mg/Rm^3*	0.102 g/s
PM_{10} Part. (b)	6.04 mg/Rm^3*	0.095 g/s
$PM_{2.5}$ Part. (b)	4.93 mg/Rm^3*	0.078 g/s
Cond. Part.	4.51 mg/Rm^3*	0.071 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)	517.5	658.3	773.8	871.5	
final volume or weight (ml or mg)	682.7	658.3	773.1	880.7	
gain in volume or weight (ml or mg)	165.2	0.0	-0.7	9.2	0.0
				TOTAL	**173.7**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.5	1.3	0.4	<0.1	5.3

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 10, 2020	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22050
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	10.6	0.00	0.82	0.35	287	70	71	0.38	3.0	62.7	10.21	2.35	91.4
	2	10.6	10.6	3.64	0.77	0.35	286	71	72	0.38	3.0	60.8	10.20	2.35	94.4
	3	21.1	10.0	7.29	0.71	0.35	287	71	73	0.38	3.0	58.4	10.11	2.31	99.5
	4	31.1	9.7	10.79	0.68	0.35	287	72	74	0.38	3.0	57.1	10.32	2.40	98.9
	5	40.9	9.6	14.10	0.60	0.35	286	73	74	0.38	3.0	53.6	10.14	2.33	107.7
	6	50.4	9.3	17.44	0.60	0.35	286	73	74	0.38	3.0	53.6	10.45	2.45	103.3
		59.7		20.54											
1	1	0.00	10.6	20.54	0.90	0.35	286	74	75	0.38	3.0	65.7	10.15	2.33	87.9
	2	10.6	10.7	24.26	0.88	0.35	288	74	76	0.38	3.0	65.0	10.17	2.34	88.8
	3	21.3	10.4	28.00	0.85	0.35	288	75	76	0.38	3.0	63.9	10.16	2.33	90.4
	4	31.8	10.1	31.65	0.83	0.35	288	75	76	0.38	3.0	63.2	10.16	2.34	91.5
	5	41.9	9.4	35.20	0.74	0.35	289	75	76	0.38	3.0	59.7	10.04	2.29	98.7
	6	51.3	9.0	38.55	0.68	0.35	289	75	76	0.38	3.0	57.2	9.95	2.25	104.3
		60.3		41.80											
Averages					**0.76**		**287**	**74**		**0.38**		**60.1**	**10.17**	**2.35**	**95.7**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 10, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 1

Project No.: 22050
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	0.992
Pitot Factor	0.848
Barometric Pressure (" Hg)	29.72
Static Pressure ("H_2O)	-9.36
Oxygen Content (%)	8.37
Carbon Dioxide Content (%)	10.95
Carbon Monoxide Content (PPM)	15
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}	41.7 Rft^3*	1.180 Rm^3*
Average Cyclone I Cut Diameter		10.19 µm
Average Cyclone IV Cut Diameter		2.34 µm
Average Isokineticity		101.7 %
Stack Gas Physical Parameters		
B_{ws}	16.1 % v/v	
Average m	219.8 (dimensionless)	
M_d	30.09 lbs/lbs mole	
M_w	28.14 lbs/lbs mole	
Average T_s	283 °F	140 °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	53605 ACFM	25.3 m^3/s
Wet Reference Q_s	37584 SCFM*	17.7 Rm^3/s*
Dry Reference Q_s	31525 SCFM*	14.9 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.59 mg/Rm^3*	0.0088 g/s
Total Part. (b)	6.69 mg/Rm^3*	0.100 g/s
PM_{10} Part. (b)	6.52 mg/Rm^3*	0.097 g/s
$PM_{2.5}$ Part. (b)	6.27 mg/Rm^3*	0.093 g/s
Cond. Part.	6.10 mg/Rm^3*	0.091 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	491.1	672.0	782.7	925.5	
final volume or weight (ml or mg)	647.8	672.0	781.9	936.5	
gain in volume or weight (ml or mg)	156.7	0.0	-0.8	11.0	0.0
				TOTAL	166.9

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.2	0.3	0.1	<0.1	7.2

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 10, 2020	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 22050
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	10.4	41.94	0.82	0.35	286	77	78	0.38	4.0	62.6	10.24	2.36	91.2
	2	10.4	10.1	45.60	0.81	0.35	286	77	78	0.38	4.0	62.2	10.13	2.32	93.1
	3	20.6	9.7	49.20	0.74	0.35	287	77	79	0.38	4.0	59.5	10.26	2.37	95.8
	4	30.3	9.5	52.60	0.68	0.35	286	77	79	0.38	4.0	57.0	10.32	2.39	99.0
	5	39.8	8.9	55.90	0.60	0.35	286	78	79	0.38	4.0	53.6	10.28	2.38	106.0
	6	48.7	8.9	59.02	0.53	0.35	281	78	79	0.38	4.0	50.2	9.70	2.15	121.8
		57.7		62.40											
1	1	0.00	10.9	62.40	0.70	0.35	277	79	81	0.38	4.0	57.5	10.26	2.36	97.5
	2	10.9	10.8	66.23	0.70	0.35	279	79	80	0.38	4.0	57.6	10.29	2.38	97.3
	3	21.8	10.6	70.00	0.67	0.35	282	79	80	0.38	4.0	56.5	10.09	2.30	102.5
	4	32.4	10.5	73.81	0.63	0.35	282	80	81	0.38	4.0	54.8	10.16	2.33	104.8
	5	42.9	9.9	77.55	0.56	0.35	283	80	81	0.38	4.0	51.7	10.29	2.38	109.3
	6	52.8	9.5	81.02	0.52	0.35	283	81	82	0.38	4.0	49.8	10.29	2.38	113.3
		62.3		84.35											
Averages					**0.66**		**283**	**79**		**0.38**		**56.1**	**10.19**	**2.34**	**101.7**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 10, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 1

Project No.: 22050
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	0.992
Pitot Factor	0.848
Barometric Pressure (" Hg)	29.67
Static Pressure ("H_2O)	-9.36
Oxygen Content (%)	8.45
Carbon Dioxide Content (%)	10.78
Carbon Monoxide Content (PPM)	14.2
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.34 Rft^3/min*	9.7 l/min*
Cyclone Qs_{actual}	0.59 ft^3/min	16.7 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.2 Rft^3*	1.167 Rm^3*
Average Cyclone I Cut Diameter		10.20 µm
Average Cyclone IV Cut Diameter		2.35 µm
Average Isokineticity		99.2 %
Stack Gas Physical Parameters		
B_{ws}	16.6 % v/v	
Average m	220.3 (dimensionless)	
M_d	30.06 lbs/lbs mole	
M_w	28.06 lbs/lbs mole	
Average T_s	287 °F	141 °C
Average U_s	57.7 ft/s	17.6 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	55135 ACFM	26.0 m^3/s
Wet Reference Q_s	38418 SCFM*	18.1 Rm^3/s*
Dry Reference Q_s	32026 SCFM*	15.1 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.86 mg/Rm^3*	0.0129 g/s
Total Part. (b)	5.57 mg/Rm^3*	0.084 g/s
PM_{10} Part. (b)	5.14 mg/Rm^3*	0.078 g/s
$PM_{2.5}$ Part. (b)	4.97 mg/Rm^3*	0.075 g/s
Cond. Part.	4.71 mg/Rm^3*	0.071 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)	517.5	658.3	773.1	880.7	
final volume or weight (ml or mg)	680.3	659.9	772.1	888.7	
gain in volume or weight (ml or mg)	162.8	1.6	-1.0	8.0	0.0
				TOTAL	**171.4**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.5	0.2	0.2	<0.1	5.5

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 10, 2020	Plant: DYEC	Test No.: 3	Project No.: 22050
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	11.1	84.52	0.79	0.35	286	80	82	0.38	3.0	61.6	10.46	2.45	89.9
	2	11.1	11.1	88.31	0.76	0.35	285	80	81	0.38	3.0	60.4	10.23	2.36	94.4
	3	22.2	10.6	92.19	0.68	0.35	286	80	82	0.38	3.0	57.2	10.26	2.37	99.6
	4	32.8	10.2	95.89	0.63	0.35	286	81	83	0.38	3.0	55.0	9.95	2.25	108.0
	5	43.0	9.5	99.60	0.60	0.35	287	81	83	0.38	3.0	53.7	10.21	2.36	106.8
	6	52.5	9.0	102.96	0.60	0.35	288	81	83	0.38	3.0	53.8	10.28	2.38	105.9
		61.5		106.09											
1	1	0.00	10.3	106.00	0.81	0.35	285	82	84	0.38	3.0	62.4	10.06	2.29	93.6
	2	10.3	10.3	109.71	0.79	0.35	287	82	84	0.38	3.0	61.7	10.09	2.31	94.7
	3	20.6	10.1	113.41	0.75	0.35	287	82	84	0.38	3.0	60.1	10.29	2.39	94.5
	4	30.7	9.8	116.93	0.71	0.35	287	83	84	0.38	3.0	58.5	10.26	2.38	97.5
	5	40.4	9.2	120.36	0.62	0.35	287	83	84	0.38	3.0	54.6	10.11	2.32	106.5
	6	49.7	8.9	123.66	0.59	0.35	287	83	84	0.38	3.0	53.3	10.23	2.36	107.4
		58.5		126.79											
Averages					**0.69**		**287**	**82**		**0.38**		**57.7**	**10.20**	**2.35**	**99.2**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 9, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 2

Project No.: 22050
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	0.992
Pitot Factor	0.848
Barometric Pressure (" Hg)	30.01
Static Pressure ("H_2O)	-8.20
Oxygen Content (%)	8.43
Carbon Dioxide Content (%)	11.07
Carbon Monoxide Content (PPM)	19.7
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}	0.58 ft^3/min	16.4 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.8 Rft^3*	1.185 Rm^3*
Average Cyclone I Cut Diameter		10.37 µm
Average Cyclone IV Cut Diameter		2.40 µm
Average Isokineticity		103.0 %
Stack Gas Physical Parameters		
B_{ws}	14.9 % v/v	
Average m	221.8 (dimensionless)	
M_d	30.11 lbs/lbs mole	
M_w	28.31 lbs/lbs mole	
Average T_s	287 °F	142 °C
Average U_s	54.3 ft/s	16.5 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	51878 ACFM	24.5 m^3/s
Wet Reference Q_s	36659 SCFM*	17.3 Rm^3/s*
Dry Reference Q_s	31205 SCFM*	14.7 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.42 mg/Rm^3*	0.0062 g/s
Total Part. (b)	6.33 mg/Rm^3*	0.093 g/s
PM_{10} Part. (b)	6.25 mg/Rm^3*	0.092 g/s
$PM_{2.5}$ Part. (b)	6.16 mg/Rm^3*	0.091 g/s
Cond. Part.	5.91 mg/Rm^3*	0.087 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)	517.5	659.1	775.0	852.4	
final volume or weight (ml or mg)	658.2	660.3	774.7	863.1	
gain in volume or weight (ml or mg)	140.7	1.2	-0.3	10.7	0.0
				TOTAL	**152.3**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.1	0.1	0.2	<0.1	7.0

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 9, 2020	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22050
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
2	1	0.00	10.5	72.71	0.74	0.35	289	69	70	0.38	3.0	59.1	10.27	2.36	96.6
	2	10.5	10.4	76.39	0.71	0.35	288	70	71	0.38	3.0	57.8	10.32	2.38	97.8
	3	20.9	10.2	80.00	0.67	0.35	287	70	72	0.38	3.0	56.1	10.30	2.37	100.9
	4	31.1	10.0	83.55	0.61	0.35	287	70	74	0.38	3.0	53.5	10.31	2.38	105.6
	5	41.1	9.4	87.05	0.54	0.35	287	72	75	0.38	3.0	50.4	10.32	2.38	112.0
	6	50.5	9.0	90.34	0.49	0.35	286	73	75	0.38	3.0	48.0	10.33	2.38	117.4
		59.5		93.49											
1	1	0.00	10.3	93.49	0.67	0.35	285	73	76	0.38	3.0	56.0	10.75	2.55	94.9
	2	10.3	10.4	96.90	0.72	0.35	286	74	76	0.38	3.0	58.1	10.34	2.39	96.7
	3	20.7	10.8	100.53	0.67	0.35	287	75	76	0.38	3.0	56.1	10.34	2.39	100.3
	4	31.5	10.0	104.31	0.62	0.35	287	75	77	0.38	3.0	54.0	10.38	2.41	103.7
	5	41.5	9.7	107.80	0.59	0.35	287	75	77	0.38	3.0	52.7	10.35	2.39	106.7
	6	51.2	9.3	111.20	0.52	0.35	287	75	77	0.38	3.0	49.4	10.37	2.40	113.5
		60.5		114.43											
Averages					**0.63**		**287**	**73**		**0.38**		**54.3**	**10.37**	**2.40**	**103.0**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 9, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 2

Project No.: 22050
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	0.992
Pitot Factor	0.848
Barometric Pressure (" Hg)	29.94
Static Pressure ("H_2O)	-8.20
Oxygen Content (%)	8.17
Carbon Dioxide Content (%)	11.13
Carbon Monoxide Content (PPM)	13.2
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft³/min*	9.8 l/min*
Cyclone Qs_{actual}	0.59 ft³/min	16.7 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.7 Rft³*	1.181 Rm³*
Average Cyclone I Cut Diameter		10.24 µm
Average Cyclone IV Cut Diameter		2.36 µm
Average Isokineticity		103.1 %
Stack Gas Physical Parameters		
B_{ws}	16.1 % v/v	
Average m	220.9 (dimensionless)	
M_d	30.11 lbs/lbs mole	
M_w	28.16 lbs/lbs mole	
Average T_s	288 °F	142 °C
Average U_s	55.0 ft/s	16.8 m/s
Stack Area	15.9 ft²	1.48 m²
Actual Q_s	52579 ACFM	24.8 m³/s
Wet Reference Q_s	37024 SCFM*	17.5 Rm³/s*
Dry Reference Q_s	31065 SCFM*	14.7 Rm³/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.27 mg/Rm³*	0.0186 g/s
Total Part. (b)	7.62 mg/Rm³*	0.112 g/s
PM_{10} Part. (b)	6.94 mg/Rm³*	0.102 g/s
$PM_{2.5}$ Part. (b)	6.77 mg/Rm³*	0.099 g/s
Cond. Part.	6.35 mg/Rm³*	0.093 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	491.1	673.0	784.1	914.7	
final volume or weight (ml or mg)	649.4	672.0	782.7	925.5	
gain in volume or weight (ml or mg)	158.3	-1.0	-1.4	10.8	0.0
				TOTAL	**166.7**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.8	0.2	0.4	<0.1	7.5

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 9, 2020	Plant: DYEC	Test No.: 2	Project No.: 22050
Client: Covanta	Location: Courtice, Ontario	Test location: APC Outlet No. 2	Operator: DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
2	1	0.00	10.9	14.70	0.73	0.35	286	76	77	0.38	4.0	58.8	10.24	2.35	96.8
	2	10.9	10.6	18.50	0.71	0.35	288	76	77	0.38	4.0	58.0	10.24	2.36	98.2
	3	21.5	10.3	22.22	0.65	0.35	288	77	78	0.38	4.0	55.5	10.27	2.37	102.4
	4	31.9	9.9	25.83	0.61	0.35	287	77	78	0.38	4.0	53.8	10.21	2.34	106.4
	5	41.7	9.3	29.30	0.59	0.35	287	78	79	0.38	4.0	52.9	10.17	2.33	108.8
	6	51.0	8.8	32.59	0.53	0.35	288	78	79	0.38	4.0	50.1	10.23	2.35	114.0
		59.8		35.70											
1	1	0.00	10.3	35.70	0.72	0.35	287	78	80	0.38	4.0	58.4	10.24	2.36	97.5
	2	10.3	10.7	39.33	0.72	0.35	289	79	80	0.38	4.0	58.5	10.30	2.38	96.9
	3	21.1	10.3	43.07	0.67	0.35	289	80	81	0.38	4.0	56.4	10.27	2.37	100.9
	4	31.4	9.9	46.70	0.62	0.35	288	80	81	0.38	4.0	54.2	10.21	2.34	105.7
	5	41.3	9.7	50.22	0.60	0.35	288	80	81	0.38	4.0	53.3	10.26	2.36	106.7
	6	51.0	9.1	53.63	0.53	0.35	288	80	81	0.38	4.0	50.1	10.31	2.38	112.7
		60.2		56.81											
Averages					**0.64**		**288**	**79**		**0.38**		**55.0**	**10.24**	**2.36**	**103.1**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 9, 2020
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 2

Project No.: 22050
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	0.992
Pitot Factor	0.848
Barometric Pressure (" Hg)	29.88
Static Pressure ("H_2O)	-8.97
Oxygen Content (%)	8.28
Carbon Dioxide Content (%)	10.97
Carbon Monoxide Content (PPM)	13.6
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}	0.59 ft^3/min	16.6 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.4 Rft^3*	1.174 Rm^3*
Average Cyclone I Cut Diameter		10.30 μm
Average Cyclone IV Cut Diameter		2.37 μm
Average Isokineticity		94.4 %
Stack Gas Physical Parameters		
B_{ws}	15.9 % v/v	
Average m	221.2 (dimensionless)	
M_d	30.09 lbs/lbs mole	
M_w	28.16 lbs/lbs mole	
Average T_s	288 °F	142 °C
Average U_s	60.3 ft/s	18.4 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	57650 ACFM	27.2 m^3/s
Wet Reference Q_s	40415 SCFM*	19.1 Rm^3/s*
Dry Reference Q_s	33980 SCFM*	16.0 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.45 mg/Rm^3*	0.0232 g/s
Total Part. (b)	6.39 mg/Rm^3*	0.102 g/s
PM_{10} Part. (b)	5.96 mg/Rm^3*	0.096 g/s
$PM_{2.5}$ Part. (b)	5.79 mg/Rm^3*	0.093 g/s
Cond. Part.	4.94 mg/Rm^3*	0.079 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)	517.5	659.1	774.7	863.1	
final volume or weight (ml or mg)	674.3	658.3	773.8	871.5	
gain in volume or weight (ml or mg)	156.8	-0.8	-0.9	8.4	0.0
				TOTAL	**163.5**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.5	0.2	0.9	<0.1	5.8

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 9, 2020	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22050
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
2	1	0.00	10.7	57.61	0.85	0.35	288	81	82	0.38	3.0	63.6	10.32	2.39	88.8
	2	10.7	10.5	61.35	0.81	0.35	289	81	82	0.38	3.0	62.1	10.02	2.27	95.0
	3	21.2	10.1	65.20	0.76	0.35	289	81	82	0.38	3.0	60.2	10.32	2.39	94.0
	4	31.3	9.8	68.73	0.70	0.35	288	81	83	0.38	3.0	57.7	10.33	2.39	97.8
	5	41.1	9.6	72.15	0.63	0.35	287	81	83	0.38	3.0	54.7	10.31	2.39	103.3
	6	50.7	9.1	75.52	0.54	0.35	288	81	83	0.38	3.0	50.7	10.32	2.39	111.5
		59.8		78.71											
1	1	0.00	10.6	78.71	0.89	0.35	287	82	84	0.38	3.0	65.1	10.33	2.39	86.6
	2	10.6	10.6	82.43	0.87	0.35	288	82	84	0.38	3.0	64.4	10.25	2.36	88.6
	3	21.2	10.2	86.19	0.85	0.35	288	82	84	0.38	3.0	63.6	10.19	2.34	90.5
	4	31.5	9.9	89.85	0.84	0.35	288	82	82	0.38	3.0	63.2	10.32	2.39	89.4
	5	41.3	9.7	93.30	0.77	0.35	288	82	82	0.38	3.0	60.6	10.33	2.40	93.2
	6	51.0	9.1	96.69	0.70	0.35	289	82	82	0.38	3.0	57.8	10.51	2.47	95.5
		60.2		99.80											
Averages					**0.77**		**288**	**82**		**0.38**		**60.3**	**10.30**	**2.37**	**94.4**

APPENDIX 24

Acid Gases Test Emission Calculations
(12 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	1 - M26A
Date:	November 9, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.338 m^3
AVGERGE ISOKINETICITY	100.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.3 °C
AVERAGE GAS MOISTURE BY VOLUME	14.4 %
AVERAGE GAS VELOCITY	17.15 m/s
BAROMETRIC PRESSURE (Station)	101.626 Kpa
STATIC PRESSURE	-2.224 Kpa
ABSOLUTE GAS PRESSURE	99.402 Kpa
OXYGEN CONCENTRATION	8.73 %
CARBON DIOXIDE CONCENTRATION	10.78 %
CARBON MONOXIDE CONCENTRATION	13.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.33 m^3/s
DRY REF GAS FLOWRATE	15.34 Rm^3/s
DRY ADJ GAS FLOWRATE	18.85 Rm^3/s
WET REF GAS FLOWRATE	17.93 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.338 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No. 1
Date:	November 9, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.004	Probe (mg)	0
Barometric Pressure	30.01 "Hg	CWTR (g)	151.2
Static Pressure	-8.930 "H_2O	WCBDA (g)	14.6
Nozzle	0.2651 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%	8.73
CO2%	10.78
COppm	13.9

Measured H2O
14.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Temperatures: Imp. Out °F	Temperatures: DGM Out °F	Temperatures: DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	82.60	0.64	288	66	68	68	2.8	6.0		16.71	
2	5	86.72	0.66	282	50	68	71	2	5.0		16.90	111.9
3	10	90.49	0.66	282	49	69	75	2	5.0		16.90	99.9
4	15	94.07	0.66	283	50	69	79	2.1	5.0		16.91	94.4
5	20	97.88	0.68	284	50	70	83	2.15	5.5		17.17	100.2
6	25	101.86	0.66	284	51	71	85	2.1	5.5		16.92	102.7
7	30	105.70	0.72	284	51	71	86	2.1	5.5		17.67	100.3
8	35	109.57	0.68	285	52	72	87	2.1	5.5		17.18	96.7
9	40	113.43	0.7	285	52	72	88	2.2	5.5		17.44	99.1
10	45	117.44	0.7	285	52	73	89	2.2	5.5		17.44	101.4
11	50	121.42	0.69	286	53	74	90	2.1	5.5		17.32	100.5
12	55	125.32	0.68	286	53	74	91	2.1	5.5		17.20	99.1
	60	129.24										100.2

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	2 - M26A
Date:	November 9, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.296 m^3
AVGERGE ISOKINETICITY	100.0 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.1 °C
AVERAGE GAS MOISTURE BY VOLUME	15.8 %
AVERAGE GAS VELOCITY	17.04 m/s
BAROMETRIC PRESSURE (Station)	101.524 Kpa
STATIC PRESSURE	-2.224 Kpa
ABSOLUTE GAS PRESSURE	99.300 Kpa
OXYGEN CONCENTRATION	8.59 %
CARBON DIOXIDE CONCENTRATION	10.76 %
CARBON MONOXIDE CONCENTRATION	12.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.18 m^3/s
DRY REF GAS FLOWRATE	14.92 Rm^3/s
DRY ADJ GAS FLOWRATE	18.56 Rm^3/s
WET REF GAS FLOWRATE	17.72 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.296 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No. 1
Date:	November 9, 2020	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.98 "Hg	**CWTR (g)**	163.4
Static Pressure	-8.930 "H_2O	**WCBDA (g)**	14.9
Nozzle	0.2651 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%	8.59
CO2%	10.76
COppm	12.2

Measured H2O
15.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	29.77	0.67	288	73	72	72	2.05	5.5		17.15	
2	5	33.63	0.67	287	60	72	72	2	5.5		17.14	102.7
3	10	37.40	0.67	288	58	72	83	2	5.5		17.15	100.3
4	15	41.17	0.68	288	60	73	86	2.1	5.5		17.28	99.3
5	20	44.99	0.68	288	59	73	88	2.1	5.5		17.28	99.5
6	25	48.93	0.68	288	59	74	90	2	5.5		17.28	102.5
7	30	52.77	0.68	288	58	75	91	2.05	5.5		17.28	99.6
8	35	56.61	0.65	288	58	75	92	1.9	5.5		16.89	99.4
9	40	60.32	0.65	288	56	76	92	1.95	5.5		16.89	98.1
10	45	64.09	0.65	288	56	76	93	1.95	5.5		16.89	99.6
11	50	67.86	0.63	288	56	77	93	1.9	5.5		16.63	99.5
12	55	71.57	0.63	287	56	77	93	1.9	5.5		16.62	99.4
	60	75.32										100.4

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	3 - M26A
Date:	November 9, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.322 m^3
AVGERGE ISOKINETICITY	101.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.5 ^oC
AVERAGE GAS MOISTURE BY VOLUME	17.6 %
AVERAGE GAS VELOCITY	17.57 m/s
BAROMETRIC PRESSURE (Station)	101.321 Kpa
STATIC PRESSURE	-2.224 Kpa
ABSOLUTE GAS PRESSURE	99.097 Kpa
OXYGEN CONCENTRATION	8.3 %
CARBON DIOXIDE CONCENTRATION	11.01 %
CARBON MONOXIDE CONCENTRATION	12.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.95 m^3/s
DRY REF GAS FLOWRATE	15.00 Rm^3/s
DRY ADJ GAS FLOWRATE	19.09 Rm^3/s
WET REF GAS FLOWRATE	18.21 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.322 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - M26A	**Test Location:**	APC Outlet No. 1
Date:	November 9, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.004	Probe (mg)	0
Barometric Pressure	29.92 "Hg	CWTR (g)	195.3
Static Pressure	-8.930 "H_2O	WCBDA (g)	12.4
Nozzle	0.2651 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%	8.3
CO2%	11.01
COppm	12.5

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	75.65	0.68	288	74	75	75	2	4.5		17.36	
2	5	79.45	0.73	288	52	75	79	2.1	4.5		17.99	101.6
3	10	83.37	0.68	288	49	75	84	2.05	4.5		17.36	100.8
4	15	87.22	0.68	289	50	75	86	2.05	4.5		17.37	102.1
5	20	91.03	0.68	289	50	76	89	2.05	4.5		17.37	100.9
6	25	94.93	0.68	289	50	76	89	2.05	4.5		17.37	102.9
7	30	98.77	0.72	289	50	76	90	2.1	4.5		17.88	101.3
8	35	102.65	0.72	289	51	77	91	2.15	5.0		17.88	99.4
9	40	106.64	0.72	289	52	77	91	2.15	5.0		17.88	102.1
10	45	110.64	0.7	289	54	78	91	2.1	5.0		17.63	102.3
11	50	114.55	0.68	288	56	78	91	2.05	5.0		17.36	101.3
12	55	118.43	0.68	288	57	78	92	2.05	5.0		17.36	101.9
	60	122.29										101.3

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No.2
Test No.:	1 - M26A
Date:	November 10, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.319 m^3
AVGERGE ISOKINETICITY	100.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.8 °C
AVERAGE GAS MOISTURE BY VOLUME	16.5 %
AVERAGE GAS VELOCITY	17.46 m/s
BAROMETRIC PRESSURE (Station)	100.711 Kpa
STATIC PRESSURE	-2.400 Kpa
ABSOLUTE GAS PRESSURE	98.311 Kpa
OXYGEN CONCENTRATION	7.9 %
CARBON DIOXIDE CONCENTRATION	11.21 %
CARBON MONOXIDE CONCENTRATION	16.7 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.79 m^3/s
DRY REF GAS FLOWRATE	15.05 Rm^3/s
DRY ADJ GAS FLOWRATE	19.77 Rm^3/s
WET REF GAS FLOWRATE	18.03 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.319 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No.2
Date:	November 10, 2020	**Operator:**	TT

Pitot Factor	0.848	Filter (mg)	0
DGMCF	1.004	Probe (mg)	0
Barometric Pressure	29.74 "Hg	CWTR (g)	176.8
Static Pressure	-9.640 "H_2O	WCBDA (g)	14.6
Nozzle	0.2651 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%	7.9
CO2%	11.21
COppm	16.7

Measured H2O
16.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	171.77	0.67	269	67	70	69	2	4.5		17.03	
2	5	175.51	0.67	285	51	69	71	2	4.5		17.22	99.2
3	10	179.25	0.7	287	51	69	75	2.1	4.5		17.62	100.2
4	15	183.09	0.7	287	54	70	79	2.1	4.5		17.62	100.4
5	20	186.99	0.72	287	57	70	82	2.2	5.0		17.87	101.5
6	25	190.97	0.66	287	60	71	83	2	4.5		17.11	101.9
7	30	194.78	0.66	286	61	72	85	2	4.5		17.10	101.6
8	35	198.55	0.68	287	60	72	86	2.05	4.5		17.37	100.2
9	40	202.39	0.7	287	58	73	87	2.15	5.0		17.62	100.5
10	45	206.37	0.7	287	56	73	88	2.15	5.0		17.62	102.5
11	50	210.32	0.7	288	55	74	88	2.15	5.0		17.64	101.7
12	55	214.23	0.7	288	55	74	89	2.15	5.0		17.64	100.6
	60	218.15										100.8

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No.2
Test No.:	2 - M26A
Date:	November 10, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.324 m^3
AVGERGE ISOKINETICITY	100.8 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.5 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	17.54 m/s
BAROMETRIC PRESSURE (Station)	100.711 Kpa
STATIC PRESSURE	-2.400 Kpa
ABSOLUTE GAS PRESSURE	98.311 Kpa
OXYGEN CONCENTRATION	8.28 %
CARBON DIOXIDE CONCENTRATION	11.10 %
CARBON MONOXIDE CONCENTRATION	16.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.92 m^3/s
DRY REF GAS FLOWRATE	15.13 Rm^3/s
DRY ADJ GAS FLOWRATE	19.28 Rm^3/s
WET REF GAS FLOWRATE	18.09 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.324 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No.2
Date:	November 10, 2020	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.74 "Hg	**CWTR (g)**	178.4
Static Pressure	-9.640 "H_2O	**WCBDA (g)**	11.7
Nozzle	0.2651 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%	8.28
CO2%	11.10
COppm	16.5

Measured H2O
16.3 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	218.65	0.71	286	69	72	72	2	4.5		17.73	
2	5	222.62	0.69	286	52	73	79	2.05	4.5		17.48	**102.8**
3	10	226.48	0.7	287	50	73	85	2.1	5.0		17.62	**100.7**
4	15	230.38	0.7	287	50	74	89	2.15	5.0		17.62	**100.5**
5	20	234.32	0.68	286	50	75	91	2.1	5.0		17.35	**101.1**
6	25	238.19	0.68	286	51	75	92	2.1	5.0		17.35	**100.4**
7	30	242.06	0.69	286	52	76	92	2.15	5.0		17.48	**100.3**
8	35	246.03	0.68	287	52	77	93	2.05	5.0		17.37	**102.1**
9	40	249.92	0.68	287	52	77	93	2.05	5.0		17.37	**100.6**
10	45	253.78	0.71	287	53	78	94	2.15	5.0		17.74	**99.8**
11	50	257.77	0.71	288	54	78	94	2.15	5.0		17.76	**100.8**
12	55	261.76	0.7	288	55	78	94	2.1	5.0		17.63	**100.9**
	60	265.68										**99.8**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No.2
Test No.:	3 - M26A
Date:	November 10, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.320 m^3
AVGERGE ISOKINETICITY	99.6 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.0 ^oC
AVERAGE GAS MOISTURE BY VOLUME	14.8 %
AVERAGE GAS VELOCITY	17.39 m/s
BAROMETRIC PRESSURE (Station)	100.610 Kpa
STATIC PRESSURE	-2.400 Kpa
ABSOLUTE GAS PRESSURE	98.209 Kpa
OXYGEN CONCENTRATION	8.66 %
CARBON DIOXIDE CONCENTRATION	10.65 %
CARBON MONOXIDE CONCENTRATION	18.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.70 m^3/s
DRY REF GAS FLOWRATE	15.27 Rm^3/s
DRY ADJ GAS FLOWRATE	18.88 Rm^3/s
WET REF GAS FLOWRATE	17.93 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.320 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - M26A	**Test Location:**	APC Outlet No.2
Date:	November 10, 2020	**Operator:**	TT

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.71 "Hg	**CWTR (g)**	157.4
Static Pressure	-9.640 "H_2O	**WCBDA (g)**	11.8
Nozzle	0.2651 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%	8.66
CO2%	10.65
COppm	18.3

Measured H2O
14.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	66.05	0.74	286	70	75	75	2	4.5		18.07	
2	5	70.37	0.69	287	49	75	79	1.9	4.5		17.46	**107.3**
3	10	74.12	0.68	287	49	75	84	2.05	4.5		17.33	**96.1**
4	15	77.98	0.68	286	50	76	87	2.05	4.5		17.32	**99.2**
5	20	81.87	0.68	287	51	76	89	2.05	4.5		17.33	**99.6**
6	25	85.75	0.66	286	53	77	90	2	4.5		17.07	**99.2**
7	30	89.57	0.68	285	54	77	91	2.05	4.5		17.31	**98.9**
8	35	93.45	0.68	286	56	77	91	2.05	4.5		17.32	**98.8**
9	40	97.35	0.7	285	58	78	91	2.1	5.0		17.56	**99.4**
10	45	101.30	0.68	285	61	78	91	2.05	5.0		17.31	**99.1**
11	50	105.20	0.68	285	61	78	91	2.05	5.0		17.31	**99.2**
12	55	109.10	0.68	285	61	79	92	2.05	5.0		17.31	**99.2**
	60	112.99										**98.8**

APPENDIX 25

SVOC Test Emission Calculations
(18 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 - SVOC
Date:	November 11, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	5.135 m^3
AVGERGE ISOKINETICITY	99.7 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.7 ^oC
AVERAGE GAS MOISTURE BY VOLUME	16.6 %
AVERAGE GAS VELOCITY	17.30 m/s
BAROMETRIC PRESSURE (Station)	99.932 Kpa
STATIC PRESSURE	-2.370 Kpa
ABSOLUTE GAS PRESSURE	97.562 Kpa
OXYGEN CONCENTRATION	8.34 %
CARBON DIOXIDE CONCENTRATION	10.84 %
CARBON MONOXIDE CONCENTRATION	11.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.57 m^3/s
DRY REF GAS FLOWRATE	14.83 Rm^3/s
DRY ADJ GAS FLOWRATE	18.82 Rm^3/s
WET REF GAS FLOWRATE	17.78 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.135 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	Plant Location:	Courtice, ON
Test No.:	1 - SVOC	Test Location:	APC Outlet No. 1
Date:	November 11, 2020	Operator:	TT

Pitot Factor	0.849	Filter (mg)	0
DGMCF	1.004	Probe (mg)	0
Barometric Pressure	29.51 "Hg	CWTR (g)	726.4
Static Pressure	-9.520 "H_2O	WCBDA (g)	23
Nozzle	0.2651 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.26 ft^3
Length	0.000 ft	Reading Interval	5 minutes
Width	0.000 ft	Number of Ports	2
		Number of points / Port	12

Combustion Gases	
O2%	8.34
CO2%	10.84
COppm	11.1

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 %
1	0	55.93	0.76	285	71	70	70	2.2	7.0		18.45	
	5	59.95	0.77	283	61	70	72	2.25	8.0		18.54	100.7
2	10	64.04	0.77	283	56	70	76	2.2	8.0		18.54	101.4
	15	68.08	0.79	281	54	71	79	2.3	8.0		18.76	99.8
3	20	72.24	0.73	280	53	71	81	2.1	8.0		18.02	101.0
	25	76.19	0.75	280	52	72	83	2.2	8.0		18.26	99.4
4	30	80.24	0.72	281	52	72	84	2.1	8.0		17.91	100.3
	35	84.16	0.72	282	52	73	85	2.1	8.0		17.92	99.1
5	40	88.09	0.63	283	52	73	85	1.9	8.0		16.77	99.2
	45	91.81	0.65	283	52	73	86	2	8.0		17.04	100.4
6	50	95.60	0.61	284	52	74	87	1.8	8.0		16.51	100.6
	55	99.22	0.61	284	52	74	87	1.8	8.0		16.51	99.0
7	60	102.83	0.66	284	53	74	87	2	8.0		17.18	98.8
	65	106.61	0.64	284	52	74	87	1.9	8.0		16.92	99.5
8	70	110.37	0.64	284	53	75	87	1.85	8.0		16.92	100.5
	75	114.07	0.64	284	53	75	88	1.9	8.0		16.92	98.8
9	80	117.77	0.66	288	53	75	88	1.7	8.0		17.22	98.7
	85	121.37	0.67	284	53	75	88	2	8.0		17.31	94.7
10	90	125.16	0.65	281	53	75	88	2	8.0		17.01	98.8
	95	128.97	0.65	283	53	76	88	2	8.0		17.04	100.6
11	100	132.84	0.65	283	54	76	88	2	8.0		17.04	102.3
	105	136.69	0.68	281	54	76	87	2	8.0		17.40	101.7
12	110	140.61	0.55	284	54	76	88	1.7	8.0		15.68	101.2
	115	144.21	0.56	284	54	76	88	1.5	7.0		15.82	103.4
	120	147.46								0.26		92.5
1	0	147.72	0.77	284	61	75	78	2.2	9.0		18.55	
	5	151.77	0.78	284	57	75	82	2.2	9.0		18.67	99.5
2	10	155.84	0.78	284	59	75	84	2.25	9.0		18.67	98.9
	15	159.96	0.78	284	55	75	85	2.25	9.0		18.67	100.0
3	20	164.08	0.74	284	51	75	85	2.15	9.0		18.19	99.9

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	November 11, 2020	**Operator:**	TT

Pitot Factor	0.849	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.51 "Hg	**CWTR (g)**	726.4
Static Pressure	-9.520 "H_2O	**WCBDA (g)**	23
Nozzle	0.2651 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.26 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.34
CO2%	10.84
COppm	11.1

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 %
	25	168.08	0.77	285	49	75	86	2.25	9.0		18.57	99.5
4	30	172.17	0.71	285	51	75	86	2.1	9.0		17.83	99.8
	35	176.12	0.71	285	51	75	86	2.1	9.0		17.83	100.3
5	40	180.07	0.64	285	51	75	87	1.9	9.0		16.93	100.3
	45	183.81	0.64	285	51	75	87	1.9	8.5		16.93	99.9
6	50	187.52	0.61	285	52	75	87	1.8	8.5		16.53	99.1
	55	191.18	0.59	285	52	75	87	1.75	8.5		16.25	100.1
7	60	194.78	0.65	285	52	75	87	1.95	8.5		17.06	100.1
	65	198.55	0.65	285	51	75	87	1.95	8.5		17.06	99.9
8	70	202.33	0.66	286	48	75	87	1.95	8.5		17.20	100.2
	75	206.12	0.66	285	46	75	87	1.95	8.5		17.19	99.8
9	80	209.92	0.66	283	45	75	87	1.95	8.5		17.17	100.0
	85	213.73	0.64	282	45	75	87	1.9	8.5		16.89	100.1
10	90	217.48	0.66	282	46	75	87	1.95	8.5		17.16	100.0
	95	221.27	0.66	283	46	75	87	1.95	8.5		17.17	99.5
11	100	225.06	0.56	281	46	75	87	1.7	8.0		15.79	99.6
	105	228.65	0.6	281	46	75	87	1.8	9.0		16.35	102.2
12	110	232.30	0.57	281	46	75	87	1.6	8.0		15.93	100.4
	115	235.78	0.6	281	56	76	88	1.8	9.0		16.35	98.2
	120	239.23										94.7

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - SVOC
Date:	November 11, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	5.077 m^3
AVGERGE ISOKINETICITY	99.0 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	138.9 °C
AVERAGE GAS MOISTURE BY VOLUME	16.2 %
AVERAGE GAS VELOCITY	17.09 m/s
BAROMETRIC PRESSURE (Station)	100.068 Kpa
STATIC PRESSURE	-2.370 Kpa
ABSOLUTE GAS PRESSURE	97.697 Kpa
OXYGEN CONCENTRATION	8.49 %
CARBON DIOXIDE CONCENTRATION	10.81 %
CARBON MONOXIDE CONCENTRATION	14.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.25 m^3/s
DRY REF GAS FLOWRATE	14.76 Rm^3/s
DRY ADJ GAS FLOWRATE	18.51 Rm^3/s
WET REF GAS FLOWRATE	17.62 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.077 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	November 11, 2020	**Operator:**	TT

Pitot Factor	0.849	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.55 "Hg	**CWTR (g)**	699.9
Static Pressure	-9.520 "H_2O	**WCBDA (g)**	20.7
Nozzle	0.2651 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%	8.49
CO2%	10.81
COppm	14.0

Measured H2O
16.2 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	39.62	0.71	281	69	73	73	2	7.0		17.75	
	5	43.47	0.7	279	56	73	75	2.05	7.0		17.60	98.6
2	10	47.30	0.68	278	53	73	80	2.05	8.0		17.34	98.4
	15	51.17	0.68	276	52	73	82	2.05	8.0		17.32	100.4
3	20	55.02	0.64	276	51	74	84	1.9	8.0		16.80	99.5
	25	58.75	0.66	275	51	74	85	2.05	8.0		17.05	99.1
4	30	62.46	0.66	275	51	74	86	2.05	8.0		17.05	96.9
	35	66.32	0.68	275	51	75	87	2.05	8.0		17.30	100.8
5	40	70.21	0.65	276	51	75	87	1.95	8.5		16.93	99.9
	45	74.03	0.62	275	50	75	87	1.9	8.0		16.52	100.3
6	50	77.76	0.6	282	50	73	74	1.65	8.0		16.33	100.2
	55	81.29	0.58	283	45	74	79	1.6	8.0		16.07	98.2
7	60	84.77	0.64	283	44	74	83	1.9	8.0		16.88	98.0
	65	88.39	0.63	282	44	75	85	1.9	8.0		16.73	96.7
8	70	92.13	0.63	281	44	75	87	1.95	8.0		16.72	100.4
	75	95.89	0.63	281	44	76	88	1.9	8.0		16.72	100.7
9	80	99.62	0.7	280	45	76	88	2.05	8.0		17.62	99.7
	85	103.50	0.64	281	45	77	89	2	9.0		16.86	98.3
10	90	107.33	0.65	280	45	77	89	1.95	9.0		16.98	101.4
	95	111.12	0.62	282	45	77	89	1.85	8.5		16.60	99.5
11	100	114.82	0.52	281	46	77	90	1.4	8.0		15.19	99.5
	105	118.12	0.52	281	46	78	90	1.45	8.0		15.19	96.7
12	110	121.40	0.52	281	46	78	91	1.5	8.0		15.19	96.0
	115	124.73	0.53	279	46	78	91	1.6	8.0		15.32	97.4
	120	128.16								0.3		99.2
1	0	128.46	0.84	284	61	78	82	2.5	10.0		19.35	
	5	132.65	0.84	285	50	78	85	2.5	10.0		19.36	97.7
2	10	136.96	0.87	286	50	78	87	2.55	10.0		19.72	100.2
	15	141.32	0.84	286	51	78	88	2.4	10.0		19.38	99.5
3	20	145.62	0.8	286	52	78	88	2.3	10.0		18.91	99.8

ORTECH Environmental

Plant:	Covanta DYEC	Plant Location:	Courtice, ON
Test No.:	2 - SVOC	Test Location:	APC Outlet No. 1
Date:	November 11, 2020	Operator:	TT

Pitot Factor	0.849	Filter (mg)	0
DGMCF	1.004	Probe (mg)	0
Barometric Pressure	29.55 "Hg	CWTR (g)	699.9
Static Pressure	-9.520 "H_2O	WCBDA (g)	20.7
Nozzle	0.2651 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%	8.49
CO2%	10.81
COppm	14.0

Measured H2O
16.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	149.78	0.8	286	52	78	88	2.3	10.0		18.91	98.9
4	30	153.97	0.76	286	53	78	89	2.2	10.0		18.43	99.6
	35	158.02	0.74	286	53	78	89	2.15	10.0		18.19	98.7
5	40	162.04	0.66	286	53	78	89	2	10.0		17.17	99.2
	45	165.86	0.7	287	53	77	89	2.1	10.0		17.70	99.8
6	50	169.76	0.62	287	53	77	89	1.8	9.0		16.66	99.1
	55	173.44	0.6	287	52	77	89	1.8	9.0		16.39	99.3
7	60	177.10	0.66	287	52	77	89	1.95	9.5		17.19	100.4
	65	180.89	0.66	287	51	77	88	1.95	9.5		17.19	99.2
8	70	184.67	0.66	287	51	77	88	1.95	9.5		17.19	99.0
	75	188.45	0.65	287	51	76	88	1.95	9.5		17.06	99.0
9	80	192.21	0.65	286	51	76	87	1.95	9.5		17.04	99.3
	85	195.98	0.65	285	51	76	87	1.95	9.5		17.03	99.6
10	90	199.74	0.64	284	51	76	87	1.9	9.5		16.89	99.3
	95	203.45	0.64	286	51	75	87	1.9	9.5		16.91	98.6
11	100	207.18	0.58	281	51	75	86	1.7	9.5		16.05	99.4
	105	210.74	0.58	278	51	75	89	1.7	9.0		16.01	99.4
12	110	214.29	0.54	278	51	75	86	1.5	8.5		15.45	98.6
	115	217.65	0.58	277	51	75	86	1.7	9.0		16.00	96.9
	120	221.12										96.6

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - SVOC
Date:	November 12, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	5.162 m^3
AVGERGE ISOKINETICITY	99.6 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	138.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	17.02 m/s
BAROMETRIC PRESSURE (Station)	101.253 Kpa
STATIC PRESSURE	-2.507 Kpa
ABSOLUTE GAS PRESSURE	98.746 Kpa
OXYGEN CONCENTRATION	8.49 %
CARBON DIOXIDE CONCENTRATION	10.95 %
CARBON MONOXIDE CONCENTRATION	15.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.15 m^3/s
DRY REF GAS FLOWRATE	14.93 Rm^3/s
DRY ADJ GAS FLOWRATE	18.71 Rm^3/s
WET REF GAS FLOWRATE	17.76 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.162 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	November 12, 2020	**Operator:**	TT

Pitot Factor	0.849	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.9 "Hg	**CWTR (g)**	699.6
Static Pressure	-10.070 "H_2O	**WCBDA (g)**	20
Nozzle	0.2651 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.38 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.49
CO2%	10.95
COppm	15.8

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	21.42	0.7	275	61	59	59	1.95	7.0		17.45	
	5	25.12	0.7	276	56	59	61	1.95	7.0		17.46	**98.0**
2	10	28.80	0.68	277	53	59	65	1.95	7.0		17.22	**97.3**
	15	32.49	0.7	279	52	60	68	2	7.5		17.50	**98.7**
3	20	36.24	0.7	281	51	60	70	2	7.5		17.52	**98.6**
	25	40.02	0.72	282	51	61	71	2.1	8.0		17.78	**99.4**
4	30	43.87	0.68	281	51	61	72	2	8.0		17.27	**99.7**
	35	47.66	0.68	282	51	61	73	1.9	8.0		17.28	**100.8**
5	40	51.36	0.68	283	52	62	74	1.9	8.0		17.29	**98.4**
	45	55.07	0.65	284	50	62	74	1.8	8.0		16.92	**98.5**
6	50	58.67	0.6	285	47	63	75	1.8	8.0		16.26	**97.8**
	55	62.21	0.62	285	46	63	76	1.8	8.0		16.53	**100.0**
7	60	65.79	0.66	286	45	63	76	1.9	7.5		17.07	**99.4**
	65	69.45	0.68	285	44	63	76	2	8.0		17.31	**98.6**
8	70	73.19	0.68	285	44	64	76	2	8.0		17.31	**99.2**
	75	76.95	0.7	286	44	64	76	2.05	8.0		17.58	**99.6**
9	80	80.78	0.7	284	44	64	76	2	8.0		17.56	**100.1**
	85	84.58	0.66	285	44	64	76	1.9	8.0		17.06	**99.2**
10	90	88.24	0.64	280	44	64	76	1.85	8.0		16.74	**98.4**
	95	91.87	0.64	285	44	64	77	1.85	8.0		16.80	**98.8**
11	100	95.51	0.61	285	44	65	77	1.8	8.0		16.40	**99.3**
	105	99.08	0.6	279	44	65	77	1.8	8.0		16.20	**99.6**
12	110	102.63	0.6	278	44	65	77	1.8	8.0		16.19	**99.5**
	115	106.18	0.61	278	45	65	77	1.8	8.0		16.32	**99.4**
	120	109.73								0.38		**98.6**
1	0	110.11	0.87	284	55	64	66	2.4	9.5		19.57	
	5	114.25	0.82	285	47	64	70	2.25	9.5		19.01	**97.9**
2	10	119.36	0.82	284	48	64	73	3.3	10.0		19.00	**124.1**
	15	123.04	0.81	284	49	65	74	3.4	12.0		18.88	**89.3**
3	20	127.37	0.82	284	52	65	74	2.3	9.5		19.00	**105.5**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	November 12, 2020	**Operator:**	TT

Pitot Factor	0.849	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.9 "Hg	**CWTR (g)**	699.6
Static Pressure	-10.070 "H_2O	**WCBDA (g)**	20
Nozzle	0.2651 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.38 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.49
CO2%	10.95
COppm	15.8

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	131.51	0.74	284	53	65	76	2.05	9.0		18.05	100.0
4	30	135.40	0.7	282	54	65	77	2	9.0		17.53	98.6
	35	139.21	0.7	281	52	66	78	2	9.0		17.52	99.1
5	40	142.97	0.64	280	49	66	79	1.9	9.0		16.74	97.5
	45	146.63	0.64	280	48	66	79	1.9	9.0		16.74	99.1
6	50	150.32	0.6	281	48	66	79	1.7	8.5		16.22	99.9
	55	153.85	0.59	282	47	66	79	1.7	8.5		16.10	98.8
7	60	157.35	0.61	283	46	66	79	1.8	8.5		16.38	98.8
	65	160.94	0.61	283	47	67	79	1.8	8.5		16.38	99.8
8	70	164.56	0.61	283	47	67	79	1.8	8.5		16.38	100.5
	75	168.14	0.61	282	46	67	79	1.8	8.5		16.37	99.4
9	80	171.71	0.61	279	46	67	79	1.8	8.5		16.33	99.0
	85	175.28	0.64	279	45	67	79	1.9	9.0		16.73	98.8
10	90	178.95	0.6	277	45	67	79	1.8	8.5		16.18	99.2
	95	182.59	0.6	277	46	67	79	1.8	8.5		16.18	101.5
11	100	186.14	0.6	271	46	67	79	1.8	8.5		16.11	99.0
	105	189.74	0.56	272	46	67	80	1.6	8.5		15.57	100.0
12	110	193.18	0.56	273	46	67	80	1.6	8.5		15.59	98.8
	115	196.61	0.55	273	46	67	80	1.6	8.5		15.45	98.6
	120	200.04										99.5

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	1 - SVOC
Date:	November 11, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	4.590 m^3
AVGERGE ISOKINETICITY	97.3 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.4 ^{o}C
AVERAGE GAS MOISTURE BY VOLUME	15.8 %
AVERAGE GAS VELOCITY	17.51 m/s
BAROMETRIC PRESSURE (Station)	99.932 Kpa
STATIC PRESSURE	-2.370 Kpa
ABSOLUTE GAS PRESSURE	97.562 Kpa
OXYGEN CONCENTRATION	8.42 %
CARBON DIOXIDE CONCENTRATION	10.78 %
CARBON MONOXIDE CONCENTRATION	13.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.87 m^3/s
DRY REF GAS FLOWRATE	15.13 Rm^3/s
DRY ADJ GAS FLOWRATE	19.07 Rm^3/s
WET REF GAS FLOWRATE	17.96 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.590 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	November 11, 2020	**Operator:**	JB RW

Pitot Factor	0.851	**Filter (mg)**	0
DGMCF	0.999	**Probe (mg)**	0
Barometric Pressure	29.51 "Hg	**CWTR (g)**	617.7
Static Pressure	-9.520 "H_2O	**WCBDA (g)**	13.4
Nozzle	0.2513 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.36 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.42
CO2%	10.78
COppm	13.2

Measured H2O
15.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	118.51	0.85	280	50	74	73	2	3.5		19.46	
	5	122.31	0.86	284	52	72	71	2	3.5		19.62	97.6
2	10	126.10	0.84	284	52	71	70	2	3.5		19.39	97.4
	15	129.84	0.84	284	49	71	70	2	3.5		19.39	97.4
3	20	133.57	0.78	284	46	71	70	1.8	3.5		18.69	97.2
	25	137.19	0.76	284	46	71	70	1.8	3.5		18.45	97.8
4	30	140.74	0.77	284	44	72	71	1.8	3.5		18.57	97.2
	35	144.28	0.75	284	44	72	71	1.75	3.5		18.32	96.1
5	40	147.81	0.69	284	44	73	71	1.6	3.5		17.58	97.1
	45	151.24	0.71	284	44	73	71	1.6	3.5		17.83	98.2
6	50	154.66	0.66	284	45	73	72	1.5	3.5		17.19	96.5
	55	157.92	0.66	284	45	74	72	1.5	3.5		17.19	95.3
7	60	161.19	0.69	283	46	75	72	1.6	3.5		17.56	95.5
	65	164.57	0.69	283	46	75	72	1.6	3.5		17.56	96.4
8	70	167.94	0.69	282	46	76	73	1.6	3.5		17.55	96.1
	75	171.33	0.7	282	46	76	73	1.6	3.5		17.68	96.5
9	80	174.73	0.69	282	46	76	73	1.6	3.5		17.55	96.1
	85	178.15	0.68	280	47	76	73	1.6	3.5		17.40	97.3
10	90	181.55	0.58	280	47	76	73	1.4	3.5		16.07	97.3
	95	184.74	0.57	280	47	77	74	1.4	3.5		15.93	98.8
11	100	187.92	0.42	280	47	77	74	1	3.5		13.68	99.2
	105	190.70	0.43	280	47	76	74	0.9	3.5		13.84	100.9
12	110	193.35	0.42	280	47	76	74	0.9	3.0		13.68	95.1
	115	195.99	0.42	280	47	76	74	0.9	3.0		13.68	95.9
	120	198.64								0.36		96.3
1	0	199.00	0.78	281	48	77	75	1.9	4.0		18.65	
	5	202.64	0.79	285	49	77	75	1.9	4.0		18.82	97.2
2	10	206.31	0.81	285	49	77	75	1.9	4.0		19.06	97.6
	15	209.98	0.81	285	49	77	75	1.9	4.0		19.06	96.4
3	20	213.64	0.79	286	48	75	75	1.9	4.0		18.83	96.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	November 11, 2020	**Operator:**	JB RW

Pitot Factor	0.851	Filter (mg)	0
DGMCF	0.999	Probe (mg)	0
Barometric Pressure	29.51 "Hg	CWTR (g)	617.7
Static Pressure	-9.520 "H_2O	WCBDA (g)	13.4
Nozzle	0.2513 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.36 ft^3
Length	0.000 ft	Reading Interval	5 minutes
Width	0.000 ft	Number of Ports	2
		Number of points / Port	12

Combustion Gases	
O2%	8.42
CO2%	10.78
COppm	13.2

Measured H2O
15.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	217.31	0.79	287	49	76	75	1.9	4.0		18.85	97.8
4	30	220.95	0.76	287	49	75	74	1.8	4.0		18.48	97.0
	35	224.56	0.75	288	48	75	74	1.8	4.0		18.37	98.3
5	40	228.08	0.73	288	48	76	75	1.75	4.0		18.13	96.5
	45	231.61	0.73	288	47	75	74	1.75	4.0		18.13	97.9
6	50	235.16	0.68	289	48	75	75	1.6	4.5		17.51	98.6
	55	238.62	0.66	288	48	75	74	1.6	4.5		17.24	99.6
7	60	242.10	0.7	289	49	76	75	1.6	4.5		17.76	101.7
	65	245.57	0.7	289	48	76	75	1.6	4.5		17.76	98.3
8	70	249.05	0.72	289	44	76	75	1.65	4.5		18.01	98.6
	75	252.51	0.72	289	44	77	75	1.65	4.5		18.01	96.7
9	80	255.95	0.71	289	44	77	75	1.65	4.5		17.89	96.0
	85	259.43	0.72	288	42	77	75	1.65	4.5		18.00	97.8
10	90	262.89	0.7	288	43	77	75	1.6	4.5		17.75	96.5
	95	266.29	0.71	287	43	77	75	1.6	4.5		17.87	96.2
11	100	269.70	0.55	286	44	77	75	1.3	4.0		15.71	95.7
	105	272.75	0.54	287	44	77	75	1.3	4.0		15.58	97.1
12	110	275.78	0.54	286	44	77	75	1.3	4.0		15.57	97.4
	115	278.80	0.53	286	44	77	75	1.2	4.0		15.43	97.1
	120	281.79										97.0

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	2 - SVOC
Date:	November 11, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	4.662 m^3
AVGERGE ISOKINETICITY	97.3 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.8 °C
AVERAGE GAS MOISTURE BY VOLUME	16.4 %
AVERAGE GAS VELOCITY	17.95 m/s
BAROMETRIC PRESSURE (Station)	100.034 Kpa
STATIC PRESSURE	-2.370 Kpa
ABSOLUTE GAS PRESSURE	97.663 Kpa
OXYGEN CONCENTRATION	8.33 %
CARBON DIOXIDE CONCENTRATION	10.93 %
CARBON MONOXIDE CONCENTRATION	15.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.52 m^3/s
DRY REF GAS FLOWRATE	15.35 Rm^3/s
DRY ADJ GAS FLOWRATE	19.49 Rm^3/s
WET REF GAS FLOWRATE	18.37 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.662 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	November 11, 2020	**Operator:**	JB RW

Pitot Factor	0.851	Filter (mg)	0
DGMCF	0.999	Probe (mg)	0
Barometric Pressure	29.54 "Hg	CWTR (g)	654.6
Static Pressure	-9.520 "H_2O	WCBDA (g)	17.1
Nozzle	0.2513 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.38 ft^3
Length	0.000 ft	Reading Interval	5 minutes
Width	0.000 ft	Number of Ports	2
		Number of points / Port	12

Combustion Gases	
O2%	8.33
CO2%	10.93
COppm	15.5

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	282.43	0.8	287	48	79	78	1.9	4.0		18.97	
	5	286.12	0.8	285	50	76	76	1.9	4.0		18.95	97.9
2	10	289.77	0.85	286	50	76	75	2	4.0		19.55	97.1
	15	293.48	0.84	286	50	76	75	2	4.0		19.43	96.0
3	20	297.22	0.78	285	52	74	74	1.9	4.0		18.71	97.3
	25	300.95	0.79	285	52	74	74	1.8	4.0		18.83	100.9
4	30	304.59	0.74	286	45	75	74	1.7	4.0		18.24	97.8
	35	308.13	0.74	286	51	75	74	1.7	4.0		18.24	98.2
5	40	311.67	0.7	287	52	75	74	1.6	4.0		17.75	98.2
	45	315.16	0.7	287	52	75	74	1.6	4.0		17.75	99.6
6	50	318.64	0.65	288	51	76	74	1.5	4.0		17.11	99.3
	55	322.10	0.65	289	51	77	75	1.5	4.5		17.13	102.4
7	60	325.50	0.7	289	53	77	75	1.6	4.5		17.77	100.5
	65	328.88	0.7	288	53	77	75	1.6	4.5		17.76	96.3
8	70	332.26	0.72	288	52	77	75	1.6	4.5		18.01	96.3
	75	335.68	0.7	287	53	77	75	1.6	4.5		17.75	96.1
9	80	338.98	0.7	288	53	77	75	1.7	4.5		17.76	93.9
	85	342.57	0.7	287	54	78	76	1.7	4.5		17.75	102.3
10	90	346.04	0.65	287	54	77	75	1.5	4.5		17.10	98.6
	95	349.40	0.65	287	54	78	76	1.5	4.5		17.10	99.2
11	100	352.77	0.6	288	55	78	76	1.4	4.5		16.44	99.3
	105	355.98	0.6	288	56	78	76	1.4	4.5		16.44	98.5
12	110	359.14	0.5	288	55	78	76	1.1	4.0		15.01	97.0
	115	362.02	0.5	287	55	78	76	1.1	4.0		15.00	96.8
	120	364.92								0.38		97.4
1	0	365.30	0.85	288	61	79	78	1.8	5.0		19.57	
	5	368.89	0.85	286	56	79	77	1.8	5.0		19.55	92.4
2	10	372.48	0.89	286	54	78	76	2	5.0		20.00	92.4
	15	376.28	0.89	286	54	78	76	2	5.0		20.00	95.8
3	20	380.05	0.85	286	56	78	77	1.9	5.0		19.55	95.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	November 11, 2020	**Operator:**	JB RW

Pitot Factor	0.851	**Filter (mg)**	0
DGMCF	0.999	**Probe (mg)**	0
Barometric Pressure	29.54 "Hg	**CWTR (g)**	654.6
Static Pressure	-9.520 "H_2O	**WCBDA (g)**	17.1
Nozzle	0.2513 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.38 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.33
CO2%	10.93
COppm	15.5

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	383.81	0.85	287	57	78	77	1.9	5.5		19.56	96.9
4	30	387.56	0.85	288	57	77	77	1.9	5.5		19.57	96.7
	35	391.29	0.8	288	58	77	76	1.8	5.5		18.99	96.3
5	40	394.96	0.75	288	59	78	77	1.7	5.0		18.38	97.7
	45	398.55	0.7	288	60	79	77	1.6	5.0		17.76	98.5
6	50	402.05	0.68	288	60	78	77	1.6	5.0		17.51	99.3
	55	405.43	0.72	288	57	78	77	1.6	5.0		18.01	97.4
7	60	408.82	0.75	288	54	79	77	1.7	5.0		18.38	94.9
	65	412.25	0.75	288	53	79	77	1.7	5.0		18.38	94.1
8	70	415.79	0.75	287	52	78	77	1.7	5.0		18.37	97.1
	75	419.31	0.75	287	52	78	77	1.7	5.0		18.37	96.6
9	80	422.83	0.8	287	52	79	78	1.8	5.5		18.97	96.6
	85	426.47	0.8	288	51	79	77	1.8	5.5		18.99	96.5
10	90	430.11	0.7	288	51	78	77	1.6	5.5		17.76	96.7
	95	433.60	0.7	288	51	78	77	1.6	5.5		17.76	99.1
11	100	437.08	0.55	288	51	78	77	1.1	5.0		15.74	98.9
	105	440.09	0.55	288	51	78	77	1.1	5.0		15.74	96.3
12	110	443.00	0.5	288	51	78	77	1.1	5.0		15.01	93.1
	115	445.92	0.5	288	52	78	77	1.1	5.0		15.01	98.0
	120	448.85										98.4

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	3 - SVOC
Date:	November 12, 2020

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	4.448 m^3
AVGERGE ISOKINETICITY	96.7 %
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	141.5 °C
AVERAGE GAS MOISTURE BY VOLUME	14.4 %
AVERAGE GAS VELOCITY	16.63 m/s
BAROMETRIC PRESSURE (Station)	101.253 Kpa
STATIC PRESSURE	-2.395 Kpa
ABSOLUTE GAS PRESSURE	98.858 Kpa
OXYGEN CONCENTRATION	8.4 %
CARBON DIOXIDE CONCENTRATION	11.05 %
CARBON MONOXIDE CONCENTRATION	17.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.57 m^3/s
DRY REF GAS FLOWRATE	14.74 Rm^3/s
DRY ADJ GAS FLOWRATE	18.62 Rm^3/s
WET REF GAS FLOWRATE	17.24 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.448 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	November 12, 2020	**Operator:**	RW

Pitot Factor	0.851	Filter (mg)	0
DGMCF	0.999	Probe (mg)	0
Barometric Pressure	29.9 "Hg	CWTR (g)	537.7
Static Pressure	-9.620 "H_2O	WCBDA (g)	14.1
Nozzle	0.2513 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.37 ft^3
Length	0.000 ft	Reading Interval	5 minutes
Width	0.000 ft	Number of Ports	2
		Number of points / Port	12

Combustion Gases	
O2%	8.4
CO2%	11.05
COppm	17.0

Measured H2O
14.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	49.25	0.75	288	62	63	62	1.7	3.5		18.19	
	5	52.70	0.75	288	50	61	61	1.7	3.5		18.19	96.2
2	10	56.12	0.8	287	48	61	60	1.8	4.0		18.77	95.6
	15	59.65	0.79	287	46	61	60	1.8	4.0		18.66	95.6
3	20	63.18	0.75	287	44	61	60	1.7	4.0		18.18	96.2
	25	66.60	0.75	287	44	61	60	1.7	4.0		18.18	95.7
4	30	70.04	0.72	288	43	62	61	1.7	4.0		17.82	96.2
	35	73.44	0.72	288	43	62	61	1.7	4.0		17.82	97.0
5	40	76.84	0.7	289	43	63	61	1.7	4.0		17.59	97.0
	45	80.24	0.66	289	43	63	61	1.6	4.0		17.08	98.3
6	50	83.58	0.61	289	43	63	61	1.4	4.0		16.42	99.4
	55	86.77	0.62	288	43	64	61	1.4	4.0		16.54	98.7
7	60	89.93	0.64	288	43	64	61	1.4	4.0		16.80	96.8
	65	93.06	0.65	288	43	64	62	1.4	4.0		16.93	94.4
8	70	96.18	0.7	288	43	64	62	1.7	4.0		17.57	93.3
	75	99.58	0.69	288	43	64	62	1.7	4.0		17.45	98.0
9	80	102.99	0.68	284	43	65	62	1.6	4.0		17.27	99.0
	85	106.37	0.68	284	44	66	63	1.6	4.0		17.27	98.5
10	90	109.76	0.68	285	44	66	63	1.6	4.0		17.29	98.6
	95	113.14	0.69	285	44	65	63	1.6	4.0		17.41	98.4
11	100	116.54	0.55	286	43	66	63	1.2	4.0		15.56	98.3
	105	119.48	0.54	286	44	66	64	1.2	4.0		15.41	95.1
12	110	122.40	0.55	285	44	66	63	1.2	4.0		15.55	95.3
	115	125.31	0.54	285	44	66	64	1.2	4.0		15.40	94.1
	120	128.25								0.37		95.8
1	0	128.62	0.68	288	55	67	65	1.6	4.0		17.32	
	5	131.93	0.69	287	44	66	65	1.6	4.0		17.44	96.3
2	10	135.26	0.69	288	44	66	65	1.6	4.5		17.45	96.2
	15	138.57	0.69	288	45	66	65	1.6	4.5		17.45	95.7
3	20	141.90	0.65	287	44	66	65	1.5	4.5		16.92	96.2

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	November 12, 2020	**Operator:**	RW

Pitot Factor	0.851	Filter (mg)	0
DGMCF	0.999	Probe (mg)	0
Barometric Pressure	29.9 "Hg	CWTR (g)	537.7
Static Pressure	-9.620 "H_2O	WCBDA (g)	14.1
Nozzle	0.2513 inches		
Stack Diameter	4.500 ft	Leak Check Volume	0.37 ft^3
Length	0.000 ft	Reading Interval	5 minutes
Width	0.000 ft	Number of Ports	2
		Number of points / Port	12

Combustion Gases	
O2%	8.4
CO2%	11.05
COppm	17.0

Measured H2O
14.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	145.11	0.66	287	45	67	65	1.5	4.5		17.05	95.5
4	30	148.32	0.63	287	46	66	65	1.5	4.5		16.66	94.7
	35	151.54	0.62	287	45	66	65	1.5	4.5		16.53	97.3
5	40	154.74	0.6	286	45	67	65	1.4	4.5		16.25	97.5
	45	157.95	0.6	287	46	67	65	1.4	4.5		16.26	99.2
6	50	161.10	0.55	287	46	67	65	1.2	4.5		15.57	97.4
	55	164.06	0.56	286	47	67	65	1.2	4.5		15.70	95.6
7	60	167.01	0.58	286	47	67	65	1.2	4.5		15.97	94.3
	65	169.96	0.58	287	48	67	65	1.3	4.5		15.99	92.7
8	70	172.98	0.55	287	48	67	66	1.3	4.5		15.57	95.0
	75	176.02	0.54	287	48	68	66	1.3	4.5		15.42	98.1
9	80	179.05	0.55	286	48	69	66	1.3	4.5		15.56	98.6
	85	182.08	0.57	286	49	69	66	1.3	4.5		15.84	97.5
10	90	185.09	0.55	286	49	69	66	1.3	4.5		15.56	95.1
	95	188.12	0.56	285	50	69	66	1.3	4.5		15.69	97.5
11	100	191.12	0.55	285	50	69	67	1.3	4.5		15.55	95.6
	105	194.15	0.55	285	50	69	67	1.3	4.5		15.55	97.3
12	110	197.16	0.43	285	50	69	67	1	4.5		13.75	96.7
	115	199.95	0.43	287	51	69	67	1	4.5		13.76	101.3
	120	202.69										99.6

APPENDIX 26

ORTECH Total Hydrocarbon CEM Data
(26 pages)

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 1 Quench Inlet

Test No. 1
November 9, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
10:10	0.9	
10:11	0.8	
10:12	0.8	
10:13	0.8	
10:14	0.8	
10:15	0.8	
10:16	0.4	
10:17	4.6	
10:18	3.3	
10:19	2.8	1.6
10:20	2.4	1.8
10:21	2.4	1.9
10:22	2.0	2.0
10:23	1.4	2.1
10:24	1.1	2.1
10:25	1.1	2.2
10:26	1.1	2.2
10:27	1.1	1.9
10:28	1.0	1.6
10:29	1.0	1.5
10:30	0.9	1.3
10:31	0.9	1.2
10:32	0.8	1.0
10:33	0.7	1.0
10:34	0.8	0.9
10:35	0.8	0.9
10:36	0.8	0.9
10:37	0.8	0.8
10:38	0.7	0.8
10:39	0.7	0.8
10:40	0.7	0.8
10:41	0.7	0.7
10:42	0.6	0.7
10:43	0.6	0.7
10:44	0.5	0.7
10:45	0.5	0.7
10:46	0.4	0.6
10:47	0.5	0.6
10:48	0.4	0.6
10:49	0.5	0.5
10:50	0.4	0.5
10:51	0.4	0.5
10:52	0.4	0.5
10:53	0.5	0.4
10:54	1.6	0.6
10:55	1.1	0.6
10:56	1.0	0.7
10:57	0.9	0.7
10:58	0.8	0.7
10:59	0.7	0.8
11:00	0.6	0.8
11:01	0.5	0.8
11:02	0.5	0.8
11:03	0.4	0.8
11:04	0.4	0.7
11:05	0.4	0.6
11:06	0.4	0.6
11:07	0.5	0.5
11:08	0.4	0.5
11:09	0.3	0.4
11:10	0.4	0.4
Min	0.3	0.4
Max	4.6	2.2
Avg	0.9	1.0

Test No. 2
November 9, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
11:17	0.0	
11:18	0.0	
11:19	0.0	
11:20	0.0	
11:21	0.0	
11:22	0.0	
11:23	0.0	
11:24	0.0	
11:25	0.0	
11:26	0.0	0.0
11:27	0.0	0.0
11:28	0.0	0.0
11:29	0.0	0.0
11:30	0.0	0.0
11:31	0.0	0.0
11:32	0.0	0.0
11:33	0.0	0.0
11:34	0.0	0.0
11:35	0.0	0.0
11:36	0.0	0.0
11:37	0.0	0.0
11:38	0.0	0.0
11:39	0.0	0.0
11:40	0.0	0.0
11:41	0.0	0.0
11:42	0.0	0.0
11:43	0.2	0.0
11:44	0.2	0.0
11:45	0.3	0.1
11:46	0.2	0.1
11:47	0.2	0.1
11:48	0.3	0.1
11:49	0.3	0.2
11:50	0.3	0.2
11:51	0.2	0.2
11:52	0.2	0.2
11:53	0.2	0.2
11:54	1.3	0.3
11:55	0.7	0.4
11:56	0.4	0.4
11:57	0.4	0.4
11:58	0.3	0.4
11:59	0.3	0.4
12:00	0.2	0.4
12:01	0.2	0.4
12:02	0.2	0.4
12:03	0.2	0.4
12:04	0.2	0.3
12:05	0.3	0.3
12:06	0.3	0.3
12:07	0.3	0.2
12:08	0.3	0.2
12:09	0.3	0.2
12:10	0.3	0.2
12:11	0.3	0.3
12:12	0.3	0.3
12:13	0.3	0.3
12:14	0.3	0.3
12:15	0.3	0.3
12:16	0.3	0.3
12:17	0.3	0.3
Min	0.0	0.0
Max	1.3	0.4
Avg	0.2	0.2

Test No. 3
November 9, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
12:23	0.8	
12:24	0.7	
12:25	0.7	
12:26	0.6	
12:27	0.4	
12:28	0.4	
12:29	0.3	
12:30	0.5	
12:31	0.5	
12:32	0.4	0.5
12:33	0.2	0.5
12:34	0.2	0.4
12:35	0.2	0.4
12:36	0.2	0.3
12:37	0.3	0.3
12:38	0.2	0.3
12:39	0.3	0.3
12:40	0.3	0.3
12:41	0.2	0.3
12:42	0.2	0.2
12:43	0.2	0.2
12:44	0.3	0.2
12:45	0.3	0.2
12:46	0.3	0.3
12:47	0.2	0.3
12:48	0.3	0.3
12:49	0.3	0.3
12:50	0.2	0.2
12:51	0.2	0.2
12:52	0.2	0.2
12:53	0.2	0.2
12:54	0.2	0.2
12:55	0.2	0.2
12:56	0.2	0.2
12:57	0.2	0.2
12:58	0.1	0.2
12:59	0.1	0.2
13:00	2.5	0.4
13:01	0.7	0.4
13:02	0.5	0.5
13:03	0.6	0.5
13:04	0.6	0.5
13:05	0.3	0.6
13:06	0.4	0.6
13:07	0.4	0.6
13:08	0.4	0.6
13:09	0.4	0.7
13:10	0.4	0.5
13:11	0.3	0.4
13:12	0.3	0.4
13:13	0.2	0.4
13:14	0.2	0.3
13:15	0.2	0.3
13:16	0.2	0.3
13:17	0.1	0.3
13:18	0.1	0.3
13:19	0.1	0.2
13:20	0.1	0.2
13:21	0.1	0.2
13:22	0.2	0.2
13:23	0.1	0.1
Min	0.1	0.1
Max	2.5	0.7
Avg	0.3	0.3

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet

Test No. 1
November 9, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
10:10	4.0	
10:11	3.5	
10:12	4.0	
10:13	3.9	
10:14	3.5	
10:15	3.2	
10:16	2.9	
10:17	2.7	
10:18	2.6	
10:19	2.1	3.2
10:20	2.0	3.0
10:21	1.8	2.9
10:22	1.6	2.6
10:23	1.6	2.4
10:24	1.3	2.2
10:25	1.2	2.0
10:26	1.1	1.8
10:27	1.1	1.6
10:28	1.1	1.5
10:29	1.0	1.4
10:30	0.8	1.3
10:31	0.8	1.2
10:32	0.7	1.1
10:33	0.7	1.0
10:34	0.6	0.9
10:35	0.7	0.9
10:36	0.7	0.8
10:37	0.8	0.8
10:38	4.2	1.1
10:39	3.2	1.3
10:40	1.8	1.4
10:41	2.9	1.6
10:42	2.9	1.8
10:43	2.0	2.0
10:44	1.7	2.1
10:45	0.9	2.1
10:46	0.5	2.1
10:47	0.1	2.0
10:48	0.0	1.6
10:49	0.9	1.4
10:50	1.0	1.3
10:51	5.1	1.5
10:52	1.8	1.4
10:53	1.3	1.3
10:54	0.4	1.2
10:55	0.2	1.1
10:56	0.9	1.2
10:57	0.4	1.2
10:58	0.9	1.3
10:59	0.3	1.2
11:00	1.8	1.3
11:01	1.1	0.9
11:02	0.1	0.8
11:03	0.0	0.6
11:04	0.6	0.6
11:05	0.6	0.7
11:06	0.5	0.7
11:07	2.6	0.9
11:08	0.7	0.8
11:09	0.9	0.9
11:10	1.4	0.8
Min	0.0	0.6
Max	5.1	3.2
Avg	1.6	1.4

Test No. 2
November 9, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
11:17	0.0	
11:18	0.1	
11:19	0.0	
11:20	0.0	
11:21	0.0	
11:22	0.1	
11:23	0.3	
11:24	0.4	
11:25	0.4	
11:26	0.3	0.2
11:27	0.3	0.2
11:28	0.3	0.2
11:29	0.3	0.2
11:30	0.4	0.3
11:31	0.4	0.3
11:32	1.1	0.4
11:33	1.5	0.5
11:34	1.4	0.6
11:35	1.9	0.8
11:36	3.0	1.0
11:37	1.3	1.1
11:38	1.9	1.3
11:39	1.5	1.4
11:40	1.6	1.5
11:41	2.7	1.8
11:42	1.1	1.8
11:43	1.6	1.8
11:44	1.4	1.8
11:45	1.8	1.8
11:46	1.5	1.6
11:47	1.6	1.7
11:48	1.7	1.6
11:49	1.9	1.7
11:50	1.0	1.6
11:51	1.4	1.5
11:52	1.5	1.5
11:53	1.4	1.5
11:54	1.3	1.5
11:55	1.0	1.4
11:56	0.8	1.4
11:57	1.2	1.3
11:58	1.4	1.3
11:59	1.0	1.2
12:00	0.7	1.2
12:01	1.0	1.1
12:02	1.5	1.1
12:03	1.1	1.1
12:04	1.9	1.2
12:05	1.8	1.2
12:06	1.2	1.3
12:07	0.5	1.2
12:08	0.6	1.1
12:09	1.0	1.1
12:10	0.8	1.1
12:11	0.5	1.1
12:12	0.0	0.9
12:13	0.0	0.8
12:14	0.0	0.6
12:15	0.0	0.5
12:16	0.3	0.4
12:17	0.5	0.4
Min	0.0	0.2
Max	3.0	1.8
Avg	1.0	1.1

Test No. 3
November 9, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
12:23	0.1	
12:24	0.0	
12:25	0.0	
12:26	0.0	
12:27	0.0	
12:28	0.0	
12:29	0.0	
12:30	0.0	
12:31	0.0	
12:32	0.0	0.0
12:33	0.0	0.0
12:34	0.2	0.0
12:35	2.0	0.2
12:36	0.5	0.3
12:37	0.0	0.3
12:38	0.2	0.3
12:39	0.7	0.4
12:40	0.5	0.4
12:41	0.6	0.5
12:42	1.0	0.6
12:43	0.4	0.6
12:44	1.4	0.7
12:45	0.6	0.6
12:46	0.3	0.6
12:47	0.4	0.6
12:48	0.1	0.6
12:49	0.7	0.6
12:50	0.4	0.6
12:51	1.0	0.6
12:52	0.4	0.6
12:53	0.2	0.5
12:54	0.1	0.4
12:55	0.1	0.4
12:56	1.5	0.5
12:57	0.5	0.5
12:58	0.1	0.5
12:59	0.6	0.5
13:00	0.6	0.5
13:01	0.4	0.4
13:02	0.4	0.4
13:03	0.9	0.5
13:04	1.3	0.6
13:05	0.7	0.7
13:06	0.4	0.6
13:07	2.3	0.8
13:08	1.5	0.9
13:09	1.4	1.0
13:10	1.4	1.1
13:11	0.9	1.1
13:12	0.7	1.2
13:13	0.8	1.2
13:14	1.7	1.2
13:15	0.4	1.2
13:16	0.3	1.2
13:17	1.2	1.0
13:18	0.3	0.9
13:19	0.9	0.9
13:20	1.2	0.8
13:21	0.3	0.8
13:22	0.3	0.7
13:23	0.6	0.7
Min	0.0	0.0
Max	2.3	1.2
Avg	0.6	0.6

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 1 APC Outlet

Test No. 1
November 9, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
14:52	0.0	
14:53	0.0	
14:54	0.0	
14:55	0.0	
14:56	0.0	
14:57	0.0	
14:58	0.0	
14:59	0.0	
15:00	0.0	
15:01	0.0	0.0
15:02	0.0	0.0
15:03	0.0	0.0
15:04	0.0	0.0
15:05	0.0	0.0
15:06	1.3	0.1
15:07	0.3	0.2
15:08	0.0	0.2
15:09	0.0	0.2
15:10	0.0	0.2
15:11	0.0	0.2
15:12	0.0	0.2
15:13	0.0	0.2
15:14	0.0	0.2
15:15	0.0	0.2
15:16	0.0	0.0
15:17	4.8	0.5
15:18	0.4	0.5
15:19	0.0	0.5
15:20	0.0	0.5
15:21	0.0	0.5
15:22	0.0	0.5
15:23	0.0	0.5
15:24	0.0	0.5
15:25	0.0	0.5
15:26	0.0	0.5
15:27	0.0	0.0
15:28	0.0	0.0
15:29	0.0	0.0
15:30	2.1	0.2
15:31	0.0	0.2
15:32	0.0	0.2
15:33	0.0	0.2
15:34	0.0	0.2
15:35	0.0	0.2
15:36	0.0	0.2
15:37	0.0	0.2
15:38	0.0	0.2
15:39	2.8	0.5
15:40	0.0	0.3
15:41	0.0	0.3
15:42	0.0	0.3
15:43	0.0	0.3
15:44	1.3	0.4
15:45	2.4	0.7
15:46	3.8	1.0
15:47	2.1	1.2
15:48	1.1	1.3
15:49	0.4	1.1
15:50	0.0	1.1
15:51	0.0	1.1
15:52	0.0	1.1
Min	0.0	0.0
Max	4.8	1.3
Avg	0.4	0.4

Test No. 2
November 9, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
15:58	0.0	
15:59	0.0	
16:00	0.0	
16:01	0.0	
16:02	0.0	
16:03	0.0	
16:04	0.0	
16:05	0.0	
16:06	0.1	
16:07	0.2	0.0
16:08	0.2	0.0
16:09	0.2	0.1
16:10	0.2	0.1
16:11	1.3	0.2
16:12	3.2	0.5
16:13	0.3	0.6
16:14	0.2	0.6
16:15	0.1	0.6
16:16	0.0	0.6
16:17	0.1	0.6
16:18	0.1	0.5
16:19	0.0	0.5
16:20	0.0	0.5
16:21	0.1	0.4
16:22	0.1	0.1
16:23	2.5	0.3
16:24	0.2	0.3
16:25	0.0	0.3
16:26	0.1	0.3
16:27	0.2	0.3
16:28	0.1	0.3
16:29	0.0	0.3
16:30	0.0	0.3
16:31	0.0	0.3
16:32	0.0	0.3
16:33	0.0	0.1
16:34	0.0	0.0
16:35	0.0	0.0
16:36	0.0	0.0
16:37	0.0	0.0
16:38	0.0	0.0
16:39	0.0	0.0
16:40	0.0	0.0
16:41	0.0	0.0
16:42	0.0	0.0
16:43	0.2	0.0
16:44	0.2	0.0
16:45	0.3	0.1
16:46	1.5	0.2
16:47	2.2	0.4
16:48	3.4	0.8
16:49	2.8	1.0
16:50	2.0	1.2
16:51	1.4	1.4
16:52	0.9	1.5
16:53	0.7	1.5
16:54	0.5	1.6
16:55	0.4	1.6
16:56	0.4	1.5
16:57	0.4	1.3
16:58	0.3	1.0
Min	0.0	0.0
Max	3.4	1.6
Avg	0.4	0.5

Test No. 3
November 9, 2020

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
17:04	0.5	
17:05	0.4	
17:06	0.4	
17:07	0.4	
17:08	0.4	
17:09	0.4	
17:10	0.4	
17:11	0.4	
17:12	0.4	
17:13	0.3	0.4
17:14	0.8	0.4
17:15	5.6	1.0
17:16	1.1	1.0
17:17	0.8	1.1
17:18	0.7	1.1
17:19	0.3	1.1
17:20	0.0	1.0
17:21	0.0	1.0
17:22	0.0	1.0
17:23	0.0	0.9
17:24	2.5	1.1
17:25	0.6	0.6
17:26	0.1	0.5
17:27	0.1	0.4
17:28	0.0	0.4
17:29	0.1	0.3
17:30	0.0	0.3
17:31	0.0	0.3
17:32	0.0	0.3
17:33	0.0	0.3
17:34	0.0	0.1
17:35	1.7	0.2
17:36	1.4	0.3
17:37	0.3	0.3
17:38	0.5	0.4
17:39	0.0	0.4
17:40	0.0	0.4
17:41	0.0	0.4
17:42	0.0	0.4
17:43	0.6	0.4
17:44	0.0	0.4
17:45	0.0	0.3
17:46	0.0	0.1
17:47	0.6	0.2
17:48	0.8	0.2
17:49	2.5	0.4
17:50	3.7	0.8
17:51	4.6	1.3
17:52	2.9	1.6
17:53	1.7	1.7
17:54	1.7	1.9
17:55	1.3	2.0
17:56	0.5	2.0
17:57	0.0	2.0
17:58	0.0	1.9
17:59	0.0	1.6
18:00	0.0	1.3
18:01	0.0	0.8
18:02	0.0	0.5
18:03	0.0	0.3
18:04	0.0	0.2
Min	0.0	0.1
Max	5.6	2.0
Avg	0.7	0.8

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 APC Outlet

	Test No. 1 November 9, 2020			Test No. 2 November 9, 2020			Test No. 3 November 9, 2020	
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
14:52	0.1		15:58	0.2		17:04	0.4	
14:53	0.1		15:59	0.2		17:05	0.3	
14:54	0.1		16:00	0.2		17:06	0.4	
14:55	0.1		16:01	0.1		17:07	0.2	
14:56	0.1		16:02	0.2		17:08	0.2	
14:57	0.1		16:03	0.2		17:09	0.3	
14:58	0.0		16:04	0.3		17:10	0.3	
14:59	0.0		16:05	0.0		17:11	0.2	
15:00	0.0		16:06	0.0		17:12	0.2	
15:01	0.0	0.1	16:07	0.0	0.1	17:13	0.1	0.3
15:02	0.0	0.0	16:08	0.0	0.1	17:14	0.1	0.2
15:03	0.0	0.0	16:09	0.0	0.1	17:15	0.2	0.2
15:04	0.0	0.0	16:10	0.0	0.1	17:16	0.3	0.2
15:05	0.0	0.0	16:11	0.0	0.1	17:17	0.2	0.2
15:06	0.0	0.0	16:12	0.0	0.0	17:18	0.2	0.2
15:07	0.0	0.0	16:13	0.0	0.0	17:19	0.2	0.2
15:08	0.0	0.0	16:14	0.0	0.0	17:20	0.2	0.2
15:09	0.0	0.0	16:15	0.0	0.0	17:21	0.2	0.2
15:10	0.0	0.0	16:16	0.0	0.0	17:22	0.2	0.2
15:11	0.0	0.0	16:17	0.0	0.0	17:23	0.2	0.2
15:12	0.0	0.0	16:18	0.0	0.0	17:24	0.2	0.2
15:13	0.0	0.0	16:19	0.0	0.0	17:25	0.1	0.2
15:14	0.0	0.0	16:20	0.0	0.0	17:26	0.1	0.2
15:15	0.0	0.0	16:21	0.0	0.0	17:27	0.0	0.1
15:16	0.0	0.0	16:22	0.0	0.0	17:28	0.0	0.1
15:17	0.0	0.0	16:23	0.0	0.0	17:29	0.1	0.1
15:18	0.0	0.0	16:24	0.0	0.0	17:30	0.0	0.1
15:19	0.0	0.0	16:25	0.0	0.0	17:31	0.0	0.1
15:20	0.0	0.0	16:26	0.0	0.0	17:32	0.0	0.1
15:21	0.0	0.0	16:27	0.0	0.0	17:33	0.0	0.0
15:22	0.0	0.0	16:28	0.0	0.0	17:34	0.0	0.0
15:23	0.0	0.0	16:29	0.0	0.0	17:35	0.0	0.0
15:24	0.1	0.0	16:30	0.0	0.0	17:36	0.0	0.0
15:25	0.2	0.0	16:31	0.0	0.0	17:37	0.0	0.0
15:26	0.2	0.0	16:32	0.0	0.0	17:38	0.0	0.0
15:27	0.1	0.1	16:33	0.0	0.0	17:39	0.0	0.0
15:28	0.1	0.1	16:34	0.0	0.0	17:40	0.1	0.0
15:29	0.2	0.1	16:35	0.0	0.0	17:41	0.1	0.0
15:30	0.1	0.1	16:36	0.0	0.0	17:42	0.0	0.0
15:31	0.2	0.1	16:37	0.0	0.0	17:43	0.1	0.0
15:32	0.2	0.1	16:38	0.0	0.0	17:44	0.0	0.0
15:33	0.2	0.1	16:39	0.0	0.0	17:45	0.0	0.0
15:34	0.2	0.2	16:40	0.0	0.0	17:46	0.0	0.0
15:35	0.2	0.2	16:41	0.0	0.0	17:47	0.0	0.0
15:36	0.2	0.2	16:42	0.0	0.0	17:48	0.6	0.1
15:37	0.1	0.2	16:43	0.3	0.0	17:49	2.1	0.3
15:38	0.1	0.2	16:44	0.3	0.1	17:50	2.4	0.5
15:39	0.2	0.2	16:45	0.2	0.1	17:51	3.8	0.9
15:40	0.3	0.2	16:46	1.1	0.2	17:52	2.8	1.2
15:41	0.1	0.2	16:47	1.6	0.3	17:53	1.9	1.4
15:42	0.1	0.2	16:48	2.4	0.6	17:54	1.1	1.5
15:43	0.7	0.2	16:49	2.4	0.8	17:55	0.7	1.5
15:44	1.5	0.3	16:50	1.9	1.0	17:56	0.3	1.6
15:45	2.4	0.6	16:51	1.2	1.1	17:57	0.2	1.6
15:46	3.5	0.9	16:52	0.7	1.2	17:58	0.0	1.5
15:47	2.7	1.2	16:53	0.5	1.2	17:59	0.0	1.3
15:48	1.8	1.3	16:54	0.4	1.2	18:00	0.0	1.1
15:49	1.0	1.4	16:55	1.0	1.3	18:01	0.0	0.7
15:50	0.7	1.4	16:56	1.5	1.4	18:02	0.0	0.4
15:51	0.3	1.5	16:57	1.4	1.3	18:03	0.2	0.3
15:52	0.3	1.5	16:58	1.4	1.2	18:04	0.6	0.2
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	3.5	1.5	Max	2.4	1.4	Max	3.8	1.6
Avg	0.3	0.2	Avg	0.3	0.3	Avg	0.4	0.4

APPENDIX 27

Dispersion Modelling Results for the November 2020 Testing Program (19 pages)

GOLDER

TECHNICAL MEMORANDUM

DATE February 28, 2022 **Project No.** 20137524

TO Lydia Kwan
Covanta Durham York Renewable Energy LP

CC Anthony Ciccone

FROM Katherine Armstrong **EMAIL ksarmstrong@golder.com**

CALPUFF MODELLING FOR NOVEMBER 2020 COMPLIANCE SOURCE TESTING AT DURHAM YORK ENERGY CENTRE

1.0 INTRODUCTION

Covanta Durham York Renewable Energy LP (Covanta) operates the Durham York Energy Centre (DYEC) under the multi-media Environmental Compliance Approval (ECA) 7306-8FDKNX, as amended. The ECA application was supported with an Emission Summary and Dispersion Modelling (ESDM) Report prepared by Golder Associates Ltd (Golder) using the CALPUFF dispersion model version 6.263, with results compared to Ministry of Environment, Conservation and Parks (MECP) Point of Impingement (POI) standards listed in Schedule 3 of Ontario Regulation (O.Reg.) 419/05 as of 2011.

Condition 7, Testing, Monitoring and Auditing, of the current ECA requires annual source testing be completed at the DYEC for over 100 different contaminants. According to Schedule "E" Source Testing Procedures, of the ECA, a source testing report is required that includes the following:

> *8. (7) the results of dispersion calculations in accordance with the O.Reg. 419/05, indicating the maximum concentration of the test contaminants, at the point of impingement.*
>
> *8. (8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the test contaminants.*

This memorandum summarizes the modelling results for the November 2020 compliance source testing program using the same CALPUFF model and other input data sets used in the ESDM Report and Environmental Assessment, however, the results are compared to O.Reg. 419/05 Schedule 3 limits last updated April 2018. Please note that this memorandum has been updated from the version issued in January 2021, to update the emission rates for Aldehydes, based on a unit correction made by the laboratory.

2.0 EMISSION RATES

Voluntary source testing was completed by Ortech Environmental in November 2020 for each of the two combustion train units and results were provided to Golder on a mass per time basis. Three tests were completed for each unit and averaged. The average emission rates for each unit were then summed together to provide the total stack emission rate of each contaminant to be modelled. Where source testing results indicated that the measured concentration is below the detection limit, the full detection limit was used as the emission rate for conservatism.

Emission rates for which source testing data was available were converted to grams per second (g/s) and are provided in an updated Site-wide Emission Inventory included in Appendix A. This emission inventory includes emissions from silo filling and diesel generator testing taken from the ESDM report, in addition to source test emissions from the main stack.

In response to clarifications provided by the MECP of December 9, 2016, two different emission rates were calculated for Total Particulate Matter:

1) Filterable fraction emission rate only; and

2) Total Particulate Matter (Sum of condensable and filterable fractions).

As source testing for the condensable fraction of total particulate matter is not required pursuant to Schedule "D": of the ECA, the condensable content of PM10 was used as the condensable portion in the Total Particulate Matter emission.

3.0 MODELLING

As part of the ECA application, the MECP approved the use of the CALPUFF modelling software and CALMET meteorological data to demonstrate compliance with Ontario Regulation 419/05 Schedule 3 standards at the DYEC. As a result, the same modelling approach has been taken for this update. The following models and pre- and post-processors were used in the assessment:

- CALMET diagnostic meteorological model (v. 5.8, level 070623);
- CALPUFF dispersion model (v. 6.263, level 080827);
- CALPOST post processor (v. 6.221, Level 080724);
- BPIP building downwash pre-processor (v. 04274);
- POSTUTIL post processor (v.1.64, Level 101025).

These model versions are consistent with those used in the original ESDM report. Dispersion Modelling inputs are described in the following subsections.

3.1 Modelling Domain

The CALPUFF Model domain used in this assessment is the same as the domain used in the previous Environmental Assessment (EA) and ESDM Report. It extends 40 km by 30 Km and is centred approximately 5 km north of the Site. This domain covers more than the air quality study area but will ensure that plumes are tracked beyond the furthest receptor locations to ensure the worst-case ground level concentrations are considered at all receptors.

3.2 Meteorology, Land Use and Terrain Data

The meteorology and terrain data used in this assessment is the same as the meteorology and terrain data used in the EA and ESDM Report.

3.3 Receptors

The receptors used in this assessment are the same as the receptors used in the ESDM Report. They include gridded ground level receptors to meet the requirements of O.Reg. 419/05 in addition to 400 discrete receptors to represent locations of interest. They include hospitals, nursing homes, schools, daycares, Senior citizen centres, the nearest residential receptors, specific watersheds and water bodies and parks.

3.4 Building Downwash

The buildings used in this assessment to represent building downwash are the same as the buildings used in the ESDM Report. Building wake effects were considered in this assessment using the U.S. EPA's Building Profile Input Program (BPIP-ISC). The inputs into this pre-processor include the coordinates and heights of the buildings and stacks. The output data from BPIP is used in the building wake effect calculations. No changes were made to the BPIP input or output file for this assessment.

3.5 Deposition

CALPUFF has the capability to account for wet and dry deposition of substances that would reduce ground level concentrations at POIs. However, the deposition algorithm has not been implemented for conservatism and to maintain consistency with the ESDM report and the previous EA for maximum POI predictions.

3.6 Thermal Internal Boundary Layer

CALPUFF contains an option to account for sub-grid coastal influences on plume dispersion such as the development of a thermal internal boundary layer (TIBL). Given the proximity of the proposed Facility to Lake Ontario (approximately 500m) and the grid size (250m), variations in coastline location within the grid cells near the proposed facility were accounted for in the dispersion modelling. To achieve this, a digitized sub-grid coastline, extending to the boundaries of the air quality study area was included as an additional input. This is consistent with the approach used in the ESDM report.

3.7 Averaging Times and Conversions

CALPUFF can predict 1-hour average values. Many of the relevant Schedule 3 standards are based on a 24-hour averaging time, which is also provided by CALPUFF. Several of the modelled contaminants have averaging periods less than 1 hour. For these contaminants, the 1 hour average concentration was converted using the conversion factors listed in Table 4-1 of Air Dispersion Modelling Guidance for Ontario (ADMGO). For example, the hourly concentrations can be converted to a 10-min average by multiplying the hour value by 1.65. This is consistent with the approach used in the ESDM report.

In 2016, a number of O.Reg 419/05 standards were updated or modified to include annual average Point of Impingement (POI) limits. These standards were most recently updated in 2018. 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, NO2 and SO2 into HNO3, NO3 and SO4, CALPUFFs RIVAD/ARM3 mechanism was used. The flag MCHEM is set to 1 for model runs used to produce concentrations of particulate matter. This setting requires the input of monthly background ozone concentrations. The monthly background ozone data used in the modelling of secondary particulate matter is consistent with that used in the EA and is summarised below in Table 1.

Table 1: Background Ozone Concentrations used for Chemical Transformation Modelling[1]

Month	Ozone Concentrations (ppb)
January	13.70
February	18.50
March	24.22
April	11.09
May	32.29
June	33.63
July	16.32
August	21.33
September	12.63
October	15.39
November	17.10
December	20.91

Notes: 1 – Ozone levels from Courtice Road Station (2007-2008)

Chemical transformations were only modelled to calculate additional concentrations of particulate matter that is created as part of secondary transformations. Reported concentrations of NO_2 and SO_2 do not include the effects of depletion due to chemical transformation. The flag MCHEM is set to 0 for model runs used to produce concentrations of all other contaminants. This is consistent with the approach used in the ESDM report.

3.9 Dispersion Modelling Options

The options used in the CALPUFF dispersion model are summarized in the Table 2. The model options used are consistent with those used in the ESDM report. In the ESDM report, Exhibit 9 indicated that Puff splitting was used, however this was a typographical error and this option was not actually used in the modelling. To maintain consistency with the ESDM report, puff splitting was not modelled for this assessment.

Table 2: CALPUFF Options and Flags

Flag	Value used in ESDM Report	Value Used in this Assessment	Comments
MGAUSS	1	1	Vertical distribution used in the near field
MCTADJ	3	3	Terrain adjustment method (3 used for partial plume path adjustment)
MCTSG	0	0	Subgrid-Scale complex terrain flag
MSLUG	0	0	Near-field puffs modelled as elongated
MTRANS	1	1	Transitional Plume Rise modelled
MTIP	1	1	Stack-tip downwash
MBDW	2	2	Method used to simulate building downwash 1 = ISC method; 2 = PRIME method
MSHEAR	0	0	Vertical wind shear modelled above stack top
MSPLIT	0*	0	Puff splitting allowed 0 = No; 1 = Yes ** NB: Value of "1" reported in ESDM Report but value of "0" actually used in ESDM Report modelling*
MCHEM	1 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	1 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	Chemical Transformation Scheme 0 = chemical transformation not modeled 1 = transformation rates computed internally (MESOPUFF II scheme)
MAQCHEM	0	0	Aqueous phase transformation flag (only used if MCHEM =1 or 3)
MWET	0	0	Wet removal modelled 0 = NO; 1 = Yes
MDRY	0	0	Dry deposition modelled 0 = NO; 1 = Yes

Flag	Value used in ESDM Report	Value Used in this Assessment	Comments
MTILT	0	0	Gravitational settling (plume tilt) modelled
MDISP	2	2	Methods used to compute dispersion coefficients 2 = (dispersion coefficients from internally calculated sigma v, sigma w using micrometeorological variables (u*, w*, L, etc.)
MTURBVW	3	3	Sigma measurements used (Used only if MDISP = 1or 5)
MDISP2	3	3	Back-up method used to compute dispersion when measured turbulence data are missing (Used only if MDISP=1 or 5)
MTAULY	0	0	Method used for Lagrangian timescale for Sigma-y (used only if MDISP=1,2 or MSIDP2=1,2)
MTAUADV	0	0	Method used for Advective-Decay timescale for Turbulence (used only if MDISP=2 or MDISP2=2)
MCTURB	1	1	Method used to compute turbulence sigma-v & sigma-w using micrometeorological variables (Used only if MDISP = 2 or MDISP2 = 2)
MROUGH	0	0	PG sigma y,z adjusted for roughness
MPARTL	1	1	Partial plume penetration of elevated inversion
MTINV	0	0	Strength of temp inversion provided in PROFILE.DAT extended records
MPDF	1	1	Probability Distribution Function used for dispersion under convective conditions 0 = NO; 1 = Yes
MSGTIBL	1	1	Sub-grid TIBL module used for shore line
MBCON	0	0	Boundary conditions (concentration) modeled
MFOG	0	0	Configure for FOG Model output
MREG	0	0	Test options specified to see if they conform to regulatory values

3.10 Source Parameters

Stack exhaust temperature and flow rate were updated to match the stack characteristics at the time of source testing. All other source parameters are consistent with those used in the ESDM Report. The source parameters modelled are provided in Table 3, below:

Table 3: Modelled Source Parameters

Source ID	Stack Height [m]	Stack Diameter [m]	Flow Rate [m³/s]	Exit Velocity [m/s]	Exhaust Temperature [K]
STCK1	87.6 (No Change)	1.7 (No Change)	51.64 (UPDATED)	22.75 (UPDATED)	414.3 (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]	31.99	23.27	19.39	1.02	0.12	0.03
Dispersion Factor with meteorological anomaly removal [µg/m³ per g/s]	9.63	7.00	5.83	0.96	0.12	0.03

The average emission rate for each contaminant presented in Appendix A was multiplied by the applicable dispersion factor above to calculate the maximum point of impingement concentration for emissions from the main stack. The modelled POI concentrations were compared to the current Schedule 3 standards listed in O.Reg. 419/05 and in the case of PM2.5 and PM10, the MECP AAQC.

The MECP has recently updated the list of standards and guidelines for facilities to assess their emissions against, namely the Air Contaminants Benchmark (ACB) List, dated April 2018, which includes standards and guidelines (Benchmark 1) and screening levels (Benchmark 2). The ACB List is required to be used to assess point of impingement (POI) concentrations of contaminants released into the air.

Contaminants released by the Facility that do not have Benchmark 1 standards or guidelines in the ACB List are considered to be 'Contaminants with No MECP POI Limits'. Where applicable, predicted POI concentrations of Contaminants with No MECP POI Limits were screened against the Benchmark 2 screening levels in the ACB List or the de minimus limit.

The modelled concentrations of all compounds assessed were below their relevant MECP standards. The Emission Summary Table has been updated and is included in Appendix B. It has been modified to include reference to the new ACB List and to meet the requirements of the updated MECP guidance document "Procedure for preparing an Emission Summary and Dispersion Modelling Report" (PIBs 3614e04.1, March 2018). Results are presented both with and without meteorological anomaly removal but only the results with meteorological anomaly removal are presented as a percentage of the relevant limit.

The contaminant with the highest predicted concentration relative to O.Reg. 419/05 standard is Nitrogen Oxides at 6% of the relevant limit.

5.0 SUMMARY MODELLING UPDATES

The dispersion modelling for the DYEC was updated to reflect data obtained from Voluntary November 2020 source testing. A summary of the changes made to the modelling are provided in Table 5, below.

Table 5: ECA Concordance Table

Modelling Inputs	Changes from ESDM Report
Emission Rates	Updated to use November 2020 Source Testing Data. List of contaminants assessed expanded to include all contaminants for which source testing data was performed.
Model and Model Version	No Change
Meteorology and Terrain data	No Change
Receptors	No Change
Building Downwash	No Change
Deposition	No Change
Chemical Transformations	No Change
Thermal Internal Boundary Layer	No Change
Averaging Times and Conversions	CALPOST input file was modified to generate annual averaging to account for new O.Reg. 419/05 standards introduced in 2016 (and most recently updated in 2018) that include annual averaging periods.
Dispersion Modelling Options	No Change
Background Air Quality Concentrations	Ozone background data used in secondary particulate modelling consistent with the EA.
Emission Summary Table	Updated to include new O.Reg. 419/05 standards introduced after the ECA was approved and contaminants that were not included in the ESDM report but for which source testing data was available.

6.0 CONCLUSIONS

This assessment was completed to document compliance with Condition 8(7) and 8(8) of Schedule E of the ECA for the DYEC. The results of this assessment demonstrate that the Facility is operating in compliance with the POI limits listed in s.20 of O. Reg. 419/05.

7.0 CLOSURE

We trust this memorandum meets your needs at this time. Should you have any questions please contact the undersigned.

Golder Associates Ltd.

K. Armstrong

Katherine Armstrong, M.Sc.
Air Quality Specialist

Anthony Ciccone, Ph.D., P.Eng.
Principal, Vice-President

KSA/ADC/ng

Attachments: Appendix A – Site Wide Emission Inventory
Appendix B – Emission Summary Table

https://golderassociates.sharepoint.com/sites/121611/project files/6 deliverables/nov 2020 - reporting/feb 2022 update/20137524-tm-rev1 covanta updated modelling memo 28feb2022.docx

APPENDIX A

Site Wide Emission Inventory

Appendix A
Site-Wide Emission Inventory

Source Identifier	Source Description	Source Parameters: Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Emission Data: Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
1A	Main Stack - Fall 2020 Source Testing Conditions	51.64	141.2	1.7	87.6	(680538, 4860346)	1 – methylnaphthalene	90-12-0	1.60E-07	1,24, annual	ST	Above-Average	100%
							1,1,2-Trichloroethane	79-00-5	1.31E-05	1,24, annual	ST	Above-Average	100%
							1,2,3,4-tetrachlorobenzene	634-66-2	7.43E-08	1,24, annual	ST	Above-Average	100%
							1,2,3-trichlorobenzene	87-61-6	2.23E-07	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	120-82-1	7.37E-07	1,24, annual	ST	Above-Average	100%
							1,2,4,5-Tetrachlorobenzene	95-94-3	1.59E-07	1,24, annual	ST	Above-Average	100%
							1,2-Dichlorobenzene	95-50-1	1.93E-06	1,24, annual	ST	Above-Average	100%
							1,2-Dichloroethane	107-06-2	4.26E-05	1,24, annual	ST	Above-Average	100%
							1,2-Dichloropropane	78-87-5	1.31E-05	1,24, annual	ST	Above-Average	100%
							1,3,5-trichlorobenzene	108-70-3	2.72E-07	1,24, annual	ST	Above-Average	100%
							1,3-Butadiene	106-99-0	2.61E-05	1,24, annual	ST	Above-Average	100%
							1,3-Dichlorobenzene	541-73-1	2.39E-06	1,24, annual	ST	Above-Average	100%
							1,4-Dichlorobenzene	106-46-7	1.57E-06	1,24, annual	ST	Above-Average	100%
							1-Methylphenanthrene	832-69-9	2.26E-07	1,24, annual	ST	Above-Average	100%
							2 – methylnaphthalene	91-57-6	2.92E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,5-tetrachlorophenol	4901-51-3	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,6-Tetrachlorophenol	58-90-2	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,3,4-trichlorophenol	15950-66-0	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,3,5,6-tetrachlorophenol	935-95-5	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,3,5-trichlorophenol	933-78-8	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,3,6-trichlorophenol	933-75-5	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,3-dichlorophenol	576-24-9	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,4,5-trichlorophenol	95-95-4	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,4,6-Trichlorophenol	88-06-2	7.50E-07	1,24, annual	ST	Above-Average	100%
							2,4-Dichlorophenol	120-83-2	3.93E-07	1,24, annual	ST	Above-Average	100%
							2,6-dichlorophenol	87-65-0	3.72E-07	1,24, annual	ST	Above-Average	100%
							2-Butanone	78-93-3	1.60E-03	1,24, annual	ST	Above-Average	100%
							2-Chloronaphthalene	91-58-7	7.43E-08	1,24, annual	ST	Above-Average	100%
							2-Methylanthracene	613-12-7	2.76E-07	1,24, annual	ST	Above-Average	100%
							2-monochlorophenol	95-57-8	3.72E-07	1,24, annual	ST	Above-Average	100%
							3,4,5-trichlorophenol	609-19-8	3.72E-07	1,24, annual	ST	Above-Average	100%
							3,4-dichlorophenol	95-77-2	3.72E-07	1,24, annual	ST	Above-Average	100%
							3,5-dichlorophenol	591-35-5	7.74E-07	1,24, annual	ST	Above-Average	100%
							3-Methylcholanthrene	56-49-5	3.72E-07	1,24, annual	ST	Above-Average	100%
							3-monochlorophenol	108-43-0	3.72E-07	1,24, annual	ST	Above-Average	100%
							4-monochlorophenol	106-48-9	3.72E-07	1,24, annual	ST	Above-Average	100%
							7,12-Dimethylbenzo(a)anthracene	57-97-6	7.43E-08	1,24, annual	ST	Above-Average	100%
							9,10-Dimethylanthracene	781-43-1	9.86E-08	1,24, annual	ST	Above-Average	100%
							9-Methylphenanthrene	883-20-5	2.33E-07	1,24, annual	ST	Above-Average	100%

Source Identifier	Source Description	Source Parameters: Stack Volumetric Flow Rate [Am^3/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Emission Data: Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Acenaphthene	83-32-9	1.83E-07	1,24, annual	ST	Above-Average	11%
							Acenaphthylene	208-96-8	7.43E-08	1,24, annual	ST	Above-Average	2%
							Acetaldehyde	75-07-0	1.63E-03	1,24, annual	ST	Above-Average	99%
							Acetone	67-64-1	1.82E-03	1,24, annual	ST	Above-Average	100%
							Acrolein	107-02-8	8.40E-05	1,24, annual	ST	Above-Average	97%
							Ammonia	7664-41-7	2.47E-02	1,24, annual	ST	Above-Average	100%
							Anthracene	120-12-7	7.48E-08	1,24, annual	ST	Above-Average	16%
							Antimony	7440-36-0	2.00E-06	1,24, annual	ST	Above-Average	100%
							Arsenic	7440-38-2	1.67E-06	1,24, annual	ST	Above-Average	100%
							Barium	7440-39-3	5.81E-05	1,24, annual	ST	Above-Average	100%
							Benzene	71-43-2	2.68E-04	1,24, annual	ST	Above-Average	51%
							Benzo(a)anthracene	56-55-3	7.43E-08	1,24, annual	ST	Above-Average	27%
							Benzo(a)fluorene	238-84-6	7.43E-08	1,24, annual	ST	Above-Average	100%
							Benzo(a)pyrene	50-32-8	7.43E-08	1,24, annual	ST	Above-Average	47%
							Benzo(b)fluoranthene	205-99-2	7.43E-08	1,24, annual	ST	Above-Average	17%
							Benzo(b)fluorene	243-17-4	7.43E-08	1,24, annual	ST	Above-Average	100%
							Benzo(e)pyrene	192-97-2	7.43E-08	1,24, annual	ST	Above-Average	100%
							Benzo(g,h,i)perylene	191-24-2	2.69E-07	1,24, annual	ST	Above-Average	100%
							Benzo(k)fluoranthene	207-08-9	7.43E-08	1,24, annual	ST	Above-Average	51%
							Beryllium	7440-41-7	1.67E-06	1,24, annual	ST	Above-Average	100%
							Biphenyl	92-51-3	7.21E-07	1,24, annual	ST	Above-Average	100%
							Bromodichloromethane	75-27-4	4.36E-05	1,24, annual	ST	Above-Average	100%
							Bromoform	75-25-2	1.31E-05	1,24, annual	ST	Above-Average	100%
							Bromomethane	74-83-9	1.18E-04	1,24, annual	ST	Above-Average	100%
							Cadmium	7440-43-9	2.53E-06	1,24, annual	ST	Above-Average	100%
							Carbon Monoxide	630-08-0	4.79E-01	1,24, annual	ST	Above-Average	65%
							Carbon tetrachloride	56-23-5	1.21E-04	1,24, annual	ST	Above-Average	100%
							Chlorobenzene	108-90-7	1.61E-05	1,24, annual	ST	Above-Average	100%
							Chloroform	67-66-3	1.14E-04	1,24, annual	ST	Above-Average	100%
							Chromium (hexavalent)	18540-29-9	3.47E-05	1,24, annual	ST	Above-Average	100%
							Chrysene	218-01-9	6.41E-08	1,24, annual	ST	Above-Average	14%
							Cobalt	7440-48-4	1.99E-06	1,24, annual	ST	Above-Average	100%
							Copper	7440-50-8	1.99E-04	1,24, annual	ST	Above-Average	100%
							Coronene	191-07-1	3.81E-07	1,24, annual	ST	Above-Average	100%
							Cumene (Isopropylbenzene)	98-82-8	6.28E-05	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,c)anthracene	215-58-7	7.43E-08	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,e)pyrene	192-65-4	3.72E-07	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,h)anthracene	53-70-3	7.43E-08	1,24, annual	ST	Above-Average	40%
							Dibromochloromethane	124-48-1	1.31E-05	1,24, annual	ST	Above-Average	100%
							Dichlorodifluoromethane	75-71-8	2.79E-05	1,24, annual	ST	Above-Average	100%
							Dichloroethene, 1,1 -	75-34-3	1.31E-05	1,24, annual	ST	Above-Average	100%

Made by: TK
Checked by: KSA

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 [%]
							Dichloromethane	75-09-2	1.23E-03	1,24, annual	ST	Above-Average	100%
							Dioxins, Furans and Dioxin- like PCBs	N/A	0.00068 µg TEQ/s	1,24, annual	ST	Above-Average	100%
							Ethylbenzene	100-41-4	4.06E-04	1,24, annual	ST	Above-Average	100%
							Ethylene Dibromide	106-93-4	2.61E-05	1,24, annual	ST	Above-Average	100%
							Fluoranthene	206-44-0	2.68E-07	1,24, annual	ST	Above-Average	17%
							Fluorides	7664-39-3	3.97E-03	1,24, annual	ST	Above-Average	100%
							Fluorine	86-73-7	1.26E-07	1,24, annual	ST	Above-Average	100%
							Formaldehyde	50-00-0	1.52E-03	1,24, annual	ST	Above-Average	98%
							Hexachlorobenzene	118-74-1	7.43E-08	1,24, annual	ST	Above-Average	100%
							Hydrogen Chloride	7647-01-0	1.37E-01	1,24, annual	ST	Above-Average	100%
							Indeno(1,2,3 – cd)pyrene	193-39-5	7.53E-08	1,24, annual	ST	Above-Average	36%
							Lead	7439-92-1	1.37E-05	1,24, annual	ST	Above-Average	100%
							M&P-Xylene	179601-23-1	2.81E-03	1,24, annual	ST	Above-Average	100%
							Mercury	7439-97-6	7.43E-06	1,24, annual	ST	Above-Average	100%
							Mesitylene (1,3,5-Trimethylbenzene)	108-67-8	4.52E-04	1,24, annual	ST	Above-Average	100%
							Molybdenum	7439-98-7	1.98E-04	1,24, annual	ST	Above-Average	100%
							m-Terphenyl	92-06-8	1.10E-07	1,24, annual	ST	Above-Average	100%
							Naphthalene	91-20-3	1.77E-06	1,24, annual	ST	Above-Average	4%
							Nickel	7440-02-0	4.63E-05	1,24, annual	ST	Above-Average	100%
							Nitrogen Oxides	10102-44-0	4.21E+00	1,24, annual	ST	Above-Average	44%
							Nitrogen Oxides	10102-44-0	4.21E+00	1,24, annual	ST	Above-Average	44%
							O-terphenyl	84-15-1	1.18E-07	1,24, annual	ST	Above-Average	100%
							O-Xylene	95-47-6	1.02E-03	1,24, annual	ST	Above-Average	100%
							Pentachlorobenzene	608-93-5	7.55E-08	1,24, annual	ST	Above-Average	100%
							Pentachlorophenol	87-86-5	3.72E-07	1,24, annual	ST	Above-Average	100%
							Perylene	198-55-0	7.43E-08	1,24, annual	ST	Above-Average	100%
							Phenanthrene	85-01-8	1.04E-06	1,24, annual	ST	Above-Average	7%
							Picene	213-46-7	3.72E-07	1,24, annual	ST	Above-Average	100%
							PM10 (Condensable and Filterable)	N/A	1.86E-01	1,24, annual	ST	Above-Average	100%
							PM10 (Filterable Only)	N/A	2.23E-02	1,24, annual	ST	Above-Average	100%
							PM2.5 (Condensable and Filterable)	N/A	1.76E-01	1,24, annual	ST	Above-Average	100%
							PM2.5 (Filterable Only)	N/A	1.22E-02	1,24, annual	ST	Above-Average	100%
							Polychlorinated Biphenyls (PCB)	N/A	6.80E-04	1,24, annual	ST	Above-Average	100%
							p-Terphenyl	92-94-4	7.87E-08	1,24, annual	ST	Above-Average	100%
							Pyrene	129-00-0	2.40E-07	1,24, annual	ST	Above-Average	16%
							Selenium	7782-49-2	2.86E-05	1,24, annual	ST	Above-Average	100%
							Silver	7440-22-4	1.67E-06	1,24, annual	ST	Above-Average	100%
							Styrene	100-42-5	2.25E-04	1,24, annual	ST	Above-Average	100%
							Sulphur Dioxide	7446-09-5	5.76E-03	1,24, annual	ST	Above-Average	23%
							Tetrachloroethene	127-18-4	1.40E-05	1,24, annual	ST	Above-Average	100%
							Tetralin	119-64-2	1.85E-06	1,24, annual	ST	Above-Average	100%

Source Identifier	Source Description	Source Parameters: Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Emission Data: Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Thallium	7440-28-0	3.89E-06	1,24, annual	ST	Above-Average	100%
							Toluene	108-88-3	1.61E-03	1,24, annual	ST	Above-Average	95%
							Total Chromium (and compounds)	7440-47-3	3.47E-05	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Condensable and Filterable)	N/A	2.53E-01	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Filterable Only)	N/A	8.89E-02	1,24, annual	ST	Above-Average	100%
							trans,1,2-Dichloroethene	156-60-5	2.88E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethane, 1,1,1 -	71-55-6	1.31E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethene	86-42-0	1.31E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethylene, 1,1,2 -	79-01-6	1.40E-05	1,24, annual	ST	Above-Average	100%
							Trichlorofluoromethane	75-69-4	8.23E-05	1,24, annual	ST	Above-Average	100%
							Trichlorotrifluoroethane	76-13-1	2.61E-05	1,24, annual	ST	Above-Average	100%
							Vanadium	7440-62-2	1.08E-06	1,24, annual	ST	Above-Average	100%
							Vinyl chloride	75-01-4	2.61E-05	1,24, annual	ST	Above-Average	100%
							Xylenes, m-, p- and o-	1330-20-7	3.83E-03	1,24, annual	ST	Above-Average	98%
							Zinc	7440-66-6	2.10E-04	1,24, annual	ST	Above-Average	100%
2	Silo Filling	0.31	Ambient	0.10	5.4864	(680551,4860 359)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	4.8768	(680513,4860 332)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	3.9624	(680517,4860 333)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	12.4	(680537,4860 391)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
3	Stand-by generator	1.16	265.85	0.2	3	(680475,4860 419)	Carbon Monoxide	630-08-0	2.56E-01	½	EF	Marginal	35%
							Nitrogen Oxides	10102-44-0	1.12E+00	½	EF	Marginal	12%
							Sulphur Dioxide	7446-09-5	1.88E-02	½	EF	Above-Average	77%
							Total Particulate Matter	N/A	3.25E-02	½	EF	Above-Average	43%
							Filterable TSP	N/A	2.03E-02	½	EF	Above-Average	100%
							PM_{10}	N/A	1.88E-02	½	EF	Above-Average	30%
							$PM_{2.5}$	N/A	1.88E-02	½	EF	Above-Average	30%
							Sulphuric Acid	7664-93-9	2.88E-04	½	EC	Above-Average	100%
							Benzene	71-43-2	2.54E-04	½	EF	Marginal	49%
							Toluene	108-88-3	9.21E-05	½	EF	Marginal	5%
							Xylenes, m-, p- and o-	1330-20-7	6.32E-05	½	EF	Marginal	2%
							Propylene	115-07-1	9.14E-04	½	EF	Marginal	100%
							Formaldehyde	50-00-0	2.58E-05	½	EF	Marginal	2%
							Acetaldehyde	75-07-0	8.26E-06	½	EF	Marginal	<1%
							Acrolein	107-02-8	2.58E-06	½	EF	Marginal	3%
							Naphthalene	91-20-3	4.26E-05	½	EF	Marginal	96%

Source Identifier	Source Description	Source Parameters: Stack Volumetric Flow Rate [Am^3/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Emission Data: Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Acenaphthylene	208-96-8	3.02E-06	½	EF	Marginal	98%
							Acenaphthene	83-32-9	1.53E-06	½	EF	Marginal	89%
							Fluorene	86-73-7	4.19E-06	½	EF	Marginal	100%
							Phenanthrene	85-01-8	1.34E-05	½	EF	Marginal	93%
							Anthracene	120-12-7	4.03E-07	½	EF	Marginal	84%
							Fluoranthene	206-44-0	1.32E-06	½	EF	Marginal	83%
							Pyrene	129-00-0	1.22E-06	½	EF	Marginal	84%
							Benzo(a)anthracene	56-55-3	2.04E-07	½	EF	Marginal	73%
							Chrysene	218-01-9	5.01E-07	½	EF	Marginal	86%
							Benzo(b)fluoranthene	205-99-2	3.64E-07	½	EF	Marginal	83%
							Benzo(k)fluoranthene	207-08-9	7.14E-08	½	EF	Marginal	49%
							Benzo(a)pyrene	50-32-8	8.42E-08	½	EF	Marginal	53%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.36E-07	½	EF	Marginal	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 of Date of ACB List
1 – methylnaphthalene	90-12-0	1.60E-07	Calpuff	1.64E-07	1.54E-07	24-hour	35.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
1,2,4 – Trichlorobenzene	120-82-1	7.37E-07	Calpuff	7.53E-07	7.09E-07	24-hour	400	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
1,2,4,5-Tetrachlorobenzene	95-94-3	1.59E-07	Calpuff	1.62E-07	1.53E-07	24-hour	1	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
1,2-Dichlorobenzene	95-50-1	1.93E-06	Calpuff	3.74E-05	1.12E-05	1-hour	30500	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
2 – methylnaphthalene	91-57-6	2.92E-07	Calpuff	2.98E-07	2.81E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
2,3,4,6-Tetrachlorophenol	58-90-2	3.72E-07	Calpuff	3.80E-07	3.58E-07	24-hour	0.75	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
2,4,6-Trichlorophenol	88-06-2	7.50E-07	Calpuff	7.66E-07	7.22E-07	24-hour	1.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
2,4-Dichlorophenol	120-83-2	3.93E-07	Calpuff	4.01E-07	3.78E-07	24-hour	33.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
3-Methylcholanthrene	56-49-5	3.72E-07	Calpuff	3.80E-07	3.58E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Apr-18
7,12-Dimethylbenzo(a)anthracene	57-97-6	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Apr-18
Acenaphthene	83-32-9	1.83E-07	Calpuff	1.87E-07	1.76E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acenaphthylene	208-96-8	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acetaldehyde	75-07-0	1.63E-03	Calpuff	1.66E-03	1.57E-03	24-hour	500	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acetaldehyde	75-07-0	1.63E-03	Calpuff	1.66E-03	1.57E-03	24-hour	5000	—	Sch. 6	URT	—	<1%	—	
Acrolein	107-02-8	8.40E-05	Calpuff	8.58E-05	8.08E-05	24-hour	0.4	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acrolein	107-02-8	8.40E-05	Calpuff	1.63E-03	4.90E-04	1-hour	4.5	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acrolein	107-02-8	8.40E-05	Calpuff	8.58E-05	8.08E-05	24-hour	4	Health	Sch. 6	URT	—	<1%	—	Apr-18
Ammonia	7664-41-7	2.47E-02	Calpuff	2.52E-02	2.38E-02	24-hour	100	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Ammonia	7664-41-7	2.47E-02	Calpuff	2.52E-02	2.38E-02	24-hour	1000	Health	Sch. 6	URT	—	<1%	—	Apr-18
Anthracene	120-12-7	7.48E-08	Calpuff	7.64E-08	7.20E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Antimony	7440-36-0	2.00E-06	Calpuff	2.04E-06	1.93E-06	24-hour	25	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Arsenic	7440-38-2	1.67E-06	Calpuff	1.70E-06	1.60E-06	24-hour	0.3	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Barium	7440-39-3	5.81E-05	Calpuff	5.94E-05	5.59E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Benzene	71-43-2	2.68E-04	Calpuff	8.55E-06	8.55E-06	Annual	0.45	Health	Sch. 3	Standard	B1	<1%	Note 19, Table 2, 3 URT - Note 4, Table 4	Apr-18
Benzene	71-43-2	2.68E-04	Calpuff	2.74E-04	2.58E-04	24-hour	100	Health	Sch. 6	URT/DAV	B1	<1%	—	
Benzene	71-43-2	2.68E-04	Calpuff	8.55E-06	8.55E-06	Annual	4.5	Health	—	AAV	—	<1%	—	Apr-18
Benzo(a)anthracene	56-55-3	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(a)fluorene	238-84-6	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(a)pyrene	50-32-8	7.43E-08	Calpuff	2.37E-09	2.37E-09	Annual	0.00001	Health	Sch. 3	Standard	B1	<1%	Note 7, 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Benzo(a)pyrene	50-32-8	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.005	Health	Sch. 6	URT	—	<1%	—	Apr-18
Benzo(a)pyrene	50-32-8	7.43E-08	Calpuff	2.37E-09	2.37E-09	Annual	0.0001	Health	—	AAV	—	<1%	—	Apr-18
Benzo(b)fluoranthene	205-99-2	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(b)fluorene	243-17-4	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(e)pyrene	192-97-2	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(g,h,i)perylene	191-24-2	2.69E-07	Calpuff	2.75E-07	2.59E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(k)fluoranthene	207-08-9	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Beryllium	7440-41-7	1.67E-06	Calpuff	1.70E-06	1.60E-06	24-hour	0.01	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Biphenyl	92-51-3	7.21E-07	Calpuff	7.36E-07	6.93E-07	24-hour	175	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
Bromodichloromethane	75-27-4	4.36E-05	Calpuff	4.45E-05	4.20E-05	24-hour	350	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
Bromoform	75-25-2	1.31E-05	Calpuff	1.33E-05	1.26E-05	24-hour	55	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Bromomethane	74-83-9	1.18E-04	Calpuff	1.20E-04	1.13E-04	24-hour	1350	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Cadmium	7440-43-9	2.53E-06	Calpuff	2.58E-06	2.43E-06	24-hour	0.025	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Cadmium	7440-43-9	2.53E-06	Calpuff	2.58E-06	2.43E-06	24-hour	0.25	Health	Sch. 6	URT	—	<1%	—	Apr-18
Carbon Monoxide	630-08-0	4.79E-01	Calpuff	1.12E+01	3.36E+00	1/2-hour	6000	Health	Sch. 3	Standard	B1	<1%	Note 9	Apr-18
Carbon tetrachloride	56-23-5	1.21E-04	Calpuff	1.23E-04	1.16E-04	24-hour	2.4	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Carbon tetrachloride	56-23-5	1.21E-04	Calpuff	1.23E-04	1.16E-04	24-hour	24	Health	Sch. 6	URT	—	<1%	—	Apr-18
Chlorobenzene	108-90-7	1.61E-05	Calpuff	3.12E-04	9.39E-05	1-hour	3500	Health	Sch. 3	Guideline	B1	<1%	Note 2, 3	
Chlorobenzene	108-90-7	1.61E-05	Calpuff	5.15E-04	1.55E-04	10-minute	4500	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	
Chloroform	67-66-3	1.14E-04	Calpuff	1.17E-04	1.10E-04	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Chloroform	67-66-3	1.14E-04	Calpuff	1.17E-04	1.10E-04	24-hour	100	Health	Sch. 6	URT	—	<1%	—	Apr-18
Chromium (hexavalent)	18540-29-9	3.47E-05	Calpuff	1.11E-06	1.11E-06	Annual	0.00014	Health	Sch. 3	Standard	B1	<1%	Notes 11, 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Chromium (hexavalent)	18540-29-9	3.47E-05	Calpuff	3.55E-05	3.34E-05	24-hour	0.07	Health	Sch. 6	URT	—	<1%	—	
Chrysene	218-01-9	8.41E-08	Calpuff	8.58E-08	8.09E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Cobalt	7440-48-4	1.99E-06	Calpuff	2.03E-06	1.91E-06	24-hour	0.1	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Copper	7440-50-8	1.99E-04	Calpuff	2.03E-04	1.91E-04	24-hour	50	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Dibenzo(a,c)anthracene	215-58-7	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Dibenzo(a,h)anthracene	53-70-3	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Dichlorodifluoromethane	75-71-8	2.79E-05	Calpuff	2.85E-05	2.69E-05	24-hour	500000	Health	Sch. 3	Guideline	B1	<1%	Note 10	Apr-18
Dichloroethene, 1,1 -	75-34-3	1.31E-05	Calpuff	1.33E-05	1.26E-05	24-hour	165	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Dichloroethene, 1,1 -	75-34-3	1.31E-05	Calpuff	1.33E-05	1.26E-05	24-hour	1650	Health	Sch. 6	URT	—	<1%	—	Apr-18
Dichloromethane	75-09-2	1.23E-03	Calpuff	1.25E-03	1.18E-03	24-hour	220	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Dichloromethane	75-09-2	1.23E-03	Calpuff	1.25E-03	1.18E-03	24-hour	22000	Health	Sch. 6	URT	—	<1%	—	Apr-18
Dioxins, Furans and Dioxin- like PCBs	N/A	0.00068 µg TEQ/s	Calpuff	0.00069 pg TEQ/m³	0.00065 pg TEQ/m³	24-hour	0.1 pg TEQ/m³	Health	Sch. 3	Guideline	B1	<1%	Note 8, 8a, Table 1URT - Note 4, Table 4	Apr-18
Ethylbenzene	100-41-4	4.06E-04	Calpuff	4.14E-04	3.90E-04	24-hour	1000	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Ethylbenzene	100-41-4	4.06E-04	Calpuff	1.30E-02	3.90E-03	10-minute	1900	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Ethylbenzene	100-41-4	4.06E-04	Calpuff	4.14E-04	3.90E-04	24-hour	14000	Not Applicable	Sch. 6	URT	—	<1%	—	Apr-18
Ethylene Dibromide	106-93-4	2.61E-05	Calpuff	2.67E-05	2.52E-05	24-hour	3	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Fluoranthene	206-44-0	2.68E-07	Calpuff	2.74E-07	2.58E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Fluorides	7664-39-3	3.97E-03	Calpuff	4.05E-03	3.82E-03	24-hour	0.86	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	3.97E-03	Calpuff	4.57E-04	4.57E-04	30-day	0.34	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	3.97E-03	Calpuff	4.05E-03	3.82E-03	24-hour	1.74	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	3.97E-03	Calpuff	4.57E-04	4.57E-04	30-day	0.69	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	3.97E-03	Calpuff	4.05E-03	3.82E-03	24-hour	3.44	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	3.97E-03	Calpuff	4.57E-04	4.57E-04	30-day	1.38	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18

Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration Before Meteorological Anomaly Removal [µg/m³]	Maximum POI Concentration After Meeorological Anomaly Removal [µg/m³]	Averaging Period	MECP POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MECP Limit [%]	Notes	Version of Date of ACB List
Fluorine	86-73-7	1.26E-07	Calpuff	1.29E-07	1.21E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Formaldehyde	50-00-0	1.52E-03	Calpuff	1.55E-03	1.46E-03	24-hour	65	Odour & Irritation	Sch. 3	Standard	B1	<1%	—	Apr-18
Hexachlorobenzene	118-74-1	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.011	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Hydrogen Chloride	7647-01-0	1.37E-01	Calpuff	1.40E-01	1.32E-01	24-hour	20	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Hydrogen Chloride	7647-01-0	1.37E-01	Calpuff	1.40E-01	1.32E-01	24-hour	200	Health	Sch. 6	URT	—	<1%	—	Apr-18
Indeno[1,2,3 – cd]pyrene	193-39-5	7.53E-08	Calpuff	7.69E-08	7.25E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Lead	7439-92-1	1.37E-05	Calpuff	1.40E-05	1.32E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	1.37E-05	Calpuff	1.58E-06	1.58E-06	30-day	0.2	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	1.37E-05	Calpuff	1.40E-05	1.32E-05	24-hour	2	Health	Sch. 6	URT	—	<1%	Note 2URT - Note 4, Table 4	Apr-18
Mercury	7439-97-6	7.43E-06	Calpuff	7.58E-06	7.15E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Molybdenum	7439-98-7	1.98E-04	Calpuff	2.03E-04	1.91E-04	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Naphthalene	91-20-3	1.77E-06	Calpuff	1.81E-06	1.70E-06	24-hour	22.5	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Naphthalene	91-20-3	1.77E-06	Calpuff	5.66E-05	1.70E-05	10-minute	50	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Nickel	7440-02-0	4.63E-05	Calpuff	1.48E-06	1.48E-06	Annual	0.04	Health	Sch. 3	Standard	B1	<1%	Note 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Nickel	7440-02-0	4.63E-05	Calpuff	4.73E-05	4.46E-05	24-hour	2	Health	Sch. 6	URT	—	<1%	—	Apr-18
Nickel	7440-02-0	4.63E-05	Calpuff	1.48E-06	1.48E-06	Annual	0.4	Health	—	AAV	—	<1%	—	Apr-18
Nitrogen Oxides	10102-44-0	4.21E+00	Calpuff	4.30E+00	4.06E+00	24-hour	200	Health	Sch. 3	Standard	B1	2%	Notes 2, 17	Apr-18
Nitrogen Oxides	10102-44-0	4.21E+00	Calpuff	8.17E+01	2.46E+01	1-hour	400	Health	Sch. 3	Standard	B1	6%	Notes 2, 17	Apr-18
O-terphenyl	84-15-1	1.18E-07	Calpuff	1.20E-07	1.13E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	
PM_{10} (Condensable and Filterable)	N/A	1.86E-01	Calpuff	4.34E-01	4.23E-01	24-hour	50	—	—	AAQC	—	<1%	—	
PM_{10} (Filterable Only)	N/A	2.23E-02	Calpuff	2.28E-02	2.65E-01	24-hour	50	—	—	AAQC	—	<1%	—	
$PM_{2.5}$ (Condensable and Filterable)	N/A	1.76E-01	Calpuff	1.80E-01	4.13E-01	24-hour	30	—	—	AAQC	—	1%	—	
$PM_{2.5}$ (Filterable Only)	N/A	1.22E-02	Calpuff	1.25E-02	2.55E-01	24-hour	30	—	—	AAQC	—	<1%	—	
Pentachlorobenzene	608-93-5	7.55E-08	Calpuff	7.71E-08	7.27E-08	24-hour	80	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Pentachlorophenol	87-86-5	3.72E-07	Calpuff	3.80E-07	3.58E-07	24-hour	20	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Perylene	198-55-0	7.43E-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Phenanthrene	85-01-8	1.04E-06	Calpuff	1.07E-06	1.01E-06	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Pyrene	129-00-0	2.40E-07	Calpuff	2.45E-07	2.31E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Selenium	7782-49-2	2.86E-05	Calpuff	2.92E-05	2.75E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Silver	7440-22-4	1.67E-06	Calpuff	1.70E-06	1.60E-06	24-hour	1	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Sulphur Dioxide	7446-09-5	5.76E-03	Calpuff	5.88E-03	5.54E-03	24-hour	275	Health	Sch. 3	Standard	B1	<1%	Effective until July 1, 2023Note 2URT - Note 4, Table 4	Apr-18
Sulphur Dioxide	7446-09-5	5.76E-03	Calpuff	1.12E-01	3.36E-02	1-hour	690	Health	Sch. 3	Standard	B1	<1%	Effective until July 1, 2023Note 2URT - Note 4, Table 4	Apr-18
Tetrachloroethene	127-18-4	1.40E-05	Calpuff	1.43E-05	1.35E-05	24-hour	360	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Tetrachloroethene	127-18-4	1.40E-05	Calpuff	1.43E-05	1.35E-05	24-hour	3600	Health	Sch. 6	URT	—	<1%	—	
Tetralin	119-64-2	1.85E-06	Calpuff	1.89E-06	1.78E-06	24-hour	151.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Thallium	7440-28-0	3.89E-06	Calpuff	3.98E-06	3.75E-06	24-hour	0.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Toluene	108-88-3	1.61E-03	Calpuff	1.64E-03	1.55E-03	24-hour	2000	Not Applicable	Sch. 3	Guideline	B1	<1%	To be updated - Note 5	Apr-18
Total Chromium (and compounds)	7440-47-3	3.47E-05	Calpuff	3.55E-05	3.34E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 11aURT - Note 4, Table 4	Apr-18
Total Chromium (and compounds)	7440-47-3	3.47E-05	Calpuff	3.55E-05	3.34E-05	24-hour	5	Health	Sch. 6	URT	—	<1%	—	Apr-18
Total Particulate Matter (Condensable and Filterable)	N/A	2.53E-01	Calpuff	2.58E-01	4.87E-01	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Total Particulate Matter (Filterable only)	N/A	2.53E-01	Calpuff	2.58E-01	4.87E-01	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Trichloroethane, 1,1,1 -	71-55-6	1.31E-05	Calpuff	1.33E-05	1.26E-05	24-hour	115000	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Trichloroethene	86-42-0	1.31E-05	Calpuff	1.33E-05	1.26E-05	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	1.40E-05	Calpuff	1.43E-05	1.35E-05	24-hour	12	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	1.40E-05	Calpuff	1.43E-05	1.35E-05	24-hour	1200	Health	Sch. 6	URT	—	<1%	—	Apr-18
Trichlorofluoromethane	75-69-4	8.23E-05	Calpuff	8.41E-05	7.92E-05	24-hour	6000	Health	Sch. 3	Guideline	B1	<1%	Note 10	Apr-18
Vanadium	7440-62-2	1.08E-06	Calpuff	1.11E-06	1.04E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Vinyl chloride	75-01-4	2.61E-05	Calpuff	2.67E-05	2.52E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Vinyl chloride	75-01-4	2.61E-05	Calpuff	2.67E-05	2.52E-05	24-hour	100	Health	Sch. 6	URT	—	<1%	—	Apr-18
Xylenes, m-, p- and o-	1330-20-7	3.83E-03	Calpuff	3.91E-03	3.68E-03	24-hour	730	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3, 22	Apr-18
Xylenes, m-, p- and o-	1330-20-7	3.83E-03	Calpuff	1.22E-01	3.68E-02	10-minute	3000	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3, 22	Apr-18
Xylenes, m-, p- and o-	1330-20-7	3.83E-03	Calpuff	3.91E-03	3.68E-03	24-hour	7300	Not Applicable	Sch. 6	URT	—	<1%	—	Apr-18
Zinc	7440-66-6	2.10E-04	Calpuff	2.15E-04	2.02E-04	24-hour	120	Particulate	Sch. 3	Standard	B1	<1%	—	Apr-18

APPENDIX 28

DYEC CEMS 1-Hour Average Data
(4 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

		BH Outlet										Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
9-Nov-20	0:00	8.81	11		0		113		5		0	9
9-Nov-20	1:00	8.59	9		0		111		5		0	9
9-Nov-20	2:00	8.55	7		0		105		4		0	9
9-Nov-20	3:00	8.42	8	8.8	0		105		4		0	9
9-Nov-20	4:00	8.53	11	8.8	0		111		2		0	9
9-Nov-20	5:00	8.33	8	8.5	0		98		4		0	9
9-Nov-20	6:00	8.58	11	9.5	0		117		5		0	9
9-Nov-20	7:00	9.17	15	11.3	0		109		6		0	9
9-Nov-20	8:00	9.51	8	10.5	0		110		7		0	9
9-Nov-20	9:00	8.93	14	12.0	0		112		5		0	9
9-Nov-20	10:00	8.74	12	12.3	0		112		4		0	9
9-Nov-20	11:00	8.85	12	11.5	6		106		5		0	9
9-Nov-20	12:00	8.57	12	12.5	0		108		4		0	9
9-Nov-20	13:00	8.19	12	12.0	0		113		3		0	9
9-Nov-20	14:00	9.13	10	11.5	0		103		5		0	9
9-Nov-20	15:00	8.76	9	10.8	0		118		5		0	9
9-Nov-20	16:00	8.47	8	9.8	0		109		4		0	9
9-Nov-20	17:00	8.60	9	9.0	0		108		3		0	9
9-Nov-20	18:00	8.37	11	9.3	0		112		2		0	9
9-Nov-20	19:00	8.43	11	9.8	0		114		5		0	9
9-Nov-20	20:00	8.36	8	9.8	0		109		5		0	9
9-Nov-20	21:00	8.39	10	10.0	0		113		5		0	9
9-Nov-20	22:00	8.32	12	10.3	0		109		4		0	9
9-Nov-20	23:00	8.56	9	9.8	4	0.4	111	110	4	4.4	0	9
10-Nov-20	0:00	8.46	8	9.8	0	0.4	116	110	4	4.3	0	9
10-Nov-20	1:00	8.33	9	9.5	0	0.4	108	110	4	4.3	0	8
10-Nov-20	2:00	8.44	11	9.3	0	0.4	107	110	4	4.3	0	9
10-Nov-20	3:00	8.26	13	10.3	0	0.4	103	110	3	4.3	0	9
10-Nov-20	4:00	8.16	12	11.3	0	0.4	112	110	3	4.3	0	8
10-Nov-20	5:00	7.97	12	12.0	0	0.4	100	110	3	4.3	0	8
10-Nov-20	6:00	8.74	10	11.8	1	0.5	112	110	6	4.3	0	9
10-Nov-20	7:00	8.49	12	11.5	0	0.5	109	110	4	4.2	0	9
10-Nov-20	8:00	8.52	17	12.8	0	0.5	108	110	4	4.1	0	9
10-Nov-20	9:00	8.31	10	12.3	0	0.5	110	110	3	4.0	0	9
10-Nov-20	10:00	8.45	13	13.0	0	0.5	107	109	4	4.0	0	9
10-Nov-20	11:00	8.58	14	13.5	0	0.2	112	110	5	4.0	0	9
10-Nov-20	12:00	8.37	13	12.5	0	0.2	113	110	5	4.0	0	9
10-Nov-20	13:00	8.26	15	13.8	0	0.2	107	110	4	4.1	0	8
10-Nov-20	14:00	8.50	13	13.8	0	0.2	109	110	4	4.0	0	9
10-Nov-20	15:00	8.61	11	13.0	0	0.2	115	110	4	4.0	0	9
10-Nov-20	16:00	8.35	11	12.5	0	0.2	108	110	4	4.0	0	9
10-Nov-20	17:00	8.27	11	11.5	0	0.2	112	110	4	4.0	0	9
10-Nov-20	18:00	8.34	10	10.8	0	0.2	113	110	4	4.1	0	9
10-Nov-20	19:00	8.49	8	10.0	0	0.2	108	110	2	4.0	0	9
10-Nov-20	20:00	8.55	7	9.0	0	0.2	110	110	4	4.0	0	8
10-Nov-20	21:00	8.28	10	8.8	0	0.2	113	110	5	4.0	0	8
10-Nov-20	22:00	8.46	18	10.8	0	0.2	118	110	5	4.0	0	9
10-Nov-20	23:00	8.56	8	10.8	0	0.0	100	110	4	4.0	0	9
11-Nov-20	0:00	8.23	7	10.8	0	0.0	108	109	4	4.0	0	9
11-Nov-20	1:00	8.00	9	10.5	0	0.0	110	109	4	4.0	0	8
11-Nov-20	2:00	8.07	8	8.0	0	0.0	107	109	4	4.0	0	8
11-Nov-20	3:00	8.55	7	7.8	0	0.0	108	110	5	4.1	0	9
11-Nov-20	4:00	8.43	8	8.0	0	0.0	115	110	3	4.1	0	9
11-Nov-20	5:00	8.04	12	8.8	0	0.0	105	110	3	4.1	0	8
11-Nov-20	6:00	8.50	13	10.0	0	0.0	110	110	4	4.0	0	9
11-Nov-20	7:00	8.51	9	10.5	0	0.0	110	110	4	4.0	0	9
11-Nov-20	8:00	8.53	6	10.0	0	0.0	112	110	4	4.0	0	9
11-Nov-20	9:00	8.37	11	9.8	0	0.0	107	110	3	4.0	0	9
11-Nov-20	10:00	8.27	9	8.8	0	0.0	112	110	3	4.0	0	9
11-Nov-20	11:00	8.45	11	9.3	0	0.0	106	110	4	3.9	0	9
11-Nov-20	12:00	8.26	12	10.8	0	0.0	108	110	4	3.9	0	8
11-Nov-20	13:00	8.44	9	10.3	0	0.0	112	110	5	3.9	0	9
11-Nov-20	14:00	9.22	14	11.5	0	0.0	106	110	4	3.9	0	9
11-Nov-20	15:00	8.59	13	12.0	0	0.0	116	110	4	3.9	0	9
11-Nov-20	16:00	8.21	17	13.3	0	0.0	109	110	3	3.9	0	8
11-Nov-20	17:00	8.40	11	13.8	0	0.0	110	110	3	3.8	0	9
11-Nov-20	18:00	8.16	9	12.5	0	0.0	109	110	3	3.8	0	8
11-Nov-20	19:00	8.27	9	11.5	0	0.0	110	110	1	3.8	0	9
11-Nov-20	20:00	8.53	9	9.5	0	0.0	110	110	3	3.7	0	9
11-Nov-20	21:00	8.28	9	9.0	0	0.0	106	109	3	3.6	0	9
11-Nov-20	22:00	8.67	15	10.5	0	0.0	107	109	5	3.6	0	9
11-Nov-20	23:00	8.33	7	10.0	0	0.0	113	109	5	3.7	0	8

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

		BH Outlet										Scrubber Inlet
		O_2	CO		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
12-Nov-20	0:00	8.03	7	9.5	0	0.0	108	109	3	3.6	0	8
12-Nov-20	1:00	8.29	20	12.3	0	0.0	113	110	3	3.6	0	8
12-Nov-20	2:00	8.56	16	12.5	0	0.0	110	110	3	3.5	0	9
12-Nov-20	3:00	8.48	10	13.3	0	0.0	109	110	3	3.5	0	9
12-Nov-20	4:00	8.38	11	14.3	0	0.0	114	110	2	3.4	0	9
12-Nov-20	5:00	8.41	16	13.3	0	0.0	100	109	3	3.4	0	9
12-Nov-20	6:00	8.30	11	12.0	0	0.0	110	109	3	3.4	0	9
12-Nov-20	7:00	9.22	26	16.0	0	0.0	113	110	6	3.5	0	9
12-Nov-20	8:00	8.63	10	15.8	0	0.0	108	109	4	3.5	0	9
12-Nov-20	9:00	8.39	18	16.3	0	0.0	113	110	3	3.5	0	9
12-Nov-20	10:00	8.41	13	16.8	0	0.0	108	110	3	3.5	0	9
12-Nov-20	11:00	8.96	15	14.0	0	0.0	112	110	5	3.5	0	9
12-Nov-20	12:00	8.62	13	14.8	0	0.0	109	110	4	3.5	0	9
12-Nov-20	13:00	8.67	11	13.0	0	0.0	111	110	3	3.4	0	9
12-Nov-20	14:00	8.77	17	14.0	0	0.0	113	110	4	3.4	0	9
12-Nov-20	15:00	8.28	12	13.3	0	0.0	111	110	4	3.4	0	9
12-Nov-20	16:00	8.42	14	13.5	0	0.0	112	110	5	3.5	0	9
12-Nov-20	17:00	8.51	14	14.3	0	0.0	108	110	4	3.5	0	9
12-Nov-20	18:00	8.00	15	13.8	0	0.0	112	110	3	3.5	0	8
12-Nov-20	19:00	9.04	10	13.3	0	0.0	109	110	2	3.6	0	9
12-Nov-20	20:00	8.36	10	12.3	0	0.0	105	110	3	3.6	0	9
12-Nov-20	21:00	8.54	11	11.5	0	0.0	115	110	4	3.6	0	9
12-Nov-20	22:00	8.41	16	11.8	0	0.0	112	110	5	3.6	0	8
12-Nov-20	23:00	8.53	12	12.3	0	0.0	108	110	4	3.6	0	9
	Min	7.97	6	7.8	0	0.0	98	109	1	3.4	0	8
	Max	9.51	26	16.8	6	0.5	118	110	7	4.4	0	9
	Avg	8.48	11	11.4	0.1	0.1	110	110	4	3.8	0	9
	Std Dev	0.27	3.3	2.0	0.7	0.2	3.75	0.2	1.0	0.3	-	0.4

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

		BH Outlet										Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
9-Nov-20	0:00	8.54	19		0		114		4		0	8
9-Nov-20	1:00	8.25	19		0		106		3		0	8
9-Nov-20	2:00	8.27	21		0		107		3		0	8
9-Nov-20	3:00	8.21	24	20.8	0		110		3		0	8
9-Nov-20	4:00	8.18	11	18.8	0		115		3		0	8
9-Nov-20	5:00	8.45	10	16.5	0		111		4		1	8
9-Nov-20	6:00	8.31	12	14.3	0		121		4		1	8
9-Nov-20	7:00	8.51	11	11.0	0		112		4		0	8
9-Nov-20	8:00	8.48	21	13.5	0		103		4		0	8
9-Nov-20	9:00	8.52	17	15.3	0		115		4		0	8
9-Nov-20	10:00	8.44	20	17.3	0		108		4		0	8
9-Nov-20	11:00	8.24	13	17.8	0		105		4		0	8
9-Nov-20	12:00	8.30	17	16.8	0		111		4		0	8
9-Nov-20	13:00	7.97	9	14.8	0		113		4		0	8
9-Nov-20	14:00	8.45	16	13.8	0		108		4		0	8
9-Nov-20	15:00	8.35	14	14.0	1		108		4		0	8
9-Nov-20	16:00	8.17	11	12.5	0		110		4		0	8
9-Nov-20	17:00	8.34	11	13.0	0		105		4		0	8
9-Nov-20	18:00	8.43	12	12.0	0		113		4		0	8
9-Nov-20	19:00	8.21	17	12.8	0		109		4		0	8
9-Nov-20	20:00	8.50	14	13.5	0		105		4		0	8
9-Nov-20	21:00	8.77	14	14.3	0		116		3		0	9
9-Nov-20	22:00	8.62	11	14.0	0		102		3		0	8
9-Nov-20	23:00	8.26	12	12.8	0	0.0	104	110	3	3.7	0	8
10-Nov-20	0:00	8.25	9	11.5	0	0.0	117	110	3	3.7	0	8
10-Nov-20	1:00	8.68	14	11.5	0	0.0	110	110	3	3.7	0	8
10-Nov-20	2:00	8.66	11	11.5	0	0.0	110	110	3	3.7	0	8
10-Nov-20	3:00	8.58	11	11.3	0	0.0	119	110	3	3.7	0	8
10-Nov-20	4:00	8.23	8	11.0	0	0.0	113	110	3	3.7	0	8
10-Nov-20	5:00	7.97	13	10.8	2	0.1	107	110	4	3.7	1	8
10-Nov-20	6:00	8.20	13	11.3	2	0.2	121	110	4	3.7	1	8
10-Nov-20	7:00	8.25	17	12.8	3	0.3	111	110	3	3.6	0	8
10-Nov-20	8:00	7.88	15	14.5	0	0.3	100	110	3	3.6	0	8
10-Nov-20	9:00	8.48	13	14.5	0	0.3	117	110	4	3.6	0	8
10-Nov-20	10:00	8.15	13	14.5	0	0.3	110	110	3	3.5	0	8
10-Nov-20	11:00	8.70	17	14.5	0	0.3	102	110	4	3.5	0	9
10-Nov-20	12:00	8.39	13	14.0	0	0.3	112	110	4	3.5	0	8
10-Nov-20	13:00	8.22	16	14.8	0	0.3	109	110	4	3.5	0	8
10-Nov-20	14:00	8.44	11	14.3	0	0.3	110	110	4	3.5	0	8
10-Nov-20	15:00	8.29	12	13.0	0	0.3	111	110	3	3.5	0	8
10-Nov-20	16:00	8.68	15	13.5	0	0.3	108	110	3	3.5	0	8
10-Nov-20	17:00	8.53	11	12.3	0	0.3	108	110	3	3.4	0	8
10-Nov-20	18:00	8.43	15	13.3	0	0.3	117	110	4	3.4	0	8
10-Nov-20	19:00	8.64	18	14.8	0	0.3	102	110	4	3.4	0	9
10-Nov-20	20:00	8.90	21	16.3	0	0.3	107	110	4	3.4	0	8
10-Nov-20	21:00	8.30	18	18.0	0	0.3	112	110	3	3.4	0	8
10-Nov-20	22:00	8.47	11	17.0	0	0.3	108	110	3	3.4	0	8
10-Nov-20	23:00	8.26	12	15.5	0	0.3	104	110	3	3.4	0	8
11-Nov-20	0:00	8.15	12	13.3	0	0.3	113	110	3	3.4	0	8
11-Nov-20	1:00	8.36	16	12.8	0	0.3	106	110	4	3.5	0	8
11-Nov-20	2:00	8.28	13	13.3	0	0.3	108	110	4	3.5	0	8
11-Nov-20	3:00	8.47	9	12.5	0	0.3	116	110	3	3.5	0	8
11-Nov-20	4:00	8.43	12	12.5	0	0.3	113	110	3	3.5	0	8
11-Nov-20	5:00	8.21	11	11.3	0	0.2	120	110	4	3.5	1	8
11-Nov-20	6:00	8.56	12	11.0	0	0.1	119	110	3	3.5	1	8
11-Nov-20	7:00	8.43	11	11.5	0	0.0	108	110	3	3.5	0	8
11-Nov-20	8:00	8.35	10	11.0	0	0.0	107	110	3	3.5	0	8
11-Nov-20	9:00	8.40	12	11.3	0	0.0	109	110	3	3.4	0	8
11-Nov-20	10:00	8.31	11	11.0	0	0.0	107	110	3	3.4	0	8
11-Nov-20	11:00	8.45	12	11.3	0	0.0	113	110	3	3.4	0	8
11-Nov-20	12:00	8.72	14	12.3	0	0.0	112	110	3	3.3	0	8
11-Nov-20	13:00	8.50	15	13.0	0	0.0	106	110	3	3.3	0	8
11-Nov-20	14:00	8.14	15	14.0	0	0.0	106	110	3	3.3	0	8
11-Nov-20	15:00	8.45	15	14.8	0	0.0	109	110	3	3.3	0	8
11-Nov-20	16:00	8.25	11	14.0	0	0.0	116	110	3	3.3	0	8
11-Nov-20	17:00	8.51	17	14.5	0	0.0	109	110	3	3.3	0	8
11-Nov-20	18:00	8.73	21	16.0	0	0.0	108	110	3	3.2	0	8
11-Nov-20	19:00	8.22	12	15.3	0	0.0	112	110	2	3.1	0	8
11-Nov-20	20:00	8.26	12	15.5	0	0.0	104	110	2	3.0	0	8
11-Nov-20	21:00	8.08	11	14.0	0	0.0	108	110	2	3.0	0	8
11-Nov-20	22:00	8.18	25	15.0	0	0.0	106	110	2	3.0	0	8
11-Nov-20	23:00	8.51	15	15.8	0	0.0	112	110	2	2.9	0	8

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

		BH Outlet											Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC		O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr		1-hr
12-Nov-20	0:00	8.02	11	15.5	0	0.0	111	110	3	2.9	0		8
12-Nov-20	1:00	8.21	13	16.0	0	0.0	111	110	3	2.9	0		8
12-Nov-20	2:00	8.24	10	12.3	0	0.0	102	110	3	2.8	0		8
12-Nov-20	3:00	8.88	14	12.0	0	0.0	122	110	3	2.8	0		9
12-Nov-20	4:00	8.33	24	15.3	0	0.0	115	111	3	2.8	0		8
12-Nov-20	5:00	8.20	12	15.0	0	0.0	115	110	4	2.8	1		8
12-Nov-20	6:00	8.44	13	15.8	0	0.0	120	110	3	2.8	1		8
12-Nov-20	7:00	8.60	15	16.0	0	0.0	109	110	3	2.8	0		9
12-Nov-20	8:00	8.33	14	13.5	0	0.0	102	110	3	2.8	0		8
12-Nov-20	9:00	8.19	18	15.0	0	0.0	111	110	2	2.8	0		8
12-Nov-20	10:00	8.19	16	15.8	0	0.0	110	110	3	2.8	0		8
12-Nov-20	11:00	8.78	11	14.8	0	0.0	111	110	3	2.8	0		9
12-Nov-20	12:00	8.56	15	15.0	0	0.0	108	110	3	2.8	0		8
12-Nov-20	13:00	8.82	14	14.0	0	0.0	112	110	3	2.8	0		9
12-Nov-20	14:00	8.54	18	14.5	0	0.0	103	110	3	2.8	0		8
12-Nov-20	15:00	8.28	18	16.3	0	0.0	116	111	3	2.8	0		8
12-Nov-20	16:00	8.30	17	16.8	6	0.3	111	110	3	2.8	0		8
12-Nov-20	17:00	8.59	21	18.5	1	0.3	109	110	3	2.8	0		8
12-Nov-20	18:00	7.93	17	18.3	1	0.3	107	110	3	2.8	0		8
12-Nov-20	19:00	8.51	12	16.8	0	0.3	107	110	2	2.8	0		8
12-Nov-20	20:00	8.45	11	15.3	0	0.3	111	110	2	2.8	0		8
12-Nov-20	21:00	8.63	13	13.3	0	0.3	113	111	3	2.8	0		8
12-Nov-20	22:00	8.41	14	12.5	0	0.3	112	111	3	2.9	0		8
12-Nov-20	23:00	8.60	21	14.8	3	0.5	107	111	3	2.9	0		8
	Min	7.88	8	10.8	0	0	100	110	2	2.8	0		8
	Max	8.90	25	20.8	6	0.5	122	111	4	3.7	1		9
	Avg	8.39	14	14.1	0.2	0.1	110	110	3	3.2	0.1		8
	Std Dev	0.21	3.6	2.1	0.8	0.2	4.77	0.2	0.6	0.3	0.3		0.3

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