Report No. 22230

ORTECH
a Kontrol Technologies Company

Report:

Covanta Durham York Renewable Energy Limited Partnership
Durham York Energy Centre
2023 Voluntary Compliance Emission Testing Program

Date: July 25, 2023



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2023 Voluntary Compliance Emission Testing Program

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

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

Covanta Corporation
445 South Street
Morristown, NJ, USA 07960

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

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

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

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

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

Hank Van Bakel, P.Eng.
(Associate)
Tel: (905) 822-4120

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Revision History

Version	Date	Summary Changes/Purpose of Revision
1	July 25, 2023	None

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EXECUTIVE SUMMARY

ORTECH Consulting Inc. (ORTECH) completed a voluntary compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between April 24 and April 27, 2023. The voluntary emission testing program was performed at the request of the Regions of Durham and York. The current test program is the eighth voluntary test program conducted at the facility.

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

Test Program	Test Date	ORTECH Report No.
2015 Compliance	September/October 2015	21546
2016 Voluntary	May 2016	21656
2016 Compliance	October/November 2016	21698
2017 Voluntary	May 2017	21754
2017 Compliance	October 2017	21800
2018 Voluntary	May/June 2018	21840
2018 Compliance	September 2018	21880
2019 Voluntary	June 2019	21936
2019 Compliance	September 2019	21960
2020 Voluntary	June 2020	22001
2020 Compliance	November 2020	22050
2021 Voluntary	June 2021	22081
2021 Compliance	November/December 2021	22085
2022 Voluntary	May 2022	22158
2022 Compliance	November/December 2022	22160
2023 Voluntary	April 2023	22230

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

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

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

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

Since relative accuracy and system bias testing was conducted in September 2022, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (April 24 to April 27, 2023) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on April 24 and April 25, 2023 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

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

The MECP "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provides an updated framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs. This document was replaced by "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", with the most recent version published in April 2023, however the dioxin and furan toxicity equivalent calculation methodology remains the same. The dioxins, furans and dioxin-like PCBs toxicity equivalent emission data was also calculated using half the detection limit for those compounds not detected. The half detection limit data was used to assess against the dispersion modelling Point of Impingement limit. The toxicity equivalent concentrations calculated using the full detection limit, for those compounds less than the reportable detection limit, were used to assess against the in-stack limit detailed in Schedule C of the ECA.

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

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	392	-
Average Combustion Zone Temp. (°C)*	-	-	-	1267	-
Steam (tonnes/day)*	-	-	-	802	-
MSW Combusted (tonnes/day)*	-	-	-	221	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	718	-
Carbon Injection (kg/day)*	-	-	-	127	-
Lime Injection (kg/day)*	-	-	-	4033	-
Filterable Particulate (mg/Rm^3) (1)	<0.11	<0.18	<0.29	<0.20	9
PM_{10} with Condensable (mg/Rm^3) (1)	<2.88	<4.19	<5.66	<4.24	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<2.81	<4.11	<4.68	<3.87	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.098	<0.11	<0.11	<0.10	-
Ammonia (mg/Rm^3) (1)	0.74	0.78	0.74	0.76	-
Cadmium (µg/Rm^3) (1)	0.15	0.049	0.16	0.12	7
Lead (µg/Rm^3) (1)	0.33	0.31	0.21	0.28	50
Mercury (µg/Rm^3) (1)	<0.086	<0.085	<0.084	<0.085	15
Antimony (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Arsenic (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Barium (µg/Rm^3) (1)	0.39	0.24	0.60	0.41	-
Beryllium (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Chromium (µg/Rm^3) (1)	0.90	0.88	0.82	0.87	-
Cobalt (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Copper (µg/Rm^3) (1)	2.63	2.01	1.81	2.15	-
Molybdenum (µg/Rm^3) (1)	8.31	8.41	7.49	8.07	-
Nickel (µg/Rm^3) (1)	0.79	0.63	0.84	0.75	-
Selenium (µg/Rm^3) (1)	<0.23	<0.23	<0.21	<0.22	-
Silver (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Thallium (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Vanadium (µg/Rm^3) (1)	<0.023	<0.023	<0.021	<0.022	-
Zinc (µg/Rm^3) (1)	7.12	7.17	5.49	6.60	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<2.70	<4.77	<12.4	<6.61	60
Total Chlorobenzenes (ng/Rm^3) (1)	<275	<227	<300	<267	-
Total Chlorophenols (ng/Rm^3) (1)	<161	<159	<161	<161	-
Total PAHs (ng/Rm^3) (1)	<378	<805	<249	<477	-
VOCs (µg/Rm^3) (1)	<261	<165	<969	<465	-
Aldehydes (µg/Rm^3) (1)	<95.5	<95.5	<104	<98.4	-
Total VOCs (µg/Rm^3) (1) (4)	<357	<261	<1073	<563	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0	0.1	0	0.03	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)*	-	-	-	392	-
Average Combustion Zone Temp. (°C)*	-	-	-	1270	-
Steam (tonnes/day)*	-	-	-	798	-
MSW Combusted (tonnes/day)*	-	-	-	222	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	707	-
Carbon Injection (kg/day)*	-	-	-	128	-
Lime Injection (kg/day)*	-	-	-	3978	-
Filterable Particulate (mg/Rm^3) (1)	<0.34	0.24	0.13	<0.24	9
PM_{10} with Condensable (mg/Rm^3) (1)	<8.93	<3.64	<4.97	<5.85	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<8.86	<3.49	<4.34	<5.56	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm^3) (1)	0.80	<0.28	0.36	<0.48	-
Cadmium (µg/Rm^3) (1)	0.056	0.081	0.11	0.083	7
Lead (µg/Rm^3) (1)	0.070	0.20	0.18	0.15	50
Mercury (µg/Rm^3) (1)	<0.083	<0.093	<0.091	<0.089	15
Antimony (µg/Rm^3) (1)	<0.045	0.074	0.067	<0.062	-
Arsenic (µg/Rm^3) (1)	<0.045	<0.044	<0.043	<0.044	-
Barium (µg/Rm^3) (1)	0.19	1.43	0.15	0.59	-
Beryllium (µg/Rm^3) (1)	<0.045	<0.044	<0.043	<0.044	-
Chromium (µg/Rm^3) (1)	0.90	1.48	0.76	1.05	-
Cobalt (µg/Rm^3) (1)	<0.023	<0.022	<0.021	<0.022	-
Copper (µg/Rm^3) (1)	1.93	1.95	1.53	1.80	-
Molybdenum (µg/Rm^3) (1)	8.57	8.31	7.84	8.24	-
Nickel (µg/Rm^3) (1)	1.08	0.54	0.41	0.68	-
Selenium (µg/Rm^3) (1)	<0.23	<0.22	<0.21	<0.22	-
Silver (µg/Rm^3) (1)	<0.045	<0.044	<0.043	<0.044	-
Thallium (µg/Rm^3) (1)	<0.045	<0.044	<0.043	<0.044	-
Vanadium (µg/Rm^3) (1)	<0.023	0.091	<0.021	<0.045	-
Zinc (µg/Rm^3) (1)	4.26	3.80	6.77	4.94	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<9.24	<8.67	<9.63	<9.18	60
Total Chlorobenzenes (ng/Rm^3) (1)	<352	<297	<351	<333	-
Total Chlorophenols (ng/Rm^3) (1)	<169	<169	<169	<169	-
Total PAHs (ng/Rm^3) (1)	<312	<371	<194	<292	-
VOCs (µg/Rm^3) (1)	<69.6	<63.1	<64.2	<65.6	-
Aldehydes (µg/Rm^3) (1)	<135	<107	<136	<126	-
Total VOCs (µg/Rm^3) (1) (4)	<205	<170	<200	<192	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.5	0.4	0.3	0.4	50

* based on process data provided by Covanta

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

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

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

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

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

Boiler No.	Parameter	Minimum	Average	Maximum	In-Stack Limit
Boiler No. 1	Carbon Monoxide (mg/Rm^3) (1)	6.8	9.0	13.3	40
	Hydrogen Chloride (mg/Rm^3) (2)	0.7	0.8	1.3	9
	Nitrogen Oxides (mg/Rm^3) (2)	110	110	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.02	0.04	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	10.3	16.1	27.3	40
	Hydrogen Chloride (mg/Rm^3) (2)	2.7	3.1	3.3	9
	Nitrogen Oxides (mg/Rm^3) (2)	109	110	112	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.13	0.3	35

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

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

Dispersion modelling was completed using the CALPUFF model (using Version 7.2.1 level 150618 as approved by the MECP in December 2021) by WSP Canada Inc. A summary of the results are provided in the tables appended to this report (Appendix 27) based on calculated ground level Point of Impingement (POI) concentrations for the average total Main Stack emissions. As shown in the tables, the calculated impingement concentrations for all the contaminants were well below the relevant MECP standards. Note the Ontario Regulation 419/05 Schedule 3 limits were updated in April 2023.

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 794 tonnes of steam per day for each Boiler (approximately 98.3% of maximum continuous rating). The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler).
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in Schedule C of the ECA.
- Using CALPUFF dispersion modelling techniques, the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below all current standards in Regulation 419/05 under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

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

1. INTRODUCTION

ORTECH Consulting Inc. (ORTECH) completed a voluntary compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between April 24 and April 27, 2023. The voluntary emission testing program was performed at the request of the Regions of Durham and York. The current test program is the eighth voluntary test program conducted at the facility.

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

Test Program	Test Date	ORTECH Report No.
2015 Compliance	September/October 2015	21546
2016 Voluntary	May 2016	21656
2016 Compliance	October/November 2016	21698
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2018 Compliance	September 2018	21880
2019 Voluntary	June 2019	21936
2019 Compliance	September 2019	21960
2020 Voluntary	June 2020	22001
2020 Compliance	November 2020	22050
2021 Voluntary	June 2021	22081
2021 Compliance	November/December 2021	22085
2022 Voluntary	May 2022	22158
2022 Compliance	November/December 2022	22160
2023 Voluntary	April 2023	22230

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

Prior to commencing the test program, the Durham and York Regions submitted a Pre-Test Plan letter to the MECP stating that the Voluntary sampling program would follow the procedures detailed in ORTECH Pre-Test Plan No. 22050, "Covanta Durham York Renewable Energy Limited Partnership Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (Air) No. 7306-8FDKNX", dated September 8, 2020. Provided in Appendix 3 is a copy of the Pre-Test Plan letter sent by the Regions, dated April 3, 2023. 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 April 24 and April 27, 2023.

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

The Air Pollution Control System is a set of devices and equipment designed to control the release of contaminants into the atmosphere. At the core of this system is a dry recirculation type scrubber and a fabric filter baghouse, both of which play vital roles in purifying the flue gas through necessary reactions. To counter acidic chemical compounds and manage particulate matter, heavy metals, and dioxins and furans, the system utilizes hydrated lime and powdered carbon. Additionally, upstream of this setup, a Selective Non-Catalytic Reduction System (SNCR) effectively controls nitrogen oxides (NOx) by introducing ammonia into the combustion unit.

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
					SO_2	0-500 ppm
					O_2 (Dry)	0-25%
		Ametek	RM CEM O_2/IQ	10217710-2	O_2 (Wet)	0-25%
1	BH Outlet	Environmental SA	MIR 9000	2686	NO_X	0-500 ppm
					SO_2	0-200 ppm
					HCl	0-100 ppm
					HF	0-100 ppm
					CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					O_2 (Dry)	0-25%
					CO_2	0-25%
		Ametek	RM CEM O_2/IQ	10217710-1	O_2 (Wet)	0-25%
		Tethys	EXM400	F130304	NH_3	0-50 ppm
		OSI	OFS-2000W	13020629	Flow	0-40 m/s
		Teledyne	Light Hawk 560	5602492	Opacity	0-100%
		Environmental SA	Graphite 52M	647	THC	0-100 ppm
		Environmental SA	Amesa	1825-269	Dioxin/Furan	0-10 ng/m^3
2	Quench Inlet	Environmental SA	MIR 9000	2685	CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					HCl	0-1500 ppm
					SO_2	0-500 ppm
					O_2 (Dry)	0-25%
		Ametek	RM CEM O2/IQ	10218084-1	O_2 (Wet)	0-25%
2	BH Outlet	Environmental SA	MIR 9000	2687	NO_X	0-500 ppm
					SO_2	0-200 ppm
					HCl	0-100 ppm
					HF	0-100 ppm
					CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					O_2 (Dry)	0-25%
					CO_2	0-25%
		Ametek	RM CEM O2/IQ	10218084-2	O_2 (Wet)	0-25%
		Tethys	EXM400	F130303	NH_3	0-50 ppm
		OSI	OFS-2000W	13020633	Flow	0-40 m/s
		Teledyne	Light Hawk 560	5602493	Opacity	0-100%
		Environmental SA	Graphite 52M	648	THC	0-100 ppm
		Environmental SA	Amesa	1825-284	Dioxin/Furan	0-10 ng/m^3

3. SAMPLING LOCATIONS

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

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

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

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

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

The results for the cyclonic flow checks are summarized below:

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

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

4. SAMPLING PROCEDURES

4.1 General

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

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

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

Since relative accuracy and system bias testing was conducted in September 2022, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (April 24 to April 27, 2023) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on April 24 and April 25, 2023 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

4.2 Particulate and Metals

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

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

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

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

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

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

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

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

4.3 Particle Size Distribution

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

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

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

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

4.4 Semi-Volatile Organic Compounds

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

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

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

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

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

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

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

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

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

4.5 Acid Gases

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

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

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

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

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

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

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

4.6 Volatile Organic Compounds

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

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

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

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

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

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

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

4.7 Aldehydes

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

Major components of the test train were as follows:

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

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

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

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

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

4.8 Combustion Gases

In September 2022, relative accuracy and system bias testing was conducted on the Continuous Emission Monitoring Systems (CEMS) installed at the Quench Inlet and BH Outlet of each Boiler. DYEC CEMS met the performance parameters detailed in Schedule F of the ECA. Therefore, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide.

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

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMS during each isokinetic test day at each Boiler. The data measured by the DYEC CEMS, from April 24, 2023 at 08:00 to April 27, 2023 at 16:00, 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 April 24 and April 25, 2023. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA.

5. SAMPLE RECOVERY AND ANALYSIS

All sample analysis, except for the VOST tube preparation and analysis, was performed by ALS Canada Ltd (ALS). ALS does not currently have VOST analysis capabilities, and this analysis was contracted to Bureau Veritas Laboratories (BV Labs). 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.

Note that during the recovery of Particulate and Metals Test No. 1 at Boiler No. 2, it was noted that there were shards of broken glass on the filter. It was determined that the end of the glass probe, where it was inserted into the cyclone bypass, was broken when the sampling train was removed from the sampling port at the end of the test. To avoid possible sample contamination, Test No. 1 was considered void, and the samples were not analyzed. The particulate and metals emission data is reported as Test No. 2 to Test No. 4 to avoid confusion.

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

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

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

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

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

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

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

5.2 Particle Size Distribution

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

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

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

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

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

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

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

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

5.3 Semi-Volatile Organic Compounds

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

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

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

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

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

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

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

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

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

The SVOC analytical reports are provided in Appendix 15.

5.4 Acid Gases

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

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

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

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

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

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

5.5 Volatile Organics Train Recovery

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

Note the reportable detection limits for Test No. 4 at Boiler No. 1 were elevated as the sample was diluted to bring the toluene into the calibration range. The reportable detection limits for Test No. 4 are ten times higher than the reportable detection limits for Test No. 1 and Test No. 3. The sample tubes for Test No. 2 were broken during extraction and could not be analyzed.

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 sheet is provided in Appendix 18 and the analytical results are presented in Appendix 19.

6. INTERNAL AND EXTERNAL QA/QC PROGRAM

6.1 General

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

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

6.2 Pre-Test Activities

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

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

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

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

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

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

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

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

6.3 Emission Testing QA/QC Results

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

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

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

- All sampling equipment was cleaned and proven clean (where applicable) prior to the commencement of the field testing program.
- All sampling equipment passed a visual and operational check prior to use in the field.
- Oil filled manometer gauges which had been properly leveled and zeroed were used to measure the velocity pressure.
- All sampling data was recorded in ink on preformatted data sheets at least once every 5 minutes and/or at least twice during sampling each traverse point.
- Any unusual occurrences were noted during each test on the appropriate data form.
- The field team leader reviewed all calibration and sampling data forms daily.
- Only tapered edge sampling nozzles and S-type pitot tubes that had been visually inspected and caliper measured, and deemed acceptable, were used for sampling.
- Each leg of the S-type pitot was leak-checked before the start of testing. The leak-checks were all acceptable (no leak detected).

- Each entire sampling train met acceptable leak-check criteria before and after each test, and during any move from one sampling traverse to another. If a test did not meet the leak-check criteria the test was voided and repeated.
- The S-type pitot tube and sampling nozzle were maintained parallel to the flow during testing and care was taken to ensure that they did not scrape the ports when being inserted and removed from the stack.
- The probe and filter components were maintained at 120°C $\pm$ 14°C during testing. If the probe or filter temperature was outside of the acceptable range the test was halted until the temperature could be brought back into the acceptable range.
- The process was monitored by Covanta personnel to ensure it was operating as close as possible to the maximum continuous rating stated in the ECA. Covanta notified ORTECH when to commence sampling each day.

6.4 Sample Recovery, Handling and Custody

During the recovery of Particulate and Metals Test No. 1 at Boiler No. 2, it was noted that there were shards of broken glass on the filter. It was determined that the end of the glass probe, where it was inserted into the cyclone bypass, was broken when the sampling train was removed from the sampling port at the end of the test. To avoid possible sample contamination, Test No. 1 was considered void, and the samples were not analyzed. The particulate and metals emission data is reported as Test No. 2 to Test No. 4 to avoid confusion.

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 4.9% well within the acceptable limit of less than ±20%, for elements that are greater than 5 times the minimum detection limit, except for copper in the back half. The copper relative percent difference was greater than 20%; the greater value was used to calculate the emission data.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 84-107%. The acceptable limit is 80-115% of the true value.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. All of the recovery results were between 89-107%. 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 trains at levels greater than the limit of reporting. Chromium, copper, molybdenum and nickel were observed by the analytical laboratory in the method blank at levels greater than the limit of reporting. The test sample data may be biased high for these compounds as a result of this potential background.

Mercury Analysis

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

- One duplicate sample analysis was performed for each fraction. However, mercury was not detected in any of the fractions in quantities greater than the detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 89-97% (duplicate analysis was 90-96%) 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 91-94%, 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 4.8%, 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 100% for hydrogen chloride, 103% for hydrogen fluoride and 108% 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 98% for hydrogen chloride, 98% for hydrogen fluoride and 106% for ammonia, within the acceptable range of 85-115%.

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

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

6.5.3 Aldehyde Sample Analysis QA/QC

Analysis for formaldehyde, acetaldehyde and acrolein was performed via GC/MS. Laboratory control samples were analyzed with the test samples. A field BHA and spike sample was prepared by the analytical laboratory and analyzed with the test samples. The recoveries for the spike sample were 68% for acetaldehyde, 88% for formaldehyde and 6% for acrolein. The low recoveries may indicate a low bias in the sample data.

Acrolein was not detected in any of the samples in quantities greater than the reported detection limit. Poor LCS recoveries were observed by the analytical laboratory for acrolein. As a result, acrolein reporting limits were raised a factor of 20 to compensate for the likelihood of low recoveries in the test samples similar to the LCS in the batch.

Formaldehyde was detected in both blank samples in quantities similar to those found in the test samples. Formaldehyde was also detected in the method blank. The test sample data may be biased high for formaldehyde as a result of this potential background.

6.5.4 SVOC Sample Analysis QA/QC

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

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

Recovery of the dioxin and furan field spike standards were between 97-113% which indicates good extraction efficiency and provides a high degree of confidence in the results obtained from the dioxin and furan test trains. The recoveries of the labelled extraction standards for Test No. 3 at Boiler No. 1 were below the method control limits. As a result, the detection limits are elevated for this sample. A reanalysis from a small portion of archived extract did not yield improved results.

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.

A field blank, 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 field blank samples are taken to the sampling location, opened then recapped to provide background levels at the sampling location. The trip blank is taken to the sampling location but remains sealed.

The analytical report includes the field standards, internal standards and surrogate standards used. The surrogate recoveries for each of the surrogates should be between 50-150%. The recoveries for each sample were between 74 – 108%.

Note the reportable detection limits for Test No. 4 at Boiler No. 1 were elevated as the sample was diluted to bring the toluene into the calibration range. Due to the sample dilution the reportable detection limits for Test No. 4 are ten times higher than the reportable detection limits for Test No. 1 and Test No. 3. The sample tubes for Test No. 2 were broken during extraction and could not be analyzed.

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 (April 24 to April 27, 2023) by the DYEC CEMS. Total hydrocarbon concentrations were also measured at the BH Outlet and Quench Inlet by ORTECH on April 24 and April 25, 2023.

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

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

7.1 Stack Gas Sampling Parameters

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

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

7.2 Stack Gas Physical Parameters

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

Stack Gas Parameter	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Gas Temperature (°C)	140	140
Moisture by Volume (%)	15.6	15.6
Velocity (m/s)	18.5	18.8
Static Pressure (kPa)	-2.53	-2.69
Absolute Pressure (kPa)	98.6	98.5
Carbon Dioxide by Volume (%)**	10.1	10.6
Oxygen by Volume (%)**	8.99	9.15

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

7.3 Volumetric Flowrate Data

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

Volumetric Flowrate	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Actual Flowrate (m^3/s)	27.4	27.7
Dry Reference Flowrate (Rm^3/s)**	16.2	16.4
Dry Adjusted Flowrate (Rm^3/s)***	19.5	19.5
Wet Reference Flowrate (Rm^3/s)**	19.2	19.5

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

7.4 Particulate Emission Data

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

Particulate Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<0.14	<0.17
Dry Reference Conc. (mg/Rm^3)*	<0.24	<0.28
Dry Adjusted Conc. (mg/Rm^3)**	<0.20	<0.24
Wet Reference Conc. (mg/Rm^3)*	<0.20	<0.24
Emission Rate (mg/s)	<3.82	<4.53

* at 25°C and 1 atmosphere

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

The ECA stipulates maximum in-stack limits for the emissions of various compounds including particulate matter. The average particulate dry adjusted concentration at the Boiler No. 1 BH Outlet (<0.20 mg/Rm^3, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (<0.24 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 0.8 mg and 0.1 mg, respectively. The amount of particulate detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 2 BH Outlet was 0.3 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)	<0.55	<0.46	<0.28	<0.26
Dry Reference Conc. (mg/Rm^3)*	<0.92	<0.78	<0.47	<0.44
Dry Adjusted Conc. (mg/Rm^3)**	<0.77	<0.66	<0.40	<0.38
Wet Reference Conc. (mg/Rm^3)*	<0.78	<0.66	<0.40	<0.38
Emission Rate (mg/s)	<14.6	<13.0	<7.59	<7.43

* 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)	1.68	2.87	0.75	0.73
Dry Reference Conc. (mg/Rm^3)*	2.82	4.83	1.26	1.23
Dry Adjusted Conc. (mg/Rm^3)**	2.40	4.14	1.07	1.05
Wet Reference Conc. (mg/Rm^3)*	2.40	4.09	1.07	1.04
Emission Rate (mg/s)	45.5	80.8	20.3	20.5

* at 25°C and 1 atmosphere

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

The amount of condensable particulate detected in the blank sampling train for Boiler No. 1 was 0.6 mg for the inorganic fraction and 0.3 mg for the organic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 0.5 mg for the inorganic fraction and 1.4 mg for the organic fraction. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the condensable particulate emission data.

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

PM_{10} and $PM_{2.5}$ + Condensable Emission Parameter	PM_{10} + Condensable		$PM_{2.5}$ + Condensable	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<2.98	<4.07	<2.71	<3.87
Dry Reference Conc. (mg/Rm^3)*	<5.00	<6.84	<4.55	<6.51
Dry Adjusted Conc. (mg/Rm^3)**	<4.24	<5.85	<3.87	<5.56
Wet Reference Conc. (mg/Rm^3)*	<4.25	<5.79	<3.87	<5.51
Emission Rate (mg/s)	<80.5	<114	<73.5	<109

* 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 was detected in quantities greater than the detection limit in all of the samples collected at each location. Ammonia was also detected in quantities greater than the detection limit in all of the samples except Test No. 2 at Boiler No. 2.

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)	2.87	2.19	<0.074	<0.074	0.54	<0.34
Dry Reference Conc. (mg/Rm^3)*	4.82	3.69	<0.12	<0.12	0.90	<0.57
Dry Adjusted Conc. (mg/Rm^3)**	4.03	3.11	<0.10	<0.10	0.76	<0.48
Wet Reference Conc. (mg/Rm^3)*	4.11	3.12	<0.11	<0.11	0.77	<0.48
Emission Rate (mg/s)	75.9	58.6	<1.95	<1.98	14.2	<9.04
Dry Adjusted Conc. (ppm)**	2.71	2.09	<0.13	<0.13	1.09	<0.69

* at 25°C and 1 atmosphere

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

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

7.6 Combustion Gas Emission Data

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

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMS during each isokinetic test day at each Boiler. DYEC CEMS data was provided from April 24 to April 27, 2023 for each Boiler.

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

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

Combustion Gases Emission Parameter		In-Stack ECA Limit	Maximum Concentration	
			Boiler No. 1	Boiler No. 2
BH Outlet	Oxygen (%, 1-hr)	-	10.03	10.57
	Carbon Monoxide (mg/Rm^3, 4-hr)*	≤ 40	13.3	27.3
	Sulphur Dioxide (mg/Rm^3, 24-hr)*	≤ 35	0.04	0.3
	Nitrogen Oxides (mg/Rm^3, 24-hr)*	≤ 121	111	112
	Hydrogen Chloride (mg/Rm^3, 24-hr)*	≤ 9	1.3	3.3
	Total Hydrocarbons (mg/Rm^3, 1-hr)*	-	2	0
Quench Inlet	Oxygen (%, 1-hr)	≥ 6	9	10

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

Total hydrocarbon concentration data was measured by ORTECH on April 24 and April 25, 2023 at the Quench Inlet and BH Outlet sampling locations. The results of the total hydrocarbons tests are summarized in Table 10 (Appendix 1 and Appendix 2). The average THC concentration for each location, along with the in-stack limit stated in the ECA, is summarized in the following table.

Combustion Gases Emission Parameter		Limit	Average Concentration	
			Boiler No. 1	Boiler No. 2
BH Outlet	Total Hydrocarbons (1-minute)*	-	0.1	0.2
	Total Hydrocarbons (10-minute)**	-	0.1	0.2
Quench Inlet	Total Hydrocarbons (1-minute)*	-	0.03	0.4
	Total Hydrocarbons (10-minute)**	50	0.1	0.5

* 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)	0.084	0.058
Dry Reference Conc. (µg/Rm^3)*	0.14	0.099
Dry Adjusted Conc. (µg/Rm^3)**	0.12	0.083
Wet Reference Conc. (µg/Rm^3)*	0.12	0.083
Emission Rate (mg/s)	0.0023	0.0016

* 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)	0.20	0.11
Dry Reference Conc. (µg/Rm^3)*	0.34	0.18
Dry Adjusted Conc. (µg/Rm^3)**	0.28	0.15
Wet Reference Conc. (µg/Rm^3)*	0.29	0.15
Emission Rate (mg/s)	0.0055	0.0029

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

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

7.8 Mercury Emission Data

Mercury analysis, concentration and emission data are also summarized in the metals emission tables. Mercury was not detected in quantities greater than the method detection limit in the three tests at Boiler No. 1 and Boiler No. 2, and as is the case with all other analyses the mercury analytical results are not blank corrected.

The average mercury emission data is summarized below:

Mercury Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	<0.060	<0.063
Dry Reference Conc. (µg/Rm^3)*	<0.10	<0.11
Dry Adjusted Conc. (µg/Rm^3)**	<0.085	<0.089
Wet Reference Conc. (µg/Rm^3)*	<0.086	<0.089
Emission Rate (mg/s)	<0.0016	<0.0017

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

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

7.9 Semi-Volatile Organic Emission Data

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

7.9.1 Dioxins and Furans Emission Data

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

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

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

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

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

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

Dioxin Congener Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<0.12	<0.37
Dry Reference Conc. (ng/Rm^3)*	<0.21	<0.62
Dry Adjusted Conc. (ng/Rm^3)**	<0.17	<0.52
Wet Reference Conc. (ng/Rm^3)*	<0.18	<0.52
Emission Rate (ng/s)	<3.46	<10.2

* 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)	<0.023	<0.048
Dry Reference Conc. (ng/Rm^3)*	<0.038	<0.081
Dry Adjusted Conc. (ng/Rm^3)**	<0.031	<0.068
Wet Reference Conc. (ng/Rm^3)*	<0.032	<0.069
Emission Rate (ng/s)	<0.63	<1.34

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

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

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

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

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

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

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

The MECP "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provided a new framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs. This document was replaced by "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", with the most recent version published in April 2023, 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)	3.30	4.77
Dry Reference Conc. (pg TEQ/Rm^3)*	5.57	8.03
Dry Adjusted Conc. (pg TEQ/Rm^3)**	4.53	6.76
Wet Reference Conc. (pg TEQ/Rm^3)*	4.66	6.81
Emission Rate (ng TEQ/s)	0.091	0.13

* 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)*	<6.61	<9.18

* 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)	<194	<235
Dry Reference Conc. (ng/Rm^3)*	<328	<396
Dry Adjusted Conc. (ng/Rm^3)**	<267	<333
Wet Reference Conc. (ng/Rm^3)*	<275	<336
Emission Rate (µg/s)	<5.38	<6.52

* 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)	<117	<119
Dry Reference Conc. (ng/Rm^3)*	<197	<201
Dry Adjusted Conc. (ng/Rm^3)**	<161	<169
Wet Reference Conc. (ng/Rm^3)*	<165	<170
Emission Rate (µg/s)	<3.24	<3.30

* 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)	<347	<206
Dry Reference Conc. (ng/Rm^3)*	<587	<348
Dry Adjusted Conc. (ng/Rm^3)**	<477	<292
Wet Reference Conc. (ng/Rm^3)*	<491	<294
Emission Rate (µg/s)	<9.65	<5.72

* 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)	29.2	40.1	9.28	10.0	<33.3	<39.0
Dry Reference Conc. (µg/Rm^3)*	49.5	67.6	15.7	16.9	<56.4	<65.8
Dry Adjusted Conc. (µg/Rm^3)**	40.1	56.6	12.7	14.2	<45.6	<55.1
Wet Reference Conc. (µg/Rm^3)*	41.4	57.1	13.2	14.3	<47.2	<55.5
Emission Rate (mg/s)	0.81	1.11	0.26	0.28	<0.92	<1.08

* 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. Formaldehyde was detected in both blank samples and the method blank in quantities greater than the detection limit and in quantities similar to the test samples.

7.11 Volatile Organic Emission Data

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

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

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)	<339	<46.7
Dry Reference Conc. (µg/Rm^3)*	<573	<78.4
Dry Adjusted Conc. (µg/Rm^3)**	<465	<65.6
Wet Reference Conc. (µg/Rm^3)*	<479	<66.7
Emission Rate (mg/s)	<9.34	<1.29

* 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)*	<695	<229
Dry Adjusted Conc. (µg/Rm^3)**	<563	<192
Emission Rate (mg/s)	<11.3	<3.76

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

Analysis of blank adsorbent tubes is provided in Table 91. Test sample analyses were not blank corrected during the calculation of the emission data.

8. DISPERSION MODELLING

The emission data measured during the testing program was used to assess emissions from the main stack against the point of impingement criteria detailed in Ontario Regulation 419/05 or the applicable MECP guideline. Note the Ontario Regulation 419/05 Schedule 3 limits were updated in April 2023 and the updated limits were used in the modelling assessment.

Dispersion modelling was completed using the CALPUFF model (using Version 7.2.1 level 150618 as approved by the MECP in December 2021) by WSP Canada Inc. The dispersion modelling results are detailed in Appendix 27. WSP can provide the dispersion modelling zip files upon request.

The predicted ground level Point of Impingement (POI) concentrations, calculated based on the average total emission rate, for each contaminant included in the April 2023 emission testing program was well below the applicable standard, guideline or upper risk threshold. The contaminant with the highest predicted concentration relative to the standard was nitrogen oxides (11% of the 1-hour standard and 2% of the 24-hour standard with meteorological anomaly removal), all other contaminants were 1% or less than the relevant standard with meteorological anomaly removal.

9. FACILITY PROCESS DATA

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

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

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMS during each isokinetic test day at each Boiler. DYEC CEMS data was provided from April 24 to April 27, 2023 for each Boiler. A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limit stated in the ECA.

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

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

ORTECH a Kontrol Technologies Company

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

Test Date	Total Power Output* (MWh/d)	Aux. Fuel Combusted** (m^3/d)		Avg. Combustion Zone Temp. (°C)		Steam (tonnes/d)		MSW Combusted*** (tonnes/d)		NO_X Reagent Inj. Rate (liters/d)		Carbon Inj. Rate (kg/d)		Lime Inj. Rate (kg/d)	
		Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
24-Apr-23	391	0	0	1290	1276	800	798	219	218	666	645	126	128	4336	4062
25-Apr-23	390	0	0	1276	1253	800	794	220	220	678	585	126	128	3958	4007
26-Apr-23	391	0	0	1260	1287	802	796	225	227	740	634	133	128	3956	3955
27-Apr-23	397	0	0	1243	1263	804	802	219	222	786	966	123	127	3880	3889
Average	392	0	0	1267	1270	802	798	221	222	718	707	127	128	4033	3978

* Gross turbine output

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

*** Calculated by crane scales.

10. CONCLUSIONS

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

- The facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation during the stack test periods. Testing was conducted at a steam production rate of greater than 794 tonnes of steam per day for each Boiler (approximately 98.3% of maximum continuous rating). The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler).
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in the ECA.
- Using CALPUFF dispersion modelling techniques (using Version 7.2.1 level 150618 as approved by the MECP in December 2021), the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below the current standards in Regulation 419/05 (Schedule 3, updated April 2023) under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

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

Since relative accuracy and system bias testing was conducted in September 2022, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (April 24 to April 27, 2023) 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 April 24 and April 25, 2023 at the Quench Inlet and BH Outlet sampling locations. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was well below the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

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

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	392	-
Average Combustion Zone Temp. (°C)*	-	-	-	1267	-
Steam (tonnes/day)*	-	-	-	802	-
MSW Combusted (tonnes/day)*	-	-	-	221	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	718	-
Carbon Injection (kg/day)*	-	-	-	127	-
Lime Injection (kg/day)*	-	-	-	4033	-
Filterable Particulate (mg/Rm^3) (1)	<0.11	<0.18	<0.29	<0.20	9
PM_{10} with Condensable (mg/Rm^3) (1)	<2.88	<4.19	<5.66	<4.24	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<2.81	<4.11	<4.68	<3.87	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.098	<0.11	<0.11	<0.10	-
Ammonia (mg/Rm^3) (1)	0.74	0.78	0.74	0.76	-
Cadmium (µg/Rm^3) (1)	0.15	0.049	0.16	0.12	7
Lead (µg/Rm^3) (1)	0.33	0.31	0.21	0.28	50
Mercury (µg/Rm^3) (1)	<0.086	<0.085	<0.084	<0.085	15
Antimony (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Arsenic (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Barium (µg/Rm^3) (1)	0.39	0.24	0.60	0.41	-
Beryllium (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Chromium (µg/Rm^3) (1)	0.90	0.88	0.82	0.87	-
Cobalt (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Copper (µg/Rm^3) (1)	2.63	2.01	1.81	2.15	-
Molybdenum (µg/Rm^3) (1)	8.31	8.41	7.49	8.07	-
Nickel (µg/Rm^3) (1)	0.79	0.63	0.84	0.75	-
Selenium (µg/Rm^3) (1)	<0.23	<0.23	<0.21	<0.22	-
Silver (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Thallium (µg/Rm^3) (1)	<0.046	<0.046	<0.041	<0.044	-
Vanadium (µg/Rm^3) (1)	<0.023	<0.023	<0.021	<0.022	-
Zinc (µg/Rm^3) (1)	7.12	7.17	5.49	6.60	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<2.70	<4.77	<12.4	<6.61	60
Total Chlorobenzenes (ng/Rm^3) (1)	<275	<227	<300	<267	-
Total Chlorophenols (ng/Rm^3) (1)	<161	<159	<161	<161	-
Total PAHs (ng/Rm^3) (1)	<378	<805	<249	<477	-
VOCs (µg/Rm^3) (1)	<261	<165	<969	<465	-
Aldehydes (µg/Rm^3) (1)	<95.5	<95.5	<104	<98.4	-
Total VOCs (µg/Rm^3) (1) (4)	<357	<261	<1073	<563	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0	0.1	0	0.03	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)*	-	-	-	392	-
Average Combustion Zone Temp. (°C)*	-	-	-	1270	-
Steam (tonnes/day)*	-	-	-	798	-
MSW Combusted (tonnes/day)*	-	-	-	222	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	707	-
Carbon Injection (kg/day)*	-	-	-	128	-
Lime Injection (kg/day)*	-	-	-	3978	-
Filterable Particulate (mg/Rm^3) (1)	<0.34	0.24	0.13	<0.24	9
PM_{10} with Condensable (mg/Rm^3) (1)	<8.93	<3.64	<4.97	<5.85	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<8.86	<3.49	<4.34	<5.56	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.11	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm^3) (1)	0.80	<0.28	0.36	<0.48	-
Cadmium (µg/Rm^3) (1)	0.056	0.081	0.11	0.083	7
Lead (µg/Rm^3) (1)	0.070	0.20	0.18	0.15	50
Mercury (µg/Rm^3) (1)	<0.083	<0.093	<0.091	<0.089	15
Antimony (µg/Rm^3) (1)	<0.045	0.074	0.067	<0.062	-
Arsenic (µg/Rm^3) (1)	<0.045	<0.044	<0.043	<0.044	-
Barium (µg/Rm^3) (1)	0.19	1.43	0.15	0.59	-
Beryllium (µg/Rm^3) (1)	<0.045	<0.044	<0.043	<0.044	-
Chromium (µg/Rm^3) (1)	0.90	1.48	0.76	1.05	-
Cobalt (µg/Rm^3) (1)	<0.023	<0.022	<0.021	<0.022	-
Copper (µg/Rm^3) (1)	1.93	1.95	1.53	1.80	-
Molybdenum (µg/Rm^3) (1)	8.57	8.31	7.84	8.24	-
Nickel (µg/Rm^3) (1)	1.08	0.54	0.41	0.68	-
Selenium (µg/Rm^3) (1)	<0.23	<0.22	<0.21	<0.22	-
Silver (µg/Rm^3) (1)	<0.045	<0.044	<0.043	<0.044	-
Thallium (µg/Rm^3) (1)	<0.045	<0.044	<0.043	<0.044	-
Vanadium (µg/Rm^3) (1)	<0.023	0.091	<0.021	<0.045	-
Zinc (µg/Rm^3) (1)	4.26	3.80	6.77	4.94	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<9.24	<8.67	<9.63	<9.18	60
Total Chlorobenzenes (ng/Rm^3) (1)	<352	<297	<351	<333	-
Total Chlorophenols (ng/Rm^3) (1)	<169	<169	<169	<169	-
Total PAHs (ng/Rm^3) (1)	<312	<371	<194	<292	-
VOCs (µg/Rm^3) (1)	<69.6	<63.1	<64.2	<65.6	-
Aldehydes (µg/Rm^3) (1)	<135	<107	<136	<126	-
Total VOCs (µg/Rm^3) (1) (4)	<205	<170	<200	<192	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.5	0.4	0.3	0.4	50

* based on process data provided by Covanta

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

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

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

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

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

Boiler No.	Parameter	Minimum	Average	Maximum	In-Stack Limit
Boiler No. 1	Carbon Monoxide (mg/Rm^3) (1)	6.8	9.0	13.3	40
	Hydrogen Chloride (mg/Rm^3) (2)	0.7	0.8	1.3	9
	Nitrogen Oxides (mg/Rm^3) (2)	110	110	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.02	0.04	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	10.3	16.1	27.3	40
	Hydrogen Chloride (mg/Rm^3) (2)	2.7	3.1	3.3	9
	Nitrogen Oxides (mg/Rm^3) (2)	109	110	112	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.13	0.3	35

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

APPENDIX 1

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

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

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	April 24, 2023	9:56	13:07	180
2	April 24, 2023	14:48	17:56	180
3	April 25, 2023	15:14	18:21	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	April 25, 2023	8:06	10:09	120
2	April 25, 2023	10:53	12:56	120
3	April 25, 2023	13:37	15:40	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	April 24, 2023	9:57	10:57	60
2	April 24, 2023	11:39	12:39	60
3	April 24, 2023	13:42	14:42	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	April 26, 2023	8:25	13:09	240
2	April 26, 2023	14:44	18:53	240
3	April 27, 2023	8:06	16:20	240

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

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

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	April 26, 2023	11:48	12:48	60
2	April 26, 2023	12:53	13:53	60
3	April 26, 2023	13:58	14:58	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time
		Start	Finish	min
1	April 26, 2023	8:25	9:05	40
2	April 26, 2023	9:11	9:55	40
3	April 26, 2023	10:00	10:40	40
4	April 26, 2023	10:45	11:25	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period		Sampling Time
			Start	Finish	min
BH Outlet	1	April 25, 2023	8:35	9:35	60
BH Outlet	2	April 25, 2023	10:15	11:15	60
BH Outlet	3	April 25, 2023	11:30	12:30	60
Quench Inlet	1	April 25, 2023	8:35	9:35	60
Quench Inlet	2	April 25, 2023	10:15	11:15	60
Quench Inlet	3	April 25, 2023	11:30	12:30	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	0.842	1.002	6.40	3.670	98.8
2	0.842	1.002	6.40	3.679	98.9
3	0.843	1.002	6.42	3.978	100.5

Particle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.844	0.961	4.51	1.186	92.1
2	0.844	0.961	4.51	1.192	95.0
3	0.844	0.961	4.51	1.200	98.1

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.843	1.002	6.42	1.234	97.8
2	0.843	1.002	6.42	1.285	97.8
3	0.843	1.002	6.42	1.272	99.7

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.843	1.002	6.42	5.125	99.6
2	0.843	1.002	6.42	5.217	99.9
3	0.843	1.002	6.42	5.156	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.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	141	14.7	17.9	-2.52	98.3	10.0	9.08
2	143	14.9	18.0	-2.52	98.4	9.87	9.11
3	139	16.9	19.3	-2.54	98.6	10.1	8.82
Average	141	15.5	18.4	-2.52	98.5	9.99	9.00

Particle Size Distribution Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	139	15.7	18.7	-2.54	98.6	10.2	9.01
2	142	14.7	18.6	-2.54	98.6	9.61	9.59
3	138	15.4	17.8	-2.54	98.6	9.94	9.09
Average	140	15.3	18.4	-2.54	98.6	9.91	9.23

Acid Gases Trains **

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	136	14.7	17.9	-2.52	98.3	9.96	9.16
2	140	15.4	19.0	-2.52	98.3	9.87	9.24
3	140	16.2	18.6	-2.52	98.4	10.2	8.85
Average	138	15.4	18.5	-2.52	98.3	10.0	9.08

Semi-Volatile Organics Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	139	16.3	18.7	-2.54	98.8	10.4	8.67
2	138	16.0	18.9	-2.54	98.7	10.2	8.77
3	137	16.2	18.7	-2.54	98.8	10.2	8.77
Average	138	16.2	18.7	-2.54	98.8	10.3	8.74

* 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	26.5	15.8	18.8	18.5
2	26.7	15.8	18.8	18.6
3	28.6	16.7	20.4	20.1
Average	27.2	16.1	19.3	19.1

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.7	16.5	19.8	19.5
2	27.5	16.4	18.7	19.2
3	26.3	15.7	18.7	18.5
Average	27.2	16.2	19.1	19.1

Acid Gases Trains ***

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	26.5	16.0	19.0	18.7
2	28.1	16.7	19.6	19.7
3	27.5	16.2	19.7	19.3
Average	27.4	16.3	19.4	19.2

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.6	16.3	20.1	19.5
2	27.9	16.5	20.3	19.7
3	27.6	16.4	20.1	19.6
Average	27.7	16.4	20.2	19.6

* At 25°C and 1 atmosphere

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

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

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

Test No.	Particulate Collected			Dry Gas Volume Sampled	Actual	Particulate Concentration			Particulate Emission Rate
	Probe Rinse	Main Filter	Total			Dry Reference	Dry Adjusted	Wet Reference	
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	0.4	<0.1	<0.5	3.670	<0.081	<0.14	<0.11	<0.12	<2.15
2	0.7	<0.1	<0.8	3.679	<0.13	<0.22	<0.18	<0.19	<3.43
3	1.3	<0.1	<1.4	3.978	<0.21	<0.35	<0.29	<0.29	<5.88
Average					<0.14	<0.24	<0.20	<0.20	<3.82
Blank	0.1	0.8	0.9						

* At 25 °C and 1 atmosphere

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

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

$PM_{2.5}$

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	$PM_{2.5}$ Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<0.4	1.186	<0.20	<0.34	<0.28	<0.29	<5.56
2	<0.3	1.192	<0.15	<0.25	<0.22	<0.21	<4.13
3	<1.0	1.200	<0.50	<0.83	<0.70	<0.71	<13.1
Average			<0.28	<0.47	<0.40	<0.40	<7.59
Blank	0.2						

PM_{10}

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	PM_{10} Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<0.5	1.186	<0.25	<0.42	<0.35	<0.36	<6.96
2	<0.4	1.192	<0.20	<0.34	<0.29	<0.29	<5.50
3	<2.4	1.200	<1.19	<2.00	<1.68	<1.70	<31.4
Average			<0.55	<0.92	<0.77	<0.78	<14.6
Blank	0.4						

* At 25 °C and 1 atmosphere

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

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

Inorganic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Inorganic Condensable Particulate Concentration				Emission Rate mg/s
			Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	
1	2.4	1.186	1.21	2.02	1.68	1.71	33.4
2	3.6	1.192	1.80	3.02	2.64	2.58	49.5
3	4.1	1.200	2.04	3.42	2.86	2.90	53.6
Average			1.68	2.82	2.40	2.40	45.5
Blank	0.6						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Organic Condensable Particulate Concentration				Emission Rate mg/s
			Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	
1	1.2	1.186	0.60	1.01	0.84	0.86	16.7
2	1.7	1.192	0.85	1.43	1.25	1.22	23.4
3	1.6	1.200	0.80	1.33	1.12	1.13	20.9
Average			0.75	1.26	1.07	1.07	20.3
Blank	0.3						

* At 25 °C and 1 atmosphere

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

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

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Chloride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	5.99	1.234	2.89	4.85	4.07	4.14	76.5
2	6.57	1.285	3.05	5.11	4.28	4.36	80.6
3	5.70	1.272	2.67	4.48	3.75	3.82	70.7
Average			2.87	4.82	4.03	4.11	75.9
Blank	<0.154						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Fluoride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.145	1.234	<0.070	<0.12	<0.098	<0.10	<1.85
2	<0.163	1.285	<0.076	<0.13	<0.11	<0.11	<2.00
3	<0.161	1.272	<0.075	<0.13	<0.11	<0.11	<2.00
Average			<0.074	<0.12	<0.10	<0.11	<1.95
Blank	<0.105						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Ammonia Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	1.09	1.234	0.53	0.88	0.74	0.75	13.9
2	1.20	1.285	0.56	0.93	0.78	0.80	14.7
3	1.13	1.272	0.53	0.89	0.74	0.76	14.0
Average			0.54	0.90	0.76	0.77	14.2
Blank	<0.283						

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

* At 25 °C and 1 atmosphere

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

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

Data measured by the DYEC CEMS from April 24 to April 27, 2023

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	8.48	8.96	10.03
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	5	9	17
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	6.8	9.0	13.3
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.01	1
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.02	0.04
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	104	110	119
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	110	110	111
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	0	1	2
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	0.7	0.8	1.3
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	2
Quench Inlet	Oxygen (%, 1 hr Avg)	7	8	9

Data measured by the ORTECH CEMS on April 25, 2023

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	1.0
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	2.2
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.1	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0.3
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	1.9
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.03	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0.1
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.2	0.8
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		0.1	

* Reference conditions, dry basis adjusted to 11% oxygen

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

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	1.72	1.72
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	0.66	0.66
Chromium	2.85	1.07	3.92
Cobalt	<0.2	<0.1	<0.20
Copper	7.10	4.38	11.5
Lead	0.59	0.86	1.45
Mercury *	<0.015	<0.38	<0.38
Molybdenum	36.2	0.11	36.3
Nickel	2.61	0.83	3.44
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	11.2	19.9	31.1
Total			<92.7

* Includes the permanganate impingers

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	1.04	1.04
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.10	0.11	0.22
Chromium	2.69	1.18	3.87
Cobalt	<0.2	<0.1	<0.20
Copper	6.85	1.96	8.81
Lead	0.58	0.78	1.36
Mercury *	<0.015	<0.37	<0.37
Molybdenum	36.7	0.10	36.8
Nickel	1.77	0.98	2.75
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	12.2	19.2	31.4
Total			<88.9

* Includes the permanganate impingers

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	2.93	2.93
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.44	0.32	0.76
Chromium	3.32	0.66	3.98
Cobalt	<0.2	<0.1	<0.20
Copper	7.24	1.56	8.80
Lead	0.73	0.30	1.03
Mercury *	<0.015	<0.41	<0.41
Molybdenum	36.4	<0.1	36.4
Nickel	3.60	0.48	4.08
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	15.1	11.6	26.7
Total			<87.4

* Includes the permanganate impingers

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

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

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.032	<0.054	<0.046	<0.047	<0.00086
Arsenic	<0.20	<0.032	<0.054	<0.046	<0.047	<0.00086
Barium	1.72	0.28	0.47	0.39	0.40	0.0074
Beryllium	<0.20	<0.032	<0.054	<0.046	<0.047	<0.00086
Cadmium	0.66	0.11	0.18	0.15	0.15	0.0028
Chromium	3.92	0.64	1.07	0.90	0.91	0.017
Cobalt	<0.20	<0.032	<0.054	<0.046	<0.047	<0.00086
Copper	11.5	1.87	3.13	2.63	2.67	0.049
Lead	1.45	0.24	0.39	0.33	0.34	0.0062
Mercury	<0.38	<0.061	<0.10	<0.086	<0.087	<0.0016
Molybdenum	36.3	5.90	9.89	8.31	8.45	0.16
Nickel	3.44	0.56	0.94	0.79	0.80	0.015
Selenium	<1.00	<0.16	<0.27	<0.23	<0.23	<0.0043
Silver	<0.20	<0.032	<0.054	<0.046	<0.047	<0.00086
Thallium	<0.20	<0.032	<0.054	<0.046	<0.047	<0.00086
Vanadium	<0.10	<0.016	<0.027	<0.023	<0.023	<0.00043
Zinc	31.1	5.05	8.47	7.12	7.24	0.13
Total	<92.7	<15.1	<25.3	<21.2	<21.6	<0.40

Dry Gas Volume Sampled (Rm^3*) :	3.670
Actual Flowrate (m^3/s) :	26.5
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	18.5

* At 25°C and 1 atmosphere

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

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

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.032	<0.054	<0.046	<0.046	<0.00086
Arsenic	<0.20	<0.032	<0.054	<0.046	<0.046	<0.00086
Barium	1.04	0.17	0.28	0.24	0.24	0.0045
Beryllium	<0.20	<0.032	<0.054	<0.046	<0.046	<0.00086
Cadmium	0.22	0.035	0.059	0.049	0.050	0.00093
Chromium	3.87	0.62	1.05	0.88	0.89	0.017
Cobalt	<0.20	<0.032	<0.054	<0.046	<0.046	<0.00086
Copper	8.81	1.42	2.39	2.01	2.03	0.038
Lead	1.36	0.22	0.37	0.31	0.31	0.0058
Mercury	<0.37	<0.060	<0.10	<0.085	<0.085	<0.0016
Molybdenum	36.8	5.92	10.0	8.41	8.50	0.16
Nickel	2.75	0.44	0.75	0.63	0.63	0.012
Selenium	<1.00	<0.16	<0.27	<0.23	<0.23	<0.0043
Silver	<0.20	<0.032	<0.054	<0.046	<0.046	<0.00086
Thallium	<0.20	<0.032	<0.054	<0.046	<0.046	<0.00086
Vanadium	<0.10	<0.016	<0.027	<0.023	<0.023	<0.00043
Zinc	31.4	5.05	8.53	7.17	7.25	0.13
Total	<88.9	<14.3	<24.2	<20.3	<20.5	<0.38

Dry Gas Volume Sampled (Rm³*) :	3.679
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	18.8
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	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.029	<0.050	<0.041	<0.042	<0.00084
Arsenic	<0.20	<0.029	<0.050	<0.041	<0.042	<0.00084
Barium	2.93	0.43	0.74	0.60	0.61	0.012
Beryllium	<0.20	<0.029	<0.050	<0.041	<0.042	<0.00084
Cadmium	0.76	0.11	0.19	0.16	0.16	0.0032
Chromium	3.98	0.58	1.00	0.82	0.83	0.017
Cobalt	<0.20	<0.029	<0.050	<0.041	<0.042	<0.00084
Copper	8.80	1.29	2.21	1.81	1.84	0.037
Lead	1.03	0.15	0.26	0.21	0.22	0.0043
Mercury	<0.41	<0.060	<0.10	<0.084	<0.086	<0.0017
Molybdenum	36.4	5.34	9.15	7.49	7.60	0.15
Nickel	4.08	0.60	1.02	0.84	0.85	0.017
Selenium	<1.00	<0.15	<0.25	<0.21	<0.21	<0.0042
Silver	<0.20	<0.029	<0.050	<0.041	<0.042	<0.00084
Thallium	<0.20	<0.029	<0.050	<0.041	<0.042	<0.00084
Vanadium	<0.10	<0.015	<0.025	<0.021	<0.021	<0.00042
Zinc	26.7	3.92	6.71	5.49	5.58	0.11
Total	<87.4	<12.8	<22.0	<18.0	<18.3	<0.37

Dry Gas Volume Sampled (Rm^3*) :	3.978
Actual Flowrate (m^3/s) :	28.6
Dry Reference Flowrate (Rm^3/s*) :	16.7
Dry Adjusted Flowrate (Rm^3/s**) :	20.4
Wet Reference Flowrate (Rm^3/s*) :	20.1

* At 25°C and 1 atmosphere

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

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

Metal	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	<0.032	<0.032	<0.029	<0.031	5.5
Arsenic	<0.032	<0.032	<0.029	<0.031	5.5
Barium	0.28	0.17	0.43	0.29	45.1
Beryllium	<0.032	<0.032	<0.029	<0.031	5.5
Cadmium	0.11	0.035	0.11	0.084	51.1
Chromium	0.64	0.62	0.58	0.61	4.4
Cobalt	<0.032	<0.032	<0.029	<0.031	5.5
Copper	1.87	1.42	1.29	1.52	19.8
Lead	0.24	0.22	0.15	0.20	22.1
Mercury	<0.061	<0.060	<0.060	<0.060	1.2
Molybdenum	5.90	5.92	5.34	5.72	5.7
Nickel	0.56	0.44	0.60	0.53	15.2
Selenium	<0.16	<0.16	<0.15	<0.16	5.5
Silver	<0.032	<0.032	<0.029	<0.031	5.5
Thallium	<0.032	<0.032	<0.029	<0.031	5.5
Vanadium	<0.016	<0.016	<0.015	<0.016	5.5
Zinc	5.05	5.05	3.92	4.67	14.0
Total	<15.1	<14.3	<12.8	<14.1	8.1

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

Metal	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.054	<0.054	<0.050	<0.053	4.5
Arsenic	<0.054	<0.054	<0.050	<0.053	4.5
Barium	0.47	0.28	0.74	0.50	46.0
Beryllium	<0.054	<0.054	<0.050	<0.053	4.5
Cadmium	0.18	0.059	0.19	0.14	51.3
Chromium	1.07	1.05	1.00	1.04	3.4
Cobalt	<0.054	<0.054	<0.050	<0.053	4.5
Copper	3.13	2.39	2.21	2.58	18.8
Lead	0.39	0.37	0.26	0.34	21.1
Mercury	<0.10	<0.10	<0.10	<0.10	1.2
Molybdenum	9.89	10.0	9.15	9.68	4.8
Nickel	0.94	0.75	1.02	0.90	15.7
Selenium	<0.27	<0.27	<0.25	<0.27	4.5
Silver	<0.054	<0.054	<0.050	<0.053	4.5
Thallium	<0.054	<0.054	<0.050	<0.053	4.5
Vanadium	<0.027	<0.027	<0.025	<0.027	4.5
Zinc	8.47	8.53	6.71	7.91	13.1
Total	<25.3	<24.2	<22.0	<23.8	7.1

* At 25°C and 1 atmosphere

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

Metal	Dry Adjusted Concentration				Coefficient
	Test No. 1 µg/Rm³**	Test No. 2 µg/Rm³**	Test No. 3 µg/Rm³**	Average µg/Rm³**	of Variation %
Antimony	<0.046	<0.046	<0.041	<0.044	6.0
Arsenic	<0.046	<0.046	<0.041	<0.044	6.0
Barium	0.39	0.24	0.60	0.41	44.6
Beryllium	<0.046	<0.046	<0.041	<0.044	6.0
Cadmium	0.15	0.049	0.16	0.12	50.8
Chromium	0.90	0.88	0.82	0.87	4.8
Cobalt	<0.046	<0.046	<0.041	<0.044	6.0
Copper	2.63	2.01	1.81	2.15	19.8
Lead	0.33	0.31	0.21	0.28	22.4
Mercury	<0.086	<0.085	<0.084	<0.085	1.0
Molybdenum	8.31	8.41	7.49	8.07	6.2
Nickel	0.79	0.63	0.84	0.75	14.6
Selenium	<0.23	<0.23	<0.21	<0.22	6.0
Silver	<0.046	<0.046	<0.041	<0.044	6.0
Thallium	<0.046	<0.046	<0.041	<0.044	6.0
Vanadium	<0.023	<0.023	<0.021	<0.022	6.0
Zinc	7.12	7.17	5.49	6.60	14.5
Total	<21.2	<20.3	<18.0	<19.8	8.4

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

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

Metal	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.047	<0.046	<0.042	<0.045	5.9
Arsenic	<0.047	<0.046	<0.042	<0.045	5.9
Barium	0.40	0.24	0.61	0.42	44.7
Beryllium	<0.047	<0.046	<0.042	<0.045	5.9
Cadmium	0.15	0.050	0.16	0.12	50.9
Chromium	0.91	0.89	0.83	0.88	4.8
Cobalt	<0.047	<0.046	<0.042	<0.045	5.9
Copper	2.67	2.03	1.84	2.18	20.0
Lead	0.34	0.31	0.22	0.29	22.4
Mercury	<0.087	<0.085	<0.086	<0.086	1.2
Molybdenum	8.45	8.50	7.60	8.18	6.1
Nickel	0.80	0.63	0.85	0.76	14.9
Selenium	<0.23	<0.23	<0.21	<0.22	5.9
Silver	<0.047	<0.046	<0.042	<0.045	5.9
Thallium	<0.047	<0.046	<0.042	<0.045	5.9
Vanadium	<0.023	<0.023	<0.021	<0.022	5.9
Zinc	7.24	7.25	5.58	6.69	14.4
Total	<21.6	<20.5	<18.3	<20.1	8.5

* At 25°C and 1 atmosphere

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

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	<0.00086	<0.00086	<0.00084	<0.00085	1.4
Arsenic	<0.00086	<0.00086	<0.00084	<0.00085	1.4
Barium	0.0074	0.0045	0.012	0.0081	49.1
Beryllium	<0.00086	<0.00086	<0.00084	<0.00085	1.4
Cadmium	0.0028	0.00093	0.0032	0.0023	52.6
Chromium	0.017	0.017	0.017	0.017	0.8
Cobalt	<0.00086	<0.00086	<0.00084	<0.00085	1.4
Copper	0.049	0.038	0.037	0.041	16.8
Lead	0.0062	0.0058	0.0043	0.0055	18.4
Mercury	<0.0016	<0.0016	<0.0017	<0.0016	4.3
Molybdenum	0.16	0.16	0.15	0.16	1.7
Nickel	0.015	0.012	0.017	0.015	18.2
Selenium	<0.0043	<0.0043	<0.0042	<0.0043	1.4
Silver	<0.00086	<0.00086	<0.00084	<0.00085	1.4
Thallium	<0.00086	<0.00086	<0.00084	<0.00085	1.4
Vanadium	<0.00043	<0.00043	<0.00042	<0.00043	1.4
Zinc	0.13	0.13	0.11	0.13	10.1
Total	<0.40	<0.38	<0.37	<0.38	4.2

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

Metal	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.031	<0.053	<0.044	<0.045	<0.00085
Arsenic	<0.031	<0.053	<0.044	<0.045	<0.00085
Barium	0.29	0.50	0.41	0.42	0.0081
Beryllium	<0.031	<0.053	<0.044	<0.045	<0.00085
Cadmium	0.084	0.14	0.12	0.12	0.0023
Chromium	0.61	1.04	0.87	0.88	0.017
Cobalt	<0.031	<0.053	<0.044	<0.045	<0.00085
Copper	1.52	2.58	2.15	2.18	0.041
Lead	0.20	0.34	0.28	0.29	0.0055
Mercury	<0.060	<0.10	<0.085	<0.086	<0.0016
Molybdenum	5.72	9.68	8.07	8.18	0.16
Nickel	0.53	0.90	0.75	0.76	0.015
Selenium	<0.16	<0.27	<0.22	<0.22	<0.0043
Silver	<0.031	<0.053	<0.044	<0.045	<0.00085
Thallium	<0.031	<0.053	<0.044	<0.045	<0.00085
Vanadium	<0.016	<0.027	<0.022	<0.022	<0.00043
Zinc	4.67	7.91	6.60	6.69	0.13
Total	<14.1	<23.8	<19.8	<20.1	<0.38

* At 25°C and 1 atmosphere

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.76	0.76
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	3.07	0.31	3.38
Cobalt	<0.2	<0.1	<0.20
Copper	5.48	1.31	6.79
Lead	<0.5	0.28	0.28
Mercury *	<0.015	<0.15	<0.15
Molybdenum	33.8	<0.1	33.8
Nickel	0.84	<0.1	0.84
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	<3	<6.00
Total			<54.4

* Includes the permanganate impingers.

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

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

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	60.8	0.0070	0.012	0.0096	0.0099	0.19
Pentachlorodibenzo-p-dioxins	98.6	0.011	0.019	0.016	0.016	0.31
Hexachlorodibenzo-p-dioxins	248	0.029	0.048	0.039	0.040	0.79
Heptachlorodibenzo-p-dioxins	281	0.032	0.055	0.044	0.046	0.89
Octachlorodibenzo-p-dioxin	291	0.034	0.057	0.046	0.047	0.93
Total	979	0.11	0.19	0.15	0.16	3.11

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	21.1	0.0024	0.0041	0.0033	0.0034	0.067
Pentachlorodibenzofurans	10.6	0.0012	0.0021	0.0017	0.0017	0.034
Hexachlorodibenzofurans	46.1	0.0053	0.0090	0.0073	0.0075	0.15
Heptachlorodibenzofurans	9.46	0.0011	0.0018	0.0015	0.0015	0.030
Octachlorodibenzofuran	<25	<0.0029	<0.0049	<0.0040	<0.0041	<0.080
Total	<112	<0.013	<0.022	<0.018	<0.018	<0.36

Dry Gas Volume Sampled (Rm^3*) :	5.125
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	102	0.012	0.020	0.016	0.016	0.32
Pentachlorodibenzo-p-dioxins	159	0.018	0.030	0.025	0.026	0.50
Hexachlorodibenzo-p-dioxins	319	0.036	0.061	0.050	0.051	1.01
Heptachlorodibenzo-p-dioxins	452	0.051	0.087	0.070	0.073	1.43
Octachlorodibenzo-p-dioxin	428	0.049	0.082	0.067	0.069	1.35
Total	1460	0.17	0.28	0.23	0.23	4.62

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	107	0.012	0.021	0.017	0.017	0.34
Pentachlorodibenzofurans	37.1	0.0042	0.0071	0.0058	0.0060	0.12
Hexachlorodibenzofurans	55.8	0.0063	0.011	0.0087	0.0090	0.18
Heptachlorodibenzofurans	71.8	0.0081	0.014	0.011	0.012	0.23
Octachlorodibenzofuran	<45	<0.0051	<0.0086	<0.0070	<0.0072	<0.14
Total	<317	<0.036	<0.061	<0.049	<0.051	<1.00

Dry Gas Volume Sampled (Rm^3*) :	5.217
Actual Flowrate (m^3/s) :	27.9
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	20.3
Wet Reference Flowrate (Rm^3/s*) :	19.7

* At 25°C and 1 atmosphere

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

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

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

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	<35	<0.0040	<0.0068	<0.0055	<0.0057	<0.11
Pentachlorodibenzo-p-dioxins	105	0.012	0.020	0.017	0.017	0.33
Hexachlorodibenzo-p-dioxins	201	0.023	0.039	0.032	0.033	0.64
Heptachlorodibenzo-p-dioxins	144	0.017	0.028	0.023	0.023	0.46
Octachlorodibenzo-p-dioxin	348	0.040	0.067	0.055	0.056	1.11
Total	<833	<0.096	<0.16	<0.13	<0.14	<2.65

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	<32	<0.0037	<0.0062	<0.0051	<0.0052	<0.10
Pentachlorodibenzofurans	<18	<0.0021	<0.0035	<0.0028	<0.0029	<0.057
Hexachlorodibenzofurans	<19	<0.0022	<0.0037	<0.0030	<0.0031	<0.060
Heptachlorodibenzofurans	<33	<0.0038	<0.0064	<0.0052	<0.0054	<0.10
Octachlorodibenzofuran	<63	<0.0073	<0.012	<0.010	<0.010	<0.20
Total	<165	<0.019	<0.032	<0.026	<0.027	<0.52

Dry Gas Volume Sampled (Rm^3*) :	5.156
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	19.6

* At 25°C and 1 atmosphere

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

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

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

Dioxins

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.0070	0.012	<0.0040	<0.0075	50.3
Pentachlorodibenzo-p-dioxins	0.011	0.018	0.012	0.014	26.4
Hexachlorodibenzo-p-dioxins	0.029	0.036	0.023	0.029	22.3
Heptachlorodibenzo-p-dioxins	0.032	0.051	0.017	0.033	51.9
Octachlorodibenzo-p-dioxin	0.034	0.049	0.040	0.041	18.4
Total	0.11	0.17	<0.096	<0.12	29.1

Furans

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.0024	0.012	<0.0037	<0.0061	86.7
Pentachlorodibenzofurans	0.0012	0.0042	<0.0021	<0.0025	61.5
Hexachlorodibenzofurans	0.0053	0.0063	<0.0022	<0.0046	46.8
Heptachlorodibenzofurans	0.0011	0.0081	<0.0038	<0.0043	81.8
Octachlorodibenzofuran	<0.0029	<0.0051	<0.0073	<0.0051	43.1
Total	<0.013	<0.036	<0.019	<0.023	52.6

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

Dioxins

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.012	0.020	<0.0068	<0.013	50.5
Pentachlorodibenzo-p-dioxins	0.019	0.030	0.020	0.023	26.5
Hexachlorodibenzo-p-dioxins	0.048	0.061	0.039	0.050	22.5
Heptachlorodibenzo-p-dioxins	0.055	0.087	0.028	0.056	52.0
Octachlorodibenzo-p-dioxin	0.057	0.082	0.067	0.069	18.4
Total	0.19	0.28	<0.16	<0.21	29.2

Furans

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0041	0.021	<0.0062	<0.010	86.8
Pentachlorodibenzofurans	0.0021	0.0071	<0.0035	<0.0042	61.6
Hexachlorodibenzofurans	0.0090	0.011	<0.0037	<0.0078	46.9
Heptachlorodibenzofurans	0.0018	0.014	<0.0064	<0.0073	82.0
Octachlorodibenzofuran	<0.0049	<0.0086	<0.012	<0.0086	42.8
Total	<0.022	<0.061	<0.032	<0.038	52.7

* At 25°C and 1 atmosphere

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

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.0096	0.016	<0.0055	<0.010	50.4
Pentachlorodibenzo-p-dioxins	0.016	0.025	0.017	0.019	26.5
Hexachlorodibenzo-p-dioxins	0.039	0.050	0.032	0.040	22.3
Heptachlorodibenzo-p-dioxins	0.044	0.070	0.023	0.046	52.0
Octachlorodibenzo-p-dioxin	0.046	0.067	0.055	0.056	18.5
Total	0.15	0.23	<0.13	<0.17	29.1

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0033	0.017	<0.0051	<0.0084	86.8
Pentachlorodibenzofurans	0.0017	0.0058	<0.0028	<0.0034	61.5
Hexachlorodibenzofurans	0.0073	0.0087	<0.0030	<0.0063	46.8
Heptachlorodibenzofurans	0.0015	0.011	<0.0052	<0.0060	81.9
Octachlorodibenzofuran	<0.0040	<0.0070	<0.010	<0.0070	43.1
Total	<0.018	<0.049	<0.026	<0.031	52.7

* 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				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.0099	0.016	<0.0057	<0.011	50.5
Pentachlorodibenzo-p-dioxins	0.016	0.026	0.017	0.020	26.6
Hexachlorodibenzo-p-dioxins	0.040	0.051	0.033	0.041	22.5
Heptachlorodibenzo-p-dioxins	0.046	0.073	0.023	0.047	52.1
Octachlorodibenzo-p-dioxin	0.047	0.069	0.056	0.058	18.5
Total	0.16	0.23	<0.14	<0.18	29.3

Furans

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0034	0.017	<0.0052	<0.0086	86.9
Pentachlorodibenzofurans	0.0017	0.0060	<0.0029	<0.0035	61.7
Hexachlorodibenzofurans	0.0075	0.0090	<0.0031	<0.0065	47.0
Heptachlorodibenzofurans	0.0015	0.012	<0.0054	<0.0061	82.0
Octachlorodibenzofuran	<0.0041	<0.0072	<0.010	<0.0072	42.8
Total	<0.018	<0.051	<0.027	<0.032	52.8

* 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				Coefficient of Variation
	Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	%
Tetrachlorodibenzo-p-dioxins	0.19	0.32	<0.11	<0.21	50.9
Pentachlorodibenzo-p-dioxins	0.31	0.50	0.33	0.38	27.1
Hexachlorodibenzo-p-dioxins	0.79	1.01	0.64	0.81	22.9
Heptachlorodibenzo-p-dioxins	0.89	1.43	0.46	0.93	52.5
Octachlorodibenzo-p-dioxin	0.93	1.35	1.11	1.13	19.0
Total	3.11	4.62	<2.65	<3.46	29.7

Furans

Congener Group	Emission Rate				Coefficient of Variation
	Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	%
Tetrachlorodibenzofurans	0.067	0.34	<0.10	<0.17	87.3
Pentachlorodibenzofurans	0.034	0.12	<0.057	<0.069	62.1
Hexachlorodibenzofurans	0.15	0.18	<0.060	<0.13	47.1
Heptachlorodibenzofurans	0.030	0.23	<0.10	<0.12	82.4
Octachlorodibenzofuran	<0.080	<0.14	<0.20	<0.14	43.0
Total	<0.36	<1.00	<0.52	<0.63	53.3

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

Dioxins

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	<0.0075	<0.013	<0.010	<0.011	<0.21
Pentachlorodibenzo-p-dioxins	0.014	0.023	0.019	0.020	0.38
Hexachlorodibenzo-p-dioxins	0.029	0.050	0.040	0.041	0.81
Heptachlorodibenzo-p-dioxins	0.033	0.056	0.046	0.047	0.93
Octachlorodibenzo-p-dioxin	0.041	0.069	0.056	0.058	1.13
Total	<0.12	<0.21	<0.17	<0.18	<3.46

Furans

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	<0.0061	<0.010	<0.0084	<0.0086	<0.17
Pentachlorodibenzofurans	<0.0025	<0.0042	<0.0034	<0.0035	<0.069
Hexachlorodibenzofurans	<0.0046	<0.0078	<0.0063	<0.0065	<0.13
Heptachlorodibenzofurans	<0.0043	<0.0073	<0.0060	<0.0061	<0.12
Octachlorodibenzofuran	<0.0051	<0.0086	<0.0070	<0.0072	<0.14
Total	<0.023	<0.038	<0.031	<0.032	<0.63

* At 25°C and 1 atmosphere

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

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

Dioxins

Congener Group	Blank Train pg	Method Blank pg
Tetrachlorodibenzo-p-dioxins	<4.8	<4.1
Pentachlorodibenzo-p-dioxins	<4.6	<4.0
Hexachlorodibenzo-p-dioxins	<6.1	<3.3
Heptachlorodibenzo-p-dioxins	<7.2	<5.4
Octachlorodibenzo-p-dioxin	<13	142
Total	<35.7	<158.8

Furans

Congener Group	Blank Train pg	Method Blank pg
Tetrachlorodibenzofurans	<2.7	<3.6
Pentachlorodibenzofurans	<2.9	4.56
Hexachlorodibenzofurans	<5.6	2.87
Heptachlorodibenzofurans	<4.7	<4.4
Octachlorodibenzofuran	<11	<26
Total	<26.9	<41.4

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.2	<0.48	<0.82	<0.66	<0.69	<0.013
12378-pentachlorodibenzo-p-dioxin	<4.8	<0.55	<0.94	<0.76	<0.78	<0.015
123478-hexachlorodibenzo-p-dioxin	6.04	0.70	1.18	0.96	0.99	0.019
123678-hexachlorodibenzo-p-dioxin	<14	<1.61	<2.73	<2.22	<2.28	<0.045
123789-hexachlorodibenzo-p-dioxin	<9.1	<1.05	<1.78	<1.44	<1.48	<0.029
1234678-heptachlorodibenzo-p-dioxin	124	14.3	24.2	19.6	20.2	0.39
Octachlorodibenzo-p-dioxin	291	33.5	56.8	46.0	47.5	0.93
2378-tetrachlorodibenzofuran	<4.0	<0.46	<0.78	<0.63	<0.65	<0.013
12378-pentachlorodibenzofuran	<4.4	<0.51	<0.86	<0.70	<0.72	<0.014
23478-pentachlorodibenzofuran	<4.1	<0.47	<0.80	<0.65	<0.67	<0.013
123478-hexachlorodibenzofuran	6.93	0.80	1.35	1.10	1.13	0.022
123678-hexachlorodibenzofuran	<7.4	<0.85	<1.44	<1.17	<1.21	<0.024
234678-hexachlorodibenzofuran	7.15	0.82	1.40	1.13	1.17	0.023
123789-hexachlorodibenzofuran	8.74	1.01	1.71	1.38	1.43	0.028
1234678-heptachlorodibenzofuran	<24	<2.77	<4.68	<3.80	<3.91	<0.076
1234789-heptachlorodibenzofuran	<7.0	<0.81	<1.37	<1.11	<1.14	<0.022
Octachlorodibenzofuran	<25	<2.88	<4.88	<3.96	<4.08	<0.080
PCB 81	<13	<1.50	<2.54	<2.06	<2.12	<0.041
PCB 77	297	34.2	58.0	47.0	48.4	0.94
PCB 123	<120	<13.8	<23.4	<19.0	<19.6	<0.38
PCB 118	7660	883	1495	1212	1249	24.4
PCB 114	185	21.3	36.1	29.3	30.2	0.59
PCB 105	2110	243	412	334	344	6.71
PCB 126	<18	<2.07	<3.51	<2.85	<2.94	<0.057
PCB 167	<58	<6.68	<11.3	<9.18	<9.46	<0.18
PCB 156/157	151	17.4	29.5	23.9	24.6	0.48
PCB 169	<9.1	<1.05	<1.78	<1.44	<1.48	<0.029
PCB 189	<4.6	<0.53	<0.90	<0.73	<0.75	<0.015
Total Dioxins & Furans Only	<552	<63.6	<108	<87.3	<90.0	<1.76
Total PCBs Only	<10626	<1224	<2073	<1681	<1733	<33.8
Total Dioxins & Furans and PCBs	<11178	<1288	<2181	<1769	<1823	<35.6

Dry Gas Volume Sampled (Rm³*) :	5.125
Actual Flowrate (m³/s) :	27.6
Dry Reference Flowrate (Rm³/s*) :	16.3
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<6.9	<0.78	<1.32	<1.08	<1.11	<0.022
12378-pentachlorodibenzo-p-dioxin	<5.8	<0.66	<1.11	<0.90	<0.93	<0.018
123478-hexachlorodibenzo-p-dioxin	11.2	1.27	2.15	1.74	1.80	0.035
123678-hexachlorodibenzo-p-dioxin	27.0	3.06	5.18	4.21	4.33	0.085
123789-hexachlorodibenzo-p-dioxin	14.2	1.61	2.72	2.21	2.28	0.045
1234678-heptachlorodibenzo-p-dioxin	225	25.5	43.1	35.1	36.1	0.71
Octachlorodibenzo-p-dioxin	428	48.5	82.0	66.7	68.7	1.35
2378-tetrachlorodibenzofuran	<14	<1.59	<2.68	<2.18	<2.25	<0.044
12378-pentachlorodibenzofuran	11.7	1.33	2.24	1.82	1.88	0.037
23478-pentachlorodibenzofuran	<11	<1.25	<2.11	<1.71	<1.77	<0.035
123478-hexachlorodibenzofuran	<9.4	<1.07	<1.80	<1.46	<1.51	<0.030
123678-hexachlorodibenzofuran	9.48	1.07	1.82	1.48	1.52	0.030
234678-hexachlorodibenzofuran	17.2	1.95	3.30	2.68	2.76	0.054
123789-hexachlorodibenzofuran	11.6	1.31	2.22	1.81	1.86	0.037
1234678-heptachlorodibenzofuran	45.1	5.11	8.64	7.03	7.24	0.14
1234789-heptachlorodibenzofuran	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Octachlorodibenzofuran	<45	<5.10	<8.63	<7.01	<7.22	<0.14
PCB 81	15.5	1.76	2.97	2.41	2.49	0.049
PCB 77	483	54.8	92.6	75.3	77.5	1.53
PCB 123	175	19.8	33.5	27.3	28.1	0.55
PCB 118	11600	1315	2224	1807	1862	36.7
PCB 114	289	32.8	55.4	45.0	46.4	0.91
PCB 105	3290	373	631	513	528	10.4
PCB 126	27.1	3.07	5.19	4.22	4.35	0.086
PCB 167	80.2	9.09	15.4	12.5	12.9	0.25
PCB 156/157	188	21.3	36.0	29.3	30.2	0.59
PCB 169	<11	<1.25	<2.11	<1.71	<1.77	<0.035
PCB 189	<3.0	<0.34	<0.58	<0.47	<0.48	<0.0095
Total Dioxins & Furans Only	<905	<103	<173	<141	<145	<2.86
Total PCBs Only	<16162	<1832	<3098	<2518	<2595	<51.1
Total Dioxins & Furans and PCBs	<17066	<1935	<3271	<2659	<2740	<54.0

Dry Gas Volume Sampled (Rm³*) :	5.217
Actual Flowrate (m³/s) :	27.9
Dry Reference Flowrate (Rm³/s*) :	16.5
Dry Adjusted Flowrate (Rm³/s**) :	20.3
Wet Reference Flowrate (Rm³/s*) :	19.7

* 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 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	<35	<4.03	<6.79	<5.54	<5.68	<0.11
12378-pentachlorodibenzo-p-dioxin	<29	<3.34	<5.62	<4.59	<4.71	<0.092
123478-hexachlorodibenzo-p-dioxin	<26	<3.00	<5.04	<4.11	<4.22	<0.083
123678-hexachlorodibenzo-p-dioxin	<25	<2.88	<4.85	<3.96	<4.06	<0.080
123789-hexachlorodibenzo-p-dioxin	<25	<2.88	<4.85	<3.96	<4.06	<0.080
1234678-heptachlorodibenzo-p-dioxin	<78	<8.99	<15.1	<12.3	<12.7	<0.25
Octachlorodibenzo-p-dioxin	348	40.1	67.5	55.1	56.5	1.11
2378-tetrachlorodibenzofuran	<32	<3.69	<6.21	<5.06	<5.19	<0.10
12378-pentachlorodibenzofuran	<18	<2.07	<3.49	<2.85	<2.92	<0.057
23478-pentachlorodibenzofuran	<17	<1.96	<3.30	<2.69	<2.76	<0.054
123478-hexachlorodibenzofuran	<16	<1.84	<3.10	<2.53	<2.60	<0.051
123678-hexachlorodibenzofuran	<15	<1.73	<2.91	<2.37	<2.43	<0.048
234678-hexachlorodibenzofuran	<16	<1.84	<3.10	<2.53	<2.60	<0.051
123789-hexachlorodibenzofuran	<19	<2.19	<3.69	<3.01	<3.08	<0.060
1234678-heptachlorodibenzofuran	<27	<3.11	<5.24	<4.27	<4.38	<0.086
1234789-heptachlorodibenzofuran	<33	<3.80	<6.40	<5.22	<5.36	<0.10
Octachlorodibenzofuran	<63	<7.26	<12.2	<9.97	<10.2	<0.20
PCB 81	<35	<4.03	<6.79	<5.54	<5.68	<0.11
PCB 77	549	63.3	106	86.9	89.1	1.75
PCB 123	<33	<3.80	<6.40	<5.22	<5.36	<0.10
PCB 118	3240	373	628	513	526	10.3
PCB 114	73.0	8.41	14.2	11.6	11.8	0.23
PCB 105	798	92.0	155	126	130	2.54
PCB 126	40.4	4.66	7.84	6.39	6.56	0.13
PCB 167	37.9	4.37	7.35	6.00	6.15	0.12
PCB 156/157	<39	<4.49	<7.56	<6.17	<6.33	<0.12
PCB 169	<18	<2.07	<3.49	<2.85	<2.92	<0.057
PCB 189	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Total Dioxins & Furans Only	<822	<94.7	<159	<130	<133	<2.61
Total PCBs Only	<4875	<562	<946	<772	<791	<15.5
Total Dioxins & Furans and PCBs	<5697	<657	<1105	<902	<925	<18.1

Dry Gas Volume Sampled (Rm³*) :	5.156
Actual Flowrate (m³/s) :	27.6
Dry Reference Flowrate (Rm³/s*) :	16.4
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	19.6

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.48	<0.78	<4.03	<1.77	111
12378-pentachlorodibenzo-p-dioxin	<0.55	<0.66	<3.34	<1.52	104
123478-hexachlorodibenzo-p-dioxin	0.70	1.27	<3.00	<1.65	72.4
123678-hexachlorodibenzo-p-dioxin	<1.61	3.06	<2.88	<2.52	31.3
123789-hexachlorodibenzo-p-dioxin	<1.05	1.61	<2.88	<1.85	50.8
1234678-heptachlorodibenzo-p-dioxin	14.3	25.5	<8.99	<16.3	51.9
Octachlorodibenzo-p-dioxin	33.5	48.5	40.1	40.7	18.4
2378-tetrachlorodibenzofuran	<0.46	<1.59	<3.69	<1.91	85.7
12378-pentachlorodibenzofuran	<0.51	1.33	<2.07	<1.30	60.2
23478-pentachlorodibenzofuran	<0.47	<1.25	<1.96	<1.23	60.6
123478-hexachlorodibenzofuran	0.80	<1.07	<1.84	<1.24	43.9
123678-hexachlorodibenzofuran	<0.85	1.07	<1.73	<1.22	37.4
234678-hexachlorodibenzofuran	0.82	1.95	<1.84	<1.54	40.4
123789-hexachlorodibenzofuran	1.01	1.31	<2.19	<1.50	40.8
1234678-heptachlorodibenzofuran	<2.77	5.11	<3.11	<3.66	34.6
1234789-heptachlorodibenzofuran	<0.81	<1.36	<3.80	<1.99	80.1
Octachlorodibenzofuran	<2.88	<5.10	<7.26	<5.08	43.1
PCB 81	<1.50	1.76	<4.03	<2.43	57.4
PCB 77	34.2	54.8	63.3	50.7	29.4
PCB 123	<13.8	19.8	<3.80	<12.5	64.9
PCB 118	883	1315	373	857	55.0
PCB 114	21.3	32.8	8.41	20.8	58.5
PCB 105	243	373	92.0	236	59.6
PCB 126	<2.07	3.07	4.66	<3.27	39.8
PCB 167	<6.68	9.09	4.37	<6.71	35.2
PCB 156/157	17.4	21.3	<4.49	<14.4	61.1
PCB 169	<1.05	<1.25	<2.07	<1.46	37.4
PCB 189	<0.53	<0.34	<1.38	<0.75	74.0
Total Dioxins & Furans Only	<63.6	<103	<94.7	<87.0	23.7
Total PCBs Only	<1224	<1832	<562	<1206	52.7
Total Dioxins & Furans and PCBs	<1288	<1935	<657	<1293	49.4

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				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	<0.82	<1.32	<6.79	<2.98	111
12378-pentachlorodibenzo-p-dioxin	<0.94	<1.11	<5.62	<2.56	104
123478-hexachlorodibenzo-p-dioxin	1.18	2.15	<5.04	<2.79	72.1
123678-hexachlorodibenzo-p-dioxin	<2.73	5.18	<4.85	<4.25	31.2
123789-hexachlorodibenzo-p-dioxin	<1.78	2.72	<4.85	<3.12	50.5
1234678-heptachlorodibenzo-p-dioxin	24.2	43.1	<15.1	<27.5	52.0
Octachlorodibenzo-p-dioxin	56.8	82.0	67.5	68.8	18.4
2378-tetrachlorodibenzofuran	<0.78	<2.68	<6.21	<3.22	85.4
12378-pentachlorodibenzofuran	<0.86	2.24	<3.49	<2.20	59.9
23478-pentachlorodibenzofuran	<0.80	<2.11	<3.30	<2.07	60.4
123478-hexachlorodibenzofuran	1.35	<1.80	<3.10	<2.09	43.6
123678-hexachlorodibenzofuran	<1.44	1.82	<2.91	<2.06	37.0
234678-hexachlorodibenzofuran	1.40	3.30	<3.10	<2.60	40.3
123789-hexachlorodibenzofuran	1.71	2.22	<3.69	<2.54	40.5
1234678-heptachlorodibenzofuran	<4.68	8.64	<5.24	<6.19	34.7
1234789-heptachlorodibenzofuran	<1.37	<2.30	<6.40	<3.36	79.8
Octachlorodibenzofuran	<4.88	<8.63	<12.2	<8.57	42.8
PCB 81	<2.54	2.97	<6.79	<4.10	57.1
PCB 77	58.0	92.6	106	85.7	29.2
PCB 123	<23.4	33.5	<6.40	<21.1	64.9
PCB 118	1495	2224	628	1449	55.1
PCB 114	36.1	55.4	14.2	35.2	58.6
PCB 105	412	631	155	399	59.7
PCB 126	<3.51	5.19	7.84	<5.51	39.5
PCB 167	<11.3	15.4	7.35	<11.3	35.4
PCB 156/157	29.5	36.0	<7.56	<24.4	61.2
PCB 169	<1.78	<2.11	<3.49	<2.46	37.0
PCB 189	<0.90	<0.58	<2.33	<1.27	73.6
Total Dioxins & Furans Only	<108	<173	<159	<147	23.6
Total PCBs Only	<2073	<3098	<946	<2039	52.8
Total Dioxins & Furans and PCBs	<2181	<3271	<1105	<2186	49.6

* At 25°C and 1 atmosphere

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

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

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.66	<1.08	<5.54	<2.43	111
12378-pentachlorodibenzo-p-dioxin	<0.76	<0.90	<4.59	<2.08	104
123478-hexachlorodibenzo-p-dioxin	0.96	1.74	<4.11	<2.27	72.4
123678-hexachlorodibenzo-p-dioxin	<2.22	4.21	<3.96	<3.46	31.4
123789-hexachlorodibenzo-p-dioxin	<1.44	2.21	<3.96	<2.54	50.8
1234678-heptachlorodibenzo-p-dioxin	19.6	35.1	<12.3	<22.3	51.9
Octachlorodibenzo-p-dioxin	46.0	66.7	55.1	55.9	18.5
2378-tetrachlorodibenzofuran	<0.63	<2.18	<5.06	<2.63	85.6
12378-pentachlorodibenzofuran	<0.70	1.82	<2.85	<1.79	60.2
23478-pentachlorodibenzofuran	<0.65	<1.71	<2.69	<1.68	60.6
123478-hexachlorodibenzofuran	1.10	<1.46	<2.53	<1.70	43.9
123678-hexachlorodibenzofuran	<1.17	1.48	<2.37	<1.67	37.3
234678-hexachlorodibenzofuran	1.13	2.68	<2.53	<2.11	40.4
123789-hexachlorodibenzofuran	1.38	1.81	<3.01	<2.07	40.8
1234678-heptachlorodibenzofuran	<3.80	7.03	<4.27	<5.03	34.6
1234789-heptachlorodibenzofuran	<1.11	<1.87	<5.22	<2.73	80.1
Octachlorodibenzofuran	<3.96	<7.01	<9.97	<6.98	43.1
PCB 81	<2.06	2.41	<5.54	<3.34	57.4
PCB 77	47.0	75.3	86.9	69.7	29.4
PCB 123	<19.0	27.3	<5.22	<17.2	64.9
PCB 118	1212	1807	513	1177	55.0
PCB 114	29.3	45.0	11.6	28.6	58.5
PCB 105	334	513	126	324	59.6
PCB 126	<2.85	4.22	6.39	<4.49	39.8
PCB 167	<9.18	12.5	6.00	<9.22	35.2
PCB 156/157	23.9	29.3	<6.17	<19.8	61.1
PCB 169	<1.44	<1.71	<2.85	<2.00	37.3
PCB 189	<0.73	<0.47	<1.90	<1.03	73.9
Total Dioxins & Furans Only	<87.3	<141	<130	<119	23.7
Total PCBs Only	<1681	<2518	<772	<1657	52.7
Total Dioxins & Furans and PCBs	<1769	<2659	<902	<1776	49.5

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

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

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

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.69	<1.11	<5.68	<2.49	111
12378-pentachlorodibenzo-p-dioxin	<0.78	<0.93	<4.71	<2.14	104
123478-hexachlorodibenzo-p-dioxin	0.99	1.80	<4.22	<2.33	72.1
123678-hexachlorodibenzo-p-dioxin	<2.28	4.33	<4.06	<3.56	31.3
123789-hexachlorodibenzo-p-dioxin	<1.48	2.28	<4.06	<2.61	50.5
1234678-heptachlorodibenzo-p-dioxin	20.2	36.1	<12.7	<23.0	52.1
Octachlorodibenzo-p-dioxin	47.5	68.7	56.5	57.6	18.5
2378-tetrachlorodibenzofuran	<0.65	<2.25	<5.19	<2.70	85.4
12378-pentachlorodibenzofuran	<0.72	1.88	<2.92	<1.84	59.9
23478-pentachlorodibenzofuran	<0.67	<1.77	<2.76	<1.73	60.4
123478-hexachlorodibenzofuran	1.13	<1.51	<2.60	<1.75	43.6
123678-hexachlorodibenzofuran	<1.21	1.52	<2.43	<1.72	37.0
234678-hexachlorodibenzofuran	1.17	2.76	<2.60	<2.17	40.3
123789-hexachlorodibenzofuran	1.43	1.86	<3.08	<2.12	40.5
1234678-heptachlorodibenzofuran	<3.91	7.24	<4.38	<5.18	34.8
1234789-heptachlorodibenzofuran	<1.14	<1.93	<5.36	<2.81	79.8
Octachlorodibenzofuran	<4.08	<7.22	<10.2	<7.18	42.8
PCB 81	<2.12	2.49	<5.68	<3.43	57.1
PCB 77	48.4	77.5	89.1	71.7	29.2
PCB 123	<19.6	28.1	<5.36	<17.7	65.0
PCB 118	1249	1862	526	1212	55.2
PCB 114	30.2	46.4	11.8	29.5	58.7
PCB 105	344	528	130	334	59.8
PCB 126	<2.94	4.35	6.56	<4.61	39.5
PCB 167	<9.46	12.9	6.15	<9.50	35.4
PCB 156/157	24.6	30.2	<6.33	<20.4	61.2
PCB 169	<1.48	<1.77	<2.92	<2.06	37.0
PCB 189	<0.75	<0.48	<1.95	<1.06	73.6
Total Dioxins & Furans Only	<90.0	<145	<133	<123	23.7
Total PCBs Only	<1733	<2595	<791	<1706	52.9
Total Dioxins & Furans and PCBs	<1823	<2740	<925	<1829	49.6

* At 25°C and 1 atmosphere

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

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

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.013	<0.022	<0.11	<0.049	111
12378-pentachlorodibenzo-p-dioxin	<0.015	<0.018	<0.092	<0.042	104
123478-hexachlorodibenzo-p-dioxin	0.019	0.035	<0.083	<0.046	72.1
123678-hexachlorodibenzo-p-dioxin	<0.045	0.085	<0.080	<0.070	31.6
123789-hexachlorodibenzo-p-dioxin	<0.029	0.045	<0.080	<0.051	50.6
1234678-heptachlorodibenzo-p-dioxin	0.39	0.71	<0.25	<0.45	52.5
Octachlorodibenzo-p-dioxin	0.93	1.35	1.11	1.13	19.0
2378-tetrachlorodibenzofuran	<0.013	<0.044	<0.10	<0.053	85.3
12378-pentachlorodibenzofuran	<0.014	0.037	<0.057	<0.036	60.0
23478-pentachlorodibenzofuran	<0.013	<0.035	<0.054	<0.034	60.4
123478-hexachlorodibenzofuran	0.022	<0.030	<0.051	<0.034	43.7
123678-hexachlorodibenzofuran	<0.024	0.030	<0.048	<0.034	37.1
234678-hexachlorodibenzofuran	0.023	0.054	<0.051	<0.043	40.7
123789-hexachlorodibenzofuran	0.028	0.037	<0.060	<0.042	40.5
1234678-heptachlorodibenzofuran	<0.076	0.14	<0.086	<0.10	35.3
1234789-heptachlorodibenzofuran	<0.022	<0.038	<0.10	<0.055	79.8
Octachlorodibenzofuran	<0.080	<0.14	<0.20	<0.14	43.0
PCB 81	<0.041	0.049	<0.11	<0.067	57.1
PCB 77	0.94	1.53	1.75	1.41	29.5
PCB 123	<0.38	0.55	<0.10	<0.35	65.3
PCB 118	24.4	36.7	10.3	23.8	55.5
PCB 114	0.59	0.91	0.23	0.58	59.0
PCB 105	6.71	10.4	2.54	6.55	60.1
PCB 126	<0.057	0.086	0.13	<0.090	39.6
PCB 167	<0.18	0.25	0.12	<0.19	35.7
PCB 156/157	0.48	0.59	<0.12	<0.40	61.4
PCB 169	<0.029	<0.035	<0.057	<0.040	37.1
PCB 189	<0.015	<0.0095	<0.038	<0.021	73.7
Total Dioxins & Furans Only	<1.76	<2.86	<2.61	<2.41	24.1
Total PCBs Only	<33.8	<51.1	<15.5	<33.5	53.2
Total Dioxins & Furans and PCBs	<35.6	<54.0	<18.1	<35.9	50.0

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

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

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.77	<2.98	<2.43	<2.49	<0.049
12378-pentachlorodibenzo-p-dioxin	<1.52	<2.56	<2.08	<2.14	<0.042
123478-hexachlorodibenzo-p-dioxin	<1.65	<2.79	<2.27	<2.33	<0.046
123678-hexachlorodibenzo-p-dioxin	<2.52	<4.25	<3.46	<3.56	<0.070
123789-hexachlorodibenzo-p-dioxin	<1.85	<3.12	<2.54	<2.61	<0.051
1234678-heptachlorodibenzo-p-dioxin	<16.3	<27.5	<22.3	<23.0	<0.45
Octachlorodibenzo-p-dioxin	40.7	68.8	55.9	57.6	1.13
2378-tetrachlorodibenzofuran	<1.91	<3.22	<2.63	<2.70	<0.053
12378-pentachlorodibenzofuran	<1.30	<2.20	<1.79	<1.84	<0.036
23478-pentachlorodibenzofuran	<1.23	<2.07	<1.68	<1.73	<0.034
123478-hexachlorodibenzofuran	<1.24	<2.09	<1.70	<1.75	<0.034
123678-hexachlorodibenzofuran	<1.22	<2.06	<1.67	<1.72	<0.034
234678-hexachlorodibenzofuran	<1.54	<2.60	<2.11	<2.17	<0.043
123789-hexachlorodibenzofuran	<1.50	<2.54	<2.07	<2.12	<0.042
1234678-heptachlorodibenzofuran	<3.66	<6.19	<5.03	<5.18	<0.10
1234789-heptachlorodibenzofuran	<1.99	<3.36	<2.73	<2.81	<0.055
Octachlorodibenzofuran	<5.08	<8.57	<6.98	<7.18	<0.14
PCB 81	<2.43	<4.10	<3.34	<3.43	<0.067
PCB 77	50.7	85.7	69.7	71.7	1.41
PCB 123	<12.5	<21.1	<17.2	<17.7	<0.35
PCB 118	857	1449	1177	1212	23.8
PCB 114	20.8	35.2	28.6	29.5	0.58
PCB 105	236	399	324	334	6.55
PCB 126	<3.27	<5.51	<4.49	<4.61	<0.090
PCB 167	<6.71	<11.35	<9.22	<9.50	<0.19
PCB 156/157	<14.4	<24.4	<19.8	<20.4	<0.40
PCB 169	<1.46	<2.46	<2.00	<2.06	<0.040
PCB 189	<0.75	<1.27	<1.03	<1.06	<0.021
Total Dioxins & Furans Only	<87.0	<147	<119	<123	<2.41
Total PCBs Only	<1206	<2039	<1657	<1706	<33.5
Total Dioxins & Furans and PCBs	<1293	<2186	<1776	<1829	<35.9

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

Specific Isomer	Blank Train pg	Method Blank pg
2378-tetrachlorodibenzo-p-dioxin	<4.8	<4.1
12378-pentachlorodibenzo-p-dioxin	<4.6	<4.0
123478-hexachlorodibenzo-p-dioxin	<6.1	<3.3
123678-hexachlorodibenzo-p-dioxin	<5.8	<3.2
123789-hexachlorodibenzo-p-dioxin	<5.9	<5.3
1234678-heptachlorodibenzo-p-dioxin	<7.2	<5.4
Octachlorodibenzo-p-dioxin	<13	142
2378-tetrachlorodibenzofuran	<2.7	<3.6
12378-pentachlorodibenzofuran	<2.9	<2.3
23478-pentachlorodibenzofuran	<2.7	<2.1
123478-hexachlorodibenzofuran	<4.8	<2.4
123678-hexachlorodibenzofuran	<4.5	<2.1
234678-hexachlorodibenzofuran	<4.7	2.87
123789-hexachlorodibenzofuran	<5.6	<7.5
1234678-heptachlorodibenzofuran	<3.9	<3.6
1234789-heptachlorodibenzofuran	<4.7	<4.4
Octachlorodibenzofuran	<11	<26
PCB 81	<7.3	<5.4
PCB 77	<7.6	<5.8
PCB 123	<13	<6.6
PCB 118	<12	<15
PCB 114	<13	<6.3
PCB 105	<13	<6.5
PCB 126	<13	<6.8
PCB 167	<4.4	<4.5
PCB 156/157	<6.1	<6.2
PCB 169	<4.5	<4.9
PCB 189	<5.6	<3.3
Total Dioxins & Furans Only	<94.9	<224
Total PCBs Only	<99.5	<71.3
Total Dioxins & Furans and PCBs	<194	<295

"<" 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	<0.48	<0.78	<4.03	<1.77
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.55	<0.66	<3.34	<1.52
123478-hexachlorodibenzo-p-dioxin	0.10000	0.070	0.13	<0.30	<0.17
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.16	0.31	<0.29	<0.25
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.10	0.16	<0.29	<0.18
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.14	0.26	<0.090	<0.16
Octachlorodibenzo-p-dioxin	0.00030	0.010	0.015	0.012	0.012
2378-tetrachlorodibenzofuran	0.10000	<0.046	<0.16	<0.37	<0.19
12378-pentachlorodibenzofuran	0.03000	<0.015	0.040	<0.062	<0.039
23478-pentachlorodibenzofuran	0.30000	<0.14	<0.37	<0.59	<0.37
123478-hexachlorodibenzofuran	0.10000	0.080	<0.11	<0.18	<0.12
123678-hexachlorodibenzofuran	0.10000	<0.085	0.11	<0.17	<0.12
234678-hexachlorodibenzofuran	0.10000	0.082	0.19	<0.18	<0.15
123789-hexachlorodibenzofuran	0.10000	0.10	0.13	<0.22	<0.15
1234678-heptachlorodibenzofuran	0.01000	<0.028	0.051	<0.031	<0.037
1234789-heptachlorodibenzofuran	0.01000	<0.0081	<0.014	<0.038	<0.020
Octachlorodibenzofuran	0.00030	<0.00086	<0.0015	<0.0022	<0.0015
PCB 81	0.00030	<0.00045	0.00053	<0.0012	<0.00073
PCB 77	0.00010	0.0034	0.0055	0.0063	0.0051
PCB 123	0.00003	<0.00041	0.00060	<0.00011	<0.00037
PCB 118	0.00003	0.026	0.039	0.011	0.026
PCB 114	0.00003	0.00064	0.00098	0.00025	0.00062
PCB 105	0.00003	0.0073	0.011	0.0028	0.0071
PCB 126	0.10000	<0.21	0.31	0.47	<0.33
PCB 167	0.00003	<0.00020	0.00027	0.00013	<0.00020
PCB 156/157	0.00003	0.00052	0.00064	<0.00013	<0.00043
PCB 169	0.03000	<0.031	<0.037	<0.062	<0.044
PCB 189	0.00003	<0.000016	<0.000010	<0.000041	<0.000023
Total Dioxins & Furans Only		<2.11	<3.48	<10.2	<5.27
Total PCBs Only		<0.28	<0.40	<0.55	<0.41
Total Dioxins & Furans and PCBs		<2.39	<3.89	<10.8	<5.68

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	<1.32	<6.79	<2.98
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.94	<1.11	<5.62	<2.56
123478-hexachlorodibenzo-p-dioxin	0.10000	0.12	0.21	<0.50	<0.28
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.27	0.52	<0.48	<0.43
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.18	0.27	<0.48	<0.31
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.24	0.43	<0.15	<0.27
Octachlorodibenzo-p-dioxin	0.00030	0.017	0.025	0.020	0.021
2378-tetrachlorodibenzofuran	0.10000	<0.078	<0.27	<0.62	<0.32
12378-pentachlorodibenzofuran	0.03000	<0.026	0.067	<0.10	<0.066
23478-pentachlorodibenzofuran	0.30000	<0.24	<0.63	<0.99	<0.62
123478-hexachlorodibenzofuran	0.10000	0.14	<0.18	<0.31	<0.21
123678-hexachlorodibenzofuran	0.10000	<0.14	0.18	<0.29	<0.21
234678-hexachlorodibenzofuran	0.10000	0.14	0.33	<0.31	<0.26
123789-hexachlorodibenzofuran	0.10000	0.17	0.22	<0.37	<0.25
1234678-heptachlorodibenzofuran	0.01000	<0.047	0.086	<0.052	<0.062
1234789-heptachlorodibenzofuran	0.01000	<0.014	<0.023	<0.064	<0.034
Octachlorodibenzofuran	0.00030	<0.0015	<0.0026	<0.0037	<0.0026
PCB 81	0.00030	<0.00076	0.00089	<0.0020	<0.0012
PCB 77	0.00010	0.0058	0.0093	0.011	0.0086
PCB 123	0.00003	<0.00070	0.0010	<0.00019	<0.00063
PCB 118	0.00003	0.045	0.067	0.019	0.043
PCB 114	0.00003	0.0011	0.0017	0.00042	0.0011
PCB 105	0.00003	0.012	0.019	0.0046	0.012
PCB 126	0.10000	<0.35	0.52	0.78	<0.55
PCB 167	0.00003	<0.00034	0.00046	0.00022	<0.00034
PCB 156/157	0.00003	0.00088	0.0011	<0.00023	<0.00073
PCB 169	0.03000	<0.053	<0.063	<0.10	<0.074
PCB 189	0.00003	<0.000027	<0.000017	<0.000070	<0.000038
Total Dioxins & Furans Only		<3.58	<5.89	<17.2	<8.88
Total PCBs Only		<0.47	<0.68	<0.93	<0.69
Total Dioxins & Furans and PCBs		<4.05	<6.57	<18.1	<9.57

* 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	<0.66	<1.08	<5.54	<2.43
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.76	<0.90	<4.59	<2.08
123478-hexachlorodibenzo-p-dioxin	0.10000	0.096	0.17	<0.41	<0.23
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.22	0.42	<0.40	<0.35
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.14	0.22	<0.40	<0.25
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.20	0.35	<0.12	<0.22
Octachlorodibenzo-p-dioxin	0.00030	0.014	0.020	0.017	0.017
2378-tetrachlorodibenzofuran	0.10000	<0.063	<0.22	<0.51	<0.26
12378-pentachlorodibenzofuran	0.03000	<0.021	0.055	<0.085	<0.054
23478-pentachlorodibenzofuran	0.30000	<0.19	<0.51	<0.81	<0.51
123478-hexachlorodibenzofuran	0.10000	0.11	<0.15	<0.25	<0.17
123678-hexachlorodibenzofuran	0.10000	<0.12	0.15	<0.24	<0.17
234678-hexachlorodibenzofuran	0.10000	0.11	0.27	<0.25	<0.21
123789-hexachlorodibenzofuran	0.10000	0.14	0.18	<0.30	<0.21
1234678-heptachlorodibenzofuran	0.01000	<0.038	0.070	<0.043	<0.050
1234789-heptachlorodibenzofuran	0.01000	<0.011	<0.019	<0.052	<0.027
Octachlorodibenzofuran	0.00030	<0.0012	<0.0021	<0.0030	<0.0021
PCB 81	0.00030	<0.00062	0.00072	<0.0017	<0.0010
PCB 77	0.00010	0.0047	0.0075	0.0087	0.0070
PCB 123	0.00003	<0.00057	0.00082	<0.00016	<0.00051
PCB 118	0.00003	0.036	0.054	0.015	0.035
PCB 114	0.00003	0.00088	0.0014	0.00035	0.00086
PCB 105	0.00003	0.010	0.015	0.0038	0.0097
PCB 126	0.10000	<0.28	0.42	0.64	<0.45
PCB 167	0.00003	<0.00028	0.00037	0.00018	<0.00028
PCB 156/157	0.00003	0.00072	0.00088	<0.00019	<0.00059
PCB 169	0.03000	<0.043	<0.051	<0.085	<0.060
PCB 189	0.00003	<0.000022	<0.000014	<0.000057	<0.000031
Total Dioxins & Furans Only		<2.90	<4.79	<14.0	<7.23
Total PCBs Only		<0.38	<0.55	<0.76	<0.56
Total Dioxins & Furans and PCBs		<3.28	<5.34	<14.8	<7.80

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

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

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

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

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	0.33	0.54	2.77	1.21
12378-pentachlorodibenzo-p-dioxin	1.00000	0.38	0.45	2.29	1.04
123478-hexachlorodibenzo-p-dioxin	0.10000	0.096	0.17	0.21	0.16
123678-hexachlorodibenzo-p-dioxin	0.10000	0.11	0.42	0.20	0.24
123789-hexachlorodibenzo-p-dioxin	0.10000	0.072	0.221	0.20	0.16
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.20	0.35	0.062	0.20
Octachlorodibenzo-p-dioxin	0.00030	0.014	0.020	0.017	0.017
2378-tetrachlorodibenzofuran	0.10000	0.032	0.11	0.25	0.13
12378-pentachlorodibenzofuran	0.03000	0.010	0.055	0.043	0.036
23478-pentachlorodibenzofuran	0.30000	0.097	0.26	0.40	0.25
123478-hexachlorodibenzofuran	0.10000	0.11	0.073	0.13	0.10
123678-hexachlorodibenzofuran	0.10000	0.059	0.15	0.12	0.11
234678-hexachlorodibenzofuran	0.10000	0.11	0.27	0.13	0.17
123789-hexachlorodibenzofuran	0.10000	0.14	0.18	0.15	0.16
1234678-heptachlorodibenzofuran	0.01000	0.019	0.070	0.021	0.037
1234789-heptachlorodibenzofuran	0.01000	0.0055	0.0093	0.026	0.014
Octachlorodibenzofuran	0.00030	0.00059	0.0011	0.0015	0.0010
PCB 81	0.00030	0.00031	0.00072	0.00083	0.00062
PCB 77	0.00010	0.0047	0.0075	0.0087	0.0070
PCB 123	0.00003	0.00028	0.00082	0.000078	0.00039
PCB 118	0.00003	0.036	0.054	0.015	0.035
PCB 114	0.00003	0.00088	0.0014	0.00035	0.00086
PCB 105	0.00003	0.010	0.015	0.0038	0.0097
PCB 126	0.10000	0.14	0.42	0.64	0.40
PCB 167	0.00003	0.00014	0.00037	0.00018	0.00023
PCB 156/157	0.00003	0.00072	0.00088	0.000093	0.00056
PCB 169	0.03000	0.022	0.026	0.043	0.030
PCB 189	0.00003	0.000011	0.0000070	0.000028	0.000015
Total Dioxins & Furans Only		1.78	3.35	7.01	4.05
Total PCBs Only		0.22	0.53	0.71	0.49
Total Dioxins & Furans and PCBs		2.00	3.88	7.73	4.53

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

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

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

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

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00	<0.66	<1.08	<5.54	<2.43
12378-pentachlorodibenzo-p-dioxin	0.50	<0.38	<0.45	<2.29	<1.04
123478-hexachlorodibenzo-p-dioxin	0.10	0.096	0.17	<0.41	<0.23
123678-hexachlorodibenzo-p-dioxin	0.10	<0.22	0.42	<0.40	<0.35
123789-hexachlorodibenzo-p-dioxin	0.10	<0.14	0.22	<0.40	<0.25
1234678-heptachlorodibenzo-p-dioxin	0.010	0.20	0.35	<0.12	<0.22
Octachlorodibenzo-p-dioxin	0.0010	0.046	0.067	0.055	0.056
2378-tetrachlorodibenzofuran	0.10	<0.063	<0.22	<0.51	<0.26
12378-pentachlorodibenzofuran	0.050	<0.035	0.091	<0.14	<0.089
23478-pentachlorodibenzofuran	0.50	<0.32	<0.86	<1.35	<0.84
123478-hexachlorodibenzofuran	0.10	0.11	<0.15	<0.25	<0.17
123678-hexachlorodibenzofuran	0.10	<0.12	0.15	<0.24	<0.17
234678-hexachlorodibenzofuran	0.10	0.11	0.27	<0.25	<0.21
123789-hexachlorodibenzofuran	0.10	0.14	0.18	<0.30	<0.21
1234678-heptachlorodibenzofuran	0.010	<0.038	0.070	<0.043	<0.050
1234789-heptachlorodibenzofuran	0.010	<0.011	<0.019	<0.052	<0.027
Octachlorodibenzofuran	0.0010	<0.0040	<0.0070	<0.010	<0.0070
Total Dioxins & Furans		<2.70	<4.77	<12.4	<6.61
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	<0.69	<1.11	<5.68	<2.49
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.78	<0.93	<4.71	<2.14
123478-hexachlorodibenzo-p-dioxin	0.10000	0.099	0.18	<0.42	<0.23
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.23	0.43	<0.41	<0.36
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.15	0.23	<0.41	<0.26
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.20	0.36	<0.13	<0.23
Octachlorodibenzo-p-dioxin	0.00030	0.014	0.021	0.017	0.017
2378-tetrachlorodibenzofuran	0.10000	<0.065	<0.22	<0.52	<0.27
12378-pentachlorodibenzofuran	0.03000	<0.022	0.056	<0.088	<0.055
23478-pentachlorodibenzofuran	0.30000	<0.20	<0.53	<0.83	<0.52
123478-hexachlorodibenzofuran	0.10000	0.11	<0.15	<0.26	<0.17
123678-hexachlorodibenzofuran	0.10000	<0.12	0.15	<0.24	<0.17
234678-hexachlorodibenzofuran	0.10000	0.12	0.28	<0.26	<0.22
123789-hexachlorodibenzofuran	0.10000	0.14	0.19	<0.31	<0.21
1234678-heptachlorodibenzofuran	0.01000	<0.039	0.072	<0.044	<0.052
1234789-heptachlorodibenzofuran	0.01000	<0.011	<0.019	<0.054	<0.028
Octachlorodibenzofuran	0.00030	<0.0012	<0.0022	<0.0031	<0.0022
PCB 81	0.00030	<0.00064	0.00075	<0.0017	<0.0010
PCB 77	0.00010	0.0048	0.0078	0.0089	0.0072
PCB 123	0.00003	<0.00059	0.00084	<0.00016	<0.00053
PCB 118	0.00003	0.037	0.056	0.016	0.036
PCB 114	0.00003	0.00091	0.0014	0.00036	0.00088
PCB 105	0.00003	0.010	0.016	0.0039	0.010
PCB 126	0.10000	<0.29	0.44	0.66	<0.46
PCB 167	0.00003	<0.00028	0.00039	0.00018	<0.00028
PCB 156/157	0.00003	0.00074	0.00091	<0.00019	<0.00061
PCB 169	0.03000	<0.045	<0.053	<0.088	<0.062
PCB 189	0.00003	<0.000023	<0.000014	<0.000058	<0.000032
Total Dioxins & Furans Only		<2.99	<4.93	<14.4	<7.43
Total PCBs Only		<0.39	<0.57	<0.77	<0.58
Total Dioxins & Furans and PCBs		<3.39	<5.50	<15.1	<8.01

* 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	<0.013	<0.022	<0.11	<0.049
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.015	<0.018	<0.092	<0.042
123478-hexachlorodibenzo-p-dioxin	0.10000	0.0019	0.0035	<0.0083	<0.0046
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.0045	0.0085	<0.0080	<0.0070
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.0029	0.0045	<0.0080	<0.0051
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.0039	0.0071	<0.0025	<0.0045
Octachlorodibenzo-p-dioxin	0.00030	0.00028	0.00041	0.00033	0.00034
2378-tetrachlorodibenzofuran	0.10000	<0.0013	<0.0044	<0.010	<0.0053
12378-pentachlorodibenzofuran	0.03000	<0.00042	0.0011	<0.0017	<0.0011
23478-pentachlorodibenzofuran	0.30000	<0.0039	<0.010	<0.016	<0.010
123478-hexachlorodibenzofuran	0.10000	0.0022	<0.0030	<0.0051	<0.0034
123678-hexachlorodibenzofuran	0.10000	<0.0024	0.0030	<0.0048	<0.0034
234678-hexachlorodibenzofuran	0.10000	0.0023	0.0054	<0.0051	<0.0043
123789-hexachlorodibenzofuran	0.10000	0.0028	0.0037	<0.0060	<0.0042
1234678-heptachlorodibenzofuran	0.01000	<0.00076	0.0014	<0.00086	<0.0010
1234789-heptachlorodibenzofuran	0.01000	<0.00022	<0.00038	<0.0010	<0.00055
Octachlorodibenzofuran	0.00030	<0.000024	<0.000043	<0.000060	<0.000042
PCB 81	0.00030	<0.000012	0.000015	<0.000033	<0.000020
PCB 77	0.00010	0.000094	0.00015	0.00017	0.00014
PCB 123	0.00003	<0.000011	0.000017	<0.0000031	<0.000010
PCB 118	0.00003	0.00073	0.0011	0.00031	0.00071
PCB 114	0.00003	0.000018	0.000027	0.0000070	0.000017
PCB 105	0.00003	0.00020	0.00031	0.000076	0.00020
PCB 126	0.10000	<0.0057	0.0086	0.013	<0.0090
PCB 167	0.00003	<0.0000055	0.0000076	0.0000036	<0.0000056
PCB 156/157	0.00003	0.000014	0.000018	<0.0000037	<0.000012
PCB 169	0.03000	<0.00087	<0.00104	<0.0017	<0.0012
PCB 189	0.00003	<0.00000044	<0.00000028	<0.0000011	<0.00000062
Total Dioxins & Furans Only		<0.058	<0.097	<0.28	<0.15
Total PCBs Only		<0.008	<0.011	<0.015	<0.011
Total Dioxins & Furans and PCBs		<0.066	<0.11	<0.30	<0.16

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

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

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

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg TEQ/m³	pg TEQ/Rm³*	pg TEQ/Rm³**	pg TEQ/Rm³*	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<1.77	<2.98	<2.43	<2.49	<0.049
12378-pentachlorodibenzo-p-dioxin	<1.52	<2.56	<2.08	<2.14	<0.042
123478-hexachlorodibenzo-p-dioxin	<0.17	<0.28	<0.23	<0.23	<0.0046
123678-hexachlorodibenzo-p-dioxin	<0.25	<0.43	<0.35	<0.36	<0.0070
123789-hexachlorodibenzo-p-dioxin	<0.18	<0.31	<0.25	<0.26	<0.0051
1234678-heptachlorodibenzo-p-dioxin	<0.16	<0.27	<0.22	<0.23	<0.0045
Octachlorodibenzo-p-dioxin	0.012	0.021	0.017	0.017	0.00034
2378-tetrachlorodibenzofuran	<0.19	<0.32	<0.26	<0.27	<0.0053
12378-pentachlorodibenzofuran	<0.039	<0.066	<0.054	<0.055	<0.0011
23478-pentachlorodibenzofuran	<0.37	<0.62	<0.51	<0.52	<0.010
123478-hexachlorodibenzofuran	<0.12	<0.21	<0.17	<0.17	<0.0034
123678-hexachlorodibenzofuran	<0.12	<0.21	<0.17	<0.17	<0.0034
234678-hexachlorodibenzofuran	<0.15	<0.26	<0.21	<0.22	<0.0043
123789-hexachlorodibenzofuran	<0.15	<0.25	<0.21	<0.21	<0.0042
1234678-heptachlorodibenzofuran	<0.037	<0.062	<0.050	<0.052	<0.0010
1234789-heptachlorodibenzofuran	<0.020	<0.034	<0.027	<0.028	<0.00055
Octachlorodibenzofuran	<0.0015	<0.0026	<0.0021	<0.0022	<0.000042
PCB 81	<0.00073	<0.0012	<0.0010	<0.0010	<0.000020
PCB 77	0.0051	0.0086	0.0070	0.0072	0.00014
PCB 123	<0.00037	<0.00063	<0.00051	<0.00053	<0.000010
PCB 118	0.026	0.043	0.035	0.036	0.00071
PCB 114	0.00062	0.0011	0.00086	0.00088	0.000017
PCB 105	0.0071	0.012	0.0097	0.010	0.00020
PCB 126	<0.33	<0.55	<0.45	<0.46	<0.0090
PCB 167	<0.00020	<0.00034	<0.00028	<0.00028	<0.0000056
PCB 156/157	<0.00043	<0.00073	<0.00059	<0.00061	<0.000012
PCB 169	<0.044	<0.074	<0.060	<0.062	<0.0012
PCB 189	<0.000023	<0.000038	<0.000031	<0.000032	<0.00000062
Total Dioxins & Furans Only	<5.27	<8.88	<7.23	<7.43	<0.15
Total PCBs Only	<0.41	<0.69	<0.56	<0.58	<0.011
Total Dioxins & Furans and PCBs	<5.68	<9.57	<7.80	<8.01	<0.16

* At 25°C and 1 atmosphere

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

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

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

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

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg TEQ/m³	pg TEQ/Rm³*	pg TEQ/Rm³**	pg TEQ/Rm³*	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.88	1.49	1.21	1.25	0.024
12378-pentachlorodibenzo-p-dioxin	0.76	1.28	1.04	1.07	0.021
123478-hexachlorodibenzo-p-dioxin	0.12	0.19	0.16	0.16	0.0032
123678-hexachlorodibenzo-p-dioxin	0.18	0.30	0.24	0.25	0.0049
123789-hexachlorodibenzo-p-dioxin	0.12	0.20	0.16	0.17	0.0033
1234678-heptachlorodibenzo-p-dioxin	0.15	0.25	0.20	0.21	0.0041
Octachlorodibenzo-p-dioxin	0.012	0.021	0.017	0.017	0.00034
2378-tetrachlorodibenzofuran	0.096	0.16	0.13	0.13	0.0026
12378-pentachlorodibenzofuran	0.026	0.044	0.036	0.037	0.00073
23478-pentachlorodibenzofuran	0.18	0.31	0.25	0.26	0.0051
123478-hexachlorodibenzofuran	0.075	0.13	0.10	0.11	0.0021
123678-hexachlorodibenzofuran	0.079	0.13	0.11	0.11	0.0022
234678-hexachlorodibenzofuran	0.12	0.21	0.17	0.17	0.0034
123789-hexachlorodibenzofuran	0.11	0.19	0.16	0.16	0.0032
1234678-heptachlorodibenzofuran	0.027	0.045	0.037	0.038	0.00075
1234789-heptachlorodibenzofuran	0.010	0.017	0.014	0.014	0.00028
Octachlorodibenzofuran	0.00076	0.0013	0.0010	0.0011	0.000021
PCB 81	0.00045	0.00076	0.00062	0.00064	0.000013
PCB 77	0.0051	0.0086	0.0070	0.0072	0.00014
PCB 123	0.00029	0.00048	0.00039	0.00041	0.0000080
PCB 118	0.026	0.043	0.035	0.036	0.00071
PCB 114	0.00062	0.0011	0.00086	0.00088	0.000017
PCB 105	0.0071	0.012	0.0097	0.010	0.00020
PCB 126	0.29	0.49	0.40	0.41	0.0081
PCB 167	0.00017	0.00028	0.00023	0.00024	0.0000047
PCB 156/157	0.00041	0.00069	0.00056	0.00058	0.000011
PCB 169	0.022	0.037	0.030	0.031	0.00060
PCB 189	0.000011	0.000019	0.000015	0.000016	0.00000031
Total Dioxins & Furans Only	2.95	4.97	4.05	4.16	0.082
Total PCBs Only	0.35	0.60	0.49	0.50	0.0098
Total Dioxins & Furans and PCBs	3.30	5.57	4.53	4.66	0.091

* At 25°C and 1 atmosphere

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

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1210	139	236	191	197	3.85
1,3-Dichlorobenzene	161	18.6	31.4	25.5	26.3	0.51
1,4-Dichlorobenzene	147	16.9	28.7	23.3	24.0	0.47
1,2-Dichlorobenzene	119	13.7	23.2	18.8	19.4	0.38
Total Dichlorobenzene	427	49.2	83.3	67.6	69.6	1.36
1,3,5-trichlorobenzene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
1,2,4-trichlorobenzene	27.8	3.20	5.42	4.40	4.53	0.088
1,2,3-trichlorobenzene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Total Trichlorobenzene	<51.8	<5.97	<10.1	<8.20	<8.45	<0.16
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.38	<2.34	<1.90	<1.96	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Total Tetrachlorobenzene	<24.0	<2.77	<4.68	<3.80	<3.91	<0.076
Pentachlorobenzene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Hexachlorobenzene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Total Chlorobenzenes	<1737	<200	<339	<275	<283	<5.52

Dry Gas Volume Sampled (Rm^3*) :	5.125
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1030	117	197	160	165	3.26
1,3-Dichlorobenzene	122	13.8	23.4	19.0	19.6	0.39
1,4-Dichlorobenzene	119	13.5	22.8	18.5	19.1	0.38
1,2-Dichlorobenzene	86.9	9.85	16.7	13.5	14.0	0.27
Total Dichlorobenzene	328	37.2	62.9	51.1	52.6	1.04
1,3,5-trichlorobenzene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
1,2,4-trichlorobenzene	25.1	2.85	4.81	3.91	4.03	0.079
1,2,3-trichlorobenzene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Total Trichlorobenzene	<49.1	<5.57	<9.41	<7.65	<7.88	<0.16
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.36	<2.30	<1.87	<1.93	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Total Tetrachlorobenzene	<24.0	<2.72	<4.60	<3.74	<3.85	<0.076
Pentachlorobenzene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Hexachlorobenzene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Total Chlorobenzenes	<1455	<165	<279	<227	<234	<4.60

Dry Gas Volume Sampled (Rm^3*) :	5.217
Actual Flowrate (m^3/s) :	27.9
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	20.3
Wet Reference Flowrate (Rm^3/s*) :	19.7

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1410	162	273	223	229	4.48
1,3-Dichlorobenzene	150	17.3	29.1	23.7	24.3	0.48
1,4-Dichlorobenzene	135	15.6	26.2	21.4	21.9	0.43
1,2-Dichlorobenzene	102	11.8	19.8	16.1	16.6	0.32
Total Dichlorobenzene	387	44.6	75.1	61.2	62.8	1.23
1,3,5-trichlorobenzene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
1,2,4-trichlorobenzene	25.1	2.89	4.87	3.97	4.07	0.080
1,2,3-trichlorobenzene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Total Trichlorobenzene	<49.1	<5.66	<9.52	<7.77	<7.97	<0.16
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.38	<2.33	<1.90	<1.95	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Total Tetrachlorobenzene	<24.0	<2.77	<4.65	<3.80	<3.89	<0.076
Pentachlorobenzene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Hexachlorobenzene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Total Chlorobenzenes	<1894	<218	<367	<300	<307	<6.02

Dry Gas Volume Sampled (Rm^3*) :	5.156
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	19.6

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	139	117	162	140	16.4
1,3-Dichlorobenzene	18.6	13.8	17.3	16.6	14.8
1,4-Dichlorobenzene	16.9	13.5	15.6	15.3	11.3
1,2-Dichlorobenzene	13.7	9.85	11.8	11.8	16.4
Total Dichlorobenzene	49.2	37.2	44.6	43.7	13.9
1,3,5-trichlorobenzene	<1.38	<1.36	<1.38	<1.38	0.9
1,2,4-trichlorobenzene	3.20	2.85	2.89	2.98	6.5
1,2,3-trichlorobenzene	<1.38	<1.36	<1.38	<1.38	0.9
Total Trichlorobenzene	<5.97	<5.57	<5.66	<5.73	3.7
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.38	<1.36	<1.38	<1.38	0.9
1,2,3,4-tetrachlorobenzene	<1.38	<1.36	<1.38	<1.38	0.9
Total Tetrachlorobenzene	<2.77	<2.72	<2.77	<2.75	0.9
Pentachlorobenzene	<1.38	<1.36	<1.38	<1.38	0.9
Hexachlorobenzene	<1.38	<1.36	<1.38	<1.38	0.9
Total Chlorobenzenes	<200	<165	<218	<194	13.9

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

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	236	197	273	236	16.1
1,3-Dichlorobenzene	31.4	23.4	29.1	28.0	14.8
1,4-Dichlorobenzene	28.7	22.8	26.2	25.9	11.4
1,2-Dichlorobenzene	23.2	16.7	19.8	19.9	16.5
Total Dichlorobenzene	83.3	62.9	75.1	73.7	14.0
1,3,5-trichlorobenzene	<2.34	<2.30	<2.33	<2.32	0.9
1,2,4-trichlorobenzene	5.42	4.81	4.87	5.03	6.7
1,2,3-trichlorobenzene	<2.34	<2.30	<2.33	<2.32	0.9
Total Trichlorobenzene	<10.1	<9.41	<9.52	<9.68	3.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.34	<2.30	<2.33	<2.32	0.9
1,2,3,4-tetrachlorobenzene	<2.34	<2.30	<2.33	<2.32	0.9
Total Tetrachlorobenzene	<4.68	<4.60	<4.65	<4.65	0.9
Pentachlorobenzene	<2.34	<2.30	<2.33	<2.32	0.9
Hexachlorobenzene	<2.34	<2.30	<2.33	<2.32	0.9
Total Chlorobenzenes	<339	<279	<367	<328	13.8

* At 25°C and 1 atmosphere

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

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	%
Monochlorobenzene	191	160	223	192	16.3
1,3-Dichlorobenzene	25.5	19.0	23.7	22.7	14.7
1,4-Dichlorobenzene	23.3	18.5	21.4	21.1	11.3
1,2-Dichlorobenzene	18.8	13.5	16.1	16.2	16.4
Total Dichlorobenzene	67.6	51.1	61.2	60.0	13.9
1,3,5-trichlorobenzene	<1.90	<1.87	<1.90	<1.89	0.9
1,2,4-trichlorobenzene	4.40	3.91	3.97	4.09	6.5
1,2,3-trichlorobenzene	<1.90	<1.87	<1.90	<1.89	0.9
Total Trichlorobenzene	<8.20	<7.65	<7.77	<7.87	3.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.90	<1.87	<1.90	<1.89	0.9
1,2,3,4-tetrachlorobenzene	<1.90	<1.87	<1.90	<1.89	0.9
Total Tetrachlorobenzene	<3.80	<3.74	<3.80	<3.78	0.9
Pentachlorobenzene	<1.90	<1.87	<1.90	<1.89	0.9
Hexachlorobenzene	<1.90	<1.87	<1.90	<1.89	0.9
Total Chlorobenzenes	<275	<227	<300	<267	13.9

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

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

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	197	165	229	197	16.1
1,3-Dichlorobenzene	26.3	19.6	24.3	23.4	14.7
1,4-Dichlorobenzene	24.0	19.1	21.9	21.7	11.3
1,2-Dichlorobenzene	19.4	14.0	16.6	16.6	16.4
Total Dichlorobenzene	69.6	52.6	62.8	61.7	13.9
1,3,5-trichlorobenzene	<1.96	<1.93	<1.95	<1.94	0.8
1,2,4-trichlorobenzene	4.53	4.03	4.07	4.21	6.6
1,2,3-trichlorobenzene	<1.96	<1.93	<1.95	<1.94	0.8
Total Trichlorobenzene	<8.45	<7.88	<7.97	<8.10	3.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.96	<1.93	<1.95	<1.94	0.8
1,2,3,4-tetrachlorobenzene	<1.96	<1.93	<1.95	<1.94	0.8
Total Tetrachlorobenzene	<3.91	<3.85	<3.89	<3.89	0.8
Pentachlorobenzene	<1.96	<1.93	<1.95	<1.94	0.8
Hexachlorobenzene	<1.96	<1.93	<1.95	<1.94	0.8
Total Chlorobenzenes	<283	<234	<307	<275	13.7

* At 25°C and 1 atmosphere

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

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
Monochlorobenzene	3.85	3.26	4.48	3.86	15.9
1,3-Dichlorobenzene	0.51	0.39	0.48	0.46	14.2
1,4-Dichlorobenzene	0.47	0.38	0.43	0.42	10.8
1,2-Dichlorobenzene	0.38	0.27	0.32	0.33	15.9
Total Dichlorobenzene	1.36	1.04	1.23	1.21	13.4
1,3,5-trichlorobenzene	<0.038	<0.038	<0.038	<0.038	0.3
1,2,4-trichlorobenzene	0.088	0.079	0.080	0.083	6.2
1,2,3-trichlorobenzene	<0.038	<0.038	<0.038	<0.038	0.3
Total Trichlorobenzene	<0.16	<0.16	<0.16	<0.16	3.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.038	<0.038	<0.038	<0.038	0.3
1,2,3,4-tetrachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.3
Total Tetrachlorobenzene	<0.076	<0.076	<0.076	<0.076	0.3
Pentachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.3
Hexachlorobenzene	<0.038	<0.038	<0.038	<0.038	0.3
Total Chlorobenzenes	<5.52	<4.60	<6.02	<5.38	13.4

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

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	140	236	192	197	3.86
1,3-Dichlorobenzene	16.6	28.0	22.7	23.4	0.46
1,4-Dichlorobenzene	15.3	25.9	21.1	21.7	0.42
1,2-Dichlorobenzene	11.8	19.9	16.2	16.6	0.33
Total Dichlorobenzene	43.7	73.7	60.0	61.7	1.21
1,3,5-trichlorobenzene	<1.38	<2.32	<1.89	<1.94	<0.038
1,2,4-trichlorobenzene	2.98	5.03	4.09	4.21	0.083
1,2,3-trichlorobenzene	<1.38	<2.32	<1.89	<1.94	<0.038
Total Trichlorobenzene	<5.73	<9.68	<7.87	<8.10	<0.16
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.38	<2.32	<1.89	<1.94	<0.038
1,2,3,4-tetrachlorobenzene	<1.38	<2.32	<1.89	<1.94	<0.038
Total Tetrachlorobenzene	<2.75	<4.65	<3.78	<3.89	<0.076
Pentachlorobenzene	<1.38	<2.32	<1.89	<1.94	<0.038
Hexachlorobenzene	<1.38	<2.32	<1.89	<1.94	<0.038
Total Chlorobenzenes	<194	<328	<267	<275	<5.38

* At 25°C and 1 atmosphere

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

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

Isomers and Congener Group Totals	Blank Train Total ng	Method Blank Total ng
Monochlorobenzene	<12	12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	30.7	32.6
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<54.7	<56.6
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	<151	<153

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
3-monochlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
4-monochlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
Total Monochlorophenols	<180	<20.7	<35.1	<28.5	<29.4	<0.57
2,6-dichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
2,4 & 2,5-dichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
3,5-dichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
2,3-dichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
3,4-dichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
Total Dichlorophenols	<300	<34.6	<58.5	<47.5	<48.9	<0.95
2,4,6-trichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
2,3,6-trichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
2,3,5-trichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
2,4,5-trichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
2,3,4-trichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
3,4,5-trichlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
Total Trichlorophenols	<360	<41.5	<70.2	<57.0	<58.7	<1.14
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
2,3,4,5-tetrachlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
Total Tetrachlorophenols	<120	<13.8	<23.4	<19.0	<19.6	<0.38
Pentachlorophenol	<60	<6.91	<11.7	<9.49	<9.79	<0.19
Total Chlorophenols	<1020	<118	<199	<161	<166	<3.24

Dry Gas Volume Sampled (Rm^3*) :	5.125
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

TABLE 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	<6.80	<11.5	<9.35	<9.63	<0.19
3-monochlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
4-monochlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
Total Monochlorophenols	<180	<20.4	<34.5	<28.0	<28.9	<0.57
2,6-dichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
2,4 & 2,5-dichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
3,5-dichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
2,3-dichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
3,4-dichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
Total Dichlorophenols	<300	<34.0	<57.5	<46.7	<48.2	<0.95
2,4,6-trichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
2,3,6-trichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
2,3,5-trichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
2,4,5-trichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
2,3,4-trichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
3,4,5-trichlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
Total Trichlorophenols	<360	<40.8	<69.0	<56.1	<57.8	<1.14
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
2,3,4,5-tetrachlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
Total Tetrachlorophenols	<120	<13.6	<23.0	<18.7	<19.3	<0.38
Pentachlorophenol	<60	<6.80	<11.5	<9.35	<9.63	<0.19
Total Chlorophenols	<1020	<116	<196	<159	<164	<3.23

Dry Gas Volume Sampled (Rm³*) :	5.217
Actual Flowrate (m³/s) :	27.9
Dry Reference Flowrate (Rm³/s*) :	16.5
Dry Adjusted Flowrate (Rm³/s**) :	20.3
Wet Reference Flowrate (Rm³/s*) :	19.7

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
3-monochlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
4-monochlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
Total Monochlorophenols	<180	<20.7	<34.9	<28.5	<29.2	<0.57
2,6-dichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
2,4 & 2,5-dichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
3,5-dichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
2,3-dichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
3,4-dichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
Total Dichlorophenols	<300	<34.6	<58.2	<47.5	<48.7	<0.95
2,4,6-trichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
2,3,6-trichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
2,3,5-trichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
2,4,5-trichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
2,3,4-trichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
3,4,5-trichlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
Total Trichlorophenols	<360	<41.5	<69.8	<57.0	<58.4	<1.15
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
2,3,4,5-tetrachlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
Total Tetrachlorophenols	<120	<13.8	<23.3	<19.0	<19.5	<0.38
Pentachlorophenol	<60	<6.91	<11.6	<9.49	<9.74	<0.19
Total Chlorophenols	<1020	<118	<198	<161	<166	<3.24

Dry Gas Volume Sampled (Rm^3*) :	5.156
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	19.6

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
3-monochlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
4-monochlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
Total Monochlorophenols	<20.7	<20.4	<20.7	<20.6	0.9
2,6-dichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
2,4 & 2,5-dichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
3,5-dichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
2,3-dichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
3,4-dichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
Total Dichlorophenols	<34.6	<34.0	<34.6	<34.4	0.9
2,4,6-trichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
2,3,6-trichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
2,3,5-trichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
2,4,5-trichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
2,3,4-trichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
3,4,5-trichlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
Total Trichlorophenols	<41.5	<40.8	<41.5	<41.3	0.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
2,3,4,5-tetrachlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
Total Tetrachlorophenols	<13.8	<13.6	<13.8	<13.8	0.9
Pentachlorophenol	<6.91	<6.80	<6.91	<6.88	0.9
Total Chlorophenols	<118	<116	<118	<117	0.9

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

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
3-monochlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
4-monochlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
Total Monochlorophenols	<35.1	<34.5	<34.9	<34.8	0.9
2,6-dichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
2,4 & 2,5-dichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
3,5-dichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
2,3-dichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
3,4-dichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
Total Dichlorophenols	<58.5	<57.5	<58.2	<58.1	0.9
2,4,6-trichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
2,3,6-trichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
2,3,5-trichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
2,4,5-trichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
2,3,4-trichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
3,4,5-trichlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
Total Trichlorophenols	<70.2	<69.0	<69.8	<69.7	0.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
2,3,4,5-tetrachlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
Total Tetrachlorophenols	<23.4	<23.0	<23.3	<23.2	0.9
Pentachlorophenol	<11.7	<11.5	<11.6	<11.6	0.9
Total Chlorophenols	<199	<196	<198	<197	0.9

* At 25°C and 1 atmosphere

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

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
3-monochlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
4-monochlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
Total Monochlorophenols	<28.5	<28.0	<28.5	<28.3	0.9
2,6-dichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
2,4 & 2,5-dichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
3,5-dichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
2,3-dichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
3,4-dichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
Total Dichlorophenols	<47.5	<46.7	<47.5	<47.2	0.9
2,4,6-trichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
2,3,6-trichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
2,3,5-trichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
2,4,5-trichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
2,3,4-trichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
3,4,5-trichlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
Total Trichlorophenols	<57.0	<56.1	<57.0	<56.7	0.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
2,3,4,5-tetrachlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
Total Tetrachlorophenols	<19.0	<18.7	<19.0	<18.9	0.9
Pentachlorophenol	<9.49	<9.35	<9.49	<9.45	0.9
Total Chlorophenols	<161	<159	<161	<161	0.9

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

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

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
3-monochlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
4-monochlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
Total Monochlorophenols	<29.4	<28.9	<29.2	<29.2	0.8
2,6-dichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
2,4 & 2,5-dichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
3,5-dichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
2,3-dichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
3,4-dichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
Total Dichlorophenols	<48.9	<48.2	<48.7	<48.6	0.8
2,4,6-trichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
2,3,6-trichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
2,3,5-trichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
2,4,5-trichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
2,3,4-trichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
3,4,5-trichlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
Total Trichlorophenols	<58.7	<57.8	<58.4	<58.3	0.8
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
2,3,4,5-tetrachlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
Total Tetrachlorophenols	<19.6	<19.3	<19.5	<19.4	0.8
Pentachlorophenol	<9.79	<9.63	<9.74	<9.72	0.8
Total Chlorophenols	<166	<164	<166	<165	0.8

* At 25°C and 1 atmosphere

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

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
3-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
4-monochlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
Total Monochlorophenols	<0.57	<0.57	<0.57	<0.57	0.3
2,6-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,4 & 2,5-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
3,5-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,3-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
3,4-dichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
Total Dichlorophenols	<0.95	<0.95	<0.95	<0.95	0.3
2,4,6-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,3,6-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,3,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,4,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,3,4-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
3,4,5-trichlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
Total Trichlorophenols	<1.14	<1.14	<1.15	<1.14	0.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
2,3,4,5-tetrachlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
Total Tetrachlorophenols	<0.38	<0.38	<0.38	<0.38	0.3
Pentachlorophenol	<0.19	<0.19	<0.19	<0.19	0.3
Total Chlorophenols	<3.24	<3.23	<3.24	<3.24	0.3

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

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
3-monochlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
4-monochlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
Total Monochlorophenols	<20.6	<34.8	<28.3	<29.2	<0.57
2,6-dichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
2,4 & 2,5-dichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
3,5-dichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
2,3-dichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
3,4-dichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
Total Dichlorophenols	<34.4	<58.1	<47.2	<48.6	<0.95
2,4,6-trichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
2,3,6-trichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
2,3,5-trichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
2,4,5-trichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
2,3,4-trichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
3,4,5-trichlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
Total Trichlorophenols	<41.3	<69.7	<56.7	<58.3	<1.14
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
2,3,4,5-tetrachlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
Total Tetrachlorophenols	<13.8	<23.2	<18.9	<19.4	<0.38
Pentachlorophenol	<6.88	<11.6	<9.45	<9.72	<0.19
Total Chlorophenols	<117	<197	<161	<165	<3.24

* At 25°C and 1 atmosphere

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

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

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

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

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

Compound	Total Collected	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	<1.38	<2.34	<1.90	<1.96	<0.038
Acenaphthylene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Anthracene	16.5	1.90	3.22	2.61	2.69	0.052
Benzo(a)Anthracene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Benzo(b)Fluoranthene	16.6	1.91	3.24	2.63	2.71	0.053
Benzo(k)Fluoranthene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Benzo(a)fluorene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Benzo(b)fluorene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Benzo(g,h,i)Perylene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Benzo(a)Pyrene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Benzo(e)Pyrene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Biphenyl	56.6	6.52	11.0	8.96	9.23	0.18
2-Chloronaphthalene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Chrysene/Triphenylene	21.8	2.51	4.25	3.45	3.56	0.069
Coronene	<60	<6.91	<11.7	<9.49	<9.79	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Dibenzo(a,e)pyrene	<60	<6.91	<11.7	<9.49	<9.79	<0.19
9,10-dimethylanthracene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Fluoranthene	151	17.4	29.5	23.9	24.6	0.48
Fluorene	48.8	5.62	9.52	7.72	7.96	0.16
Indeno(1,2,3-cd)Pyrene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
2-methylanthracene	33.1	3.81	6.46	5.24	5.40	0.11
3-Methylcholanthrene	<60	<6.91	<11.7	<9.49	<9.79	<0.19
1-Methylnaphthalene	35.6	4.10	6.95	5.63	5.81	0.11
2-Methylnaphthalene	64.3	7.41	12.5	10.2	10.5	0.20
1-Methylphenanthrene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
9-Methylphenanthrene	87.2	10.0	17.0	13.8	14.2	0.28
Naphthalene	237	27.3	46.2	37.5	38.7	0.75
Perylene	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Phenanthrene	943	109	184	149	154	3.00
Picene	<60	<6.91	<11.7	<9.49	<9.79	<0.19
Pyrene	129	14.9	25.2	20.4	21.0	0.41
Tetralin	77.2	8.90	15.1	12.2	12.6	0.25
m-terphenyl	<12	<1.38	<2.34	<1.90	<1.96	<0.038
o-Terphenyl	17.5	2.02	3.41	2.77	2.85	0.056
p-terphenyl	<12	<1.38	<2.34	<1.90	<1.96	<0.038
Total	<2391	<276	<467	<378	<390	<7.61

Dry Gas Volume Sampled (Rm³*) :	5.125
Actual Flowrate (m³/s) :	27.6
Dry Reference Flowrate (Rm³/s*) :	16.3
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	31.0	3.51	5.94	4.83	4.98	0.098
Acenaphthylene	162	18.4	31.1	25.2	26.0	0.51
Anthracene	14.8	1.68	2.84	2.31	2.38	0.047
Benzo(a)Anthracene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Benzo(b)Fluoranthene	41.9	4.75	8.03	6.53	6.73	0.13
Benzo(k)Fluoranthene	17.9	2.03	3.43	2.79	2.87	0.057
Benzo(a)fluorene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Benzo(b)fluorene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Benzo(g,h,i)Perylene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Benzo(a)Pyrene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Benzo(e)Pyrene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Biphenyl	132	15.0	25.3	20.6	21.2	0.42
2-Chloronaphthalene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Chrysene/Triphenylene	53.6	6.08	10.3	8.35	8.61	0.17
Coronene	<60	<6.80	<11.5	<9.35	<9.63	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Dibenzo(a,e)pyrene	<60	<6.80	<11.5	<9.35	<9.63	<0.19
9,10-dimethylanthracene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Fluoranthene	119	13.5	22.8	18.5	19.1	0.38
Fluorene	68.3	7.74	13.1	10.6	11.0	0.22
Indeno(1,2,3-cd)Pyrene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
2-methylanthracene	34.0	3.85	6.52	5.30	5.46	0.11
3-Methylcholanthrene	<60	<6.80	<11.5	<9.35	<9.63	<0.19
1-Methylnaphthalene	210	23.8	40.3	32.7	33.7	0.66
2-Methylnaphthalene	290	32.9	55.6	45.2	46.6	0.92
1-Methylphenanthrene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
9-Methylphenanthrene	84.2	9.54	16.1	13.1	13.5	0.27
Naphthalene	2490	282	477	388	400	7.88
Perylene	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Phenanthrene	819	93	157	128	131	2.59
Picene	<60	<6.80	<11.5	<9.35	<9.63	<0.19
Pyrene	73.8	8.37	14.1	11.5	11.8	0.23
Tetralin	88.8	10.1	17.0	13.8	14.3	0.28
m-terphenyl	14.8	1.68	2.84	2.31	2.38	0.047
o-Terphenyl	<12	<1.36	<2.30	<1.87	<1.93	<0.038
p-terphenyl	<12	<1.36	<2.30	<1.87	<1.93	<0.038
Total	<5165	<586	<990	<805	<829	<16.3

Dry Gas Volume Sampled (Rm³*) :	5.217
Actual Flowrate (m³/s) :	27.9
Dry Reference Flowrate (Rm³/s*) :	16.5
Dry Adjusted Flowrate (Rm³/s**) :	20.3
Wet Reference Flowrate (Rm³/s*) :	19.7

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	22.0	2.54	4.27	3.48	3.57	0.070
Acenaphthylene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Anthracene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Benzo(a)Anthracene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Benzo(b)Fluoranthene	30.6	3.53	5.93	4.84	4.97	0.097
Benzo(k)Fluoranthene	22.0	2.54	4.27	3.48	3.57	0.070
Benzo(a)fluorene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Benzo(b)fluorene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Benzo(g,h,i)Perylene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Benzo(a)Pyrene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Benzo(e)Pyrene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Biphenyl	67.6	7.79	13.1	10.7	11.0	0.22
2-Chloronaphthalene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Chrysene/Triphenylene	16.6	1.91	3.22	2.63	2.69	0.053
Coronene	<60	<6.91	<11.6	<9.49	<9.74	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Dibenzo(a,e)pyrene	<60	<6.91	<11.6	<9.49	<9.74	<0.19
9,10-dimethylanthracene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Fluoranthene	47.0	5.42	9.12	7.44	7.63	0.15
Fluorene	13.5	1.56	2.62	2.14	2.19	0.043
Indeno(1,2,3-cd)Pyrene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
2-methylanthracene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
3-Methylcholanthrene	<60	<6.91	<11.6	<9.49	<9.74	<0.19
1-Methylnaphthalene	29.7	3.42	5.76	4.70	4.82	0.094
2-Methylnaphthalene	44.2	5.09	8.57	6.99	7.17	0.14
1-Methylphenanthrene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
9-Methylphenanthrene	13.3	1.53	2.58	2.10	2.16	0.042
Naphthalene	495	57.0	96.0	78.3	80.3	1.57
Perylene	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Phenanthrene	137	15.8	26.6	21.7	22.2	0.44
Picene	<60	<6.91	<11.6	<9.49	<9.74	<0.19
Pyrene	75.8	8.74	14.7	12.0	12.3	0.24
Tetralin	89.3	10.3	17.3	14.1	14.5	0.28
m-terphenyl	<12	<1.38	<2.33	<1.90	<1.95	<0.038
o-Terphenyl	<12	<1.38	<2.33	<1.90	<1.95	<0.038
p-terphenyl	<12	<1.38	<2.33	<1.90	<1.95	<0.038
Total	<1572	<181	<305	<249	<255	<5.00

Dry Gas Volume Sampled (Rm³*) :	5.156
Actual Flowrate (m³/s) :	27.6
Dry Reference Flowrate (Rm³/s*) :	16.4
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	19.6

* At 25°C and 1 atmosphere

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

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

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

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<1.38	3.51	2.54	<2.48	43.1
Acenaphthylene	<1.38	18.4	<1.38	<7.04	139
Anthracene	1.90	1.68	<1.38	<1.65	15.7
Benzo(a)Anthracene	<1.38	<1.36	<1.38	<1.38	0.9
Benzo(b)Fluoranthene	1.91	4.75	3.53	3.40	41.9
Benzo(k)Fluoranthene	<1.38	2.03	2.54	<1.98	29.1
Benzo(a)fluorene	<1.38	<1.36	<1.38	<1.38	0.9
Benzo(b)fluorene	<1.38	<1.36	<1.38	<1.38	0.9
Benzo(g,h,i)Perylene	<1.38	<1.36	<1.38	<1.38	0.9
Benzo(a)Pyrene	<1.38	<1.36	<1.38	<1.38	0.9
Benzo(e)Pyrene	<1.38	<1.36	<1.38	<1.38	0.9
Biphenyl	6.52	15.0	7.79	9.76	46.6
2-Chloronaphthalene	<1.38	<1.36	<1.38	<1.38	0.9
Chrysene/Triphenylene	2.51	6.08	1.91	3.50	64.3
Coronene	<6.91	<6.80	<6.91	<6.88	0.9
Dibenzo(a,c/a,h)Anthracene	<1.38	<1.36	<1.38	<1.38	0.9
Dibenzo(a,e)pyrene	<6.91	<6.80	<6.91	<6.88	0.9
9,10-dimethylanthracene	<1.38	<1.36	<1.38	<1.38	0.9
7,12-Dimethylbenzo(a)anthracene	<1.38	<1.36	<1.38	<1.38	0.9
Fluoranthene	17.4	13.5	5.42	12.1	50.5
Fluorene	5.62	7.74	1.56	4.97	63.2
Indeno(1,2,3-cd)Pyrene	<1.38	<1.36	<1.38	<1.38	0.9
2-methylanthracene	3.81	3.85	<1.38	<3.02	46.9
3-Methylcholanthrene	<6.91	<6.80	<6.91	<6.88	0.9
1-Methylnaphthalene	4.10	23.8	3.42	10.4	111
2-Methylnaphthalene	7.41	32.9	5.09	15.1	102
1-Methylphenanthrene	<1.38	<1.36	<1.38	<1.38	0.9
9-Methylphenanthrene	10.0	9.54	1.53	7.04	67.8
Naphthalene	27.3	282	57.0	122	114
Perylene	<1.38	<1.36	<1.38	<1.38	0.9
Phenanthrene	109	92.8	15.8	72.4	68.6
Picene	<6.91	<6.80	<6.91	<6.88	0.9
Pyrene	14.9	8.37	8.74	10.7	34.3
Tetralin	8.90	10.1	10.3	9.75	7.7
m-terphenyl	<1.38	1.68	<1.38	<1.48	11.5
o-Terphenyl	2.02	<1.36	<1.38	<1.59	23.5
p-terphenyl	<1.38	<1.36	<1.38	<1.38	0.9
Total	<276	<586	<181	<347	60.9

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

Compound	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.34	5.94	4.27	<4.18	43.1
Acenaphthylene	<2.34	31.1	<2.33	<11.9	139
Anthracene	3.22	2.84	<2.33	<2.79	16.0
Benzo(a)Anthracene	<2.34	<2.30	<2.33	<2.32	0.9
Benzo(b)Fluoranthene	3.24	8.03	5.93	5.74	41.9
Benzo(k)Fluoranthene	<2.34	3.43	4.27	<3.35	28.9
Benzo(a)fluorene	<2.34	<2.30	<2.33	<2.32	0.9
Benzo(b)fluorene	<2.34	<2.30	<2.33	<2.32	0.9
Benzo(g,h,i)Perylene	<2.34	<2.30	<2.33	<2.32	0.9
Benzo(a)Pyrene	<2.34	<2.30	<2.33	<2.32	0.9
Benzo(e)Pyrene	<2.34	<2.30	<2.33	<2.32	0.9
Biphenyl	11.0	25.3	13.1	16.5	46.7
2-Chloronaphthalene	<2.34	<2.30	<2.33	<2.32	0.9
Chrysene/Triphenylene	4.25	10.3	3.22	5.92	64.4
Coronene	<11.7	<11.5	<11.6	<11.6	0.9
Dibenzo(a,c/a,h)Anthracene	<2.34	<2.30	<2.33	<2.32	0.9
Dibenzo(a,e)pyrene	<11.7	<11.5	<11.6	<11.6	0.9
9,10-dimethylanthracene	<2.34	<2.30	<2.33	<2.32	0.9
7,12-Dimethylbenzo(a)anthracene	<2.34	<2.30	<2.33	<2.32	0.9
Fluoranthene	29.5	22.8	9.12	20.5	50.7
Fluorene	9.52	13.1	2.62	8.41	63.3
Indeno(1,2,3-cd)Pyrene	<2.34	<2.30	<2.33	<2.32	0.9
2-methylanthracene	6.46	6.52	<2.33	<5.10	47.1
3-Methylcholanthrene	<11.7	<11.5	<11.6	<11.6	0.9
1-Methylnaphthalene	6.95	40.3	5.76	17.7	111
2-Methylnaphthalene	12.5	55.6	8.57	25.6	102
1-Methylphenanthrene	<2.34	<2.30	<2.33	<2.32	0.9
9-Methylphenanthrene	17.0	16.1	2.58	11.9	67.9
Naphthalene	46.2	477	96.0	207	114
Perylene	<2.34	<2.30	<2.33	<2.32	0.9
Phenanthrene	184	157	26.6	123	68.7
Picene	<11.7	<11.5	<11.6	<11.6	0.9
Pyrene	25.2	14.1	14.7	18.0	34.5
Tetralin	15.1	17.0	17.3	16.5	7.4
m-terphenyl	<2.34	2.84	<2.33	<2.50	11.6
o-Terphenyl	3.41	<2.30	<2.33	<2.68	23.7
p-terphenyl	<2.34	<2.30	<2.33	<2.32	0.9
Total	<467	<990	<305	<587	61.0

* 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 of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.90	4.83	3.48	<3.40	43.1
Acenaphthylene	<1.90	25.2	<1.90	<9.68	139
Anthracene	2.61	2.31	<1.90	<2.27	15.7
Benzo(a)Anthracene	<1.90	<1.87	<1.90	<1.89	0.9
Benzo(b)Fluoranthene	2.63	6.53	4.84	4.67	41.9
Benzo(k)Fluoranthene	<1.90	2.79	3.48	<2.72	29.1
Benzo(a)fluorene	<1.90	<1.87	<1.90	<1.89	0.9
Benzo(b)fluorene	<1.90	<1.87	<1.90	<1.89	0.9
Benzo(g,h,i)Perylene	<1.90	<1.87	<1.90	<1.89	0.9
Benzo(a)Pyrene	<1.90	<1.87	<1.90	<1.89	0.9
Benzo(e)Pyrene	<1.90	<1.87	<1.90	<1.89	0.9
Biphenyl	8.96	20.6	10.7	13.4	46.7
2-Chloronaphthalene	<1.90	<1.87	<1.90	<1.89	0.9
Chrysene/Triphenylene	3.45	8.35	2.63	4.81	64.4
Coronene	<9.49	<9.35	<9.49	<9.45	0.9
Dibenzo(a,c/a,h)Anthracene	<1.90	<1.87	<1.90	<1.89	0.9
Dibenzo(a,e)pyrene	<9.49	<9.35	<9.49	<9.45	0.9
9,10-dimethylanthracene	<1.90	<1.87	<1.90	<1.89	0.9
7,12-Dimethylbenzo(a)anthracene	<1.90	<1.87	<1.90	<1.89	0.9
Fluoranthene	23.9	18.5	7.44	16.6	50.5
Fluorene	7.72	10.6	2.14	6.83	63.2
Indeno(1,2,3-cd)Pyrene	<1.90	<1.87	<1.90	<1.89	0.9
2-methylanthracene	5.24	5.30	<1.90	<4.14	46.9
3-Methylcholanthrene	<9.49	<9.35	<9.49	<9.45	0.9
1-Methylnaphthalene	5.63	32.7	4.70	14.4	111
2-Methylnaphthalene	10.2	45.2	6.99	20.8	102
1-Methylphenanthrene	<1.90	<1.87	<1.90	<1.89	0.9
9-Methylphenanthrene	13.8	13.1	2.10	9.67	67.9
Naphthalene	37.5	388	78.3	168	114
Perylene	<1.90	<1.87	<1.90	<1.89	0.9
Phenanthrene	149	128	21.7	99.5	68.6
Picene	<9.49	<9.35	<9.49	<9.45	0.9
Pyrene	20.4	11.5	12.0	14.6	34.2
Tetralin	12.2	13.8	14.1	13.4	7.7
m-terphenyl	<1.90	2.31	<1.90	<2.03	11.5
o-Terphenyl	2.77	<1.87	<1.90	<2.18	23.5
p-terphenyl	<1.90	<1.87	<1.90	<1.89	0.9
Total	<378	<805	<249	<477	61.0

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

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

Compound	Wet Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.96	4.98	3.57	<3.50	43.2
Acenaphthylene	<1.96	26.0	<1.95	<9.97	139
Anthracene	2.69	2.38	<1.95	<2.34	16.0
Benzo(a)Anthracene	<1.96	<1.93	<1.95	<1.94	0.8
Benzo(b)Fluoranthene	2.71	6.73	4.97	4.80	42.0
Benzo(k)Fluoranthene	<1.96	2.87	3.57	<2.80	28.9
Benzo(a)fluorene	<1.96	<1.93	<1.95	<1.94	0.8
Benzo(b)fluorene	<1.96	<1.93	<1.95	<1.94	0.8
Benzo(g,h,i)Perylene	<1.96	<1.93	<1.95	<1.94	0.8
Benzo(a)Pyrene	<1.96	<1.93	<1.95	<1.94	0.8
Benzo(e)Pyrene	<1.96	<1.93	<1.95	<1.94	0.8
Biphenyl	9.23	21.2	11.0	13.8	46.8
2-Chloronaphthalene	<1.96	<1.93	<1.95	<1.94	0.8
Chrysene/Triphenylene	3.56	8.61	2.69	4.95	64.5
Coronene	<9.79	<9.63	<9.74	<9.72	0.8
Dibenzo(a,c/a,h)Anthracene	<1.96	<1.93	<1.95	<1.94	0.8
Dibenzo(a,e)pyrene	<9.79	<9.63	<9.74	<9.72	0.8
9,10-dimethylanthracene	<1.96	<1.93	<1.95	<1.94	0.8
7,12-Dimethylbenzo(a)anthracene	<1.96	<1.93	<1.95	<1.94	0.8
Fluoranthene	24.6	19.1	7.63	17.1	50.7
Fluorene	7.96	11.0	2.19	7.04	63.4
Indeno(1,2,3-cd)Pyrene	<1.96	<1.93	<1.95	<1.94	0.8
2-methylanthracene	5.40	5.46	<1.95	<4.27	47.1
3-Methylcholanthrene	<9.79	<9.63	<9.74	<9.72	0.8
1-Methylnaphthalene	5.81	33.7	4.82	14.8	111
2-Methylnaphthalene	10.5	46.6	7.17	21.4	102
1-Methylphenanthrene	<1.96	<1.93	<1.95	<1.94	0.8
9-Methylphenanthrene	14.2	13.5	2.16	9.97	67.9
Naphthalene	38.7	400	80.3	173	114
Perylene	<1.96	<1.93	<1.95	<1.94	0.8
Phenanthrene	154	131	22.2	103	68.7
Picene	<9.79	<9.63	<9.74	<9.72	0.8
Pyrene	21.0	11.8	12.3	15.1	34.4
Tetralin	12.6	14.3	14.5	13.8	7.5
m-terphenyl	<1.96	2.38	<1.95	<2.09	11.7
o-Terphenyl	2.85	<1.93	<1.95	<2.24	23.6
p-terphenyl	<1.96	<1.93	<1.95	<1.94	0.8
Total	<390	<829	<255	<491	61.1

* At 25°C and 1 atmosphere

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

Compound	Emission Rate				Coefficient
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	of Variation %
Acenaphthene	<0.038	0.098	0.070	<0.069	43.6
Acenaphthylene	<0.038	0.51	<0.038	<0.20	140
Anthracene	0.052	0.047	<0.038	<0.046	15.7
Benzo(a)Anthracene	<0.038	<0.038	<0.038	<0.038	0.3
Benzo(b)Fluoranthene	0.053	0.13	0.097	0.094	42.4
Benzo(k)Fluoranthene	<0.038	0.057	0.070	<0.055	29.1
Benzo(a)fluorene	<0.038	<0.038	<0.038	<0.038	0.3
Benzo(b)fluorene	<0.038	<0.038	<0.038	<0.038	0.3
Benzo(g,h,i)Perylene	<0.038	<0.038	<0.038	<0.038	0.3
Benzo(a)Pyrene	<0.038	<0.038	<0.038	<0.038	0.3
Benzo(e)Pyrene	<0.038	<0.038	<0.038	<0.038	0.3
Biphenyl	0.18	0.42	0.22	0.27	47.3
2-Chloronaphthalene	<0.038	<0.038	<0.038	<0.038	0.3
Chrysene/Triphenylene	0.069	0.17	0.053	0.097	65.0
Coronene	<0.19	<0.19	<0.19	<0.19	0.3
Dibenzo(a,c/a,h)Anthracene	<0.038	<0.038	<0.038	<0.038	0.3
Dibenzo(a,e)pyrene	<0.19	<0.19	<0.19	<0.19	0.3
9,10-dimethylanthracene	<0.038	<0.038	<0.038	<0.038	0.3
7,12-Dimethylbenzo(a)anthracene	<0.038	<0.038	<0.038	<0.038	0.3
Fluoranthene	0.48	0.38	0.15	0.34	50.4
Fluorene	0.16	0.22	0.043	0.14	63.6
Indeno(1,2,3-cd)Pyrene	<0.038	<0.038	<0.038	<0.038	0.3
2-methylanthracene	0.11	0.11	<0.038	<0.084	47.1
3-Methylcholanthrene	<0.19	<0.19	<0.19	<0.19	0.3
1-Methylnaphthalene	0.11	0.66	0.094	0.29	111
2-Methylnaphthalene	0.20	0.92	0.14	0.42	102
1-Methylphenanthrene	<0.038	<0.038	<0.038	<0.038	0.3
9-Methylphenanthrene	0.28	0.27	0.042	0.20	67.9
Naphthalene	0.75	7.88	1.57	3.40	115
Perylene	<0.038	<0.038	<0.038	<0.038	0.3
Phenanthrene	3.00	2.59	0.44	2.01	68.6
Picene	<0.19	<0.19	<0.19	<0.19	0.3
Pyrene	0.41	0.23	0.24	0.29	33.9
Tetralin	0.25	0.28	0.28	0.27	7.9
m-terphenyl	<0.038	0.047	<0.038	<0.041	12.2
o-Terphenyl	0.056	<0.038	<0.038	<0.044	23.1
p-terphenyl	<0.038	<0.038	<0.038	<0.038	0.3
Total	<7.61	<16.3	<5.00	<9.65	61.6

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

Compound	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<2.48	<4.18	<3.40	<3.50	<0.069
Acenaphthylene	<7.04	<11.9	<9.68	<9.97	<0.20
Anthracene	<1.65	<2.79	<2.27	<2.34	<0.046
Benzo(a)Anthracene	<1.38	<2.32	<1.89	<1.94	<0.038
Benzo(b)Fluoranthene	3.40	5.74	4.67	4.80	0.094
Benzo(k)Fluoranthene	<1.98	<3.35	<2.72	<2.80	<0.055
Benzo(a)fluorene	<1.38	<2.32	<1.89	<1.94	<0.038
Benzo(b)fluorene	<1.38	<2.32	<1.89	<1.94	<0.038
Benzo(g,h,i)Perylene	<1.38	<2.32	<1.89	<1.94	<0.038
Benzo(a)Pyrene	<1.38	<2.32	<1.89	<1.94	<0.038
Benzo(e)Pyrene	<1.38	<2.32	<1.89	<1.94	<0.038
Biphenyl	9.76	16.5	13.4	13.8	0.27
2-Chloronaphthalene	<1.38	<2.32	<1.89	<1.94	<0.038
Chrysene/Triphenylene	3.50	5.92	4.81	4.95	0.097
Coronene	<6.88	<11.6	<9.45	<9.72	<0.19
Dibenzo(a,c/a,h)Anthracene	<1.38	<2.32	<1.89	<1.94	<0.038
Dibenzo(a,e)pyrene	<6.88	<11.6	<9.45	<9.72	<0.19
9,10-dimethylanthracene	<1.38	<2.32	<1.89	<1.94	<0.038
7,12-Dimethylbenzo(a)anthracene	<1.38	<2.32	<1.89	<1.94	<0.038
Fluoranthene	12.1	20.5	16.6	17.1	0.34
Fluorene	4.97	8.41	6.83	7.04	0.14
Indeno(1,2,3-cd)Pyrene	<1.38	<2.32	<1.89	<1.94	<0.038
2-methylanthracene	<3.02	<5.10	<4.14	<4.27	<0.084
3-Methylcholanthrene	<6.88	<11.6	<9.45	<9.72	<0.19
1-Methylnaphthalene	10.4	17.7	14.4	14.8	0.29
2-Methylnaphthalene	15.1	25.6	20.8	21.4	0.42
1-Methylphenanthrene	<1.38	<2.32	<1.89	<1.94	<0.038
9-Methylphenanthrene	7.04	11.9	9.67	9.97	0.20
Naphthalene	122	207	168	173	3.40
Perylene	<1.38	<2.32	<1.89	<1.94	<0.038
Phenanthrene	72.4	123	99.5	103	2.01
Picene	<6.88	<11.6	<9.45	<9.72	<0.19
Pyrene	10.7	18.0	14.6	15.1	0.29
Tetralin	9.75	16.5	13.4	13.8	0.27
m-terphenyl	<1.48	<2.50	<2.03	<2.09	<0.041
o-Terphenyl	<1.59	<2.68	<2.18	<2.24	<0.044
p-terphenyl	<1.38	<2.32	<1.89	<1.94	<0.038
Total	<347	<587	<477	<491	<9.65

* At 25°C and 1 atmosphere

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

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

Compound	Blank Train ng	Media Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	17.4	23.1
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	40.2	27.7
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	142	132
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	80.0	73.3
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<868	<844

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

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

Acetaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acetaldehyde Concentration Actual $\mu g/m^3$	Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Acetaldehyde Emission Rate mg/s
1	1.16	0.0313	21.9	37.1	30.0	31.0	0.60
2	2.09	0.0395	31.2	52.9	42.8	44.3	0.86
3	2.15	0.0367	34.6	58.6	47.4	49.0	0.95
Average			29.2	49.5	40.1	41.4	0.81
Blank	<0.1						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Formaldehyde Concentration Actual $\mu g/m^3$	Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Formaldehyde Emission Rate mg/s
1	0.53	0.0313	9.99	16.9	13.7	14.2	0.28
2	0.57	0.0395	8.51	14.4	11.7	12.1	0.23
3	0.58	0.0367	9.33	15.8	12.8	13.2	0.26
Average			9.28	15.7	12.7	13.2	0.26
Blank	0.42						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acrolein Concentration Actual $\mu g/m^3$	Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Acrolein Emission Rate mg/s
1	<2.0	0.0313	<37.7	<63.9	<51.7	<53.5	<1.04
2	<2.0	0.0395	<29.9	<50.6	<41.0	<42.4	<0.82
3	<2.0	0.0367	<32.2	<54.5	<44.1	<45.6	<0.89
Average			<33.3	<56.4	<45.6	<47.2	<0.92
Blank	<2.0						

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

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

* At 25 °C and 1 atmosphere

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

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

Compound	Total Collected µg	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3**	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Acetone	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Benzene	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Bromodichloromethane	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Bromoform	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Bromomethane	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
1,3-Butadiene	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
2-Butanone	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Carbon Tetrachloride	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Chloroform	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Cumene (Isopropylbenzene)	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Dibromochloromethane	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Dichlorodifluoromethane	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
1,2-Dichloroethane	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
trans,1,2-Dichloroethene	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
1,1-Dichloroethene	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
1,2-Dichloropropane	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Ethylbenzene	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Ethylene Dibromide	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Methylene Chloride	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Styrene	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Tetrachloroethene	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Toluene	5.66	150	254	206	212	4.14
1,1,1-Trichloroethane	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Trichlorotrifluoroethane	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Trichlorofluoromethane	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
M&P-Xylene	0.11	2.91	4.94	4.00	4.13	0.080
O-Xylene	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Vinyl Chloride	<0.050	<1.32	<2.24	<1.82	<1.88	<0.037
Total	<7.17	<190	<322	<261	<269	<5.24

Dry Gas Volume Sampled (Rm^3*) :	0.0223
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	19.5

* At 25°C and 1 atmosphere

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

Note: "<" indicates that the analyte was not detected. 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. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Benzene	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Bromodichloromethane	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Bromoform	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Bromomethane	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
1,3-Butadiene	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
2-Butanone	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Carbon Tetrachloride	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Chloroform	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Cumene (Isopropylbenzene)	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Dibromochloromethane	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Dichlorodifluoromethane	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
1,2-Dichloroethane	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
trans,1,2-Dichloroethene	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
1,1-Dichloroethene	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
1,2-Dichloropropane	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Ethylbenzene	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Ethylene Dibromide	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Methylene Chloride	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Styrene	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Tetrachloroethene	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Toluene	3.74	85.7	145	118	121	2.36
1,1,1-Trichloroethane	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Trichlorotrifluoroethane	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Trichlorofluoromethane	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
M&P-Xylene	<0.10	<2.29	<3.88	<3.15	<3.24	<0.063
O-Xylene	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Vinyl Chloride	<0.050	<1.15	<1.94	<1.57	<1.62	<0.032
Total	<5.24	<120	<203	<165	<170	<3.31

Dry Gas Volume Sampled (Rm^3*) :	0.0258
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Benzene	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Bromodichloromethane	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Bromoform	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Bromomethane	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
1,3-Butadiene	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
2-Butanone	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Carbon Tetrachloride	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Chloroform	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Cumene (Isopropylbenzene)	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Dibromochloromethane	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Dichlorodifluoromethane	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
1,2-Dichloroethane	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
trans,1,2-Dichloroethene	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
1,1-Dichloroethene	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
1,2-Dichloropropane	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Ethylbenzene	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Ethylene Dibromide	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Mesitylene (1,3,5-Trimethylbenzene)	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Methylene Chloride	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Styrene	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Tetrachloroethene	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Toluene	15.4	357	605	491	506	9.87
1,1,1-Trichloroethane	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Trichloroethene/1,1,2-Trichloroethene	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Trichlorotrifluoroethane	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Trichlorofluoromethane	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
M&P-Xylene	<1.0	<23.2	<39.3	<31.9	<32.9	<0.64
O-Xylene	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Vinyl Chloride	<0.50	<11.6	<19.7	<15.9	<16.4	<0.32
Total	<30.4	<706	<1195	<969	<999	<19.5

Dry Gas Volume Sampled (Rm^3*) :	0.0254
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 3	Test No. 4	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Acetone	<1.32	<1.15	<11.6	<4.69	128
Benzene	<1.32	<1.15	<11.6	<4.69	128
Bromodichloromethane	<1.32	<1.15	<11.6	<4.69	128
Bromoform	<1.32	<1.15	<11.6	<4.69	128
Bromomethane	<1.32	<1.15	<11.6	<4.69	128
1,3-Butadiene	<1.32	<1.15	<11.6	<4.69	128
2-Butanone	<1.32	<1.15	<11.6	<4.69	128
Carbon Tetrachloride	<1.32	<1.15	<11.6	<4.69	128
Chloroform	<1.32	<1.15	<11.6	<4.69	128
Cumene (Isopropylbenzene)	<1.32	<1.15	<11.6	<4.69	128
Dibromochloromethane	<1.32	<1.15	<11.6	<4.69	128
Dichlorodifluoromethane	<1.32	<1.15	<11.6	<4.69	128
1,2-Dichloroethane	<1.32	<1.15	<11.6	<4.69	128
trans,1,2-Dichloroethene	<1.32	<1.15	<11.6	<4.69	128
1,1-Dichloroethene	<1.32	<1.15	<11.6	<4.69	128
1,2-Dichloropropane	<1.32	<1.15	<11.6	<4.69	128
Ethylbenzene	<1.32	<1.15	<11.6	<4.69	128
Ethylene Dibromide	<1.32	<1.15	<11.6	<4.69	128
Mesitylene (1,3,5-Trimethylbenzene)	<1.32	<1.15	<11.6	<4.69	128
Methylene Chloride	<1.32	<1.15	<11.6	<4.69	128
Styrene	<1.32	<1.15	<11.6	<4.69	128
Tetrachloroethene	<1.32	<1.15	<11.6	<4.69	128
Toluene	150	85.7	357	198	71.8
1,1,1-Trichloroethane	<1.32	<1.15	<11.6	<4.69	128
Trichloroethene/1,1,2-Trichloroethene	<1.32	<1.15	<11.6	<4.69	128
Trichlorotrifluoroethane	<1.32	<1.15	<11.6	<4.69	128
Trichlorofluoromethane	<1.32	<1.15	<11.6	<4.69	128
M&P-Xylene	2.91	<2.29	<23.2	<9.5	126
O-Xylene	<1.32	<1.15	<11.6	<4.69	128
Vinyl Chloride	<1.32	<1.15	<11.6	<4.69	128
Total	<190	<120	<706	<339	94.5

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

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 3	Test No. 4	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	<2.24	<1.94	<19.7	<7.94	128
Benzene	<2.24	<1.94	<19.7	<7.94	128
Bromodichloromethane	<2.24	<1.94	<19.7	<7.94	128
Bromoform	<2.24	<1.94	<19.7	<7.94	128
Bromomethane	<2.24	<1.94	<19.7	<7.94	128
1,3-Butadiene	<2.24	<1.94	<19.7	<7.94	128
2-Butanone	<2.24	<1.94	<19.7	<7.94	128
Carbon Tetrachloride	<2.24	<1.94	<19.7	<7.94	128
Chloroform	<2.24	<1.94	<19.7	<7.94	128
Cumene (Isopropylbenzene)	<2.24	<1.94	<19.7	<7.94	128
Dibromochloromethane	<2.24	<1.94	<19.7	<7.94	128
Dichlorodifluoromethane	<2.24	<1.94	<19.7	<7.94	128
1,2-Dichloroethane	<2.24	<1.94	<19.7	<7.94	128
trans,1,2-Dichloroethene	<2.24	<1.94	<19.7	<7.94	128
1,1-Dichloroethene	<2.24	<1.94	<19.7	<7.94	128
1,2-Dichloropropane	<2.24	<1.94	<19.7	<7.94	128
Ethylbenzene	<2.24	<1.94	<19.7	<7.94	128
Ethylene Dibromide	<2.24	<1.94	<19.7	<7.94	128
Mesitylene (1,3,5-Trimethylbenzene)	<2.24	<1.94	<19.7	<7.94	128
Methylene Chloride	<2.24	<1.94	<19.7	<7.94	128
Styrene	<2.24	<1.94	<19.7	<7.94	128
Tetrachloroethene	<2.24	<1.94	<19.7	<7.94	128
Toluene	254	145	605	335	71.8
1,1,1-Trichloroethane	<2.24	<1.94	<19.7	<7.94	128
Trichloroethene/1,1,2-Trichloroethene	<2.24	<1.94	<19.7	<7.94	128
Trichlorotrifluoroethane	<2.24	<1.94	<19.7	<7.94	128
Trichlorofluoromethane	<2.24	<1.94	<19.7	<7.94	128
M&P-Xylene	4.94	<3.88	<39.3	<16.0	126
O-Xylene	<2.24	<1.94	<19.7	<7.94	128
Vinyl Chloride	<2.24	<1.94	<19.7	<7.94	128
Total	<322	<203	<1195	<573	94.5

* At 25°C and 1 atmosphere

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

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 3	Test No. 4	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	<1.82	<1.57	<15.9	<6.44	128
Benzene	<1.82	<1.57	<15.9	<6.44	128
Bromodichloromethane	<1.82	<1.57	<15.9	<6.44	128
Bromoform	<1.82	<1.57	<15.9	<6.44	128
Bromomethane	<1.82	<1.57	<15.9	<6.44	128
1,3-Butadiene	<1.82	<1.57	<15.9	<6.44	128
2-Butanone	<1.82	<1.57	<15.9	<6.44	128
Carbon Tetrachloride	<1.82	<1.57	<15.9	<6.44	128
Chloroform	<1.82	<1.57	<15.9	<6.44	128
Cumene (Isopropylbenzene)	<1.82	<1.57	<15.9	<6.44	128
Dibromochloromethane	<1.82	<1.57	<15.9	<6.44	128
Dichlorodifluoromethane	<1.82	<1.57	<15.9	<6.44	128
1,2-Dichloroethane	<1.82	<1.57	<15.9	<6.44	128
trans,1,2-Dichloroethene	<1.82	<1.57	<15.9	<6.44	128
1,1-Dichloroethene	<1.82	<1.57	<15.9	<6.44	128
1,2-Dichloropropane	<1.82	<1.57	<15.9	<6.44	128
Ethylbenzene	<1.82	<1.57	<15.9	<6.44	128
Ethylene Dibromide	<1.82	<1.57	<15.9	<6.44	128
Mesitylene (1,3,5-Trimethylbenzene)	<1.82	<1.57	<15.9	<6.44	128
Methylene Chloride	<1.82	<1.57	<15.9	<6.44	128
Styrene	<1.82	<1.57	<15.9	<6.44	128
Tetrachloroethene	<1.82	<1.57	<15.9	<6.44	128
Toluene	206	118	491	271	71.8
1,1,1-Trichloroethane	<1.82	<1.57	<15.9	<6.44	128
Trichloroethene/1,1,2-Trichloroethene	<1.82	<1.57	<15.9	<6.44	128
Trichlorotrifluoroethane	<1.82	<1.57	<15.9	<6.44	128
Trichlorofluoromethane	<1.82	<1.57	<15.9	<6.44	128
M&P-Xylene	4.00	<3.15	<31.9	<13.0	126
O-Xylene	<1.82	<1.57	<15.9	<6.44	128
Vinyl Chloride	<1.82	<1.57	<15.9	<6.44	128
Total	<261	<165	<969	<465	94.5

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

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

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 3	Test No. 4	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	<1.88	<1.62	<16.4	<6.64	128
Benzene	<1.88	<1.62	<16.4	<6.64	128
Bromodichloromethane	<1.88	<1.62	<16.4	<6.64	128
Bromoform	<1.88	<1.62	<16.4	<6.64	128
Bromomethane	<1.88	<1.62	<16.4	<6.64	128
1,3-Butadiene	<1.88	<1.62	<16.4	<6.64	128
2-Butanone	<1.88	<1.62	<16.4	<6.64	128
Carbon Tetrachloride	<1.88	<1.62	<16.4	<6.64	128
Chloroform	<1.88	<1.62	<16.4	<6.64	128
Cumene (Isopropylbenzene)	<1.88	<1.62	<16.4	<6.64	128
Dibromochloromethane	<1.88	<1.62	<16.4	<6.64	128
Dichlorodifluoromethane	<1.88	<1.62	<16.4	<6.64	128
1,2-Dichloroethane	<1.88	<1.62	<16.4	<6.64	128
trans,1,2-Dichloroethene	<1.88	<1.62	<16.4	<6.64	128
1,1-Dichloroethene	<1.88	<1.62	<16.4	<6.64	128
1,2-Dichloropropane	<1.88	<1.62	<16.4	<6.64	128
Ethylbenzene	<1.88	<1.62	<16.4	<6.64	128
Ethylene Dibromide	<1.88	<1.62	<16.4	<6.64	128
Mesitylene (1,3,5-Trimethylbenzene)	<1.88	<1.62	<16.4	<6.64	128
Methylene Chloride	<1.88	<1.62	<16.4	<6.64	128
Styrene	<1.88	<1.62	<16.4	<6.64	128
Tetrachloroethene	<1.88	<1.62	<16.4	<6.64	128
Toluene	212	121	506	280	71.8
1,1,1-Trichloroethane	<1.88	<1.62	<16.4	<6.64	128
Trichloroethene/1,1,2-Trichloroethene	<1.88	<1.62	<16.4	<6.64	128
Trichlorotrifluoroethane	<1.88	<1.62	<16.4	<6.64	128
Trichlorofluoromethane	<1.88	<1.62	<16.4	<6.64	128
M&P-Xylene	4.13	<3.24	<32.9	<13.4	126
O-Xylene	<1.88	<1.62	<16.4	<6.64	128
Vinyl Chloride	<1.88	<1.62	<16.4	<6.64	128
Total	<269	<170	<999	<479	94.5

* At 25°C and 1 atmosphere

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

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 mg/s	Test No. 3 mg/s	Test No. 4 mg/s	Average mg/s	%
Acetone	<0.037	<0.032	<0.32	<0.13	128
Benzene	<0.037	<0.032	<0.32	<0.13	128
Bromodichloromethane	<0.037	<0.032	<0.32	<0.13	128
Bromoform	<0.037	<0.032	<0.32	<0.13	128
Bromomethane	<0.037	<0.032	<0.32	<0.13	128
1,3-Butadiene	<0.037	<0.032	<0.32	<0.13	128
2-Butanone	<0.037	<0.032	<0.32	<0.13	128
Carbon Tetrachloride	<0.037	<0.032	<0.32	<0.13	128
Chloroform	<0.037	<0.032	<0.32	<0.13	128
Cumene (Isopropylbenzene)	<0.037	<0.032	<0.32	<0.13	128
Dibromochloromethane	<0.037	<0.032	<0.32	<0.13	128
Dichlorodifluoromethane	<0.037	<0.032	<0.32	<0.13	128
1,2-Dichloroethane	<0.037	<0.032	<0.32	<0.13	128
trans,1,2-Dichloroethene	<0.037	<0.032	<0.32	<0.13	128
1,1-Dichloroethene	<0.037	<0.032	<0.32	<0.13	128
1,2-Dichloropropane	<0.037	<0.032	<0.32	<0.13	128
Ethylbenzene	<0.037	<0.032	<0.32	<0.13	128
Ethylene Dibromide	<0.037	<0.032	<0.32	<0.13	128
Mesitylene (1,3,5-Trimethylbenzene)	<0.037	<0.032	<0.32	<0.13	128
Methylene Chloride	<0.037	<0.032	<0.32	<0.13	128
Styrene	<0.037	<0.032	<0.32	<0.13	128
Tetrachloroethene	<0.037	<0.032	<0.32	<0.13	128
Toluene	4.14	2.36	9.87	5.46	71.8
1,1,1-Trichloroethane	<0.037	<0.032	<0.32	<0.13	128
Trichloroethene/1,1,2-Trichloroethene	<0.037	<0.032	<0.32	<0.13	128
Trichlorotrifluoroethane	<0.037	<0.032	<0.32	<0.13	128
Trichlorofluoromethane	<0.037	<0.032	<0.32	<0.13	128
M&P-Xylene	0.080	<0.063	<0.64	<0.26	126
O-Xylene	<0.037	<0.032	<0.32	<0.13	128
Vinyl Chloride	<0.037	<0.032	<0.32	<0.13	128
Total	<5.24	<3.31	<19.5	<9.34	94.5

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	<4.69	<7.94	<6.44	<6.64	<0.13
Benzene	<4.69	<7.94	<6.44	<6.64	<0.13
Bromodichloromethane	<4.69	<7.94	<6.44	<6.64	<0.13
Bromoform	<4.69	<7.94	<6.44	<6.64	<0.13
Bromomethane	<4.69	<7.94	<6.44	<6.64	<0.13
1,3-Butadiene	<4.69	<7.94	<6.44	<6.64	<0.13
2-Butanone	<4.69	<7.94	<6.44	<6.64	<0.13
Carbon Tetrachloride	<4.69	<7.94	<6.44	<6.64	<0.13
Chloroform	<4.69	<7.94	<6.44	<6.64	<0.13
Cumene (Isopropylbenzene)	<4.69	<7.94	<6.44	<6.64	<0.13
Dibromochloromethane	<4.69	<7.94	<6.44	<6.64	<0.13
Dichlorodifluoromethane	<4.69	<7.94	<6.44	<6.64	<0.13
1,2-Dichloroethane	<4.69	<7.94	<6.44	<6.64	<0.13
trans,1,2-Dichloroethene	<4.69	<7.94	<6.44	<6.64	<0.13
1,1-Dichloroethene	<4.69	<7.94	<6.44	<6.64	<0.13
1,2-Dichloropropane	<4.69	<7.94	<6.44	<6.64	<0.13
Ethylbenzene	<4.69	<7.94	<6.44	<6.64	<0.13
Ethylene Dibromide	<4.69	<7.94	<6.44	<6.64	<0.13
Mesitylene (1,3,5-Trimethylbenzene)	<4.69	<7.94	<6.44	<6.64	<0.13
Methylene Chloride	<4.69	<7.94	<6.44	<6.64	<0.13
Styrene	<4.69	<7.94	<6.44	<6.64	<0.13
Tetrachloroethene	<4.69	<7.94	<6.44	<6.64	<0.13
Toluene	198	335	271	280	5.46
1,1,1-Trichloroethane	<4.69	<7.94	<6.44	<6.64	<0.13
Trichloroethene/1,1,2-Trichloroethene	<4.69	<7.94	<6.44	<6.64	<0.13
Trichlorotrifluoroethane	<4.69	<7.94	<6.44	<6.64	<0.13
Trichlorofluoromethane	<4.69	<7.94	<6.44	<6.64	<0.13
M&P-Xylene	<9.5	<16.0	<13.0	<13.4	<0.26
O-Xylene	<4.69	<7.94	<6.44	<6.64	<0.13
Vinyl Chloride	<4.69	<7.94	<6.44	<6.64	<0.13
Total	<339	<573	<465	<479	<9.34

* At 25°C and 1 atmosphere

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

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

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

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

APPENDIX 2

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

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

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1**	April 25, 2023	7:55	11:04	180
2	April 25, 2023	12:01	15:09	180
3	April 25, 2023	16:54	20:04	180
4	April 26, 2023	8:47	12:48	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	April 24, 2023	9:56	11:59	120
2	April 24, 2023	13:05	15:08	120
3	April 24, 2023	16:04	18:08	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	April 25, 2023	7:56	8:56	60
2	April 25, 2023	10:28	11:28	60
3	April 25, 2023	11:55	12:55	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	April 26, 2023	8:50	13:13	240
2	April 26, 2023	14:09	18:19	240
3	April 27, 2023	8:06	12:15	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.
** Glass was found on the filter during train recovery. Test was voided and repeated as Test 4.

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

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	April 26, 2023	12:16	13:16	60
2	April 26, 2023	13:54	14:54	60
3	April 26, 2023	14:57	15:57	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	April 26, 2023	8:48	9:28	40
2	April 26, 2023	9:33	10:13	40
3	April 26, 2023	10:19	10:59	40
4	April 26, 2023	11:05	11:45	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
BH Outlet	1	April 24, 2023	11:30	12:30	60
BH Outlet	2	April 24, 2023	12:50	13:50	60
BH Outlet	3	April 24, 2023	14:25	15:25	60
Quench Inlet	1	April 24, 2023	11:30	12:30	60
Quench Inlet	2	April 24, 2023	12:50	13:50	60
Quench Inlet	3	April 24, 2023	14:25	15:25	60

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

Particulate and Metals Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
2	0.842	1.002	6.40	3.706	99.4
3	0.842	1.002	6.40	3.786	101.1
4	0.842	0.961	6.40	3.909	99.3

Particle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.844	0.961	4.51	1.208	91.7
2	0.844	0.961	4.51	1.182	90.5
3	0.844	0.961	4.51	1.192	92.5

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.843	1.002	6.42	1.298	100.0
2	0.843	1.002	6.42	1.312	99.3
3	0.843	1.002	6.42	1.278	99.3

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	0.841	1.002	6.38	5.063	98.7
2	0.841	1.002	6.38	5.074	99.6
3	0.841	1.002	6.38	5.110	99.7

* Dry at 25°C and 1 atmosphere

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

Particulate and Metals Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
2	140	15.0	18.0	-2.69	98.5	10.9	9.16
3	141	16.6	18.5	-2.69	98.5	10.9	8.98
4	139	16.3	19.2	-2.69	98.6	10.6	9.08
Average	140	16.0	18.6	-2.69	98.6	10.8	9.07

Particle Size Distribution Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	138	15.1	19.0	-2.69	98.2	10.4	9.43
2	140	15.3	19.0	-2.69	98.2	10.44	9.38
3	139	15.7	18.9	-2.69	98.2	10.7	9.04
Average	139	15.4	19.0	-2.69	98.2	10.5	9.28

Acid Gases Trains **

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	136	16.1	18.7	-2.69	98.5	10.7	9.30
2	138	15.8	19.1	-2.69	98.5	11.0	9.13
3	138	15.2	18.5	-2.69	98.5	10.9	9.19
Average	137	15.7	18.8	-2.69	98.5	10.8	9.21

Semi-Volatile Organics Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	141	15.1	18.7	-2.69	98.6	10.6	9.08
2	141	15.7	18.7	-2.69	98.6	10.5	9.08
3	141	15.4	18.8	-2.69	98.7	10.6	9.16
Average	141	15.4	18.7	-2.69	98.7	10.6	9.11

* 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*
2	26.6	15.8	18.8	18.6
3	27.3	15.9	19.2	19.1
4	28.4	16.7	20.0	20.0
Average	27.4	16.2	19.3	19.2

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	28.2	16.8	19.5	19.8
2	28.1	16.7	19.4	19.7
3	27.9	16.5	19.8	19.6
Average	28.1	16.7	19.6	19.7

Acid Gases Trains ***

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.7	16.4	19.3	19.6
2	28.2	16.7	19.9	19.9
3	27.3	16.3	19.3	19.3
Average	27.7	16.5	19.5	19.6

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.7	16.5	19.7	19.4
2	27.7	16.4	19.5	19.4
3	27.8	16.5	19.5	19.5
Average	27.7	16.4	19.6	19.4

* At 25°C and 1 atmosphere

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

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

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

Test No.	Particulate Collected			Dry Gas Volume Sampled	Actual	Particulate Concentration Dry Reference	Dry Adjusted	Wet Reference	Particulate Emission Rate
	Probe Rinse	Main Filter	Total						
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
2	1.4	<0.1	<1.5	3.706	<0.24	<0.41	<0.34	<0.34	<6.41
3	0.9	0.2	1.1	3.786	0.17	0.29	0.24	0.24	4.62
4	0.5	0.1	0.6	3.909	0.090	0.15	0.13	0.13	2.57
Average					<0.17	<0.28	<0.24	<0.24	<4.53
Blank	<0.1	0.3	<0.4						

* At 25 °C and 1 atmosphere

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

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

$PM_{2.5}$

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	$PM_{2.5}$ Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	1.2	1.208	0.59	0.99	0.86	0.84	16.7
2	<0.2	1.182	<0.10	<0.17	<0.15	<0.14	<2.83
3	<0.2	1.192	<0.099	<0.17	<0.14	<0.14	<2.77
Average			<0.26	<0.44	<0.38	<0.38	<7.43
Blank	0.2						

PM_{10}

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	PM_{10} Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<1.3	1.208	<0.64	<1.08	<0.93	<0.91	<18.1
2	<0.4	1.182	<0.20	<0.34	<0.29	<0.29	<5.65
3	<1.1	1.192	<0.55	<0.92	<0.77	<0.78	<15.2
Average			<0.46	<0.78	<0.66	<0.66	<13.0
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. 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	10.4	1.208	5.13	8.61	7.43	7.30	145
2	2.8	1.182	1.41	2.37	2.04	2.01	39.6
3	4.2	1.192	2.08	3.52	2.94	2.97	58.1
Average			2.87	4.83	4.14	4.09	80.8
Blank	0.5						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Organic Condensable Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	0.8	1.208	0.39	0.66	0.57	0.56	11.1
2	1.8	1.182	0.91	1.52	1.31	1.29	25.4
3	1.8	1.192	0.89	1.51	1.26	1.27	24.9
Average			0.73	1.23	1.05	1.04	20.5
Blank	1.4						

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

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Chloride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	4.59	1.298	2.10	3.54	2.98	2.99	56.1
2	5.00	1.312	2.26	3.81	3.21	3.22	60.5
3	4.76	1.278	2.21	3.72	3.14	3.15	59.1
Average			2.19	3.69	3.11	3.12	58.6
Blank	<0.157						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Fluoride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.168	1.298	<0.077	<0.13	<0.11	<0.11	<2.05
2	<0.158	1.312	<0.071	<0.12	<0.10	<0.10	<1.91
3	<0.158	1.278	<0.073	<0.12	<0.10	<0.10	<1.96
Average			<0.074	<0.12	<0.10	<0.11	<1.98
Blank	<0.107						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Ammonia Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	1.23	1.298	0.56	0.95	0.80	0.80	15.0
2	<0.434	1.312	<0.20	<0.33	<0.28	<0.28	<5.25
3	0.551	1.278	0.26	0.43	0.36	0.36	6.84
Average			<0.34	<0.57	<0.48	<0.48	<9.04
Blank	<0.288						

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

* At 25 °C and 1 atmosphere

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

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

Data measured by the DYEC CEMS from April 24 to April 27, 2023

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	8.82	9.28	10.57
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	8	16	33
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	10.3	16.1	27.3
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.12	5
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.13	0.3
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	99	110	123
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	109	110	112
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	2	3	5
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	2.7	3.1	3.3
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	0
Quench Inlet	Oxygen (%, 1 hr Avg)	8	8	10

Data measured by the ORTECH CEMS on April 24, 2023

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	0.5
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	1.1
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	1.3
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.2	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.5	2.6
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.4	15.6
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	7.7
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.4	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0.1	0.5	1.0
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.5	2.6
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.4	1.7
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. 2 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.84	0.84
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.25	<0.05	0.25
Chromium	3.35	0.64	3.99
Cobalt	<0.2	<0.1	<0.10
Copper	6.81	1.71	8.52
Lead	<0.5	0.31	0.31
Mercury *	<0.015	<0.37	<0.37
Molybdenum	37.8	<0.1	37.8
Nickel	1.91	2.86	4.77
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	12.3	6.49	18.8
Total			<77.8

* Includes the permanganate impingers

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

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	0.34	<0.1	0.34
Arsenic	<1	<0.2	<0.20
Barium	5.09	1.45	6.54
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.13	0.24	0.37
Chromium	2.77	3.98	6.75
Cobalt	<0.2	<0.1	<0.10
Copper	5.90	3.00	8.90
Lead	0.52	0.39	0.91
Mercury *	<0.015	<0.43	<0.43
Molybdenum	36.9	1.08	38.0
Nickel	1.63	0.83	2.46
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.41	0.41
Zinc	13.8	3.57	17.4
Total			<84.4

* 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 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 4

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	0.31	<0.1	0.31
Arsenic	<1	<0.2	<0.20
Barium	<5	0.72	0.72
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.52	<0.05	0.52
Chromium	2.89	0.68	3.57
Cobalt	<0.2	<0.1	<0.10
Copper	5.50	1.66	7.16
Lead	0.57	0.29	0.86
Mercury *	<0.015	<0.43	<0.43
Molybdenum	36.7	<0.1	36.7
Nickel	1.53	0.37	1.90
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	9.50	22.2	31.7
Total			<85.9

* Includes the permanganate impingers

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

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

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.032	<0.054	<0.045	<0.046	<0.00085
Arsenic	<0.20	<0.032	<0.054	<0.045	<0.046	<0.00085
Barium	0.84	0.13	0.23	0.19	0.19	0.0036
Beryllium	<0.20	<0.032	<0.054	<0.045	<0.046	<0.00085
Cadmium	0.25	0.039	0.066	0.056	0.056	0.0010
Chromium	3.99	0.64	1.08	0.90	0.91	0.017
Cobalt	<0.10	<0.016	<0.027	<0.023	<0.023	<0.00043
Copper	8.52	1.37	2.30	1.93	1.95	0.036
Lead	0.31	0.050	0.083	0.070	0.071	0.0013
Mercury	<0.37	<0.059	<0.098	<0.083	<0.084	<0.0016
Molybdenum	37.8	6.06	10.2	8.57	8.66	0.16
Nickel	4.77	0.76	1.29	1.08	1.09	0.020
Selenium	<1.00	<0.16	<0.27	<0.23	<0.23	<0.0043
Silver	<0.20	<0.032	<0.054	<0.045	<0.046	<0.00085
Thallium	<0.20	<0.032	<0.054	<0.045	<0.046	<0.00085
Vanadium	<0.10	<0.016	<0.027	<0.023	<0.023	<0.00043
Zinc	18.8	3.01	5.07	4.26	4.31	0.080
Total	<77.8	<12.5	<21.0	<17.6	<17.8	<0.33

Dry Gas Volume Sampled (Rm^3*) :	3.706
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	18.6

* 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. 3

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	0.34	0.052	0.090	0.074	0.075	0.0014
Arsenic	<0.20	<0.031	<0.053	<0.044	<0.044	<0.00084
Barium	6.54	1.01	1.73	1.43	1.44	0.027
Beryllium	<0.20	<0.031	<0.053	<0.044	<0.044	<0.00084
Cadmium	0.37	0.057	0.098	0.081	0.082	0.0016
Chromium	6.75	1.04	1.78	1.48	1.48	0.028
Cobalt	<0.10	<0.015	<0.026	<0.022	<0.022	<0.00042
Copper	8.90	1.37	2.35	1.95	1.96	0.037
Lead	0.91	0.14	0.24	0.20	0.20	0.0038
Mercury	<0.43	<0.065	<0.11	<0.093	<0.093	<0.0018
Molybdenum	38.0	5.84	10.0	8.31	8.35	0.16
Nickel	2.46	0.38	0.65	0.54	0.54	0.010
Selenium	<1.00	<0.15	<0.26	<0.22	<0.22	<0.0042
Silver	<0.20	<0.031	<0.053	<0.044	<0.044	<0.00084
Thallium	<0.20	<0.031	<0.053	<0.044	<0.044	<0.00084
Vanadium	0.41	0.064	0.11	0.091	0.091	0.0017
Zinc	17.4	2.67	4.59	3.80	3.82	0.073
Total	<84.4	<13.0	<22.3	<18.5	<18.5	<0.35

Dry Gas Volume Sampled (Rm^3*) :	3.786
Actual Flowrate (m^3/s) :	27.3
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.2
Wet Reference Flowrate (Rm^3/s*) :	19.1

* At 25°C and 1 atmosphere

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

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 4

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	0.31	0.047	0.080	0.067	0.067	0.0013
Arsenic	<0.20	<0.030	<0.051	<0.043	<0.043	<0.00085
Barium	0.72	0.11	0.18	0.15	0.15	0.0031
Beryllium	<0.20	<0.030	<0.051	<0.043	<0.043	<0.00085
Cadmium	0.52	0.078	0.13	0.11	0.11	0.0022
Chromium	3.57	0.54	0.91	0.76	0.76	0.015
Cobalt	<0.10	<0.015	<0.026	<0.021	<0.021	<0.00043
Copper	7.16	1.08	1.83	1.53	1.53	0.031
Lead	0.86	0.13	0.22	0.18	0.18	0.0037
Mercury	<0.43	<0.064	<0.11	<0.091	<0.091	<0.0018
Molybdenum	36.7	5.52	9.39	7.84	7.84	0.16
Nickel	1.90	0.29	0.49	0.41	0.41	0.0081
Selenium	<1.00	<0.15	<0.26	<0.21	<0.21	<0.0043
Silver	<0.20	<0.030	<0.051	<0.043	<0.043	<0.00085
Thallium	<0.20	<0.030	<0.051	<0.043	<0.043	<0.00085
Vanadium	<0.10	<0.015	<0.026	<0.021	<0.021	<0.00043
Zinc	31.7	4.77	8.11	6.77	6.77	0.14
Total	<85.9	<12.9	<22.0	<18.3	<18.3	<0.37

Dry Gas Volume Sampled (Rm^3*) :	3.909
Actual Flowrate (m^3/s) :	28.4
Dry Reference Flowrate (Rm^3/s*) :	16.7
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	20.0

* At 25°C and 1 atmosphere

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

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

Metal	Actual Concentration				Coefficient of Variation
	Test No. 2	Test No. 3	Test No. 4	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	<0.032	0.052	0.047	<0.044	23.9
Arsenic	<0.032	<0.031	<0.030	<0.031	3.2
Barium	0.13	1.01	0.11	0.42	123
Beryllium	<0.032	<0.031	<0.030	<0.031	3.2
Cadmium	0.039	0.057	0.078	0.058	33.2
Chromium	0.64	1.04	0.54	0.74	35.9
Cobalt	<0.016	<0.015	<0.015	<0.015	3.2
Copper	1.37	1.37	1.08	1.27	13.2
Lead	0.050	0.14	0.13	0.11	46.5
Mercury	<0.059	<0.065	<0.064	<0.063	5.8
Molybdenum	6.06	5.84	5.52	5.81	4.7
Nickel	0.76	0.38	0.29	0.48	53.4
Selenium	<0.16	<0.15	<0.15	<0.15	3.2
Silver	<0.032	<0.031	<0.030	<0.031	3.2
Thallium	<0.032	<0.031	<0.030	<0.031	3.2
Vanadium	<0.016	0.064	<0.015	<0.032	88.0
Zinc	3.01	2.67	4.77	3.48	32.3
Total	<12.5	<13.0	<12.9	<12.8	2.2

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

Metal	Dry Reference Concentration				Coefficient of Variation
	Test No. 2	Test No. 3	Test No. 4	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.054	0.090	0.080	<0.074	24.7
Arsenic	<0.054	<0.053	<0.051	<0.053	2.7
Barium	0.23	1.73	0.18	0.71	123
Beryllium	<0.054	<0.053	<0.051	<0.053	2.7
Cadmium	0.066	0.098	0.13	0.099	33.5
Chromium	1.08	1.78	0.91	1.26	36.7
Cobalt	<0.027	<0.026	<0.026	<0.026	2.7
Copper	2.30	2.35	1.83	2.16	13.2
Lead	0.083	0.24	0.22	0.18	47.1
Mercury	<0.098	<0.11	<0.11	<0.11	6.7
Molybdenum	10.2	10.0	9.39	9.87	4.3
Nickel	1.29	0.65	0.49	0.81	52.4
Selenium	<0.27	<0.26	<0.26	<0.26	2.7
Silver	<0.054	<0.053	<0.051	<0.053	2.7
Thallium	<0.054	<0.053	<0.051	<0.053	2.7
Vanadium	<0.027	0.11	<0.026	<0.054	88.9
Zinc	5.07	4.59	8.11	5.92	32.2
Total	<21.0	<22.3	<22.0	<21.7	3.1

* At 25°C and 1 atmosphere

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

Metal	Dry Adjusted Concentration				Coefficient
	Test No. 2 µg/Rm³**	Test No. 3 µg/Rm³**	Test No. 4 µg/Rm³**	Average µg/Rm³**	of Variation %
Antimony	<0.045	0.074	0.067	<0.062	24.1
Arsenic	<0.045	<0.044	<0.043	<0.044	3.0
Barium	0.19	1.43	0.15	0.59	123
Beryllium	<0.045	<0.044	<0.043	<0.044	3.0
Cadmium	0.056	0.081	0.11	0.083	33.3
Chromium	0.90	1.48	0.76	1.05	36.0
Cobalt	<0.023	<0.022	<0.021	<0.022	3.0
Copper	1.93	1.95	1.53	1.80	13.1
Lead	0.070	0.20	0.18	0.15	46.7
Mercury	<0.083	<0.093	<0.091	<0.089	6.0
Molybdenum	8.57	8.31	7.84	8.24	4.5
Nickel	1.08	0.54	0.41	0.68	53.1
Selenium	<0.23	<0.22	<0.21	<0.22	3.0
Silver	<0.045	<0.044	<0.043	<0.044	3.0
Thallium	<0.045	<0.044	<0.043	<0.044	3.0
Vanadium	<0.023	0.091	<0.021	<0.045	88.2
Zinc	4.26	3.80	6.77	4.94	32.3
Total	<17.6	<18.5	<18.3	<18.1	2.4

** 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. 2	Test No. 3	Test No. 4	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.046	0.075	0.067	<0.062	23.8
Arsenic	<0.046	<0.044	<0.043	<0.044	3.6
Barium	0.19	1.44	0.15	0.59	123
Beryllium	<0.046	<0.044	<0.043	<0.044	3.6
Cadmium	0.056	0.082	0.11	0.083	32.8
Chromium	0.91	1.48	0.76	1.05	36.1
Cobalt	<0.023	<0.022	<0.021	<0.022	3.6
Copper	1.95	1.96	1.53	1.81	13.5
Lead	0.071	0.20	0.18	0.15	46.4
Mercury	<0.084	<0.093	<0.091	<0.089	5.7
Molybdenum	8.66	8.35	7.84	8.28	5.0
Nickel	1.09	0.54	0.41	0.68	53.6
Selenium	<0.23	<0.22	<0.21	<0.22	3.6
Silver	<0.046	<0.044	<0.043	<0.044	3.6
Thallium	<0.046	<0.044	<0.043	<0.044	3.6
Vanadium	<0.023	0.091	<0.021	<0.045	88.2
Zinc	4.31	3.82	6.77	4.97	31.9
Total	<17.8	<18.5	<18.3	<18.2	2.0

* At 25°C and 1 atmosphere

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

Metal	Emission Rate				Coefficient
	Test No. 2 mg/s	Test No. 3 mg/s	Test No. 4 mg/s	Average mg/s	of Variation %
Antimony	<0.00085	0.0014	0.0013	<0.0012	25.5
Arsenic	<0.00085	<0.00084	<0.00085	<0.00085	0.9
Barium	0.0036	0.027	0.0031	0.011	123
Beryllium	<0.00085	<0.00084	<0.00085	<0.00085	0.9
Cadmium	0.0010	0.0016	0.0022	0.0016	36.4
Chromium	0.017	0.028	0.015	0.020	35.2
Cobalt	<0.00043	<0.00042	<0.00043	<0.00042	0.9
Copper	0.036	0.037	0.031	0.035	10.5
Lead	0.0013	0.0038	0.0037	0.0029	47.8
Mercury	<0.0016	<0.0018	<0.0018	<0.0017	8.2
Molybdenum	0.16	0.16	0.16	0.16	1.4
Nickel	0.020	0.010	0.0081	0.013	50.4
Selenium	<0.0043	<0.0042	<0.0043	<0.0042	0.9
Silver	<0.00085	<0.00084	<0.00085	<0.00085	0.9
Thallium	<0.00085	<0.00084	<0.00085	<0.00085	0.9
Vanadium	<0.00043	0.0017	<0.00043	<0.00086	87.7
Zinc	0.080	0.073	0.14	0.096	35.6
Total	<0.33	<0.35	<0.37	<0.35	5.1

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

Metal	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.044	<0.074	<0.062	<0.062	<0.0012
Arsenic	<0.031	<0.053	<0.044	<0.044	<0.00085
Barium	0.42	0.71	0.59	0.59	0.011
Beryllium	<0.031	<0.053	<0.044	<0.044	<0.00085
Cadmium	0.058	0.099	0.083	0.083	0.0016
Chromium	0.74	1.26	1.05	1.05	0.020
Cobalt	<0.015	<0.026	<0.022	<0.022	<0.00042
Copper	1.27	2.16	1.80	1.81	0.035
Lead	0.11	0.18	0.15	0.15	0.0029
Mercury	<0.063	<0.11	<0.089	<0.089	<0.0017
Molybdenum	5.81	9.87	8.24	8.28	0.16
Nickel	0.48	0.81	0.68	0.68	0.013
Selenium	<0.15	<0.26	<0.22	<0.22	<0.0042
Silver	<0.031	<0.053	<0.044	<0.044	<0.00085
Thallium	<0.031	<0.053	<0.044	<0.044	<0.00085
Vanadium	<0.032	<0.054	<0.045	<0.045	<0.00086
Zinc	3.48	5.92	4.94	4.97	0.096
Total	<12.8	<21.7	<18.1	<18.2	<0.35

* At 25°C and 1 atmosphere

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.81	0.81
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	3.02	0.38	3.40
Cobalt	<0.2	<0.1	<0.10
Copper	5.38	1.04	6.42
Lead	<0.5	0.32	0.32
Mercury *	<0.015	<0.16	<0.16
Molybdenum	36.2	<0.1	36.2
Nickel	0.87	<0.1	0.87
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			<56.5

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

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	197	0.023	0.039	0.033	0.033	0.64
Pentachlorodibenzo-p-dioxins	766	0.090	0.15	0.13	0.13	2.50
Hexachlorodibenzo-p-dioxins	1440	0.17	0.28	0.24	0.24	4.69
Heptachlorodibenzo-p-dioxins	804	0.095	0.16	0.13	0.14	2.62
Octachlorodibenzo-p-dioxin	201	0.024	0.040	0.033	0.034	0.66
Total	3408	0.40	0.67	0.56	0.57	11.1

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	46.6	0.0055	0.0092	0.0077	0.0078	0.15
Pentachlorodibenzofurans	233	0.027	0.046	0.039	0.039	0.76
Hexachlorodibenzofurans	176	0.021	0.035	0.029	0.030	0.57
Heptachlorodibenzofurans	45.6	0.0054	0.0090	0.0075	0.0077	0.15
Octachlorodibenzofuran	<45	<0.0053	<0.0089	<0.0074	<0.0076	<0.15
Total	<546	<0.064	<0.11	<0.090	<0.092	<1.78

Dry Gas Volume Sampled (Rm^3*) :	5.063
Actual Flowrate (m^3/s) :	27.7
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	92.6	0.011	0.018	0.015	0.015	0.30
Pentachlorodibenzo-p-dioxins	755	0.088	0.15	0.13	0.13	2.44
Hexachlorodibenzo-p-dioxins	1340	0.16	0.26	0.22	0.22	4.33
Heptachlorodibenzo-p-dioxins	698	0.081	0.14	0.12	0.12	2.26
Octachlorodibenzo-p-dioxin	154	0.018	0.030	0.026	0.026	0.50
Total	3040	0.35	0.60	0.50	0.51	9.82

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	12.3	0.0014	0.0024	0.0020	0.0020	0.040
Pentachlorodibenzofurans	155	0.018	0.031	0.026	0.026	0.50
Hexachlorodibenzofurans	120	0.014	0.024	0.020	0.020	0.39
Heptachlorodibenzofurans	87.9	0.010	0.017	0.015	0.015	0.28
Octachlorodibenzofuran	<17	<0.0020	<0.0034	<0.0028	<0.0028	<0.055
Total	<392	<0.046	<0.077	<0.065	<0.065	<1.27

Dry Gas Volume Sampled (Rm^3*) :	5.074
Actual Flowrate (m^3/s) :	27.7
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	247	0.029	0.048	0.041	0.041	0.80
Pentachlorodibenzo-p-dioxins	694	0.081	0.14	0.11	0.11	2.24
Hexachlorodibenzo-p-dioxins	1530	0.18	0.30	0.25	0.25	4.94
Heptachlorodibenzo-p-dioxins	328	0.038	0.064	0.054	0.054	1.06
Octachlorodibenzo-p-dioxin	<180	<0.021	<0.035	<0.030	<0.030	<0.58
Total	<2979	<0.35	<0.58	<0.49	<0.49	<9.62

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	19.1	0.0022	0.0037	0.0032	0.0032	0.062
Pentachlorodibenzofurans	123	0.014	0.024	0.020	0.020	0.40
Hexachlorodibenzofurans	120	0.014	0.023	0.020	0.020	0.39
Heptachlorodibenzofurans	<14	<0.0016	<0.0027	<0.0023	<0.0023	<0.045
Octachlorodibenzofuran	<26	<0.0030	<0.0051	<0.0043	<0.0043	<0.084
Total	<302	<0.035	<0.059	<0.050	<0.050	<0.98

Dry Gas Volume Sampled (Rm^3*) :	5.110
Actual Flowrate (m^3/s) :	27.8
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

Dioxins

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.023	0.011	0.029	0.021	43.8
Pentachlorodibenzo-p-dioxins	0.090	0.088	0.081	0.086	5.8
Hexachlorodibenzo-p-dioxins	0.17	0.16	0.18	0.17	6.4
Heptachlorodibenzo-p-dioxins	0.095	0.081	0.038	0.071	41.4
Octachlorodibenzo-p-dioxin	0.024	0.018	<0.021	<0.021	13.6
Total	0.40	0.35	<0.35	<0.37	8.0

Furans

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.0055	0.0014	0.0022	0.0030	70.5
Pentachlorodibenzofurans	0.027	0.018	0.014	0.020	33.9
Hexachlorodibenzofurans	0.021	0.014	0.014	0.016	24.0
Heptachlorodibenzofurans	0.0054	0.010	<0.0016	<0.0057	75.3
Octachlorodibenzofuran	<0.0053	<0.0020	<0.0030	<0.0034	49.3
Total	<0.064	<0.046	<0.035	<0.048	30.5

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

Dioxins

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.039	0.018	0.048	0.035	43.8
Pentachlorodibenzo-p-dioxins	0.15	0.15	0.14	0.15	5.7
Hexachlorodibenzo-p-dioxins	0.28	0.26	0.30	0.28	6.3
Heptachlorodibenzo-p-dioxins	0.16	0.14	0.064	0.12	41.3
Octachlorodibenzo-p-dioxin	0.040	0.030	<0.035	<0.035	13.3
Total	0.67	0.60	<0.58	<0.62	7.8

Furans

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0092	0.0024	0.0037	0.0051	70.2
Pentachlorodibenzofurans	0.046	0.031	0.024	0.034	33.6
Hexachlorodibenzofurans	0.035	0.024	0.023	0.027	23.7
Heptachlorodibenzofurans	0.0090	0.017	<0.0027	<0.0097	75.5
Octachlorodibenzofuran	<0.0089	<0.0034	<0.0051	<0.0058	49.0
Total	<0.11	<0.077	<0.059	<0.081	30.3

* 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	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.033	0.015	0.041	0.030	44.0
Pentachlorodibenzo-p-dioxins	0.13	0.13	0.11	0.12	5.2
Hexachlorodibenzo-p-dioxins	0.24	0.22	0.25	0.24	6.6
Heptachlorodibenzo-p-dioxins	0.13	0.12	0.054	0.10	40.9
Octachlorodibenzo-p-dioxin	0.033	0.026	<0.030	<0.030	13.1
Total	0.56	0.50	<0.49	<0.52	7.3

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0077	0.0020	0.0032	0.0043	69.8
Pentachlorodibenzofurans	0.039	0.026	0.020	0.028	33.1
Hexachlorodibenzofurans	0.029	0.020	0.020	0.023	23.2
Heptachlorodibenzofurans	0.0075	0.015	<0.0023	<0.0081	75.5
Octachlorodibenzofuran	<0.0074	<0.0028	<0.0043	<0.0049	48.6
Total	<0.090	<0.065	<0.050	<0.068	29.8

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

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

Dioxins

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.033	0.015	0.041	0.030	43.8
Pentachlorodibenzo-p-dioxins	0.13	0.13	0.11	0.12	5.9
Hexachlorodibenzo-p-dioxins	0.24	0.22	0.25	0.24	6.3
Heptachlorodibenzo-p-dioxins	0.14	0.12	0.054	0.10	41.5
Octachlorodibenzo-p-dioxin	0.034	0.026	<0.030	<0.030	13.6
Total	0.57	0.51	<0.49	<0.52	8.1

Furans

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0078	0.0020	0.0032	0.0043	70.5
Pentachlorodibenzofurans	0.039	0.026	0.020	0.028	34.0
Hexachlorodibenzofurans	0.030	0.020	0.020	0.023	24.0
Heptachlorodibenzofurans	0.0077	0.015	<0.0023	<0.0082	75.3
Octachlorodibenzofuran	<0.0076	<0.0028	<0.0043	<0.0049	49.4
Total	<0.092	<0.065	<0.050	<0.069	30.6

* 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	0.64	0.30	0.80	0.58	44.0
Pentachlorodibenzo-p-dioxins	2.50	2.44	2.24	2.39	5.6
Hexachlorodibenzo-p-dioxins	4.69	4.33	4.94	4.65	6.6
Heptachlorodibenzo-p-dioxins	2.62	2.26	1.06	1.98	41.3
Octachlorodibenzo-p-dioxin	0.66	0.50	<0.58	<0.58	13.6
Total	11.1	9.82	<9.62	<10.2	7.9

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	0.15	0.040	0.062	0.084	70.4
Pentachlorodibenzofurans	0.76	0.50	0.40	0.55	33.8
Hexachlorodibenzofurans	0.57	0.39	0.39	0.45	23.9
Heptachlorodibenzofurans	0.15	0.28	<0.045	<0.16	75.2
Octachlorodibenzofuran	<0.15	<0.055	<0.084	<0.095	49.2
Total	<1.78	<1.27	<0.98	<1.34	30.4

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

Dioxins

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	0.021	0.035	0.030	0.030	0.58
Pentachlorodibenzo-p-dioxins	0.086	0.15	0.12	0.12	2.39
Hexachlorodibenzo-p-dioxins	0.17	0.28	0.24	0.24	4.65
Heptachlorodibenzo-p-dioxins	0.071	0.12	0.10	0.10	1.98
Octachlorodibenzo-p-dioxin	<0.021	<0.035	<0.030	<0.030	<0.58
Total	<0.37	<0.62	<0.52	<0.52	<10.2

Furans

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	0.0030	0.0051	0.0043	0.0043	0.084
Pentachlorodibenzofurans	0.020	0.034	0.028	0.028	0.55
Hexachlorodibenzofurans	0.016	0.027	0.023	0.023	0.45
Heptachlorodibenzofurans	<0.0057	<0.0097	<0.0081	<0.0082	<0.16
Octachlorodibenzofuran	<0.0034	<0.0058	<0.0049	<0.0049	<0.095
Total	<0.048	<0.081	<0.068	<0.069	<1.34

* At 25°C and 1 atmosphere

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

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

Dioxins

Congener Group	Blank Train	Method Blank
	pg	pg
Tetrachlorodibenzo-p-dioxins	<8.5	<4.1
Pentachlorodibenzo-p-dioxins	<8.3	<4.0
Hexachlorodibenzo-p-dioxins	<7.9	<3.3
Heptachlorodibenzo-p-dioxins	<8.9	<5.4
Octachlorodibenzo-p-dioxin	<17	142
Total	<50.6	<159

Furans

Congener Group	Blank Train	Laboratory Blank
	pg	pg
Tetrachlorodibenzofurans	<7.2	<3.6
Pentachlorodibenzofurans	<4.9	4.56
Hexachlorodibenzofurans	<5.4	2.87
Heptachlorodibenzofurans	<5.5	<4.4
Octachlorodibenzofuran	<13	<26
Total	<36.0	<41.4

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<5.9	<0.69	<1.17	<0.98	<0.99	<0.019
12378-pentachlorodibenzo-p-dioxin	<7.4	<0.87	<1.46	<1.22	<1.24	<0.024
123478-hexachlorodibenzo-p-dioxin	28.3	3.33	5.59	4.68	4.75	0.092
123678-hexachlorodibenzo-p-dioxin	83.1	9.78	16.4	13.7	14.0	0.27
123789-hexachlorodibenzo-p-dioxin	34.7	4.08	6.85	5.74	5.83	0.11
1234678-heptachlorodibenzo-p-dioxin	400	47.1	79.0	66.2	67.2	1.30
Octachlorodibenzo-p-dioxin	201	23.6	39.7	33.3	33.8	0.66
2378-tetrachlorodibenzofuran	<8.6	<1.01	<1.70	<1.42	<1.44	<0.028
12378-pentachlorodibenzofuran	10.8	1.27	2.13	1.79	1.81	0.035
23478-pentachlorodibenzofuran	26.5	3.12	5.23	4.38	4.45	0.086
123478-hexachlorodibenzofuran	<23	<2.71	<4.54	<3.80	<3.86	<0.075
123678-hexachlorodibenzofuran	28.5	3.35	5.63	4.71	4.79	0.093
234678-hexachlorodibenzofuran	43.9	5.16	8.67	7.26	7.37	0.14
123789-hexachlorodibenzofuran	20.2	2.38	3.99	3.34	3.39	0.066
1234678-heptachlorodibenzofuran	<100	<11.8	<19.8	<16.5	<16.8	<0.33
1234789-heptachlorodibenzofuran	<21	<2.47	<4.15	<3.47	<3.53	<0.068
Octachlorodibenzofuran	<45	<5.29	<8.89	<7.44	<7.56	<0.15
PCB 81	<21	<2.47	<4.15	<3.47	<3.53	<0.068
PCB 77	219	25.8	43.3	36.2	36.8	0.71
PCB 123	<56	<6.59	<11.1	<9.26	<9.41	<0.18
PCB 118	4590	540	907	759	771	15.0
PCB 114	104	12.2	20.5	17.2	17.5	0.34
PCB 105	1390	164	275	230	234	4.53
PCB 126	<14	<1.65	<2.77	<2.32	<2.35	<0.046
PCB 167	44.0	5.18	8.69	7.28	7.39	0.14
PCB 156/157	116	13.6	22.9	19.2	19.5	0.38
PCB 169	<15	<1.76	<2.96	<2.48	<2.52	<0.049
PCB 189	<8.8	<1.04	<1.74	<1.46	<1.48	<0.029
Total Dioxins & Furans Only	<1088	<128	<215	<180	<183	<3.55
Total PCBs Only	<6578	<774	<1299	<1088	<1105	<21.4
Total Dioxins & Furans and PCBs	<7666	<902	<1514	<1268	<1288	<25.0

Dry Gas Volume Sampled (Rm³*) :	5.063
Actual Flowrate (m³/s) :	27.7
Dry Reference Flowrate (Rm³/s*) :	16.5
Dry Adjusted Flowrate (Rm³/s**) :	19.7
Wet Reference Flowrate (Rm³/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<6.9	<0.81	<1.36	<1.14	<1.15	<0.022
12378-pentachlorodibenzo-p-dioxin	10.7	1.25	2.11	1.77	1.78	0.035
123478-hexachlorodibenzo-p-dioxin	<25	<2.92	<4.93	<4.14	<4.17	<0.081
123678-hexachlorodibenzo-p-dioxin	<69	<8.05	<13.6	<11.4	<11.5	<0.22
123789-hexachlorodibenzo-p-dioxin	29.9	3.49	5.89	4.96	4.98	0.097
1234678-heptachlorodibenzo-p-dioxin	334	39.0	65.8	55.4	55.6	1.08
Octachlorodibenzo-p-dioxin	154	18.0	30.4	25.5	25.7	0.50
2378-tetrachlorodibenzofuran	<9.3	<1.09	<1.83	<1.54	<1.55	<0.030
12378-pentachlorodibenzofuran	<7.5	<0.88	<1.48	<1.24	<1.25	<0.024
23478-pentachlorodibenzofuran	<23	<2.68	<4.53	<3.81	<3.83	<0.074
123478-hexachlorodibenzofuran	<21	<2.45	<4.14	<3.48	<3.50	<0.068
123678-hexachlorodibenzofuran	<22	<2.57	<4.34	<3.65	<3.67	<0.071
234678-hexachlorodibenzofuran	<47	<5.48	<9.26	<7.79	<7.83	<0.15
123789-hexachlorodibenzofuran	<13	<1.52	<2.56	<2.15	<2.17	<0.042
1234678-heptachlorodibenzofuran	87.9	10.3	17.3	14.6	14.6	0.28
1234789-heptachlorodibenzofuran	<17	<1.98	<3.35	<2.82	<2.83	<0.055
Octachlorodibenzofuran	<17	<1.98	<3.35	<2.82	<2.83	<0.055
PCB 81	<14	<1.63	<2.76	<2.32	<2.33	<0.045
PCB 77	143	16.7	28.2	23.7	23.8	0.46
PCB 123	51.5	6.01	10.1	8.54	8.58	0.17
PCB 118	3700	432	729	613	616	12.0
PCB 114	<98	<11.4	<19.3	<16.2	<16.3	<0.32
PCB 105	872	102	172	145	145	2.82
PCB 126	<12	<1.40	<2.36	<1.99	<2.00	<0.039
PCB 167	<25	<2.92	<4.93	<4.14	<4.17	<0.081
PCB 156/157	80.3	9.37	15.8	13.3	13.4	0.26
PCB 169	<5.9	<0.69	<1.16	<0.98	<0.98	<0.019
PCB 189	<4.7	<0.55	<0.93	<0.78	<0.78	<0.015
Total Dioxins & Furans Only	<894	<104	<176	<148	<149	<2.89
Total PCBs Only	<5006	<584	<987	<830	<834	<16.2
Total Dioxins & Furans and PCBs	<5901	<689	<1163	<978	<983	<19.1

Dry Gas Volume Sampled (Rm³*) :	5.074
Actual Flowrate (m³/s) :	27.7
Dry Reference Flowrate (Rm³/s*) :	16.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<8.8	<1.02	<1.72	<1.46	<1.46	<0.028
12378-pentachlorodibenzo-p-dioxin	<12	<1.39	<2.35	<1.99	<1.99	<0.039
123478-hexachlorodibenzo-p-dioxin	<38	<4.41	<7.44	<6.29	<6.29	<0.12
123678-hexachlorodibenzo-p-dioxin	83.7	9.72	16.4	13.9	13.9	0.27
123789-hexachlorodibenzo-p-dioxin	42.0	4.88	8.22	6.95	6.95	0.14
1234678-heptachlorodibenzo-p-dioxin	328	38.1	64.2	54.3	54.3	1.06
Octachlorodibenzo-p-dioxin	<180	<20.9	<35.2	<29.8	<29.8	<0.58
2378-tetrachlorodibenzofuran	<16	<1.86	<3.13	<2.65	<2.65	<0.052
12378-pentachlorodibenzofuran	<11	<1.28	<2.15	<1.82	<1.82	<0.036
23478-pentachlorodibenzofuran	<20	<2.32	<3.91	<3.31	<3.31	<0.065
123478-hexachlorodibenzofuran	<21	<2.44	<4.11	<3.48	<3.48	<0.068
123678-hexachlorodibenzofuran	30.4	3.53	5.95	5.03	5.03	0.098
234678-hexachlorodibenzofuran	<39	<4.53	<7.63	<6.46	<6.46	<0.13
123789-hexachlorodibenzofuran	<12	<1.39	<2.35	<1.99	<1.99	<0.039
1234678-heptachlorodibenzofuran	<95	<11.0	<18.6	<15.7	<15.7	<0.31
1234789-heptachlorodibenzofuran	<14	<1.63	<2.74	<2.32	<2.32	<0.045
Octachlorodibenzofuran	<26	<3.02	<5.09	<4.31	<4.31	<0.084
PCB 81	<8.0	<0.93	<1.57	<1.32	<1.32	<0.026
PCB 77	81.7	9.49	16.0	13.5	13.5	0.26
PCB 123	<23	<2.67	<4.50	<3.81	<3.81	<0.074
PCB 118	1830	213	358	303	303	5.91
PCB 114	39.9	4.63	7.81	6.61	6.61	0.13
PCB 105	608	70.6	119	101	101	1.96
PCB 126	<10	<1.16	<1.96	<1.66	<1.66	<0.032
PCB 167	<21	<2.44	<4.11	<3.48	<3.48	<0.068
PCB 156/157	81.5	9.47	15.9	13.5	13.5	0.26
PCB 169	<7.2	<0.84	<1.41	<1.19	<1.19	<0.023
PCB 189	<5.5	<0.64	<1.08	<0.91	<0.91	<0.018
Total Dioxins & Furans Only	<977	<113	<191	<162	<162	<3.15
Total PCBs Only	<2716	<315	<531	<450	<450	<8.77
Total Dioxins & Furans and PCBs	<3693	<429	<723	<611	<611	<11.9

Dry Gas Volume Sampled (Rm³*) :	5.110
Actual Flowrate (m³/s) :	27.8
Dry Reference Flowrate (Rm³/s*) :	16.5
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.69	<0.81	<1.02	<0.84	19.8
12378-pentachlorodibenzo-p-dioxin	<0.87	1.25	<1.39	<1.17	23.1
123478-hexachlorodibenzo-p-dioxin	3.33	<2.92	<4.41	<3.55	21.8
123678-hexachlorodibenzo-p-dioxin	9.78	<8.05	9.72	<9.18	10.7
123789-hexachlorodibenzo-p-dioxin	4.08	3.49	4.88	4.15	16.8
1234678-heptachlorodibenzo-p-dioxin	47.1	39.0	38.1	41.4	11.9
Octachlorodibenzo-p-dioxin	23.6	18.0	<20.9	<20.8	13.6
2378-tetrachlorodibenzofuran	<1.01	<1.09	<1.86	<1.32	35.6
12378-pentachlorodibenzofuran	1.27	<0.88	<1.28	<1.14	20.2
23478-pentachlorodibenzofuran	3.12	<2.68	<2.32	<2.71	14.7
123478-hexachlorodibenzofuran	<2.71	<2.45	<2.44	<2.53	6.0
123678-hexachlorodibenzofuran	3.35	<2.57	3.53	<3.15	16.3
234678-hexachlorodibenzofuran	5.16	<5.48	<4.53	<5.06	9.6
123789-hexachlorodibenzofuran	2.38	<1.52	<1.39	<1.76	30.4
1234678-heptachlorodibenzofuran	<11.8	10.3	<11.0	<11.0	6.8
1234789-heptachlorodibenzofuran	<2.47	<1.98	<1.63	<2.03	20.9
Octachlorodibenzofuran	<5.29	<1.98	<3.02	<3.43	49.3
PCB 81	<2.47	<1.63	<0.93	<1.68	46.0
PCB 77	25.8	16.7	9.49	17.3	47.1
PCB 123	<6.59	6.01	<2.67	<5.09	41.5
PCB 118	540	432	213	395	42.3
PCB 114	12.2	<11.4	4.63	<9.44	44.3
PCB 105	164	102	70.6	112	42.2
PCB 126	<1.65	<1.40	<1.16	<1.40	17.3
PCB 167	5.18	<2.92	<2.44	<3.51	41.6
PCB 156/157	13.6	9.37	9.47	10.8	22.6
PCB 169	<1.76	<0.69	<0.84	<1.10	53.2
PCB 189	<1.04	<0.55	<0.64	<0.74	35.0
Total Dioxins & Furans Only	<128	<104	<113	<115	10.3
Total PCBs Only	<774	<584	<315	<558	41.3
Total Dioxins & Furans and PCBs	<902	<689	<429	<673	35.2

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

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

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<1.17	<1.36	<1.72	<1.42	20.0
12378-pentachlorodibenzo-p-dioxin	<1.46	2.11	<2.35	<1.97	23.3
123478-hexachlorodibenzo-p-dioxin	5.59	<4.93	<7.44	<5.98	21.7
123678-hexachlorodibenzo-p-dioxin	16.4	<13.6	16.4	<15.5	10.4
123789-hexachlorodibenzo-p-dioxin	6.85	5.89	8.22	6.99	16.7
1234678-heptachlorodibenzo-p-dioxin	79.0	65.8	64.2	69.7	11.7
Octachlorodibenzo-p-dioxin	39.7	30.4	<35.2	<35.1	13.3
2378-tetrachlorodibenzofuran	<1.70	<1.83	<3.13	<2.22	35.6
12378-pentachlorodibenzofuran	2.13	<1.48	<2.15	<1.92	20.0
23478-pentachlorodibenzofuran	5.23	<4.53	<3.91	<4.56	14.5
123478-hexachlorodibenzofuran	<4.54	<4.14	<4.11	<4.26	5.7
123678-hexachlorodibenzofuran	5.63	<4.34	5.95	<5.30	16.1
234678-hexachlorodibenzofuran	8.67	<9.26	<7.63	<8.52	9.7
123789-hexachlorodibenzofuran	3.99	<2.56	<2.35	<2.97	30.1
1234678-heptachlorodibenzofuran	<19.8	17.3	<18.6	<18.6	6.5
1234789-heptachlorodibenzofuran	<4.15	<3.35	<2.74	<3.41	20.7
Octachlorodibenzofuran	<8.89	<3.35	<5.09	<5.78	49.0
PCB 81	<4.15	<2.76	<1.57	<2.82	45.8
PCB 77	43.3	28.2	16.0	29.1	46.9
PCB 123	<11.1	10.1	<4.50	<8.57	41.5
PCB 118	907	729	358	665	42.1
PCB 114	20.5	<19.3	7.81	<15.9	44.2
PCB 105	275	172	119	188	42.0
PCB 126	<2.77	<2.36	<1.96	<2.36	17.1
PCB 167	8.69	<4.93	<4.11	<5.91	41.3
PCB 156/157	22.9	15.8	15.9	18.2	22.2
PCB 169	<2.96	<1.16	<1.41	<1.84	52.9
PCB 189	<1.74	<0.93	<1.08	<1.25	34.6
Total Dioxins & Furans Only	<215	<176	<191	<194	10.0
Total PCBs Only	<1299	<987	<531	<939	41.1
Total Dioxins & Furans and PCBs	<1514	<1163	<723	<1133	35.0

* At 25°C and 1 atmosphere

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

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

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.98	<1.14	<1.46	<1.19	20.5
12378-pentachlorodibenzo-p-dioxin	<1.22	1.77	<1.99	<1.66	23.7
123478-hexachlorodibenzo-p-dioxin	4.68	<4.14	<6.29	<5.04	22.2
123678-hexachlorodibenzo-p-dioxin	13.7	<11.4	13.9	<13.0	10.5
123789-hexachlorodibenzo-p-dioxin	5.74	4.96	6.95	5.88	17.1
1234678-heptachlorodibenzo-p-dioxin	66.2	55.4	54.3	58.6	11.2
Octachlorodibenzo-p-dioxin	33.3	25.5	<29.8	<29.5	13.1
2378-tetrachlorodibenzofuran	<1.42	<1.54	<2.65	<1.87	36.2
12378-pentachlorodibenzofuran	1.79	<1.24	<1.82	<1.62	20.1
23478-pentachlorodibenzofuran	4.38	<3.81	<3.31	<3.84	14.0
123478-hexachlorodibenzofuran	<3.80	<3.48	<3.48	<3.59	5.2
123678-hexachlorodibenzofuran	4.71	<3.65	5.03	<4.47	16.3
234678-hexachlorodibenzofuran	7.26	<7.79	<6.46	<7.17	9.4
123789-hexachlorodibenzofuran	3.34	<2.15	<1.99	<2.49	29.6
1234678-heptachlorodibenzofuran	<16.5	14.6	<15.7	<15.6	6.4
1234789-heptachlorodibenzofuran	<3.47	<2.82	<2.32	<2.87	20.2
Octachlorodibenzofuran	<7.44	<2.82	<4.31	<4.86	48.6
PCB 81	<3.47	<2.32	<1.32	<2.37	45.3
PCB 77	36.2	23.7	13.5	24.5	46.4
PCB 123	<9.26	8.54	<3.81	<7.20	41.1
PCB 118	759	613	303	559	41.7
PCB 114	17.2	<16.2	6.61	<13.4	43.9
PCB 105	230	145	101	158	41.5
PCB 126	<2.32	<1.99	<1.66	<1.99	16.6
PCB 167	7.28	<4.14	<3.48	<4.97	40.9
PCB 156/157	19.2	13.3	13.5	15.3	21.8
PCB 169	<2.48	<0.98	<1.19	<1.55	52.5
PCB 189	<1.46	<0.78	<0.91	<1.05	34.2
Total Dioxins & Furans Only	<180	<148	<162	<163	9.8
Total PCBs Only	<1088	<830	<450	<789	40.7
Total Dioxins & Furans and PCBs	<1268	<978	<611	<953	34.5

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

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

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 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	<0.99	<1.15	<1.46	<1.20	19.8
12378-pentachlorodibenzo-p-dioxin	<1.24	1.78	<1.99	<1.67	23.0
123478-hexachlorodibenzo-p-dioxin	4.75	<4.17	<6.29	<5.07	21.7
123678-hexachlorodibenzo-p-dioxin	14.0	<11.5	13.9	<13.1	10.6
123789-hexachlorodibenzo-p-dioxin	5.83	4.98	6.95	5.92	16.7
1234678-heptachlorodibenzo-p-dioxin	67.2	55.6	54.3	59.1	12.0
Octachlorodibenzo-p-dioxin	33.8	25.7	<29.8	<29.7	13.6
2378-tetrachlorodibenzofuran	<1.44	<1.55	<2.65	<1.88	35.5
12378-pentachlorodibenzofuran	1.81	<1.25	<1.82	<1.63	20.2
23478-pentachlorodibenzofuran	4.45	<3.83	<3.31	<3.87	14.8
123478-hexachlorodibenzofuran	<3.86	<3.50	<3.48	<3.61	6.0
123678-hexachlorodibenzofuran	4.79	<3.67	5.03	<4.50	16.2
234678-hexachlorodibenzofuran	7.37	<7.83	<6.46	<7.22	9.7
123789-hexachlorodibenzofuran	3.39	<2.17	<1.99	<2.52	30.4
1234678-heptachlorodibenzofuran	<16.8	14.6	<15.7	<15.7	6.8
1234789-heptachlorodibenzofuran	<3.53	<2.83	<2.32	<2.89	21.0
Octachlorodibenzofuran	<7.56	<2.83	<4.31	<4.90	49.4
PCB 81	<3.53	<2.33	<1.32	<2.39	46.0
PCB 77	36.8	23.8	13.5	24.7	47.2
PCB 123	<9.41	8.58	<3.81	<7.27	41.6
PCB 118	771	616	303	564	42.3
PCB 114	17.5	<16.3	6.61	<13.5	44.3
PCB 105	234	145	101	160	42.3
PCB 126	<2.35	<2.00	<1.66	<2.00	17.4
PCB 167	7.39	<4.17	<3.48	<5.01	41.7
PCB 156/157	19.5	13.4	13.5	15.5	22.6
PCB 169	<2.52	<0.98	<1.19	<1.57	53.3
PCB 189	<1.48	<0.78	<0.91	<1.06	35.0
Total Dioxins & Furans Only	<183	<149	<162	<164	10.4
Total PCBs Only	<1105	<834	<450	<796	41.4
Total Dioxins & Furans and PCBs	<1288	<983	<611	<961	35.3

* 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				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.019	<0.022	<0.028	<0.023	20.1
12378-pentachlorodibenzo-p-dioxin	<0.024	0.035	<0.039	<0.032	23.2
123478-hexachlorodibenzo-p-dioxin	0.092	<0.081	<0.12	<0.099	22.0
123678-hexachlorodibenzo-p-dioxin	0.27	<0.22	0.27	<0.25	10.8
123789-hexachlorodibenzo-p-dioxin	0.11	0.097	0.14	0.12	17.0
1234678-heptachlorodibenzo-p-dioxin	1.30	1.08	1.06	1.15	11.8
Octachlorodibenzo-p-dioxin	0.66	0.50	<0.58	<0.58	13.6
2378-tetrachlorodibenzofuran	<0.028	<0.030	<0.052	<0.037	35.8
12378-pentachlorodibenzofuran	0.035	<0.024	<0.036	<0.032	20.3
23478-pentachlorodibenzofuran	0.086	<0.074	<0.065	<0.075	14.5
123478-hexachlorodibenzofuran	<0.075	<0.068	<0.068	<0.070	5.8
123678-hexachlorodibenzofuran	0.093	<0.071	0.098	<0.087	16.4
234678-hexachlorodibenzofuran	0.14	<0.15	<0.13	<0.14	9.4
123789-hexachlorodibenzofuran	0.066	<0.042	<0.039	<0.049	30.3
1234678-heptachlorodibenzofuran	<0.33	0.28	<0.31	<0.31	6.8
1234789-heptachlorodibenzofuran	<0.068	<0.055	<0.045	<0.056	20.8
Octachlorodibenzofuran	<0.15	<0.055	<0.084	<0.095	49.2
PCB 81	<0.068	<0.045	<0.026	<0.047	45.9
PCB 77	0.71	0.46	0.26	0.48	47.0
PCB 123	<0.18	0.17	<0.074	<0.14	41.4
PCB 118	15.0	12.0	5.91	10.9	42.1
PCB 114	0.34	<0.32	0.13	<0.26	44.1
PCB 105	4.53	2.82	1.96	3.10	42.1
PCB 126	<0.046	<0.039	<0.032	<0.039	17.1
PCB 167	0.14	<0.081	<0.068	<0.097	41.5
PCB 156/157	0.38	0.26	0.26	0.30	22.4
PCB 169	<0.049	<0.019	<0.023	<0.030	53.1
PCB 189	<0.029	<0.015	<0.018	<0.021	34.9
Total Dioxins & Furans Only	<3.55	<2.89	<3.15	<3.20	10.3
Total PCBs Only	<21.4	<16.2	<8.77	<15.5	41.2
Total Dioxins & Furans and PCBs	<25.0	<19.1	<11.9	<18.7	35.0

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

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

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.84	<1.42	<1.19	<1.20	<0.023
12378-pentachlorodibenzo-p-dioxin	<1.17	<1.97	<1.66	<1.67	<0.032
123478-hexachlorodibenzo-p-dioxin	<3.55	<5.98	<5.04	<5.07	<0.099
123678-hexachlorodibenzo-p-dioxin	<9.18	<15.5	<13.0	<13.1	<0.25
123789-hexachlorodibenzo-p-dioxin	4.15	6.99	5.88	5.92	0.12
1234678-heptachlorodibenzo-p-dioxin	41.4	69.7	58.6	59.1	1.15
Octachlorodibenzo-p-dioxin	<20.8	<35.1	<29.5	<29.7	<0.58
2378-tetrachlorodibenzofuran	<1.32	<2.22	<1.87	<1.88	<0.037
12378-pentachlorodibenzofuran	<1.14	<1.92	<1.62	<1.63	<0.032
23478-pentachlorodibenzofuran	<2.71	<4.56	<3.84	<3.87	<0.075
123478-hexachlorodibenzofuran	<2.53	<4.26	<3.59	<3.61	<0.070
123678-hexachlorodibenzofuran	<3.15	<5.30	<4.47	<4.50	<0.087
234678-hexachlorodibenzofuran	<5.06	<8.52	<7.17	<7.22	<0.14
123789-hexachlorodibenzofuran	<1.76	<2.97	<2.49	<2.52	<0.049
1234678-heptachlorodibenzofuran	<11.0	<18.6	<15.6	<15.7	<0.31
1234789-heptachlorodibenzofuran	<2.03	<3.41	<2.87	<2.89	<0.056
Octachlorodibenzofuran	<3.43	<5.78	<4.86	<4.90	<0.095
PCB 81	<1.68	<2.82	<2.37	<2.39	<0.047
PCB 77	17.3	29.1	24.5	24.7	0.48
PCB 123	<5.09	<8.57	<7.20	<7.27	<0.14
PCB 118	395	665	559	564	10.9
PCB 114	<9.44	<15.9	<13.4	<13.5	<0.26
PCB 105	112	188	158	160	3.10
PCB 126	<1.40	<2.36	<1.99	<2.00	<0.039
PCB 167	<3.51	<5.91	<4.97	<5.01	<0.097
PCB 156/157	10.8	18.2	15.3	15.5	0.30
PCB 169	<1.10	<1.84	<1.55	<1.57	<0.030
PCB 189	<0.74	<1.25	<1.05	<1.06	<0.021
Total Dioxins & Furans Only	<115	<194	<163	<164	<3.20
Total PCBs Only	<558	<939	<789	<796	<15.5
Total Dioxins & Furans and PCBs	<673	<1133	<953	<961	<18.7

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Blank Train pg	Method Blank pg
2378-tetrachlorodibenzo-p-dioxin	<8.5	<4.1
12378-pentachlorodibenzo-p-dioxin	<8.3	<4.0
123478-hexachlorodibenzo-p-dioxin	<7.9	<3.3
123678-hexachlorodibenzo-p-dioxin	<7.6	<3.2
123789-hexachlorodibenzo-p-dioxin	<7.8	<5.3
1234678-heptachlorodibenzo-p-dioxin	<8.9	<5.4
Octachlorodibenzo-p-dioxin	<17	142
2378-tetrachlorodibenzofuran	<7.2	<3.6
12378-pentachlorodibenzofuran	<4.9	<2.3
23478-pentachlorodibenzofuran	<4.5	<2.1
123478-hexachlorodibenzofuran	<4.5	<2.4
123678-hexachlorodibenzofuran	<4.3	<2.1
234678-hexachlorodibenzofuran	<4.4	2.87
123789-hexachlorodibenzofuran	<8.1	<7.5
1234678-heptachlorodibenzofuran	<4.7	<3.6
1234789-heptachlorodibenzofuran	<5.5	<4.4
Octachlorodibenzofuran	<13	<26
PCB 81	<5.9	<5.4
PCB 77	<6.5	<5.8
PCB 123	<8.0	<7
PCB 118	<7.3	<15
PCB 114	<7.3	<6
PCB 105	<7.6	<7
PCB 126	<7.8	<7
PCB 167	<2.9	<4.5
PCB 156/157	<4.0	<6.2
PCB 169	<2.9	<4.9
PCB 189	<2.0	<3.3
Total Dioxins & Furans Only	<127	<224
Total PCBs Only	<62.2	<71.3
Total Dioxins & Furans and PCBs	<189	<295

"<" 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	<0.69	<0.81	<1.02	<0.84
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.87	1.25	<1.39	<1.17
123478-hexachlorodibenzo-p-dioxin	0.10000	0.33	<0.29	<0.44	<0.36
123678-hexachlorodibenzo-p-dioxin	0.10000	0.98	<0.81	0.97	<0.92
123789-hexachlorodibenzo-p-dioxin	0.10000	0.41	0.35	0.49	0.41
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.47	0.39	0.38	0.41
Octachlorodibenzo-p-dioxin	0.00030	0.0071	0.0054	<0.0063	<0.0063
2378-tetrachlorodibenzofuran	0.10000	<0.10	<0.11	<0.19	<0.13
12378-pentachlorodibenzofuran	0.03000	0.038	<0.026	<0.038	<0.034
23478-pentachlorodibenzofuran	0.30000	0.94	<0.81	<0.70	<0.81
123478-hexachlorodibenzofuran	0.10000	<0.27	<0.25	<0.24	<0.25
123678-hexachlorodibenzofuran	0.10000	0.34	<0.26	0.35	<0.32
234678-hexachlorodibenzofuran	0.10000	0.52	<0.55	<0.45	<0.51
123789-hexachlorodibenzofuran	0.10000	0.24	<0.15	<0.14	<0.18
1234678-heptachlorodibenzofuran	0.01000	<0.12	0.10	<0.11	<0.11
1234789-heptachlorodibenzofuran	0.01000	<0.025	<0.020	<0.016	<0.020
Octachlorodibenzofuran	0.00030	<0.0016	<0.00060	<0.00091	<0.0010
PCB 81	0.00030	<0.00074	<0.00049	<0.00028	<0.00050
PCB 77	0.00010	0.0026	0.0017	0.00095	0.0017
PCB 123	0.00003	<0.00020	0.00018	<0.000080	<0.00015
PCB 118	0.00003	0.016	0.013	0.0064	0.012
PCB 114	0.00003	0.00037	<0.00034	0.00014	<0.00028
PCB 105	0.00003	0.0049	0.0031	0.0021	0.0034
PCB 126	0.10000	<0.16	<0.14	<0.12	<0.14
PCB 167	0.00003	0.00016	<0.000088	<0.000073	<0.00011
PCB 156/157	0.00003	0.00041	0.00028	0.00028	0.00032
PCB 169	0.03000	<0.053	<0.021	<0.025	<0.033
PCB 189	0.00003	<0.000031	<0.000016	<0.000019	<0.000022
Total Dioxins & Furans Only		<6.34	<6.16	<6.94	<6.48
Total PCBs Only		<0.24	<0.18	<0.15	<0.19
Total Dioxins & Furans and PCBs		<6.58	<6.34	<7.09	<6.67

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

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

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<1.17	<1.36	<1.72	<1.42
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.46	2.11	<2.35	<1.97
123478-hexachlorodibenzo-p-dioxin	0.10000	0.56	<0.49	<0.74	<0.60
123678-hexachlorodibenzo-p-dioxin	0.10000	1.64	<1.36	1.64	<1.55
123789-hexachlorodibenzo-p-dioxin	0.10000	0.69	0.59	0.82	0.70
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.79	0.66	0.64	0.70
Octachlorodibenzo-p-dioxin	0.00030	0.012	0.0091	<0.011	<0.011
2378-tetrachlorodibenzofuran	0.10000	<0.17	<0.18	<0.31	<0.22
12378-pentachlorodibenzofuran	0.03000	0.064	<0.044	<0.065	<0.058
23478-pentachlorodibenzofuran	0.30000	1.57	<1.36	<1.17	<1.37
123478-hexachlorodibenzofuran	0.10000	<0.45	<0.41	<0.41	<0.43
123678-hexachlorodibenzofuran	0.10000	0.56	<0.43	0.59	<0.53
234678-hexachlorodibenzofuran	0.10000	0.87	<0.93	<0.76	<0.85
123789-hexachlorodibenzofuran	0.10000	0.40	<0.26	<0.23	<0.30
1234678-heptachlorodibenzofuran	0.01000	<0.20	0.17	<0.19	<0.19
1234789-heptachlorodibenzofuran	0.01000	<0.041	<0.034	<0.027	<0.034
Octachlorodibenzofuran	0.00030	<0.0027	<0.0010	<0.0015	<0.0017
PCB 81	0.00030	<0.0012	<0.00083	<0.00047	<0.00085
PCB 77	0.00010	0.0043	0.0028	0.0016	0.0029
PCB 123	0.00003	<0.00033	0.00030	<0.00014	<0.00026
PCB 118	0.00003	0.027	0.022	0.011	0.020
PCB 114	0.00003	0.00062	<0.00058	0.00023	<0.00048
PCB 105	0.00003	0.0082	0.0052	0.0036	0.0057
PCB 126	0.10000	<0.28	<0.24	<0.20	<0.24
PCB 167	0.00003	0.00026	<0.00015	<0.00012	<0.00018
PCB 156/157	0.00003	0.00069	0.00047	0.00048	0.00055
PCB 169	0.03000	<0.089	<0.035	<0.042	<0.055
PCB 189	0.00003	<0.000052	<0.000028	<0.000032	<0.000037
Total Dioxins & Furans Only		<10.6	<10.4	<11.7	<10.9
Total PCBs Only		<0.41	<0.30	<0.26	<0.32
Total Dioxins & Furans and PCBs		<11.1	<10.7	<12.0	<11.2

* 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	<0.98	<1.14	<1.46	<1.19
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.22	1.77	<1.99	<1.66
123478-hexachlorodibenzo-p-dioxin	0.10000	0.47	<0.41	<0.63	<0.50
123678-hexachlorodibenzo-p-dioxin	0.10000	1.37	<1.14	1.39	<1.30
123789-hexachlorodibenzo-p-dioxin	0.10000	0.57	0.50	0.70	0.59
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.66	0.55	0.54	0.59
Octachlorodibenzo-p-dioxin	0.00030	0.010	0.0077	<0.0089	<0.0089
2378-tetrachlorodibenzofuran	0.10000	<0.14	<0.15	<0.26	<0.19
12378-pentachlorodibenzofuran	0.03000	0.054	<0.037	<0.055	<0.049
23478-pentachlorodibenzofuran	0.30000	1.32	<1.14	<0.99	<1.15
123478-hexachlorodibenzofuran	0.10000	<0.38	<0.35	<0.35	<0.36
123678-hexachlorodibenzofuran	0.10000	0.47	<0.36	0.50	<0.45
234678-hexachlorodibenzofuran	0.10000	0.73	<0.78	<0.65	<0.72
123789-hexachlorodibenzofuran	0.10000	0.33	<0.22	<0.20	<0.25
1234678-heptachlorodibenzofuran	0.01000	<0.17	0.15	<0.16	<0.16
1234789-heptachlorodibenzofuran	0.01000	<0.035	<0.028	<0.023	<0.029
Octachlorodibenzofuran	0.00030	<0.0022	<0.00085	<0.0013	<0.0015
PCB 81	0.00030	<0.0010	<0.00070	<0.00040	<0.00071
PCB 77	0.00010	0.0036	0.0024	0.0014	0.0024
PCB 123	0.00003	<0.00028	0.00026	<0.00011	<0.00022
PCB 118	0.00003	0.023	0.018	0.0091	0.017
PCB 114	0.00003	0.00052	<0.00049	0.00020	<0.00040
PCB 105	0.00003	0.0069	0.0043	0.0030	0.0048
PCB 126	0.10000	<0.23	<0.20	<0.17	<0.20
PCB 167	0.00003	0.00022	<0.00012	<0.00010	<0.00015
PCB 156/157	0.00003	0.00058	0.00040	0.00040	0.00046
PCB 169	0.03000	<0.074	<0.029	<0.036	<0.047
PCB 189	0.00003	<0.000044	<0.000023	<0.000027	<0.000031
Total Dioxins & Furans Only		<8.91	<8.75	<9.90	<9.19
Total PCBs Only		<0.34	<0.26	<0.22	<0.27
Total Dioxins & Furans and PCBs		<9.26	<9.00	<10.1	<9.46

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

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

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

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

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	0.49	0.57	0.73	0.60
12378-pentachlorodibenzo-p-dioxin	1.00000	0.61	1.77	0.99	1.13
123478-hexachlorodibenzo-p-dioxin	0.10000	0.47	0.21	0.31	0.33
123678-hexachlorodibenzo-p-dioxin	0.10000	1.37	0.57	1.39	1.11
123789-hexachlorodibenzo-p-dioxin	0.10000	0.57	0.50	0.70	0.59
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.66	0.55	0.54	0.59
Octachlorodibenzo-p-dioxin	0.00030	0.010	0.0077	0.0045	0.0074
2378-tetrachlorodibenzofuran	0.10000	0.071	0.077	0.13	0.094
12378-pentachlorodibenzofuran	0.03000	0.054	0.019	0.027	0.033
23478-pentachlorodibenzofuran	0.30000	1.32	0.57	0.50	0.79
123478-hexachlorodibenzofuran	0.10000	0.19	0.17	0.17	0.18
123678-hexachlorodibenzofuran	0.10000	0.47	0.18	0.50	0.39
234678-hexachlorodibenzofuran	0.10000	0.73	0.39	0.32	0.48
123789-hexachlorodibenzofuran	0.10000	0.33	0.11	0.099	0.18
1234678-heptachlorodibenzofuran	0.01000	0.083	0.15	0.079	0.10
1234789-heptachlorodibenzofuran	0.01000	0.017	0.014	0.012	0.014
Octachlorodibenzofuran	0.00030	0.0011	0.00042	0.00065	0.00073
PCB 81	0.00030	0.00052	0.00035	0.00020	0.00036
PCB 77	0.00010	0.0036	0.0024	0.0014	0.0024
PCB 123	0.00003	0.00014	0.00026	0.000057	0.00015
PCB 118	0.00003	0.023	0.018	0.0091	0.017
PCB 114	0.00003	0.00052	0.00024	0.00020	0.00032
PCB 105	0.00003	0.0069	0.0043	0.0030	0.0048
PCB 126	0.10000	0.12	0.099	0.083	0.099
PCB 167	0.00003	0.00022	0.000062	0.000052	0.00011
PCB 156/157	0.00003	0.00058	0.00040	0.00040	0.00046
PCB 169	0.03000	0.037	0.015	0.018	0.023
PCB 189	0.00003	0.000022	0.000012	0.000014	0.000016
Total Dioxins & Furans Only		7.45	5.86	6.51	6.61
Total PCBs Only		0.19	0.14	0.12	0.15
Total Dioxins & Furans and PCBs		7.64	6.00	6.63	6.76

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

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

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

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

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00	<0.98	<1.14	<1.46	<1.19
12378-pentachlorodibenzo-p-dioxin	0.50	<0.61	0.89	<0.99	<0.83
123478-hexachlorodibenzo-p-dioxin	0.10	0.47	<0.41	<0.63	<0.50
123678-hexachlorodibenzo-p-dioxin	0.10	1.37	<1.14	1.39	<1.30
123789-hexachlorodibenzo-p-dioxin	0.10	0.57	0.50	0.70	0.59
1234678-heptachlorodibenzo-p-dioxin	0.01	0.66	0.55	0.54	0.59
Octachlorodibenzo-p-dioxin	0.001	0.033	0.026	<0.030	<0.030
2378-tetrachlorodibenzofuran	0.10	<0.14	<0.15	<0.26	<0.19
12378-pentachlorodibenzofuran	0.05	0.089	<0.062	<0.091	<0.081
23478-pentachlorodibenzofuran	0.50	2.19	<1.91	<1.66	<1.92
123478-hexachlorodibenzofuran	0.10	<0.38	<0.35	<0.35	<0.36
123678-hexachlorodibenzofuran	0.10	0.47	<0.36	0.50	<0.45
234678-hexachlorodibenzofuran	0.10	0.73	<0.78	<0.65	<0.72
123789-hexachlorodibenzofuran	0.10	0.33	<0.22	<0.20	<0.25
1234678-heptachlorodibenzofuran	0.01	<0.17	0.15	<0.16	<0.16
1234789-heptachlorodibenzofuran	0.01	<0.035	<0.028	<0.023	<0.029
Octachlorodibenzofuran	0.001	<0.0074	<0.0028	<0.0043	<0.0049
Total Dioxins & Furans		<9.24	<8.67	<9.63	<9.18
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	<0.99	<1.15	<1.46	<1.20
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.24	1.78	<1.99	<1.67
123478-hexachlorodibenzo-p-dioxin	0.10000	0.48	<0.42	<0.63	<0.51
123678-hexachlorodibenzo-p-dioxin	0.10000	1.40	<1.15	1.39	<1.31
123789-hexachlorodibenzo-p-dioxin	0.10000	0.58	0.50	0.70	0.59
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.67	0.56	0.54	0.59
Octachlorodibenzo-p-dioxin	0.00030	0.010	0.0077	<0.0089	<0.0089
2378-tetrachlorodibenzofuran	0.10000	<0.14	<0.15	<0.26	<0.19
12378-pentachlorodibenzofuran	0.03000	0.054	<0.037	<0.055	<0.049
23478-pentachlorodibenzofuran	0.30000	1.34	<1.15	<0.99	<1.16
123478-hexachlorodibenzofuran	0.10000	<0.39	<0.35	<0.35	<0.36
123678-hexachlorodibenzofuran	0.10000	0.48	<0.37	0.50	<0.45
234678-hexachlorodibenzofuran	0.10000	0.74	<0.78	<0.65	<0.72
123789-hexachlorodibenzofuran	0.10000	0.34	<0.22	<0.20	<0.25
1234678-heptachlorodibenzofuran	0.01000	<0.17	0.15	<0.16	<0.16
1234789-heptachlorodibenzofuran	0.01000	<0.035	<0.028	<0.023	<0.029
Octachlorodibenzofuran	0.00030	<0.0023	<0.00085	<0.0013	<0.0015
PCB 81	0.00030	<0.0011	<0.00070	<0.00040	<0.00072
PCB 77	0.00010	0.0037	0.0024	0.0014	0.0025
PCB 123	0.00003	<0.00028	0.00026	<0.00011	<0.00022
PCB 118	0.00003	0.023	0.018	0.0091	0.017
PCB 114	0.00003	0.00052	<0.00049	0.00020	<0.00040
PCB 105	0.00003	0.0070	0.0044	0.0030	0.0048
PCB 126	0.10000	<0.24	<0.20	<0.17	<0.20
PCB 167	0.00003	0.00022	<0.00012	<0.00010	<0.00015
PCB 156/157	0.00003	0.00058	0.00040	0.00040	0.00046
PCB 169	0.03000	<0.076	<0.029	<0.036	<0.047
PCB 189	0.00003	<0.000044	<0.000023	<0.000027	<0.000032
Total Dioxins & Furans Only		<9.05	<8.79	<9.90	<9.25
Total PCBs Only		<0.35	<0.26	<0.22	<0.27
Total Dioxins & Furans and PCBs		<9.40	<9.05	<10.1	<9.52

* At 25°C and 1 atmosphere

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

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

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.019	<0.022	<0.028	<0.023
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.024	0.035	<0.039	<0.032
123478-hexachlorodibenzo-p-dioxin	0.10000	0.0092	<0.0081	<0.012	<0.0099
123678-hexachlorodibenzo-p-dioxin	0.10000	0.027	<0.022	0.027	<0.025
123789-hexachlorodibenzo-p-dioxin	0.10000	0.011	0.0097	0.014	0.012
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.013	0.011	0.011	0.011
Octachlorodibenzo-p-dioxin	0.00030	0.00020	0.00015	<0.00017	<0.00017
2378-tetrachlorodibenzofuran	0.10000	<0.0028	<0.0030	<0.0052	<0.0037
12378-pentachlorodibenzofuran	0.03000	0.0011	<0.00073	<0.0011	<0.00095
23478-pentachlorodibenzofuran	0.30000	0.026	<0.022	<0.019	<0.023
123478-hexachlorodibenzofuran	0.10000	<0.0075	<0.0068	<0.0068	<0.0070
123678-hexachlorodibenzofuran	0.10000	0.0093	<0.0071	0.0098	<0.0087
234678-hexachlorodibenzofuran	0.10000	0.014	<0.015	<0.013	<0.014
123789-hexachlorodibenzofuran	0.10000	0.0066	<0.0042	<0.0039	<0.0049
1234678-heptachlorodibenzofuran	0.01000	<0.0033	0.0028	<0.0031	<0.0031
1234789-heptachlorodibenzofuran	0.01000	<0.00068	<0.00055	<0.00045	<0.00056
Octachlorodibenzofuran	0.00030	<0.000044	<0.000016	<0.000025	<0.000029
PCB 81	0.00030	<0.000021	<0.000014	<0.0000077	<0.000014
PCB 77	0.00010	0.000071	0.000046	0.000026	0.000048
PCB 123	0.00003	<0.0000055	0.0000050	<0.0000022	<0.0000042
PCB 118	0.00003	0.00045	0.00036	0.00018	0.00033
PCB 114	0.00003	0.000010	<0.0000095	0.0000039	<0.0000078
PCB 105	0.00003	0.00014	0.000085	0.000059	0.000093
PCB 126	0.10000	<0.0046	<0.0039	<0.0032	<0.0039
PCB 167	0.00003	0.0000043	<0.0000024	<0.0000020	<0.0000029
PCB 156/157	0.00003	0.000011	0.0000078	0.0000079	0.0000090
PCB 169	0.03000	<0.0015	<0.00057	<0.00070	<0.00091
PCB 189	0.00003	<0.00000086	<0.00000046	<0.00000053	<0.00000062
Total Dioxins & Furans Only		<0.18	<0.17	<0.19	<0.18
Total PCBs Only		<0.0067	<0.0050	<0.0042	<0.0053
Total Dioxins & Furans and PCBs		<0.18	<0.18	<0.20	<0.19

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/m^3	Dry Reference Concentration pg TEQ/Rm^3*	Dry Adjusted Concentration pg TEQ/Rm^3**	Wet Reference Concentration pg TEQ/Rm^3*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.84	<1.42	<1.19	<1.20	<0.023
12378-pentachlorodibenzo-p-dioxin	<1.17	<1.97	<1.66	<1.67	<0.032
123478-hexachlorodibenzo-p-dioxin	<0.36	<0.60	<0.50	<0.51	<0.0099
123678-hexachlorodibenzo-p-dioxin	<0.92	<1.55	<1.30	<1.31	<0.025
123789-hexachlorodibenzo-p-dioxin	0.41	0.70	0.59	0.59	0.012
1234678-heptachlorodibenzo-p-dioxin	0.41	0.70	0.59	0.59	0.011
Octachlorodibenzo-p-dioxin	<0.0063	<0.011	<0.0089	<0.0089	<0.00017
2378-tetrachlorodibenzofuran	<0.13	<0.22	<0.19	<0.19	<0.0037
12378-pentachlorodibenzofuran	<0.034	<0.058	<0.049	<0.049	<0.00095
23478-pentachlorodibenzofuran	<0.81	<1.37	<1.15	<1.16	<0.023
123478-hexachlorodibenzofuran	<0.25	<0.43	<0.36	<0.36	<0.0070
123678-hexachlorodibenzofuran	<0.32	<0.53	<0.45	<0.45	<0.0087
234678-hexachlorodibenzofuran	<0.51	<0.85	<0.72	<0.72	<0.014
123789-hexachlorodibenzofuran	<0.18	<0.30	<0.25	<0.25	<0.0049
1234678-heptachlorodibenzofuran	<0.11	<0.19	<0.16	<0.16	<0.0031
1234789-heptachlorodibenzofuran	<0.020	<0.034	<0.029	<0.029	<0.00056
Octachlorodibenzofuran	<0.0010	<0.0017	<0.0015	<0.0015	<0.000029
PCB 81	<0.00050	<0.00085	<0.00071	<0.00072	<0.000014
PCB 77	0.0017	0.0029	0.0024	0.0025	0.000048
PCB 123	<0.00015	<0.00026	<0.00022	<0.00022	<0.0000042
PCB 118	0.012	0.020	0.017	0.017	0.00033
PCB 114	<0.00028	<0.00048	<0.00040	<0.00040	<0.0000078
PCB 105	0.0034	0.0057	0.0048	0.0048	0.000093
PCB 126	<0.14	<0.24	<0.20	<0.20	<0.0039
PCB 167	<0.00011	<0.00018	<0.00015	<0.00015	<0.0000029
PCB 156/157	0.00032	0.00055	0.00046	0.00046	0.0000090
PCB 169	<0.033	<0.055	<0.047	<0.047	<0.00091
PCB 189	<0.000022	<0.000037	<0.000031	<0.000032	<0.00000062
Total Dioxins & Furans Only	<6.48	<10.9	<9.19	<9.25	<0.18
Total PCBs Only	<0.19	<0.32	<0.27	<0.27	<0.0053
Total Dioxins & Furans and PCBs	<6.67	<11.2	<9.46	<9.52	<0.19

* At 25°C and 1 atmosphere

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

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

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

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

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg TEQ/m³	pg TEQ/Rm³*	pg TEQ/Rm³**	pg TEQ/Rm³*	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.42	0.71	0.60	0.60	0.012
12378-pentachlorodibenzo-p-dioxin	0.79	1.34	1.13	1.13	0.022
123478-hexachlorodibenzo-p-dioxin	0.23	0.39	0.33	0.33	0.0065
123678-hexachlorodibenzo-p-dioxin	0.78	1.32	1.11	1.12	0.022
123789-hexachlorodibenzo-p-dioxin	0.41	0.70	0.59	0.59	0.012
1234678-heptachlorodibenzo-p-dioxin	0.41	0.70	0.59	0.59	0.011
Octachlorodibenzo-p-dioxin	0.0052	0.0088	0.0074	0.0074	0.00014
2378-tetrachlorodibenzofuran	0.066	0.11	0.094	0.094	0.0018
12378-pentachlorodibenzofuran	0.023	0.039	0.033	0.033	0.00065
23478-pentachlorodibenzofuran	0.56	0.95	0.79	0.80	0.016
123478-hexachlorodibenzofuran	0.13	0.21	0.18	0.18	0.0035
123678-hexachlorodibenzofuran	0.27	0.46	0.39	0.39	0.0076
234678-hexachlorodibenzofuran	0.34	0.57	0.48	0.48	0.0094
123789-hexachlorodibenzofuran	0.13	0.21	0.18	0.18	0.0035
1234678-heptachlorodibenzofuran	0.072	0.12	0.10	0.10	0.0020
1234789-heptachlorodibenzofuran	0.010	0.017	0.014	0.014	0.00028
Octachlorodibenzofuran	0.00051	0.00087	0.00073	0.00073	0.000014
PCB 81	0.00025	0.00042	0.00036	0.00036	0.0000070
PCB 77	0.0017	0.0029	0.0024	0.0025	0.000048
PCB 123	0.00011	0.00018	0.00015	0.00015	0.0000029
PCB 118	0.012	0.020	0.017	0.017	0.00033
PCB 114	0.00023	0.00038	0.00032	0.00032	0.0000063
PCB 105	0.0034	0.0057	0.0048	0.0048	0.000093
PCB 126	0.070	0.12	0.099	0.10	0.0019
PCB 167	0.000079	0.00013	0.00011	0.00011	0.0000022
PCB 156/157	0.00032	0.00055	0.00046	0.00046	0.0000090
PCB 169	0.016	0.028	0.023	0.023	0.00046
PCB 189	0.000011	0.000019	0.000016	0.000016	0.00000031
Total Dioxins & Furans Only	4.67	7.85	6.61	6.66	0.13
Total PCBs Only	0.10	0.18	0.15	0.15	0.0029
Total Dioxins & Furans and PCBs	4.77	8.03	6.76	6.81	0.13

* At 25°C and 1 atmosphere

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

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1630	192	322	270	274	5.31
1,3-Dichlorobenzene	147	17.3	29.0	24.3	24.7	0.48
1,4-Dichlorobenzene	160	18.8	31.6	26.5	26.9	0.52
1,2-Dichlorobenzene	90.0	10.6	17.8	14.9	15.1	0.29
Total Dichlorobenzene	397	46.7	78.4	65.7	66.7	1.29
1,3,5-trichlorobenzene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
1,2,4-trichlorobenzene	28.6	3.36	5.65	4.73	4.80	0.093
1,2,3-trichlorobenzene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Total Trichlorobenzene	<52.6	<6.19	<10.4	<8.70	<8.84	<0.17
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.41	<2.37	<1.99	<2.02	<0.039
1,2,3,4-tetrachlorobenzene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Total Tetrachlorobenzene	<24.0	<2.82	<4.74	<3.97	<4.03	<0.078
Pentachlorobenzene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Hexachlorobenzene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Total Chlorobenzenes	<2128	<250	<420	<352	<357	<6.93

Dry Gas Volume Sampled (Rm^3*) :	5.063
Actual Flowrate (m^3/s) :	27.7
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

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

Specific Isomer	Total Collected	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	1310	153	258	217	218	4.23
1,3-Dichlorobenzene	135	15.8	26.6	22.4	22.5	0.44
1,4-Dichlorobenzene	142	16.6	28.0	23.5	23.7	0.46
1,2-Dichlorobenzene	106	12.4	20.9	17.6	17.7	0.34
Total Dichlorobenzene	383	44.7	75.5	63.5	63.8	1.24
1,3,5-trichlorobenzene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
1,2,4-trichlorobenzene	28.0	3.27	5.52	4.64	4.66	0.091
1,2,3-trichlorobenzene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Total Trichlorobenzene	<52.0	<6.07	<10.2	<8.62	<8.66	<0.17
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.40	<2.36	<1.99	<2.00	<0.039
1,2,3,4-tetrachlorobenzene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Total Tetrachlorobenzene	<24.0	<2.80	<4.73	<3.98	<4.00	<0.078
Pentachlorobenzene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Hexachlorobenzene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Total Chlorobenzenes	<1793	<209	<353	<297	<299	<5.80

Dry Gas Volume Sampled (Rm^3*) :	5.074
Actual Flowrate (m^3/s) :	27.7
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1690	196	331	280	280	5.46
1,3-Dichlorobenzene	139	16.1	27.2	23.0	23.0	0.45
1,4-Dichlorobenzene	112	13.0	21.9	18.5	18.5	0.36
1,2-Dichlorobenzene	80.2	9.32	15.7	13.3	13.3	0.26
Total Dichlorobenzene	331	38.5	64.8	54.8	54.8	1.07
1,3,5-trichlorobenzene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
1,2,4-trichlorobenzene	26.5	3.08	5.19	4.39	4.39	0.086
1,2,3-trichlorobenzene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Total Trichlorobenzene	<51	<5.87	<9.88	<8.36	<8.36	<0.163
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.39	<2.35	<1.99	<1.99	<0.039
1,2,3,4-tetrachlorobenzene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Total Tetrachlorobenzene	<24.0	<2.79	<4.70	<3.97	<3.97	<0.077
Pentachlorobenzene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Hexachlorobenzene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Total Chlorobenzenes	<2120	<246	<415	<351	<351	<6.84

Dry Gas Volume Sampled (Rm^3*) :	5.110
Actual Flowrate (m^3/s) :	27.8
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	192	153	196	180	13.2
1,3-Dichlorobenzene	17.3	15.8	16.1	16.4	4.9
1,4-Dichlorobenzene	18.8	16.6	13.0	16.1	18.2
1,2-Dichlorobenzene	10.6	12.4	9.32	10.8	14.3
Total Dichlorobenzene	46.7	44.7	38.5	43.3	9.9
1,3,5-trichlorobenzene	<1.41	<1.40	<1.39	<1.40	0.7
1,2,4-trichlorobenzene	3.36	3.27	3.08	3.24	4.5
1,2,3-trichlorobenzene	<1.41	<1.40	<1.39	<1.40	0.7
Total Trichlorobenzene	<6.19	<6.07	<5.87	<6.04	2.7
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.41	<1.40	<1.39	<1.40	0.7
1,2,3,4-tetrachlorobenzene	<1.41	<1.40	<1.39	<1.40	0.7
Total Tetrachlorobenzene	<2.82	<2.80	<2.79	<2.80	0.7
Pentachlorobenzene	<1.41	<1.40	<1.39	<1.40	0.7
Hexachlorobenzene	<1.41	<1.40	<1.39	<1.40	0.7
Total Chlorobenzenes	<250	<209	<246	<235	9.6

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

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	322	258	331	304	13.0
1,3-Dichlorobenzene	29.0	26.6	27.2	27.6	4.6
1,4-Dichlorobenzene	31.6	28.0	21.9	27.2	18.0
1,2-Dichlorobenzene	17.8	20.9	15.7	18.1	14.4
Total Dichlorobenzene	78.4	75.5	64.8	72.9	9.8
1,3,5-trichlorobenzene	<2.37	<2.36	<2.35	<2.36	0.5
1,2,4-trichlorobenzene	5.65	5.52	5.19	5.45	4.4
1,2,3-trichlorobenzene	<2.37	<2.36	<2.35	<2.36	0.5
Total Trichlorobenzene	<10.4	<10.2	<9.88	<10.2	2.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.37	<2.36	<2.35	<2.36	0.5
1,2,3,4-tetrachlorobenzene	<2.37	<2.36	<2.35	<2.36	0.5
Total Tetrachlorobenzene	<4.74	<4.73	<4.70	<4.72	0.5
Pentachlorobenzene	<2.37	<2.36	<2.35	<2.36	0.5
Hexachlorobenzene	<2.37	<2.36	<2.35	<2.36	0.5
Total Chlorobenzenes	<420	<353	<415	<396	9.4

* 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				Coefficient of Variation
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	%
Monochlorobenzene	270	217	280	256	13.2
1,3-Dichlorobenzene	24.3	22.4	23.0	23.2	4.3
1,4-Dichlorobenzene	26.5	23.5	18.5	22.9	17.5
1,2-Dichlorobenzene	14.9	17.6	13.3	15.2	14.2
Total Dichlorobenzene	65.7	63.5	54.8	61.3	9.3
1,3,5-trichlorobenzene	<1.99	<1.99	<1.99	<1.99	0.1
1,2,4-trichlorobenzene	4.73	4.64	4.39	4.59	3.9
1,2,3-trichlorobenzene	<1.99	<1.99	<1.99	<1.99	0.1
Total Trichlorobenzene	<8.70	<8.62	<8.36	<8.56	2.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.99	<1.99	<1.99	<1.99	0.1
1,2,3,4-tetrachlorobenzene	<1.99	<1.99	<1.99	<1.99	0.1
Total Tetrachlorobenzene	<3.97	<3.98	<3.97	<3.97	0.1
Pentachlorobenzene	<1.99	<1.99	<1.99	<1.99	0.1
Hexachlorobenzene	<1.99	<1.99	<1.99	<1.99	0.1
Total Chlorobenzenes	<352	<297	<351	<333	9.4

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

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

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	274	218	280	257	13.2
1,3-Dichlorobenzene	24.7	22.5	23.0	23.4	4.9
1,4-Dichlorobenzene	26.9	23.7	18.5	23.0	18.2
1,2-Dichlorobenzene	15.1	17.7	13.3	15.4	14.3
Total Dichlorobenzene	66.7	63.8	54.8	61.8	10.0
1,3,5-trichlorobenzene	<2.02	<2.00	<1.99	<2.00	0.7
1,2,4-trichlorobenzene	4.80	4.66	4.39	4.62	4.6
1,2,3-trichlorobenzene	<2.02	<2.00	<1.99	<2.00	0.7
Total Trichlorobenzene	<8.84	<8.66	<8.36	<8.62	2.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.02	<2.00	<1.99	<2.00	0.7
1,2,3,4-tetrachlorobenzene	<2.02	<2.00	<1.99	<2.00	0.7
Total Tetrachlorobenzene	<4.03	<4.00	<3.97	<4.00	0.7
Pentachlorobenzene	<2.02	<2.00	<1.99	<2.00	0.7
Hexachlorobenzene	<2.02	<2.00	<1.99	<2.00	0.7
Total Chlorobenzenes	<357	<299	<351	<336	9.6

* At 25°C and 1 atmosphere

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

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
Monochlorobenzene	5.31	4.23	5.46	5.00	13.4
1,3-Dichlorobenzene	0.48	0.44	0.45	0.45	4.8
1,4-Dichlorobenzene	0.52	0.46	0.36	0.45	18.0
1,2-Dichlorobenzene	0.29	0.34	0.26	0.30	14.1
Total Dichlorobenzene	1.29	1.24	1.07	1.20	9.7
1,3,5-trichlorobenzene	<0.039	<0.039	<0.039	<0.039	0.5
1,2,4-trichlorobenzene	0.093	0.091	0.086	0.090	4.3
1,2,3-trichlorobenzene	<0.039	<0.039	<0.039	<0.039	0.5
Total Trichlorobenzene	<0.17	<0.17	<0.163	<0.17	2.5
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.039	<0.039	<0.039	<0.039	0.5
1,2,3,4-tetrachlorobenzene	<0.039	<0.039	<0.039	<0.039	0.5
Total Tetrachlorobenzene	<0.078	<0.078	<0.077	<0.078	0.5
Pentachlorobenzene	<0.039	<0.039	<0.039	<0.039	0.5
Hexachlorobenzene	<0.039	<0.039	<0.039	<0.039	0.5
Total Chlorobenzenes	<6.93	<5.80	<6.84	<6.52	9.7

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

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Monochlorobenzene	180	304	256	257	5.00
1,3-Dichlorobenzene	16.4	27.6	23.2	23.4	0.45
1,4-Dichlorobenzene	16.1	27.2	22.9	23.0	0.45
1,2-Dichlorobenzene	10.8	18.1	15.2	15.4	0.30
Total Dichlorobenzene	43.3	72.9	61.3	61.8	1.20
1,3,5-trichlorobenzene	<1.40	<2.36	<1.99	<2.00	<0.039
1,2,4-trichlorobenzene	3.24	5.45	4.59	4.62	0.090
1,2,3-trichlorobenzene	<1.40	<2.36	<1.99	<2.00	<0.039
Total Trichlorobenzene	<6.04	<10.2	<8.56	<8.62	<0.17
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.40	<2.36	<1.99	<2.00	<0.039
1,2,3,4-tetrachlorobenzene	<1.40	<2.36	<1.99	<2.00	<0.039
Total Tetrachlorobenzene	<2.80	<4.72	<3.97	<4.00	<0.078
Pentachlorobenzene	<1.40	<2.36	<1.99	<2.00	<0.039
Hexachlorobenzene	<1.40	<2.36	<1.99	<2.00	<0.039
Total Chlorobenzenes	<235	<396	<333	<336	<6.52

* At 25°C and 1 atmosphere

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

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

Isomers and Congener Group Totals	Blank Train Total ng	Method Blank Total ng
Monochlorobenzene	<12	<12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	28.4	32.6
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<52.4	<56.6
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	<148	<153

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
3-monochlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
4-monochlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
Total Monochlorophenols	<180	<21.2	<35.6	<29.8	<30.2	<0.59
2,6-dichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
2,4 & 2,5-dichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
3,5-dichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
2,3-dichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
3,4-dichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
Total Dichlorophenols	<300	<35.3	<59.3	<49.6	<50.4	<0.98
2,4,6-trichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
2,3,6-trichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
2,3,5-trichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
2,4,5-trichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
2,3,4-trichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
3,4,5-trichlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
Total Trichlorophenols	<360	<42.4	<71.1	<59.6	<60.5	<1.17
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
2,3,4,5-tetrachlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
Total Tetrachlorophenols	<120	<14.1	<23.7	<19.9	<20.2	<0.39
Pentachlorophenol	<60	<7.06	<11.9	<9.93	<10.1	<0.20
Total Chlorophenols	<1020	<120	<201	<169	<171	<3.32

Dry Gas Volume Sampled (Rm^3*) :	5.063
Actual Flowrate (m^3/s) :	27.7
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
3-monochlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
4-monochlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
Total Monochlorophenols	<180	<21.0	<35.5	<29.8	<30.0	<0.58
2,6-dichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
3,5-dichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
2,3-dichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
3,4-dichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
Total Dichlorophenols	<300	<35.0	<59.1	<49.7	<50.0	<0.97
2,4,6-trichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
2,3,6-trichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
2,3,5-trichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
2,4,5-trichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
2,3,4-trichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
3,4,5-trichlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
Total Trichlorophenols	<360	<42.0	<70.9	<59.7	<60.0	<1.16
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
Total Tetrachlorophenols	<120	<14.0	<23.6	<19.9	<20.0	<0.39
Pentachlorophenol	<60	<7.00	<11.8	<9.95	<10.0	<0.19
Total Chlorophenols	<1020	<119	<201	<169	<170	<3.30

Dry Gas Volume Sampled (Rm^3*) :	5.074
Actual Flowrate (m^3/s) :	27.7
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
3-monochlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
4-monochlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
Total Monochlorophenols	<180	<20.9	<35.2	<29.8	<29.8	<0.58
2,6-dichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
2,4 & 2,5-dichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
3,5-dichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
2,3-dichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
3,4-dichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
Total Dichlorophenols	<300	<34.8	<58.7	<49.7	<49.7	<0.97
2,4,6-trichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
2,3,6-trichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
2,3,5-trichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
2,4,5-trichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
2,3,4-trichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
3,4,5-trichlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
Total Trichlorophenols	<360	<41.8	<70.5	<59.6	<59.6	<1.16
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
2,3,4,5-tetrachlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
Total Tetrachlorophenols	<120	<13.9	<23.5	<19.9	<19.9	<0.39
Pentachlorophenol	<60	<6.97	<11.7	<9.94	<9.94	<0.19
Total Chlorophenols	<1020	<118	<200	<169	<169	<3.29

Dry Gas Volume Sampled (Rm^3*) :	5.110
Actual Flowrate (m^3/s) :	27.8
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
3-monochlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
4-monochlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
Total Monochlorophenols	<21.2	<21.0	<20.9	<21.0	0.7
2,6-dichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
2,4 & 2,5-dichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
3,5-dichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
2,3-dichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
3,4-dichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
Total Dichlorophenols	<35.3	<35.0	<34.8	<35.0	0.7
2,4,6-trichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
2,3,6-trichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
2,3,5-trichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
2,4,5-trichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
2,3,4-trichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
3,4,5-trichlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
Total Trichlorophenols	<42.4	<42.0	<41.8	<42.1	0.7
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
2,3,4,5-tetrachlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
Total Tetrachlorophenols	<14.1	<14.0	<13.9	<14.0	0.7
Pentachlorophenol	<7.06	<7.00	<6.97	<7.01	0.7
Total Chlorophenols	<120	<119	<118	<119	0.7

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

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
3-monochlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
4-monochlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
Total Monochlorophenols	<35.6	<35.5	<35.2	<35.4	0.5
2,6-dichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
2,4 & 2,5-dichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
3,5-dichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
2,3-dichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
3,4-dichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
Total Dichlorophenols	<59.3	<59.1	<58.7	<59.0	0.5
2,4,6-trichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
2,3,6-trichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
2,3,5-trichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
2,4,5-trichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
2,3,4-trichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
3,4,5-trichlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
Total Trichlorophenols	<71.1	<70.9	<70.5	<70.8	0.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
2,3,4,5-tetrachlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
Total Tetrachlorophenols	<23.7	<23.6	<23.5	<23.6	0.5
Pentachlorophenol	<11.9	<11.8	<11.7	<11.8	0.5
Total Chlorophenols	<201	<201	<200	<201	0.5

* At 25°C and 1 atmosphere

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

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
3-monochlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
4-monochlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
Total Monochlorophenols	<29.8	<29.8	<29.8	<29.8	0.1
2,6-dichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
2,4 & 2,5-dichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
3,5-dichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
2,3-dichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
3,4-dichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
Total Dichlorophenols	<49.6	<49.7	<49.7	<49.7	0.1
2,4,6-trichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
2,3,6-trichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
2,3,5-trichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
2,4,5-trichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
2,3,4-trichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
3,4,5-trichlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
Total Trichlorophenols	<59.6	<59.7	<59.6	<59.6	0.1
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
2,3,4,5-tetrachlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
Total Tetrachlorophenols	<19.9	<19.9	<19.9	<19.9	0.1
Pentachlorophenol	<9.93	<9.95	<9.94	<9.94	0.1
Total Chlorophenols	<169	<169	<169	<169	0.1

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

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

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
3-monochlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
4-monochlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
Total Monochlorophenols	<30.2	<30.0	<29.8	<30.0	0.7
2,6-dichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
2,4 & 2,5-dichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
3,5-dichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
2,3-dichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
3,4-dichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
Total Dichlorophenols	<50.4	<50.0	<49.7	<50.0	0.7
2,4,6-trichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
2,3,6-trichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
2,3,5-trichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
2,4,5-trichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
2,3,4-trichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
3,4,5-trichlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
Total Trichlorophenols	<60.5	<60.0	<59.6	<60.0	0.7
2,3,5,6/2,3,4,6-tetrachlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
2,3,4,5-tetrachlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
Total Tetrachlorophenols	<20.2	<20.0	<19.9	<20.0	0.7
Pentachlorophenol	<10.1	<10.0	<9.94	<10.0	0.7
Total Chlorophenols	<171	<170	<169	<170	0.7

* At 25°C and 1 atmosphere

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

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
2-monochlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
3-monochlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
4-monochlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
Total Monochlorophenols	<0.59	<0.58	<0.58	<0.58	0.5
2,6-dichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
2,4 & 2,5-dichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
3,5-dichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
2,3-dichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
3,4-dichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
Total Dichlorophenols	<0.98	<0.97	<0.97	<0.97	0.5
2,4,6-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
2,3,6-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
2,3,5-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
2,4,5-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
2,3,4-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
3,4,5-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
Total Trichlorophenols	<1.17	<1.16	<1.16	<1.17	0.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
2,3,4,5-tetrachlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
Total Tetrachlorophenols	<0.39	<0.39	<0.39	<0.39	0.5
Pentachlorophenol	<0.20	<0.19	<0.19	<0.19	0.5
Total Chlorophenols	<3.32	<3.30	<3.29	<3.30	0.5

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

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
3-monochlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
4-monochlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
Total Monochlorophenols	<21.0	<35.4	<29.8	<30.0	<0.58
2,6-dichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
2,4 & 2,5-dichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
3,5-dichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
2,3-dichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
3,4-dichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
Total Dichlorophenols	<35.0	<59.0	<49.7	<50.0	<0.97
2,4,6-trichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
2,3,6-trichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
2,3,5-trichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
2,4,5-trichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
2,3,4-trichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
3,4,5-trichlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
Total Trichlorophenols	<42.1	<70.8	<59.6	<60.0	<1.17
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
2,3,4,5-tetrachlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
Total Tetrachlorophenols	<14.0	<23.6	<19.9	<20.0	<0.39
Pentachlorophenol	<7.01	<11.8	<9.94	<10.0	<0.19
Total Chlorophenols	<119	<201	<169	<170	<3.30

* At 25°C and 1 atmosphere

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

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

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

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

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	16.6	1.95	3.28	2.75	2.79	0.054
Acenaphthylene	29.7	3.49	5.87	4.91	4.99	0.097
Anthracene	12.7	1.49	2.51	2.10	2.13	0.041
Benzo(a)Anthracene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Benzo(b)Fluoranthene	32.6	3.84	6.44	5.39	5.48	0.11
Benzo(k)Fluoranthene	21.4	2.52	4.23	3.54	3.59	0.070
Benzo(a)fluorene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Benzo(b)fluorene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Benzo(g,h,i)Perylene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Benzo(a)Pyrene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Benzo(e)Pyrene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Biphenyl	86.8	10.2	17.1	14.4	14.6	0.28
2-Chloronaphthalene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Chrysene/Triphenylene	14.2	1.67	2.80	2.35	2.39	0.046
Coronene	<60	<7.06	<11.9	<9.93	<10.1	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Dibenzo(a,e)pyrene	<60	<7.06	<11.9	<9.93	<10.1	<0.20
9,10-dimethylanthracene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Fluoranthene	45.9	5.40	9.07	7.59	7.71	0.15
Fluorene	21.7	2.55	4.29	3.59	3.65	0.071
Indeno(1,2,3-cd)Pyrene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
2-methylanthracene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
3-Methylcholanthrene	<60	<7.06	<11.9	<9.93	<10.1	<0.20
1-Methylnaphthalene	62.8	7.39	12.4	10.4	10.5	0.20
2-Methylnaphthalene	123	14.5	24.3	20.3	20.7	0.40
1-Methylphenanthrene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
9-Methylphenanthrene	19.7	2.32	3.89	3.26	3.31	0.064
Naphthalene	637	74.9	126	105	107	2.08
Perylene	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Phenanthrene	188	22.1	37.1	31.1	31.6	0.61
Picene	<60	<7.06	<11.9	<9.93	<10.1	<0.20
Pyrene	43.6	5.13	8.61	7.21	7.32	0.14
Tetralin	84.2	9.91	16.6	13.9	14.1	0.27
m-terphenyl	<12	<1.41	<2.37	<1.99	<2.02	<0.039
o-Terphenyl	<12	<1.41	<2.37	<1.99	<2.02	<0.039
p-terphenyl	<12	<1.41	<2.37	<1.99	<2.02	<0.039
Total	<1884	<222	<372	<312	<316	<6.14

Dry Gas Volume Sampled (Rm³*) :	5.063
Actual Flowrate (m³/s) :	27.7
Dry Reference Flowrate (Rm³/s*) :	16.5
Dry Adjusted Flowrate (Rm³/s**) :	19.7
Wet Reference Flowrate (Rm³/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Acenaphthylene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Anthracene	12.6	1.47	2.48	2.09	2.10	0.041
Benzo(a)Anthracene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Benzo(b)Fluoranthene	32.3	3.77	6.37	5.35	5.38	0.10
Benzo(k)Fluoranthene	19.7	2.30	3.88	3.27	3.28	0.064
Benzo(a)fluorene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Benzo(b)fluorene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Benzo(g,h,i)Perylene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Benzo(a)Pyrene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Benzo(e)Pyrene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Biphenyl	103	12.0	20.3	17.1	17.2	0.33
2-Chloronaphthalene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Chrysene/Triphenylene	15.7	1.83	3.09	2.60	2.62	0.051
Coronene	<60	<7.00	<11.8	<9.95	<10.0	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Dibenzo(a,e)pyrene	<60	<7.00	<11.8	<9.95	<10.0	<0.19
9,10-dimethylanthracene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Fluoranthene	92.5	10.8	18.2	15.3	15.4	0.30
Fluorene	43.8	5.11	8.63	7.26	7.30	0.14
Indeno(1,2,3-cd)Pyrene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
2-methylanthracene	26.5	3.09	5.22	4.39	4.42	0.086
3-Methylcholanthrene	<60	<7.00	<11.8	<9.95	<10.0	<0.19
1-Methylnaphthalene	35.8	4.18	7.06	5.93	5.96	0.12
2-Methylnaphthalene	59.5	6.94	11.7	9.86	9.91	0.19
1-Methylphenanthrene	<12	<1.40	<2.36	<1.99	<2.00	<0.039
9-Methylphenanthrene	73.1	8.53	14.4	12.1	12.2	0.24
Naphthalene	279	32.6	55.0	46.2	46.5	0.90
Perylene	18.2	2.12	3.59	3.02	3.03	0.059
Phenanthrene	798	93.1	157	132	133	2.58
Picene	<60	<7.00	<11.8	<9.95	<10.0	<0.19
Pyrene	88.7	10.3	17.5	14.7	14.8	0.29
Tetralin	93.8	10.9	18.5	15.5	15.6	0.30
m-terphenyl	<12	<1.40	<2.36	<1.99	<2.00	<0.039
o-Terphenyl	13.6	1.59	2.68	2.25	2.27	0.044
p-terphenyl	<12	<1.40	<2.36	<1.99	<2.00	<0.039
Total	<2238	<261	<441	<371	<373	<7.23

Dry Gas Volume Sampled (Rm³*) :	5.074
Actual Flowrate (m³/s) :	27.7
Dry Reference Flowrate (Rm³/s*) :	16.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

TABLE 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	<1.39	<2.35	<1.99	<1.99	<0.039
Acenaphthylene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Anthracene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Benzo(a)Anthracene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Benzo(b)Fluoranthene	15.9	1.85	3.11	2.63	2.63	0.051
Benzo(k)Fluoranthene	14.2	1.65	2.78	2.35	2.35	0.046
Benzo(a)fluorene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Benzo(b)fluorene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Benzo(g,h,i)Perylene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Benzo(a)Pyrene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Benzo(e)Pyrene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Biphenyl	61.7	7.17	12.1	10.2	10.2	0.20
2-Chloronaphthalene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Chrysene/Triphenylene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Coronene	<60	<6.97	<11.7	<9.94	<9.94	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Dibenzo(a,e)pyrene	<60	<6.97	<11.7	<9.94	<9.94	<0.19
9,10-dimethylanthracene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Fluoranthene	37.4	4.34	7.32	6.19	6.19	0.12
Fluorene	12.7	1.48	2.49	2.10	2.10	0.041
Indeno(1,2,3-cd)Pyrene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
2-methylanthracene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
3-Methylcholanthrene	<60	<6.97	<11.7	<9.94	<9.94	<0.19
1-Methylnaphthalene	26.3	3.05	5.15	4.35	4.35	0.085
2-Methylnaphthalene	46.4	5.39	9.08	7.68	7.68	0.15
1-Methylphenanthrene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
9-Methylphenanthrene	12.6	1.46	2.47	2.09	2.09	0.041
Naphthalene	195	22.6	38.2	32.3	32.3	0.63
Perylene	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Phenanthrene	125	14.5	24.5	20.7	20.7	0.40
Picene	<60	<6.97	<11.7	<9.94	<9.94	<0.19
Pyrene	44.5	5.17	8.71	7.37	7.37	0.14
Tetralin	88.8	10.3	17.4	14.7	14.7	0.29
m-terphenyl	<12	<1.39	<2.35	<1.99	<1.99	<0.039
o-Terphenyl	<12	<1.39	<2.35	<1.99	<1.99	<0.039
p-terphenyl	<12	<1.39	<2.35	<1.99	<1.99	<0.039
Total	<1173	<136	<229	<194	<194	<3.79

Dry Gas Volume Sampled (Rm³*) :	5.110
Actual Flowrate (m³/s) :	27.8
Dry Reference Flowrate (Rm³/s*) :	16.5
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	19.5

* At 25°C and 1 atmosphere

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

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

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

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	1.95	<1.40	<1.39	<1.58	20.3
Acenaphthylene	3.49	<1.40	<1.39	<2.10	57.8
Anthracene	1.49	1.47	<1.39	<1.45	3.6
Benzo(a)Anthracene	<1.41	<1.40	<1.39	<1.40	0.7
Benzo(b)Fluoranthene	3.84	3.77	1.85	3.15	35.9
Benzo(k)Fluoranthene	2.52	2.30	1.65	2.16	21.0
Benzo(a)fluorene	<1.41	<1.40	<1.39	<1.40	0.7
Benzo(b)fluorene	<1.41	<1.40	<1.39	<1.40	0.7
Benzo(g,h,i)Perylene	<1.41	<1.40	<1.39	<1.40	0.7
Benzo(a)Pyrene	<1.41	<1.40	<1.39	<1.40	0.7
Benzo(e)Pyrene	<1.41	<1.40	<1.39	<1.40	0.7
Biphenyl	10.2	12.0	7.17	9.80	25.0
2-Chloronaphthalene	<1.41	<1.40	<1.39	<1.40	0.7
Chrysene/Triphenylene	1.67	1.83	<1.39	<1.63	13.6
Coronene	<7.06	<7.00	<6.97	<7.01	0.7
Dibenzo(a,c/a,h)Anthracene	<1.41	<1.40	<1.39	<1.40	0.7
Dibenzo(a,e)pyrene	<7.06	<7.00	<6.97	<7.01	0.7
9,10-dimethylanthracene	<1.41	<1.40	<1.39	<1.40	0.7
7,12-Dimethylbenzo(a)anthracene	<1.41	<1.40	<1.39	<1.40	0.7
Fluoranthene	5.40	10.8	4.34	6.85	50.5
Fluorene	2.55	5.11	1.48	3.05	61.3
Indeno(1,2,3-cd)Pyrene	<1.41	<1.40	<1.39	<1.40	0.7
2-methylanthracene	<1.41	3.09	<1.39	<1.97	49.6
3-Methylcholanthrene	<7.06	<7.00	<6.97	<7.01	0.7
1-Methylnaphthalene	7.39	4.18	3.05	4.87	46.2
2-Methylnaphthalene	14.5	6.94	5.39	8.93	54.4
1-Methylphenanthrene	<1.41	<1.40	<1.39	<1.40	0.7
9-Methylphenanthrene	2.32	8.53	1.46	4.10	94.0
Naphthalene	74.9	32.6	22.6	43.4	64.0
Perylene	<1.41	2.12	<1.39	<1.64	25.3
Phenanthrene	22.1	93.1	14.5	43.3	100
Picene	<7.06	<7.00	<6.97	<7.01	0.7
Pyrene	5.13	10.3	5.17	6.88	43.6
Tetralin	9.91	10.9	10.3	10.4	5.0
m-terphenyl	<1.41	<1.40	<1.39	<1.40	0.7
o-Terphenyl	<1.41	1.59	<1.39	<1.46	7.3
p-terphenyl	<1.41	<1.40	<1.39	<1.40	0.7
Total	<222	<261	<136	<206	31.0

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

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	3.28	<2.36	<2.35	<2.66	20.0
Acenaphthylene	5.87	<2.36	<2.35	<3.53	57.5
Anthracene	2.51	2.48	<2.35	<2.45	3.5
Benzo(a)Anthracene	<2.37	<2.36	<2.35	<2.36	0.5
Benzo(b)Fluoranthene	6.44	6.37	3.11	5.31	35.8
Benzo(k)Fluoranthene	4.23	3.88	2.78	3.63	20.8
Benzo(a)fluorene	<2.37	<2.36	<2.35	<2.36	0.5
Benzo(b)fluorene	<2.37	<2.36	<2.35	<2.36	0.5
Benzo(g,h,i)Perylene	<2.37	<2.36	<2.35	<2.36	0.5
Benzo(a)Pyrene	<2.37	<2.36	<2.35	<2.36	0.5
Benzo(e)Pyrene	<2.37	<2.36	<2.35	<2.36	0.5
Biphenyl	17.1	20.3	12.1	16.5	25.1
2-Chloronaphthalene	<2.37	<2.36	<2.35	<2.36	0.5
Chrysene/Triphenylene	2.80	3.09	<2.35	<2.75	13.7
Coronene	<11.9	<11.8	<11.7	<11.8	0.5
Dibenzo(a,c/a,h)Anthracene	<2.37	<2.36	<2.35	<2.36	0.5
Dibenzo(a,e)pyrene	<11.9	<11.8	<11.7	<11.8	0.5
9,10-dimethylanthracene	<2.37	<2.36	<2.35	<2.36	0.5
7,12-Dimethylbenzo(a)anthracene	<2.37	<2.36	<2.35	<2.36	0.5
Fluoranthene	9.07	18.2	7.32	11.5	50.8
Fluorene	4.29	8.63	2.49	5.13	61.5
Indeno(1,2,3-cd)Pyrene	<2.37	<2.36	<2.35	<2.36	0.5
2-methylanthracene	<2.37	5.22	<2.35	<3.31	49.9
3-Methylcholanthrene	<11.9	<11.8	<11.7	<11.8	0.5
1-Methylnaphthalene	12.4	7.06	5.15	8.20	45.9
2-Methylnaphthalene	24.3	11.7	9.08	15.0	54.1
1-Methylphenanthrene	<2.37	<2.36	<2.35	<2.36	0.5
9-Methylphenanthrene	3.89	14.4	2.47	6.92	94.2
Naphthalene	126	55.0	38.2	73.0	63.7
Perylene	<2.37	3.59	<2.35	<2.77	25.6
Phenanthrene	37.1	157	24.5	73.0	100
Picene	<11.9	<11.8	<11.7	<11.8	0.5
Pyrene	8.61	17.5	8.71	11.6	43.9
Tetralin	16.6	18.5	17.4	17.5	5.3
m-terphenyl	<2.37	<2.36	<2.35	<2.36	0.5
o-Terphenyl	<2.37	2.68	<2.35	<2.47	7.5
p-terphenyl	<2.37	<2.36	<2.35	<2.36	0.5
Total	<372	<441	<229	<348	31.1

* At 25°C and 1 atmosphere

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

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	2.75	<1.99	<1.99	<2.24	19.5
Acenaphthylene	4.91	<1.99	<1.99	<2.96	57.0
Anthracene	2.10	2.09	<1.99	<2.06	3.0
Benzo(a)Anthracene	<1.99	<1.99	<1.99	<1.99	0.1
Benzo(b)Fluoranthene	5.39	5.35	2.63	4.46	35.5
Benzo(k)Fluoranthene	3.54	3.27	2.35	3.05	20.4
Benzo(a)fluorene	<1.99	<1.99	<1.99	<1.99	0.1
Benzo(b)fluorene	<1.99	<1.99	<1.99	<1.99	0.1
Benzo(g,h,i)Perylene	<1.99	<1.99	<1.99	<1.99	0.1
Benzo(a)Pyrene	<1.99	<1.99	<1.99	<1.99	0.1
Benzo(e)Pyrene	<1.99	<1.99	<1.99	<1.99	0.1
Biphenyl	14.4	17.1	10.2	13.9	24.9
2-Chloronaphthalene	<1.99	<1.99	<1.99	<1.99	0.1
Chrysene/Triphenylene	2.35	2.60	<1.99	<2.31	13.4
Coronene	<9.93	<9.95	<9.94	<9.94	0.1
Dibenzo(a,c/a,h)Anthracene	<1.99	<1.99	<1.99	<1.99	0.1
Dibenzo(a,e)pyrene	<9.93	<9.95	<9.94	<9.94	0.1
9,10-dimethylanthracene	<1.99	<1.99	<1.99	<1.99	0.1
7,12-Dimethylbenzo(a)anthracene	<1.99	<1.99	<1.99	<1.99	0.1
Fluoranthene	7.59	15.3	6.19	9.71	50.7
Fluorene	3.59	7.26	2.10	4.32	61.5
Indeno(1,2,3-cd)Pyrene	<1.99	<1.99	<1.99	<1.99	0.1
2-methylanthracene	<1.99	4.39	<1.99	<2.79	49.8
3-Methylcholanthrene	<9.93	<9.95	<9.94	<9.94	0.1
1-Methylnaphthalene	10.4	5.93	4.35	6.89	45.4
2-Methylnaphthalene	20.3	9.86	7.68	12.6	53.6
1-Methylphenanthrene	<1.99	<1.99	<1.99	<1.99	0.1
9-Methylphenanthrene	3.26	12.1	2.09	5.82	94.2
Naphthalene	105	46.2	32.3	61.3	63.3
Perylene	<1.99	3.02	<1.99	<2.33	25.5
Phenanthrene	31.1	132	20.7	61.4	100
Picene	<9.93	<9.95	<9.94	<9.94	0.1
Pyrene	7.21	14.7	7.37	9.76	43.8
Tetralin	13.9	15.5	14.7	14.7	5.5
m-terphenyl	<1.99	<1.99	<1.99	<1.99	0.1
o-Terphenyl	<1.99	2.25	<1.99	<2.08	7.5
p-terphenyl	<1.99	<1.99	<1.99	<1.99	0.1
Total	<312	<371	<194	<292	30.8

* 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				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	2.79	<2.00	<1.99	<2.26	20.3
Acenaphthylene	4.99	<2.00	<1.99	<2.99	57.8
Anthracene	2.13	2.10	<1.99	<2.07	3.7
Benzo(a)Anthracene	<2.02	<2.00	<1.99	<2.00	0.7
Benzo(b)Fluoranthene	5.48	5.38	2.63	4.50	35.9
Benzo(k)Fluoranthene	3.59	3.28	2.35	3.08	21.0
Benzo(a)fluorene	<2.02	<2.00	<1.99	<2.00	0.7
Benzo(b)fluorene	<2.02	<2.00	<1.99	<2.00	0.7
Benzo(g,h,i)Perylene	<2.02	<2.00	<1.99	<2.00	0.7
Benzo(a)Pyrene	<2.02	<2.00	<1.99	<2.00	0.7
Benzo(e)Pyrene	<2.02	<2.00	<1.99	<2.00	0.7
Biphenyl	14.6	17.2	10.2	14.0	25.1
2-Chloronaphthalene	<2.02	<2.00	<1.99	<2.00	0.7
Chrysene/Triphenylene	2.39	2.62	<1.99	<2.33	13.7
Coronene	<10.1	<10.0	<9.94	<10.0	0.7
Dibenzo(a,c/a,h)Anthracene	<2.02	<2.00	<1.99	<2.00	0.7
Dibenzo(a,e)pyrene	<10.1	<10.0	<9.94	<10.0	0.7
9,10-dimethylanthracene	<2.02	<2.00	<1.99	<2.00	0.7
7,12-Dimethylbenzo(a)anthracene	<2.02	<2.00	<1.99	<2.00	0.7
Fluoranthene	7.71	15.4	6.19	9.77	50.6
Fluorene	3.65	7.30	2.10	4.35	61.3
Indeno(1,2,3-cd)Pyrene	<2.02	<2.00	<1.99	<2.00	0.7
2-methylanthracene	<2.02	4.42	<1.99	<2.81	49.7
3-Methylcholanthrene	<10.1	<10.0	<9.94	<10.0	0.7
1-Methylnaphthalene	10.5	5.96	4.35	6.96	46.2
2-Methylnaphthalene	20.7	9.91	7.68	12.8	54.4
1-Methylphenanthrene	<2.02	<2.00	<1.99	<2.00	0.7
9-Methylphenanthrene	3.31	12.2	2.09	5.86	94.0
Naphthalene	107	46.5	32.3	61.9	64.1
Perylene	<2.02	3.03	<1.99	<2.35	25.4
Phenanthrene	31.6	133	20.7	61.7	100
Picene	<10.1	<10.0	<9.94	<10.0	0.7
Pyrene	7.32	14.8	7.37	9.82	43.7
Tetralin	14.1	15.6	14.7	14.8	5.1
m-terphenyl	<2.02	<2.00	<1.99	<2.00	0.7
o-Terphenyl	<2.02	2.27	<1.99	<2.09	7.3
p-terphenyl	<2.02	<2.00	<1.99	<2.00	0.7
Total	<316	<373	<194	<294	31.0

* At 25°C and 1 atmosphere

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

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
Acenaphthene	0.054	<0.039	<0.039	<0.044	20.2
Acenaphthylene	0.097	<0.039	<0.039	<0.058	57.7
Anthracene	0.041	0.041	<0.039	<0.040	3.4
Benzo(a)Anthracene	<0.039	<0.039	<0.039	<0.039	0.5
Benzo(b)Fluoranthene	0.11	0.10	0.051	0.087	35.7
Benzo(k)Fluoranthene	0.070	0.064	0.046	0.060	20.8
Benzo(a)fluorene	<0.039	<0.039	<0.039	<0.039	0.5
Benzo(b)fluorene	<0.039	<0.039	<0.039	<0.039	0.5
Benzo(g,h,i)Perylene	<0.039	<0.039	<0.039	<0.039	0.5
Benzo(a)Pyrene	<0.039	<0.039	<0.039	<0.039	0.5
Benzo(e)Pyrene	<0.039	<0.039	<0.039	<0.039	0.5
Biphenyl	0.28	0.33	0.20	0.27	24.9
2-Chloronaphthalene	<0.039	<0.039	<0.039	<0.039	0.5
Chrysene/Triphenylene	0.046	0.051	<0.039	<0.045	13.4
Coronene	<0.20	<0.19	<0.19	<0.19	0.5
Dibenzo(a,c/a,h)Anthracene	<0.039	<0.039	<0.039	<0.039	0.5
Dibenzo(a,e)pyrene	<0.20	<0.19	<0.19	<0.19	0.5
9,10-dimethylanthracene	<0.039	<0.039	<0.039	<0.039	0.5
7,12-Dimethylbenzo(a)anthracene	<0.039	<0.039	<0.039	<0.039	0.5
Fluoranthene	0.15	0.30	0.12	0.19	50.4
Fluorene	0.071	0.14	0.041	0.084	61.2
Indeno(1,2,3-cd)Pyrene	<0.039	<0.039	<0.039	<0.039	0.5
2-methylanthracene	<0.039	0.086	<0.039	<0.055	49.5
3-Methylcholanthrene	<0.20	<0.19	<0.19	<0.19	0.5
1-Methylnaphthalene	0.20	0.12	0.085	0.14	46.0
2-Methylnaphthalene	0.40	0.19	0.15	0.25	54.2
1-Methylphenanthrene	<0.039	<0.039	<0.039	<0.039	0.5
9-Methylphenanthrene	0.064	0.24	0.041	0.11	93.9
Naphthalene	2.08	0.90	0.63	1.20	63.9
Perylene	<0.039	0.059	<0.039	<0.046	25.2
Phenanthrene	0.61	2.58	0.40	1.20	100
Picene	<0.20	<0.19	<0.19	<0.19	0.5
Pyrene	0.14	0.29	0.14	0.19	43.5
Tetralin	0.27	0.30	0.29	0.29	5.0
m-terphenyl	<0.039	<0.039	<0.039	<0.039	0.5
o-Terphenyl	<0.039	0.044	<0.039	<0.041	7.2
p-terphenyl	<0.039	<0.039	<0.039	<0.039	0.5
Total	<6.14	<7.23	<3.79	<5.72	30.8

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

Compound	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<1.58	<2.66	<2.24	<2.26	<0.044
Acenaphthylene	<2.10	<3.53	<2.96	<2.99	<0.058
Anthracene	<1.45	<2.45	<2.06	<2.07	<0.040
Benzo(a)Anthracene	<1.40	<2.36	<1.99	<2.00	<0.039
Benzo(b)Fluoranthene	3.15	5.31	4.46	4.50	0.087
Benzo(k)Fluoranthene	2.16	3.63	3.05	3.08	0.060
Benzo(a)fluorene	<1.40	<2.36	<1.99	<2.00	<0.039
Benzo(b)fluorene	<1.40	<2.36	<1.99	<2.00	<0.039
Benzo(g,h,i)Perylene	<1.40	<2.36	<1.99	<2.00	<0.039
Benzo(a)Pyrene	<1.40	<2.36	<1.99	<2.00	<0.039
Benzo(e)Pyrene	<1.40	<2.36	<1.99	<2.00	<0.039
Biphenyl	9.80	16.5	13.9	14.0	0.27
2-Chloronaphthalene	<1.40	<2.36	<1.99	<2.00	<0.039
Chrysene/Triphenylene	<1.63	<2.75	<2.31	<2.33	<0.045
Coronene	<7.01	<11.8	<9.94	<10.0	<0.19
Dibenzo(a,c/a,h)Anthracene	<1.40	<2.36	<1.99	<2.00	<0.039
Dibenzo(a,e)pyrene	<7.01	<11.8	<9.94	<10.0	<0.19
9,10-dimethylanthracene	<1.40	<2.36	<1.99	<2.00	<0.039
7,12-Dimethylbenzo(a)anthracene	<1.40	<2.36	<1.99	<2.00	<0.039
Fluoranthene	6.85	11.5	9.71	9.77	0.19
Fluorene	3.05	5.13	4.32	4.35	0.084
Indeno(1,2,3-cd)Pyrene	<1.40	<2.36	<1.99	<2.00	<0.039
2-methylanthracene	<1.97	<3.31	<2.79	<2.81	<0.055
3-Methylcholanthrene	<7.01	<11.8	<9.94	<10.0	<0.19
1-Methylnaphthalene	4.87	8.20	6.89	6.96	0.14
2-Methylnaphthalene	8.93	15.0	12.6	12.8	0.25
1-Methylphenanthrene	<1.40	<2.36	<1.99	<2.00	<0.039
9-Methylphenanthrene	4.10	6.92	5.82	5.86	0.11
Naphthalene	43.4	73.0	61.3	61.9	1.20
Perylene	<1.64	<2.77	<2.33	<2.35	<0.046
Phenanthrene	43.3	73.0	61.4	61.7	1.20
Picene	<7.01	<11.8	<9.94	<10.0	<0.19
Pyrene	6.88	11.6	9.76	9.82	0.19
Tetralin	10.4	17.5	14.7	14.8	0.29
m-terphenyl	<1.40	<2.36	<1.99	<2.00	<0.039
o-Terphenyl	<1.46	<2.47	<2.08	<2.09	<0.041
p-terphenyl	<1.40	<2.36	<1.99	<2.00	<0.039
Total	<206	<348	<292	<294	<5.72

* At 25°C and 1 atmosphere

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

TABLE 80
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Media Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	23.1
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	19.3	27.7
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	114	132
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	66.8	73.3
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<200	<256

"<" 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	2.21	0.0298	44.2	74.3	62.2	63.0	1.22
2	1.54	0.0313	29.1	49.2	41.2	41.4	0.80
3	2.40	0.0302	46.9	79.4	66.5	66.9	1.30
Average			40.1	67.6	56.6	57.1	1.11
Blank	<0.1						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Formaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Formaldehyde Emission Rate mg/s
1	0.60	0.0298	12.0	20.2	16.9	17.1	0.33
2	0.45	0.0313	8.49	14.4	12.0	12.1	0.24
3	0.49	0.0302	9.58	16.2	13.6	13.7	0.27
Average			10.0	16.9	14.2	14.3	0.28
Blank	0.35						

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	<2	0.0298	<40.0	<67.2	<56.3	<57.0	<1.11
2	<2	0.0313	<37.8	<63.9	<53.5	<53.8	<1.05
3	<2	0.0302	<39.1	<66.2	<55.4	<55.7	<1.08
Average			<39.0	<65.8	<55.1	<55.5	<1.08
Blank	<2						

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

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

* At 25 °C and 1 atmosphere

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

TABLE 82
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected µg	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3**	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Acetone	0.052	1.45	2.43	2.03	2.06	0.040
Benzene	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Bromodichloromethane	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Bromoform	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Bromomethane	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
1,3-Butadiene	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
2-Butanone	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Carbon Tetrachloride	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Chloroform	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Cumene (Isopropylbenzene)	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Dibromochloromethane	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Dichlorodifluoromethane	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
1,2-Dichloroethane	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
trans,1,2-Dichloroethene	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
1,1-Dichloroethene	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
1,2-Dichloropropane	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Ethylbenzene	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Ethylene Dibromide	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Methylene Chloride	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Styrene	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Tetrachloroethene	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Toluene	0.279	7.76	13.0	10.9	11.1	0.21
1,1,1-Trichloroethane	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Trichlorotrifluoroethane	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Trichlorofluoromethane	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
M&P-Xylene	<0.10	<2.78	<4.67	<3.91	<3.97	<0.077
O-Xylene	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Vinyl Chloride	<0.050	<1.39	<2.33	<1.96	<1.99	<0.039
Total	<1.78	<49.5	<83.2	<69.6	<70.7	<1.37

Dry Gas Volume Sampled (Rm^3*) :	0.0214
Actual Flowrate (m^3/s) :	27.7
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Benzene	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Bromodichloromethane	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Bromoform	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Bromomethane	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
1,3-Butadiene	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
2-Butanone	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Carbon Tetrachloride	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Chloroform	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Cumene (Isopropylbenzene)	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Dibromochloromethane	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Dichlorodifluoromethane	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
1,2-Dichloroethane	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
trans,1,2-Dichloroethene	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
1,1-Dichloroethene	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
1,2-Dichloropropane	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Ethylbenzene	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Ethylene Dibromide	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Methylene Chloride	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Styrene	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Tetrachloroethene	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Toluene	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
1,1,1-Trichloroethane	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Trichlorotrifluoroethane	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Trichlorofluoromethane	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
M&P-Xylene	<0.10	<2.90	<4.86	<4.07	<4.13	<0.080
O-Xylene	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Vinyl Chloride	<0.050	<1.45	<2.43	<2.04	<2.07	<0.040
Total	<1.55	<44.9	<75.3	<63.1	<64.1	<1.24

Dry Gas Volume Sampled (Rm^3*) :	0.0206
Actual Flowrate (m^3/s) :	27.7
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Benzene	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Bromodichloromethane	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Bromoform	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Bromomethane	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
1,3-Butadiene	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
2-Butanone	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Carbon Tetrachloride	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Chloroform	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Cumene (Isopropylbenzene)	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Dibromochloromethane	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Dichlorodifluoromethane	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
1,2-Dichloroethane	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
trans,1,2-Dichloroethene	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
1,1-Dichloroethene	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
1,2-Dichloropropane	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Ethylbenzene	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Ethylene Dibromide	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Mesitylene (1,3,5-Trimethylbenzene)	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Methylene Chloride	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Styrene	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Tetrachloroethene	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Toluene	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
1,1,1-Trichloroethane	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Trichloroethene/1,1,2-Trichloroethene	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Trichlorotrifluoroethane	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Trichlorofluoromethane	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
M&P-Xylene	<0.10	<2.94	<4.94	<4.14	<4.20	<0.082
O-Xylene	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Vinyl Chloride	<0.050	<1.47	<2.47	<2.07	<2.10	<0.041
Total	<1.55	<45.6	<76.6	<64.2	<65.2	<1.26

Dry Gas Volume Sampled (Rm^3*) :	0.0202
Actual Flowrate (m^3/s) :	27.7
Dry Reference Flowrate (Rm^3/s*) :	16.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.4

* At 25°C and 1 atmosphere

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

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

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

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m^3	µg/m^3	µg/m^3	µg/m^3	%
Acetone	1.45	<1.45	<1.47	<1.46	1.0
Benzene	<1.39	<1.45	<1.47	<1.44	2.9
Bromodichloromethane	<1.39	<1.45	<1.47	<1.44	2.9
Bromoform	<1.39	<1.45	<1.47	<1.44	2.9
Bromomethane	<1.39	<1.45	<1.47	<1.44	2.9
1,3-Butadiene	<1.39	<1.45	<1.47	<1.44	2.9
2-Butanone	<1.39	<1.45	<1.47	<1.44	2.9
Carbon Tetrachloride	<1.39	<1.45	<1.47	<1.44	2.9
Chloroform	<1.39	<1.45	<1.47	<1.44	2.9
Cumene (Isopropylbenzene)	<1.39	<1.45	<1.47	<1.44	2.9
Dibromochloromethane	<1.39	<1.45	<1.47	<1.44	2.9
Dichlorodifluoromethane	<1.39	<1.45	<1.47	<1.44	2.9
1,2-Dichloroethane	<1.39	<1.45	<1.47	<1.44	2.9
trans,1,2-Dichloroethene	<1.39	<1.45	<1.47	<1.44	2.9
1,1-Dichloroethene	<1.39	<1.45	<1.47	<1.44	2.9
1,2-Dichloropropane	<1.39	<1.45	<1.47	<1.44	2.9
Ethylbenzene	<1.39	<1.45	<1.47	<1.44	2.9
Ethylene Dibromide	<1.39	<1.45	<1.47	<1.44	2.9
Mesitylene (1,3,5-Trimethylbenzene)	<1.39	<1.45	<1.47	<1.44	2.9
Methylene Chloride	<1.39	<1.45	<1.47	<1.44	2.9
Styrene	<1.39	<1.45	<1.47	<1.44	2.9
Tetrachloroethene	<1.39	<1.45	<1.47	<1.44	2.9
Toluene	7.76	<1.45	<1.47	<3.56	102
1,1,1-Trichloroethane	<1.39	<1.45	<1.47	<1.44	2.9
Trichloroethene/1,1,2-Trichloroethene	<1.39	<1.45	<1.47	<1.44	2.9
Trichlorotrifluoroethane	<1.39	<1.45	<1.47	<1.44	2.9
Trichlorofluoromethane	<1.39	<1.45	<1.47	<1.44	2.9
M&P-Xylene	<2.78	<2.90	<2.94	<2.87	2.9
O-Xylene	<1.39	<1.45	<1.47	<1.44	2.9
Vinyl Chloride	<1.39	<1.45	<1.47	<1.44	2.9
Total	<49.5	<44.9	<45.6	<46.7	5.4

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

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	2.43	<2.43	<2.47	<2.44	1.0
Benzene	<2.33	<2.43	<2.47	<2.41	2.9
Bromodichloromethane	<2.33	<2.43	<2.47	<2.41	2.9
Bromoform	<2.33	<2.43	<2.47	<2.41	2.9
Bromomethane	<2.33	<2.43	<2.47	<2.41	2.9
1,3-Butadiene	<2.33	<2.43	<2.47	<2.41	2.9
2-Butanone	<2.33	<2.43	<2.47	<2.41	2.9
Carbon Tetrachloride	<2.33	<2.43	<2.47	<2.41	2.9
Chloroform	<2.33	<2.43	<2.47	<2.41	2.9
Cumene (Isopropylbenzene)	<2.33	<2.43	<2.47	<2.41	2.9
Dibromochloromethane	<2.33	<2.43	<2.47	<2.41	2.9
Dichlorodifluoromethane	<2.33	<2.43	<2.47	<2.41	2.9
1,2-Dichloroethane	<2.33	<2.43	<2.47	<2.41	2.9
trans,1,2-Dichloroethene	<2.33	<2.43	<2.47	<2.41	2.9
1,1-Dichloroethene	<2.33	<2.43	<2.47	<2.41	2.9
1,2-Dichloropropane	<2.33	<2.43	<2.47	<2.41	2.9
Ethylbenzene	<2.33	<2.43	<2.47	<2.41	2.9
Ethylene Dibromide	<2.33	<2.43	<2.47	<2.41	2.9
Mesitylene (1,3,5-Trimethylbenzene)	<2.33	<2.43	<2.47	<2.41	2.9
Methylene Chloride	<2.33	<2.43	<2.47	<2.41	2.9
Styrene	<2.33	<2.43	<2.47	<2.41	2.9
Tetrachloroethene	<2.33	<2.43	<2.47	<2.41	2.9
Toluene	13.0	<2.43	<2.47	<5.98	102
1,1,1-Trichloroethane	<2.33	<2.43	<2.47	<2.41	2.9
Trichloroethene/1,1,2-Trichloroethene	<2.33	<2.43	<2.47	<2.41	2.9
Trichlorotrifluoroethane	<2.33	<2.43	<2.47	<2.41	2.9
Trichlorofluoromethane	<2.33	<2.43	<2.47	<2.41	2.9
M&P-Xylene	<4.67	<4.86	<4.94	<4.82	2.9
O-Xylene	<2.33	<2.43	<2.47	<2.41	2.9
Vinyl Chloride	<2.33	<2.43	<2.47	<2.41	2.9
Total	<83.2	<75.3	<76.6	<78.4	5.4

* 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/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	2.03	<2.04	<2.07	<2.05	1.0
Benzene	<1.96	<2.04	<2.07	<2.02	2.9
Bromodichloromethane	<1.96	<2.04	<2.07	<2.02	2.9
Bromoform	<1.96	<2.04	<2.07	<2.02	2.9
Bromomethane	<1.96	<2.04	<2.07	<2.02	2.9
1,3-Butadiene	<1.96	<2.04	<2.07	<2.02	2.9
2-Butanone	<1.96	<2.04	<2.07	<2.02	2.9
Carbon Tetrachloride	<1.96	<2.04	<2.07	<2.02	2.9
Chloroform	<1.96	<2.04	<2.07	<2.02	2.9
Cumene (Isopropylbenzene)	<1.96	<2.04	<2.07	<2.02	2.9
Dibromochloromethane	<1.96	<2.04	<2.07	<2.02	2.9
Dichlorodifluoromethane	<1.96	<2.04	<2.07	<2.02	2.9
1,2-Dichloroethane	<1.96	<2.04	<2.07	<2.02	2.9
trans,1,2-Dichloroethene	<1.96	<2.04	<2.07	<2.02	2.9
1,1-Dichloroethene	<1.96	<2.04	<2.07	<2.02	2.9
1,2-Dichloropropane	<1.96	<2.04	<2.07	<2.02	2.9
Ethylbenzene	<1.96	<2.04	<2.07	<2.02	2.9
Ethylene Dibromide	<1.96	<2.04	<2.07	<2.02	2.9
Mesitylene (1,3,5-Trimethylbenzene)	<1.96	<2.04	<2.07	<2.02	2.9
Methylene Chloride	<1.96	<2.04	<2.07	<2.02	2.9
Styrene	<1.96	<2.04	<2.07	<2.02	2.9
Tetrachloroethene	<1.96	<2.04	<2.07	<2.02	2.9
Toluene	10.9	<2.04	<2.07	<5.01	102
1,1,1-Trichloroethane	<1.96	<2.04	<2.07	<2.02	2.9
Trichloroethene/1,1,2-Trichloroethene	<1.96	<2.04	<2.07	<2.02	2.9
Trichlorotrifluoroethane	<1.96	<2.04	<2.07	<2.02	2.9
Trichlorofluoromethane	<1.96	<2.04	<2.07	<2.02	2.9
M&P-Xylene	<3.91	<4.07	<4.14	<4.04	2.9
O-Xylene	<1.96	<2.04	<2.07	<2.02	2.9
Vinyl Chloride	<1.96	<2.04	<2.07	<2.02	2.9
Total	<69.6	<63.1	<64.2	<65.6	5.4

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

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

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	2.06	<2.07	<2.10	<2.08	1.0
Benzene	<1.99	<2.07	<2.10	<2.05	2.9
Bromodichloromethane	<1.99	<2.07	<2.10	<2.05	2.9
Bromoform	<1.99	<2.07	<2.10	<2.05	2.9
Bromomethane	<1.99	<2.07	<2.10	<2.05	2.9
1,3-Butadiene	<1.99	<2.07	<2.10	<2.05	2.9
2-Butanone	<1.99	<2.07	<2.10	<2.05	2.9
Carbon Tetrachloride	<1.99	<2.07	<2.10	<2.05	2.9
Chloroform	<1.99	<2.07	<2.10	<2.05	2.9
Cumene (Isopropylbenzene)	<1.99	<2.07	<2.10	<2.05	2.9
Dibromochloromethane	<1.99	<2.07	<2.10	<2.05	2.9
Dichlorodifluoromethane	<1.99	<2.07	<2.10	<2.05	2.9
1,2-Dichloroethane	<1.99	<2.07	<2.10	<2.05	2.9
trans,1,2-Dichloroethene	<1.99	<2.07	<2.10	<2.05	2.9
1,1-Dichloroethene	<1.99	<2.07	<2.10	<2.05	2.9
1,2-Dichloropropane	<1.99	<2.07	<2.10	<2.05	2.9
Ethylbenzene	<1.99	<2.07	<2.10	<2.05	2.9
Ethylene Dibromide	<1.99	<2.07	<2.10	<2.05	2.9
Mesitylene (1,3,5-Trimethylbenzene)	<1.99	<2.07	<2.10	<2.05	2.9
Methylene Chloride	<1.99	<2.07	<2.10	<2.05	2.9
Styrene	<1.99	<2.07	<2.10	<2.05	2.9
Tetrachloroethene	<1.99	<2.07	<2.10	<2.05	2.9
Toluene	11.1	<2.07	<2.10	<5.08	102
1,1,1-Trichloroethane	<1.99	<2.07	<2.10	<2.05	2.9
Trichloroethene/1,1,2-Trichloroethene	<1.99	<2.07	<2.10	<2.05	2.9
Trichlorotrifluoroethane	<1.99	<2.07	<2.10	<2.05	2.9
Trichlorofluoromethane	<1.99	<2.07	<2.10	<2.05	2.9
M&P-Xylene	<3.97	<4.13	<4.20	<4.10	2.9
O-Xylene	<1.99	<2.07	<2.10	<2.05	2.9
Vinyl Chloride	<1.99	<2.07	<2.10	<2.05	2.9
Total	<70.7	<64.1	<65.2	<66.7	5.4

* At 25°C and 1 atmosphere

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

Compound	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Acetone	0.040	<0.040	<0.041	<0.040	1.0
Benzene	<0.039	<0.040	<0.041	<0.040	2.9
Bromodichloromethane	<0.039	<0.040	<0.041	<0.040	2.9
Bromoform	<0.039	<0.040	<0.041	<0.040	2.9
Bromomethane	<0.039	<0.040	<0.041	<0.040	2.9
1,3-Butadiene	<0.039	<0.040	<0.041	<0.040	2.9
2-Butanone	<0.039	<0.040	<0.041	<0.040	2.9
Carbon Tetrachloride	<0.039	<0.040	<0.041	<0.040	2.9
Chloroform	<0.039	<0.040	<0.041	<0.040	2.9
Cumene (Isopropylbenzene)	<0.039	<0.040	<0.041	<0.040	2.9
Dibromochloromethane	<0.039	<0.040	<0.041	<0.040	2.9
Dichlorodifluoromethane	<0.039	<0.040	<0.041	<0.040	2.9
1,2-Dichloroethane	<0.039	<0.040	<0.041	<0.040	2.9
trans,1,2-Dichloroethene	<0.039	<0.040	<0.041	<0.040	2.9
1,1-Dichloroethene	<0.039	<0.040	<0.041	<0.040	2.9
1,2-Dichloropropane	<0.039	<0.040	<0.041	<0.040	2.9
Ethylbenzene	<0.039	<0.040	<0.041	<0.040	2.9
Ethylene Dibromide	<0.039	<0.040	<0.041	<0.040	2.9
Mesitylene (1,3,5-Trimethylbenzene)	<0.039	<0.040	<0.041	<0.040	2.9
Methylene Chloride	<0.039	<0.040	<0.041	<0.040	2.9
Styrene	<0.039	<0.040	<0.041	<0.040	2.9
Tetrachloroethene	<0.039	<0.040	<0.041	<0.040	2.9
Toluene	0.21	<0.040	<0.041	<0.099	102
1,1,1-Trichloroethane	<0.039	<0.040	<0.041	<0.040	2.9
Trichloroethene/1,1,2-Trichloroethene	<0.039	<0.040	<0.041	<0.040	2.9
Trichlorotrifluoroethane	<0.039	<0.040	<0.041	<0.040	2.9
Trichlorofluoromethane	<0.039	<0.040	<0.041	<0.040	2.9
M&P-Xylene	<0.077	<0.080	<0.082	<0.080	2.9
O-Xylene	<0.039	<0.040	<0.041	<0.040	2.9
Vinyl Chloride	<0.039	<0.040	<0.041	<0.040	2.9
Total	<1.37	<1.24	<1.26	<1.29	5.4

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

Compound	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³*	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<1.46	<2.44	<2.05	<2.08	<0.040
Benzene	<1.44	<2.41	<2.02	<2.05	<0.040
Bromodichloromethane	<1.44	<2.41	<2.02	<2.05	<0.040
Bromoform	<1.44	<2.41	<2.02	<2.05	<0.040
Bromomethane	<1.44	<2.41	<2.02	<2.05	<0.040
1,3-Butadiene	<1.44	<2.41	<2.02	<2.05	<0.040
2-Butanone	<1.44	<2.41	<2.02	<2.05	<0.040
Carbon Tetrachloride	<1.44	<2.41	<2.02	<2.05	<0.040
Chloroform	<1.44	<2.41	<2.02	<2.05	<0.040
Cumene (Isopropylbenzene)	<1.44	<2.41	<2.02	<2.05	<0.040
Dibromochloromethane	<1.44	<2.41	<2.02	<2.05	<0.040
Dichlorodifluoromethane	<1.44	<2.41	<2.02	<2.05	<0.040
1,2-Dichloroethane	<1.44	<2.41	<2.02	<2.05	<0.040
trans,1,2-Dichloroethene	<1.44	<2.41	<2.02	<2.05	<0.040
1,1-Dichloroethene	<1.44	<2.41	<2.02	<2.05	<0.040
1,2-Dichloropropane	<1.44	<2.41	<2.02	<2.05	<0.040
Ethylbenzene	<1.44	<2.41	<2.02	<2.05	<0.040
Ethylene Dibromide	<1.44	<2.41	<2.02	<2.05	<0.040
Mesitylene (1,3,5-Trimethylbenzene)	<1.44	<2.41	<2.02	<2.05	<0.040
Methylene Chloride	<1.44	<2.41	<2.02	<2.05	<0.040
Styrene	<1.44	<2.41	<2.02	<2.05	<0.040
Tetrachloroethene	<1.44	<2.41	<2.02	<2.05	<0.040
Toluene	<3.56	<5.98	<5.01	<5.08	<0.099
1,1,1-Trichloroethane	<1.44	<2.41	<2.02	<2.05	<0.040
Trichloroethene/1,1,2-Trichloroethene	<1.44	<2.41	<2.02	<2.05	<0.040
Trichlorotrifluoroethane	<1.44	<2.41	<2.02	<2.05	<0.040
Trichlorofluoromethane	<1.44	<2.41	<2.02	<2.05	<0.040
M&P-Xylene	<2.87	<4.82	<4.04	<4.10	<0.080
O-Xylene	<1.44	<2.41	<2.02	<2.05	<0.040
Vinyl Chloride	<1.44	<2.41	<2.02	<2.05	<0.040
Total	<46.7	<78.4	<65.6	<66.7	<1.29

* At 25°C and 1 atmosphere

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

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Volatile Organic Analyses

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

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

APPENDIX 3

Notice of Testing
and ECA No. 7306-8FDKNX
(109 pages)

If you require this information in an accessible format, please contact The Regional Municipality of Durham at 1-800-372-1102 ext. 3560.

Sent via email (celeste.dugas@ontario.ca and julie.schroeder@ontario.ca)

April 3, 2023

Celeste Dugas, Manager,
York Durham District Office
Ministry of the Environment, Conservation and Parks
230 Westney Road South, Floor 5
Ajax, Ontario L1S 7J5

and

Dr. Julie Schroeder, Director
Technical Assessment and Standards Development Branch
Ministry of the Environment, Conservation and Parks
40 St. Clair Avenue West, Floor 7 - Foster Building
Toronto, Ontario M4V 1M2

Dear Ms. Dugas and Ms. Schroeder:

RE: Durham York Energy Centre
Voluntary Spring 2023 Source Test
Environmental Compliance Approval #7306-8FDKNX

The Regional Municipalities of Durham and York (Regions) are planning to complete a voluntary Source Test at the Durham York Energy Centre (DYEC) commencing on April 24, 2023. The purpose of this Source Test is to measure DYEC emissions under a directive from the Regional Municipality of Durham's Council. Conduct of this Source Test is not a requirement of the Environmental Assessment (EA) approval or the Environmental Compliance Approval (ECA) for the facility.

ORTECH Consulting Inc. (ORTECH) is the contractor selected to conduct the Source Test. ORTECH will be following the September 2020 Pre-Test Plan for Source Testing (Pre-Test Plan #22050). The approved 2020 test plan has been used for all subsequent test programs (voluntary and compliance) performed since.

The analytical laboratories performing analysis are ALS Environmental in Burlington, Ontario, along with Bureau Veritas in Mississauga, Ontario, as a subcontractor. The laboratories are certified to conduct the analysis.

Please accept this courtesy notification of the planned voluntary Source Test. If you have any questions regarding this notification and the impending conduct of the DYEC Source Testing Program, please do not hesitate to contact the undersigned.

Sincerely,

Gioseph Anello, M.Eng., P.Eng., PMP
Director, Waste Management Services
The Regional Municipality of Durham
905-668-7711 extension 3445
Gioseph.Anello@durham.ca

Laura McDowell, P.Eng.
General Manager, Interim - Environmental
The Regional Municipality of York
905-830-4444 extension 75077
Laura.McDowell@york.ca

c. J. McKerrall, Manager (Acting), Technology Standards Section, MECP
B. Fullerton, Source Assessment Specialist, Technology Standards Section, MECP
C. Ruddy, Senior Source Assessment Specialists, Technology Standards Section, MECP
P. Dunn, Senior Environmental Officer, York Durham District Office, MECP
D. Keene, Senior Environmental Officer, York Durham District Office, MECP
B. Parayankuzhiyil, Facility Manager, Covanta
R. Kohler, Environmental Engineer, Covanta
L. Kwan, Environmental Specialist, Covanta
A. Evans, Manager, Waste Planning and Technical Services, Durham Region
L. Saha, Project Manager, Waste Planning and Technical Services, Durham Region
M. Farid, Contract Management Engineer, Environmental Promotion and Protection, York Region

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

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

Ontario

Via email: erika.hobe@durham.com

TSS File No.: CR:SA: 110155:23

2023/04/12

Erika Hobe
The Regional Municipality of Durham

Dear Ms. Hobe:

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

We received your letter, dated April 3, 2023, referring to a voluntary source testing program taking place at the Durham York Energy Centre. The testing program is being conducted under a directive from the Regional Municipality of Durham's Council. The letter outlines the intent to use the previously approved pre-test plan (submitted 09/08/2020) for the 2023 voluntary testing program.

The use of the previously approved pre-test plan is acceptable for the 2023 voluntary testing program.

We have noted the sampling schedule to commence the week of April 24, 2023. If changes to this schedule occur, please notify both the MECP's York-Durham District Office and the Source Testing Group.

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

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

Sincerely,

Caitlyn Ruddy
Source Assessment Specialist
Technology Standards Section

cc: C. Dugas – Manager, MECP York-Durham D.O. (celeste.dugas@ontario.ca)
P. Dunn – Sr. Environmental Officer, MECP York-Durham D.O. (philip.dunn@ontario.ca)
B. Parayankuzhiyil – Facility Manager, Covanta DYEC L.P (bparayanku@covanta.com)
R. Kohler – Environmental Engineer, Covanta DYEC L.P. (rkohler@covant.com)
L. Kwan – Environmental Specialist, Covanta DYEC L.P. (lkwan@covanta.com)
A. Evans – Durham Region (andrew.evans@durham.ca)
G. Anello – Durham Region (gioseph.anello@durham.ca)
M. Farid – York Region (muneeb.farid@york.ca)
L. McDowell – York Region (laura.mcdowell@york.ca)
L. Saha- Lipika.Saha@durham.ca
L. Waller- Lyndsay.Waller@Durham.ca
R. McCormick- Robyn.McCormick@durham.ca
M. Smart Melodee.Smart@Durham.ca
J. McKerrall –TSS (jeffrey.mckerrall@ontario.ca)
B. Fullerton- TSS (bill.fullerton@ontario.ca)

File AQ-02 (Durham-York Energy Centre)

Doc.Mgmt # 5AG040026

Ontario

Ministry of the Environment
Ministère de l'Environnement

CERTIFICATE OF APPROVAL

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

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

and

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

and

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

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

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

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

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

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

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

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

(b) the following air pollution control equipment:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Technology Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL PROVISIONS

1. GENERAL

Compliance

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

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

Build in Accordance

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

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

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

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

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

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

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

As-built Drawings

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

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

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

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

Interpretation

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

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

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

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

Other Legal Obligations

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

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

(b) limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner to furnish any further information related to compliance with this Certificate.

Adverse Effects

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

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

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

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

Change of Ownership

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

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

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

Inspections by the Ministry

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

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

Information

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(4) Waste Receipt Rate:

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

(5) Storage Restrictions:

Solids:

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

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

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

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

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

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

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

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

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

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

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

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

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

Liquids:

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

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

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

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

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

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

(b) Emergency Waste storage duration extension:

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

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

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

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

3. **SIGNS and SITE SECURITY**

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

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

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

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

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

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

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

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

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

4. SITE OPERATIONS

(1) Operating hours:

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

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

(c) Emergency Receipt of Waste:

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

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

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

(2) Incoming Waste receipt:

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

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

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

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

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

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

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

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

(3) **Unacceptable Waste handling:**

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

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

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

(4) **Waste Sorting:**

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

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

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

(a) (i) Except for transportation of the Residual Waste between the Grizzly Building and the Residue Building, the Owner shall ensure that all

handling of the bottom ash and its segregated constituents, and of the fly ash, is undertaken within the confines of enclosed conveyors and enclosed buildings.

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

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

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

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

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

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

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

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

(6) **Wastewater Management**

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

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

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

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

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

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

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

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

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

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

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

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

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Operation and Maintenance

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

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

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

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

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

Critical Spare Parts

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

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

Inspections

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

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

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

Inspections and Maintenance of the Works

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

6. PERFORMANCE REQUIREMENTS

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

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

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

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

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

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

(ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000^{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. **TESTING, MONITORING** and **AUDITING**

Source Testing

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

Continuous Monitoring

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

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

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

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

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

Long-Term Sampling for Dioxins and Furans

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

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

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

Ambient Air Monitoring

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

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

(c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

Residual Waste Testing

(7) (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg.* 347 and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.

(b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.

(c) The Testing Protocol shall include the rationale for the proposed methods and the following:

(i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;

(ii) sample(s) handling and preserving procedures;

(iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and

(iv) a testing protocol for the bottom ash during the Site commissioning period.

(d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.

(8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:

(a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;

(b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the “incinerator ash” definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

(c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the "incinerator ash" definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re‑establish compliance with the "incinerator ash" definition from the *O. Reg. 347* and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and

(d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re‑establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.

(9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347*.

(b) The Owner shall follow the following schedule for compliance testing:

(i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;

(ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and

(iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re‑establish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

Soil Testing:

(10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.

(b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

Disposal of Residual Waste

(11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.

(12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347,* may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

(13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

Groundwater and Surface Water Monitoring

(14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

8. NUISANCE IMPACT CONTROL and HOUSEKEEPING

Odour Management

(1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.

(b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.

(ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained

to maintain a negative air pressure atmosphere throughout the Tipping Building.

(c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.

(3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.

(4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.

(5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.

(6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.

(7) (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.

(ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.

(iii) These tests shall be repeated as directed or agreed by the District Manager.

(8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(9) (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:

(i) identification of all potential sources of odourous emissions;

(ii) description of the preventative and control measures to minimize odourous emissions from the identified sources;
(iii) procedures for the implementation of the Odour Management and Mitigation Plan;
(iv) inspection and maintenance procedures to ensure effective implementation of the Odour Management and Mitigation Plan; and
(v) procedures for verification and recording the progress of the implementation of the Odour Management and Mitigation Plan.

(b) The Owner shall continue to submit an updated Odour Management and Mitigation Plan until such time as the Regional Director notifies the Owner in writing that further submissions are no longer required.

Vehicles and Traffic

(10) (a) The Owner shall ensure that all vehicles transporting waste to and from the Site are not leaking or dripping waste when arriving at or leaving the Site.

(b) Should the Owner become aware that the truck(s) delivering waste to the Site have leaked wastewater on the municipal roadways, the Owner shall immediately report the violation to the owner of the vehicle(s) and to the District Manager.

(c) The Owner shall ensure that the exterior of all vehicles delivering Waste to the Site or hauling waste from the Site is washed prior to the trucks' departure from the Site, if necessary.

(d) Any necessary truck washing shall occur only in the designated wash down area of the Tipping Building or the Residue Building.

(11) The Owner shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Site on any roadway that is not a distinct part of the Site.

Litter

(12) The Owner shall:

(a) take all practical steps to prevent the escape of litter from the Site;
(b) pick up litter around the Site on a daily basis, or more frequently if necessary; and
(c) if necessary, erect litter fences around the areas causing a litter problem.

Dust

(13) The Owner shall ensure that all on-site roads and operations/yard areas are regularly swept/washed to prevent dust impacts off-Site.

Vermin and Vectors

(14) The Owner shall:

(a) implement necessary housekeeping procedures to eliminate sources and potential sources of attraction for vermin and vectors; and

(b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the Site. The pest control plan shall remain in place, and be updated from time to time as necessary, until the Site has been closed and this Certificate has been revoked.

Visual Screening

(15) The Owner shall provide visual screening for the Site in accordance with the documentation included in the attached Schedule "A".

9. STAFF TRAINING

(1) (a) The Owner shall ensure that all operators of the Site are trained with respect to the following, as per the specific job requirements of each individual operator:

(i) terms and conditions of this Certificate and the requirements of the EA Approval;
(ii) operation and management of the Site, or area(s) within the Site, as per the specific job requirements of each individual operator, and which may include procedures for receiving, screening and identifying Waste, refusal, handling, processing and temporarily storing wastes, operation of the Equipment, the APC Equipment, the CEM System and the Works;
(iii) testing, monitoring and operating requirements;
(iv) maintenance and inspection procedures;
(v) recording procedures;
(vi) nuisance impact control and housekeeping procedures;
(vii) procedures for recording and responding to public complaints;
(viii) an outline of the responsibilities of Site personnel including roles and responsibilities during emergency situations;
(ix) the Contingency and Emergency Response Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
(x) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
(xi) emergency first-aid information; and
(xii) relevant waste management legislation and regulations, including the *EPA,* the *OWRA,* the *O. Reg. 347,* the *O. Reg. 419/05* and the Ministry guidelines affecting thermal treatment facilities.

(2) The Owner shall ensure that all personnel are trained in the requirements of this Certificate relevant to the employee's position:

(a) upon commencing employment at the Site in a particular position;
(b) whenever items listed in Condition 9.(1) are changed or updated; and
(c) during the planned refresher training.

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

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

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

Step 1: Record of Complaint/Emission Event

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

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

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

Step 2: Investigation and Handling of Complaint/Emission Event

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

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

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

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

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

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

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

11. CONTINGENCY and EMERGENCY RESPONSE PLAN

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

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

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

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

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

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

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

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

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

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

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

12. EMERGENCY SITUATION RESPONSE and REPORTING

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

14. RECORDS KEEPING

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

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

Daily Activities

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

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

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

Monitoring and Testing Records

(4) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) day and time of the activity;
(b) all original records produced by the recording devices associated with the CEM Systems;
(c) a summary of daily records of readings of the CEM Systems, including:
  (i) the daily minimum and maximum 4-hour average readings for carbon monoxide;
  (ii) the daily minimum and maximum one hour average readings for oxygen;
  (iii) the daily minimum and maximum 10-minute average readings for organic matter;
  (iv) the daily minimum and maximum 24-hour average readings for sulphur dioxide;
  (v) the daily minimum and maximum 24-hour average readings for nitrogen oxides;
  (vi) the daily minimum and maximum 24-hour average readings for hydrogen chloride;
  (vii) the daily minimum and maximum 6-minute average and 2-hour average opacity readings; and
  (viii) the daily minimum and maximum one-hour average readings for temperature measurements.
(d) records of all excursions from the applicable Performance Requirements as measured by the CEM Systems, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions;
(e) all records produced during any Acoustic Audit;
(f) all records produced during any Source Testing;
(g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;
(h) all records produced during the Residual Waste compliance testing;
(i) all records produced during the Soil Testing;
(j) all records produced during the Groundwater and Surface Water Monitoring required by this Certificate;
(k) all records produced during the Ambient Air Monitoring required by this Certificate;
(l) all records associated with radiation monitoring of the incoming Waste, including but not limited to:
  (i) transaction number;
  (ii) hauler;
  (iii) vehicle ID;
  (iv) alarm level;
  (v) maximum CPS;
  (vi) uSv/hr;

(vii) comment;
(viii) background CPS;
(ix) driver time in and out; and
(x) name of the Trainer Personnel that carried out the monitoring.

(m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;

(n) results the negative pressure in the Tipping Building carried out, as required.

Inspections/Maintenance/Repairs

(5) The Owner shall maintain an on-Site written or digital record of inspections and maintenance as required by this Certificate. As a minimum, the record shall include the following:

(a) the name and signature of the Trained Personnel that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered, including the need for a maintenance or repair activity;
(d) the recommendations for remedial action;
(e) the date, time and description of actions (repair or maintenance) undertaken;
(f) the name and signature of the Trained Personnel who undertook the remedial action; and
(g) an estimate of the quantity of any materials removed during cleaning of the Works.

Emergency Situations

(6) The Owner shall maintain an on-Site written or digital record of the emergency situations. As a minimum, the record shall include the following:

(a) the type of an emergency situation;
(b) description of how the emergency situation was handled;
(c) the type and amount of material spilled, if applicable;
(d) a description of how the material was cleaned up and stored, if generated; and
(e) the location and time of final disposal, if applicable; and
(f) description of the preventative and control measures undertaken to minimize the potential for re-occurrence of the emergency situation in the future.

Complaints Response Records

(7) The Owner shall establish and maintain a written or digital record of complaints received and the responses made as required by this Certificate.

Training

(8) The Owner shall maintain an on-Site written or digital record of training as required by this Certificate. As a minimum, the record shall include the following:

(a) date of training;
(b) name and signature of person who has been trained; and
(c) description of the training provided.

Reports

(9) The Owner shall keep at the Site the following reports required by this Certificate:

(a) the ESDM Report
(b) the Acoustic Assessment Report;
(c) the Annual Report; and
(d) the Third Party Audit.

15. **REPORTING**

Annual Report

(1) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager and to the Advisory Committee, an Annual Report summarizing the operation of the Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:

(a) a summary of the quality and the quantity of the Wastes accepted at the Site, including the maximum amount of the Waste received annually and daily and the sources of the Waste;

(b) a summary of the quality and the quantity of the Residual Waste shipped from the Site, including the analytical data required to characterize the Residual Waste, the off-Site destinations for the Residual Waste and its subsequent use, if known;

(c) estimated material balance for each month documenting the maximum amount of wastes stored at the Site;

(d) annual water usage;

(e) annual amount of the electricity produced and the annual amount of the electricity exported to the electrical grid;

(f) summaries and conclusions from the records required by Conditions 14.(3) through 14.(8) of this Certificate;

(g) the Emission Summary Table and the Acoustic Assessment Summary Table for the Facility as of December 31 from the previous calendar year;

(h) a summary of dates, duration and reasons for any environmental and operational problems, Boilers downtime, APC Equipment and CEM System malfunctions that may have negatively impacted the quality of the environment or any incidents triggered by the Emergency Response and

Contingency Plan and corrective measures taken to eliminate the environmental impacts of the incidents;

(i) a summary of the dates, duration and reasons for all excursions from the applicable Performance Requirements as measured by the CEM Systems or as reported by the annual Source Testing, reasons for the excursions and corrective measures taken to eliminate the excursions;

(j) results of the evaluation of the performance of the long-term sampling system in determining the Dioxins and Furans emission trends and/or fluctuations for the year reported on as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers;

(k) dates of all environmental complaints relating to the Site together with cause of the Complaints and actions taken to prevent future Complaints and/or events that could lead to future Complaints;

(l) any environmental and operational problems that could have negatively impacted the environment, discovered as a result of daily inspections or otherwise and any mitigative actions taken;

(m) a summary of any emergency situations that have occurred at the Site and how they were handled;

(n) the results and an interpretive analysis of the results of the groundwater and surface water, including an assessment of the need to amend the monitoring programs;

(o) summaries of the Advisory Committee meetings, including the issues raised by the public and their current status;

(p) any recommendations to improve the environmental and process performance of the Site in the future;

(q) statement of compliance with this Certificate, including compliance with the *O. Reg. 419/05* and all air emission limits based on the results of source testing, continuous monitoring and engineering calculations, as may be appropriate; and

(r) interpretation of the results and comparison to the results from previous Annual Reports to demonstrate the Facility's impact on the environment.

Third Party Audit

(2) (a) The Regions shall ensure that an independent technical review of the operations at the Site is undertaken in accordance with the requirements of the EA Approval.

(b) In addition to the Third Party Audit requirements set out in the EA approval, the Third Party Audit shall include the following:

(i) a review of the data from the monitoring and testing required by this Certificate;
(ii) a review of all complaints received about the operation of the Facility;
(iii) any recommendations for improving the operation of the Facility received from the Advisory Committee; and
(iv) a recommendation of any improvements that could be made to ensure that the operation of the Facility is optimized and is protective of the health and safety of people and the environment.

(3) The Regions shall submit a Written Audit Report on the results of the independent technical review to the Regional Director in accordance with the Audit Plan and retain a copy at the Site.

Soil Testing Report

(4) Within one (1) month of completion of each Soil Testing event, the Regions shall submit to the District Manager a Soil Testing Report, which includes the details on the sampling/testing procedures, the results of the testing and a comparison with the results obtained during the previous Soil Testing.

16. PUBLIC ACCESS TO DOCUMENTATION

(1) The Owner shall, at all times, maintain documentation that describes the current operations of the Facility. The Owner shall post the documentation at the website for the undertaking and during regular business hours, the Owner shall make the following documents available for inspection at the Site by any interested member of the public, upon submission to the Ministry for review:

(a) a current ESDM Report that demonstrates compliance with the Performance Limits for the Facility regarding all Compounds of Concern;

(b) a current Acoustic Assessment Report that demonstrates compliance with the Performance Limits for the Facility regarding noise emissions;

(c) the most recent Annual Report;

(d) the most current Third Party Audit Report;

(e) Odour Management and Mitigation Plan, prepared in accordance with the requirements of the EA Approval;

(f) Noise Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval; and

(g) Groundwater and Surface Water Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval.

(2) The Owner shall ensure that necessary hardware and software are provided at a location available to the public, to provide on-line real-time reporting of the operating parameter data for the Facility, including acceptable operating limits, stack emissions, and all other parameters for which continuous monitoring is required and that continuous records of the same be kept and made available to the public.

17. ADVISORY COMMITTEE

(1) The Regions shall establish an Advisory Committee in accordance with the requirements set out in the EA Approval.

18. CLOSURE of the SITE

(1) A minimum of nine (9) months prior to closure of the Site, the Owner shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Owner shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

SCHEDULE "A"

Supporting Documentation

(1) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) Emission Summary and Dispersion Modelling Report, dated March 2011, prepared by Golder Associates;

(b) Acoustic Assessment Report prepared by Golder Associates Ltd., dated March 2011 and signed by Paul Niejadlik.

(2) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) Attachment #1 containing the "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.;

(b) Attachment #3 containing the "Public Consultation Report", dated March 2011, prepared by Golder Associates Ltd.;

(c) Attachment #4 containing the Host Community Agreement

(d) Attachment #5 containing the proof of legal name for Covanta Durham York Renewable Energy Limited Partnership; and

(e) A letter May 24, 2011 from Anthony Ciccone, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, providing additional technical information on the proposal and attaching a report entitled "Amendment #1 Durham York Energy Centre Design and Operations Report", dated May 2011;

(3) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of Durham and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) "Surface Water and Groundwater Technical Study Report" dated July 2009, prepared by Jacques Whitford, Markham, Ontario (CD Report).

(b) "Stormwater Design Model Output" prepared by Sigma Energy, dated March 2001 (CD Report).

(c) Clearance letter from Central Lake Ontario Conservation date February 22, 2011.

(d) A letter dated March 23, 2011, from Brian Bahor, Covanta Energy Corporation, to Stefanos Habtom, Ontario Ministry of the Environment, providing additional technical design information on the proposed stormwater management ponds.

SCHEDULE "B"

Procedure to calculate and record the 10-minute average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor

(a) Calculate and record one-hour average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor, employing CALPUFF atmospheric dispersion model or the dispersion model acceptable to the Director that employs at least five (5) years of hourly local meteorological data and that can provide results reported as individual one-hour average odour concentrations.

(b) Convert and record each of the one-hour average concentrations predicted over the five (5) years of hourly local meteorological data at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations using the One-hour Average to 10-Minute Average Conversion described below; and

(c) Record and present the 10-Minute Average concentrations predicted to occur over a five (5) year period at the Point of Impingement and at the most impacted Sensitive Receptor in a histogram. The histogram shall identify all predicted 10-minute average odour concentration occurrences in terms of frequency, identifying the number of occurrences over the entire range of predicted odour concentration in increments of not more than 1/10 of one odour unit. The maximum 10-minute average concentration of odour at the Sensitive Receptor will be considered to be the maximum odour concentration at the most impacted Sensitive Receptor that occurs and is represented in the histogram, disregarding outlying data points on the histogram as agreed to by the Director.

One-hour Average To 10-minute Average Conversion

1. Use the following formula to convert and record one-hour average concentrations predicted by the CALPUFF atmospheric dispersion model or by the dispersion model acceptable to the Director to 10-minute average concentrations:

X10min = X60min*1.65

where X10min = 10-minute average concentration
X60min = one-hour average concentration

SCHEDULE "C"

PERFORMANCE REQUIREMENTS
In-Stack Emission Limits

Parameter	In-Stack Emission Limit	Verification of Compliance
Total Suspended Particulate Matter (filterable particulate measured in accordance with the Ontario Source Testing Code)	9 mg/Rm3	Results from compliance Source Testing
cadmium	7 µg/Rm3	Results from compliance Source Testing
lead	50 µg/Rm3	Results from compliance Source Testing
mercury	15 µg/Rm3	Results from compliance Source Testing
dioxins and furans	60 pg/Rm3	Results from compliance Source Testing; results expressed as I-TEQ
hydrochloric acid (HCl)	9 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
sulphur dioxide (SO2)	35 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
nitrogen oxides (NOx)	121 mg/ Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
organic matter (undiluted, expressed as equivalent methane)	50 ppmdv (33 mg/ Rm3)	Results from compliance source testing
carbon monoxide	35 ppmdv (40 mg/Rm3)	Calculated as the rolling arithmetic average of four (4) hours of data measured by a CEM System that provides data at least once every fifteen minutes, in accordance with condition 6 (2) (c)
opacity	10 percent	Calculated as the rolling arithmetic average of six (6) minutes of data measured by a CEM System that provides data at least once every minute
	5 percent	Calculated as the rolling arithmetic average of two (2) hours of data measured by a CEM System that provides data at least once every

		fifteen minutes

mg/Rm3- milligrams per reference cubic metre;

pg/Rm3 - picograms per reference cubic metre

ppmdv parts per million by dry volume,

µg/Rm3 - micrograms per reference cubic metre

R- reference conditions - 25 degrees Celsius, 101.3 kilopascals, dry basis, 11% oxygen

SCHEDULE "D"

TEST CONTAMINANTS

Hydrogen Chloride
Hydrogen Fluoride
Oxides of Nitrogen expressed as Nitrogen Dioxide
Sulphur Dioxide
Total Hydrocarbons, expressed as methane on wet basis
Carbon Dioxide
Total Suspended Particulate Matter (< 44 microns)
Total PM-10 including condensables
Total PM-2.5 including condensables

Metals

Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Mercury
Molybdenum
Nickel
Selenium
Silver
Thallium
Vanadium
Zinc

Schedule "D" - Cont'd

Chlorobenzenes	Chlorophenols
Monochlorobenzene (MCB) 1,2-Dichlorobenzene (1,2-DCB) 1,3-Dichlorobenzene (1,3-DCB) 1,4-Dichlorobenzene (1,4-DCB) 1,2,3-Trichlorobenzene (1,2,3-TCB) 1,2,4-Trichlorobenzene (1,2,4-TCB) 1,3,5-Trichlorobenzene (1,3,5-TCB) 1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB) 1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB) 1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB) Pentachlorobenzene (PeCB) Hexachlorobenzene (HxCB)	2-monochlorophenol (2-MCP) 3-monochlorophenol (3-MCP) 4-monochlorophenol (4-MCP) 2,3-dichlorophenol (2,3-DCP) 2,4-dichlorophenol (2,4-DCP) 2,5-dichlorophenol (2,5-DCP) 2,6-dichlorophenol (2,6-DCP) 3,4-dichlorophenol (3,4-DCP) 3,5-dichlorophenol (3,5-DCP) 2,3,4-trichlorophenol (2,3,4-T3CP) 2,3,5-trichlorophenol (2,3,5-T3CP) 2,3,6-trichlorophenol (2,3,6-T3CP) 2,4,5-trichlorophenol (2,4,5-T3CP) 2,4,6-trichlorophenol (2,4,6-T3CP) 3,4,5-trichlorophenol (3,4,5-T3CP) 2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP) 2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP) 2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP) Pentachlorophenol (PeCP)

Schedule "D" - Cont'd

Co-Planar PCBs (Dioxin-like PCBs)	Volatile Organic Matter
PCB-077 (3,3',4,4'-TCB)	Acetaldehyde
PCB-081 (3,4,4',5-TCB)	Acetone
PCB-105 (2,3,3',4,4'-PeCB)	Acrolein
PCB-114 (2,3,4,4',5-PeCB)	Benzene
PCB-118 (2,3',4,4',5-PeCB)	Bromodichloromethane
PCB-123 (2',3,4,4',5-PeCB)	Bromoform
PCB-126 (3,3',4,4',5-PeCB)	Bromomethane
PCB-156 (2,3,3',4,4',5-HxCB)	Butadiene, 1,3 -
PCB-157 (2,3,3',4,4',5'-HxCB)	Butanone, 2 -
PCB-167 (2,3',4,4',5,5'-HxCB)	Carbon Tetrachloride
PCB-169 (3,3',4,4',5,5'-HxCB)	Chloroform
PCB-189 (2,3,3',4,4',5,5'-HpCB)	Cumene
	Dibromochloromethane
	Dichlorodifluoromethane
	Dichloroethane, 1,2 -
	Dichloroethene, Trans - 1,2
	Dichloroethene, 1,1 -
	Dichloropropane, 1,2 -
	Ethylbenzene
	Ethylene Dibromide
	Formaldehyde
	Mesitylene
	Methylene Chloride
	Styrene
	Tetrachloroethene
	Toluene
	Trichloroethane, 1,1,1 -
	Trichloroethene
	Trichloroethylene, 1,1,2 -
	Trichlorotrifluoroethane
	Trichlorofluoromethane
	Xylenes, M-, P- and O-
	Vinyl Chloride

Schedule "D" - Cont'd

Polycyclic Organic Matter	Dioxin/Furan Isomers
Acenaphthylene	
Acenaphthene	2,3,7,8-Tetrachlorodibenzo-p-dioxin
Anthracene	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
Benzo(a)anthracene	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
Benzo(b)fluoranthene	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
Benzo(k)fluoranthene	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
Benzo(a)fluorene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
Benzo(b)fluorene	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin
Benzo(ghi)perylene	
Benzo(a)pyrene	2,3,7,8-Tetrachlorodibenzofuran
Benzo(e)pyrene	2,3,4,7,8-Pentachlorodibenzofuran
Biphenyl	1,2,3,7,8-Pentachlorodibenzofuran
2-Chloronaphthalene	1,2,3,4,7,8-Hexachlorodibenzofuran
Chrysene	1,2,3,6,7,8-Hexachlorodibenzofuran
Coronene	1,2,3,7,8,9-Hexachlorodibenzofuran
Dibenzo(a,c)anthracene	2,3,4,6,7,8-Hexachlorodibenzofuran
Dibenzo(a,h)anthracene	1,2,3,4,6,7,8-Heptachlorodibenzofuran
Dibenzo(a,e)pyrene	1,2,3,4,7,8,9-Heptachlorodibenzofuran
9,10-Dimethylanthracene	1,2,3,4,6,7,8,9-Octachlorodibenzofuran
7,12-Dimethylbenzo(a)anthracene	
Fluoranthene	
Fluorene	
Indeno(1,2,3-cd)pyrene	
2-Methylanthracene	
3-Methylcholanthrene	
1-Methylnaphthalene	
2-Methylnaphthalene	
1-Methylphenanthrene	
9-Methylphenanthrene	
Naphthalene	
Perylene	
Phenanthrene	
Picene	
Pyrene	
Tetralin	
M-terphenyl	
O-terphenyl	
P-terphenyl	
Triphenylene	

SCHEDULE "E"

SOURCE TESTING PROCEDURES

1. The Owner shall submit, to the Manager a test protocol including the Pre-Test Information required by the Source Testing Code, at least two (2) months prior to the scheduled Source Testing date.

2. (1) For the purpose of the Source Testing program, the Owner is temporarily permitted to operate the Boilers at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b) during the period of the Source Testing. The Owner shall ensure that the concentration of residual oxygen in the Undiluted Gases leaving the combustion zone of the Boilers, as measured and recorded by the CEM System, shall not be less than 5 percent by volume on a dry basis, during this Source Testing program.

   (2) If the Source Testing results demonstrate that compliance with the Performance Requirements can be maintained at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b), the Owner may apply to the Director for approval to alter the required residual oxygen concentration.

3. The Owner shall finalize the test protocol in consultation with the Manager.

4. The Owner shall not commence the Source Testing until the Manager has accepted the test protocol.

5. The Owner shall complete the first Source Testing not later than six (6) months after Commencement of Operation of the Facility/Equipment.

6. The Owner shall conduct subsequent Source Testing at least once (1) every calendar year thereafter.

7. The Owner shall notify the District Manager and the Manager in writing of the location, date and time of any impending Source Testing required by this Certificate, at least fifteen (15) days prior to the Source Testing.

8. The Owner shall submit a report on the Source Testing programs to the District Manager and the Manager not later than three (3) months after completing each Source Testing program. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:

   (1) an executive summary;
   (2) records of operating conditions; including process description, records of waste composition and feed rate during the Source Testing;
   (3) all records produced by the CEM Equipment;
   (4) procedures followed during the Source Testing and any deviation from the proposed test protocol and the reasons therefore;
   (5) the results of the analyses of the stack emissions;

(6) a summary table that compares the Source Testing results, the monitoring data and the records of operating conditions during the Source Testing to the requirements imposed by the *EPA*, the Regulation and/or the Performance Requirements;
(7) the results of dispersion calculations in accordance with the *O. Reg. 419/05*, indicating the maximum concentration of the Test Contaminants, at the Point of Impingement.
(8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the Test Contaminants.

9. The Owner shall ensure that the Source Testing Report is made available and easily accessible for review by the public at the Facility, immediately after the document is submitted to the Ministry.

10. The Director may not accept the results of the Source Testing if:
(1) the Source Testing Code or the requirements of the Manager were not followed; or
(2) the Owner did not notify the District Manager and the Manager of the Source Testing; or
(3) the Owner failed to provide a complete report on the Source Testing.

11. If the Director does not accept the results of the Source Testing, the Director may require re-testing.

SCHEDULE "F"

PARAMETER:
Temperature

LOCATION:
The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000^{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

Selection and Installation

The Owner shall select and install a CEM System, to measure moisture content of the stack gases, the concentration of hydrogen fluoride and ammonia in the Undiluted Gases leaving the APC Equipment associated with each Boiler, as follows:

a) Design and Performance Specifications shall be in accordance with 40 CFR 60, Appendix B, Specification 4.

b) The Owner shall select the probe locations in compliance with 40 CFR 60, Appendix B, Specification 2.

Test Procedures

The Owner shall verify compliance with the Design and Performance Specifications in accordance with 40 CFR 60, Appendix B, Specification 4, with the reference method for the relative accuracy test being Method 4. of the Source Testing Code.

In furtherance of, but without limiting the generality of the foregoing, the mean difference between the calibration gas value and the analyzer response value at each of the four test concentrations shall be less than 5 percent of the measurement range.

SCHEDULE "G"

A stormwater management facility to service a 10.0 ha drainage area of the Durham York Energy Centre located on the west side of Osbourne Road and north of the CN Rail, Lot 27, Concession Broken Front, Part, Municipality of Clarington, Regional Municipality of Durham, designed to provide quality and quantity control of stormwater run-off by attenuating runoff from storm events up to 1:100 years return frequency to or below the pre-development levels, consisting of:

East Stormwater Management Pond (East SWM Pond)

A stormwater management facility to service a 5.7 ha drainage area comprising of the eastern part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 128 m long drainage ditch collecting stormwater runoff from the north eastern part of the site, having an average horizontal slope of 1.56%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- one (1) approximately 199 m long drainage ditch collecting stormwater runoff from the eastern part of the site, having an average horizontal slope of 2.77%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately fourteen (14) catch basins/maintenance holes and a total of 466.8 m long 450 mm diameter and 34.6 m of 600 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the north and north eastern part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 11.0 m wide and 34.8 m long and depth of 1.0 m, equipped with 600 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south east part of the site, with approximate bottom dimensions of 21.0 m wide and 71.4 m long and a maximum depth of 2.7 m at 96.70 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent pool storage capacity of 1,008 m^3 at elevation 95.0 m masl, an active storage capacity of 3,099 m^3 at 96.70 m masl elevation, and total storage capacity of 4,107 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 97.0 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

West Stormwater Management Pond (West SWM Pond)

A stormwater management facility to service a 4.3 ha drainage area comprising of the western part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 296 m long drainage ditch collecting stormwater runoff from the north western part of the site, having an average horizontal slope of 1.0%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately five (5) catch basins/maintenance holes and a total of 272.2 m long 450 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the western part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 13.0 m wide and 26.0 m long and depth of 1.0 m, equipped with 450 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south western part of the site, with approximate bottom dimensions of 13.0 m wide and 58.0 m long and a maximum depth of 2.5 m at 96.5 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent storage capacity of 623 m^3 at elevation 95.0 m masl, an active storage capacity of 2,054 m^3 at 96.50 m masl elevation, and total storage capacity of 2,677 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 96.80 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

including all associated controls and appurtenances.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

Conditions 1.(1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), (17), (18) and (19) are included to clarify the legal rights and responsibilities of the Owner.

Conditions Nos.1.(3) and (4) are included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

Condition No. 1.(14) is included to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

Condition No.1.(15) is included to restrict potential transfer or encumbrance of the Site without the notification to the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate.

Condition No. 1.(16) is included to ensure that the appropriate Ministry staff has ready access to the operations of the Site which are approved under this Certificate. The Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.

SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

Condition No. 2. is included to specify the approved waste receipt rates, the approved waste types and the service area from which waste may be accepted at the Site based on the Owner's application and supporting documentation. Condition No. 2. is also included to specify the maximum amount of waste that is approved to be stored at the Site.

SIGNS and SITE SECURITY

Condition No. 3. is included to ensure that the Site's users, operators and the public are fully aware of important information and restrictions related to the operation of the Site. Condition No. 3. is also included to ensure that the Site is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site personnel is on duty.

SITE OPERATIONS

Condition No. 4. is included to outline the operational requirements for the Facility to ensure that the said operation does not result in an adverse effect or a hazard to the natural environment or any person.

EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Condition No. 5. is included to require the Site to be maintained and inspected thoroughly on a regular basis to ensure that the operations at the Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

PERFORMANCE REQUIREMENTS

Condition No. 6 is included to set out the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

TESTING, **MONITORING** and **AUDITING**

Condition No. 7. is to require the Owner to gather accurate information on the operation of the Facility so that the environmental impact and subsequent compliance with the *EPA*, the *OWRA*, their Regulations and this Certificate can be verified.

NUISANCE IMPACT CONTROL and HOUSEKEEPING

Condition No. 8. is included to ensure that the Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person. Condition No. 8 is also included to specify odour control measures to minimize a potential for odour emissions from the Site.

STAFF TRAINING

Condition No. 9. is included to ensure that staff are properly trained in the operation of the equipment and instrumentation used at the Site, in the emergency response procedures and on the requirements and restrictions related to the Site operations under this Certificate.

COMPLAINTS RECORDING PROCEDURE

Condition No.10. is included to require the Owner to respond to any environmental complaints resulting from the Facility appropriately and in a timely manner and that appropriate actions are taken to prevent any further incidents that may cause complaints in the future.

CONTINGENCY and EMERGENCY RESPONSE PLAN and EMERGENCY SITUATIONS RESPONSE AND REPORTING

Conditions Nos.11. and 12. are included to ensure that the Owner is prepared and properly equipped to take immediate action in the event of an emergency situation.

SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER

Condition No. 13. is included to set out the requirements for the submissions to the District Manager and the Regional Director regarding the operation of the Facility and the activities required by this Certificate.

RECORDS KEEPING

Condition No.14. is included to ensure that detailed records of Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

REPORTING

Condition No.15. is to ensure that regular review of site, operations and monitoring is carried out and findings documented by a third party for determining whether or not the Site is being operated in compliance with this Certificate of Approval, the EPA and its regulations and whether or not any changes should be considered.

PUBLIC ACCESS to DOCUMENTATION

Condition No.16. is included to ensure that the public has access to information on the operation of the Site in order to participate in the activities of the Advisory Committee in a meaningful and effective way.

ADVISORY COMMITTEE

Condition No.17. is included to require the Owner to establish a forum for the exchange of information and public dialogue on activities carried out at the Site and to ensure that the local residents are properly informed of the activities at the Site and that their concerns can be heard and acted upon , as necessary. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Site and protection of the natural environment. Condition 16. is also included to ensure that the requirements of the EA Approval are fulfilled.

CLOSURE of the SITE

Condition No.18. is included to ensure that the final closure of the Site is completed in accordance with Ministry's standards.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, and in accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written Notice served upon me, the Environmental Review Tribunal, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act and Section 101 of the

Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 9 and 39, *Environmental Protection Act*
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted site is approved under Section 9 and Section 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of June, 2011

Signature
Ian Parrott, P .Eng.
Director
Section 9, *EPA*
Section 39, *EPA*
Section 53, *OWRA*

MW,QN,SH/

c: District Manager, MOE York-Durham
Regional Director, MOE Central Region

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: August 12, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

1. The following definition has been added:

"Contingency and Emergency Response Plan" also means the document entitled "Spill Contingency and Emergency Response Plan";

2. The following Conditions are amended to read as follows:

2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

4.(5)(e) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is as follows:

(i) The storage duration is limited to a maximum of seven (7) days.

(ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The notification shall include the duration of the extension and the reasons.

3. The following Conditions are added:

7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.

11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).

4. The following documents have been added to Schedule "A":

4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by by Golder Associates and dated June 2014.

5. Document entitled "Durham York Energy Centre, Spill Contingency & Emergency Response Plan" prepared by Covanta Durham York Renewable Energy Limited Partnership and dated January 13, 2014, excluding section entitled "Containment Evaluation".

6. Document entitled "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations", prepared by Covanta Durham York Renewable Energy Limited Partnership and dated June 2014.

7. Document entitled "Durham York Energy Centre, Noise Monitoring and Reporting Plan", prepared by Golder Associates and dated September 2011.

The reasons for this amendment to the Approval are as follows:

to approve the "Ash Sampling and Testing Protocol" as required Condition 7.(7)(a), the "Durham York Energy Centre, Spill Contingency & Emergency Response Plan", as required Condition 11.(3), "Durham York Energy Centre, Noise Monitoring and Reporting Plan" as required Condition 7.(5)(a) and "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations" as proposed by the applicant.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served

upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 12th day of August, 2014

Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MOE York-Durham
n/a, The Regional Municipality of Durham

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: October 24, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

1. The address of the Site has been changed to read as follows:

Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

2. The following definitions have been added:

" **Operator** " means any person other than the Regions' employees, authorized by the Regions as having the charge, management or control of any aspect of the Site and includes TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change, and includes its successors and assignees, their successors and assignees;

" **Regions** " means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and it includes The Regional Municipality of Durham and The Regional Municipality of York, their successors and assignees;

2. The following definition has been amended to read as follows:

" **Site** " means the property referred to as Durham York Energy Centre where the Owner has located and operates the Facility and the Works and located at 1835 Energy Drive in the Municipality of Clarington, Regional Municipality of Durham;

" **Owner** " within the context of this Approval, means the Regions and the Operator;

3. The following Conditions have been amended to read as follows:

"General: Change of Ownership" Conditions 1.(14) and 1.(15):

(14) The Regions shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Regions;
(d) the partners, where the Regions are or at any time become a partnership and a copy of the most recent declaration filed under the *Business Names Act ,* R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Regions are or at any time become a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act ,* R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Regions shall notify the successor of and provide the successor with a copy of this Approval, and the Regions shall provide a copy of the notification to the District Manager and the Director.

"Service Area, Approved Waste Types, Rates And Storage: Storage Restrictions" Condition 2.(5)(e):

2.(5)(e) (i) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(ii) The storage duration of bottom ash in the bunkers is limited to a maximum of seven (7) days.

(iii) Should additional storage location(s) and a longer storage duration be required during testing, a minimum of forty eight (48) hours before the storage parameters are changed from those approved in Condition 2.(5)(e)(i) and (ii), the Owner shall notify the District Manager, in writing, of the proposed changes and provide the reasons for the changes.

"Site Operations: Residual Waste Handling and Disposal" Condition 4.(5)(b)(iii):

4.(5)(b)(iii) The Owner may use the equipment that comes in contact with the hazardous wastes to handle other wastes provided that prior to such use, the equipment has been cleaned, as confirmed by visual inspections, to ensure the removal of any hazardous waste residues and to prevent cross contamination.

"Closure of the Site" Conditions 18.(1) and 18.(2):

(1) A minimum of nine (9) months prior to closure of the Site, the Regions shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Regions shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

4. "Covanta Durham York Renewable Energy Limited Partnership" is replaced with "TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change and includes its successors and assignees", in the Environmental Compliance Approval dated June 28, 2011 and in the Notice of Amendment dated August 12, 2014.

5. The following documents are added to Schedule "A":

8. Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Matthew R. Mulcahy, Covanta Durham York Renewable Energy Limited Partnership, Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Cliff Curtis, The Regional Municipality of Durham and Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Laura McDowell, The Regional Municipality of York, including the following attached supporting documentation:

(a) revised Section 8.0 "Ash Handling and Associated System" and revised Section 10.0 "Potable Process and Wastewater" dated May 2014, of the document entitled "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.

(b) Drawing No. M-2530, entitled "Piping & Instrumentation Diagram Bottom Ash Lime Slurry System"

(c) Drawing No. 70258-1-ME-GA-SK-001, entitled "Covanta Durham York Hydrated Lime System for Boiler Bottom Ash"

9. E-mail dated September 10, 2014 (2:26 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Margaret Wojcik, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the proposal, including an attachment entitled "M-1500^0360 Highlighted for MOE.pdf".

10. E-mail dated October 13, 2014 (3:23 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Ricki Allum, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the legal name of the applicant,

including an attachment entitled "Partnership Legal Clarification.pdf".

The reasons for this amendment to the Approval are as follows:

to approve the proposed Bottom Ash Lime Conditioning System, to correct the typographical errors in the Notice of Amendment dated August 12, 2014, to clarify the intent of the Residual Waste equipment cleaning condition and to allow different bottom ash storage conditions during testing.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*****
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of October, 2014

Tesfaye Gebrezghi, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

MW/
c: District Manager, MOE York-Durham
Leon Brasowski, Covanta Energy Corporation

Content Copy Of Original

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 3
Issue Date: December 23, 2015

The Regional Municipality of Durham
605 Rossland Road Level 5
Whitby, Ontario
L1N 6A3

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

The following Conditions are revoked:

7. TESTING, MONITORING and AUDITING

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment and

M5G 1E5

Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 23rd day of December, 2015

Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

HM/
c: District Manager, MOECC York-Durham
Kathryn Katsiroumpas, Valcoustics Canada Ltd.

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 4
Issue Date: February 24, 2016

The Regional Municipality of Durham
605 Rossland Road East, Level 5
Whitby, Ontario
L1N 6A3

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

TransRiver Canada Incorporated operating as Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for a Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

The following Conditions are revoked:

7. **TESTING** , **MONITORING** and **AUDITING**

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233*

and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the
purposes of Part II.1 of the
Environmental Protection Act
Ministry of the Environment and
Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of February, 2016

Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

HM/
c: District Manager, MOECC York-Durham
Kathryn Katsiroumpas, Valcoustics Canada Ltd.

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 5
Issue Date: March 14, 2016

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

I. The following conditions have been amended to read as follows:

2 . SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

(5) Storage Restrictions:

Solids:

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. (d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals,

shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation.

(e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(j) A maximum of 65 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

(k) A maximum of 105 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

Liquids: (l) (i) A maximum of 57 cubic metres of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the Residue Building.

(8) (a) Waste received at the Site shall be processed within six (6) days from its receipt at the Site.

(b) Emergency storage of Waste requirements:

(i) On an emergency basis only, the storage duration of Waste inside the tipping pit may be extended beyond the limit set out in Condition 2.(8)(a), above, subject to compliance with the following requirements:

(A) prior to the start of the emergency storage of Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste will be stored longer than six (6) days from its receipt;

(B) any additional information that the District Manager may require shall be submitted within a time period acceptable to the District Manager;

(C) the proposed preventative measures for emergency storage of Waste as identified in the Operations and Maintenance Manual shall be implemented upon commencement of the emergency storage of Waste and shall remain in effect for the entire duration of the emergency storage, unless otherwise advised by the District Manager; and

(D) the Owner shall notify, in writing, the District Manager when emergency storage is no longer required.

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

(p) all measures deemed necessary to prevent an occurrence of an adverse effect from the emergency storage of Waste.

II. The following section of Schedule "F" has been amended to read as follows:

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler or at any other location that has been determined in consultation with the Ministry to be suitable/equivalent for the determination of Total Hydrocarbons leaving the combustion zone of each Boiler and has been approved by the Director. The Total Hydrocarbons Monitor shall meet the following installation specifications:

PARAMETERS SPECIFICATION

1. Detector Type: Flame Ionization
2. Oven Temperature: 160 o C minimum
3. Flame Temperature: 1800 o C minimum at the corona of the hydrogen flame
4. Range (parts per million, ppm): 0 to ³ 200 ppm
5. Calibration Gas: propane in air or nitrogen
6. Calibration Gas Ports: close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS SPECIFICATION

1. Span Value (nearest ppm equivalent): 2 times the average normal concentration of the source
2. Relative Accuracy: £ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3. System Bias: £ 4 percent of the mean value of the reference method test data
4. Noise: £ 1 percent of span value on most sensitive range
5. Repeatability: £ 1 percent of span value
6. Linearity (response with propane in air): £ 3 percent of span value over all ranges
7. Calibration Error: £ 2 percent of actual concentration
8. Procedure for Zero and Span Calibration Check: all system components checked on all ranges
9. Zero Calibration Drift (24-hours): £ 2.5 percent of span value on all ranges
10. Span Calibration Drift (24-hours): £ 2.5 percent of span value
11. Response Time (90 percent response £ 60 seconds to a step change):
12. Operational Test Period: ³ 168 hours without corrective

maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter .

III. The following Item #4 in Schedule "A" has been amended to read as follows:

4. Letter dated October 31, 2013 from Mirka Januszkiewicz, The Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", excluding a reference to the Loss-on-Ignition test method on page 6, prepared by Golder Associates and dated June 2014.

IV. The following document has been added to Schedule "A":

5. Letter dated February 29, 2016 from Leon Brasowski, TransRiver Canada Incorporated, to Dale Gable, Ministry of the Environment and Climate Change, requesting change to the total hydrocarbon monitor location as reviewed and accepted by the Ministry`s Standards Development Branch.

The reasons for this amendment to the Approval are as follows:

1. to remove the storage duration limits on storage of recovered ferrous and non-ferrous metals since such storage does not pose an environmental risk;

2. to increase the amounts of cement, pozzolan and aqueous ammonia approved for storage at the Site since the currently approved amounts result in partial filling of the tanks, necessitating more frequent deliveries resulting in increased truck traffic and a chance of interrupting fly ash and flue gas treatment;

3. to revise the protocol for an emergency storage of the incoming Waste so that the Owner is able to deal more effectively with emergency situations occurring at the Site while providing more flexibility to the Districting Manager to oversee management of such situations;

4. to remove a reference to an incorrect bottom ash testing method erroneously included within the text of the DYEC Ash Sampling and Testing Protocol included as Item #4 in Schedule “A” in order to ensure that only the approved testing method for compliance testing is referenced in the supporting documentation.

5. to approve the revised location of the Total Hydrocarbons Monitor following the Ministry's acceptance of the results of the test program in which two (2) Total Hydrocarbons Monitor monitors were operated in the existing and the proposed locations simultaneously.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*****
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the
purposes of Part II.1 of the
Environmental Protection Act
Ministry of the Environment and
Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 14th day of March, 2016

Dale Gable, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

MW/
c: District Manager, MOECC York-Durham

n/a, TransRiver Canada Incorporated operating as Covanta Durham York Renewable Energy Limited Partnership

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: April 22, 2020

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

Notwithstanding the existing conditions of this Environmental Compliance Approval, the following provisions of this Emergency Approval are in effect for the time durations set out as follows:

1. Until December 31, 2020, the Owner may temporarily increase the amount of Waste to be received and thermally treated at the Site up-to 160,000 tonnes per year.

2. From the date of this Approval to the date that corresponds to up-to ninety (90) days after the Ontario Government ends the current Declaration of Emergency to Protect the Public Health, unless an extension has been issued in writing by the District Manager, the following Conditions Nos. 3 through 10 are in effect.

3. The Owner shall provide a written notification to the District Manager when any of the following Conditions Nos. 4 through 9 are implemented.

4. All conditions that set out limitations on hours/days for shipping and receiving of materials including the Waste, the reagents and the Residual Waste are temporarily rescinded.

5. The Owner may temporarily increase the maximum tonnage amounts for the bottom and fly ash within the Residue Building up-to 80% of the total achievable storage capacity of the Residue Building.

6. The Owner may temporarily store the Residual Waste and the reagents in the outdoor locations at the Site and the storage shall be done as follows:

a. the storage shall be in covered and leak-proof trailers or bins or containers;

b. trailers or bins or containers shall be parked or located away from catchbasins, if possible; and

c. if trailers or bins or containers must be parked or be located near catchbasins, covers or booms shall be readily available to protect catchbasins in the event of a spill or leak.

7. All conditions that set out limitations on receipt and storage of reagents are temporarily rescinded.

8. The Owner may temporarily reduce the number of loads tipped on the tipping floor for a manual visual inspection and sorting of the incoming Waste from one load per hour to two loads per shift, unless instructed otherwise by the local Medical Officer of Health to cease inspections on the tipping floor.

9. Following commencement of the outdoor storage of the Residual Waste or the reagents at the Site, the Owner shall conduct daily inspections of any outdoor storage location for evidence of spills, odour, vermin/vectors, dust, litter and other nuisance impacts, and shall maintain a written or electronic log of these inspections. The log shall be kept at the Site for the duration acceptable to the District Manager and it shall contain the following information:

a. the date of the inspection;

b. the location of the inspection;

c. the name of person undertaking the inspection;

d. any impacts identified during the inspection; and

e. any remedial actions taken to address those impacts.

10. By the end of the ninety (90) day-period from the date when the Ontario Government ends the current Declaration of Emergency to Protect the Public Health,

the Owner shall provide to the District Manager a summary report of the expected timelines for the storage and the operational practices to return to normal operating levels/protocols as approved in this Approval.

The reasons for this amendment to the Approval are as follows:

to provide temporary additional thermal treatment capacity at the Site and the operational flexibility as requested in the letter dated March 20, 2020 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham and Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York to respond to the current Declaration of Emergency to Protect the Public Health and to alleviate impacts and prevent any danger to the health and safety of the public and the environment.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or** www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 22nd day of April, 2020

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: December 23, 2021

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

Notwithstanding the existing conditions of this Environmental Compliance Approval, the following provisions of this Emergency Approval are in effect for the time durations set out as follows:

1. Until December 31, 2021, the Owner may temporarily increase the amount of Waste to be received and thermally treated at the Site from 140,000 tonnes per year up-to 142,000 tonnes per year.

The reasons for this amendment to the Approval are as follows:

1. to provide temporary additional thermal treatment capacity at the Site as requested in the Environmental Compliance Approval Application dated November 23, 2021 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Director Waste Management Services, the Regional Municipality of Durham (Durham Region) on behalf of York

Region, Durham Region and Covanta;

2. to effectively manage the increase in the quantities of waste being disposed of within the existing curbside programs and received at transfer stations within the approved service area due to work from home arrangements and behaviour change of residents resulting from the ongoing COVID-19 pandemic; and

3. to safely manage waste generated in the approved service area to prevent,

d. danger to the health or safety of any person;

e. impairment or immediate risk of impairment of the quality of the natural environment for any use that can be made of it; or

f. injury or damage or immediate risk of injury or damage to any property or to any plant or animal life environment and present potential hazard to the health and safety of neighbouring sites, wildlife and the public and prevent any danger to the health and safety of the public and the environment.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing ("the Notice") shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act,* a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;

5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1 of the *Environmental Protection Act*
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or** www.oltt.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act.*

DATED AT TORONTO this 23rd day of December, 2021

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York
Andrew Evans, The Regional Municipality of Durham

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: April 22, 2020

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

Notwithstanding the existing conditions of this Environmental Compliance Approval, the following provisions of this Emergency Approval are in effect for the time durations set out as follows:

1. Until December 31, 2020, the Owner may temporarily increase the amount of Waste to be received and thermally treated at the Site up-to 160,000 tonnes per year.

2. From the date of this Approval to the date that corresponds to up-to ninety (90) days after the Ontario Government ends the current Declaration of Emergency to Protect the Public Health, unless an extension has been issued in writing by the District Manager, the following Conditions Nos. 3 through 10 are in effect.

3. The Owner shall provide a written notification to the District Manager when any of the following Conditions Nos. 4 through 9 are implemented.

4. All conditions that set out limitations on hours/days for shipping and receiving of materials including the Waste, the reagents and the Residual Waste are temporarily rescinded.

5. The Owner may temporarily increase the maximum tonnage amounts for the bottom and fly ash within the Residue Building up-to 80% of the total achievable storage capacity of the Residue Building.

6. The Owner may temporarily store the Residual Waste and the reagents in the outdoor locations at the Site and the storage shall be done as follows:

a. the storage shall be in covered and leak-proof trailers or bins or containers;

b. trailers or bins or containers shall be parked or located away from catchbasins, if possible; and

c. if trailers or bins or containers must be parked or be located near catchbasins, covers or booms shall be readily available to protect catchbasins in the event of a spill or leak.

7. All conditions that set out limitations on receipt and storage of reagents are temporarily rescinded.

8. The Owner may temporarily reduce the number of loads tipped on the tipping floor for a manual visual inspection and sorting of the incoming Waste from one load per hour to two loads per shift, unless instructed otherwise by the local Medical Officer of Health to cease inspections on the tipping floor.

9. Following commencement of the outdoor storage of the Residual Waste or the reagents at the Site, the Owner shall conduct daily inspections of any outdoor storage location for evidence of spills, odour, vermin/vectors, dust, litter and other nuisance impacts, and shall maintain a written or electronic log of these inspections. The log shall be kept at the Site for the duration acceptable to the District Manager and it shall contain the following information:

a. the date of the inspection;

b. the location of the inspection;

c. the name of person undertaking the inspection;

d. any impacts identified during the inspection; and

e. any remedial actions taken to address those impacts.

10. By the end of the ninety (90) day-period from the date when the Ontario Government ends the current Declaration of Emergency to Protect the Public Health,

the Owner shall provide to the District Manager a summary report of the expected timelines for the storage and the operational practices to return to normal operating levels/protocols as approved in this Approval.

The reasons for this amendment to the Approval are as follows:

to provide temporary additional thermal treatment capacity at the Site and the operational flexibility as requested in the letter dated March 20, 2020 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham and Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York to respond to the current Declaration of Emergency to Protect the Public Health and to alleviate impacts and prevent any danger to the health and safety of the public and the environment.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or** www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 22nd day of April, 2020

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: December 23, 2021

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

Notwithstanding the existing conditions of this Environmental Compliance Approval, the following provisions of this Emergency Approval are in effect for the time durations set out as follows:

1. Until December 31, 2021, the Owner may temporarily increase the amount of Waste to be received and thermally treated at the Site from 140,000 tonnes per year up-to 142,000 tonnes per year.

The reasons for this amendment to the Approval are as follows:

1. to provide temporary additional thermal treatment capacity at the Site as requested in the Environmental Compliance Approval Application dated November 23, 2021 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Director Waste Management Services, the Regional Municipality of Durham (Durham Region) on behalf of York

Region, Durham Region and Covanta;

2. to effectively manage the increase in the quantities of waste being disposed of within the existing curbside programs and received at transfer stations within the approved service area due to work from home arrangements and behaviour change of residents resulting from the ongoing COVID-19 pandemic; and

3. to safely manage waste generated in the approved service area to prevent,

d. danger to the health or safety of any person;

e. impairment or immediate risk of impairment of the quality of the natural environment for any use that can be made of it; or

f. injury or damage or immediate risk of injury or damage to any property or to any plant or animal life environment and present potential hazard to the health and safety of neighbouring sites, wildlife and the public and prevent any danger to the health and safety of the public and the environment.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing ("the Notice") shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act,* a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;

5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1 of the *Environmental Protection Act*
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or** www.oltt.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act.*

DATED AT TORONTO this 23rd day of December, 2021

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York
Andrew Evans, The Regional Municipality of Durham

APPENDIX 4

Particulate and Metals Field Data Sheets
(35 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Metals
Test Date	April 24, 2023
Test Location	APC Outlet No. 1
Operator	BP

Project No.:	22230
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	TEAM #3
Impinger Box No.:	11

Pitot Factor	S6 0.842	
DGMCF	1.002	
Barometric Pressure	29.78	"Hg
Static Pressure	-10.1	"H2O
Nozzle Size	0.2521	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	0.1	mg
Probe	0.4	mg

Moisture Gain

CWTR	445.1	g
WCBDA	20.0	g

Combustion Gas Concentration

Oxygen	9.08	%
Carbon Dioxide	10.02	%
Carbon Monoxide	12.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	BO 03770
Trendicator	
Control Box	CoE 20045
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN 22136

Nozzle Measurements	
1	0.2520
2	0.2520
3	0.2525
4	0.2520
Average:	0.2521

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: April 24, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	12.11	.84	7.5	280	251	260	64	127	65	65	2.1	3.5
	2.5	13.99	.83	.74	281	244	260	53	214	65	65	2.1	3.5
	5	15.88	.84	.75	282	254	259	51	223	65	66	2.1	3.5
2	7.5	17.75	.82	.74	282	261	260	50	227	65	67	2.1	3.5
	10	19.62	.83	.75	282	250	260	49	229	66	68	2.1	3.5
	12.5	21.44	.82	.74	282	259	260	49	230	66	69	2.1	3.5
3	15	23.34	.79	.73	282	251	260	49	231	66	70	2.1	3.5
	17.5	25.17	.76	.72	282	257	260	49	232	66	70	2.0	3.5
	20	26.98	.79	.73	282	255	260	50	232	67	71	2.0	3.5
4	22.5	28.78	.73	.70	282	257	260	50	233	67	72	2.0	3.5
	25	30.56	.72	.70	282	253	260	50	233	68	72	1.9	3.5
	27.5	32.32	.68	.68	282	258	260	50	233	68	72	1.8	3.5
5	30	34.00	.65	.67	282	252	260	50	233	68	73	1.8	3.0
	32.5	35.67	.66	.67	281	259	260	50	233	69	73	1.7	3.0
	35	37.32	.67	.68	282	250	260	50	233	69	74	1.7	3.0
6	37.5	39.02	.62	.65	282	258	260	50	233	69	74	1.7	3.0
	40	40.63	.62	.65	283	250	260	51	233	70	74	1.5	3.0
	42.5	42.24	.62	.65	284	258	260	51	233	70	74	1.5	3.0
7	45	43.89	.71	.70	284	255	260	51	233	70	75	1.6	3.0
	47.5	45.64	.70	.69	284	257	260	51	234	71	75	1.8	3.5
	50	47.38	.71	.70	284	257	260	50	234	71	75	1.8	3.5

Traverse: 2		
Start Time: 9:56	Initial Leak Check: 0.003 cfm@ 15.5 "Hg	
Finish Time:	Final Leak Check: — cfm@ — "Hg	

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 24, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	49.13	.75	.72	285	255	260	50	233	71	76	1.8	3.5
	55	50.42	.77	.73	285	260	260	50	234	71	76	1.9	3.9
	57.5	52.73	.80	.74	286	253	260	50	234	72	76	1.9	3.9
9	60	54.57	.82	.75	287	261	260	50	234	72	76	2.0	4.0
	62.5	56.45	.82	.75	287	252	260	50	235	72	77	2.1	4.0
	65	58.33	.81	.75	287	260	260	50	235	72	77	2.1	4.0
10	67.5	60.21	.76	.72	285	251	260	50	235	72	77	2.1	4.0
	70	62.05	.75	.72	285	257	260	50	234	73	77	2.0	4.0
	72.5	63.88	.75	.72	285	259	260	50	234	73	77	2.0	4.0
11	75	65.73	.67	.68	285	251	260	50	234	73	77	2.0	4.0
	77.5	67.39	.68	.69	283	258	260	50	233	73	77	1.6	3.5
	80	69.11	.69	.69	283	259	259	50	233	73	77	1.7	3.5
12	82.5	70.84	.68	.69	283	251	259	50	233	73	77	1.7	3.5
	85	72.57	.66	.68	284	258	259	50	232	73	78	1.8	3.5
	87.5	74.29	.66	.68	284	260	260	50	232	74	78	1.7	3.5
	90	76.09											

Traverse: 2				
Start Time: 9:56	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 11:26	Final Leak Check: 0.002	cfm@ 15.5	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 24, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	~~76.~~ 76.33	.89	.78	285	260	260	60	157	73	73	2.2	3.5
	2.5	78.835	.92	.79	288	251	258	50	229	73	74	2.2	3.5
	5	80.31	.91	.79	288	254	259	50	231	73	74	2.2	4.0
2	7.5	82.27	.91	.79	289	254	259	49	232	73	75	2.2	4.0
	10	84.22	.91	.79	289	260	259	49	233	73	76	2.2	4.0
	12.5	86.21	.92	.79	289	251	259	49	234	73	76	2.3	4.0
3	15	88.19	.87	.77	289	253	260	49	235	73	77	2.3	4.0
	17.5	90.12	.87	.77	289	256	259	50	233	73	77	2.3	4.0
	20	92.03	.89	.78	289	260	260	49	235	73	77	2.3	4
4	22.5	94.02	.89	.78	290	254	259	49	235	74	78	2.3	4
	25	96.00	.89	.76	290	254	259	49	236	74	78	2.2	4
	27.5	97.96	.82	.75	290	252	260	49	235	74	78	2.2	4
5	30	99.81	.69	.69	290	257	258	48	234	74	78	2.0	4
	32.5	101.42	.70	.69	290	252	259	49	234	74	78	1.7	3.5
	35	103.25	.71	.70	290	253	258	48	234	74	78	1.7	3.5
6	37.5	105.01	.61	.65	290	259	260	48	234	74	78	1.8	4.0
	40	106.62	.62	.65	290	260	258	48	233	74	78	1.5	3.5
	42.5	108.23	.62	.65	290	250	260	48	233	75	78	1.5	3.5
7	45	109.87	.70	.69	290	245	258	48	233	74	78	1.6	3.5
	47.5	111.62	.70	.69	290	259	260	48	234	75	78	1.8	4
	50	113.38	.72	.70	290	260	258	48	234	75	78	1.8	4

Traverse: 1				
Start Time: 11:37	Initial Leak Check: 0.002	cfm@ 15.5	"Hg
Finish Time:	Final Leak Check: —	cfm@ —	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 24, 2023	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	115.15	.75	.72	290	249	260	48	234	75	78	1.8	4
	55	116.96	.73	.71	290	256	259	47	234	75	78	1.9	4
	57.5	118.76	.73	.71	290	261	260	47	234	75	79	1.9	4
9	60	120.56	.77	.73	290	250	259	48	234	75	79	1.8	4
	62.5	122.39	.75	.72	290	295	260	48	234	75	79	2.0	4
	65	124.22	.78	.73	290	260	259	48	234	75	79	2.0	4
10	67.5	126.05	.69	.69	290	259	260	48	234	75	79	2.0	4
	70	127.75	.70	.70	280	260	259	48	232	75	79	1.6	3.5
	72.5	129.48	.68	.69	280	258	259	47	232	75	78	1.8	4
11	75	131.22	.58	.64	283	261	259	47	232	75	79	1.8	4
	77.5	132.80	.57	.63	283	250	259	47	230	75	79	1.5	3.5
	80	134.42	.56	.63	280	252	259	47	230	75	78	1.5	3.5
12	82.5	136.01	.59	.64	280	257	259	47	229	75	78	1.4	3.5
	85	137.55	.59	.64	280	258	259	47	229	75	78	1.4	3.5
	87.5	139.18	.63	.66	280	259	259	47	229	75	78	1.5	3.5
	90	140.83											

Traverse: 1				
Start Time:	Initial Leak Check: —	cfm@ —	"Hg	
Finish Time: 13:07	Final Leak Check: 0.002	cfm@ 15.5	"Hg	

-10.1

Project No.: 22230

Operator : BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date	April 24, 2023
Test Location	APC Outlet No. 1
Operator BP	

Project No.:	22230
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	TEAM #3
Impinger Box No.:	16

Pitot Factor	S6 0.842	
DGMCF	1.002	
Barometric Pressure	29.80	"Hg
Static Pressure	-10.1	"H2O
Nozzle Size	0.2521	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	0.1	mg
Probe	0.7	mg

Moisture Gain

CWTR	450.7	~~445.1~~	g
WCBDA	24.1	~~20.0~~	g

Combustion Gas Concentration

Oxygen	9.11	%
Carbon Dioxide	9.87	%
Carbon Monoxide	7.7	ppm

Measuring Device	MII Numbers
Probe / Pitot	BO 03770
Trendicator	
Control Box	COE ~~3008~~ 20093
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN 22136

Nozzle Measurements	
1	0.2520
2	0.2520
3	0.2525
4	0.2520
Average:	0.2521

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: April 24, 2023	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	43.92	.88	.77	280	259	258	65	99	68	68	2.1	3.5
	2.5	45.96	.90	.78	287	259	254	60	173	68	69	2.1	4.0
	5	47.87	.90	.78	289	257	256	57	192	68	70	2.1	4.0
2	7.5	49.83	.89	.77	289	253	257	56	203	69	71	2.2	4.0
	10	51.77	.89	.78	289	254	257	55	209	69	72	2.2	4.0
	12.5	53.72	.88	.77	289	261	257	55	213	69	73	2.2	4.0
3	15	55.66	.87	.77	289	259	257	55	216	70	74	2.2	4.0
	17.5	57.58	.88	.77	289	256	257	54	228	70	75	2.2	4.0
	20	59.51	.87	.77	290	251	257	54	229	71	75	2.2	4.0
4	22.5	61.45	.80	.74	290	251	257	54	234	71	76	2.2	4.0
	25	63.30	.79	.73	290	261	257	54	233	72	76	2.0	3.9
	27.5	65.14	.80	.74	290	259	257	53	235	72	76	2.0	3.9
5	30	66.98	.70	.69	290	255	257	53	234	72	77	2.0	3.9
	32.5	68.67	.71	.70	290	251	257	53	234	72	77	1.7	3.5
	35	70.42	.72	.70	290	261	257	53	234	73	77	1.8	3.5
6	37.5	72.17	.61	.65	290	260	257	53	235	73	77	1.8	3.5
	40	73.76	.59	.64	290	252	257	53	233	73	77	1.5	3.0
	42.5	75.36	.60	.64	290	254	257	53	233	73	77	1.5	3.0
7	45	76.97	.67	.68	296	260	257	53	233	74	78	1.5	3.0
	47.5	78.68	.66	.67	289	252	257	52	234	74	78	1.7	3.5
	50	80.40	.69	.69	289	260	257	52	235	74	78	1.7	3.5

Traverse:			
Start Time: 13:48	Initial Leak Check: 0.004	cfm@ 15.5	"Hg
Finish Time:	Final Leak Check: —	cfm@ —	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 24, 2023	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	82.11	.70	.69	284	258	257	52	234	74	78	1.7	3.5
	55	83.86	.69	.69	284	252	256	52	235	74	78	1.8	3.5
	57.5	85.60	.67	.68	284	260	257	52	234	74	79	1.8	3.5
9	60	87.32	.70	.70	289	259	258	52	235	75	79	1.7	3.5
	62.5	89.07	.72	.71	288	252	258	52	234	75	79	1.8	3.5
	65	90.83	.70	.70	288	259	258	52	235	75	79	1.8	3.5
10	67.5	92.58	.67	.68	288	259	258	52	235	75	79	1.8	3.5
	70	94.29	.70	.70	283	252	257	51	233	75	79	1.7	3.5
	72.5	96.05	.70	.70	283	261	257	50	235	75	79	1.8	3.5
11	75	97.80	.51	.60	283	257	256	48	236	75	79	1.8	3.5
	77.5	99.29	.55	.62	283	260	256	48	234	75	79	1.3	3.0
	80	100.87	.57	.63	283	254	256	47	234	75	79	1.4	3.0
12	82.5	102.40	.57	.63	283	261	256	47	234	75	79	1.4	3.0
	85	103.96	.56	.62	283	251	256	46	234	75	79	1.5	3.0
	87.5	105.54	.57	.63	283	261	257	46	235	75	79	1.5	3.0
	90	107.11											

Traverse: 1					
Start Time: 14:48	Initial Leak Check:	—	cfm@	—	"Hg
Finish Time: 16:18	Final Leak Check:	0.002	cfm@	16	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 24, 2023	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	7.59	.87	.78	285	256	260	52	147	75	75	2.2	4.0
	2.5	9.44	.89	.78	289	256	250	46	220	75	76	2.2	4.0
	5	11.41	.90	.79	290	260	248	43	223	75	77	2.2	4.0
2	7.5	13.40	.91	.79	290	250	253	42	228	75	77	2.3	4.0
	10	15.38	.90	.79	291	260	255	42	233	75	78	2.3	4.0
	12.5	17.36	.91	.79	291	253	258	42	236	75	78	2.3	4.0
3	15	19.34	.86	.77	291	254	258	42	237	75	79	2.3	4.0
	17.5	21.29	.85	.77	291	262	259	41	237	75	79	2.2	4.0
	20	23.24	.84	.76	290	258	259	41	238	75	79	2.2	4.0
4	22.5	25.16	.79	.74	290	254	257	41	238	75	79	2.1	4.0
	25	27.01	.80	.74	290	253	257	41	238	75	79	2.0	4.0
	27.5	28.88	.79	.74	290	251	256	41	238	76	79	2.0	4.0
5	30	30.75	.74	.72	290	250	257	41	238	76	79	2.0	4.0
	32.5	32.55	.80	.74	290	252	257	41	238	76	79	1.9	3.9
	35	34.34	.75	.72	291	261	257	41	238	76	79	2.0	4.0
6	37.5	36.19	.68	.69	291	261	257	41	238	76	79	1.9	3.9
	40	37.88	.67	.68	291	258	258	41	237	76	79	1.7	3.5
	42.5	39.60	.66	.68	291	253	257	41	237	76	79	1.7	3.5
7	45	41.31	.74	.72	291	250	256	41	237	76	79	1.7	3.5
	47.5	43.80	.75	.72	291	261	256	41	237	76	79	2.0	4.0
	50	44.91	.72	.71	291	258	257	41	237	76	79	1.9	4.0

Traverse: 2				
Start Time: 16:26	Initial Leak Check: 0.002	cfm@ 16	"Hg
Finish Time:	Final Leak Check: —	cfm@ —	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 24, 2023	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	46.67	.74	.72	291	252	256	41	237	76	79	1.8	3.9
	55	48.46	.75	.72	290	254	257	41	237	76	79	1.9	4.0
	57.5	50.26	.74	.72	290	260	257	41	237	76	79	1.9	4.0
9	60	52.06	.75	.72	290	253	257	41	237	76	79	1.9	4.0
	62.5	53.86	.77	.73	290	250	258	42	237	76	79	1.9	4.0
	65	55.69	.75	.72	290	262	257	42	238	76	79	2.0	4.0
10	67.5	57.53	.79	.74	290	257	257	42	237	76	79	2.0	4.0
	70	59.36	.82	.74	289	251	258	42	238	76	79	2.0	4.0
	72.5	61.21	.80	.74	289	260	258	42	238	76	79	2.0	4.0
11	75	63.09	.70	.70	289	251	257	42	237	76	79	2.1	4.0
	77.5	64.85	.70	.70	289	260	261	42	236	76	79	1.8	3.9
	80	66.61	.71	.70	289	250	258	42	236	76	79	1.8	3.9
12	82.5	68.37	.72	.71	289	260	258	43	236	76	79	1.8	3.9
	85	70.15	.69	.69	284	250	256	43	236	76	79	1.9	4.0
	87.5	71.86	.70	.70	289	260	257	43	235	76	79	1.8	3.9
	90	73.61											

Traverse: 2					
Start Time: 16:26	Initial Leak Check:	–	cfm@	–	"Hg
Finish Time: 17:56	Final Leak Check:	.002	cfm@	16	"Hg

Project No.: 22230

Operator: BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date	April 25 2023
Test Location	APC Outlet No. 1
Operator	TT

Project No.:	22230
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	Team 4
Impinger Box No.:	11

Pitot Factor	.843	
DGMCF	1.002	
Barometric Pressure	29.88	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	0.1	mg
Probe	1.3	mg

Moisture Gain

CWTR	563.8	g
WCBDA	29.7	g

Combustion Gas Concentration

Oxygen	8.8.2	%
Carbon Dioxide	10.09	%
Carbon Monoxide	11.7	ppm

Measuring Device	MII Numbers
Probe / Pitot S8	B03769
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2530
2	.2530
3	.2525
4	.2525
Average:	.2528

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: April 25 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	55.01	.68	.67	278	248	269	61	99	61	60	1.8	6
	2.5	56.90	.71	.68	278	253	266	60	204	61	61	1.8	6
	5	58.62	.71	.68	278	252	260	61	213	61	63	1.8	6
2	7.5	60.38	.79	.72	278	251	249	58	217	61	65	1.95	6
	10	62.19	.79	.72	273	251	242	56	217	61	66	1.95	6
	12.5	63.99	.82	.74	274	250	251	54	221	67	68	2.05	6.5
3	15	65.84	.77	.72	273	250	246	53	223	62	70	2.0	6.5
	17.5	67.65	.77	.72	273	250	244	52	222	62	71	2.0	6.5
	20	69.47	.79	.73	278	250	249	51	224	62	73	2.1	6.5
4	22.5	71.32	.77	.72	279	251	243	50	224	63	74	2.0	6.5
	25	73.15	.79	.73	279	250	249	49	224	63	74	2.1	6.5
	27.5	75.02	.83	.75	279	250	248	48	226	63	75	2.15	6.5
5	30	76.92	.80	.73	279	251	243	47	225	63	76	2.1	6.5
	32.5	78.77	.80	.74	279	251	250	47	227	64	76	2.1	6.5
	35	80.66	.80	.74	279	251	248	47	228	64	77	2.1	6.5
6	37.5	82.54	.78	.73	280	250	244	47	226	64	77	2.1	6.5
	40	84.38	.81	.74	280	251	250	47	227	64	77	2.1	6.5
	42.5	86.25	.83	.75	281	251	246	47	228	65	78	2.15	7
7	45	88.19	.76	.72	281	251	249	47	228	65	78	1.95	7
	47.5	90.02	.76	.72	282	251	249	47	229	65	78	1.95	7
	50	91.79	.75	.71	282	251	245	47	228	65	78	1.9	6.5

Traverse:			
Start Time: 15:14	Initial Leak Check: .006	cfm@ 13	"Hg
Finish Time: ~~15:14~~	Final Leak Check:	cfm@	"Hg

Project No.: 22230

Operator : TT

Field Data Sheet

Date: April 25 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	93.57	.75	.71	283	251	248	47	226	65	78	1.9	6.5
	55	95.36	.83	.75	282	267	250	47	228	66	79	2.1	7
	57.5	97.25	.83	.75	283	251	244	47	228	66	79	2.1	7
9	60	99.12	.90	.78	284	252	250	47	229	66	79	2.2	7
	62.5	101.04	.91	.79	284	253	249	47	231	66	79	2.25	7
	65	103.03	.88	.77	284	253	245	48	230	67	79	2.2	7
10	67.5	104.96	.91	.79	283	253	251	48	230	67	79	2.3	7
	70	106.95	.92	.79	283	253	249	48	231	67	80	2.3	7
	72.5	108.93	.92	.79	283	253	244	48	230	67	80	2.35	7
11	75	110.95	.91	.79	283	253	252	48	231	67	80	2.35	7
	77.5	112.96	.95	.80	282	253	249	48	232	67	80	2.4	7.5
	80	114.98	.93	.80	283	253	245	49	230	68	79	2.4	7.5
12	82.5	116.99	.95	.80	282	253	251	49	231	67	79	2.4	7.5
	85	119.02	.97	.81	283	253	249	49	232	68	79	2.4	7.5
	87.5	121.05	.98	.82	283	254	245	49	232	67	79	2.45	7.5
	90	123.10											

Traverse:				
Start Time: /	Initial Leak Check: /	cfm@ /	"Hg
Finish Time:	Final Leak Check: .008	cfm@ 16	"Hg

Project No.: 22230

Operator : TT

Field Data Sheet

Date: Apr. 25 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	123.56	.98	.81	281	249	249	55	159	67	72	2.4	7.5
	2.5	125.59	.99	.82	284	252	252	51	220	67	77	2.45	7.5
	5	127.64	1.0	.82	284	252	248	49	229	67	74	2.45	7.5
2	7.5	129.67	1.1	.86	284	252	244	49	230	67	75	2.6	8
	10	131.77	1.1	.86	285	252	251	48	233	67	76	2.7	8
	12.5	133.92	1.1	.86	285	252	249	49	234	67	77	2.7	8
3	15	136.08	1.0	.82	284	252	245	49	232	67	78	2.5	8
	17.5	138.15	1.0	.82	285	252	250	50	233	67	78	2.5	8
	20	140.23	1.1	.86	285	252	247	50	233	67	78	2.7	8
4	22.5	142.38	.96	.81	286	251	246	51	232	67	79	2.4	8
	25	144.41	.96	.81	286	252	251	50	235	67	79	2.4	8
	27.5	146.46	.96	.81	286	252	247	51	233	67	79	2.55	8
5	30	148.49	.96	.81	286	252	247	51	233	67	79	2.35	8
	32.5	150.52	.92	.79	286	252	248	52	232	67	79	2.2	8
	35	152.44	.76	.72	286	252	245	52	231	67	79	1.95	7
6	37.5	154.26	.74	.71	285	251	247	50	229	67	79	1.9	7
	40	156.04	.80	.74	285	251	255	48	232	67	79	2.0	7
	42.5	157.88	.77	.72	287	252	248	47	233	67	79	1.95	7
7	45	159.69	.84	.75	286	251	245	46	230	67	79	2.1	7
	47.5	161.57	.84	.75	286	252	249	45	232	67	79	2.15	7
	50	163.48	.84		285	252	246	44	233	67	79		

Traverse: 1				
Start Time: 16:57	Initial Leak Check: .008	cfm@ 15	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Project No.: 22230

Operator : [signature]

Field Data Sheet

Date: Apr. 25 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	165.39	.85	.76	285	253	246	44	232	67	79	2.15	7.5
	55	167.32	.86	.76	285	252	235	44	235	67	79	2.15	7.5
	57.5	169.23	.90	.78	285	253	248	43	234	67	79	2.2	7.5
9	60	171.18	.85	.76	285	252	246	43	232	67	79	2.15	7.5
	62.5	173.08	.87	.77	284	252	249	43	233	67	79	2.25	8
	65	175.08	.87	.77	285	252	245	43	233	67	79	2.2	8
10	67.5	177.06	.83	.75	284	252	250	43	232	67	79	2.1	7.5
	70	178.95	.81	.74	283	252	249	43	233	67	79	2.05	7.5
	72.5	180.81	.82	.75	283	252	244	43	231	67	79	2.1	7.5
11	75	182.69	.76	.72	283	252	251	43	232	67	79	1.95	7
	77.5	184.51	.76	.72	283	252	248	44	232	67	79	1.95	7
	80	186.32	.76	.72	281	252	244	44	230	67	79	1.95	7
12	82.5	188.13	.76	.72	281	252	251	44	231	67	79	1.95	7
	85	189.94	.73	.71	281	252	247	44	231	67	79	1.9	7
	87.5	191.72	.73	.71	280	251	247	44	229	67	79	1.9	7
	90	193.50											

Traverse: 1			
Start Time: –	Initial Leak Check: –	cfm@ –	"Hg
Finish Time: 14:21	Final Leak Check: .003	cfm@ 15	"Hg

Project No.: 22230

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Metals
Test Date April 25, 2023	
Test Location	APC Outlet No. 2
Operator BP	

TEST VOID
Glass on filter

Project No.:	22230
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	TEAM #5
Impinger Box No.:	11

Pitot Factor	S6 0.842	
DGMCF	1.002	
Barometric Pressure	29.88	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	0.2521	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	480.4	g
WCBDA	21.2	g

Combustion Gas Concentration

Oxygen	9.16	%
Carbon Dioxide	10.83	%
Carbon Monoxide	16.9	ppm

Measuring Device	MII Numbers
Probe / Pitot	BO 03770
Trendicator	
Control Box	COF 20093
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN 22136

Nozzle Measurements	
1	0.2520
2	0.2520
3	0.2525
4	0.2520
Average:	0.2521

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal /(Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: April 25, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	75.33	.80	.73	280	258	261	59	76	62	62	~~2.0~~ 1.9	3.0
	2.5	77.13	.79	.73	278	257	258	53	193	63	63	1.9	3.0
	5	78.92	.83	.74	279	254	257	52	208	63	64	1.9	3.0
2	7.5	80.75	.83	.74	280	249	258	51	215	63	65	2.0	3.0
	10	82.62	.84	.75	280	256	259	51	221	63	66	2.1	3.0
	12.5	84.48	.85	.75	280	259	260	51	224	64	67	2.1	3.5
3	15	86.38	.79	.73	280	254	259	52	227	64	68	2.1	3.5
	17.5	88.20	.84	.75	281	259	260	52	228	65	69	2.0	3.0
	20	90.05	.86	.76	281	257	260	53	230	65	70	2.1	3.5
4	22.5	91.97	.84	.75	282	252	260	54	230	66	70	2.1	3.5
	25	93.85	.82	.74	282	259	260	54	232	66	71	2.1	3.5
	27.5	95.64	.83	.75	282	251	260	55	232	66	71	2.0	3.5
5	30	97.56	.77	.72	282	262	260	55	233	67	71	2.1	3.5
	32.5	99.35	.76	.72	283	259	260	55	233	67	72	1.9	3.0
	35	101.15	.79	.73	283	251	260	56	233	68	72	2.0	3.5
6	37.5	102.97	.71	.69	284	261	260	56	233	68	72	2.0	3.5
	40	104.69	.68	.68	284	257	260	56	233	68	72	1.8	3.0
	42.5	106.41	.69	.68	284	253	260	57	233	68	73	1.8	3.0
7	45	108.11	.75	.71	284	258	260	57	232	69	73	1.7	3.0
	47.5	109.89	.76	.72	284	253	260	57	233	69	73	1.9	3.5
	50	111.70	.78	.73	285	258	260	57	233	69	73	2.0	3.5

Traverse: 1			
Start Time: 7:55	Initial Leak Check: .003	cfm@ 16	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 25, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	113.53	.79	.73	285	250	260	57	234	69	74	2.0	3.5
	55	115.36	.77	.72	286	258	260	57	234	70	74	2.0	3.5
	57.5	117.19	.74	.71	286	251	260	58	234	70	74	2.0	3.5
9	60	118.97	.77	.72	286	259	260	58	234	70	74	1.9	3.5
	62.5	120.75	.76	.72	286	250	260	57	232	70	74	1.9	3.5
	65	122.58	.79	.73	286	258	260	55	234	70	74	2.0	3.5
10	67.5	124.48	.81	.75	285	261	260	52	216	71	715	2.0	3.5
	70	126.30	.80	.74	284	260	260	52	212	71	75	1.9	3.5
	72.5	128.14	.78	.73	285	250	261	51	223	71	75	2.0	3.5
11	75	129.97	.74	.71	281	261	267	51	223	71	75	2.0	3.5
	77.5	131.76	.77	.73	280	258	262	51	234	71	75	1.9	3.5
	80	133.54	.76	.72	281	260	260	51	227	71	75	1.9	3.5
12	82.5	135.36	.75	.72	280	251	253	50	228	71	75	2.0	3.5
	85	137.19	.77	.73	280	262	266	50	234	72	76	2.0	3.5
	87.5	139.03	.78	.73	280	251	261	50	235	72	76	2.0	3.5
	90	140.88											

Traverse: 1				
Start Time:	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 9:24	Final Leak Check: .002	cfm@ 16	"Hg

Project No.: 22230

Operator: RP

Field Data Sheet

Date: April 25, 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	41.27	.83	.75	285	251	264	58	142	71	72	2.0	3.5
	2.5	43.15	.85	.76	282	254	263	51	223	71	72	2.0	3.5
	5	45.04	.84	.76	285	259	258	50	234	71	72	2.1	3.9
2	7.5	46.94	.83	.75	284	252	257	49	235	71	73	2.1	3.9
	10	48.85	.87	.77	285	258	258	49	235	71	74	2.1	3.9
	12.5	50.79	.88	.78	285	250	259	49	236	71	74	2.2	4.0
3	15	52.72	.83	.75	285	258	259	49	236	71	75	2.2	4.0
	17.5	54.62	.85	.76	285	257	259	49	236	71	75	2.1	3.9
	20	56.55	.82	.75	285	251	259	50	237	71	75	2.2	4.0
4	22.5	58.42	.79	.74	285	255	259	50	236	71	75	2.1	3.9
	25	60.24	.80	.74	285	262	259	51	236	72	75	2.0	3.5
	27.5	62.06	.79	.74	285	259	259	51	236	72	75	2.0	3.5
5	30	63.91	.74	.71	285	255	259	51	236	72	76	2.0	3.5
	32.5	65.68	.74	.71	286	250	258	51	236	72	76	1.9	3.5
	35	67.45	.73	.71	286	261	258	50	236	72	76	1.9	3.5
6	37.5	69.22	.65	.67	286	260	259	50	236	72	76	1.9	3.5
	40	70.84	.68	.68	286	256	258	50	235	72	75	1.6	3.5
	42.5	72.54	.69	.69	286	250	259	50	235	72	76	1.8	3.5
7	45	74.28	.69	.69	287	260	259	50	235	72	76	1.8	3.5
	47.5	76.03	.67	.68	287	261	258	50	235	72	76	1.8	3.9
	50	77.73	.67	.68	287	258	258	50	235	72	76	1.7	3.5

Traverse: 2				
Start Time: 9:34	Initial Leak Check:	.003	cfm@ 16	"Hg
Finish Time:	Final Leak Check:	—	cfm@ —	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 25 2023	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	79.42	.67	.68	287	253	259	50	234	72	76	1.7	3.5
	55	81.12	.72	.70	287	254	259	50	234	72	76	1.7	3.5
	57.5	82.88	.72	.70	286	262	258	50	234	72	76	1.8	3.9
9	60	84.67	.74	.71	286	259	258	50	234	72	76	1.9	4.0
	62.5	86.47	.71	.70	286	262	258	50	235	72	76	1.9	4.0
	65	88.27	.72	.70	286	261	258	50	235	72	76	1.9	4.0
10	67.5	90.01	.69	.69	285	256	258	50	234	73	76	1.8	3.9
	70	91.73	.67	.68	285	250	258	50	234	73	76	1.8	3.9
	72.5	93.44	.68	.68	285	262	258	50	233	73	76	1.7	3.5
11	75	95.13	.64	.66	285	254	258	50	233	73	76	1.7	3.5
	77.5	96.78	.63	.66	285	257	258	50	233	73	76	1.6	3.5
	80	98.43	.65	.67	285	258	258	50	232	73	76	1.6	3.5
12	82.5	100.12	.65	.67	285	252	258	50	232	73	76	1.7	3.5
	85	101.80	.68	.68	285	260	258	50	232	73	76	1.7	3.5
	87.5	103.49	.64	.66	285	251	257	50	232	73	76	1.7	3.5
	90	105.21											

Traverse: 2				
Start Time:	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 11:54	Final Leak Check: 0.002	cfm@ 16	"Hg

Project No.: 22230

Operator: BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: ~~1 2~~ 2	Particulate/Metals
Test Date	April 25, 2023
Test Location	APC Outlet No. 2
Operator	BP

Project No.:	22230
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	TEAM #3
Impinger Box No.:	16

Pitot Factor	S6 0.842	
DGMCF	1.002	
Barometric Pressure	29.88	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	0.2521	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	0.1	mg
Probe	1.4	mg

Moisture Gain

CWTR	460.7	g
WCBDA	21.0	g

Combustion Gas Concentration

Oxygen	9.16	%
Carbon Dioxide	10.92	%
Carbon Monoxide	15.3	ppm

Measuring Device	MII Numbers
Probe / Pitot	BO 03770
Trendicator	
Control Box	COE 20093
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN 22136

Nozzle Measurements	
1	0.2520
2	0.2520
3	0.2527
4	0.2520
Average:	0.2521

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: April 25, 2023	Plant: Covanta DYEC	Test No.: ~~1~~ ~~2~~ 2 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	5.61	.84	.75	280	252	260	61	128	68	68	2.1	4
	2.5	7.59	.88	.77	283	249	255	57	206	68	68	2.1	4
	5	9.49	.89	.77	285	253	251	54	217	68	68	2.1	4
2	7.5	11.43	.90	.78	286	252	253	53	220	68	69	2.2	4
	10	13.37	.90	.78	286	261	257	53	223	68	70	2.2	4
	12.5	15.30	.90	.78	286	262	259	54	226	68	71	2.2	4
3	15	17.23	.90	.78	285	260	260	55	227	69	72	2.2	4
	17.5	19.17	.85	.76	285	256	259	55	229	69	72	2.1	4
-	20	~~20.90~~ 20.90	.85	.76	286	257	256	53	230	69	72	2.1	4
4 -	22.5	22.51	.85	.76	286	259	257	51	231	69	73	2.1	4
-	25	24.85	.88	.77	286	257	257	49	232	70	74	2.2	4
	27.5	26.77	.89	.78	286	255	258	48	235	70	74	2.2	4
5	30	28.71	.73	.71	285	253	258	49	237	74	74	2.0	4
	32.5	30.54	.69	.69	285	257	258	47	236	70	74	2.0	4
	35	32.24	.70	.69	285	263	258	46	235	70	74	1.7	3.5
6	37.5	33.96	.70	.69	285	258	258	46	235	70	74	1.8	3.5
	40	35.68	.69	.69	285	259	258	46	236	71	75	1.8	3.5
	42.5	37.41	.63	.66	285	263	257	45	236	71	75	1.8	3.5
7	45	39.02	.61	.65	285	252	258	45	235	71	75	1.6	3.4
	47.5	40.67	.59	.64	284	259	258	45	235	71	75	1.6	3.4
	50	42.28	.60	.64	284	262	258	45	235	71	75	1.5	3.0

Traverse: 2			
Start Time: 12:01	Initial Leak Check: .004	cfm@ 15.5	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22230

Operator : BP

Field Data Sheet

Date: April 25, 2023	Plant: Covanta DYEC	Test No.: # 2 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	43.87	.62	.65	284	252	258	45	235	71	75	1.5	3.0
	55	45.48	.60	.64	283	253	258	45	234	72	75	1.6	3.4
	57.5	47.13	.64	.66	283	262	258	45	235	72	75	1.6	3.4
9	60	48.79	.68	.68	283	263	258	45	235	72	76	1.6	3.4
	62.5	50.49	.70	.69	283	253	257	45	235	72	76	1.7	3.5
	65	52.24	.73	.71	284	253	258	45	235	72	76	1.8	3.5
10	67.5	54.00	.73	.71	281	253	258	45	235	72	76	1.9	4.0
	70	55.76	.70	.70	281	259	257	45	234	72	76	1.9	4.0
	72.5	57.50	.72	.71	280	258	257	45	234	72	76	1.8	3.5
11	75	59.24	.70	.70	280	262	257	45	234	73	77	1.8	3.5
	77.5	~~60.98~~ 60.98	.71	.70	280	251	257	45	234	73	77	1.8	3.5
	80	62.75	.70	.70	280	250	257	45	234	73	77	1.9	4.0
12	82.5	64.51	.73	.71	280	251	257	45	234	73	77	1.9	4.0
	85	66.27	.75	.72	280	257	257	46	234	73	77	1.9	4.0
	87.5	68.08	.74	.72	280	260	256	46	234	73	77	2.0	4.0
	90	69.89											

Traverse: 2					
Start Time:	Initial Leak Check:	–	cfm@	–	"Hg
Finish Time: 13:31	Final Leak Check:	0.002	cfm@	16	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 25, 2023	Plant: Covanta DYEC	Test No.: # 2 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	70.28	.85	.76	285	261	262	51	152	73	73	2.1	4
	2.5	72.18	.88	.78	286	257	255	46	214	72	73	2.1	4
	5	74.12	.88	.78	287	254	254	44	224	72	74	2.2	4
2	7.5	76.07	.86	.77	287	254	255	44	232	72	75	2.2	4
	10	78.02	.88	.78	287	255	257	44	234	72	75	2.2	4
	12.5	79.95	.83	.75	287	258	258	44	235	72	76	2.2	4
3	15	81.84	.82	.75	286	260	259	44	234	73	76	2.1	4
	17.5	83.72	.79	.74	286	255	259	44	235	73	76	2.1	4
	20	85.56	.79	.74	286	255	259	44	234	73	77	2.0	4
4	22.5	87.39	.76	.72	286	263	258	44	234	73	77	2.0	4
	25	89.19	.79	.74	287	250	258	44	234	73	77	2.0	4
	27.5	91.04	.78	.73	286	257	258	44	234	73	77	2.0	4
5	30	92.88	.72	.70	286	263	258	45	234	73	77	2.0	4
	32.5	94.63	.73	.71	286	254	258	45	233	73	77	1.8	3.5
	35	96.40	.74	.71	286	261	258	45	234	74	77	1.9	3.5
6	37.5	98.18	.65	.67	286	253	258	45	234	74	77	1.9	3.5
	40	99.84	.66	.67	287	256	259	45	233	74	77	1.6	3.5
	42.5	101.53	.67	.68	287	263	258	45	232	74	77	1.7	3.5
7	45	103.23	.71	.70	287	251	258	45	233	74	79	1.7	3.5
	47.5	104.98	.75	.72	287	254	256	45	232	74	78	1.8	3.5
	50	106.79	.72	.71	287	257	256	45	231	75	78	2.0	4

Traverse: 1			
Start Time: 13:37	Initial Leak Check: 0.004	cfm@ 16	"Hg
Finish Time:	Final Leak Check: —	cfm@ —	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 25, 2023	Plant: Covanta DYEC	Test No.: # 2 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	108.59	.72	.71	286	252	258	45	233	74	78	1.9	4
	55	110.35	.74	.72	285	252	278	48	233	75	78	1.8	3.5
	57.5	112.14	.76	.73	286	260	258	46	233	74	78	1.9	4
9	60	113.98	.75	.72	285	256	258	46	232	74	78	2.0	4
	62.5	115.82	.73	.71	285	257	258	46	233	74	78	2.0	4
	65	117.60	.70	.70	285	261	258	46	233	74	78	1.9	4
10	67.5	119.36	.73	.71	281	263	258	45	232	74	78	1.8	3.5
	70	121.13	.71	.70	281	251	258	45	232	74	78	1.9	4
	72.5	122.91	.75	.72	282	253	257	45	232	74	78	1.9	4
11	75	124.73	.73	.71	282	253	258	45	232	75	78	2.0	4
	77.5	126.55	.73	.71	281	258	258	45	232	75	78	1.9	4
	80	128.32	.71	.70	281	261	256	45	232	75	79	1.9	4
12	82.5	130.09	.70	.70	280	262	257	45	232	75	79	1.9	4
	85	131.82	.69	.70	280	259	258	45	231	75	79	1.8	3.5
	87.5	133.58	.70	.70	280	250	258	45	232	75	79	1.8	3.5
	90	135.35											

Traverse: 1				
Start Time:	Initial Leak Check:	—	cfm@ —	"Hg
Finish Time: 15:09	Final Leak Check:	0.001	cfm@ 16	"Hg

Project No.: 22230

Operator: BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date	April 25, 2023
Test Location	APC Outlet No. 2
Operator	BP

Project No.:	22230
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	TEAM #3
Impinger Box No.:	9

Pitot Factor	S6 0.842	
DGMCF	1.002	
Barometric Pressure	29.89	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	0.2521	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	0.2	mg
Probe	0.9	mg

Moisture Gain

CWTR	533.4	g
WCBDA	22.5	g

Combustion Gas Concentration

Oxygen	8.98	%
Carbon Dioxide	10.85	%
Carbon Monoxide	15.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	Bo 03770
Trendicator	
Control Box	COE 20093
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN 22136

Nozzle Measurements	
1	0.2520
2	0.2520
3	0.2525
4	0.2520
Average:	0.2521

Probe Liner (Glass) / Metal / Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None / Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Apr 25, 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	37.12	.95	.80	280	257	256	52	124	69	69	2.4	4
	2.5	39.11	.92	.79	287	260	255	47	219	69	69	2.4	4
	5	41.10	.93	.79	287	253	261	46	232	69	70	2.3	4
2	7.5	43.09	.93	.79	287	261	260	45	231	69	71	2.3	4
	10	45.07	.92	.79	287	254	259	44	231	70	73	2.3	4
	12.5	47.05	.95	.80	287	252	258	45	232	69	73	2.3	4
3	15	49.09	.94	.80	287	252	257	46	233	70	74	2.4	4
	17.5	51.13	.94	.80	287	253	257	46	231	70	74	2.4	4
	20	53.13	.91	.79	287	251	257	46	232	71	75	2.3	4
4	22.5	55.13	.85	.76	287	260	258	47	232	71	75	2.3	4
	25	56.74	.82	.75	287	258	259	47	233	72	76	2.1	4
	27.5	58.60	.85	.76	288	256	259	47	234	72	76	2.4	4
5	30	60.47	.83	.75	287	253	258	47	235	72	77	2.2	4
	32.5	62.19	.81	.75	288	260	258	47	234	72	77	2.0	4
	35	64.09	.81	.75	284	254	258	47	234	73	77	2.2	4
6	37.5	65.95	.83	.75	288	250	258	47	232	72	77	2.0	4
	40	67.84	.79	.74	284	258	258	48	232	73	77	2.1	4
	42.5	69.66	.78	.73	284	260	258	48	230	73	77	2.0	4
7	45	71.47	.77	.73	288	251	258	48	231	73	77	2.0	4
	47.5	73.33	.73	.71	288	253	254	48	230	73	77	2.0	4
	50	75.11	.74	.72	287	250	254	48	230	74	78	1.8	3.5

Traverse: 1			
Start Time: 16:54	Initial Leak Check: 0.006	cfm@ 15.5	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 25, 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	76.94	.73	.71	288	260	258	48	231	74	78	2.0	4
	55	78.72	.75	.72	288	262	259	48	231	74	78	1.9	4
	57.5	80.51	.77	.73	287	258	258	48	234	74	78	1.9	4
9	60	82.35	.80	.74	287	255	258	48	234	74	78	2.0	4
	62.5	84.21	.82	.75	288	253	258	49	235	75	79	2.0	4
	65	86.09	.83	.76	288	260	258	48	233	75	79	2.1	4
10	67.5	87.98	.84	.76	288	255	258	49	233	75	79	2.1	4
	70	89.90	.86	.77	288	257	258	48	232	75	79	2.1	4
	72.5	91.85	.86	.77	284	262	258	48	232	77	81	2.2	4
11	75	93.79	.66	.68	284	254	258	48	231	76	80	2.2	4
	77.5	95.49	.64	.67	285	251	256	48	231	75	79	1.6	3.5
	80	97.14	.60	.65	285	258	258	48	230	76	81	1.6	3.5
12	82.5	98.77	.60	.65	285	256	258	48	231	75	80	1.5	3.5
	85	100.39	.54	.64	285	252	257	48	230	78	80	1.5	3.5
	87.5	102.04	.54	.64	285	260	257	48	228	76	79	1.6	3.5
	90	103.66							~~230~~				

Traverse: 1				
Start Time:	Initial Leak Check:		cfm@	"Hg
Finish Time: 15:24	Final Leak Check:	.002	cfm@ 16	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 25, 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	4.07	.88	.78	285	258	258	57	134	74	75	2.2	4
	2.5	6.03	.90	.79	286	261	257	48	220	75	75	2.2	4
	5	8.01	.92	.80	286	256	257	47	231	74	76	2.3	4
2	7.5	10.00	.89	.78	286	250	258	47	232	75	77	2.3	4
	10	11.99	.89	.78	287	248	255	47	232	75	77	2.3	4
	12.5	13.97	.90	.79	285	262	257	48	233	75	78	2.3	4
3	15	15.94	.87	.78	286	256	254	48	234	75	78	2.3	4
	17.5	17.88	.88	.78	286	256	255	49	235	77	80	2.2	4
	20	19.84	.87	.78	285	257	257	48	233	75	78	2.2	4
4	22.5	21.78	.80	.75	285	250	257	48	234	76	79	2.2	4
	25	23.63	.81	.75	287	249	258	49	231	75	81	2.0	4
	27.5	25.50	.82	.76	286	249	261	49	228	76	80	2.1	4
5	30	27.41	.80	.75	286	260	258	48	233	75	79	2.1	4
	32.5	29.31	.73	.71	286	256	258	47	232	75	78	2.1	4
	35	31.08	.75	.72	286	250	258	47	231	75	79	1.8	4
6	37.5	32.92	.66	.68	287	250	258	46	232	75	79	2.0	4
	40	34.65	.65	.67	286	261	258	46	231	76	79	1.7	3.5
	42.5	36.31	.68	.69	287	260	257	47	230	76	79	1.6	3.5
7	45	38.03	.72	.71	287	253	258	46	230	75	78	1.7	3.5
	47.5	39.81	.71	.70	286	254	258	46	231	75	78	1.9	4.0
	50	41.57	.72	.71	287	264	257	46	231	75	79	1.8	4

Traverse: 2					
Start Time: 18:34	Initial Leak Check:	.008	cfm@	16	"Hg
Finish Time:	Final Leak Check:	—	cfm@	—	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 25, 2023	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	43.34	.74	.72	287	257	257	46	232	76	80	1.4	4
	55	45.10	.71	.70	286	250	258	46	231	76	79	1.4	4
	57.5	46.86	.70	.70	286	261	258	46	231	75	78	1.4	4
9	60	48.62	.73	.71	286	256	258	46	230	75	78	1.8	4
	62.5	50.41	.74	.72	285	260	258	46	231	80	83	1.4	4
	65	52.23	.77	.73	288	253	258	46	231	76	79	2.0	4
10	67.5	54.09	.75	.72	284	250	258	46	231	75	79	2.0	4
	70	55.93	.74	.72	284	262	258	46	231	75	79	2.0	4
	72.5	57.74	.74	.72	284	256	258	46	231	75	79	1.9	4
11	75	59.54	.67	.68	284	260	257	46	231	75	79	1.9	4
	77.5	61.25	.66	.68	284	255	258	46	230	75	79	1.7	3.5
	80	62.94	.69	.69	284	252	257	46	229	75	79	1.7	3.5
12	82.5	64.69	.70	.70	284	257	255	46	230	76	79	1.8	4
	85	66.47	.69	.69	284	251	257	46	229	75	78	1.8	4
	87.5	68.24	.68	.69	284	260	257	46	229	75	78	1.8	4
	90	70.08											

Traverse: 2				
Start Time: ~~20:04~~	Initial Leak Check:		cfm@	"Hg
Finish Time: 20:04	Final Leak Check:	.003	cfm@ 16	"Hg

Project No.: 22230

Operator: BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	4 Particulate/Metals
Test Date	Apr 26/23
Test Location	APC Outlet No. 2
Operator	M

Project No.:	22230
Page	1 of 5
Probe No.:	
Meter Box No.:	Team #1
Impinger Box No.:	

Pitot Factor	S6 0.842	
DGMCF	0.961	
Barometric Pressure	29.92	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	0.2521	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	0.1	mg
Probe	0.5	mg

Moisture Gain

CWTR	537.7	g
WCBDA	23.5	g

Combustion Gas Concentration

Oxygen	9.08	%
Carbon Dioxide	10.64	%
Carbon Monoxide	116.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	
Control Box	Team #1 200944
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	22136

Nozzle Measurements	
1	0.2520
2	0.2520
3	0.2525
4	0.2520
Average:	0.2521

Probe Liner (Glass) / Metal / Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None / Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Apr 26/21	Plant: Covanta DYEC	Test No.: 4 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 4 & 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	25.85	0.95	0.82	280	271	253	58	83	61	60	2.0	3.0
	2.5	27.81	1.10	0.88	281	272	254	54	204	61	60	2.1	3.0
	5	29.81	1.10	0.88	281	271	255	53	208	61	60	2.1	3.0
2	7.5	31.92	1.0	0.84	281	268	256	50	214	62	61	2.1	3.5
	10	33.82	1.1	0.88	281	273	255	49	215	62	61	2.2	3.5
	12.5	35.89	1.0	0.84	281	272	255	48	215	62	61	2.2	3.5
3	15	37.95	0.95	0.82	281	272	255	47	216	63	61	2.1	3.5
	17.5	39.98	0.94	0.81	281	268	255	47	216	63	61	2.1	3.5
	20	42.01	0.94	0.81	281	274	255	47	217	64	61	2.1	3.5
4	22.5	44.03	0.92	0.80	281	273	255	46	216	64	61	2.1	3.5
	25	46.05	0.90	0.80	282	269	256	46	217	65	61	2.1	3.5
	27.5	48.07	0.90	0.80	282	275	255	45	216	65	61	2.1	3.5
5	30	50.08	0.82	0.76	281	272	255	45	216	65	61	1.9	3.5
	32.5	52.02	0.80	0.75	281	273	255	45	216	66	62	1.9	3.5
	35	53.89	0.79	0.75	281	274	255	45	216	66	62	1.9	3.5
6	37.5	55.79	0.70	0.70	281	268	255	44	216	66	62	1.7	3
	40	57.61	0.74	0.72	281	269	255	44	215	67	62	1.7	3
	42.5	59.44	0.72	0.71	281	274	256	44	215	67	62	1.7	3
7	45	61.27	0.75	0.73	281	274	255	44	215	67	62	1.8	3
	47.5	63.14	0.76	0.73	281	271	256	43	215	67	62	1.8	3
	50	64.97	0.76	0.73	281	269	255	43	215	67	62	1.8	3

Traverse: 2 FW				
Start Time: 8:47	Initial Leak Check: .002	cfm@ 13	"Hg	
Finish Time: 10:17	Final Leak Check: .003	cfm@ 13	"Hg	

Project No.: 22230

Operator : RV

Field Data Sheet

Date: Apr 26/23	Plant: Covanta DYEC	Test No.: 4	Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp		Meter Temp		Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
								Outlet °F	Inlet/Trap °F	Outlet °F	Inlet °F		
8	52.5	66.85	0.80	0.75	282	273	255	43	215	67	63	1.9	3.5
	55	68.73	0.82	0.76	282	271	255	43	214	67	62	1.9	3.5
	57.5	70.67	0.85	0.78	282	270	256	43	213	71	63	1.9	3.5
9	60	72.59	0.85	0.78	282	269	256	43	213	68	63	1.9	3.5
	62.5	74.53	0.85	0.78	282	274	256	43	214	68	63	1.9	3.5
	65	76.43	0.84	0.77	282	274	255	43	213	68	63	1.9	3.5
10	67.5	78.38	0.82	0.76	282	274	255	43	214	68	63	1.9	3.5
	70	80.31	0.82	0.76	282	273	255	44	214	68	63	1.9	3.5
	72.5	82.24	0.82	0.76	282	273	255	44	214	68	63	1.9	3.5
11	75	84.16	0.80	0.75	282	268	254	43	214	68	64	1.9	3.5
	77.5	86.08	0.80	0.75	282	272	255	43	212	68	64	1.9	3.5
	80	88.02	0.80	0.75	282	273	255	43	212	68	64	1.9	3.5
12	82.5	89.93	0.70	0.70	282	270	255	43	211	68	64	1.7	3.5
	85	91.74	0.70	0.70	282	272	255	44	211	68	64	1.7	3.5
	87.5	93.55	0.70	0.70	282	272	255	44	211	68	64	1.7	3.5
	90	95.35											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22230

Operator : N

Field Data Sheet

Date: Apr. 26/23	Plant: Covanta DYEC	Test No.: 4 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. #2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	95.73	0.85	0.77	282	267	256	54	116	64	63	1.9	3.5
	2.5	97.64	1.00	0.84	283	271	253	45	197	63	63	2.2	3.5
	5	99.64	0.98	0.83	283	273	256	40	216	64	63	2.1	3.5
2	7.5	101.61	1.00	0.84	283	275	256	39	216	65	63	2.2	3.5
	10	103.68	1.00	0.84	284	271	256	39	217	64	63	2.2	3.5
	12.5	105.76	1.00	0.84	284	275	255	39	217	64	63	2.2	3.5
3	15	107.83	1.00	0.84	284	274	256	40	217	65	63	2.2	3.5
	17.5	109.92	1.00	0.84	285	271	256	40	218	65	63	2.2	3.5
	20	111.99	1.00	0.84	285	268	255	40	217	66	63	2.2	3.5
4	22.5	114.08	0.95	0.82	285	268	255	40	217	66	63	2.1	3.5
	25	116.10	0.94	0.81	285	269	255	40	217	67	64	2.1	3.5
	27.5	118.15	0.91	0.80	285	269	255	40	218	67	63	2.1	3.5
5	30	120.20	0.85	0.77	285	270	256	40	218	67	64	1.9	3.5
	32.5	122.15	0.85	0.77	285	272	255	41	222	67	64	1.9	3.5
	35	124.06	0.85	0.78	284	271	256	41	227	65	64	2.0	3.5
6	37.5	126.06	0.75	0.73	287	269	255	40	227	68	64	1.8	3.5
	40	127.93	0.75	0.73	284	270	256	41	225	68	64	1.8	3.5
	42.5	129.81	0.75	0.73	284	272	256	41	225	68	64	1.8	3.5
7	45	131.63	0.80	0.75	284	270	255	41	218	68	64	1.8	3.5
	47.5	133.54	0.8	0.75	283	270	256	40	217	68	64	1.8	3.5
	50	135.42	0.8	0.73	283	270	255	40	219	69	65	1.8	3.5

Traverse:	1 PW					
Start Time:	11:18	Initial Leak Check:	.004	cfm@	13	"Hg
Finish Time:	12:48	Final Leak Check:	.003	cfm@	13	"Hg

Project No.: 22230

Operator : N

Field Data Sheet

Date: Apr 26/23	Plant: Covanta DYEC	Test No.: 4 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 4 & 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	137.30	0.81	0.76	283	273	255	40	218	68	64	1.8 1.9	3.5
	55	139.10	0.85	0.78	283	270	255	40	218	69	64	1.9	3.5
	57.5	141.15	0.83	0.77	283	269	255	40	217	68	64	1.9	3.5
9	60	143.00	0.83	0.77	283	269	255	39	219	68	65	1.9	3.5
	62.5	144.92	0.85	0.78	282	273	255	40	217	68	64	1.9	3.5
	65	146.83	0.85	0.78	282	270	256	39	219	69	65	1.9	3.5
10	67.5	148.81	0.86	0.78	281	272	256	39	218	69	65	2.0	3.5
	70	150.80	0.87	0.79	281	274	257	40	219	69	65	2.0	3.5
	72.5	152.75	0.87	0.79	281	274	256	40	218	69	65	2.0	3.5
11	75	154.70	0.86	0.76	281	271	255	40	217	69	65	1.8	3.5
	77.5	156.61	0.86	0.76	281	271	256	40	218	69	65	1.8	3.5
	80	158.50	0.79	0.75	281	273	256	40	218	69	65	1.8	3.5
12	82.5	160.40	0.70	0.71	281	271	256	40	217	69	65	1.6	3.5
	85	162.18	0.70	0.71	281	273	256	40	217	69	65	1.6	3.5
	87.5	164.01	0.70	0.71	281	271	255	40	216	69	65	1.6	3.5
	90	165.83											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22230

Operator : RV

APPENDIX 5

Particle Size Distribution Field Data Sheets
(12 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Particle Size
Test Date	APR 25/23
Test Location	APC Outlet No. 1
Operator	DW

Project No.:	22230
Page	1 of 2
Probe No.:	5
Meter Box No.:	TEAM 1
Impinger Box No.:	7

Pitot Factor	.844	
DGMCF	0.961	
Barometric Pressure	29.88	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	~~148.9~~	154	g
WCBDA	~~9.0~~	9.0	g

Combustion Gas Concentration

Oxygen	9.01	%
Carbon Dioxide	10.17	%
Carbon Monoxide	11.7	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST 1
Incline Manometer	
Comb.Gas.Analyzer	UNIT 2
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / (Metal) / Other_____

Union None / (Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: APR 25/23	Plant: Covanta DYEC	Test No.: 1 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	97.29	.84	.35	281	261	253	59	56	60	60	.36	4
2	10.5	100.93	.82		284	265	254	54	58	60	60	.38	4
3	21.0	104.59	.83		285	265	253	52	58	61	60	.38	4
4	31.2	108.10	.80		284	264	253	51	58	62	60	.38	4
5	41.1	111.65	.70		284	265	253	50	57	62	60	.38	4
6	50.7	115.04	.69		281	264	253	51	58	63	61	.38	4
	60.1	118.33											
1	0	118.33	.97		281	265	252	52	57	62	61	.38	4
2	10.5	122.10	.96		281	265	252	52	56	62	61	.38	4
3	21.4	125.99	.90		281	265	252	52	56	62	61	.38	4
4	31.7	129.57	.80		281	264	251	51	56	63	62	.38	4
5	41.5	133.08	.70		280	264	252	51	56	63	62	.38	4
6	50.7	136.32	.67		280	265	251	51	55	63	62	.38	4
	59.9	139.60		↓									

Traverse: 2				
Start Time: 906	Initial Leak Check: .004	cfm@	16	"Hg
Finish Time: 916	Final Leak Check:	cfm@		"Hg

Traverse: 1				
Start Time: 909	Initial Leak Check:	cfm @		"Hg
Finish Time: 1009	Final Leak Check:	cfm @		"Hg

Project No.: 22230

Operator : D. Day

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	2 Particle Size
Test Date	APRIL 25, 2023
Test Location	APC Outlet No. 1
Operator	RW

Project No.:	22230
Page	1 of 2
Probe No.:	5
Meter Box No.:	TEAM 1
Impinger Box No.:	5

Pitot Factor	.844	
DGMCF	.961	
Barometric Pressure	~~29.88~~	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	~~149.0~~	141.1	g
WCBDA	~~8.3~~	100	g

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	TEST
Control Box	
Incline Manometer	1
Comb.Gas.Analyzer	
Micromanometer	UNIT 2
Barometer	
Calipers	

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Combustion Gas Concentration

Oxygen	9.59	%
Carbon Dioxide	9.61	%
Carbon Monoxide	8.8	ppm

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other ~~PFA~~

Nozzle Glass / (Metal) / Other_____

Union None / (Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: APR 25/23	Plant: Covanta DYEC	Test No.: 2 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	39.68	.87	.35	285	262	251	57	58	62	61	.38	3
2	10.2	43.32	.85		287	266	254	54	57	61	60	.38	3
3	20.3	46.85	.80		286	265	255	54	57	61	60	.36	3
4	30.5	50.52	.76		286	265	254	60	60	62	61	.38	3
5	40.5	54.01	.65		286	264	254	62	54	63	61	.38	3
6	49.8	57.31	.61		287	265	255	62	54	63	61	.38	3
	59.1	60.63											
1	0	60.63	.96		289	265	252	59	54	63	62	.38	3
2	11.0	64.45	.97		289	265	254	59	52	63	63	.38	3
3	21.9	68.45	.85		290	265	253	58	51	64	62	.38	3
4	32.5	72.23	.78		289	265	254	58	52	64	63	.38	3
5	42.5	75.78	.70		289	265	255	57	52	64	63	.38	3
6	51.8	79.06	.66		289	265	254	57	52	64	62	.38	3
	60.9	82.29											

Traverse: 1				Traverse: 1			
Start Time: 1053	Initial Leak Check: .002	cfm@ 17	"Hg	Start Time: 1155	Initial Leak Check:	cfm @	"Hg
Finish Time: 1152	Final Leak Check:	cfm@	"Hg	Finish Time: 1256	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator: RM

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	3 Particle Size
Test Date	APRIL 25, 2023
Test Location	APC Outlet No. 1
Operator	RM

Project No.:	22230
Page	1 of 2
Probe No.:	5
Meter Box No.:	TEAM 1
Impinger Box No.:	7

Pitot Factor	.844	
DGMCF	.961	
Barometric Pressure	~~29.88~~	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	~~155.3~~	151.1	g
WCBDA	~~7.7~~	10.2	g

Combustion Gas Concentration

Oxygen	9.09	%
Carbon Dioxide	9.94	%
Carbon Monoxide	10.6	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST 1
Incline Manometer	
Comb.Gas.Analyzer	UNIT 2
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / (Other) PFA

Nozzle Glass / (Metal) / Other_____

Union None / (Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Apr 25/23	Plant: Covanta DYEC	Test No.: 3 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	82.39	.92	.35	286	264	254	58	58	63	62	.38	4
2	10.5	86.20	.89		288	266	255	49	59	62	62	.38	4
3	20.9	89.87	.76		284	265	255	49	58	62	62	.38	4
4	31.0	93.44	.68		283	265	255	49	58	62	62	.38	4
5	40.9	97.11	.66		281	266	255	50	60	64	63	.38	4
6	50.0	100.40	.59		278	266	255	50	60	65	63	.38	4
	58.8	103.55											
1	0	103.55	.82		280	267	255	52	60	65	64	.38	4
2	11.1	107.52	.80		280	267	255	52	60	65	64	.38	4
3	22.2	111.45	.77		277	265	254	52	62	66	64	.38	4
4	32.6	115.15	.67		278	265	254	52	61	66	64	.38	4
5	42.6	118.69	.58		277	265	251	52	64	66	65	.38	4
6	52.0	122.10	.58		276	265	251	51	63	66	65	.38	4
	61.2	125.41											

Traverse: 2			Traverse: 1		
Start Time: 1337	Initial Leak Check: .003 cfm@	"Hg	Start Time: 1439	Initial Leak Check: cfm @	"Hg
Finish Time: 1436	Final Leak Check: cfm@	"Hg	Finish Time: 1540	Final Leak Check: cfm @	"Hg

Project No.: 22230

Operator: [signature]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Particle Size
Test Date	APRIL 24 2023
Test Location	APC Outlet No. 2
Operator	DM

Project No.:	22230
Page	1 of 2
Probe No.:	5
Meter Box No.:	TEAM 1
Impinger Box No.:	5

Pitot Factor	.844	
DGMCF	0.961	
Barometric Pressure	29.78	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	1489	g
WCBDA	9.0	g

Combustion Gas Concentration

Oxygen	9.43	%
Carbon Dioxide	10.40	%
Carbon Monoxide	12.7	ppm

Measuring Device	MII Numbers
Probe / Pitot	AM 6/2.5
Trendicator	} COE 20094
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV-CAN
Calipers	B03906

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	.1775
2	.1775
3	.1775
4	.1780
Average:	

Probe Liner Glass / (Metal) / Teflon / (Other) PFA

Nozzle Glass / (Metal) / Other_____

Union None / (Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: April 24/23	Plant: Covanta DYEC	Test No.: 1 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	67.46	.98	.35	279	262	249	63	65	65	64	.38	2.5
2	10.5	71.20	.92		279	265	248	55	65	65	65	.38	3
3	21.0	74.80	.84		280	265	248	52	64	65	65	.38	4
4	31.1	78.52	.82		279	262	249	52	62	68	65	.38	4
5	41.1	81.87	.76		280	265	247	52	54	69	66	.38	4
6	50.7	85.50	.73		281	264	249	52	53	69	66	.38	4
	59.9	88.81											
1	0	88.81	.88		280	264	249	52	55	68	66	.38	4
2	10.4	92.80	.96		282	265	254	51	53	68	67	.38	4
3	20.7	96.52	.96		283	266	255	50	52	68	67	.38	4
4	30.8	100.20	.83		282	265	255	50	52	68	67	.38	4
5	40.7	103.92	.74		282	265	255	51	52	68	66	.38	4
6	50.5	107.63	.64		282	265	255	51	53	68	66	.38	4
	60.1	111.14											

Traverse: 2				
Start Time: 956	Initial Leak Check: .005	cfm@ 15	"Hg
Finish Time: 1056	Final Leak Check:	cfm@	"Hg

Traverse: ~~1059~~ 1			
Start Time: 1059	Initial Leak Check:	cfm @	"Hg
Finish Time: 1159	Final Leak Check:	cfm @	"Hg

R

Project No.: 22230

Operator:

~~34~~ 34.4

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	APRIL 24, 2023
Test Location	APC Outlet No. 2
Operator	DM

Project No.:	22230
Page	1 of 2
Probe No.:	5
Meter Box No.:	TEAM 1
Impinger Box No.:	7

Pitot Factor	.844	
DGMCF	.961	
Barometric Pressure	29.79	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	149.0	g
WCBDA	8.3	g

Combustion Gas Concentration

Oxygen	9.38	%
Carbon Dioxide	10.44	%
Carbon Monoxide	159	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	
Calipers	

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / (Metal) / Other_____

Union None /(Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Notes:

Field Data Sheet

Date: April 24/23	Plant: Covanta DYEC	Test No.: 2 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	11.37	.98	.35	284	262	251	61	60	65	64	.38	4
2	10.9	15.20	.97		285	265	250	52	51	64	64	.38	4
3	21.4	19.03	.84		284	265	250	50	60	65	64	.38	4
4	31.4	22.61	.91		284	265	250	50	50	66	64	.38	4
5	41.4	26.18	.76		284	265	250	50	50	66	64	.38	4
6	51.0	29.54	.65		284	265	250	50	51	67	65	.38	4
	60.3	32.83											
1	0	32.83	.88		284	266	250	52	53	67	65	.38	4
2	10.3	36.43	.92		283	265	250	52	52	67	66	.38	4
3	20	40.13	.88		284	265	250	52	52	67	66	.38	4
4	31.5	43.89	.84		285	265	250	51	52	67	66	.38	4
5	41.5	47.46	.76		284	265	251	51	52	68	66	.38	4
6	50.9	50.88	.64		284	265	251	52	52	68	66	.38	4
	59.7	54.04											

Traverse: 2				
Start Time: 1305	Initial Leak Check: .006	cfm@ 16	"Hg
Finish Time: 1405	Final Leak Check:	cfm@	"Hg

Traverse: 1			
Start Time: 1408	Initial Leak Check:	cfm @	"Hg
Finish Time: 1508	Final Leak Check:	cfm @	"Hg

Ps −10.8

Project No.: 22230

Operator: [illegible]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date	APRIL 24 2023
Test Location	APC Outlet No. 2
Operator	RM

Project No.:	22230
Page	1 of 2
Probe No.:	5
Meter Box No.:	TEAM 1
Impinger Box No.:	5

Pitot Factor	.844	
DGMCF	0.961	
Barometric Pressure	29.80	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	155.2	g
WCBDA	7.7	g

Combustion Gas Concentration

Oxygen	9.04	%
Carbon Dioxide	10.66	%
Carbon Monoxide	16.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	
Calipers	

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1 _____
2 _____
3 _____
4 _____
Average:

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: APR 24/23	Plant: Covanta DYEC	Test No.: 3 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	54.15	.96	.35	279	263	256	61	61	65	65	.38	3
2	10.9	58.19	.94		282	265	255	52	51	65	65	.38	3
3	21.8	62.11	.80		282	266	255	51	51	67	65	.38	3
4	31.9	65.76	.75		282	265	255	50	51	67	65	.38	3
5	41.8	69.31	.72		282	264	254	51	50	67	65	.38	3
6	51.4	72.74	.64		283	265	255	51	51	67	65	.38	3
	60.3	75.97											
1	0	75.97	.90		283	266	254	52	52	66	65	.38	3
2	10.3	79.68	.94		284	265	255	51	51	66	65	.38	3
3	20.9	83.37	.88		285	265	255	50	50	66	65	.38	3
4	31.2	87.20	.84		284	265	254	51	50	67	65	.38	3
5	41.3	90.63	.76		283	265	255	50	51	67	65	.38	3
6	50.9	94.05	.66		284	265	255	50	51	67	65	.38	3
	59.7	97.14											

Traverse: 2					Traverse: 1				
Start Time: 1604	Initial Leak Check: .004	cfm@ 17	"Hg		Start Time: 1708	Initial Leak Check:	cfm @	"Hg	
Finish Time: 1704	Final Leak Check:	cfm@	"Hg		Finish Time: 1808	Final Leak Check:	cfm @	"Hg	

Project No.: 22230

Operator: DM

APPENDIX 6

SVOC Data Sheets
(30 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	April 26. 2023
Test Location	APC Outlet No. 1
Operator	TT

Project No.:	22230
Page	1 of 5
Probe No.:	7 series
Meter Box No.:	Team 4
Impinger Box No.:	6

Pitot Factor	.843	
DGMCF	1.002	
Barometric Pressure	29.92	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	710.3	g
WCBDA	22.5	g

Combustion Gas Concentration

Oxygen	8.67	%
Carbon Dioxide	10.37	%
Carbon Monoxide	9.5	ppm

Measuring Device	MII Numbers
Probe / Pitot S8	B03769
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2530
2	.2530
3	.2525
4	.2525
Average:	.2528

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal /(Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: April 24 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	894.09	.96	.79	275	253	244	56	39	57	57	2.2	7.5
	5	899.91	.98	.80	280	257	247	44	42	57	57	2.25	8
2	10	906.81	.97	.80	281	255	247	43	44	58	60	2.3	8
	15	905.75	.97	.80	281	255	243	42	45	58	64	2.35	8.5
3	20	909.73	.97	.80	281	256	242	42	44	58	67	2.4	8.5
	25	913.75	.97	.80	282	256	244	42	44	59	69	2.4	8.5
4	30	917.77	.97	.80	283	256	248	42	48	60	70	2.4	8.5
	35	921.83	.87	.76	283	255	248	43	44	60	72	2.2	8.5
5	40	925.74	.77	.72	283	256	246	43	46	61	72	1.95	8
	45	929.35	.72	.69	283	256	250	43	44	61	73	1.8	7.5
6	50	932.81	.65	.66	282	256	247	44	44	62	74	1.7	7.5
	55	936.16	.65	.66	282	256	250	45	44	62	74	1.7	7.85
7	60	939.9	.67	.66	281	275	249	48	40	61	60	1.7	8
	65	943.20	.70	.68	283	245	248	46	42	60	62	1.8	8
8	70	945.58	.81	.73	284	245	249	45	45	60	66	2.05	8.5
	75	949.24	.81	.73	284	283	244	45	44	61	69	2.05	9
9	80	952.97	.77	.68	283	244	246	45	44	61	71	1.8	8.5
	85	956.41	.77	.72	284	252	249	46	44	62	72	1.95	8.5
10	90	960.05	.77	.72	283	278	245	46	45	62	74	1.95	8.5
	95	963.64	.74	.71	282	268	246	46	44	62	74	1.9	8.5
11	100	967.21	.68	.68	282	272	247	47	45	63	75	1.75	8.5

Traverse: 1					Traverse:			
Start Time: 8:25	Initial Leak Check: .008	cfm@	16	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Power tripat 60 minute mark.

Project No.: 22230

Operator : TT

Field Data Sheet

Date: April 26 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	970.61	.71	.69	283	274	247	47	45	63	75	1.8	8.5
12	110	974.07	.72	.70	283	245	243	47	45	63	76	1.8	8.5
	115	977.58	.74	.71	283	261	246	47	45	64	76	1.9	8.5
	120	981.14											

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 10:57	Final Leak Check: .003	cfm@ 13	"Hg

Traverse:				
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator : YKL

Field Data Sheet

Date: April 26 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	981.33	.90	.77	281	247	245	55	41	63	67	2.25	9.5
	5	985.17	.95	.80	284	271	249	48	46	63	71	2.3	9.5
2	10	989.13	.95	.80	285	264	243	47	46	63	72	2.35	10
	15	993.14	.91	.78	284	265	246	48	45	63	73	2.2	9.5
3	20	997.07	.84	.75	284	268	245	49	44	63	74	2.1	9.5
	25	1000.88	.85	.76	283	252	247	49	43	64	75	2.25	9.5
4	30	1004.78	.82	.75	282	267	246	50	43	64	75	2.1	9
	35	1008.49	.83	.75	283	257	243	51	45	64	75	2.1	9
5	40	1012.24	.76	.72	284	265	245	51	46	64	76	1.95	9
	45	1015.86	.75	.71	284	266	249	52	45	64	76	1.95	9
6	50	1019.59	.74	.71	284	266	246	52	46	64	76	1.95	9
	55	1023.13	.69	.69	283	225	244	53	46	65	77	1.8	9
7	60	1026.61	.76	.72	284	249	247	52	46	65	77	1.95	9
	65	1030.21	.76	.72	284	254	246	51	44	65	77	1.95	9
8	70	1033.81	.80	.74	284	253	243	49	44	65	76	2.1	9.5
	75	1037.51	.78	.73	284	250	246	48	45	65	76	2.05	9.5
9	80	1041.17	.78	.73	283	249	249	47	45	65	76	2.05	9.5
	85	1044.93	.82	.75	284	249	242	47	47	65	76	2.1	9.5
10	90	1048.72	.82	.75	283	249	246	47	49	65	76	2.1	9.5
	95	1052.46	.82	.75	283	250	246	47	51	65	76	2.1	9.5
11	100	1056.21	.73	.70	283	249	248	47	53	65	76	1.75	9

Traverse:					
Start Time: 11:09	Initial Leak Check:	.003	cfm@	13	"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.: 22230

Operator :

Field Data Sheet

Date: April 26 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	1059.62	.73	.70	282	251	246	47	54	65	76	1.8	9
12	110	1063.09	.79	.73	282	250	246	47	56	65	76	2.1	9.5
	115	1066.84	.81	.74	282	249	243	47	60	65	76	2.05	9.5
	120	1070.62											

Traverse: 2					Traverse:				
Start Time: –	Initial Leak Check:	–	cfm@	– "Hg	Start Time: /	Initial Leak Check:	/	cfm @	/ "Hg
Finish Time: 13:09	Final Leak Check:	.002	cfm@	15 "Hg	Finish Time: /	Final Leak Check:	/	cfm @	/ "Hg

Project No.: 22230

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	April 26 2023
Test Location	APC Outlet No. 1
Operator	

Project No.:	22230
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.002	
Barometric Pressure	29.91	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

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	708.5	g
WCBDA	20.0	g

Combustion Gas Concentration

Oxygen	8.77	%
Carbon Dioxide	10.18	%
Carbon Monoxide	8.3	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	
Control Box	See
Incline Manometer	SVOC
Comb.Gas.Analyzer	Test #1
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Notes:

Field Data Sheet

Date: April 26 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3 71.72	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	~~71.54~~	.72	.69	283	251	257	59	57	60	59	1.8	8
	5	75.18	.72	.69	282	257	246	46	43	59	61	1.8	8
2	10	78.58	.82	.73	283	250	247	43	43	59	64	2.05	9
	15	82.17	.81	.73	281	247	247	41	44	60	67	2.05	9
3	20	85.86	.80	.73	281	248	248	41	42	60	69	2.05	9
	25	89.55	.80	.73	282	249	248	40	41	61	70	2.05	9
4	30	93.21	.80	.73	282	249	246	40	42	61	72	2.05	9
	35	96.86	.80	.73	282	250	248	40	41	62	73	2.05	9
5	40	100.77	.80	.73	281	250	247	40	39	62	73	2.05	9
	45	104.72	.80	.73	282	249	247	40	38	62	73	2.05	9
6	50	108.39	.78	.72	282	250	248	40	38	63	73	1.95	9.5
	55	112.02	.78	.73	282	249	247	40	38	63	74	2.05	10
7	60	115.72	.68	.68	282	249	245	40	38	63	74	1.7	9
	65	119.14	.68	.68	282	250	244	41	38	63	74	1.7	9
8	70	122.56	.79	.73	282	249	245	41	38	63	75	2.05	10
	75	126.27	.79	.73	281	251	253	41	39	63	75	2.05	10
9	80	130.03	.83	.75	281	252	244	41	40	64	75	2.1	10
	85	133.80	.87	.77	282	251	246	41	41	64	74	2.25	11
10	90	137.71	.87	.77	281	251	247	41	42	64	74	2.25	11
	95	141.68	.95	.80	281	251	244	41	42	64	74	2.25	11
11	100	145.63	.96	.81	281	250	246	41	43	64	74	2.4	11

Traverse:					
Start Time: 14:44	Initial Leak Check:	.012	cfm@	15	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg

Traverse:					
Start Time:	Initial Leak Check:		cfm @		"Hg
Finish Time:	Final Leak Check:		cfm @		"Hg

Project No.: 22230

Operator :

Field Data Sheet

Date: April 26 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	149.65	.96	.81	281	250	248	42	43	64	73	2.4	11
12	110	153.70	.94	.80	282	251	251	42	44	64	73	2.25	11
	115	157.66	.96	.80	282	250	248	42	44	64	73	2.25	11
	120	161.70											

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 16:44	Final Leak Check: .002	cfm@ 14	"Hg

Traverse:				
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator :

Field Data Sheet

Date: April 26 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	162.14	.91	.79	273	246	237	49	46	63	66	2.2	11
	5	165.88	.88	.77	280	256	272	43	40	63	69	2.25	11
2	10	169.79	.92	.79	281	253	258	42	41	63	70	2.2	11
	15	173.66	.91	.78	281	253	243	42	40	63	71	2.2	11
3	20	177.52	.90	.78	281	253	243	42	40	63	72	2.2	11
	25	181.40	.88	.77	281	253	247	42	39	63	72	2.2	11
4	30	185.29	.81	.74	281	252	248	43	40	63	72	2.25	11
	35	189.12	.83	.75	281	252	248	43	39	63	73	2.15	11
5	40	192.87	.82	.74	282	251	248	44	39	64	73	2.1	11
	45	196.59	.79	.73	283	250	244	44	40	64	74	2.1	11
6	50	200.27	.73	.70	283	251	244	44	40	64	74	2.0	11
	55	203.86	.72	.70	283	250	244	44	39	64	74	1.85	11
7	60	207.39	.72	.70	283	249	246	45	40	64	74	1.85	11
	65	210.92	.78	.73	283	249	249	45	40	64	75	1.85	11
8	70	214.58	.77	.72	283	250	250	45	41	64	75	1.85	11
	75	218.22	.79	.73	283	248	244	45	42	64	74	1.95	11
9	80	221.89	.81	.74	284	250	244	45	41	64	74	2.0	11
	85	225.58	.80	.74	284	249	244	45	39	65	74	2.05	11
10	90	229.30	.77	.72	284	249	247	46	39	65	74	2.05	11
	95	232.93	.82	.74	280	249	249	46	39	64	74	1.95	11
11	100	236.62	.83	.75	280	250	249	46	39	64	74	2.0	11

Traverse: 2			
Start Time: 16:53	Initial Leak Check: .003	cfm@ 13	"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.: 22230

Operator : [signature]

Field Data Sheet

Date: April 26 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	240.46	0.81	.74	271	250	245	46	39	64	74	2.1	11
12	110	244.08	0.87	.77	271	249	243	46	39	64	74	2.05	11
	115	247.91	0.86	.77	271	250	245	46	40	64	74	2.2	11
	120	251.83											

Traverse:					
Start Time:	—	Initial Leak Check:	—	cfm@	— "Hg
Finish Time:	18:53	Final Leak Check:	0.002	cfm@	14.5 "Hg

Traverse:					
Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time:		Final Leak Check:		cfm @	"Hg

Project No.: 22230

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	APR 27/23
Test Location	APC Outlet No. 1
Operator	TT / AP

Project No.:	22230
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.002	
Barometric Pressure	29.93	"Hg
Static Pressure	-0.2	"H2O
Nozzle Size	.25.28	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	720.5	g
WCBDA	150	g

Combustion Gas Concentration

Oxygen	8.77	%
Carbon Dioxide	10.22	%
Carbon Monoxide	8.8	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot 58	
Trendicator	
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Notes:

Field Data Sheet

Date: Apr. 27th/23	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	253.06	0.97	0.79	284	248	242	51	38	55	54	2.0	8.0
	5	256.82	0.90	0.76	280	248	243	43	49	55	55	2.15	8.0
2	10	260.56	0.91	.76	280	250	246	42	49	55	58	2.1	8.5
	15	264.29	0.96	.79	281	249	246	41	50	55	61	2.1	8.5
3	20	268.07	0.96	.79	281	248	241	41	50	56	64	2.15	9.0
	25	271.9	0.93	.78	282	250	244	41	50	56	66	2.2	9.0
4	30	275.81	0.91	.77	283	251	246	42	51	57	68	2.25	9.5
	35	279.72	0.87	.76	283	250	241	42	52	58	69	2.25	9.5
5	40	283.58	0.76	.71	283	251	245	43	53	58	70	2.2	9.5
	45	287.18	0.77	.72	283	250	241	43	54	59	71	1.95	9.0
6	50	290.76	0.71	.69	284	249	242	44	54	60	72	1.95	9.0
	55	294.26	0.66	.66	284	248	239	44	54	60	72	1.85	8.5
7	60	297.64	0.70	.68	284	250	243	44	54	60	73	1.7	8.5
	65	301.04	0.76	.71	284	250	244	44	38	61	73	1.75	8.0
8	70	304.53	0.75	.71	284	250	245	44	38	61	74	1.85	8.5
	75	308.08	0.77	.72	283	249	244	44	38	61	74	1.9	8.5
9	80	311.64	0.78	.72	283	250	244	44	38	62	74	1.9	9.0
	85	315.21	0.82	.74	284	251	245	44	39	62	74	1.95	9.0
10	90	318.89	0.75	.71	284	250	245	45	39	62	74	2.05	9.0
	95	322.50	0.75	.71	283	249	245	45	39	62	75	1.95	9.0
11	100	326.09	0.71	.69	282	244	245	45	38	63	75	1.95	9.0

Traverse: 1					
Start Time: 08:06	Initial Leak Check:	0.004	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.: 22230

Operator: AP ; TT

Field Data Sheet

Date: Apr. 27th / 23	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	329.62	.71	.69	282	250	246	45	38	63	75	1.8	9
12	110	333.09	.70	.71	234	250	245	45	38	63	75	1.8	8.5
	115	336.57	.71	.72	233	250	246	45	38	63	75	1.8	9.0
	120	340.5											

Traverse:					Traverse:				
Start Time:		Initial Leak Check:		cfm@ "Hg	Start Time:		Initial Leak Check:		cfm @ "Hg
Finish Time:	10:06am	Final Leak Check:	0.005	cfm@ 18.0 "Hg	Finish Time:		Final Leak Check:		cfm @ "Hg

Paused @ 10:02am
Re-start @ 2:05pm

Project No.: 22230
Operator: AP + TT

Field Data Sheet

Date: Apr. 27th/23	Plant: Covanta DYEC	Test No.: #3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	340.81	0.88	.78	245	250	245	62	38	64	63	2.0	10.0
	5	344.60	0.89	.77	282	250	248	51	39	64	65	2.15	10.5
2	10	348.48	0.96	.80	283	249	247	46	40	64	68	2.25	11.0
	15	352.39	0.95	.80	283	249	249	45	40	64	70	2.25	11.0
3	20	356.34	1.0	.82	283	251	246	44	41	65	72	2.35	11.0
	25	360.38	0.96	.81	284	250	245	43	41	66	74	2.4	11.5
4	30	364.39	0.87	.77	285	250	246	43	41	66	75	2.35	11.5
	35	368.33	0.83	.75	284	249	249	43	40	67	76	2.35	11.5
5	40	372.11	0.8	.74	284	250	251	43	39	67	77	2.1	11.0
	45	375.79	0.78	.73	283	249	246	43	39	68	78	2.05	10.5
6	50	379.47	0.71	.70	284	249	246	43	40	68	79	2.05	10.5
	55	382.98	0.73	.71	284	251	247	44	39	69	79	1.85	10.0
7	60	386.53	0.73	.73	284	250	249	44	39	69	80	1.85	10.0
	65	390.23	0.79	.74	284	251	247	44	39	69	80	2.05	10.5
8	70	393.95	0.78	.73	284	250	250	44	40	69	80	2.1	10.5
	75	397.65	0.74	.71	283	250	245	44	40	70	80	2.05	10.5
9	80	401.26	0.77	.73	283	250	248	45	40	70	80	1.9	10.0
	85	404.98	0.79	.74	282	249	248	44	40	70	81	2.05	10.5
10	90	408.72	0.78	.74	282	250	250	45	40	70	81	2.05	11.0
	95	412.45	0.8	.74	282	250	248	45	41	70	81	2.1	11.0
11	100	416.19	0.76	.73	282	250	249	45	42	71	81	2.05	10.5

Traverse: 2				
Start Time: 2:20pm	Initial Leak Check:	0.004	cfm@ 16.0	"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.: 22230

Operator: AP + TT

Field Data Sheet

Date: Apr. 27th/23	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	419.91	0.77	.74	256	250	249	45	43	71	81	2.05	11.0
12	110	423.64	0.76	.74	255	250	247	45	44	71	81	2.05	11.0
	115	427.34	0.78	.75	255	250	248	45	45	71	81	2.05	11.0
	120	431.11											

Traverse:					
Start Time:	Initial Leak Check:		cfm@		"Hg
Finish Time: 4:20 pm	Final Leak Check:	0.001	cfm@	19.0	"Hg

Traverse:					
Start Time:	Initial Leak Check:		cfm @		"Hg
Finish Time:	Final Leak Check:		cfm @		"Hg

Project No.: 22230

Operator : AP + TT

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date April 26, 2023	
Test Location	APC Outlet No. 2
Operator BP	

Project No.:	22230
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	TEAM #3
Impinger Box No.:	2

Pitot Factor	S1 0.841	
DGMCF	1.002	
Barometric Pressure	29.92	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	647.0	g
WCBDA	16.8	g

Combustion Gas Concentration

Oxygen	9.08	%
Carbon Dioxide	10.63	%
Carbon Monoxide	18.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	B03761
Trendicator	
Control Box	10E20093
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAL 22136

Nozzle Measurements	
1	.2505
2	.2515
3	.2510
4	.2510
Average:	.2510

Probe Liner (Glass) / Metal / Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None / Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: April 26, 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	71.06	.60	.62	284	248	251	63	51	63	63	1.3	3.9
	5	74.11	.59	.61	284	248	259	58	39	63	64	1.3	3.9
2	10	77.10	.56	.60	284	275	259	55	40	63	66	1.4	4.0
	15	80.10	.55	.54	284	256	258	54	40	64	68	1.4	4.5
3	20	83.08	.83	.73	284	248	260	53	40	65	68	1.3	4.5
	25	86.47	.86	.75	283	257	259	53	41	65	70	2.0	5
4	30	90.08	.83	.73	284	256	259	53	43	66	71	2.1	6
	35	~~93.86~~ 93.86	.78	.71	284	270	259	53	43	67	72	2.3	6.5
5	40	97.46	.80	.72	284	258	260	53	42	68	72	1.8	5.5
	45	101.02	.80	.72	284	251	259	54	43	68	72	1.9	5.5
6	50	104.65	.79	.72	285	253	259	54	43	69	73	2.0	6
	55	108.30	.80	.72	285	259	258	54	43	69	74	2.0	6
7	60	111.88	.75	.70	286	249	259	55	43	70	74	1.9	6
	65	115.39	.73	.69	286	257	259	53	43	70	74	1.8	6
8	70	118.84	.85	.75	286	249	259	52	43	71	75	1.8	6
	75	122.54	.86	.75	287	251	259	51	44	71	75	2.0	6
9	80	126.38	.90	.77	287	259	260	51	43	71	75	2.1	6.5
	85	130.29	.92	.78	286	250	260	50	42	72	75	2.2	6.5
10	90	134.23	.95	.79	286	257	260	51	43	72	76	2.2	6.5
	95	138.24	.91	.78	286	254	259	51	43	72	76	2.3	7
11	100	142.15	.95	.79	286	256	259	52	43	73	76	2.2	6.5

Traverse: 1				
Start Time: 8:50	Initial Leak Check:	.005	cfm@ 17.5	"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.: 22230

Operator: BP

Field Data Sheet

Date: April 26, 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	146.15	.92	.78	286	256	260	53	44	73	76	2.3	7
12	110	150.06	.91	.78	285	255	260	53	44	73	76	2.2	7
	115	153.97	.89	.77	285	256	258	53	44	73	77	2.2	7
	120	157.93											

Traverse: 1				
Start Time:	Initial Leak Check:	.005	cfm@ 17.5	"Hg
Finish Time: 10:50	Final Leak Check:	.005	cfm@ 17.5	"Hg

Traverse:				
Start Time:	Initial Leak Check:		cfm @	"Hg
Finish Time:	Final Leak Check:		cfm @	"Hg

Project No.: 22230

Operator : RP

Field Data Sheet

Date: April 26, 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	58.37	.62	.64	285	259	259	59	42	72	72	1.5	5
	5	61.54	.71	.68	284	249	261	49	43	71	72	1.5	5.5
2	10	64.88	.73	.69	284	257	261	47	43	71	73	1.7	6
	15	68.36	.71	.69	284	254	258	47	44	72	75	1.8	6
3	20	71.84	.89	.77	285	248	258	47	43	73	77	1.8	6
	25	75.69	.90	.77	287	259	258	47	45	72	76	2.2	7
4	30	79.60	.87	.76	287	249	259	47	44	72	75	2.2	7
	35	83.42	.86	.75	287	255	259	48	45	73	76	2.1	7
5	40	87.23	.79	.72	287	257	260	48	44	73	76	2.1	7
	45	90.86	.77	.72	287	249	260	49	44	74	77	1.9	6.9
6	50	94.47	.75	.71	286	256	259	49	44	73	77	1.9	6.9
	55	97.98	.77	.71	286	251	259	48	44	73	77	1.8	6.5
7	60	101.57	.69	.68	286	252	260	48	45	73	77	1.9	6.9
	65	104.95	.71	.69	286	259	260	48	43	73	77	1.7	6
8	70	108.37	.78	.72	286	248	254	49	43	74	77	1.7	6
	75	111.94	.77	.72	286	255	258	49	45	74	77	1.9	6.9
9	80	115.56	.89	.77	286	258	259	49	44	74	77	1.9	6.9
	85	119.47	.87	.76	286	251	258	49	44	74	77	2.2	7.5
10	90	123.29	.91	.78	286	259	258	50	44	74	77	2.1	7.5
	95	127.24	.92	.78	286	249	259	50	45	74	78	2.2	7.5
11	100	131.19	.95	.80	285	258	259	50	45	78	79	2.2	8

Traverse: 2			
Start Time: 11:13	Initial Leak Check: .009	cfm@ 17	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 26, 2023	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	135.23	.96	.80	286	252	260	49	46	75	77	2.3	8
12	110	139.27	.99	.82	285	256	259	46	47	75	82	2.3	8
	115	143.40	.98	.81	285	253	258	48	45	75	78	2.4	8
	120	147.57											

Traverse: 2				
Start Time:	Initial Leak Check: ~~0.006~~	cfm@ ~~17~~	"Hg
Finish Time: 13:13	Final Leak Check: 0.006	cfm@ 17	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator : BD

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date April 26, 2023	
Test Location	APC Outlet No. 2
Operator BP	

Project No.:	22230
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	TEAM #3
Impinger Box No.:	4

Pitot Factor	S1 0.841	
DGMCF	1.002	
Barometric Pressure	29.91	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	681.3	~~537.7~~	g
WCBDA	16.0	~~23.5~~	g

Combustion Gas Concentration

Oxygen	9.05	%
Carbon Dioxide	10.50	%
Carbon Monoxide	17.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	B03761
Trendicator	
Control Box	606 20043
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN 22136

Nozzle Measurements	
1	.2505
2	.2515
3	.2510
4	.2510
Average:	.2510

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: April 26, 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	~~48.08~~ 48.04	.99	.80	284	258	263	62	42	68	68	2.3	5
	5	52.07	.98	.80	284	248	263	58	43	68	69	2.3	5
2	10	56.02	.98	.80	284	256	258	54	44	68	71	2.3	5.5
	15	60.04	.99	.80	285	255	260	51	44	68	72	2.3	5.5
3	20	64.10	.97	.80	285	253	261	49	44	70	73	2.4	6
	25	68.12	.95	.79	285	260	260	48	44	70	74	2.3	6
4	30	72.69	.92	.78	285	259	260	47	44	71	75	2.3	6
	35	75.97	.91	.77	285	260	261	47	43	71	75	2.3	6
5	40	79.84	.84	.75	285	250	261	47	44	74	76	2.1	5.5
	45	83.61	.84	.75	285	260	261	48	44	72	76	2.1	5.5
6	50	87.41	.75	.71	286	249	261	46	44	74	77	1.9	5
	55	91.04	.72	.69	286	259	261	45	44	74	76	1.9	5
7	60	94.57	.82	.74	286	250	261	45	43	73	76	1.7	5
	65	98.14	.79	.72	285	256	261	45	42	73	76	2.0	5.5
8	70	101.83	.84	.75	285	255	260	45	43	73	77	2.0	5.5
	75	105.56	.82	.74	285	254	260	45	43	73	77	2.0	5.5
9	80	109.29	.80	.73	285	259	261	45	43	73	77	2.0	5.5
	85	112.97	.86	.76	286	249	260	45	43	73	77	2.0	5.5
10	90	116.74	.85	.75	286	259	261	45	44	74	77	2.1	6
	95	120.57	.84	.75	285	251	261	45	44	74	77	2.1	6
11	100	124.34	.75	.71	285	254	260	45	44	74	77	2.0	5.5

Traverse: i				Traverse:			
Start Time: ~~13:09~~ 14:09	Initial Leak Check: 0.006	cfm@ 17	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 26, 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	127.88	.75	.71	284	259	261	46	43	74	77	1.8	5
12	110	131.44	.65	.66	284	249	261	46	44	74	77	1.8	5
	115	134.74	.62	.64	284	257	261	46	43	74	77	1.6	5
	120	138.01											

Traverse:					Traverse:				
Start Time:	Initial Leak Check:	cfm@	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg	
Finish Time: 16:09	Final Leak Check: 0.002	cfm@ 17	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg	

Project No.: 22230

Operator : RP

Field Data Sheet

Date: April 26, 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet (Trap) °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	38.34	.99	.81	285	259	259	53	43	73	73	2.4	6
	5	42.45	.94	.79	286	252	259	47	47	73	75	2.4	6.5
2	10	46.46	.93	.78	285	254	261	46	46	73	75	2.3	6
	15	50.40	.93	.79	285	260	260	45	43	73	76	2.3	6
3	20	54.38	.90	.77	285	249	260	45	43	73	76	2.3	6
	25	58.29	.92	.78	285	258	260	45	43	73	77	2.2	6
4	30	62.18	.88	.76	285	251	260	45	43	73	77	2.2	6
	35	66.06	.90	.77	286	257	261	45	43	74	77	2.2	6
5	40	69.95	.84	.75	286	255	260	45	43	74	77	2.2	6
	45	73.67	.82	.74	286	255	261	46	42	74	77	2.0	6
6	50	77.38	.71	.69	286	258	260	46	43	74	77	2.0	6
	55	80.78	.72	.69	286	251	261	46	42	74	77	1.7	5.5
7	60	84.24	.73	.70	285	260	261	46	41	74	77	1.8	5.5
	65	87.78	.71	.69	285	249	260	46	42	74	77	1.8	5.5
8	70	91.24	.76	.71	285	258	260	46	42	74	77	1.7	5.5
	75	94.88	.75	.71	285	254	260	46	43	74	77	1.9	6
9	80	98.43	.75	.71	285	253	261	46	43	74	77	1.8	5.5
	85	102.01	.78	.72	284	260	260	46	43	74	78	1.9	6
10	90	105.63	.70	.68	283	249	260	46	42	74	78	1.8	6
	95	109.05	.69	.68	283	257	260	46	42	74	78	1.7	5.5
11	100	112.47	.64	.65	283	256	260	47	43	74	78	1.7	5.5

Traverse: 2			
Start Time: 16:19	Initial Leak Check: 0.002	cfm@ 17	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator: BP

Field Data Sheet

Date: April 26, 2023	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet (Trap) °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	115.78	.65	.66	283	251	260	47	43	74	77	1.6	5.5
12	110	119.08	.62	.64	283	244	259	47	43	75	78	1.6	5.5
	115	122.33	.60	.63	283	251	260	47	43	74	78	1.5	5
	120	125.45											

Traverse: 2				
Start Time:	Initial Leak Check: ~~0.004~~	cfm@	"Hg
Finish Time: 18:19	Final Leak Check: 0.00	cfm@ 17	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator : BP

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date April 27, 2023	
Test Location	APC Outlet No. 3
Operator BP	

Project No.:	22230
Page	1 of 5
Probe No.:	7Series
Meter Box No.:	TEAM #3
Impinger Box No.:	2

Pitot Factor	S1 0.841	
DGMCF	1.002	
Barometric Pressure	29.95	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	671.1	g
WCBDA	12.7	g

Combustion Gas Concentration

Oxygen	9.16	%
Carbon Dioxide	10.56	%
Carbon Monoxide	11.9	ppm

Measuring Device	MII Numbers
Probe / Pitot	R03761
Trendicator	
Control Box	COE20093
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN 22136

Nozzle Measurements	
1	.2505
2	.2515
3	.2510
4	.2510
Average:	.2510

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: April 27, 2023	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet (Trap) °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	26.1	.94	.79	284	256	258	60	44	61	62	2.3	6.5
	5	29.96	.94	.77	285	253	258	47	47	62	62	2.3	7
2	10	33.86	.96	.78	285	253	259	47	48	62	64	2.3	7
	15	37.84	.93	.77	284	260	259	46	48	62	65	2.3	7
3	20	41.72	.90	.76	284	250	259	46	48	63	66	2.2	7
	25	45.50	.91	.76	284	259	258	46	48	63	67	2.1	6.9
4	30	49.36	.84	.74	284	249	259	46	49	64	68	2.2	7
	35	53.04	.84	.74	284	259	258	47	48	65	68	2.0	6.5
5	40	56.73	.81	.72	284	249	258	47	49	65	69	2.0	6.5
	45	60.38	.83	.73	284	259	258	48	48	66	70	2.0	6.5
6	50	64.05	.72	.68	285	250	258	48	46	66	70	2.0	6.5
	55	67.50	.70	.67	285	257	258	48	45	67	71	1.7	6
7	60	70.93	.77	.71	285	254	258	48	44	67	71	1.7	6
	65	74.52	.78	.71	285	254	258	49	45	68	72	1.9	6.5
8	70	78.11	.77	.71	285	258	257	49	46	68	72	1.9	6.5
	75	81.72	.76	.70	286	253	257	49	46	68	72	1.9	6.5
9	80	85.26	.77	.71	286	260	257	49	46	69	73	1.8	6.5
	85	88.87	.76	.71	285	249	257	49	45	69	73	1.9	6.5
10	90	92.41	.82	.73	285	258	257	50	45	70	73	1.8	6.5
	95	96.06	.83	.74	286	251	258	51	47	70	74	2.0	7
11	100	99.79	.77	.71	284	254	257	50	47	70	74	2.0	7

Traverse: 1				
Start Time: 8:06	Initial Leak Check: .005	cfm@	16.5	"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.: 22230

Operator: BP

Field Data Sheet

Date: April 27, 2023	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	103.42	.75	.70	284	257	257	50	45	70	74	1.9	7
12	110	106.97	.74	.70	284	250	257	50	45	70	74	1.8	6.5
	115	110.47	.79	.72	284	258	257	51	45	71	74	1.8	6.5
	120	114.09											

Traverse: 1					
Start Time:	Initial Leak Check:	0.007	cfm@		"Hg
Finish Time: 10:06	Final Leak Check:	0.007	cfm@	17	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator : RP

Field Data Sheet

Date: April 27, 2023	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	14.45	.95	.79	285	259	257	59	41	71	71	2.3	8
	5	18.45	.99	.80	289	251	256	53	48	71	72	2.3	8
2	10	22.48	.92	.78	285	259	257	52	48	71	72	2.4	8.5
	15	26.40	.93	.78	285	249	257	52	47	70	73	2.2	8
3	20	30.30	.92	.78	285	257	257	53	48	71	74	2.2	8
	25	34.24	.97	.80	286	250	258	53	50	71	74	2.3	8.5
4	30	38.28	.87	.76	287	258	258	53	50	71	74	2.4	9
	35	42.11	.89	.76	287	252	258	54	48	71	74	2.1	8
5	40	46.07	.84	.74	287	257	258	54	49	71	74	2.2	8.5
	45	49.72	.83	.74	287	251	257	54	50	72	75	2.0	8
6	50	53.42	.75	.70	288	256	257	54	51	72	75	2.0	8
	55	56.94	.76	.71	288	253	257	54	51	72	75	1.8	7.5
7	60	60.54	.74	.70	288	255	257	54	51	72	76	1.9	8
	65	64.08	.76	.86 .71	288	258	257	53	51	73	76	2.2	9
8	70	67.79	.78	.72	288	251	257	52	52	73	76	1.8	8.5 7.5
	75	71.39	.76	.71	287	259	257	52	47	73	76	1.9	8
9	80	74.99	.79	.72	287	250	257	52	47	73	76	1.9	8
	85	78.67	.82	.74	287	259	257	51	48	73	76	2.0	8
10	90	82.37	.84	.75	287	249	256	51	49	73	76	2.0	8
	95	86.15	.82	.74	287	257	256	51	48	74	77	2.1	8.5
11	100	89.88	.71	.69	285	254	256	51	47	74	77	2.0	8

Traverse: 2					
Start Time: 10:15	Initial Leak Check: 0.007	cfm@ 17	"Hg		
Finish Time:	Final Leak Check:	cfm@	"Hg		

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator: RP

Field Data Sheet

Date: April 27, 2023	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	93.40	.64	.68	284	252	256	52	46	74	77	1.8	7.5
12	110	96.84	.62	.64	284	258	256	51	45	74	77	1.7	7
	115	100.08	.63	.65	284	247	256	52	44	74	77	1.5	7
	120	103.35											

Traverse: 2				Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 12:15	Final Leak Check: 0.006	cfm@ 17	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator: BP

APPENDIX 7

Acid Gas Field Data Sheets
(12 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	M26A
Test Date	April 24 2023
Test Location	APC Outlet No. 1
Operator	TT

Project No.:	22230
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 4
Impinger Box No.:	13

Pitot Factor	.843	
DGMCF	1.002	
Barometric Pressure	29.78	"Hg
Static Pressure	-10.1	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? Yes No

Particulate Gain

Filter	+	mg
Probe	—	mg

Moisture Gain

CWTR	146.9	g
WCBDA	9.6	g

Combustion Gas Concentration

Oxygen	9.1	%
Carbon Dioxide	9.9	%
Carbon Monoxide	16.5	ppm

Measuring Device	MII Numbers
Probe / Pitot S8	B03769
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2530
2	.2530
3	.2525
4	.2525
Average:	.2528

Site Diagram

Notes:

Field Data Sheet

Date: April 24 2023	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	87.56	.75	.70	276	247	240	58	81	60	59	1.65	6
	5	90.80	.75	.70	276	251	240	41	217	60	59	1.75	6
	10	94.16	.75	.70	276	250	248	41	227	60	59	1.8	6.5
	15	97.72	.75	.70	276	250	250	42	230	60	59	1.8	6.5
	20	101.23	.73	.69	276	249	240	43	228	60	59	1.8	6.5
	25	104.83	.72	.69	276	250	249	43	232	60	59	1.75	6
	30	108.33	.70	.68	276	249	249	44	229	60	59	1.75	6.5
	35	111.51	.72	.69	276	249	249	44	229	60	59	1.8	6.5
	40	115.45	.74	.70	277	250	251	45	233	60	60	1.8	6.5
	45	118.97	.77	.71	278	249	246	46	230	60	60	1.8	6.5
	50	122.44	.77	.71	278	250	243	45	230	61	60	1.8	6.5
	55	125.97	.80	.73	279	250	251	45	234	61	60	1.85	6.5
	60	129.62											

Traverse: 1					
Start Time: 9:57	Initial Leak Check: .01	cfm@ 16	"Hg		
Finish Time: 10:57	Final Leak Check: .01	cfm@ 17	"Hg		

Traverse:					
Start Time:	Initial Leak Check:	cfm @	"Hg		
Finish Time:	Final Leak Check:	cfm @	"Hg		

Project No.: 22230

Operator : TT

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	2 M26A
Test Date	Apr 24/23
Test Location	APC Outlet No. 1
Operator	TT

Project No.:	22230
Page	1 of 2
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.002	
Barometric Pressure	29.78	"Hg
Static Pressure	-10.1	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	161.9	g
WCBDA	9.7	g

Combustion Gas Concentration

Oxygen	9.24	%
Carbon Dioxide	9.87	%
Carbon Monoxide	9.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	
Control Box	See
Incline Manometer	Test #4
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: April 24 2023	Plant: Covanta DYEC	Test No.: 2 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
		30.34											
~~1~~	0	~~30.21~~	.85	.75	~~278~~	~~247~~	~~249~~	56	118	61	59	1.8	5
	5	33.84	.85	.75	283	253	246	43	207	60	59	1.9	5
	10	37.36	.84	.74	283	251	244	43	224	60	62	2.0	5
	15	41.02	.81	.73	283	251	245	44	229	61	66	2.0	5
	20	44.65	.83	.74	284	250	252	45	232	61	70	2.1	5
	25	48.38	.83	.75	284	250	242	45	230	62	72	2.1	5
	30	52.08	.83	.75	284	250	249	46	234	62	74	2.2	5
	35	55.92	.83	.75	284	250	247	46	233	63	75	2.15	5
	40	59.74	.81	.74	285	250	245	46	236	63	76	2.05	5
	45	63.46	.81	.74	284	250	249	46	236	64	77	2.05	5
	50	67.18	.81	.74	284	250	247	47	234	64	77	2.05	5
	55	70.89	.83	.75	284	250	243	47	234	64	78	2.1	5
	60	74.68											

Traverse: 2				
Start Time: 11:39	Initial Leak Check: .004	cfm@ 15	"Hg
Finish Time: 12:39	Final Leak Check: .008	cfm@ 16	"Hg

Traverse:				
Start Time:		Initial Leak Check:	cfm @	"Hg
Finish Time:		Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator : TT

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	April 24 2023
Test Location	APC Outlet No. 1
Operator	TT

Project No.:	22230
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 4
Impinger Box No.:	13

Pitot Factor	.843	
DGMCF	1.002	
Barometric Pressure	29.79	"Hg
Static Pressure	-10.1	"H2O
Nozzle Size	.25.28	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	167.8	g
WCBDA	13.7	g

Combustion Gas Concentration

Oxygen	8.85	%
Carbon Dioxide	10.22	%
Carbon Monoxide	13.1	ppm

Measuring Device	MII Numbers
Probe / Pitot S8	B03769
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
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: Apr. 24 2023	Plant: Covanta DYEC	Test No.: 3 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	75.02	.78	.72	281	247	248	59	114	61	60	1.8	5.5
	5	78.62	.80	.73	283	253	249	48	230	61	61	1.85	5.5
	10	82.15	.80	.73	283	251	245	44	230	61	65	1.9	5.5
	15	85.69	.78	.72	283	251	251	43	232	61	69	2.0	6
	20	89.32	.78	.72	283	250	244	43	231	61	72	2.0	6
	25	92.97	.80	.73	284	251	250	44	236	62	74	2.1	6
	30	96.69	.78	.73	284	250	243	45	232	63	75	2.1	6
	35	100.33	.78	.73	284	251	252	45	238	64	76	2.1	6
	40	104.04	.83	.75	284	250	243	46	233	64	77	2.1	6
	45	107.90	.80	.74	284	250	253	47	238	65	78	2.05	6
	50	111.61	.80	.74	285	250	242	49	233	65	78	2.05	6
	55	115.33	.80	.74	285	250	255	51	239	65	79	2.05	6
	60	119.0											

Traverse: 2					
Start Time: 13:42	Initial Leak Check:	.012	cfm@	17	"Hg
Finish Time: 14:42	Final Leak Check:	.013	cfm@	16	"Hg

Traverse:					
Start Time:	Initial Leak Check:		cfm @		"Hg
Finish Time:	Final Leak Check:		cfm @		"Hg

Project No.: 22230

Operator : TT

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	M26A
Test Date	Apr 25/23
Test Location	APC Outlet No. 2
Operator	TT

Project No.:	22230
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 4
Impinger Box No.:	13

Pitot Factor	.843	
DGMCF	1.002	
Barometric Pressure	29.87	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	171.0	g
WCBDA	12.5	g

Combustion Gas Concentration

Oxygen	9.30	%
Carbon Dioxide	10.69	%
Carbon Monoxide	19.3	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot SS	B03769
Trendicator	CoE 2009e
Control Box	CoE 2009e
Incline Manometer	CoE 2009e
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2530
2	.2530
3	.2525
4	.2525
Average:	.2525

Notes:

Field Data Sheet

Date: Nov. 25 2021	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
~~1~~	0	19.32	.72	.69	273	247	244	57	83	58	58	1.8	5.5
	5	22.58	.77	.71	274	251	242	44	222	58	58	1.9	5.5
	10	26.42	.77	.71	275	250	249	42	232	58	60	1.9	5.5
	15	29.97	.77	.71	275	249	245	41	231	58	64	1.95	5.5
	20	33.55	.83	.74	276	250	251	42	235	59	67	2.05	6
	25	37.22	.83	.74	277	249	244	42	234	59	69	2.1	6
	30	40.96	.86	.76	277	250	248	43	238	60	71	2.2	6
	35	44.77	.86	.76	277	250	251	44	239	60	73	2.2	6
	40	48.70	.82	.74	278	250	246	45	238	61	74	2.05	6
	45	52.39	.85	.75	278	250	250	46	237	61	74	2.1	6
	50	56.16	.85	.76	279	250	246	46	238	62	75	2.15	6
	55	59.98	.84	.75	280	250	251	47	239	62	75	2.1	6
	60	63.77											

Traverse:					
Start Time: 7:56	Initial Leak Check:	.004	cfm@	15	"Hg
Finish Time: 9:56	Final Leak Check:	.005	cfm@	16	"Hg

Traverse:					
Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time:		Final Leak Check:		cfm @	"Hg

Project No.: 22230

Operator : TT

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	April 25 2023
Test Location	APC Outlet No. 2
Operator	

Project No.:	22230
Page	1 of 2
Probe No.:	7 series
Meter Box No.:	Team 4
Impinger Box No.:	13

Pitot Factor	.843	
DGMCF	1.002	
Barometric Pressure	29.88	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	172.0	g
WCBDA	9.5	g

Combustion Gas Concentration

Oxygen	9.13	%
Carbon Dioxide	10.95	%
Carbon Monoxide	13.2	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot S	
Trendicator	Set
Control Box	
Incline Manometer	Set 1
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Notes:

Field Data Sheet

Date: April 25 2023	Plant: Covanta DYEC	Test No.: 2 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	64.72	.84	.74	278	247	242	58	81	58	58	2.05	8
	5	68.45	.91	.77	280	252	242	44	197	58	58	2.15	8
	10	72.26	.86	.75	280	251	245	43	256	58	61	2.1	8
	15	76.00	.80	.72	280	250	230	43	294	58	65	1.95	8
	20	79.60	.76	.71	279	251	241	43	294	59	68	1.9	8
	25	83.20	.81	.73	279	251	237	43	210	60	70	2.05	8
	30	86.91	.81	.73	279	251	244	44	220	60	71	2.05	8
	35	90.58	.85	.75	280	251	249	44	295	61	72	2.1	9
	40	94.39	.85	.75	280	251	244	45	295	61	72	2.1	9
	45	98.19	.85	.75	280	252	242	46	301	62	73	2.1	9
	50	101.97	.90	.77	280	252	244	48	301	62	73	2.15	9
	55	105.92	.87	.76	281	252	246	50	304	62	74	2.1	9
	60	109.62											

Traverse: L				
Start Time: 10:28	Initial Leak Check: .008	cfm@ 16	"Hg
Finish Time: 11:28	Final Leak Check: .003	cfm@ 14	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22230

Operator: TT

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	April 25 2023
Test Location	APC Outlet No. 2
Operator	

Project No.:	22230
Page	1 of 2
Probe No.:	
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	.843	
DGMCF	1.002	
Barometric Pressure	29.88	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	156.1	g
WCBDA	129	g

Combustion Gas Concentration

Oxygen	9.19	%
Carbon Dioxide	10.88	%
Carbon Monoxide	15.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	
Control Box	Gec
Incline Manometer	
Comb.Gas.Analyzer	Testo 1
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Site Diagram

Notes:

Field Data Sheet

Date: April 25 2023	Plant: Covanta DYEC	Test No.: 3 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 4	

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	9.99	.79	.71	278	247	270	59	96	60	61	1.9	6
	5	13.61	.79	.72	280	253	272	50	251	60	62	1.95	6
	10	17.24	.83	.74	280	252	261	44	241	60	66	2.05	6
	15	20.98	.83	.74	280	251	250	44	230	60	70	2.05	6
	20	24.72	.82	.74	280	250	246	44	222	61	72	2.05	6
	25	28.45	.79	.73	280	251	247	45	222	61	74	2.0	6
	30	32.13	.79	.73	280	250	247	45	219	62	75	2.0	6
	35	35.81	.81	.74	280	251	249	46	223	63	76	2.05	6
	40	39.53	.78	.72	280	251	243	48	218	63	76	1.95	6
	45	43.17	.78	.72	280	251	250	50	222	63	77	1.95	6
	50	46.85	.74	.71	279	250	243	52	218	64	77	1.9	6
	55	50.52	.74	.71	279	250	251	53	222	64	77	1.9	6
	60	54.01											

Traverse:						
Start Time:	11:55	Initial Leak Check:	.004	cfm@	15	"Hg
Finish Time:	12:55	Final Leak Check:	.002	cfm@	14	"Hg

Traverse:						
Start Time:	/	Initial Leak Check:	/	cfm @	/	"Hg
Finish Time:	/	Final Leak Check:	/	cfm @	/	"Hg

Project No.: 22230

Operator : TT

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	1.017	29.00	50.40	21.40	29.92	1.10	18.8	22.29	0.0223
2	1.017	51.10	77.10	26.00	29.92	1.11	21.0	26.87	0.0269
3	1.017	77.70	102.70	25.00	29.92	1.10	21.7	25.78	0.0258
4	1.017	3.40	28.10	24.70	29.92	1.10	22.0	25.44	0.0254

* Dry at 25°C and 1 atmosphere

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organics Sampling Train
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
1	0.986	55.40	76.50	21.10	29.92	3.40	18.9	21.42	0.0214
2	0.986	76.90	97.30	20.40	29.92	3.40	20.8	20.57	0.0206
3	0.986	97.50	117.60	20.10	29.92	3.40	21.3	20.23	0.0202
4	0.986	18.20	38.20	20.00	29.92	3.40	21.9	20.09	0.0201

* Dry at 25°C and 1 atmosphere

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition: VOLUNTARY		Control Box ID: VOST #5
Test location: APC Outlet No. 1	DGMCF: 1.017		Operator: JAY CROWLEY
Date: APRIL 26, 2023	Barometric Pressure: "Hg		Project No: 22230
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID:	

PBAR 29.92

Test 1 Start Time: 0825	Initial Leak Check NDL @ 22 "Hg		Sample ID: 8A+8B
Test 1 End Time: 0905	Final Leak Check NDL @ 23 "Hg		Lab ID: VJF166-01

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	29.0	124	141	3	18	2.0	4.0
5	34.7	124	141	3	18	1.0	2.0
10	36.80	124	141	3	18	1.1	2.0
15	38.50	124	141	3	18	1.1	2.0
20	41.23	124	142	2	19	1.1	2.0
25	43.30	124	142	2	19	1.1	2.0
30	46.00	124	142	2	19	1.1	2.0
35	47.20	124	142	2	20	1.2	3.5
40	50.40	124	142	2	20	1.2	4.0

PBAR 29.92

Test 2 Start Time: 0911	Initial Leak Check NDL @ 23 "Hg		Sample ID: 9A+9B
Test 2 End Time: 0985	Final Leak Check NDL @ 23 "Hg		Lab ID: VJF241-01

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	51.1	124	141	2	20	1.2	2.0
5	54.0	124	142	2	21	1.1	3.5
10	57.40	124	142	2	21	1.1	4.0
# 15	59.20	124	142	2	21	1.1	4.0
20	62.80	123	142	2	21	1.1	4.0
25	65.9	123	142	2	20	1.1	4.0
30	69.6	124	141	2	23	1.1	4.0
35	73.4	124	142	3	21	1.1	4.0
40	77.1	124	142	3	21	1.1	4.0

LOST POWER @ 15 MIN MARK.

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition: VOLUNTARY		Control Box ID: #5
Test location: APC Outlet No. 1	DGMCF: 1.017		Operator: JAY/CAROLINE
Date: APRIL 26, 2023	Barometric Pressure: "Hg		Project No: 22230
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 12A+12B	

VJF24401

PBAR 29?

Test 3 Start Time: 1000	Initial Leak Check NDL @ 23 "Hg		Sample ID: 10A 10B
Test 3 End Time: 1040	Final Leak Check NDL @ 23 "Hg		Lab ID: VJF24-01

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	77.7	125	142	3	23	1.1	4.0
5	81.35	125	142	3	21	1.1	4.0
10	84.80	125	142	2	21	1.1	4.0
15	88.4	125	142	2	21	1.1	4.0
20	91.80	125	142	2	21	1.1	4.0
25	94.20	125	143	3	21	1.1	4.0
30	97.25	125	143	3	21	1.1	4.0
35	100.00	125	143	3	23	1.1	4.0
40	102.7	125	143	3	23	1.1	4.0

PBAR 29?

Test 4 Start Time: 1045	Initial Leak Check NDL @ 23 "Hg		Sample ID: 11A 11B
Test 4 End Time: 1125	Final Leak Check @ "Hg		Lab ID: VJF24-01

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	3.40	126	143	3	22	1.1	3.0
5	6.70	125	143	3	22	1.1	3.0
10	10.2	125	143	3	22	1.1	3.0
15	13.45	125	143	4	22	1.1	3.0
20	16.80	125	143	4	22	1.1	3.0
25	20.70	125	143	4	22	1.1	3.0
30	22.40	125	143	4	22	1.1	3.0
35	25.35	125	143	4	22	1.1	3.0
40	28.10	125	143	4	22	1.1	3.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: M05498
Test location: APC Outlet No. 2	DGMCF: 0.986		Operator: RM
Date: APR 26/23	Barometric Pressure: "Hg		Project No: 22230
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 5A / 5B	

PBAR 29.92

Test 1 Start Time: 848	Initial Leak Check NDL @ 21 "Hg	Sample ID: 1A/1B	
Test 1 End Time: 928	Final Leak Check NDL @ 17.5 "Hg	Lab ID: VJF159-01	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	55.4	141	140	15	16	3.4	4
5	58.0	143	139	10	18	3.4	5
10	60.8	141	139	9	18	3.4	5
15	63.7	140	138	9	19	3.4	5
20	66.5	142	138	9	19	3.4	6.5
25	69.0	141	139	9	20	3.4	5.5
30	71.3	140	139	9	20	3.4	6
35	73.8	140	139	9	20	3.4	6
40	76.5	141	138	10	20	3.4	6

PBAR 29.92

Test 2 Start Time: 933	Initial Leak Check NDL @ 16 "Hg	Sample ID: 2A/2B	
Test 2 End Time: 1013	Final Leak Check NDL @ 15 "Hg	Lab ID: VJF160-01	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	76.9	140	139	10	20	3.4	4
5	79.5	140	140	16	20	3.4	4
10	82.2	140	140	9	2021	3.4	4
15	84.1	140	140	9	21	3.4	4
20	87.6	141	140	9	21	3.4	4
25	90.0	140	140	9	21	3.4	4
30	92.5	140	140	9	21	3.4	4
35	95.0	140	140	9	21	3.4	4
40	97.3	141	139	9	21	3.4	4

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: M5199
Test location: APC Outlet No. 2	DGMCF: 0.986		Operator: DL
Date: Apr 26/23	Barometric Pressure: "Hg		Project No: 22230
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID:	5A / 5B

PBAR 29.92

Test 3 Start Time: 1019	Initial Leak Check NDL @ 16 "Hg	Sample ID: 3A/3B			
Test 3 End Time: 1059	Final Leak Check NDL @ 15 "Hg	Lab ID: VJF161-01			

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	97.5	141	140	11	20	3.4	5
5	106.3	142	140	11	21	3.4	5
10	102.8	142	140	10	21	3.4	5
15	104.7	141	140	9	21	3.4	5.5
20	107.9	141	140	9	21	3.4	6.5
25	110.3	141	140	9	22	3.4	6.5
30	112.9	140	140	9	22	3.4	6.5
35	115.5	141	140	9	22	3.4	6.5
40	117.6	141	139	9	22	3.4	6.5

PBAR 29.92,

Test 4 Start Time: 1105	Initial Leak Check NDL @ 15 "Hg	Sample ID: 4A/4B			
Test 4 End Time: 1145	Final Leak Check NDL @ 14 "Hg	Lab ID: VJF162-01			

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	18.2	143	140	13	21	3.4	5
5	20.7	142	140	10	22	3.4	5
10	23.2	141	140	9	22	3.4	6
15	25.7	141	140	9	22	3.4	6
20	28.3	141	139	9	22	3.4	6
25	30.7	141	140	9	22	3.4	6
30	32.7	141	140	10	22	3.4	6
35	36.0	141	140	10	22	3.4	6
40	38.2	141	140	10	22	3.4	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	1.017	29.10	59.40	30.30	29.92	1.10	21.4	31.28	0.0313
2	1.017	60.60	98.95	38.35	29.92	1.10	22.1	39.49	0.0395
3	1.017	0.50	36.10	35.60	29.92	1.10	22.0	36.67	0.0367

* Dry at 25°C and 1 atmosphere.

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Aldehydes
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H_2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm^3)*
1	0.986	39.00	68.50	29.50	29.92	3.40	20.8	29.75	0.0298
2	0.986	69.00	100.02	31.02	29.92	3.40	20.6	31.30	0.0313
3	0.986	1.50	31.50	30.00	29.92	3.40	21.2	30.22	0.0302

* 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:	April 26, 2023
Project No.:	22230

Measuring Device	MII Number
Control Module	COE 20018 Vac #5
Barometer	Env Canada

Barometric Pressure:	29.92	"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	29.1	124	141		17	21	1.1	1
5	32.5	123	143		17	21	1.1	1
10	34.4	124	143		16	21	1.1	1
15	36.6	125	142		16	21	1.1	1
20	39.1	125	147		18	21	1.1	1
25	41.7	125	145		15	21	1.1	1
30	44.2	126	143		16	21	1.1	1
35	46.7	125	143		16	21	1.1	1
40	49.05	125	142		16	22	1.1	1
45	51.50	126	143		16	22	1.1	1
50	54.30	126	145		16	22	1.1	1
55	57.0	126	145		16	22	1.1	1
60	59.4	126	148		16	22	1.1	1

Start Time:	1148		
Finish Time:	1248		
Initial Leak Check:	< .01	Lpm @	23" Hg
Final Leak Check:	< .01	Lpm @	23 " Hg

DGMCF:	1.017
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: Jay

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 1
Date:	APRIL 26, 2023
Project No.:	22230

Measuring Device	MII Number
Control Module	COR 2018 Vost #5
Barometer	Env Canada

Barometric Pressure: 29.92 "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	60.6	124	141		16	22	1.1	1
5	64.5	124	144		18	22	1.1	1
10	68.2	124	144		18	22	1.1	1
15	71.4	124	144		18	22	1.1	1
20	75.40	126	143		15	22	1.1	1.
25	78.35	126	143		15	22	1.1	1.
30	80.65	126	143		16	22	1.1	1
35	82.30	126	144		16	22	1.1	1
40	86.40	126	144		16	22	1.1	1
45	89.60	126	144		16	22	1.1	1
50	93.75	126	143		15	22	1.1	1
55	95.90	126	144		16	23	1.1	1
60	98.95	127	143		15	22	1.1	1

Start Time:	1253		
Finish Time:	1353		
Initial Leak Check:	2.01	Lpm @ 29	" Hg
Final Leak Check:		Lpm @	" Hg

DGMCF:	4.017
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: Jay

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 1
Date:	APRIL 26, 2023
Project No.:	22230

Measuring Device	MII Number
Control Module	Vast #5 Cal 2001
Barometer	Env Canada

Barometric Pressure: 29.92 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	0.5	124	141		16	22	1.1	2.0
5	5.0	126	144		17	22	1.1	2.0
10	8.3	126	143		17	22	1.1	2.0
15	11.15	126	143		18	22	1.1	2.0
20	14.1	126	143		18	22	1.1	2.0
25	16.8	126	143		17	22	1.1	2.0
30	19.6	126	142		17	22	1.1	2.0
35	22.3	126	142		17	22	1.1	2.0
40	25.1	124	142		17	22	1.1	2.0
45	27.9	126	142		17	22	1.1	2.0
50	30.55	127	142		17	22	1.1	2.0
55	33.45	127	142		17	22	1.1	2.0
60	36.1	127	142		17	22	1.1	2.0

Start Time:	1350		
Finish Time:	1458		
Initial Leak Check:	<.01	Lpm @ 23	" Hg
Final Leak Check:		Lpm @	" Hg

DGMCF:	1.017
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.:	1
Test location:	APC Outlet No. 2
Date:	APRIL 26 2023
Project No.:	22230

Measuring Device	MII Number
Control Module	M0598
Barometer	Env Canada

Barometric Pressure:	29.92	"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	39.0	138	140		18	20	3.4	2
5	41.4	139	140		16	20	3.4	2
10	44.0	139	140		15	20	3.4	2
15	46.5	139	140		15	21	3.4	2
20	49.0	139	140		15	21	3.4	2
25	51.5	139	140		15	21	3.4	2
30	53.1	139	140		14	21	3.4	2
35	55.5	139	139		14	21	3.4	2
40	58.0	140	140		13	21	3.4	2
45	60.4	139	140		13	21	3.4	2
50	62.9	139	141		13	21	3.4	2
55	65.7	140	140		14	21	3.4	2
60	68.5	140	140		14	21	3.4	2

Start Time:	12:16		
Finish Time:	13:16		
Initial Leak Check:	<.01	Lpm @ 10	" Hg
Final Leak Check:	<.01	Lpm @ 9	" Hg

DGMCF:	0.986
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: RM

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 2
Date:	April 26, 2023
Project No.:	22230

Measuring Device	MII Number
Control Module	M05498
Barometer	Env Canada

Barometric Pressure:	29.92	"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	69.0	139	140		17	19	3.4	2
5	71.7	140	140		10	20	3.4	2
10	74.6	140	140		10	20	3.4	2
15	77.1	140	140		10	20	3.4	2
20	79.6	140	140		10	21	3.4	2
25	81.9	141	139		10	21	3.4	2
30	84.1	140	140		10	21	3.4	2
35	86.9	139	140		11	21	3.4	2
40	89.6	139	140		11	21	3.4	2
45	92.4	139	146		11	21	3.4	2
50	95.0	140	141		11	21	3.4	2
55	97.7	140	141		11	21	3.4	2
60	100.02	140	140		11	21	3.4	2
		~~139~~	~~139~~			~~21~~	~~3.4~~	~~2~~

Start Time:	1354		
Finish Time:	1454		
Initial Leak Check:	<.01	Lpm @ 10	" Hg
Final Leak Check:	<.01	Lpm @ 10	" Hg

DGMCF:	986
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	3.4

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. 2
Date:	April 26, 2023
Project No.:	22230

Measuring Device	MII Number
Control Module	M05498
Barometer	Env Canada

Barometric Pressure:	29.92	"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	1.5	140	140		10	21	3.4	2
5	4.0	140	139		10	21	3.4	2
10	6.4	139	139		10	21	3.4	2
15	9.0	140	139		9	21	3.4	2
20	11.5	140	140		9	21	3.4	2
25	14.0	140	139		9	21	3.4	2
30	16.5	140	139		9	21	3.4	2
35	19.1	140	139		9	21	3.4	2
40	20.9	140	140		9	21	3.4	2
45	23.5	140	139		9	21	3.4	2
50	26.3	140	139		9	21	3.4	2
55	28.7	140	140		9	22	3.4	2
60	31.5	140	140		9	22	3.4	2

Start Time:	1457		
Finish Time:	1557		
Initial Leak Check:	<.01	Lpm @ 10	" Hg
Final Leak Check:	<.01	Lpm @ 10	" Hg

DGMCF:	0.9960
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	3.4

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: DLL

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: 22230
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22230-J2903

L2750250-COFC

	ORTECH Sample ID 23-22230-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
1	1		#1 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
	2				Probe Rinse Nitric	0.1N Nitric	Metals
	3				Filter	Particulate	Particulate & Metals
	4				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	5				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	6				Impinger 5-6 Rinse	8N HCl	Mercury
2	7		#1 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
	8				Probe Rinse Nitric	0.1N Nitric	Metals
	9				Filter	Particulate	Particulate & Metals
	10				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	11				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	12				Impinger 5-6 Rinse	8N HCl	Mercury
3	13		#1 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
	14				Probe Rinse Nitric	0.1N Nitric	Metals
	15				Filter	Particulate	Particulate & Metals
	16				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	17				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	18				Impinger 5-6 Rinse	8N HCl	Mercury
4	19		Blank 1	Blank 1	Probe Rinse Acetone	Acetone	Particulate & Metals
	20				Probe Rinse Nitric	0.1N Nitric	Metals
	21				Filter	Particulate	Particulate & Metals
	22				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	23				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	24				Impinger 5-6 Rinse	8N HCl	Mercury

ORTECH Consulting Inc. - Sample Log
Particulate and Metals Samples
Covanta

Client: Covanta
Project Number: 22230
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22230-J2903

L2750250-COFC

	ORTECH Sample ID 23-22230-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
5	31		#2 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
	32				Probe Rinse Nitric	0.1N Nitric	Metals
	33				Filter	Particulate	Particulate & Metals
	34				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	35				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	36				Impinger 5-6 Rinse	8N HCl	Mercury
6	37		#2 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
	38				Probe Rinse Nitric	0.1N Nitric	Metals
	39				Filter	Particulate	Particulate & Metals
	40				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	41				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	42				Impinger 5-6 Rinse	8N HCl	Mercury
7	49		#2 APC Outlet	4	Probe Rinse Acetone	Acetone	Particulate & Metals
	50				Probe Rinse Nitric	0.1N Nitric	Metals
	51				Filter	Particulate	Particulate & Metals
	52				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	53				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	54				Impinger 5-6 Rinse	8N HCl	Mercury
8	43		Blank 2	Blank 2	Probe Rinse Acetone	Acetone	Particulate & Metals
	44				Probe Rinse Nitric	0.1N Nitric	Metals
	45				Filter	Particulate	Particulate & Metals
	46				Impinger 1-4 Solution	Nitric/Peroxide	Metals
	47				Impinger 5-6 Solution	Acid. KMnO4	Mercury
	48				Impinger 5-6 Rinse	8N HCl	Mercury

Relinquished By: _____ Date: _____

Relinquished To: AARON BURTON Date: 27-Apr-2023 9:10

7.5°C

ORTECH Consulting Inc. - Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 22230
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22230-J2903

ORTECH Sample ID 23-22230-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis	
1	25-Apr-23	1	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	1
2				PM 2.5 cyclone Rinse	Acetone	Particulate	2
3				PM 2.5 exit & connectors	Acetone	Particulate	3
4				Back up filter	filter	Particulate	4
5				Impinger Soln & rinse	Water	Particulate	
6				Secondary Filter	Filter	Particulate*	5
7				Impinger Rinse	Acetone & Hexane	Particulate	
8		2	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	6
9				PM 2.5 cyclone Rinse	Acetone	Particulate	7
10				PM 2.5 exit & connectors	Acetone	Particulate	8
11				Back up filter	filter	Particulate	9
12				Impinger Soln & rinse	Water	Particulate	
13				Secondary Filter	Filter	Particulate*	10
14				Impinger Rinse	Acetone & Hexane	Particulate	
15		3	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	11
16				PM 2.5 cyclone Rinse	Acetone	Particulate	12
17				PM 2.5 exit & connectors	Acetone	Particulate	13
18				Back up filter	filter	Particulate	14
19				Impinger Soln & rinse	Water	Particulate	
20				Secondary Filter	Filter	Particulate*	15
21				Impinger Rinse	Acetone & Hexane	Particulate	
22	24-Apr-23	1	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	16
23				PM 2.5 cyclone Rinse	Acetone	Particulate	17
24				PM 2.5 exit & connectors	Acetone	Particulate	18
25				Back up filter	filter	Particulate	19
26				Impinger Soln & rinse	Water	Particulate	
27				Secondary Filter	Filter	Particulate*	20
28				Impinger Rinse	Acetone & Hexane	Particulate	
29		2	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	21
30				PM 2.5 cyclone Rinse	Acetone	Particulate	22
31				PM 2.5 exit & connectors	Acetone	Particulate	23
32				Back up filter	Filter	Particulate	24
33				Impinger Soln & rinse	Water	Particulate	
34				Secondary Filter	Filter	Particulate*	25
35				Impinger Rinse	Acetone & Hexane	Particulate	

L2750261-COFC

ORTECH Consulting Inc. - Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 22230
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22230-J2903

ORTECH Sample ID 23-22230-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis	
36	Apr 24/23	3	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	26
37				PM 2.5 cyclone Rinse	Acetone	Particulate	27
38				PM 2.5 exit & connectors	Acetone	Particulate	28
39				Back up filter	Filter	Particulate	29
40				Impinger Soln & rinse	Water	Particulate	
41				Secondary Filter	Filter	Particulate*	30
42				Impinger Rinse	Acetone & Hexane	Particulate	
43	26-Apr-23	**Blank**	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	31
44				PM 2.5 cyclone Rinse	Acetone	Particulate	32
45				PM 2.5 exit & connectors	Acetone	Particulate	33
46				Back up filter	filter	Particulate	34
47				Impinger Soln & rinse	Water	Particulate	
48				Secondary Filter	Filter	Particulate*	35
49				Impinger Rinse	Acetone & Hexane	Particulate	
50		**Blank**	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate	36
51				PM 2.5 cyclone Rinse	Acetone	Particulate	37
52				PM 2.5 exit & connectors	Acetone	Particulate	38
53				Back up filter	Filter	Particulate	39
54				Impinger Soln & rinse	Water	Particulate	
55				Secondary Filter	Filter	Particulate*	40
56				Impinger Rinse	Acetone & Hexane	Particulate	

Note: *To be included in condensible particulate analysis as per US EPA Method 202.

Relinquished To: AARON BURTON Date: 27-Apr-2023 9:10

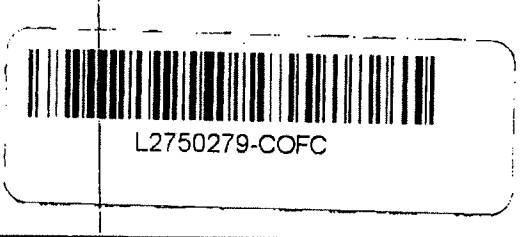
7.5°C

Relinquished By: Date:

L2750261-COFC

ORTECH Consulting Inc. - Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 22230
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: 22230-J2903



	ORTECH Sample ID 23-22230 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
1	1	26-Apr-23	Test 1 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
	2		Test 1 Filter		Particulate	SVOC
	3		Test 1 XAD-II Trap		N.A.	SVOC
	4		Test 1 Impinger Solution		Ethylene Glycol	SVOC
	5		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
2	6	26-Apr-23	Test 2 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
	7		Test 2 Filter		Particulate	SVOC
	8		Test 2 XAD-II Trap		N.A.	SVOC
	9		Test 2 Impinger Solution		Ethylene Glycol	SVOC
	10		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
3	11	27-Apr-23	Test 3 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
	12		Test 3 Filter		Particulate	SVOC
	13		Test 3 XAD-II Trap		N.A.	SVOC
	14		Test 3 Impinger Solution		Ethylene Glycol	SVOC
	15		Test 3 Impinger Rinse		Hexane/Acetone	SVOC
4	16	27-Apr-23	Blank 1 Probe Rinse	Blank	Hexane/Acetone	SVOC
	17		Blank 1 Filter		Particulate	SVOC
	18		Blank 1 XAD-II Trap		N.A.	SVOC
	19		Blank 1 Impinger Solution		Ethylene Glycol	SVOC
	20		Blank 1 Impinger Rinse		Hexane/Acetone	SVOC

Refer to letter dated March 23, 2023 for lists of analytes.

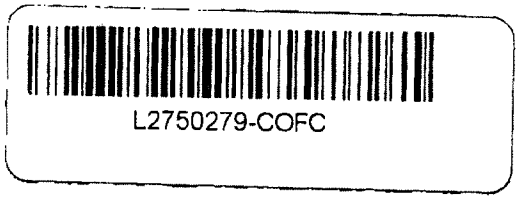
13:00 5.7°C

Relinquished To: AARON BURTON Date: 28-Apr-2023

Relinquished By: Date: Apr 28/23

ORTECH Consulting Inc. - Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 22230
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: 22230-J2903



ORTECH Sample ID 23-22230 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
21	26-Apr-23	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	26-Apr-23	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	27-Apr-23	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	27-Apr-23	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

5
6
7
8

Refer to letter dated March 23, 2023 for lists of analytes.

5.7°C 13:00

Relinquished To: Sara Burton — Date: 28-Apr-2023

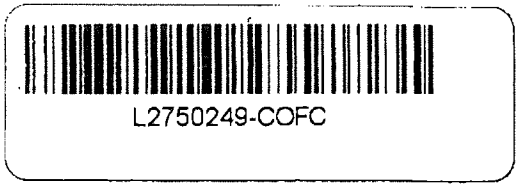
Relinquished By: — Date: Apr 28/23

ORTECH Consulting Inc. - Sample Log

Acid Gases

Covanta

Client: Covanta
Job/Report Number: 22230
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22230-J22903



ORTECH Sample ID 23-22230-M26A-	Sample Date	Location	Sample Description	Media	Initial Volume(ml)	Sample Analysis
1	24-Apr-23	APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	HCl, HF & Ammonia
2	↓	APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	HCl, HF & Ammonia
3	↓	APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	HCl, HF & Ammonia
4	25-Apr-23	APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	HCl, HF & Ammonia
5	↓	APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	HCl, HF & Ammonia
6	↓	APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	HCl, HF & Ammonia
Blank 1	24-Apr-23	APC # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	HCl, HF & Ammonia
Blank 2	25-Apr-23	APC # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By: _____ Date: _____

Relinquished To: AARON BURTON Date: 27-Apr-2023 9:10

7.5°C

ORTECH Consulting Inc. - Sample Log
VOCs

Client: Covanta
Project Number: 22230
Received By: C Belore
Job Assigned To: BV Labs
Quote / PO : 22230-J2904

Test Location	Test Number	ORTECH Sample ID 23-22230-VOST-	Sample Date	Sample Description	Sample Analysis
~~#1~~ APC Outlet #2	1	1	Apr 26/23	Tenax and Tenax/Charcoal	VOCs
	2	2		Tenax and Tenax/Charcoal	VOCs
	3	3		Tenax and Tenax/Charcoal	VOCs
	4	4		Tenax and Tenax/Charcoal	archive
	Field Blank	5		Tenax and Tenax/Charcoal	VOCs
~~#2~~ APC Outlet #1	1	8	Apr 28/23	Tenax and Tenax/Charcoal	VOCs
	2	9		Tenax and Tenax/Charcoal	archive
	3	10		Tenax and Tenax/Charcoal	VOCs
	4	11		Tenax and Tenax/Charcoal	VOCs
	Trip Blank	15		Tenax and Tenax/Charcoal	VOCs

Refer to attached for lists of analytes.

Custody Relinquished by: Brayden Pacheco Date: April 28, 2023

Custody Received by: ACM Date: 2023/04/28 13:45
9.8/9.6/9.9°c

ORTECH Consulting Inc. - Recovery & Sample Log
NCASI Method ISS/FP-A105.01

Client: Covanata DYEC
Job/Report Number: 22230
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22230-J2903

L2750278-COFC

Test Number	Test Location	ORTECH Sample ID 23-22230-	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	112.0	162.4	163.2	176.0	181.2
2	APC Outlet #1	ALD-2		ALD-2	111.7	158.4	161.0	179.2	190.0
3	APC Outlet #1	ALD-3		ALD-3	112.5	162.5	165.8	192.0	201.9
Blank 1	APC Outlet #1	Blank 1		ALD-4	111.9	160.8	160.7	181.3	190.9
1	APC Outlet #2	ALD-5		ALD-5	112.0	161.1	161.4	171.4	182.2
2	APC Outlet #2	ALD-6		ALD-6	113.0	161.6	163.7	179.7	189.7
3	APC Outlet #2	ALD-7		ALD-7	111.7	165.6	162.6	171.6	184.0
Blank 2	APC Outlet #2	Blank 2		ALD-8	111.9	165.6	165.3	177.1	189.6
				~~ALD-9~~	~~111.9~~	~~162.0~~			
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				~~ALD-10~~	~~111.0~~	~~161.0~~			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: _____ Date: Apr 28/23

Relinquished to: AARON BULTAS Date: 28-Apr-2023 13:00

5.7°C

APPENDIX 11

Particulate and Metals Train Recovery Data Sheets
(9 pages)

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	22230
Date:	APR 24/23
Test No.:	1
Test Location:	UNIT 1

Nozzle, Probe Liner, Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	375.5
Total TS1:	93.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.5
After 0.1N HNO_3 Rinse:	434.0
Total TS2:	151.5

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: [illegible] 1004

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	23-22230-PM-
TS1 (Probe Rinse-Acetone)	1
TS2 (Probe Rinse-0.1N HNO_3)	2
TS3 (Filter)	3
TS4 (Impinger 1-4 Sol'n-HNO_3)	4
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	5
TS5-B (Impinger 5,6 Rinse-HCl)	6

Train Loaded By: DT
Train Recovered By: DT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty

Empty Wt:	607.7
Final Wt:	736.3
1 Gain:	128.6
Colour:	clear

Impinger #2 HNO_3/H_2O_2

Empty Wt:	640.0
Initial Wt:	747.2
Final Wt:	907.3
2 Gain:	160.1
Colour:	clear

Impinger #3 HNO_3/H_2O_2

Empty Wt:	652.3
Initial Wt:	759.7
Final Wt:	897.0
3 Gain:	137.3
Colour:	clear

Impinger #4 Empty

Empty Wt:	599.7
Final Wt:	604.0
4 Gain:	4.3
Colour:	clear

CONTAINER TS4 WEIGHTS

Empty Wt:	409.0
w/ Imp. 1-4 Soln:	1049.9
After HNO_3 Rinse:	1175.5
Total TS4:	766.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$

Empty Wt:	678.7
Initial Wt:	795.0
Final Wt:	804.7
5 Gain:	9.7
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$

Empty Wt:	617.2
Initial Wt:	731.2
Final Wt:	736.3
6 Gain:	5.1
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A

Empty Wt:	409.0
With Imp. 5&6 Soln:	650.5
After $KMnO_4$ Rinse:	765.2
After100g H_2O Rinse:	865.6
Total TS5-A:	456.6

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B

Empty Wt:	282.5
With 150 mL DI H_2O:	732.5
After HCl Rinse:	772.9
After DI H_2O Rinse:	626.5
Total TS5-B:	344.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	445.1
WCBDA= 7:	20.0

Impinger 7

Impinger #7 Silica Gel

Initial Wt:	976.0
Final Wt:	996.0
7 Gain:	20.0

Impinger Box ID: 1

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: Apr 24/23
Test No.: 2
Test Location: Unit 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	376.0
Total TS1:	94.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.0
After 0.1N HNO_3 Rinse:	432.4
Total TS2:	149.4

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: QC 10078

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	23-22230-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:

Impingers 1, 2, 3, and 4

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	614.3
	Final Wt:	794.1
1	Gain:	179.8
	Colour:	clear

	Impinger #2 HNO_3/H_2O_2	
	Empty Wt:	650.5
	Initial Wt:	753.5
	Final Wt:	935.2
2	Gain:	181.7
	Colour:	clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	545.5
	Initial Wt:	656.5
	Final Wt:	728.8
3	Gain:	72.3
	Colour:	clear

	Impinger #4 Empty	
	Empty Wt:	476.5
	Final Wt:	478.5
4	Gain:	2.0
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	409.0
w/ Imp. 1-4 Soln:	1054.0
After HNO_3 Rinse:	1160.0
Total TS4:	751.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

	Impinger #5 $KMnO_4/H_2SO_4$	
	Empty Wt:	651.0
	Initial Wt:	765.5
	Final Wt:	774.0
5	Gain:	8.5
	Colour:	purple

	Impinger # 6 $KMnO_4/H_2SO_4$	
	Empty Wt:	657.8
	Initial Wt:	776.5
	Final Wt:	782.9
6	Gain:	6.4
	Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A

Empty Wt:	408.8
With Imp. 5&6 Soln:	647.1
After $KMnO_4$ Rinse:	761.7
After100g H_2O Rinse:	865.1
Total TS5-A:	756.3

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B

Empty Wt:	283.3
With 150 mL DI H_2O:	434.0
After HCl Rinse:	482.8
After DI H_2O Rinse:	627.0
Total TS5-B:	343.7

MARK FLUID LEVEL
SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS54- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 450.7

WCBDA= 7: 24.1

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	932.5
	Final Wt:	956.6
7	Gain:	24.1

Impinger Box ID: 16

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: Apr 25/23
Test No.: 3
Test Location: Unit 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	202.0
After Act. Rinse:	322.8
Total TS1:	120.8

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	205.0
After 0.1N HNO_3 Rinse:	420.9
Total TS2:	215.9

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 221051

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	23-22230-PM-
TS1 (Probe Rinse-Acetone)	13
TS2 (Probe Rinse-0.1N HNO_3)	14
TS3 (Filter)	15
TS4 (Impinger 1-4 Sol'n-HNO_3)	16
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	17
TS5-B (Impinger 5,6 Rinse-HCl)	18

Train Loaded By:
Train Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	606.8
	Final Wt:	744.8
1	Gain:	138.0
	Colour:	clear

	Impinger #2 HNO_3/H_2O_2	
	Empty Wt:	640.5
	Initial Wt:	744.0
	Final Wt:	915.0
2	Gain:	171.0
	Colour:	clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	651.8
	Initial Wt:	764.3
	Final Wt:	907.3
3	Gain:	143.0
	Colour:	clear

	Impinger #4 Empty	
	Empty Wt:	599.5
	Final Wt:	675.7
4	Gain:	76.2
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	407.0
w/ Imp. 1-4 Soln:	1143.6
After HNO_3 Rinse:	1242.0
Total TS4:	835.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

	Impinger #5 $KMnO_4/H_2SO_4$	
	Empty Wt:	678.7
	Initial Wt:	783.0
	Final Wt:	802.3
5	Gain:	19.3
	Colour:	purple

	Impinger # 6 $KMnO_4/H_2SO_4$	
	Empty Wt:	617.3
	Initial Wt:	731.0
	Final Wt:	747.3
6	Gain:	16.3
	Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A

Empty Wt:	408.0
With Imp. 5&6 Soln:	656.0
After $KMnO_4$ Rinse:	767.6
After100g H_2O Rinse:	870.0
Total TS5-A:	462.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B

Empty Wt:	282.3
With 150 mL DI H_2O:	432.8
After HCl Rinse:	490.0
After DI H_2O Rinse:	600.8
Total TS5-B:	318.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 563.8

WCBDA= 7: 29.7

Impinger 7

	Impinger #7 Silica Gel	
	Initial Wt:	972.3
	Final Wt:	1002.0
7	Gain:	29.7

Impinger Box ID: il

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	22230
Date:	APR 25/23
Test No.:	1
Test Location:	Unit 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.6
After Act. Rinse:	438.6
Total TS1:	156.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.0
After 0.1N HNO_3 Rinse:	453.5
Total TS2:	171.5

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: QZ-10079

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

GLASS on FILTER

SAMPLE IDENTIFICATION	23-22230-PM-
TS1 (Probe Rinse-Acetone)	2
TS2 (Probe Rinse-0.1N HNO_3)	5
TS3 (Filter)	6
TS4 (Impinger 1-4 Sol'n-HNO_3)	4
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	7
TS5-B (Impinger 5,6 Rinse-HCl)	8

Train Loaded By:
Train Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty		
Empty Wt:	607.7	
Final Wt:	716.0	
1 Gain:	108.3	
Colour:	clear	

Impinger #2 HNO_3/H_2O_2		
Empty Wt:	640.0	
Initial Wt:	746.5	
Final Wt:	906.0	
2 Gain:	159.5	
Colour:	clear	

Impinger #3 HNO_3/H_2O_2		
Empty Wt:	652.5	
Initial Wt:	764.5	
Final Wt:	933.3	
3 Gain:	168.8	
Colour:	clear	

Impinger #4 Empty		
Empty Wt:	599.7	
Final Wt:	625.5	
4 Gain:	~~496~~	25.8
Colour:	clear	

CONTAINER TS4 WEIGHTS	
Empty Wt:	409.5
w/ Imp. 1-4 Soln:	1085.8
After HNO_3 Rinse:	1180.0
Total TS4:	771.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$		
Empty Wt:	678.7	
Initial Wt:	793.6	
Final Wt:	806.1	
5 Gain:	12.5	
Colour:	Purple	

Impinger # 6 $KMnO_4/H_2SO_4$		
Empty Wt:	617.3	
Initial Wt:	730.8	
Final Wt:	736.3	
6 Gain:	5.5	
Colour:	Purple	

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A

Empty Wt:	404.7	
With Imp. 5&6 Soln:	670.6	
After $KMnO_4$ Rinse:	762.0	7
After100g H_2O Rinse:	862.2	
Total TS5-A:	457.5	

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B

Empty Wt:	282.7
With 150 mL DI H_2O:	434.5
After HCl Rinse:	484.8
After DI H_2O Rinse:	641.5
Total TS5-B:	358.8

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel		
Initial Wt:	996.0	
Final Wt:	1017.2	
Gain:	21.2	

Impinger Box ID: 11

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	430.4
WCBDA= 7:	21.2

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: APR 25/23
Test No.: 2
Test Location: Unit 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	410.6
Total TS1:	128.6

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.0
After 0.1N HNO_3 Rinse:	383.0
Total TS2:	100.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: Q710050

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	23-22230-PM-
TS1 (Probe Rinse-Acetone)	31
TS2 (Probe Rinse-0.1N HNO_3)	32
TS3 (Filter)	33
TS4 (Impinger 1-4 Sol'n-HNO_3)	34
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	35
TS5-B (Impinger 5,6 Rinse-HCl)	36

Train Loaded By:
Train Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	614.0
Final Wt:	~~754.7~~ 874.0
1 Gain:	260.0
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	649.0
Initial Wt:	759.4
Final Wt:	913.0
2 Gain:	153.6
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	543.5
Initial Wt:	648.0
Final Wt:	~~682~~ 682.5
3 Gain:	34.5
Colour:	clear

Impinger #4 Empty	
Empty Wt:	476.0
Final Wt:	477.2
4 Gain:	1.2
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	408.0
w/ Imp. 1-4 Soln:	1063.8
After HNO_3 Rinse:	1158.5
Total TS4:	750.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	659.0
Initial Wt:	771.0
Final Wt:	777.2
5 Gain:	6.2
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	657.0
Initial Wt:	769.3
Final Wt:	774.5
6 Gain:	5.2
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A

Empty Wt:	408.0
With Imp. 5&6 Soln:	677.7
After $KMnO_4$ Rinse:	745.0
After100g H_2O Rinse:	853.0
Total TS5-A:	445.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B

Empty Wt:	282.5
With 150 mL DI H_2O:	437.3
After HCl Rinse:	490.5
After DI H_2O Rinse:	605.0
Total TS5-B:	322.5

MARK FLUID LEVEL
SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 460.7

WCBDA= 7: 21.0

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	956.5
Final Wt:	977.5
7 Gain:	21.0

Impinger Box ID: 16

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: Apr 25/23
Test No.: 3
Test Location: unit 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	380.5
Total TS1:	99.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.5
After 0.1N HNO_3 Rinse:	405.8
Total TS2:	122.3

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 82100524

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	23-22230-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:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	607.3
Final Wt:	821.0
1 Gain:	213.7
Colour:	Clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	643.5
Initial Wt:	753.7
Final Wt:	904.6
2 Gain:	150.9
Colour:	Clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	667.3
Initial Wt:	774.7
Final Wt:	890.5
3 Gain:	115.8
Colour:	Clear

Impinger #4 Empty	
Empty Wt:	575.0
Final Wt:	615.0
4 Gain:	40
Colour:	Clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	408.5
w/ Imp. 1-4 Soln:	1135.8
After HNO_3 Rinse:	1276.0
Total TS4:	867.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	678.5
Initial Wt:	762.0
Final Wt:	771.3
5 Gain:	9.3
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	690.3
Initial Wt:	802.5
Final Wt:	806.7
6 Gain:	4.2
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	409.0
With Imp. 5&6 Soln:	642.9
After $KMnO_4$ Rinse:	759.7
After100g H_2O Rinse:	864.5
Total TS5-A:	455.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.0
With 150 mL DI H_2O:	433.5
After HCl Rinse:	496.2
After DI H_2O Rinse:	630.0
Total TS5-B:	347.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 533.4

WCBDA= 7: 22.5

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	930.0
Final Wt:	952.5
7 Gain:	22.5

Impinger Box ID: 9

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: Apr 26/23
Test No.: 4
Test Location: Unit 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	232.0
After Act. Rinse:	391.0
Total TS1:	159.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.0
After 0.1N HNO_3 Rinse:	623.0
Total TS2:	340.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: B7 9957

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	614.0
Final Wt:	846.5
1 Gain:	232.5
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	649.0
Initial Wt:	748.0
Final Wt:	950.5
2 Gain:	202.5
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	544.7
Initial Wt:	656.5
Final Wt:	743.2
3 Gain:	87.7
Colour:	clear

Impinger #4 Empty	
Empty Wt:	476.0
Final Wt:	480.5
4 Gain:	4.5
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	405.5
w/ Imp. 1-4 Soln:	1124.5
After HNO_3 Rinse:	1367.8
Total TS4:	962.3

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	659.0
Initial Wt:	774.3
Final Wt:	782.4
5 Gain:	8.1
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	656.5
Initial Wt:	668.8
Final Wt:	671.2
6 Gain:	2.4
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A

Empty Wt:	405.0
With Imp. 5&6 Soln:	854.5
After $KMnO_4$ Rinse:	743.0
After100g H_2O Rinse:	852.5
Total TS5-A:	447.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B

Empty Wt:	281.8
With 150 mL DI H_2O:	432.3
After HCl Rinse:	468.6
After DI H_2O Rinse:	587.2
Total TS5-B:	305.4

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	939.0
Final Wt:	962.5
7 Gain:	23.5

Impinger Box ID: 16

SAMPLE IDENTIFICATION	23-22230-PM-
TS1 (Probe Rinse-Acetone)	49
TS2 (Probe Rinse-0.1N HNO_3)	50
TS3 (Filter)	51
TS4 (Impinger 1-4 Sol'n-HNO_3)	52
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	53
TS5-B (Impinger 5,6 Rinse-HCl)	54

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 537.7

WCBDA= 7: 23.5

Train Loaded By:
Train Recovered By:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: May 26/23
Test No.:
Test Location: Blank

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	382.2
After Act. Rinse:	386.2
Total TS1:	402.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.5
After 0.1N HNO_3 Rinse:	431.5
Total TS2:	450.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 2798889

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	23-22230-PM-
TS1 (Probe Rinse-Acetone)	19
TS2 (Probe Rinse-0.1N HNO_3)	20
TS3 (Filter)	21
TS4 (Impinger 1-4 Sol'n-HNO_3)	22
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	23
TS5-B (Impinger 5,6 Rinse-HCl)	24

Train Loaded By:
Train Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Empty	
Empty Wt:	
Final Wt:	
4 Gain:	
Colour:	

CONTAINER TS4 WEIGHTS	
Empty Wt:	409.0
w/ Imp. 1-4 Soln:	620.5
After HNO_3 Rinse:	721.0
Total TS4:	312.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
5 Gain:	
Colour:	

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	407.5
With Imp. 5&6 Soln:	635.5
After $KMnO_4$ Rinse:	760.0
After100g H_2O Rinse:	850.0
Total TS5-A:	442.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	289.0
With 150 mL DI H_2O:	433.5
After HCl Rinse:	436.5
After DI H_2O Rinse:	609.0
Total TS5-B:	274.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:

WCBDA= 7:

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: APR 26/23
Test No.:
Test Location: BLANK 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.3
After Act. Rinse:	388.5
Total TS1:	106.2

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.2
After 0.1N HNO_3 Rinse:	394.0
Total TS2:	110.8

MARK FLUID LEVEL
SEAL AND LABEL TS2

Filter

Filter ID: 029689

CONTAINER TS3

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Empty	
Empty Wt:	
Final Wt:	
4 Gain:	
Colour:	

CONTAINER TS4 WEIGHTS	
Empty Wt:	408.0
w/ Imp. 1-4 Soln:	623.3
After HNO_3 Rinse:	734.5
Total TS4:	326.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
5 Gain:	
Colour:	

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	408.5
With Imp. 5&6 Soln:	635.0
After $KMnO_4$ Rinse:	750.0
After100g H_2O Rinse:	857.0
Total TS5-A:	450.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.0
With 150 mL DI H_2O:	432.0
After HCl Rinse:	486.0
After DI H_2O Rinse:	618.0
Total TS5-B:	336.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

SAMPLE IDENTIFICATION	23-22230-PM-
TS1 (Probe Rinse-Acetone)	43
TS2 (Probe Rinse-0.1N HNO_3)	44
TS3 (Filter)	45
TS4 (Impinger 1-4 Sol'n-HNO_3)	46
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	47
TS5-B (Impinger 5,6 Rinse-HCl)	48

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 1000 ml Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:

WCBDA= 7:

Train Loaded By:
Train Recovered By: DF

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 Consulting Inc.
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2750249		Mlssissauga, ON L5J 2Y4
Date of Report	4-May-23		Canada
Date of Sample Receipt	27-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS:

Cl as HCl Anion Analyzed via Ion Chromatography USEPA Method 26/26A (GN 2-May-23)
F as HF Anion Analyzed via Ion Chromatography USEPA Method 26/26A (GN 2-May-23)
Ammonia, Total (as NH_3) via Ion Chromatography USEPA Method CTM-027 (GN 28-Apr-23)

LOR = Limit of Reporting
MB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: 90-110%)
MS = Matrix Spike Sample (limits: 90-110%, NH_3: 85-115%)
RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)

Certified by: L. Wrona
Lynne Wrona
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	23-22230-M26A-1 APC OUTLET #1	23-22230-M26A-2 APC OUTLET #1	23-22230-M26A-3 APC OUTLET #1	23-22230-M26A-4 APC OUTLET #2	23-22230-M26A-5 APC OUTLET #2
ALS Sample ID	L2750249-1	L2750249-2	L2750249-3	L2750249-4	L2750249-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	24-Apr-23	24-Apr-23	24-Apr-23	25-Apr-23	25-Apr-23
Date of Receipt	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Ion Chromatography Analysis					
USEPA Method 26/26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.145	<0.163	<0.161	<0.168	<0.158
Analysis 1	<0.145	<0.163	<0.161	<0.168	<0.158
Analysis 2	<0.145	<0.163	<0.161	<0.168	<0.158
Total Cl^- as HCl (ave)	5.99	6.57	5.70	4.59	5.00
Analysis 1	6.01	6.57	5.70	4.59	5.01
Analysis 2	5.97	6.57	5.70	4.59	5.00
Ion Chromatography Analysis					
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**mg**	**mg**
Total Ammonia as NH_3	1.09	1.20	1.13	1.23	<0.434

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Sample Analysis Summary Report

Sample Name	23-22230-M26A-6 APC OUTLET #2	23-22230-M26A-BLANK1 APC OUTLET #1	23-22230-M26A-BLANK2 APC OUTLET #2
ALS Sample ID	L2750249-6	L2750249-7	L2750249-8
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	25-Apr-23	24-Apr-23	25-Apr-23
Date of Receipt	27-Apr-23	27-Apr-23	27-Apr-23
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.158	<0.105	<0.107
Analysis 1	<0.158	<0.105	<0.107
Analysis 2	<0.158	<0.105	<0.107
Total Cl^- as HCl (ave)	4.76	<0.154	<0.157
Analysis 1	4.76	<0.154	<0.157
Analysis 2	4.77	<0.154	<0.157
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**
Total Ammonia as NH_3	0.551	<0.283	<0.288

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Sample QC Summary Report

Sample Name	MB	LCS	LCS
ALS Sample ID	MB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	n/a	n/a	n/a
Date of Receipt	n/a	n/a	n/a
Ion Chromatography Analysis			
USEPA Method 26/26A	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	0.00233	0.0566	103%
Analysis 1	0.00233	0.0567	
Analysis 2	0.00233	0.0565	
Total Cl^- as HCl (ave)	<0.00241	0.0784	100%
Analysis 1	<0.00241	0.0785	
Analysis 2	<0.00241	0.0783	
Ion Chromatography Analysis			
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	<0.00472	0.0508	108%

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Sample QC Summary Report

Sample Name	23-22230-M26A-1 APC OUTLET #1	23-22230-M26A-1 APC OUTLET #1	23-22230-M26A-1 APC OUTLET #1	23-22230-M26A-1 APC OUTLET #1
ALS Sample ID	L2750249-1	L2750249-1DUP	L2750249-1MS	L2750249-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23
Date of Receipt	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	<0.145	<0.145	4.53	98%
Analysis 1	<0.145	<0.145	4.53	
Analysis 2	<0.145	<0.145	4.53	
Total Cl^- as HCl (ave)	5.99	5.85	12.7	98%
Analysis 1	6.01	5.88	12.6	
Analysis 2	5.97	5.83	12.7	
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	1.09	1.04	5.51	106%

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#:	L2750250		Mississauga, ON
Date of Report	12-May-23		L5J 2Y4
Date of Sample Receipt	27-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS:
Sample Particulate Analysis via Gravimetric USEPA Method 5 (LL5 12-MAY-2023)

ANALYST COMMENTS:
L2750250-3 shows an overall loss of mass prior to submission to the laboratory. It is possible that this loss has been captured by the acetone rinse, as evidenced by its higher result relative to others in the batch, however the filter result is not truly reflective of the sampling. **PE 18-May-23**

REPORT FLAGS:
J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting

Certified by: L. Wrona
Lynne Wrona
Project Manager

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Sample Analysis Summary Report

Sample Name		23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1		23-22230-PM-(7 THRU 12) TEST#2 APC OUTLET #1	23-22230-PM-(13 THRU 18) TEST#3 APC OUTLET #1	23-22230-PM-(19 THRU 24) BLANK1	23-22230-PM-(31 THRU 36) TEST#2 APC OUTLET #2
ALS Sample ID		L2750250-1		L2750250-2	L2750250-3	L2750250-4	L2750250-5
Matrix		Stack		Stack	Stack	Stack	Stack
Analysis type		Sample		Sample	Sample	Sample	Sample
Sampling Date/Time		24-Apr-23		24-Apr-23	25-Apr-23	26-Apr-23	25-Apr-23
Date of Receipt		27-Apr-23		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
PM via Gravimetric Analysis Method 5	**LOR**						
	mg	**mg**		**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	<0.1		<0.1	<0.1	0.8	<0.1
Acetone Particulate Matter	0.4	0.4	J	0.7	1.3	0.1	1.4
	g	**g**		**g**	**g**	**g**	**g**
Acetone Mass	0.02	90.7		92.4	104	101	129

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Sample Analysis Summary Report

Sample Name		23-22230-PM-(37 THRU 42) TEST#3 APC OUTLET #2		23-22230-PM-(49 THRU 54) TEST#4 APC OUTLET #2		23-22230-PM-(43 THRU 48) BLANK2		MB
ALS Sample ID		L2750250-6		L2750250-7		L2750250-8		L2750250-MB
Matrix		Stack		Stack		Stack		n/a
Analysis type		Sample		Sample		Sample		Sample
Sampling Date/Time		25-Apr-23		26-Apr-23		26-Apr-23		n/a
Date of Receipt		27-Apr-23		27-Apr-23		27-Apr-23		n/a
PM via Gravimetric Analysis Method 5	**LOR**							
	mg	**mg**		**mg**		**mg**		**mg**
Filter Particulate Matter	0.8	0.2	J	0.1	J	0.3	J	<0.1
Acetone Particulate Matter	0.4	0.9		0.5		<0.1		<0.1
	g	**g**		**g**		**g**		**g**
Acetone Mass	0.02	96.7		110		104		31.6

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1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2750261		Mississauga, ON
Date of Report	18-May-23		L5J 2Y4
Date of Sample Receipt	27-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 201A (LL5 17-MAY-2023)
Sample Particulate Analysis via Gravimetric USEPA Method 202 (LL5 17-MAY-2023)

ANALYST COMMENTS:

Method 201A filter for samples L2750261-24 and L2750261-29 show an overall loss of mass prior to submission to the laboratory. In addition, there is visible damage to the edges of each filter. It is possible that any loss has been captured by the acetone rinses, however the filter results are likely to be biased. SA **18-May-23**

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		23-22230-M201A-1 TEST#1 APC OUTLET#1	23-22230-M201A-2 TEST#1 APC OUTLET#1	23-22230-M201A-3 TEST#1 APC OUTLET#1	23-22230-M201A-4 TEST#1 APC OUTLET#1	23-22230-M201A-(5-7) TEST#1 APC OUTLET#1
ALS Sample ID		L2750261-1	L2750261-2	L2750261-3	L2750261-4	L2750261-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		25-Apr-23	25-Apr-23	25-Apr-23	25-Apr-23	25-Apr-23
Date of Receipt		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
PM via Gravimetric Analysis Method 201A	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.2 J	<0.1	0.3 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	53.9	35.3	15.7	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.2
Non-Extractable Condensable Particulates	0.4	-	-	-	-	2.4
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	273

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Sample Analysis Summary Report

Sample Name		23-22230-M201A-8 TEST#2 APC OUTLET#1	23-22230-M201A-9 TEST#2 APC OUTLET#1	23-22230-M201A-10 TEST#2 APC OUTLET#1	23-22230-M201A-11 TEST#2 APC OUTLET#1	23-22230-M201A-(12-14) TEST#2 APC OUTLET#1
ALS Sample ID		L2750261-6	L2750261-7	L2750261-8	L2750261-9	L2750261-10
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		25-Apr-23	25-Apr-23	25-Apr-23	25-Apr-23	25-Apr-23
Date of Receipt		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
PM via Gravimetric Analysis Method 201A	LOR					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.4 J	<0.1	0.2 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	46.4	54.4	23.2	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.7
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.6
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	216

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Sample Analysis Summary Report

Sample Name		23-22230-M201A-15 TEST#3 APC OUTLET#1	23-22230-M201A-16 TEST#3 APC OUTLET#1	23-22230-M201A-17 TEST#3 APC OUTLET#1	23-22230-M201A-18 TEST#3 APC OUTLET#1	23-22230-M201A-(19-21) TEST#3 APC OUTLET#1
ALS Sample ID		L2750261-11	L2750261-12	L2750261-13	L2750261-14	L2750261-15
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		25-Apr-23	25-Apr-23	25-Apr-23	25-Apr-23	25-Apr-23
Date of Receipt		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
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	0.8	1.4	0.9	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	43.9	49.4	15.9	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.6
Non-Extractable Condensable Particulates	0.4	-	-	-	-	4.1
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	206

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Sample Analysis Summary Report

Sample Name		23-22230-M201A-22 TEST#1 APC OUTLET#2	23-22230-M201A-23 TEST#1 APC OUTLET#2	23-22230-M201A-24 TEST#1 APC OUTLET#2	23-22230-M201A-25 TEST#1 APC OUTLET#2	23-22230-M201A-(26-28) TEST#1 APC OUTLET#2
ALS Sample ID		L2750261-16	L2750261-17	L2750261-18	L2750261-19	L2750261-20
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23
Date of Receipt		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
PM via Gravimetric Analysis Method 201A	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	0.1 J	-
Acetone Particulate Matter	0.4	0.7	<0.1	1.1	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	58.8	46.3	21.2	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	0.8
Non-Extractable Condensable Particulates	0.4	-	-	-	-	10.4
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	249

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Sample Analysis Summary Report

Sample Name		23-22230-M201A-29 TEST#2 APC OUTLET#2	23-22230-M201A-30 TEST#2 APC OUTLET#2	23-22230-M201A-31 TEST#2 APC OUTLET#2	23-22230-M201A-32 TEST#2 APC OUTLET#2	23-22230-M201A-(33-35) TEST#2 APC OUTLET#2
ALS Sample ID		L2750261-21	L2750261-22	L2750261-23	L2750261-24	L2750261-25
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23
Date of Receipt		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
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	0.1 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	50.6	44.4	23.8	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.8
Non-Extractable Condensable Particulates	0.4	-	-	-	-	2.8
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	261

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Sample Analysis Summary Report

Sample Name		23-22230-M201A-36 TEST#3 APC OUTLET#2	23-22230-M201A-37 TEST#3 APC OUTLET#2	23-22230-M201A-38 TEST#3 APC OUTLET#2	23-22230-M201A-39 TEST#3 APC OUTLET#2	23-22230-M201A-(40-42) TEST#3 APC OUTLET#2
ALS Sample ID		L2750261-26	L2750261-27	L2750261-28	L2750261-29	L2750261-30
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23
Date of Receipt		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
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	1.4	0.9	<0.1	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	33.1	24.7	21.7	-	-
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	-	-	-	-	4.2
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	240

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Sample Analysis Summary Report

Sample Name		23-22230-M201A-43 BLANK APC OUTLET#1	23-22230-M201A-44 BLANK APC OUTLET#1	23-22230-M201A-45 BLANK APC OUTLET#1	23-22230-M201A-46 BLANK APC OUTLET#1	23-22230-M201A-(47-49) BLANK APC OUTLET#1
ALS Sample ID		L2750261-31	L2750261-32	L2750261-33	L2750261-34	L2750261-35
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		26-Apr-23	26-Apr-23	26-Apr-23	26-Apr-23	26-Apr-23
Date of Receipt		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
PM via Gravimetric Analysis Method 201A	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	0.1 J	-
Acetone Particulate Matter	0.4	0.3 J	0.2 J	0.1 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	17.7	16.2	20.0	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	0.3 J
Non-Extractable Condensable Particulates	0.4	-	-	-	-	0.6
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	100

ALS Environmental

Sample Analysis Summary Report

Sample Name		23-22230-M201A-50 BLANK APC OUTLET#2		23-22230-M201A-51 BLANK APC OUTLET#2		23-22230-M201A-52 BLANK APC OUTLET#2		23-22230-M201A-53 BLANK APC OUTLET#2		23-22230-M201A-(54-56) BLANK APC OUTLET#2	
ALS Sample ID		L2750261-36		L2750261-37		L2750261-38		L2750261-39		L2750261-40	
Matrix		Stack		Stack		Stack		Stack		Stack	
Analysis type		Sample		Sample		Sample		Sample		Sample	
Sampling Date/Time		26-Apr-23		26-Apr-23		26-Apr-23		26-Apr-23		26-Apr-23	
Date of Receipt		27-Apr-23		27-Apr-23		27-Apr-23		27-Apr-23		27-Apr-23	
PM via Gravimetric Analysis Method 201A	**LOR**										
	mg	**mg**		**mg**		**mg**		**mg**		**mg**	
Filter Particulate Matter	0.8	-		-		-		0.1	J		
Acetone Particulate Matter	0.4	0.1	J	<0.1		0.1	J	-		-	
	g	**g**		**g**		**g**		**g**		**g**	
Acetone Mass	0.02	15.4		20.0		16.1		-		-	
PM via Gravimetric Analysis Method 202	**LOR**										
	mg	**mg**		**mg**		**mg**		**mg**		**mg**	
Extractable Condensable Particulates	0.4	-		-		-		-		1.4	
Non-Extractable Condensable Particulates	0.4	-		-		-		-		0.5	
	g	**g**		**g**		**g**		**g**		**g**	
Water Mass	0.02	-		-		-		-		106	

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Sample Analysis Summary Report

Sample Name		MB	MB
ALS Sample ID		L2750261-MB1	L2750261-MB2
Matrix		n/a	n/a
Analysis type		Sample	Sample
Sampling Date/Time		n/a	n/a
Date of Receipt		n/a	n/a
PM via Gravimetric Analysis Method 201A	**LOR**		
	mg	**mg**	**mg**
Filter Particulate Matter	0.8	<0.1	-
Acetone Particulate Matter	0.4	0.3	<0.1
	g		**g**
Acetone Mass	0.02	32.3	31.5
PM via Gravimetric Analysis Method 202	**LOR**		
	mg	**mg**	**mg**
Extractable Condensable Particulates	0.4	<0.1	-
Non-Extractable Condensable Particulates	0.4	0.0	-
	g	**g**	**g**
Water Mass	0.02	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
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2750250		Mississauga, ON
Date of Report	17-May-23		L5J 2Y4
Date of Sample Receipt	27-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS:

Sample Preparation via USEPA Method 29 (LL5 15-May-2023)
Mercury Analysis via CVAA using Method USEPA 7470A (KC11 16-May-2023)

LOR = Limit of Reporting
LCB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: hivol, solids: 85-115%, stack: 90-110%)
MS = Matrix Spike Sample (limits: 75-125%)
RPD = Relative Percent Difference (limits: <20%)
CCV/CVS = Calibration Verification Standard (limits: 85-115%)

Certified by: L. Wrona
Lynne Wrona
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name			23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(7 THRU 12) TEST#2 APC OUTLET #1	23-22230-PM-(13 THRU 18) TEST#3 APC OUTLET #1	23-22230-PM-(19 THRU 24) BLANK1	23-22230-PM-(31 THRU 36) TEST#2 APC OUTLET #2
ALS Sample ID			L2750250-1	L2750250-2	L2750250-3	L2750250-4	L2750250-5
Matrix			Stack	Stack	Stack	Stack	Stack
Analysis type			Sample	Sample	Sample	Sample	Sample
Sampling Date/Time			24-Apr-23	24-Apr-23	25-Apr-23	26-Apr-23	25-Apr-23
Date of Receipt			27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Mercury via CVAA		**LOR**					
	Method 29	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
	Analytical Fraction 1B	0.015	<0.015	<0.015	<0.015	<0.015	<0.015
	Analytical Fraction 2B	0.050	<0.375	<0.37	<0.41	<0.15	<0.365
	Analytical Fraction 3B	0.025	<0.0225	<0.0225	<0.0225	<0.0225	<0.0225
	Analytical Fraction 3C	0.25	<0.195	<0.195	<0.195	<0.195	<0.195

ALS Environmental

Sample Analysis Summary Report

Sample Name			23-22230-PM-(37 THRU 42) TEST#3 APC OUTLET #2	23-22230-PM-(49 THRU 54) TEST#4 APC OUTLET #2	23-22230-PM-(43 THRU 48) BLANK2
ALS Sample ID			L2750250-6	L2750250-7	L2750250-8
Matrix			Stack	Stack	Stack
Analysis type			Sample	Sample	Sample
Sampling Date/Time			25-Apr-23	26-Apr-23	26-Apr-23
Date of Receipt			27-Apr-23	27-Apr-23	27-Apr-23
Mercury via CVAA		LOR			
	Method 29	**ug**	**ug**	**ug**	**ug**
	Analytical Fraction 1B	0.015	<0.015	<0.015	<0.015
	Analytical Fraction 2B	0.050	<0.425	<0.425	<0.155
	Analytical Fraction 3B	0.025	<0.0225	<0.0225	<0.0225
	Analytical Fraction 3C	0.25	<0.195	<0.195	<0.195

ALS Environmental

Sample QC Summary Report

Sample Name		LCB	LCS	LCS	LCSD	LCSD
ALS Sample ID		LCB	LCS	LCS	LCSD	LCSD
Analysis type		Method Blank	Blank Spike	Blank Spike	Blank Spike Dup	Blank Spike Dup
Sampling Date/Time		N/A	N/A	N/A	N/A	N/A
Date of Receipt		N/A	N/A	N/A	N/A	N/A
Mercury via CVAA	LOR					
Method 29	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Analytical Fraction 1B	0.015	<0.015	0.266	89%	0.269	90%
Analytical Fraction 2B	0.050	<0.05	0.944	95%	0.927	93%
Analytical Fraction 3B	0.025	<0.025	0.484	97%	0.481	96%
Analytical Fraction 3C	0.25	<0.25	4.74	95%	4.69	94%

ALS Environmental

Sample QC Summary Report

Sample Name		23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1
ALS Sample ID		L2750250-1	L2750250-1DUP	L2750250-1MS	L2750250-1MS	L2750250-1MSD	L2750250-1MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date/Time		24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23
Date of Receipt		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Mercury via CVAA	**LOR**						
Method 29	**ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Analytical Fraction 1B	0.015	<0.015	<0.015	0.278	93%	0.275	92%
Analytical Fraction 2B	0.050	<0.375	<0.375	7.23	94%	7.23	94%
Analytical Fraction 3B	0.025	<0.0225	<0.0225	0.408	91%	0.407	90%
Analytical Fraction 3C	0.250	<0.195	<0.195	3.72	94%	3.67	93%

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#:	L2750250		Mississauga, ON
Date of Report	17-May-23		L5J 2Y4
Date of Sample Receipt	27-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS:

Metals analysed via ICP-MS Method USEPA 6020B (SA 16-May-23)
Sample Preparation via USEPA Method 29 (LL5 15-May-23)

ANALYST COMMENTS:

Fraction 1A:

Cr, Cu, Mo and Ni were observed in the method blank (MB) at varying levels above their LORs. Sample data within a factor of 5x this background level may be biased high as a result of this potential contribution.

Ag recoveries in the LCS and LCSD are outside ALS DQOs (found: 84, 73 %, limits: 85-115%). This is likely due to silver binding other elements in solution. The presence of the filter matrix has been found to mitigate this effect. Sample data is not expected to be impacted. **PE 17-May-23**

LCB = Laboratory Control Blank
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(7 THRU 12) TEST#2 APC OUTLET #1	23-22230-PM-(13 THRU 18) TEST#3 APC OUTLET #1	23-22230-PM-(19 THRU 24) BLANK1	23-22230-PM-(31 THRU 36) TEST#2 APC OUTLET #2	23-22230-PM-(37 THRU 42) TEST#3 APC OUTLET #2
ALS Sample ID		L2750250-1	L2750250-2	L2750250-3	L2750250-4	L2750250-5	L2750250-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		24-Apr-23	24-Apr-23	25-Apr-23	26-Apr-23	25-Apr-23	25-Apr-23
Date of Receipt		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Front Half HF Fraction 1A							
Antimony	0.2	<	<	<	<	<	0.339
Arsenic	1	<	<	<	<	<	<
Barium	5	<	<	<	<	<	5.09
Beryllium	0.2	<	<	<	<	<	<
Cadmium	0.1	<	0.102	0.444	<	0.246	0.129
Chromium	1	2.85	2.69	3.32	3.07	3.35	2.77
Cobalt	0.2	<	<	<	<	<	<
Copper	1	7.10	6.85	7.24	5.48	6.81	5.90
Lead	0.5	0.585	0.579	0.732	<	<	0.522
Molybdenum	0.2	36.2	36.7	36.4	33.8	37.8	36.9
Nickel	0.2	2.61	1.77	3.60	0.837	1.91	1.63
Selenium	2	<	<	<	<	<	<
Silver	0.2	<	<	<	<	<	<
Thallium	0.2	<	<	<	<	<	<
Vanadium	1	<	<	<	<	<	<
Zinc	6	11.2	12.2	15.1	<	12.3	13.8
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	<	<	<	<
Arsenic	0.2	<	<	<	<	<	<
Barium	0.5	1.72	1.04	2.93	0.764	0.839	1.45
Beryllium	0.1	<	<	<	<	<	<
Cadmium	0.05	0.656	0.114	0.320	<	<	0.243
Chromium	0.15	1.07	1.18	0.663	0.311	0.635	3.98
Cobalt	0.1	<	<	<	<	<	<
Copper	0.3	4.38	1.96	1.56	1.31	1.71	3.00
Lead	0.05	0.863	0.783	0.299	0.284	0.309	0.389
Molybdenum	0.1	0.105	0.102	<	<	<	1.08
Nickel	0.1	0.834	0.980	0.477	<	2.86	0.828
Selenium	1	<	<	<	<	<	<
Silver	0.1	<	<	<	<	<	<
Thallium	0.05	<	<	<	<	<	<
Vanadium	0.1	<	<	<	<	<	0.414
Zinc	3	19.9	19.2	11.6	<	6.49	3.57

ALS Environmental

Sample Analysis Summary Report

Sample Name		23-22230-PM-(49 THRU 54) TEST#4 APC OUTLET #2	23-22230-PM-(43 THRU 48) BLANK2	MB
ALS Sample ID		L2750250-7	L2750250-8	L2750250-MB
Matrix		Stack	Stack	n/a
Analysis Type		Sample	Sample	Sample
Sampling Date		26-Apr-23	26-Apr-23	n/a
Date of Receipt		27-Apr-23	27-Apr-23	n/a
Multi-Metals via ICP-MS	**LOR**			
	ug	**ug**	**ug**	**ug**
Front Half HF Fraction 1A				
Antimony	0.2	0.312	<	<
Arsenic	1	<	<	<
Barium	5	<	<	<
Beryllium	0.2	<	<	<
Cadmium	0.1	0.519	<	<
Chromium	1	2.89	3.02	2.07
Cobalt	0.2	<	<	<
Copper	1	5.50	5.38	4.91
Lead	0.5	0.570	<	<
Molybdenum	0.2	36.7	36.2	34.8
Nickel	0.2	1.53	0.873	0.783
Selenium	2	<	<	<
Silver	0.2	<	<	<
Thallium	0.2	<	<	<
Vanadium	1	<	<	<
Zinc	6	9.50	<	<
Back Half (HNO3 / H2O2) Fraction 2A				
Antimony	0.1	<	<	-
Arsenic	0.2	<	<	-
Barium	0.5	0.720	0.812	-
Beryllium	0.1	<	<	-
Cadmium	0.05	<	<	-
Chromium	0.15	0.684	0.383	-
Cobalt	0.1	<	<	-
Copper	0.3	1.66	1.04	-
Lead	0.05	0.287	0.318	-
Molybdenum	0.1	<	<	-
Nickel	0.1	0.369	<	-
Selenium	1	<	<	-
Silver	0.1	<	<	-
Thallium	0.05	<	<	-
Vanadium	0.1	<	<	-
Zinc	3	22.2	<	-

ALS Environmental

Sample QC Summary Report

Sample Name		RB	LCS	LCS	LCSD	LCSD
ALS Sample ID		LCB	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	<	12.4	103	12.2	102
Arsenic	1	<	60.1	100	60.8	101
Barium	5	<	64.3	107	65.2	109
Beryllium	0.2	<	60.1	100	59.6	99
Cadmium	0.1	<	29.8	99	29.9	100
Chromium	1	<	62.1	103	62.4	104
Cobalt	0.2	<	61.2	102	61.8	103
Copper	1	<	61.3	102	63.2	105
Lead	0.5	<	62.5	104	60.5	101
Molybdenum	0.2	<	31.6	105	30.9	103
Nickel	0.2	<	60.6	101	62.2	104
Selenium	2	<	58.1	97	57.7	96
Silver	0.2	<	25.1	84	21.9	73
Thallium	0.2	<	59.6	99	59.6	99
Vanadium	1	<	61.9	103	62.8	105
Zinc	6	<	121	101	123	103
Back Half (HNO3 / H2O2) Fraction 2A						
Antimony	0.1	<	5.69	95	5.63	94
Arsenic	0.2	<	28.5	95	27.7	92
Barium	0.5	<	29.7	99	29.5	98
Beryllium	0.1	<	26.0	87	26.3	88
Cadmium	0.05	<	13.9	93	13.8	92
Chromium	0.15	<	29.8	99	28.6	95
Cobalt	0.1	<	29.5	98	28.4	95
Copper	0.3	<	30.0	100	29.1	97
Lead	0.05	<	28.9	96	28.3	94
Molybdenum	0.1	<	14.8	99	14.6	97
Nickel	0.1	<	29.5	98	28.6	95
Selenium	1	<	28.3	94	27.4	91
Silver	0.1	<	14.4	96	14.1	94
Thallium	0.05	<	29.5	98	27.9	93
Vanadium	0.1	<	29.6	99	28.9	96
Zinc	3	<	57.6	96	56.1	93

ALS Environmental

Sample QC Summary Report

Sample Name		23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1	23-22230-PM-(1 THRU 6) TEST#1 APC OUTLET #1
ALS Sample ID		L2750250-1	L2750250-1	MS	MS	MSD	MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date		24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23	24-Apr-23
Date of Receipt		27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A							
Antimony	0.2	<	<	23.3	97	24.2	100
Arsenic	1	<	<	115	96	114	95
Barium	5	<	<	130	105	125	100
Beryllium	0.2	<	<	112	94	109	91
Cadmium	0.1	<	0.105	56.7	94	57.3	95
Chromium	1	2.85	2.85	118	96	120	97
Cobalt	0.2	<	<	115	96	117	97
Copper	1	7.10	7.11	124	97	126	99
Lead	0.5	0.585	0.609	119	98	118	98
Molybdenum	0.2	36.2	35.5	93.3	95	96.8	101
Nickel	0.2	2.61	2.62	117	95	119	97
Selenium	2	<	<	107	89	108	90
Silver	0.2	<	<	57.0	95	59.8	100
Thallium	0.2	<	<	115	96	120	100
Vanadium	1	<	<	118	98	118	98
Zinc	6	11.2	11.7	247	98	243	97
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	11.8	98	11.8	98
Arsenic	0.2	<	<	58.3	97	58.9	98
Barium	0.5	1.72	1.72	66.2	107	64.8	105
Beryllium	0.1	<	<	56.9	95	55.5	93
Cadmium	0.05	0.656	0.666	29.9	98	29.8	97
Chromium	0.15	1.07	1.02	62.0	102	62.9	103
Cobalt	0.1	<	<	60.1	100	61.4	102
Copper	0.3	4.38	4.34	65.8	102	66.5	103
Lead	0.05	0.863	0.824	60.0	99	63.0	103
Molybdenum	0.1	0.105	0.105	30.9	103	31.1	103
Nickel	0.1	0.834	0.819	61.3	101	62.2	102
Selenium	1	<	<	56.4	94	57.5	96
Silver	0.1	<	<	29.7	99	30.1	100
Thallium	0.05	<	<	59.4	99	61.7	103
Vanadium	0.1	<	0.120	61.5	102	61.8	103
Zinc	3	19.9	20.4	141	101	142	102

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.: 22230
Date: APR

Test No.: 1
Test Location: Unit 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: 27986 / CONTAINER TS4	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
				1 Empty Wt: 476.0 / Final Wt: 630.0 / Gain: 154.0 / Colour: clear	* if there is no gain purge is not required.	
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Initial Wt: / Final Wt: / Gain: / Colour: WHITE	Impinger #2 Empty	Purge On: 10:35 / Purge Off: 11:35	Acetone/Hexane Rinse
				Empty Wt: 650.0 / Final Wt: 650.0 / 2 Gain: 0 / Colour: ←		Mark Fluid Level and Seal and Label Container
			Seal and label container TS4	Secondary Filter	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 666.9 / Initial Wt: 767.0 / Final Wt: 767.0 / 3 Gain: 0 / Colour: —	Mark Fluid Level and Seal and Label Container	
					CONTAINER TS6	
				Impinger #4 Silica Gel	Secondary Filter	
				Initial Wt: 949.8 / Final Wt: 958.8 / 4 Gain: 9.0 / % Spent:	Seal and label container TS6	

SAMPLE IDENTIFICATION	23-22230-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_20 and rinse)	5
TS6 (Secondary Filter)	6
TS7 (Acetone / Hexane rinse)	7

Train Loaded By: DU
Train Recovered By: DT

CWTR=1+2+3:	154.0
WCBDA=4:	9.0

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: Apr 25/23

Test No.: 2
Test Location: Unit 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: 22 9987 CONTAINER TS4	Impinger #1 Knock Out Empty Wt: 527.0 Final Wt: 667.9 1 Gain: 140.9 Colour:	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr) * *if there is no gain purge is not required.*	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Initial Wt: Final Wt: Gain: Colour: Seal and label container TS4	Impinger #2 Empty Empty Wt: 672.5 Final Wt: 673.5 2 Gain: 1.0 Colour: clear	Purge On: 13:30 Purge Off: 14:30 Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	Acetone/Hexane Rinse Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	23-22230-M201A-
TS1 (Part. > 10)	9
TS2 (Part. > 2.5)	8
TS3 (Part. < 2.5)	10
TS4 (Back Up Filter, <2.5)	11
TS5 (Imp 2 H_20 and rinse)	12
TS6 (Secondary Filter)	13
TS7 (Acetone / Hexane rinse)	14

Secondary Filter

Impinger #3 H_2O
Empty Wt: 642.1
Initial Wt: 739.6
Final Wt: 738.8
3 Gain: -0.8
Colour:

Impinger #4 Silica Gel
Initial Wt: 921.9
Final Wt: 931.9
4 Gain: 10.0
% Spent:

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter
Seal and label container TS6

CWTR=1+2+3: 141.1
WCBDA=4: 10.0

Train Loaded By: DT/DH
Train Recovered By:

5

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: Apr 25/23

Test No.: 3
Test Location: Unit 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: RZ 9996	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			CONTAINER TS4	Empty Wt: 476.0	* if there is no goin purge is not required.	
			Initial Wt:	Final Wt: 627.4		Acetone/Hexane Rinse
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Final Wt:	1 Gain: 151.4	Purge On: 18:00	
			Gain:	Colour: clear	Purge Off: 19:30	Mark Fluid Level and Seal and Label Container
			Colour: WHITE	Impinger #2 Empty		
			Seal and label container TS4	Empty Wt: 650.0	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Final Wt: 650.6		
				2 Gain: 0.6		
				Colour: clear		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 666.9	Mark Fluid Level and Seal and Label Container	
				Initial Wt: 767.0		
				Final Wt: 766.1		
				3 Gain: -0.9		
				Colour: clear	CONTAINER TS6	
					Secondary Filter	
				Impinger #4 Silica Gel		
				Initial Wt: 958.8	Seal and label container TS6	
				Final Wt: 969.0		
				4 Gain: 10.2		
				% Spent:		

SAMPLE IDENTIFICATION	23-22230-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: DL
Train Recovered By: DL

CWTR=1+2+3:	151.1
WCBDA=4:	10.2

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ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: Apr 26/23

Test No.: BLANK 1
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.S cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
			QZ	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			Filter ID: 9989	Empty Wt:	* *if there is no gain purge is not required.*	
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	1 Gain:		Acetone/Hexane Rinse
			Initial Wt:	Colour:		
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Final Wt:	Impinger #2 Empty	Purge On:	
			Gain:	Empty Wt:	Purge Off:	Mark Fluid Level and Seal and Label Container
			Colour: WHITE	Final Wt:		
			Seal and label container TS4	2 Gain:	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Colour:		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt:	Mark Fluid Level and Seal and Label Container	
				Initial Wt:		
				Final Wt:		
				3 Gain:		
				Colour:	CONTAINER TS6	
					Secondary Filter	
				Impinger #4 Silica Gel		
				Initial Wt:	Seal and label container TS6	
				Final Wt:		
				4 Gain:		CWTR=1+2+3:
				% Spent:		WCBDA=4:

SAMPLE IDENTIFICATION	23-22230-M201A-
TS1 (Part. > 10)	43
TS2 (Part. > 2.5)	44
TS3 (Part. < 2.5)	45
TS4 (Back Up Filter, <2.5)	46
TS5 (Imp 2 H_20 and rinse)	47
TS6 (Secondary Filter)	48
TS7 (Acetone / Hexane rinse)	49

Train Loaded By:
Train Recovered By: DT

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: APR 26/23

Test No.: BLANK 2
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: 22-9975 CONTAINER TS4	Impinger #1 Knock Out Empty Wt: Final Wt: 1 Gain: Colour:	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr) * *if there is no goin purge is not required.*	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Initial Wt: Final Wt: Gain: Colour: WHITE Seal and label container TS4	Impinger #2 Empty Empty Wt: Final Wt: 2 Gain: Colour: Secondary Filter	Purge On: Purge Off: Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	Acetone/Hexane Rinse Mark Fluid Level and Seal and Label Container
				Impinger #3 H_2O Empty Wt: Initial Wt: Final Wt: 3 Gain: Colour:	CONTAINER TS5 Mark Fluid Level and Seal and Label Container CONTAINER TS6 Secondary Filter Seal and label container TS6	
				Impinger #4 Silica Gel Initial Wt: Final Wt: 4 Gain: % Spent:		CWTR=1+2+3: WCBDA=4:

SAMPLE IDENTIFICATION	23-22230-M201A-
TS1 (Part. > 10)	50
TS2 (Part. > 2.5)	51
TS3 (Part. < 2.5)	52
TS4 (Back Up Filter, <2.5)	53
TS5 (Imp 2 H_2O and rinse)	54
TS6 (Secondary Filter)	55
TS7 (Acetone / Hexane rinse)	56

Train Loaded By: BT
Train Recovered By:

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: APR 24/23

Test No.: 1
Test Location: UNIT 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: 227972 / CONTAINER TS4	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			Initial Wt:	Empty Wt: 527.2	* if there is no gain purge is not required.	
			Final Wt:	Final Wt: 677.2		Acetone/Hexane Rinse
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Gain:	1 Gain: 150.0	Purge On: 12:15	
			Colour: WHITE	Colour: clear	Purge Off: 13:15	Mark Fluid Level and Seal and Label Container
			Seal and label container TS4	Impinger #2 Empty	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Empty Wt: 672.3		
				Final Wt: 672.5		
				2 Gain: 0.2		
				Colour: clear		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5 Mark Fluid Level and Seal and Label Container	
				Empty Wt: 442.1		
				Initial Wt: 741.2		
				Final Wt: 739.9		
				3 Gain: -1.3		
				Colour: clear	CONTAINER TS6 Secondary Filter	
				Impinger #4 Silica Gel		
				Initial Wt: 905.2	Seal and label container TS6	
				Final Wt: 914.2		
				4 Gain: 9.0		
				% Spent:		

23-22230-M201A-

SAMPLE IDENTIFICATION	~~22-22158-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

CWTR=1+2+3:	148.9
WCBDA=4:	9.0

Train Loaded By: DL
Train Recovered By: DL / DT

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: Apr 24/23

Test No.: 2
Test Location: Unit 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TSS & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: QZ9973	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			CONTAINER TS4	Empty Wt: 478.0	* if there is no gain purge is not required.	
			Initial Wt:	Final Wt: 627.8		Acetone/Hexane Rinse
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Final Wt:	1 Gain: 149.8	Purge On: 15:25	
			Gain:	Colour: clear	Purge Off: 16:25	Mark Fluid Level and Seal and Label Container
			Colour: White	Impinger #2 Empty		
			Seal and label container TS4	Empty Wt: 650.0	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Final Wt: 650.0		
				2 Gain:		
				Colour: —		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 666.9	Mark Fluid Level and Seal and Label Container	
				Initial Wt: 767.8		
				Final Wt: 767.0		
				3 Gain: -0.8		
				Colour: Green	CONTAINER TS6	
					Secondary Filter	
				Impinger #4 Silica Gel		
				Initial Wt: 941.5	Seal and label container TS6	
				Final Wt: 949.8		
				4 Gain: 8.3		
				% Spent:		

23-22230-M201A-

SAMPLE IDENTIFICATION	~~22-22158-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: DW
Train Recovered By: DW/DT

CWTR=1+2+3: 149.0
WCBDA=4: 8.3

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22230
Date: Apr 24/23

Test No.: 3
Test Location: unit 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	Filter ID: 02 9974	Impinger #1 Knock Out	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			CONTAINER TS4	Empty Wt: 527.0	* if there is no gain purge is not required.	
			Initial Wt:	Final Wt: 682.2		Acetone/Hexane Rinse
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Final Wt:	1 Gain: 155.2	Purge On: 18:30	
			Gain:	Colour: clear	Purge Off: 17:30	Mark Fluid Level and Seal and Label Container
			Colour: white	Impinger #2 Empty		
			Seal and label container TS4	Empty Wt: 672.5	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Final Wt: 672.8		
				2 Gain: 0.3		
				Colour: clear		
				Secondary Filter		
				Impinger #3 H_2O	CONTAINER TS5	
				Empty Wt: 642.1	Mark Fluid Level and Seal and Label Container	
				Initial Wt: 739.9		
				Final Wt: 739.6		
				3 Gain: -0.3		
				Colour: clear	CONTAINER TS6	
					Secondary Filter	
				Impinger #4 Silica Gel		
				Initial Wt: 914.2	Seal and label container TS6	
				Final Wt: 921.9		
				4 Gain: 7.7		
				% Spent:		

SAMPLE IDENTIFICATION	23-22230-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_20 and rinse)	40
TS6 (Secondary Filter)	41
TS7 (Acetone / Hexane rinse)	42

Train Loaded By: DM
Train Recovered By: DT

CWTR=1+2+3:	155.2
WCBDA=4:	7.7

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APPENDIX 14

SVOC Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22230
Sample Batch No.: 23-22230-SVOC-

Test No.: 1
Test Date: Apr 26/23
Test Location: UNIT 1

Sample ID 1	Sample ID 2	Sample ID 3	Sample ID 4	Sample ID 5	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap 3	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 282.0	Colour: WHITE	Initial Wt: 375.9	Impinger #1 Empty	Empty Wt: 408.0	Initial Wt: 978.6
After Acetone/ Hexane Rinse: 502.8	FOLD IN FOIL	1 Final Wt: 381.2	Empty Wt: 609.8	After Acetone/ Hexane Rinse: 648.7	Final Wt: 1001.1
Total TS1: 220.8		Gain: 5.3	Final Wt: 952.8	5 Total TS5: 240.7	5 Gain: 22.5
	SEAL AND LABEL CONTAINER TS2	Colour: WHITE	2 Gain: 343.0		% Spent:
		SEAL TRAP	Colour: clear		
MARK FLUID LEVEL		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
SEAL AND LABEL CONTAINER TS1		LABEL AS CONTAINER TS3	Empty Wt: 658.3		
			Initial Wt: 762.5		
			Final Wt: 917.0		
			3 Gain: 154.5		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 521.0		
			Final Wt: 728.5		
			4 Gain: 207.5		
			Colour: clear		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	3
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	ALS
Hexane Batch No.:	107473
Acetone Batch No.:	107397

Container TS4 Weights	
Empty Wt:	409.0
With Imp Soln:	1204.0
After ~100g H_2O Rinse:	1337.5
Total TS4:	928.5

Impinger Box ID: 6

CWTR = 1 + 2 + 3 + 4: ~~967.3~~ 710.3

WCBDA=S: 22.5

Train Loaded By: IT
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.:	22230
Sample Batch No.:	23-22230-SVOC-

Test No.:	2
Test Date:	Apr. 26/23
Test Location:	Unit 1

Sample ID	6	Sample ID	7	Sample ID	8	Sample ID	9	Sample ID	10	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser		Filter		XAD-II Trap		Impingers 1, 2 & 3		Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers		Impinger 4 Silica Gel
CONTAINER TS1		CONTAINER TS2		CONTAINER TS3		CONTAINER TS4		CONTAINER TS5		CONTAINER TS6 (Impinger)
Empty Wt:	281.0	Colour:	WHITE	Initial Wt:	376.6	Impinger #1 Empty		Empty Wt:	281.5	Initial Wt: 1033.5
After Acetone/ Hexane Rinse:	477.5	FOLD IN FOIL		Final Wt:	382.6	Empty Wt:	622.3	After Acetone/ Hexane Rinse:	520.0	Final Wt: 1053.5
Total TS1:	196.5	SEAL AND LABEL CONTAINER TS2		1 Gain:	6.0	Final Wt:	956.0	5 Gain:	20.0	
MARK FLUID LEVEL				Colour:	WHITE	2 Gain:	333.7	Total TS5:	238.5	% Spent:
SEAL AND LABEL CONTAINER TS1				SEAL TRAP		Colour:	Clear			
				WRAP IN FOIL		Impinger #2 Ethylene Glycol				
				LABEL AS CONTAINER TS3		Empty Wt:	625.5			
						Initial Wt:	732.0			
						Final Wt:	923.0			
						3 Gain:	191.0			
						Colour:	Clear			
						Impinger #3 Empty				
						Empty Wt:	571.2			
						Final Wt:	749.0			
						4 Gain:	177.8			
						Colour:	Clear			
						Container TS4 Weights				
						Empty Wt:	405.0			
						With Imp Soln:	1198.5			
						After ~100g H_2O Rinse:	1300.0			
						Total TS4:	895.0			

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	9
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Impinger Box ID: 1

CWTR = 1 + 2 + 3 + 4:	708.5
WCBDA=5:	20.0

Train Loaded By: DT

Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22230
Sample Batch No.:	23-22230-SVOC-

Test No.:	3
Test Date:	Apr 27/23
Test Location:	UNIT 1

Sample ID	11	Sample ID	12	Sample ID	13	Sample ID	14	Sample ID	15	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser		Filter		XAD-II Trap		Impingers 1, 2 & 3		Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers		Impinger 4 Silica Gel
CONTAINER TS1		CONTAINER TS2		CONTAINER TS3		CONTAINER TS4		CONTAINER TS5		CONTAINER TS6 (Impinger)
Empty Wt:	238.0	Colour:	WHITE	Initial Wt:	398.3	Impinger #1 Empty		Empty Wt:	282.0	Initial Wt: 1001.0
After Acetone/ Hexane Rinse:	933.0	FOLD IN FOIL		1 Final Wt:	403.3	Empty Wt:	529.8	After Acetone/ Hexane Rinse:	443.5	Final Wt: 1016.0
Total TS1:	695.0	SEAL AND LABEL CONTAINER TS2		Gain:	5.0	Final Wt:	880.3	Total TS5:	161.5	5 Gain: 15.0
MARK FLUID LEVEL				Colour:	WHITE	2 Gain:	350.5			% Spent:
SEAL AND LABEL CONTAINER TS1				SEAL TRAP		Colour:	clear			
				WRAP IN FOIL		Impinger #2 Ethylene Glycol				
				LABEL A5 CONTAINER TS3		Empty Wt:	672.5			
						Initial Wt:	776.0			
						Final Wt:	980.5			
						3 Gain:	204.5			
						Colour:	clear			
						Impinger #3 Empty				
						Empty Wt:	588.5			
						Final Wt:	749.0			
						4 Gain:	160.5			
						Colour:	clear			

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	8
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Container TS4 Weights	
Empty Wt:	403.7
With Imp Soln:	1269.0
After ~100g H_2O Rinse:	1325.0
Total TS4:	291.3

Impinger Box ID: 6

CWTR = 1 + 2 + 3 + 4:	720.5
WCBDA=S:	15.0

Train Loaded By: DF

Train Recovered By:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22230
Sample Batch No.:	23-22230-SVOC-

Test No.:	BLANK 1
Test Date:	Apr 27/23
Test Location:	

Sample ID	16	Sample ID	17	Sample ID	18	Sample ID	19	Sample ID	20	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser		Filter		XAD-II Trap		Impingers 1, 2 & 3		Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers		Impinger 4 Silica Gel
CONTAINER TS1		CONTAINER TS2		CONTAINER TS3		CONTAINER TS4		CONTAINER TS5		CONTAINER TS6 (Impinger)
Empty Wt:	281.5	Colour:	WHITE	Initial Wt:	359.2	Impinger #1 Empty		Empty Wt:	281.0	Initial Wt:
After Acetone/ Hexane Rinse:	440.5	FOLD IN FOIL		Final Wt:	359.2	Empty Wt:	627.0	After Acetone/ Hexane Rinse:	488.0	Final Wt:
Total TS1:	159.0	SEAL AND LABEL CONTAINER TS2		1 Gain:	0	Final Wt:	627.0	Total TS5:	207.0	S Gain:
MARK FLUID LEVEL				Colour:	WHITE	2 Gain:	0			% Spent:
SEAL AND LABEL CONTAINER TS1				SEAL TRAP		Colour:	—			
				WRAP IN FOIL		Impinger #2 Ethylene Glycol				
				LABEL AS CONTAINER TS3		Empty Wt:	563.5			
						Initial Wt:	663.0			
						Final Wt:	663.0			
						3 Gain:	0			
						Colour:	—			
						Impinger #3 Empty				
						Empty Wt:	620.0			
						Final Wt:	620.0			
						4 Gain:	0			
						Colour:	—			
						Container TS4 Weights				
						Empty Wt:	407.5			
						With Imp Soln:	507.5			
						After ~100g H_2O Rinse:	610.0			
						Total TS4:	202.5			

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	4
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Impinger Box ID:

CWTR = 1 + 2 + 3 + 4:	
WCBDA=5:	

Train Loaded By: DT

Train Recovered By:

TS1, TS4, TSS - 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.: 22230
Sample Batch No.: 23-22230-SVOC-

Test No.: 1
Test Date: Ap-26/23
Test Location: Unit 2

Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	
21	22	23	24	25	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap #1	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 252.5	Colour: WHITE	Initial Wt: 324.5	Impinger #1 Empty	Empty Wt: 408.0	Initial Wt: 1006.9
After Acetone/ Hexane Rinse: 597.5	FOLD IN FOIL	1 Final Wt: 330.0	Empty Wt: 626.1	After Acetone/ Hexane Rinse: 603.0	5 Final Wt: 1023.1
Total TS1: 275.0	SEAL AND LABEL CONTAINER TS2	Gain: 5.5	2 Final Wt: 957.6	Total T5S: 995.0	Gain: 16.8
MARK FLUID LEVEL	SEAL TRAP	Colour: white	Gain: 331.5		% Spent:
SEAL AND LABEL CONTAINER TS1	WRAP IN FOIL		Colour: clear		
	LABEL AS CONTAINER TS3		Impinger #2 Ethylene Glycol		
			Empty Wt: 670.2		
			Initial Wt: 772.2		
			Final Wt: 973.5		
			3 Gain: 201.3		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 617.8		
			Final Wt: 726.5		
			4 Gain: 108.7		
			Colour: clear		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID: #1	1
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Container TS4 Weights	
Empty Wt:	409.3
With Imp Soln:	1138.5
After ~100g H_2O Rinse:	1246.7
Total TS4:	837.4

Impinger Box ID: 2

CWTR = 1 + 2 + 3 + 4: 647.0

WCBDA=S: 16.8

Train Loaded By: TT
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.: 22230
Sample Batch No.: 23-22230-SVOC-

Test No.: 2
Test Date: Apr 26/23
Test Location: Unit 2

Sample ID 26	Sample ID 27	Sample ID 28	Sample ID 29	Sample ID 30	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 281.2	Colour: WHITE	Initial Wt: 383.1	Impinger #1 Empty	Empty Wt: 281.0	Initial Wt: 1009.6
After Acetone/ Hexane Rinse: 477.0	FOLD IN FOIL	1 Final Wt: 396.1	Empty Wt: 627.2	After Acetone/ Hexane Rinse: 428.5	5 Final Wt: 1025.6
Total TS1: 195.8	SEAL AND LABEL CONTAINER TS2	Gain: 8.0	Final Wt: 955.5	Total TS5: 147.5	Gain: 16.0
MARK FLUID LEVEL		Colour: WHITE	2 Gain: 328.3		% Spent:
SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour: clear		
		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 563.5		
			Initial Wt: 664.7		
			Final Wt: 914.2		
			3 Gain: 249.5		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 624.5		
			Final Wt: 720.0		
			4 Gain: 95.5		
			Colour: clear		
			Container TS4 Weights		
			Empty Wt: 490.2		
			With Imp Soln: 1165.2		
			After ~100g H_2O Rinse: 1287.5		
			Total TS4: 881.3		

Impinger Box ID: 4

CWTR = 1 + 2 + 3 + 4: 681.3

WCBDA=5: 16.0

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	2
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22230
Sample Batch No.:	23-22230-SVOC-

Test No.:	3
Test Date:	Nov 27/23
Test Location:	UNIT 2

Sample ID	31	Sample ID	32	Sample ID	33	Sample ID	34	Sample ID	35	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser		Filter		XAD-II Trap		Impingers 1, 2 & 3		Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers		Impinger 4 Silica Gel
CONTAINER TS1		CONTAINER TS2		CONTAINER TS3		CONTAINER TS4		CONTAINER TS5		CONTAINER TS6 (Impinger)
Empty Wt:	282.0	Colour:		Initial Wt:	394.1	Impinger #1 Empty		Empty Wt:	281.5	Initial Wt: 1023.5
After Acetone/ Hexane Rinse:	464.2	FOLD IN FOIL		Final Wt:	401.0	Empty Wt:	676.0	After Acetone/ Hexane Rinse:	403.7	Final Wt: 1036.2
Total TS1:	182.2	SEAL AND LABEL CONTAINER TS2		1 Gain:	6.9	Final Wt:	1003.5	5 Gain:	122.2	Gain: 12.7
MARK FLUID LEVEL				Colour:	WHITE	2 Gain:	327.5	% Spent:		
SEAL AND LABEL CONTAINER TS1				SEAL TRAP		Colour:	clear			
				WRAP IN FOIL		Impinger #2 Ethylene Glycol				
				LABEL A5 CONTAINER TS3		Empty Wt:	554.5			
						Initial Wt:	664.8			
						Final Wt:	907.0			
						3 Gain:	242.2			
						Colour:	clear			
						Impinger #3 Empty				
						Empty Wt:	600.5			
						Final Wt:	695.0			
						4 Gain:	94.5			
						Colour:	clear			
						Container TS4 Weights				
						Empty Wt:	404.5			
						With Imp Soln:	1169.0			
						After ~100g H_2O Rinse:	1310.5			
						Total TS4:	906.0			

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	6
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Impinger Box ID: 2

671.1

CWTR = 1 + 2 + 3 + 4: ~~971~~

WCBDA=5: 12.7

Train Loaded By:

Train Recovered By:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22230
Sample Batch No.:	23-22230-SVOC-

Test No.:	BLANK 2
Test Date:	Apr 27/23
Test Location:	

Sample ID	36	Sample ID	37	Sample ID	38	Sample ID	39	Sample ID	40	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser		Filter		XAD-II Trap		Impingers 1, 2 & 3		Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers		Impinger 4 Silica Gel	
CONTAINER TS1		CONTAINER TS2		CONTAINER TS3		CONTAINER TS4		CONTAINER TS5		CONTAINER TS6 (Impinger)	
Empty Wt:	230.5	Colour:	WHITE	Initial Wt:	387.4	Impinger #1 Empty		Empty Wt:	231.0	Initial Wt:	
After Acetone/ Hexane Rinse:	468.0	FOLD IN FOIL		Final Wt:	387.4	Empty Wt:	610.0	After Acetone/ Hexane Rinse:	490.0	Final Wt:	
Total TS1:	187.5	SEAL AND LABEL CONTAINER TS2		1 Gain:	0	Final Wt:	610.0	Total TS5:	209.0	5 Gain:	
MARK FLUID LEVEL				Colour:	WHITE	2 Gain:	0			% Spent:	
SEAL AND LABEL CONTAINER TS1				SEAL TRAP		Colour:					
				WRAP IN FOIL		Impinger #2 Ethylene Glycol					
				LABEL AS CONTAINER TS3		Empty Wt:	658.5				
						Initial Wt:	760.0				
						Final Wt:	760.0				
						3 Gain:	0				
						Colour:					
						Impinger #3 Empty					
						Empty Wt:	540.0				
						Final Wt:	540.0				
						4 Gain:	0				
						Colour:					
						Container TS4 Weights					
						Empty Wt:	407.5				
						With Imp Soln:	512.8				
						After ~100g H_2O Rinse:	614.0				
						Total TS4:	206.5				

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Trap ID:	5
H2O Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Impinger Box ID:

CWTR = 1 + 2 + 3 + 4:	
WCBDA=5:	

Train Loaded By: DT

Train Recovered By:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

APPENDIX 15

SVOC Analytical Report
(70 pages)

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2750279		Mississauga, ON
Date of Report	9-Jun-23		L5J 2Y4
Date of Sample Receipt	28-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS: **PCDD/F by EPA M23**

For the laboratory control sample (LCS), the targets and standards were not recovered during the original analysis. As a result, the LCS has been reported from the preparation and analysis of an archived portion of extract.

For the sample 23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1, the recoveries of the labelled extraction standards were below the method control limits. As a result, the detection limits are elevated. A reanalysis from a small portion of archived extract did not yield improved results.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis summary Report

Sample Name	23-22230-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1	23-22230-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1	23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1	23-22230-SVOC-(16 THRU 20) BLANK1
ALS Sample ID	L2750279-1	L2750279-2	L2750279-3	L2750279-4
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	26-Apr-23	26-Apr-23	27-Apr-23	27-Apr-23
Extraction Date	4-May-23	4-May-23	4-May-23	4-May-23
Target Analytes	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<4.2	<6.9	<35	<4.8
1,2,3,7,8-PeCDD	<4.8	<5.8	<29	<4.6
1,2,3,4,7,8-HxCDD	6.04	11.2	<26	<6.1
1,2,3,6,7,8-HxCDD	<14	27.0	<25	<5.8
1,2,3,7,8,9-HxCDD	<9.1	14.2	<25	<5.9
1,2,3,4,6,7,8-HpCDD	124	225	<78	<7.2
OCDD	291	428	348	<13
2,3,7,8-TCDF	<4.0	<14	<32	<2.7
1,2,3,7,8-PeCDF	<4.4	11.7	<18	<2.9
2,3,4,7,8-PeCDF	<4.1	<11	<17	<2.7
1,2,3,4,7,8-HxCDF	6.93	<9.4	<16	<4.8
1,2,3,6,7,8-HxCDF	<7.4	9.48	<15	<4.5
2,3,4,6,7,8-HxCDF	7.15	17.2	<16	<4.7
1,2,3,7,8,9-HxCDF	8.74	11.6	<19	<5.6
1,2,3,4,6,7,8-HpCDF	<24	45.1	<27	<3.9
1,2,3,4,7,8,9-HpCDF	<7.0	<12	<33	<4.7
OCDF	<25	<45	<63	<11
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	104	109	111	110
13C12-1,2,3,4,7,8-HxCDD	105	109	105	107
13C12-2,3,4,7,8-PeCDF	100	104	108	97
13C12-1,2,3,4,7,8-HxCDF	100	104	104	107
13C12-1,2,3,4,7,8,9-HpCDF	102	109	97	103
Extraction Standards				
13C12-2,3,7,8-TCDD	101	75	11	104
13C12-1,2,3,7,8-PeCDD	105	82	13	94
13C12-1,2,3,6,7,8-HxCDD	113	85	14	122
13C12-1,2,3,4,6,7,8-HpCDD	100	86	11	99
13C12-OCDD	80	74	8	75
13C12-2,3,7,8-TCDF	104	82	12	106
13C12-1,2,3,7,8-PeCDF	111	87	12	104
13C12-1,2,3,6,7,8-HxCDF	118	88	14	133
13C12-1,2,3,4,6,7,8-HpCDF	107	85	12	109
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	125	98	16	153
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**
Total-TCDD	60.8	102	<35	<4.8
Total-PeCDD	98.6	159	105	<4.6
Total-HxCDD	248	319	201	<6.1
Total-HpCDD	281	452	144	<7.2
Total-TCDF	21.1	107	<32	<2.7
Total-PeCDF	10.6	37.1	<18	<2.9
Total-HxCDF	46.1	55.8	<19	<5.6
Total-HpCDF	9.46	71.8	<33	<4.7
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	4.21	12.2	0.104	0.00
Mid Point PCDD/F TEQ (WHO 2005)	15.3	23.7	44.7	7.24
Upper Bound PCDD/F TEQ (WHO 2005)	18.3	30.7	88.5	14.5

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Sample Analysis summary Report

Sample Name	23-22230-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	23-22230-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2	23-22230-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	23-22230-SVOC-(36 THRU 40) BLANK2
ALS Sample ID	L2750279-5	L2750279-6	L2750279-7	L2750279-8
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	26-Apr-23	26-Apr-23	27-Apr-23	27-Apr-23
Extraction Date	4-May-23	4-May-23	4-May-23	4-May-23
Target Analytes	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<5.9	<6.9	<8.8	<8.5
1,2,3,7,8-PeCDD	<7.4	10.7	<12	<8.3
1,2,3,4,7,8-HxCDD	28.3	<25	<38	<7.9
1,2,3,6,7,8-HxCDD	83.1	<69	83.7	<7.6
1,2,3,7,8,9-HxCDD	34.7	29.9	42.0	<7.8
1,2,3,4,6,7,8-HpCDD	400	334	328	<8.9
OCDD	201	154	<180	<17
2,3,7,8-TCDF	<8.6	<9.3	<16	<7.2
1,2,3,7,8-PeCDF	10.8	<7.5	<11	<4.9
2,3,4,7,8-PeCDF	26.5	<23	<20	<4.5
1,2,3,4,7,8-HxCDF	<23	<21	<21	<4.5
1,2,3,6,7,8-HxCDF	28.5	<22	30.4	<4.3
2,3,4,6,7,8-HxCDF	43.9	<47	<39	<4.4
1,2,3,7,8,9-HxCDF	20.2	<13	<12	<8.1
1,2,3,4,6,7,8-HpCDF	<100	87.9	<95	<4.7
1,2,3,4,7,8,9-HpCDF	<21	<17	<14	<5.5
OCDF	<45	<17	<26	<13
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	106	106	102	105
13C12-1,2,3,4,7,8-HxCDD	110	104	108	106
13C12-2,3,4,7,8-PeCDF	105	101	97	103
13C12-1,2,3,4,7,8-HxCDF	100	98	106	103
13C12-1,2,3,4,7,8,9-HpCDF	113	101	99	110
Extraction Standards				
13C12-2,3,7,8-TCDD	89	71	51	36
13C12-1,2,3,7,8-PeCDD	105	82	51	41
13C12-1,2,3,6,7,8-HxCDD	96	70	58	43
13C12-1,2,3,4,6,7,8-HpCDD	92	56	44	41
13C12-OCDD	78	41	30	37
13C12-2,3,7,8-TCDF	87	72	51	37
13C12-1,2,3,7,8-PeCDF	105	83	56	42
13C12-1,2,3,6,7,8-HxCDF	100	74	62	43
13C12-1,2,3,4,6,7,8-HpCDF	95	63	49	42
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	121	87	87	52
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**
Total-TCDD	197	92.6	247	<8.5
Total-PeCDD	766	755	694	<8.3
Total-HxCDD	1440	1340	1530	<7.9
Total-HpCDD	804	698	328	<8.9
Total-TCDF	46.6	12.3	19.1	<7.2
Total-PeCDF	233	155	123	<4.9
Total-HxCDF	176	120	120	<5.4
Total-HpCDF	45.6	87.9	<14	<5.5
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	36.2	18.0	18.9	0.00
Mid Point PCDD/F TEQ (WHO 2005)	50.5	48.9	53.7	12.3
Upper Bound PCDD/F TEQ (WHO 2005)	53.9	52.8	59.8	23.7

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG3783592-1	WG3783592-2
Sample Size	1	1
Sample size units	Sample	n/a
Percent Moisture	n/a	n/a
Sample Matrix	MEDIA	QC
Sampling Date	n/a	n/a
Extraction Date	4-May-23	4-May-23
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<4.1	82
1,2,3,7,8-PeCDD	<4.0	112
1,2,3,4,7,8-HxCDD	<3.3	103
1,2,3,6,7,8-HxCDD	<3.2	98
1,2,3,7,8,9-HxCDD	<5.3	100
1,2,3,4,6,7,8-HpCDD	<5.4	95
OCDD	142	88
2,3,7,8-TCDF	<3.6	101
1,2,3,7,8-PeCDF	<2.3	99
2,3,4,7,8-PeCDF	<2.1	79
1,2,3,4,7,8-HxCDF	<2.4	89
1,2,3,6,7,8-HxCDF	<2.1	90
2,3,4,6,7,8-HxCDF	2.87	83
1,2,3,7,8,9-HxCDF	<7.5	87
1,2,3,4,6,7,8-HpCDF	<3.6	91
1,2,3,4,7,8,9-HpCDF	<4.4	86
OCDF	<26	84
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	88	51
13C12-1,2,3,7,8-PeCDD	99	35
13C12-1,2,3,6,7,8-HxCDD	94	63
13C12-1,2,3,4,6,7,8-HpCDD	86	64
13C12-OCDD	66	67
13C12-2,3,7,8-TCDF	85	51
13C12-1,2,3,7,8-PeCDF	102	44
13C12-1,2,3,6,7,8-HxCDF	95	72
13C12-1,2,3,4,6,7,8-HpCDF	90	62
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	125	85
Homologue Group Totals	**pg**	
Total-TCDD	<4.1	
Total-PeCDD	<4.0	
Total-HxCDD	<3.3	
Total-HpCDD	<5.4	
Total-TCDF	<3.6	
Total-PeCDF	4.56	
Total-HxCDF	2.87	
Total-HpCDF	<4.4	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.330	
Mid Point PCDD/F TEQ (WHO 2005)	6.93	
Upper Bound PCDD/F TEQ (WHO 2005)	12.0	

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	26-Apr-23		Approved:
ALS Sample ID	L2750279-1	Extraction Date	4-May-23		*K.NGUYEN*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-230516A10
Run Date	16-May-23 11:20
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS7 ZBDX1146807

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	31.58	<4.8	3.9	M,J,R	4.8	150
1,2,3,4,7,8-HxCDD	0.1	33.79	6.04	4.4	M,J		150
1,2,3,6,7,8-HxCDD	0.1	33.86	<14	4.2	M,J,R	14	150
1,2,3,7,8,9-HxCDD	0.1	34.07	<9.1	4.3	M,J,R	9.1	150
1,2,3,4,6,7,8-HpCDD	0.01	36.34	124	4.1	J		150
OCDD	0.0003	39.21	291	8.3	J,B		300
2,3,7,8-TCDF	0.1	NotFnd	<4.0	4.0	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<4.4	4.4	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<4.1	4.1	U		150
1,2,3,4,7,8-HxCDF	0.1	33.23	6.93	3.3	M,J		150
1,2,3,6,7,8-HxCDF	0.1	33.31	<7.4	3.2	M,J,R	7.4	150
2,3,4,6,7,8-HxCDF	0.1	33.74	7.15	3.3	J,B		150
1,2,3,7,8,9-HxCDF	0.1	34.44	8.74	4.0	J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.41	<24	5.8	M,J,R	24	150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<7.0	7.0	U		150
OCDF	0.0003	39.53	<25	6.1	M,J,R	25	300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.51	104	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.78	105	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.45	100	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.20	100	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.96	102	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.49	101	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.55	105	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.86	113	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.33	100	25-130
13C12-OCDD	24000	39.19	80	25-130
13C12-2,3,7,8-TCDF	12000	27.94	104	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.82	111	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.30	118	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.40	107	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	34.42	125	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	1	60.8	4.2	30
Total-PeCDD	3	98.6	3.9	150
Total-HxCDD	3	248	4.4	150
Total-HpCDD	2	281	4.1	150
Total-TCDF	3	21.1	4.0	30
Total-PeCDF	2	10.6	4.4	150
Total-HxCDF	5	46.1	4.0	150
Total-HpCDF	1	9.46	7.0	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	4.21
Mid Point PCDD/F TEQ (WHO 2005)	15.3
Upper Bound PCDD/F TEQ (WHO 2005)	18.3

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**23-22230-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	26-Apr-23		Approved:
ALS Sample ID	L2750279-2	Extraction Date	4-May-23		*K.NGUYEN*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-230516A11
Run Date	16-May-23 12:05
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS7 ZBDX1146807

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<6.9	6.9	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<5.8	5.8	U		150
1,2,3,4,7,8-HxCDD	0.1	33.81	11.2	7.1	M,J		150
1,2,3,6,7,8-HxCDD	0.1	33.88	27.0	6.8	M,J		150
1,2,3,7,8,9-HxCDD	0.1	34.06	14.2	6.9	M,J		150
1,2,3,4,6,7,8-HpCDD	0.01	36.35	225	5.9			150
OCDD	0.0003	39.22	428	11	B		300
2,3,7,8-TCDF	0.1	NotFnd	<14	14	U		30
1,2,3,7,8-PeCDF	0.03	30.83	11.7	5.6	M,J		150
2,3,4,7,8-PeCDF	0.3	31.46	<11	5.2	M,J,R	11	150
1,2,3,4,7,8-HxCDF	0.1	33.23	<9.4	7.7	J,R	9.4	150
1,2,3,6,7,8-HxCDF	0.1	33.31	9.48	7.3	J		150
2,3,4,6,7,8-HxCDF	0.1	33.74	17.2	7.5	J,B		150
1,2,3,7,8,9-HxCDF	0.1	34.44	11.6	9.1	M,J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.42	45.1	5.7	J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.97	<12	6.9	M,J,R	12	150
OCDF	0.0003	39.58	<45	7.7	M,J,R	45	300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1200	28.52	109	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.79	109	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.46	104	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	33.21	104	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.97	109	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.49	75	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.57	82	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.86	85	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.34	86	25-130			
13C12-OCDD	24000	39.20	74	25-130			
13C12-2,3,7,8-TCDF	12000	27.95	82	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.83	87	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.31	88	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.41	85	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	18000	34.43	98	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	2	102	6.9	30
Total-PeCDD	3	159	5.8	150
Total-HxCDD	4	319	7.1	150
Total-HpCDD	2	452	5.9	150
Total-TCDF	4	107	14	30
Total-PeCDF	4	37.1	5.6	150
Total-HxCDF	4	55.8	9.1	150
Total-HpCDF	3	71.8	6.9	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	12.2
Mid Point PCDD/F TEQ (WHO 2005)	23.7
Upper Bound PCDD/F TEQ (WHO 2005)	30.7

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	27-Apr-23		Approved:
ALS Sample ID	L2750279-3	Extraction Date	4-May-23		*K.NGUYEN*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-230516A12
Run Date	16-May-23 12:50
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS7 ZBDX1146807

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<35	35	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<29	29	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<26	26	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<25	25	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<25	25	U		150
1,2,3,4,6,7,8-HpCDD	0.01	36.38	<78	34	M,J,R	78	150
OCDD	0.0003	39.20	348	90	M,B		300
2,3,7,8-TCDF	0.1	NotFnd	<32	32	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<18	18	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<17	17	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<16	16	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<15	15	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<16	16	U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<19	19	U		150
1,2,3,4,6,7,8-HpCDF	0.01	35.41	<27	27	M,U	15	150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<33	33	U		150
OCDF	0.0003	NotFnd	<63	63	U		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.52	111	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.80	105	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.46	108	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.23	104	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.97	97	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.51	11	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.57	13	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.87	14	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.35	11	25-130
13C12-OCDD	24000	39.21	8	25-130
13C12-2,3,7,8-TCDF	12000	27.95	12	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.83	12	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.31	14	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.41	12	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	34.43	16	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	0	<35	35	U	30
Total-PeCDD	1	105	29		150
Total-HxCDD	1	201	26		150
Total-HpCDD	1	144	34		150
Total-TCDF	0	<32	32	U	30
Total-PeCDF	0	<18	18	U	150
Total-HxCDF	0	<19	19	U	150
Total-HpCDF	0	<33	33	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.104
Mid Point PCDD/F TEQ (WHO 2005)	44.7
Upper Bound PCDD/F TEQ (WHO 2005)	88.5

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**23-22230-SVOC-(16 THRU 20) BLANK1**	Sampling Date	27-Apr-23		Approved:
ALS Sample ID	L2750279-4	Extraction Date	4-May-23		*K.NGUYEN*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-230516A08
Run Date	16-May-23 09:51
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS7 ZBDX1146807

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<4.8	4.8	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<4.6	4.6	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<6.1	6.1	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<5.8	5.8	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<5.9	5.9	U		150
1,2,3,4,6,7,8-HpCDD	0.01	36.35	<7.2	7.2	M,U	4.2	150
OCDD	0.0003	NotFnd	<13	13	U		300
2,3,7,8-TCDF	0.1	NotFnd	<2.7	2.7	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<2.9	2.9	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<2.7	2.7	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<4.8	4.8	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<4.5	4.5	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<4.7	4.7	U		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<5.6	5.6	U		150
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<3.9	3.9	U		150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<4.7	4.7	U		150
OCDF	0.0003	NotFnd	<11	11	U		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.51	110	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.79	107	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.46	97	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.21	107	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.97	103	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.49	104	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.57	94	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.87	122	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.34	99	25-130
13C12-OCDD	24000	39.20	75	25-130
13C12-2,3,7,8-TCDF	12000	27.95	106	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.83	104	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.31	133	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.41	109	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	34.43	153	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<4.8	4.8	U	30
Total-PeCDD	0	<4.6	4.6	U	150
Total-HxCDD	0	<6.1	6.1	U	150
Total-HpCDD	0	<7.2	7.2	U	150
Total-TCDF	0	<2.7	2.7	U	30
Total-PeCDF	0	<2.9	2.9	U	150
Total-HxCDF	0	<5.6	5.6	U	150
Total-HpCDF	0	<4.7	4.7	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	7.24
Upper Bound PCDD/F TEQ (WHO 2005)	14.5

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	26-Apr-23		Approved:
ALS Sample ID	L2750279-5	Extraction Date	4-May-23		*K.NGUYEN*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-230516A13
Run Date	16-May-23 13:35
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS7 Z8DX1146807

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	31.57	<7.4	3.4	M,J,R	7.4	150
1,2,3,4,7,8-HxCDD	0.1	33.79	28.3	7.9	J		150
1,2,3,6,7,8-HxCDD	0.1	33.86	83.1	7.5	J		150
1,2,3,7,8,9-HxCDD	0.1	34.06	34.7	7.7	J		150
1,2,3,4,6,7,8-HpCDD	0.01	36.34	400	4.2			150
DCDD	0.0003	39.21	201	6.5	J,B		300
2,3,7,8-TCDF	0.1	NotFnd	<8.6	8.6	U		30
1,2,3,7,8-PeCDF	0.03	30.82	10.8	5.6	M,J		150
2,3,4,7,8-PeCDF	0.3	31.46	26.5	5.2	M,J		150
1,2,3,4,7,8-HxCDF	0.1	33.21	<23	4.7	M,J,R	23	150
1,2,3,6,7,8-HxCDF	0.1	33.31	28.5	4.5	J		150
2,3,4,6,7,8-HxCDF	0.1	33.73	43.9	4.6	J		150
1,2,3,7,8,9-HxCDF	0.1	34.43	20.2	5.6	J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.41	<100	1.9	M,J,R	100	150
1,2,3,4,7,8,9-HpCDF	0.01	36.96	<21	2.3	J,R	21	150
OCDF	0.0003	39.55	<45	5.9	M,J,R	45	300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.51	106	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.78	110	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.45	105	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.20	100	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.96	113	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.48	89	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.55	105	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.86	96	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.33	92	25-130
13C12-DCDD	24000	39.19	78	25-130
13C12-2,3,7,8-TCDF	12000	27.94	87	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.82	105	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.30	100	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.40	95	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	34.41	121	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	2	197	5.9	30
Total-PeCDD	6	766	3.4	150
Total-HxCDD	7	1440	7.9	150
Total-HpCDD	2	804	4.2	150
Total-TCDF	1	46.6	8.6	30
Total-PeCDF	10	233	5.6	150
Total-HxCDF	5	176	5.6	150
Total-HpCDF	1	45.6	2.3	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	36.2
Mid Point PCDD/F TEQ (WHO 2005)	50.5
Upper Bound PCDD/F TEQ (WHO 2005)	53.9

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	**23-22230-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	26-Apr-23		
ALS Sample ID	L2750279-6	Extraction Date	4-May-23		Approved:
Analysis Method	EPA M23	Sample Size	1	Sample	*K.NGUYEN*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		08-Jun-2023

Run Information	**Run 1**
Filename	7-230516A14
Run Date	16-May-23 14:19
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS7 ZBDX1146807

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<6.9	6.9	U		30
1,2,3,7,8-PeCDD	1	31.57	10.7	4.1	M,J		150
1,2,3,4,7,8-HxCDD	0.1	33.79	<25	5.4	J,R	25	150
1,2,3,6,7,8-HxCDD	0.1	33.86	<69	5.1	M,J,R	69	150
1,2,3,7,8,9-HxCDD	0.1	34.06	29.9	5.2	J		150
1,2,3,4,6,7,8-HpCDD	0.01	36.34	334	9.1			150
OCDD	0.0003	39.21	154	15	J,B		300
2,3,7,8-TCDF	0.1	NotFnd	<9.3	9.3	U		30
1,2,3,7,8-PeCDF	0.03	30.83	<7.5	4.7	J,R	7.5	150
2,3,4,7,8-PeCDF	0.3	31.46	<23	4.4	J,R	23	150
1,2,3,4,7,8-HxCDF	0.1	33.21	<21	10	J,R	21	150
1,2,3,6,7,8-HxCDF	0.1	33.31	<22	9.6	J,R	22	150
2,3,4,6,7,8-HxCDF	0.1	33.74	<47	9.9	J,R	47	150
1,2,3,7,8,9-HxCDF	0.1	34.44	<13	12	J,R	13	150
1,2,3,4,6,7,8-HpCDF	0.01	35.41	87.9	4.8	J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.98	<17	5.8	J,R	17	150
OCDF	0.0003	39.55	<17	9.4	J,R	17	300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.51	106	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.78	104	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.45	101	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.20	98	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.96	101	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.49	71	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.55	82	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.85	70	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.33	56	25-130
13C12-OCDD	24000	39.19	41	25-130
13C12-2,3,7,8-TCDF	12000	27.94	72	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.82	83	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.30	74	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.40	63	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	34.42	87	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	2	92.6	6.9	30
Total-PeCDD	6	755	4.1	150
Total-HxCDD	4	1340	5.4	150
Total-HpCDD	2	698	9.1	150
Total-TCDF	2	12.3	9.3	30
Total-PeCDF	5	155	4.7	150
Total-HxCDF	3	120	12	150
Total-HpCDF	1	87.9	5.8	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	18.0
Mid Point PCDD/F TEQ (WHO 2005)	48.9
Upper Bound PCDD/F TEQ (WHO 2005)	52.8

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	**23-22230-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	27-Apr-23		Approved:
ALS Sample ID	L2750279-7	Extraction Date	4-May-23		*K.NGUYEN*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-230516A15
Run Date	16-May-23 15:04
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS7 ZBDX1146807

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<6.8	8.8	U		30
1,2,3,7,8-PeCDD	1	31.58	<12	8.7	M,J,R	12	150
1,2,3,4,7,8-HxCDD	0.1	33.80	<38	23	M,J,R	38	150
1,2,3,6,7,8-HxCDD	0.1	33.88	83.7	22	M,J		150
1,2,3,7,8,9-HxCDD	0.1	34.07	42.0	23	J		150
1,2,3,4,6,7,8-HpCDD	0.01	36.35	328	20			150
OCDD	0.0003	39.22	<180	28	M,J,R	180	300
2,3,7,8-TCDF	0.1	NotFnd	<16	16	U		30
1,2,3,7,8-PeCDF	0.03	30.84	<11	11	U	10	150
2,3,4,7,8-PeCDF	0.3	31.47	<20	11	J,R	20	150
1,2,3,4,7,8-HxCDF	0.1	33.23	<21	9.8	J,R	21	150
1,2,3,6,7,8-HxCDF	0.1	33.32	30.4	9.4	J		150
2,3,4,6,7,8-HxCDF	0.1	33.76	<39	9.6	J,R	39	150
1,2,3,7,8,9-HxCDF	0.1	34.43	<12	12	U	9.5	150
1,2,3,4,6,7,8-HpCDF	0.01	35.42	<95	11	J,R	95	150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<14	14	U		150
OCDF	0.0003	NotFnd	<26	26	U		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1200	28.51	102	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.79	108	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.46	97	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	33.21	106	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.97	99	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.49	51	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.57	51	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.87	58	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.34	44	25-130			
13C12-OCDD	24000	39.21	30	25-130			
13C12-2,3,7,8-TCDF	12000	27.95	51	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.83	56	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.31	62	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.41	49	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	18000	34.43	87	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	2	247	8.8		30
Total-PeCDD	4	694	8.7		150
Total-HxCDD	6	1530	23		150
Total-HpCDD	1	328	20		150
Total-TCDF	3	19.1	16		30
Total-PeCDF	3	123	11		150
Total-HxCDF	2	120	12		150
Total-HpCDF	0	<14	14	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	18.9
Mid Point PCDD/F TEQ (WHO 2005)	53.7
Upper Bound PCDD/F TEQ (WHO 2005)	59.8

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(36 THRU 40) BLANK2**	Sampling Date	27-Apr-23		Approved:
ALS Sample ID	L2750279-8	Extraction Date	4-May-23		*K.NGUYEN*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		08-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-230516A09
Run Date	16-May-23 10:36
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS7 ZBDX1146807

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<8.5	8.5	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<8.3	8.3	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<7.9	7.9	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<7.6	7.6	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<7.8	7.8	U		150
1,2,3,4,6,7,8-HpCDD	0.01	NotFnd	<8.9	8.9	U		150
OCDD	0.0003	39.22	<17	17	M,U	17	300
2,3,7,8-TCDF	0.1	NotFnd	<7.2	7.2	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<4.9	4.9	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<4.5	4.5	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<4.5	4.5	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<4.3	4.3	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<4.4	4.4	U		150
1,2,3,7,8,9-HxCDF	0.1	34.44	<8.1	5.4	J,R	8.1	150
1,2,3,4,6,7,8-HpCDF	0.01	35.41	<4.7	4.5	M,J,R	4.7	150
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<5.5	5.5	U		150
OCDF	0.0003	NotFnd	<13	13	U		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1200	28.52	105	70-130
13C12-1,2,3,4,7,8-HxCDD	12000	33.79	106	70-130
13C12-2,3,4,7,8-PeCDF	12000	31.46	103	70-130
13C12-1,2,3,4,7,8-HxCDF	12000	33.23	103	70-130
13C12-1,2,3,4,7,8,9-HpCDF	12000	36.97	110	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.51	36	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.57	41	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.87	43	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.35	41	25-130
13C12-OCDD	24000	39.21	37	25-130
13C12-2,3,7,8-TCDF	12000	27.95	37	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.83	42	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.31	43	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.41	42	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	34.43	52	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<8.5	8.5	U	30
Total-PeCDD	0	<8.3	8.3	U	150
Total-HxCDD	0	<7.9	7.9	U	150
Total-HpCDD	0	<8.9	8.9	U	150
Total-TCDF	0	<7.2	7.2	U	30
Total-PeCDF	0	<4.9	4.9	U	150
Total-HxCDF	0	<5.4	5.4	U	150
Total-HpCDF	0	<5.5	5.5	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	12.3
Upper Bound PCDD/F TEQ (WHO 2005)	23.7

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		
ALS Sample ID	WG3783592-1	Extraction Date	4-May-23		Approved:
Analysis Method	EPA M23	Sample Size	1	Sample	*K.NGUYEN*
Analysis Type	Blank	Percent Moisture	n/a		--e-signature--
Sample Matrix	MEDIA	Split Ratio	6		08-Jun-2023

Run Information	**Run 1**
Filename	7-230516A06
Run Date	16-May-23 08:22
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS7 ZBDX1146807

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	NotFnd	<4.0	4.0	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<3.3	3.3	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<3.2	3.2	U		150
1,2,3,7,8,9-HxCDD	0.1	34.05	<5.3	3.2	M,J,R	5.3	150
1,2,3,4,6,7,8-HpCDD	0.01	36.35	<5.4	5.4	M,U	4.8	150
OCDD	0.0003	39.21	142	9.7	J		300
2,3,7,8-TCDF	0.1	NotFnd	<3.6	3.6	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<2.3	2.3	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<2.1	2.1	U		150
1,2,3,4,7,8-HxCDF	0.1	33.23	<2.4	2.2	M,J,R	2.4	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	33.74	2.87	2.1	M,J		150
1,2,3,7,8,9-HxCDF	0.1	34.42	<7.5	2.6	M,J,R	7.5	150
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<3.6	3.6	U		150
1,2,3,4,7,8,9-HpCDF	0.01	37.00	<4.4	4.4	M,U	2.4	150
OCDF	0.0003	39.54	<26	7.7	M,J,R	26	300

Field Spike Standards	**pg**	**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	0	NS	
13C12-1,2,3,4,7,8-HxCDD	0	NS	
13C12-2,3,4,7,8-PeCDF	0	NS	
13C12-1,2,3,4,7,8-HxCDF	0	NS	
13C12-1,2,3,4,7,8,9-HpCDF	0	NS	

Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.49	88	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.55	99	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.86	94	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.34	86	25-130
13C12-OCDD	24000	39.19	66	25-130
13C12-2,3,7,8-TCDF	12000	27.94	85	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.82	102	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.30	95	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.40	90	25-130

Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	18000	34.42	125	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<4.1	4.1	U	30
Total-PeCDD	0	<4.0	4.0	U	150
Total-HxCDD	0	<3.3	3.3	U	150
Total-HpCDD	0	<5.4	5.4	U	150
Total-TCDF	0	<3.6	3.6	U	30
Total-PeCDF	1	4.56	2.3		150
Total-HxCDF	1	2.87	2.6		150
Total-HpCDF	0	<4.4	4.4	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.330
Mid Point PCDD/F TEQ (WHO 2005)	6.93
Upper Bound PCDD/F TEQ (WHO 2005)	12.0

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
NS	Indicates that this compound was not spiked
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	WG3783592-2	Extraction Date	4-May-23		Approved:
Analysis Method	EPA M23	Sample Size	1	n/a	*K.NGUYEN*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	12		08-Jun-2023

Run Information	**Run 1**
Filename	9-230607B17
Run Date	08-Jun-23 05:19
Final Volume	10 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS9 ZBDX1146808

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1200	28.46	82	70-130	
1,2,3,7,8-PeCDD	6000	31.53	112	70-130	
1,2,3,4,7,8-HxCDD	6000	33.73	103	70-130	
1,2,3,6,7,8-HxCDD	6000	33.81	98	70-130	
1,2,3,7,8,9-HxCDD	6000	34.00	100	70-130	
1,2,3,4,6,7,8-HpCDD	6000	36.26	95	70-130	
OCDD	12000	39.12	88	70-130	
2,3,7,8-TCDF	1200	27.91	101	70-130	
1,2,3,7,8-PeCDF	6000	30.80	99	70-130	
2,3,4,7,8-PeCDF	6000	31.42	79	70-130	
1,2,3,4,7,8-HxCDF	6000	33.16	89	70-130	
1,2,3,6,7,8-HxCDF	6000	33.26	90	70-130	
2,3,4,6,7,8-HxCDF	6000	33.68	83	70-130	
1,2,3,7,8,9-HxCDF	6000	34.37	87	70-130	
1,2,3,4,6,7,8-HpCDF	6000	35.33	91	70-130	
1,2,3,4,7,8,9-HpCDF	6000	36.90	86	70-130	
OCDF	12000	39.46	84	70-130	
Field Spike Standards	**pg**		**% Rec**	**Limits**	
37Cl4-2,3,7,8-TCDD	0		NS		
13C12-1,2,3,4,7,8-HxCDD	0		NS		
13C12-2,3,4,7,8-PeCDF	0		NS		
13C12-1,2,3,4,7,8-HxCDF	0		NS		
13C12-1,2,3,4,7,8,9-HpCDF	0		NS		
Extraction Standards					
13C12-2,3,7,8-TCDD	12000	28.45	51	40-130	
13C12-1,2,3,7,8-PeCDD	12000	31.52	35	40-130	
13C12-1,2,3,6,7,8-HxCDD	12000	33.80	63	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.26	64	25-130	
13C12-OCDD	24000	39.11	67	25-130	
13C12-2,3,7,8-TCDF	12000	27.89	51	40-130	
13C12-1,2,3,7,8-PeCDF	12000	30.79	44	40-130	
13C12-1,2,3,6,7,8-HxCDF	12000	33.25	72	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.32	62	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCOF	18000	34.36	85	40-130	

NS Indicates that this compund was not spiked

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2750279		Mississauga, ON
Date of Report	09-Jun-23		L5J 2Y4
Date of Sample Receipt	28-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS: **PCB Congeners by EPA 1668C**

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

For the sample 23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1, the results have been reported from the preparation and analysis of a small portion of archived extract. As a result, the detection limits are elevated. Reported target data are not expected to be biased, where detected.

The recovery of the field standard 13C12-PCB-095 is marginally above the method control limit for this sample. All other field standard recoveries are within limits.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	23-22230-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1	23-22230-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1	23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1	23-22230-SVOC-(16 THRU 20) BLANK1
ALS Sample ID	L2750279-1	L2750279-2	L2750279-3	L2750279-4
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	26-Apr-23	26-Apr-23	27-Apr-23	27-Apr-23
Extraction Date	4-May-23	4-May-23	4-May-23	4-May-23
Target Analytes	**pg**	**pg**	**pg**	**pg**
PCB-081	<13	15.5	<35	<7.3
PCB-077	297	483	549	<7.6
PCB-123	<120	175	<33	<13
PCB-118	7660	11600	3240	<12
PCB-114	185	289	73.0	<13
PCB-105	2110	3290	798	<13
PCB-126	<18	27.1	40.4	<13
PCB-167	<58	80.2	37.9	<4.4
PCB-156/157	151	188	<39	<6.1
PCB-169	<9.1	<11	<18	<4.5
PCB-189	<4.6	<3.0	<12	<5.6
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-081	55	78	27	38
13C12-PCB-077	53	75	25	37
13C12-PCB-123	52	74	22	37
13C12-PCB-118	54	73	24	37
13C12-PCB-114	55	75	25	38
13C12-PCB-105	54	74	29	37
13C12-PCB-126	54	76	28	38
13C12-PCB-167	54	68	18	37
13C12-PCB-156/157	55	70	24	37
13C12-PCB-169	60	76	26	40
13C12-PCB-189	59	75	30	41
Field Spike Standards				
13C12-PCB-031	121	113	93	112
13C12-PCB-095	123	106	135	128
13C12-PCB-153	93	96	70	89
Cleanup Standards				
13C12-PCB-028	65	71	33	58
13C12-PCB-111	59	78	18	44
13C12-PCB-178	53	61	20	46
Toxic Equivalency - (WHO 2005)	**pg**	**pg**	**pg**	**pg**
Lower Bound PCB TEQ	0.333	3.23	4.22	0.00
Mid Point PCB TEQ	1.38	3.40	4.50	0.720
Upper Bound PCB TEQ	2.42	3.56	4.77	1.44

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Sample Analysis Summary Report

Sample Name	23-22230-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	23-22230-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2	23-22230-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	23-22230-SVOC-(36 THRU 40) BLANK2
ALS Sample ID	L2750279-5	L2750279-6	L2750279-7	L2750279-8
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	26-Apr-23	26-Apr-23	27-Apr-23	27-Apr-23
Extraction Date	4-May-23	4-May-23	4-May-23	4-May-23
Target Analytes	**pg**	**pg**	**pg**	**pg**
PCB-081	<21	<14	<8.0	<5.9
PCB-077	219	143	81.7	<6.5
PCB-123	<56	51.5	<23	<8.0
PCB-118	4590	3700	1830	<7.3
PCB-114	104	<98	39.9	<7.3
PCB-105	1390	872	608	<7.6
PCB-126	<14	<12	<10	<7.8
PCB-167	44.0	<25	<21	<2.9
PCB-156/157	116	80.3	81.5	<4.0
PCB-169	<15	<5.9	<7.2	<2.9
PCB-189	<8.8	<4.7	<5.5	<2.0
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-081	49	55	68	56
13C12-PCB-077	48	53	67	53
13C12-PCB-123	47	56	68	53
13C12-PCB-118	47	57	69	55
13C12-PCB-114	49	58	71	57
13C12-PCB-105	50	57	69	54
13C12-PCB-126	50	55	68	56
13C12-PCB-167	50	52	60	55
13C12-PCB-156/157	50	53	62	56
13C12-PCB-169	55	56	69	62
13C12-PCB-189	55	57	68	67
Field Spike Standards				
13C12-PCB-031	106	127	113	113
13C12-PCB-095	120	113	102	118
13C12-PCB-153	90	97	102	96
Cleanup Standards				
13C12-PCB-028	57	61	87	69
13C12-PCB-111	53	60	87	64
13C12-PCB-178	48	57	91	67
Toxic Equivalency - (WHO 2005)	**pg**	**pg**	**pg**	**pg**
Lower Bound PCB TEQ	0.209	0.155	0.0850	0.00
Mid Point PCB TEQ	1.36	0.938	0.804	0.435
Upper Bound PCB TEQ	2.07	1.54	1.30	0.871

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Quality Control Summary Report

Sample Name	Method Blank
ALS Sample ID	WG3783592-1
Sample Size	1
Sample size units	Sample
Percent Moisture	n/a
Sample Matrix	MEDIA
Sampling Date	n/a
Extraction Date	4-May-23
Target Analytes	**pg**
PCB-081	<5.4
PCB-077	<5.8
PCB-123	<6.6
PCB-118	<15
PCB-114	<6.3
PCB-105	<6.5
PCB-126	<6.8
PCB-167	<4.5
PCB-156/157	<6.2
PCB-169	<4.9
PCB-189	<3.3
Extraction Standards	**% Rec**
13C12-PCB-081	46
13C12-PCB-077	44
13C12-PCB-123	46
13C12-PCB-118	46
13C12-PCB-114	47
13C12-PCB-105	46
13C12-PCB-126	47
13C12-PCB-167	47
13C12-PCB-156/157	48
13C12-PCB-169	49
13C12-PCB-189	50
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	68
13C12-PCB-111	60
13C12-PCB-178	65
Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.416
Upper Bound PCB TEQ	0.831

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Sample Analysis Summary Report

Sample Name	Laboratory Control Sample
ALS Sample ID	WG3783592-2
Sample Size	1
Sample size units	n/a
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	4-May-23
Target Analytes	**% Rec**
PCB-081	97
PCB-077	97
PCB-123	96
PCB-118	98
PCB-114	98
PCB-105	94
PCB-126	98
PCB-167	96
PCB-156/157	97
PCB-169	96
PCB-189	92
Extraction Standards	**% Rec**
13C12-PCB-081	51
13C12-PCB-077	51
13C12-PCB-123	54
13C12-PCB-118	52
13C12-PCB-114	53
13C12-PCB-105	54
13C12-PCB-126	52
13C12-PCB-167	37
13C12-PCB-156/157	41
13C12-PCB-169	44
13C12-PCB-189	45
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	61
13C12-PCB-111	59
13C12-PCB-178	55

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Sample Analysis Report

Sample Name	**23-22230-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	26-Apr-23		Approved:
ALS Sample ID	L2750279-1	Extraction Date	4-May-23		*E. Sabljic*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-230513A23
Run Date	14-May-23 07:36
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL276000-03

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<13	13	U		150
PCB-077	0.0001	22.73	297	15			150
PCB-123	0.00003	23.71	<120	17	M,J,R	120	150
PCB-118	0.00003	23.89	7660	16			150
PCB-114	0.00003	24.19	185	16			150
PCB-105	0.00003	24.54	2110	16			150
PCB-126	0.1	NotFnd	<18	18	M,U		150
PCB-167	0.00003	27.03	<58	9.2	J,R	58	150
PCB-156/157	0.00003	27.66	151	12	J		300
PCB-169	0.03	29.35	<9.1	9.1	M,U	7.6	150
PCB-189	0.00003	NotFnd	<4.6	4.6	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.42	55	10-145
13C12-PCB-077	12000	22.72	53	10-145
13C12-PCB-123	12000	23.71	52	10-145
13C12-PCB-118	12000	23.88	54	10-145
13C12-PCB-114	12000	24.18	55	10-145
13C12-PCB-105	12000	24.53	54	10-145
13C12-PCB-126	12000	26.13	54	10-145
13C12-PCB-167	12000	27.03	54	10-145
13C12-PCB-156/157	24000	27.66	55	10-145
13C12-PCB-169	12000	29.32	60	10-145
13C12-PCB-189	12000	30.61	59	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.38	121	70-130
13C12-PCB-095	12000	19.72	123	70-130
13C12-PCB-153	12000	24.81	93	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.55	65	5-145
13C12-PCB-111	18000	22.64	59	10-145
13C12-PCB-178	18000	25.69	53	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.333
Mid Point PCB TEQ	1.38
Upper Bound PCB TEQ	2.42

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**23-22230-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	26-Apr-23		Approved:
ALS Sample ID	L2750279-2	Extraction Date	4-May-23		*E. Sabljic*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-230513A24
Run Date	14-May-23 08:20
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL276000-03

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	22.42	15.5	9.7	M,J		150
PCB-077	0.0001	22.72	483	10			150
PCB-123	0.00003	23.70	175	9.0	M		150
PCB-118	0.00003	23.89	11600	8.3			150
PCB-114	0.00003	24.19	289	8.6			150
PCB-105	0.00003	24.54	3290	8.5			150
PCB-126	0.1	26.15	27.1	8.9	M,J		150
PCB-167	0.00003	27.03	80.2	11	J		150
PCB-156/157	0.00003	27.66	188	15	J		300
PCB-169	0.03	29.32	<11	11	M,U		150
PCB-189	0.00003	NotFnd	<3.0	3.0	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.41	78	10-145
13C12-PCB-077	12000	22.71	75	10-145
13C12-PCB-123	12000	23.70	74	10-145
13C12-PCB-118	12000	23.88	73	10-145
13C12-PCB-114	12000	24.18	75	10-145
13C12-PCB-105	12000	24.53	74	10-145
13C12-PCB-126	12000	26.13	76	10-145
13C12-PCB-167	12000	27.02	68	10-145
13C12-PCB-156/157	24000	27.66	70	10-145
13C12-PCB-169	12000	29.32	76	10-145
13C12-PCB-189	12000	30.60	75	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.38	113	70-130
13C12-PCB-095	12000	19.71	106	70-130
13C12-PCB-153	12000	24.81	96	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.54	71	5-145
13C12-PCB-111	18000	22.64	78	10-145
13C12-PCB-178	18000	25.69	61	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	3.23
Mid Point PCB TEQ	3.40
Upper Bound PCB TEQ	3.56

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	**23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	27-Apr-23		Approved:
ALS Sample ID	L2750279-3	Extraction Date	4-May-23		*E. Sabljic*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2023
Sample Matrix	Stack	Split Ratio	24		

Run Information	**Run 1**
Filename	6-230531B07
Run Date	01-Jun-23 03:07
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL276000-03

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<35	35	U		600
PCB-077	0.0001	22.71	549	40	J		600
PCB-123	0.00003	23.71	<33	33	M,U		600
PCB-118	0.00003	23.86	3240	30			600
PCB-114	0.00003	24.17	73.0	30	M,J		600
PCB-105	0.00003	24.52	798	25			600
PCB-126	0.1	26.10	40.4	28	M,J		600
PCB-167	0.00003	27.00	37.9	24	J		600
PCB-156/157	0.00003	27.64	<39	22	J,R	39	1200
PCB-169	0.03	NotFnd	<18	18	U		600
PCB-189	0.00003	NotFnd	<12	12	U		600

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.39	27	10-145
13C12-PCB-077	12000	22.70	25	10-145
13C12-PCB-123	12000	23.67	22	10-145
13C12-PCB-118	12000	23.84	24	10-145
13C12-PCB-114	12000	24.15	25	10-145
13C12-PCB-105	12000	24.50	29	10-145
13C12-PCB-126	12000	26.10	28	10-145
13C12-PCB-167	12000	26.99	18	10-145
13C12-PCB-156/157	24000	27.63	24	10-145
13C12-PCB-169	12000	29.29	26	10-145
13C12-PCB-189	12000	30.57	30	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.36	93	70-130
13C12-PCB-095	12000	19.69	135	70-130
13C12-PCB-153	12000	24.77	70	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.53	33	5-145
13C12-PCB-111	18000	22.61	18	10-145
13C12-PCB-178	18000	25.66	20	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	4.22
Mid Point PCB TEQ	4.50
Upper Bound PCB TEQ	4.77

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**23-22230-SVOC-(16 THRU 20) BLANK1**	Sampling Date	27-Apr-23		Approved:
ALS Sample ID	L2750279-4	Extraction Date	4-May-23		*E. Sabljic*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-230513A26
Run Date	14-May-23 09:50
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL276000-03

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<7.3	7.3	U		150
PCB-077	0.0001	NotFnd	<7.6	7.6	U		150
PCB-123	0.00003	NotFnd	<13	13	U		150
PCB-118	0.00003	NotFnd	<12	12	U		150
PCB-114	0.00003	NotFnd	<13	13	U		150
PCB-105	0.00003	NotFnd	<13	13	U		150
PCB-126	0.1	NotFnd	<13	13	U		150
PCB-167	0.00003	NotFnd	<4.4	4.4	U		150
PCB-156/157	0.00003	NotFnd	<6.1	6.1	U		300
PCB-169	0.03	NotFnd	<4.5	4.5	U		150
PCB-189	0.00003	NotFnd	<5.6	5.6	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.42	38	10-145
13C12-PCB-077	12000	22.72	37	10-145
13C12-PCB-123	12000	23.71	37	10-145
13C12-PCB-118	12000	23.89	37	10-145
13C12-PCB-114	12000	24.19	38	10-145
13C12-PCB-105	12000	24.54	37	10-145
13C12-PCB-126	12000	26.14	38	10-145
13C12-PCB-167	12000	27.03	37	10-145
13C12-PCB-156/157	24000	27.67	37	10-145
13C12-PCB-169	12000	29.33	40	10-145
13C12-PCB-189	12000	30.61	41	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.39	112	70-130
13C12-PCB-095	12000	19.72	128	70-130
13C12-PCB-153	12000	24.82	89	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.55	58	5-145
13C12-PCB-111	18000	22.65	44	10-145
13C12-PCB-178	18000	25.70	46	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.720
Upper Bound PCB TEQ	1.44

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	26-Apr-23		Approved:
ALS Sample ID	L2750279-5	Extraction Date	4-May-23		*E. Sabljic*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-230513A27
Run Date	14-May-23 10:35
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL276000-03

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<21	21	U		150
PCB-077	0.0001	22.72	219	23			150
PCB-123	0.00003	23.71	<56	14	M,J,R	56	150
PCB-118	0.00003	23.89	4590	14			150
PCB-114	0.00003	24.19	104	14	J		150
PCB-105	0.00003	24.56	1390	13			150
PCB-126	0.1	NotFnd	<14	14	U		150
PCB-167	0.00003	27.05	44.0	10	J		150
PCB-156/157	0.00003	27.66	116	14	J		300
PCB-169	0.03	29.33	<15	10	J,R	15	150
PCB-189	0.00003	NotFnd	<8.8	8.8	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.42	49	10-145
13C12-PCB-077	12000	22.72	48	10-145
13C12-PCB-123	12000	23.71	47	10-145
13C12-PCB-118	12000	23.88	47	10-145
13C12-PCB-114	12000	24.18	49	10-145
13C12-PCB-105	12000	24.53	50	10-145
13C12-PCB-126	12000	26.13	50	10-145
13C12-PCB-167	12000	27.03	50	10-145
13C12-PCB-156/157	24000	27.66	50	10-145
13C12-PCB-169	12000	29.33	55	10-145
13C12-PCB-189	12000	30.61	55	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.38	106	70-130
13C12-PCB-095	12000	19.72	120	70-130
13C12-PCB-153	12000	24.81	90	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.55	57	5-145
13C12-PCB-111	18000	22.64	53	10-145
13C12-PCB-178	18000	25.70	48	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.209
Mid Point PCB TEQ	1.36
Upper Bound PCB TEQ	2.07

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**23-22230-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	26-Apr-23		Approved:
ALS Sample ID	L2750279-6	Extraction Date	4-May-23		*E. Sabljic*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-230513A28
Run Date	14-May-23 11:19
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL276000-03

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<14	14	U		150
PCB-077	0.0001	22.73	143	16	J		150
PCB-123	0.00003	23.72	51.5	11	M,J		150
PCB-118	0.00003	23.89	3700	10			150
PCB-114	0.00003	24.19	<98	10	J,R	98	150
PCB-105	0.00003	24.54	872	10			150
PCB-126	0.1	NotFnd	<12	12	U		150
PCB-167	0.00003	27.05	<25	5.6	J,R	25	150
PCB-156/157	0.00003	27.66	80.3	7.5	J		300
PCB-169	0.03	29.34	<5.9	5.8	M,J,R	5.9	150
PCB-189	0.00003	NotFnd	<4.7	4.7	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.42	55	10-145
13C12-PCB-077	12000	22.72	53	10-145
13C12-PCB-123	12000	23.71	56	10-145
13C12-PCB-118	12000	23.88	57	10-145
13C12-PCB-114	12000	24.18	58	10-145
13C12-PCB-105	12000	24.53	57	10-145
13C12-PCB-126	12000	26.13	55	10-145
13C12-PCB-167	12000	27.03	52	10-145
13C12-PCB-156/157	24000	27.66	53	10-145
13C12-PCB-169	12000	29.32	56	10-145
13C12-PCB-189	12000	30.61	57	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.38	127	70-130
13C12-PCB-095	12000	19.72	113	70-130
13C12-PCB-153	12000	24.81	97	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.55	61	5-145
13C12-PCB-111	18000	22.64	60	10-145
13C12-PCB-178	18000	25.69	57	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.155
Mid Point PCB TEQ	0.938
Upper Bound PCB TEQ	1.54

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
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**23-22230-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	27-Apr-23		Approved:
ALS Sample ID	L2750279-7	Extraction Date	4-May-23		*E. Sabljic*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-230513A29
Run Date	14-May-23 12:04
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL276000-03

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<8.0	8.0	U		150
PCB-077	0.0001	22.73	81.7	8.4	J		150
PCB-123	0.00003	23.72	<23	10	M,J,R	23	150
PCB-118	0.00003	23.89	1830	9.3			150
PCB-114	0.00003	24.19	39.9	9.5	J		150
PCB-105	0.00003	24.54	608	9.6			150
PCB-126	0.1	NotFnd	<10	10	U		150
PCB-167	0.00003	27.03	<21	6.5	J,R	21	150
PCB-156/157	0.00003	27.66	81.5	8.6	J		300
PCB-169	0.03	29.32	<7.2	6.3	M,J,R	7.2	150
PCB-189	0.00003	NotFnd	<5.5	5.5	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.41	68	10-145
13C12-PCB-077	12000	22.71	67	10-145
13C12-PCB-123	12000	23.71	68	10-145
13C12-PCB-118	12000	23.88	69	10-145
13C12-PCB-114	12000	24.18	71	10-145
13C12-PCB-105	12000	24.53	69	10-145
13C12-PCB-126	12000	26.13	68	10-145
13C12-PCB-167	12000	27.02	60	10-145
13C12-PCB-156/157	24000	27.66	62	10-145
13C12-PCB-169	12000	29.32	69	10-145
13C12-PCB-189	12000	30.61	68	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.38	113	70-130
13C12-PCB-095	12000	19.71	102	70-130
13C12-PCB-153	12000	24.81	102	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.54	87	5-145
13C12-PCB-111	18000	22.64	87	10-145
13C12-PCB-178	18000	25.69	91	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0850
Mid Point PCB TEQ	0.804
Upper Bound PCB TEQ	1.30

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**23-22230-SVOC-(36 THRU 40) BLANK2**	Sampling Date	27-Apr-23		Approved:
ALS Sample ID	L2750279-8	Extraction Date	4-May-23		*E. Sabljic*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2023
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-230513A30
Run Date	14-May-23 12:49
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL276000-03

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<5.9	5.9	U		150
PCB-077	0.0001	NotFnd	<6.5	6.5	U		150
PCB-123	0.00003	NotFnd	<8.0	8.0	U		150
PCB-118	0.00003	23.87	<7.3	7.3	U		150
PCB-114	0.00003	NotFnd	<7.3	7.3	U		150
PCB-105	0.00003	NotFnd	<7.6	7.6	U		150
PCB-126	0.1	NotFnd	<7.8	7.8	U		150
PCB-167	0.00003	NotFnd	<2.9	2.9	U		150
PCB-156/157	0.00003	NotFnd	<4.0	4.0	U		300
PCB-169	0.03	NotFnd	<2.9	2.9	U		150
PCB-189	0.00003	NotFnd	<2.0	2.0	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.41	56	10-145
13C12-PCB-077	12000	22.71	53	10-145
13C12-PCB-123	12000	23.71	53	10-145
13C12-PCB-118	12000	23.88	55	10-145
13C12-PCB-114	12000	24.18	57	10-145
13C12-PCB-105	12000	24.53	54	10-145
13C12-PCB-126	12000	26.13	56	10-145
13C12-PCB-167	12000	27.02	55	10-145
13C12-PCB-156/157	24000	27.66	56	10-145
13C12-PCB-169	12000	29.32	62	10-145
13C12-PCB-189	12000	30.60	67	10-145
Field Spike Standards				
13C12-PCB-031	12000	16.38	113	70-130
13C12-PCB-095	12000	19.71	118	70-130
13C12-PCB-153	12000	24.81	96	70-130
Cleanup Standards				
13C12-PCB-028	18000	16.54	69	5-145
13C12-PCB-111	18000	22.64	64	10-145
13C12-PCB-178	18000	25.69	67	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.435
Upper Bound PCB TEQ	0.871

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		
ALS Sample ID	WG3783592-1	Extraction Date	4-May-23		Approved:
Analysis Method	EPA 1668C	Sample Size	1	Sample	*E. Sabljic*
Analysis Type	Blank	Percent Moisture	n/a		--e-signature--
Sample Matrix	MEDIA	Split Ratio	6		05-Jun-2023

Run Information	**Run 1**
Filename	6-230513A21
Run Date	14-May-23 06:06
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-6 SPBOCTYL276000-03

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<5.4	5.4	U		150
PCB-077	0.0001	NotFnd	<5.8	5.8	U		150
PCB-123	0.00003	NotFnd	<6.6	6.6	U		150
PCB-118	0.00003	23.89	<15	6.2	J,R	15	150
PCB-114	0.00003	NotFnd	<6.3	6.3	U		150
PCB-105	0.00003	NotFnd	<6.5	6.5	U		150
PCB-126	0.1	NotFnd	<6.8	6.8	U		150
PCB-167	0.00003	NotFnd	<4.5	4.5	U		150
PCB-156/157	0.00003	NotFnd	<6.2	6.2	U		300
PCB-169	0.03	NotFnd	<4.9	4.9	U		150
PCB-189	0.00003	NotFnd	<3.3	3.3	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	22.41	46	10-145
13C12-PCB-077	12000	22.71	44	10-145
13C12-PCB-123	12000	23.71	46	10-145
13C12-PCB-118	12000	23.88	46	10-145
13C12-PCB-114	12000	24.18	47	10-145
13C12-PCB-105	12000	24.53	46	10-145
13C12-PCB-126	12000	26.13	47	10-145
13C12-PCB-167	12000	27.02	47	10-145
13C12-PCB-156/157	24000	27.66	48	10-145
13C12-PCB-169	12000	29.32	49	10-145
13C12-PCB-189	12000	30.60	50	10-145
Field Spike Standards				
13C12-PCB-031			NS	
13C12-PCB-095			NS	
13C12-PCB-153			NS	
Cleanup Standards				
13C12-PCB-028	18000	16.54	68	5-145
13C12-PCB-111	18000	22.64	60	10-145
13C12-PCB-178	18000	25.69	65	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.416
Upper Bound PCB TEQ	0.831

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
NS	Indicates that this standard has not been added.

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Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		Approved:
ALS Sample ID	WG3783592-2	Extraction Date	4-May-23		*E. Sabljic*
Analysis Method	EPA 1668C	Sample Size	1	n/a	--e-signature--
Analysis Type	LCS	Percent Moisture	n/a		05-Jun-2023
Sample Matrix	QC	Split Ratio	6		

Run Information	**Run 1**
Filename	6-230513A19
Run Date	14-May-23 04:37
Final Volume	25 ul
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-6 SPBOCTYL276000-03

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
PCB-081	6000	22.44	97	60-135	
PCB-077	6000	22.73	97	60-135	
PCB-123	6000	23.73	96	60-135	
PCB-118	6000	23.90	98	60-135	
PCB-114	6000	24.21	98	60-135	
PCB-105	6000	24.56	94	60-135	
PCB-126	6000	26.15	98	60-135	
PCB-167	6000	27.05	96	60-135	
PCB-156/157	12000	27.69	97	60-135	
PCB-169	6000	29.34	96	60-135	
PCB-189	6000	30.63	92	60-135	
Extraction Standards		**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	22.42	51	40-145	
13C12-PCB-077	12000	22.72	51	40-145	
13C12-PCB-123	12000	23.71	54	40-145	
13C12-PCB-118	12000	23.89	52	40-145	
13C12-PCB-114	12000	24.19	53	40-145	
13C12-PCB-105	12000	24.54	54	40-145	
13C12-PCB-126	12000	26.14	52	40-145	
13C12-PCB-167	12000	27.03	37	40-145	
13C12-PCB-156/157	24000	27.67	41	40-145	
13C12-PCB-169	12000	29.33	44	40-145	
13C12-PCB-189	12000	30.61	45	40-145	
Field Spike Standards					
13C12-PCB-031			NS		
13C12-PCB-095			NS		
13C12-PCB-153			NS		
Cleanup Standards			**% Rec**		
13C12-PCB-028	18000	16.55	61	15-145	
13C12-PCB-111	18000	22.65	59	40-145	
13C12-PCB-178	18000	25.70	55	40-145	

NS	Indicates that this standard has not been added.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2750279		Mississauga, ON, L5J 2Y4
Date of Report	31-May-23		Canada
Date of Sample Receipt	24-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 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		23-22230-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		23-22230-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		23-22230-SVOC-(16 THRU 20) BLANK1	
ALS Sample ID	WG3783592-1		L2750279-1		L2750279-2		L2750279-3		L2750279-4	
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		26-Apr-23		26-Apr-23		27-Apr-23		27-Apr-23	
Extraction Date	4-May-23		4-May-23		4-May-23		4-May-23		4-May-23	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Chlorobenzene	<12	U	1210		1030		1410		<12	U
1,3-Dichlorobenzene	<12	U	161		122		150		<12	U
1,4-Dichlorobenzene	32.6		147		119		135		30.7	
1,2-Dichlorobenzene	<12	U	119		86.9	M	102		<12	U
1,3,5-Trichlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
1,2,4-Trichlorobenzene	<12	U	27.8		25.1		25.1		<12	U
1,2,3-Trichlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
1,2,3,4-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Pentachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Hexachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	NS		86		88		86		86	
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
13C6-Chlorobenzene	26		34		24		35		27	
13C6-1,4-Dichlorobenzene	32		34		34		43		32	
13C6-1,2,3-Trichlorobenzene	43		51		51		61		46	
13C6-1,2,3,4-Tetrachlorobenzene	37		45		48		56		40	
13C6-Pentachlorobenzene	41		46		53		60		44	
13C6-Hexachlorobenzene	40		45		54		59		43	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked in.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	23-22230-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2		23-22230-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2		23-22230-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2		23-22230-SVOC-(36 THRU 40) BLANK2		Laboratory Control Sample	Laboratory Control Sample (Low Level)	
ALS Sample ID	L2750279-5		L2750279-6		L2750279-7		L2750279-8		WG3783592-2	WG3783592-5	
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	26-Apr-23		26-Apr-23		27-Apr-23		27-Apr-23		n/a	n/a	
Extraction Date	4-May-23		4-May-23		4-May-23		4-May-23		4-May-23	4-May-23	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**	**% Recovery**	
Chlorobenzene	1630		1310		1690		<12	U	NS	NS	
1,3-Dichlorobenzene	147		135		139		<12	U	122	104	
1,4-Dichlorobenzene	160		142		112	M	28.4		115	134	
1,2-Dichlorobenzene	90		106	M,R	80.2	M	<12	U	120	92	M
1,3,5-Trichlorobenzene	<12	U	<12	U	<12	U	<12	U	102	94	
1,2,4-Trichlorobenzene	28.6		28		26.5		<12	U	101	93	
1,2,3-Trichlorobenzene	<12	U	<12	U	<12	U	<12	U	105	103	
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	123	100	
1,2,3,4-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	125	100	
Pentachlorobenzene	<12	U	<12	U	<12	U	<12	U	117	101	
Hexachlorobenzene	<12	U	<12	U	<12	U	<12	U	118	101	
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	**%Rec**	
1-Bromo-2,3-Dichlorobenzene	87		87		84		85		NS	NS	
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	**%Rec**	
13C6-Chlorobenzene	27		26		28		34		47	44	
13C6-1,4-Dichlorobenzene	40		30		39		38		61	58	
13C6-1,2,3-Trichlorobenzene	55		42		55		52		110	80	
13C6-1,2,3,4-Tetrachlorobenzene	58		41		58		40		79	70	
13C6-Pentachlorobenzene	63		44		64		44		91	80	
13C6-Hexachlorobenzene	62		44		63		42		96	86	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this compound was not spiked in.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3783592-1	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052536.D
Run Date	5/26/2023 0:39
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<12	U
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	7.05	32.6	
1,2-Dichlorobenzene	NotFnd	<12	U
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**	**%Rec**
1-Bromo-2,3-Dichlorobenzene		NS

Extraction Standards			**%Rec**
13C6-Chlorobenzene	300	13.63	26
13C6-1,4-Dichlorobenzene	300	7.05	32
13C6-1,2,3-Trichlorobenzene	300	9.42	43
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	37
13C6-Pentachlorobenzene	300	12.48	41
13C6-Hexachlorobenzene	300	14.12	40

U	Indicates that this compound was not detected above the MDL.
NS	Indicates that this compound was not spiked in.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-1	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052540.D
Run Date	5/26/2023 2:02
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	13.64	1210	
1,3-Dichlorobenzene	7.00	161	
1,4-Dichlorobenzene	7.07	147	
1,2-Dichlorobenzene	7.36	119	
1,3,5-Trichlorobenzene	8.51	<12	U
1,2,4-Trichlorobenzene	9.02	27.8	
1,2,3-Trichlorobenzene	9.42	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.63	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	12.48	<12	U
Hexachlorobenzene	14.13	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	250	10.44	86	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	13.64	34	M
13C6-1,4-Dichlorobenzene	300	7.07	34	
13C6-1,2,3-Trichlorobenzene	300	9.43	51	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	45	
13C6-Pentachlorobenzene	300	12.48	46	
13C6-Hexachlorobenzene	300	14.12	45	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-2	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052541.D
Run Date	5/26/2023 2:23
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS US1315321H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	13.63	1030	
1,3-Dichlorobenzene	6.98	122	
1,4-Dichlorobenzene	7.06	119	
1,2-Dichlorobenzene	7.35	86.9	M
1,3,5-Trichlorobenzene	8.51	<12	U
1,2,4-Trichlorobenzene	9.02	25.1	
1,2,3-Trichlorobenzene	9.43	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.64	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	12.48	<12	U
Hexachlorobenzene	14.12	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	250	10.44	88	

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	13.63	24	M
13C6-1,4-Dichlorobenzene	300	7.06	34	
13C6-1,2,3-Trichlorobenzene	300	9.42	51	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	48	
13C6-Pentachlorobenzene	300	12.48	53	
13C6-Hexachlorobenzene	300	14.12	54	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-3	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052542.D
Run Date	5/26/2023 2:44
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	13.63	1410	
1,3-Dichlorobenzene	7.00	150	
1,4-Dichlorobenzene	7.08	135	
1,2-Dichlorobenzene	7.36	102	
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	9.02	25.1	
1,2,3-Trichlorobenzene	9.43	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.64	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	14.13	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	250	10.44	86

Extraction Standards			**%Rec**
13C6-Chlorobenzene	300	13.63	35
13C6-1,4-Dichlorobenzene	300	7.07	43
13C6-1,2,3-Trichlorobenzene	300	9.43	61
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	56
13C6-Pentachlorobenzene	300	12.48	60
13C6-Hexachlorobenzene	300	14.12	59

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(16 THRU 20) BLANK1**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-4	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052538.D
Run Date	5/26/2023 1:21
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<12	U
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	7.06	30.7	
1,2-Dichlorobenzene	NotFnd	<12	U
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	250	10.43	86	

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	13.63	27 M	R
13C6-1,4-Dichlorobenzene	300	7.06	32	
13C6-1,2,3-Trichlorobenzene	300	9.42	46	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	40	
13C6-Pentachlorobenzene	300	12.47	44	
13C6-Hexachlorobenzene	300	14.12	43	

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	**23-22230-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-5	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052543.D
Run Date	5/26/2023 3:04
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	13.63	1630	
1,3-Dichlorobenzene	7.02	147	
1,4-Dichlorobenzene	7.09	160	
1,2-Dichlorobenzene	7.37	90	
1,3,5-Trichlorobenzene	8.51	<12	U
1,2,4-Trichlorobenzene	9.02	28.6	
1,2,3-Trichlorobenzene	9.43	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.63	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	12.48	<12	U
Hexachlorobenzene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	250	10.43	87	

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	13.63	27	M
13C6-1,4-Dichlorobenzene	300	7.09	40	
13C6-1,2,3-Trichlorobenzene	300	9.42	55	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	58	
13C6-Pentachlorobenzene	300	12.47	63	
13C6-Hexachlorobenzene	300	14.12	62	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-6	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052544.D
Run Date	5/26/2023 3:25
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	13.63	1310	
1,3-Dichlorobenzene	6.98	135	
1,4-Dichlorobenzene	7.06	142	
1,2-Dichlorobenzene	7.35	106	M R
1,3,5-Trichlorobenzene	8.51	<12	U
1,2,4-Trichlorobenzene	9.02	28	
1,2,3-Trichlorobenzene	9.42	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.63	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	12.48	<12	U
Hexachlorobenzene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	250	10.44	87	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	13.63	26	M
13C6-1,4-Dichlorobenzene	300	7.05	30	
13C6-1,2,3-Trichlorobenzene	300	9.42	42	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	41	
13C6-Pentachlorobenzene	300	12.48	44	
13C6-Hexachlorobenzene	300	14.12	44	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-7	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052545.D
Run Date	5/26/2023 3:46
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	13.63	1690	
1,3-Dichlorobenzene	6.99	139	
1,4-Dichlorobenzene	7.07	112	M
1,2-Dichlorobenzene	7.35	80.2	M
1,3,5-Trichlorobenzene	8.51	<12	U
1,2,4-Trichlorobenzene	9.02	26.5	
1,2,3-Trichlorobenzene	9.43	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.64	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	12.48	<12	U
Hexachlorobenzene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	250	10.44	84	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	13.63	28	M
13C6-1,4-Dichlorobenzene	300	7.07	39	
13C6-1,2,3-Trichlorobenzene	300	9.42	55	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	58	
13C6-Pentachlorobenzene	300	12.47	64	
13C6-Hexachlorobenzene	300	14.12	63	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(36 THRU 40) BLANK2**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-8	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052539.D
Run Date	5/26/2023 1:41
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<12	U
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	7.07	28.4	
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	250	10.44	85	

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	13.63	34	M
13C6-1,4-Dichlorobenzene	300	7.07	38	
13C6-1,2,3-Trichlorobenzene	300	9.43	52	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	40	
13C6-Pentachlorobenzene	300	12.48	44	
13C6-Hexachlorobenzene	300	14.12	42	

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	WG3783592-2	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052534.D
Run Date	5/25/2023 23:58
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene			NS	
1,3-Dichlorobenzene	300	7.04	122	
1,4-Dichlorobenzene	300	7.11	115	
1,2-Dichlorobenzene	300	7.38	120	
1,3,5-Trichlorobenzene	300	8.51	102	
1,2,4-Trichlorobenzene	300	9.03	101	
1,2,3-Trichlorobenzene	300	9.43	105	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	600	10.65	123	
1,2,3,4-Tetrachlorobenzene	300	11.14	125	
Pentachlorobenzene	300	12.48	117	
Hexachlorobenzene	300	14.12	118	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	13.62	47	
13C6-1,4-Dichlorobenzene	300	7.11	61	
13C6-1,2,3-Trichlorobenzene	300	9.43	110	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	79	
13C6-Pentachlorobenzene	300	12.48	91	
13C6-Hexachlorobenzene	300	14.12	96	

NS Indicates that this compound was not spiked in.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (Low Level)**	Sampling Date	n/a
ALS Sample ID	WG3783592-5	Extraction Date	4-May-23
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--
31-May-2023

Run Information	**Run 1**
Filename	23052533.D
Run Date	5/25/2023 23:37
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene			NS	
1,3-Dichlorobenzene	45	7.00	104	
1,4-Dichlorobenzene	45	7.07	134	
1,2-Dichlorobenzene	45	7.36	92	M
1,3,5-Trichlorobenzene	45	8.51	94	
1,2,4-Trichlorobenzene	45	9.02	93	
1,2,3-Trichlorobenzene	45	9.42	103	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	90	10.64	100	
1,2,3,4-Tetrachlorobenzene	45	11.14	100	
Pentachlorobenzene	45	12.48	101	
Hexachlorobenzene	45	14.12	101	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	13.62	44	
13C6-1,4-Dichlorobenzene	300	7.07	58	
13C6-1,2,3-Trichlorobenzene	300	9.42	80	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.14	70	
13C6-Pentachlorobenzene	300	12.47	80	
13C6-Hexachlorobenzene	300	14.12	86	

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked in.

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#:	L2750279		Mississauga, ON
Date of Report	30-May-23		L5J 2Y4
Date of Sample Receipt	28-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS: **Chlorophenols by modifed EPA 8270E**

Selected samples showed poor 13C6-2,4-Dichlorophenol extraction standard recoveries including the low level LCS sample. In is worthwhile noting that the native recovery for the corresponding dichlorophenol is in control despite the low recovery indicating that the isotope dilution correction for losses is valid and the corresponding results are accurate even for lower ES recoveries.
Also note that there is an absence of observed chlorophenols in any of the samples whether relating to good or low ES recoveries

The bias to low 13C6-2,4-Dichlorophenol may be related to an absence of acidification of the extraction solvents.

Certified by:

Ron McLeod, Ph.D.
Technical Director

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		23-22230-SVOC (1 THRU 5) TEST#1 APC OUTLET #1		23-22230-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		23-22230-SVOC-(16 THRU 20) BLANK1	
ALS Sample ID	WG3783592-1		L2750279-1		L2750279-2		L2750279-3		L2750279-4	
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		26-Apr-23		26-Apr-23		27-Apr-23		27-Apr-23	
Extraction Date	4-May-23		4-May-23		4-May-23		4-May-23		4-May-23	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
2-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3/4-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,6-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3,4-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4,5-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
2,3,6-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-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
2,3,4,6-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)	59.2	M	15.4	M	25.2	M	51.7	M	44.5	M
13C6-2,4-Dichlorophenol (ES)	36.4	M	1.1	M	1.3	M	36.7	M	24.6	M
13C6-2,4,5-Trichlorophenol (ES)	63.5	M	21.6	M	19.5	M	49.7	M	49.1	M
13C6-2,3,4,5-Tetrachlorophenol (ES)	83.0	M	51.8	M	43.5	M	67.9	M	64.7	M
13C6-Pentachlorophenol (ES)	49.5	M	9.8	M	7.6	M	74	M	30.2	M

U Indicates that this compound was not detected above the LOD.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	23-22230-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2		23-22230-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2		23-22230-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2		23-22230-SVOC-(36 THRU 40) BLANK2		Laboratory Control Sample		Laboratory Control Sample (Low Level)	
ALS Sample ID	L2750279-5		L2750279-6		L2750279-7		L2750279-8		WG3783592-2		WG3783592-5	
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	26-Apr-23		26-Apr-23		27-Apr-23		27-Apr-23		n/a		n/a	
Extraction Date	4-May-23		4-May-23		4-May-23		4-May-23		4-May-23		4-May-23	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**		**% Recovery**	
2-Chlorophenol	<60	U	<60	U	<60	U	<60	U	123	M	126	M
3/4-Chlorophenol	<60	U	<60	U	<60	U	<60	U				
2,4-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	142	M	131	MR
2,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U				
2,3-Dichlorophenol	<60	U	<60	U	<60	U	<60	U				
2,6-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	74	MR	92	MR
3,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U				
3,4-Dichlorophenol	<60	U	<60	U	<60	U	<60	U				
2,3,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U				
2,4,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	148	M	115	
2,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	119		130	M
2,3,4-Trichlorophenol	<60	U	<60	U	<60	U	<60	U				
2,3,6-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-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	111		114	M
2,3,4,5-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	136	MR	137	MR
2,3,4,6-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	73	MR	96	MR
Pentachlorophenol	<60	U	<60	U	<60	U	<60	U	136	M	104	MR
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	23.8	M	35.5	M	56.7	M	45.2	M	42.2	M	8.9	M
13C6-2,4-Dichlorophenol (ES)	1.8	M	8.8	M	33.3	M	39.4	M	19.5	M	1.2	M
13C6-2,4,5-Trichlorophenol (ES)	27.8	M	39.3	M	58.2	M	57.0	M	55.4	M	11.9	M
13C6-2,3,4,5-Tetrachlorophenol (ES)	66.6	M	68.8	M	87.2	M	78.4	M	87.4	M	38.9	M
13C6-Pentachlorophenol (ES)	12.0	M	30.2	M	79.6	M	68.8	M	47.3	M	8.0	M

U Indicates that this compound was not detected above the LOD.
M Indicates that a peak has been manually integrated.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. Value is an estimated maximum

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3783592-1	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052518.D
Run Date	5/25/2023 17:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5-MS US2879733H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.87	<60	U
3/4-Chlorophenol	8.17	<60	U
2,4-Dichlorophenol	7.98	<60	U
2,5-Dichlorophenol	7.98	<60	U
2,3-Dichlorophenol	8.12	<60	U
2,6-Dichlorophenol	8.36	<60	U
3,5-Dichlorophenol	10.21	<60	U
3,4-Dichlorophenol	10.46	<60	U
2,3,5-Trichlorophenol	9.72	<60	U
2,4,6-Trichlorophenol	9.89	<60	U
2,4,5-Trichlorophenol	9.97	<60	U
2,3,4-Trichlorophenol	10.06	<60	U
2,3,6-Trichlorophenol	10.21	<60	U
3,4,5-Trichlorophenol	12.33	<60	U
2,3,5,6-Tetrachlorophenol	11.70	<60	U
2,3,4,5-Tetrachlorophenol	11.75	<60	U
2,3,4,6-Tetrachlorophenol	11.75	<60	U
Pentachlorophenol	13.46	<60	U

Extraction Standards			**% Rec**		**Limits**
13C6-4-Chlorophenol (ES)	1200	8.24	59.2	M	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.97	36.4	M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.96	63.5	M	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.75	83	M	50-150
13C6-Pentachlorophenol (ES)	1200	13.45	49.5	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-1	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052522.D
Run Date	5/25/2023 19:22
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5-MS US2879733H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.90	<60	U
3/4-Chlorophenol	8.24	<60	U
2,4-Dichlorophenol	7.98	<60	U
2,5-Dichlorophenol	7.98	<60	U
2,3-Dichlorophenol	7.98	<60	U
2,6-Dichlorophenol	8.37	<60	U
3,5-Dichlorophenol	10.22	<60	U
3,4-Dichlorophenol	10.47	<60	U
2,3,5-Trichlorophenol	9.72	<60	U
2,4,6-Trichlorophenol	9.97	<60	U
2,4,5-Trichlorophenol	10.17	<60	U
2,3,4-Trichlorophenol	10.17	<60	U
2,3,6-Trichlorophenol	10.17	<60	U
3,4,5-Trichlorophenol	12.36	<60	U
2,3,5,6-Tetrachlorophenol	11.70	<60	U
2,3,4,5-Tetrachlorophenol	11.78	<60	U
2,3,4,6-Tetrachlorophenol	11.78	<60	U
Pentachlorophenol	13.47	<60	U

Extraction Standards			**% Rec**		**Limits**
13C6-4-Chlorophenol (ES)	1200	8.25	15.4	M	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.98	1.1	M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.98	21.6	M	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.78	51.8	M	50-150
13C6-Pentachlorophenol (ES)	1200	13.47	9.8	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-2	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052523.D
Run Date	5/25/2023 19:46
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5-MS US2879733H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.85	<60	U
3/4-Chlorophenol	8.17	<60	U
2,4-Dichlorophenol	7.97	<60	U
2,5-Dichlorophenol	7.97	<60	U
2,3-Dichlorophenol	8.12	<60	U
2,6-Dichlorophenol	8.43	<60	U
3,5-Dichlorophenol	10.22	<60	U
3,4-Dichlorophenol	10.46	<60	U
2,3,5-Trichlorophenol	9.73	<60	U
2,4,6-Trichlorophenol	9.97	<60	U
2,4,5-Trichlorophenol	10.17	<60	U
2,3,4-Trichlorophenol	10.17	<60	U
2,3,6-Trichlorophenol	10.17	<60	U
3,4,5-Trichlorophenol	12.35	<60	U
2,3,5,6-Tetrachlorophenol	11.70	<60	U
2,3,4,5-Tetrachlorophenol	11.78	<60	U
2,3,4,6-Tetrachlorophenol	11.78	<60	U
Pentachlorophenol	13.47	<60	U

Extraction Standards			**% Rec**		**Limits**
13C6-4-Chlorophenol (ES)	1200	8.27	25.2	M	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.97	1.3	M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.97	19.5	M	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.77	43.5	M	50-150
13C6-Pentachlorophenol (ES)	1200	13.47	7.6	M	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-3	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052524.D
Run Date	5/25/2023 20:10
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5-MS US2879733H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.78	<60	U
3/4-Chlorophenol	8.18	<60	U
2,4-Dichlorophenol	7.71	<60	U
2,5-Dichlorophenol	7.71	<60	U
2,3-Dichlorophenol	7.71	<60	U
2,6-Dichlorophenol	7.71	<60	U
3,5-Dichlorophenol	10.22	<60	U
3,4-Dichlorophenol	10.46	<60	U
2,3,5-Trichlorophenol	9.90	<60	U
2,4,6-Trichlorophenol	9.90	<60	U
2,4,5-Trichlorophenol	9.97	<60	U
2,3,4-Trichlorophenol	10.13	<60	U
2,3,6-Trichlorophenol	10.29	<60	U
3,4,5-Trichlorophenol	12.34	<60	U
2,3,5,6-Tetrachlorophenol	11.70	<60	U
2,3,4,5-Tetrachlorophenol	11.76	<60	U
2,3,4,6-Tetrachlorophenol	11.76	<60	U
Pentachlorophenol	13.46	<60	U

Extraction Standards			**% Rec**		**Limits**
13C6-4-Chlorophenol (ES)	1200	8.25	51.7	M	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.97	36.7	M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.97	49.7	M	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.76	67.9	M	50-150
13C6-Pentachlorophenol (ES)	1200	13.46	74	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(16 THRU 20) BLANK1**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-4	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052520.D
Run Date	5/25/2023 18:35
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP5-MS US2879733H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.88	<60	U
3/4-Chlorophenol	8.18	<60	U
2,4-Dichlorophenol	7.97	<60	U
2,5-Dichlorophenol	7.97	<60	U
2,3-Dichlorophenol	7.97	<60	U
2,6-Dichlorophenol	8.37	<60	U
3,5-Dichlorophenol	10.20	<60	U
3,4-Dichlorophenol	10.45	<60	U
2,3,5-Trichlorophenol	9.72	<60	U
2,4,6-Trichlorophenol	9.81	<60	U
2,4,5-Trichlorophenol	9.96	<60	U
2,3,4-Trichlorophenol	9.96	<60	U
2,3,6-Trichlorophenol	9.96	<60	U
3,4,5-Trichlorophenol	12.32	<60	U
2,3,5,6-Tetrachlorophenol	11.70	<60	U
2,3,4,5-Tetrachlorophenol	11.75	<60	U
2,3,4,6-Tetrachlorophenol	11.75	<60	U
Pentachlorophenol	13.46	<60	U

Extraction Standards			**% Rec**		**Limits**
13C6-4-Chlorophenol (ES)	1200	8.24	44.5	M	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.97	24.6	M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.96	49.1	M	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.75	64.7	M	50-150
13C6-Pentachlorophenol (ES)	1200	13.45	30.2	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-5	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052525.D
Run Date	5/25/2023 20:33
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USR123112H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.84	<60	U
3/4-Chlorophenol	8.19	<60	U
2,4-Dichlorophenol	8.02	<60	U
2,5-Dichlorophenol	8.02	<60	U
2,3-Dichlorophenol	8.02	<60	U
2,6-Dichlorophenol	8.38	<60	U
3,5-Dichlorophenol	10.22	<60	U
3,4-Dichlorophenol	10.47	<60	U
2,3,5-Trichlorophenol	9.73	<60	U
2,4,6-Trichlorophenol	9.98	<60	U
2,4,5-Trichlorophenol	9.98	<60	U
2,3,4-Trichlorophenol	10.08	<60	U
2,3,6-Trichlorophenol	10.21	<60	U
3,4,5-Trichlorophenol	12.33	<60	U
2,3,5,6-Tetrachlorophenol	11.70	<60	U
2,3,4,5-Tetrachlorophenol	11.76	<60	U
2,3,4,6-Tetrachlorophenol	11.76	<60	U
Pentachlorophenol	13.46	<60	U

Extraction Standards			**% Rec**		**Limits**
13C6-4-Chlorophenol (ES)	1200	8.29	23.8	M	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.99	1.8	M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.97	27.8	M	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.76	66.6	M	50-150
13C6-Pentachlorophenol (ES)	1200	13.46	12	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-6	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052526.D
Run Date	5/25/2023 20:57
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USR123112H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.79	<60	U
3/4-Chlorophenol	8.26	<60	U
2,4-Dichlorophenol	7.98	<60	U
2,5-Dichlorophenol	7.98	<60	U
2,3-Dichlorophenol	7.98	<60	U
2,6-Dichlorophenol	8.37	<60	U
3,5-Dichlorophenol	10.23	<60	U
3,4-Dichlorophenol	10.47	<60	U
2,3,5-Trichlorophenol	9.81	<60	U
2,4,6-Trichlorophenol	9.81	<60	U
2,4,5-Trichlorophenol	10.13	<60	U
2,3,4-Trichlorophenol	10.13	<60	U
2,3,6-Trichlorophenol	10.17	<60	U
3,4,5-Trichlorophenol	12.36	<60	U
2,3,5,6-Tetrachlorophenol	11.71	<60	U
2,3,4,5-Tetrachlorophenol	11.78	<60	U
2,3,4,6-Tetrachlorophenol	11.78	<60	U
Pentachlorophenol	13.47	<60	U

Extraction Standards			**% Rec**		**Limits**
13C6-4-Chlorophenol (ES)	1200	8.27	35.5	M	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.98	8.8	M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.98	39.3	M	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.78	68.8	M	50-150
13C6-Pentachlorophenol (ES)	1200	13.47	30.2	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-7	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052527.D
Run Date	5/25/2023 21:21
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USR123112H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.82	<60	U
3/4-Chlorophenol	8.19	<60	U
2,4-Dichlorophenol	7.99	<60	U
2,5-Dichlorophenol	7.99	<60	U
2,3-Dichlorophenol	7.99	<60	U
2,6-Dichlorophenol	8.37	<60	U
3,5-Dichlorophenol	10.22	<60	U
3,4-Dichlorophenol	10.47	<60	U
2,3,5-Trichlorophenol	9.73	<60	U
2,4,6-Trichlorophenol	9.90	<60	U
2,4,5-Trichlorophenol	9.98	<60	U
2,3,4-Trichlorophenol	10.09	<60	U
2,3,6-Trichlorophenol	10.21	<60	U
3,4,5-Trichlorophenol	12.34	<60	U
2,3,5,6-Tetrachlorophenol	11.71	<60	U
2,3,4,5-Tetrachlorophenol	11.76	<60	U
2,3,4,6-Tetrachlorophenol	11.76	<60	U
Pentachlorophenol	13.46	<60	U

Extraction Standards			**% Rec**		**Limits**
13C6-4-Chlorophenol (ES)	1200	8.30	56.7	M	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.99	33.3	M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.98	58.2	M	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.76	87.2	M	50-150
13C6-Pentachlorophenol (ES)	1200	13.46	79.6	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(36 THRU 40) BLANK2**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-8	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052521.D
Run Date	5/25/2023 18:58
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USR123112H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	5.82	<60	U
3/4-Chlorophenol	8.19	<60	U
2,4-Dichlorophenol	8.01	<60	U
2,5-Dichlorophenol	8.01	<60	U
2,3-Dichlorophenol	8.01	<60	U
2,6-Dichlorophenol	8.37	<60	U
3,5-Dichlorophenol	10.21	<60	U
3,4-Dichlorophenol	10.46	<60	U
2,3,5-Trichlorophenol	9.73	<60	U
2,4,6-Trichlorophenol	9.90	<60	U
2,4,5-Trichlorophenol	9.98	<60	U
2,3,4-Trichlorophenol	10.08	<60	U
2,3,6-Trichlorophenol	10.21	<60	U
3,4,5-Trichlorophenol	12.31	<60	U
2,3,5,6-Tetrachlorophenol	11.70	<60	U
2,3,4,5-Tetrachlorophenol	11.75	<60	U
2,3,4,6-Tetrachlorophenol	11.75	<60	U
Pentachlorophenol	13.46	<60	U

Extraction Standards			**% Rec**		**Limits**
13C6-4-Chlorophenol (ES)	1200	8.29	45.2	M	50-150
13C6-2,4-Dichlorophenol (ES)	1200	7.99	39.4	M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.98	57	M	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.75	78.4	M	50-150
13C6-Pentachlorophenol (ES)	1200	13.45	68.8	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3783592-2	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052516.D
Run Date	5/25/2023 17:00
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS USR123112H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**		**Limits**
2-Chlorophenol	1200	5.95	123	M		50-150
3/4-Chlorophenol						
2,4-Dichlorophenol	1200	7.98	142	M		50-150
2,5-Dichlorophenol						
2,3-Dichlorophenol						
2,6-Dichlorophenol	1200	8.35	74	M	R	50-150
3,5-Dichlorophenol						
3,4-Dichlorophenol						
2,3,5-Trichlorophenol						
2,4,6-Trichlorophenol	1200	9.96	148	M		50-150
2,4,5-Trichlorophenol	1200	9.96	119			50-150
2,3,4-Trichlorophenol						
2,3,6-Trichlorophenol						
3,4,5-Trichlorophenol						
2,3,5,6-Tetrachlorophenol	1200	11.70	111			50-150
2,3,4,5-Tetrachlorophenol	1200	11.75	136	M	R	50-150
2,3,4,6-Tetrachlorophenol	1200	11.77	73	M	R	50-150
Pentachlorophenol	1200	13.45	136	M		50-150
Extraction Standards			**% Rec**			**Limits**
13C6-4-Chlorophenol (ES)	1200	8.25	42.2	M		30-150
13C6-2,4-Dichlorophenol (ES)	1200	7.98	19.5	M		30-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.96	55.4	M		30-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.75	87.4	M		30-150
13C6-Pentachlorophenol (ES)	1200	13.45	47.3	M		30-150

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. Value is an estimated maximum

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (Low Level)**	Sampling Date	n/a
ALS Sample ID	WG3783592-5	Extraction Date	4-May-23
Analysis Method	Chlorophenols by 8270E		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Andrew Reid
--e-signature--
30-May-2023

Run Information	**Run 1**
Filename	23052515.D
Run Date	5/25/2023 16:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS USR123112H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**		**Limits**
2-Chlorophenol	120	5.86	126	M		50-150
3/4-Chlorophenol						
2,4-Dichlorophenol	120	7.96	131	M	R	50-150
2,5-Dichlorophenol						
2,3-Dichlorophenol						
2,6-Dichlorophenol	120	8.34	92	M	R	50-150
3,5-Dichlorophenol						
3,4-Dichlorophenol						
2,3,5-Trichlorophenol						
2,4,6-Trichlorophenol	120	9.89	115			50-150
2,4,5-Trichlorophenol	120	10.06	130	M		50-150
2,3,4-Trichlorophenol						
2,3,6-Trichlorophenol						
3,4,5-Trichlorophenol						
2,3,5,6-Tetrachlorophenol	120	11.70	114	M		50-150
2,3,4,5-Tetrachlorophenol	120	11.75	137	M	R	50-150
2,3,4,6-Tetrachlorophenol	120	11.78	96	M	R	50-150
Pentachlorophenol	120	13.51	104	M	R	50-150
Extraction Standards			**% Rec**			**Limits**
13C6-4-Chlorophenol (ES)	1200	8.14	8.9	M		30-150
13C6-2,4-Dichlorophenol (ES)	1200	7.96	1.2	M		30-150
13C6-2,4,5-Trichlorophenol (ES)	1200	9.96	11.9	M		30-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.75	38.9	M		30-150
13C6-Pentachlorophenol (ES)	1200	13.45	8	M		30-150

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. Value is an estimated maximum

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L2750279		Mississauga, ON
Date of Report	31-May-23		L5J2Y4
Date of Sample Receipt	28-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Low level of Benzo(b)fluoranthene is observed as an instrument background at levels similar to observed in the field samples.

Certified by:

Ron McLeod, Ph.D.
Technical Director

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		23-22230-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		23-22230-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1		23-22230-SVOC-(16 THRU 20) BLANK1	
ALS Sample ID	WG3783592-1		L2750279-1		L2750279-2		L2750279-3		L2750279-4	
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		26-Apr-23		26-Apr-23		27-Apr-23		27-Apr-23	
Extraction Date	4-May-23		4-May-23		4-May-23		4-May-23		4-May-23	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Naphthalene	132		237	B	2490		495		142	B
2-Methylnaphthalene	<12	U	64.3		290		44.2		<12	U
1-Methylnaphthalene	<12	U	35.6		210		29.7	M	<12	U
Acenaphthylene	<12	U	<12	U	162		<12	U	<12	U
Acenaphthene	<12	U	<12	U	31.0		22.0		<12	U
Fluorene	<12	U	48.8		68.3	M	13.5	M	<12	U
Phenanthrene	<12	U	943		819		137		<12	U
Anthracene	<12	U	16.5		14.8		<12	U	<12	U
Fluoranthene	<12	U	151		119		47.0		<12	U
Pyrene	<12	U	129		73.8		75.8		<12	U
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Chrysene/Triphenylene	<12	U	21.8		53.6		16.6		<12	U
Benzo(b)Fluoranthene	23.1	M,	16.6	M,B	41.9	M,B	30.6		17.4	B
Benzo(k)Fluoranthene	<12	U	<12	U	17.9	M	22.0		<12	U
Benzo(e)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Perylene	<12	U	<12	U	<12	U	<12	U	<12	U
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Dibenzo(a,h/a,c)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(g,h,i)Perylene	<12	U	<12	U	<12	U	<12	U	<12	U
Additional Analytes										
Tetralin	73.3		77.2	B	88.8	B	89.3	M,B	80.0	B
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U
Biphenyl	27.7		56.6	B	132	B	67.6	B	40.2	B
o-Terphenyl	<12	U	17.5		<12	U	<12	U	<12	U
1-Methylphenanthrene	<12	U	<12	U	<12	U	<12	U	<12	U
9-Methylphenanthrene	<12	U	87.2		84.2		13.3		<12	U
2-methylanthracene	<12	U	33.1		34.0		<12	U	<12	U
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U	<12	U
m-terphenyl	<12	U	<12	U	14.8		<12	U	<12	U
p-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U	<60	U
Picene	<60	U	<60	U	<60	U	<60	U	<60	U
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U	<60	U
Coronene	<60	U	<60	U	<60	U	<60	U	<60	U
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	NS		107.7		106.7		135.2		107.6	
Fluorene D10	NS		100.6		99.1		136.4		94.9	
Terphenyl D14(Surr.)	NS		112.2		111.3		109.7		111.7	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	92.6		117.9		96.1		48.5		90.0	
2-Methylnaphthalene-D10	87.6		110.5		89.4		42.7		85.7	
Acenaphthylene D8	71.1		92.3		72.6		48.6		75.1	
Phenanthrene D10	102.5		134.8		111.6		58.4		105.5	
Anthracene-D10	83.7		97.0		76.2		49.5		86.3	
Fluoranthene D10	87.3		127.5		104.6		54.8		104.2	
Benz(a)Anthracene-D12	56.8		97.4		78.7		46.0		86.8	
Chrysene D12	74.1		130.5		107.9		55.2		109.6	
Benzo(b)Fluoranthene-D12	68.3		122.8		107.3		52.9		111.5	
Benzo(k)Fluoranthene-D12	73.7		132.7		115.2		56.6		118.1	
Benzo(a)Pyrene D12	49.3		90.8		68.5		55.7		93.2	
Perylene D12	19.3		64.4		47.1		40.8		77.7	
Indeno(1,2,3,cd)Pyrene-D12	38.9		74.0		67.7		50.1		94.8	
Dibenz(a,h)Anthracene-D14	41.1		84.6		75.3		52.9		95.6	
Benzo(g,h,I)Perylene D12	51.0		94.7		86.8		49.3		100.1	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
NS	Indicates that this compound was not spiked.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	23-22230-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2		23-22230-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2		23-22230-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2		23-22230-SVOC-(36 THRU 40) BLANK2		Laboratory Control Sample
ALS Sample ID	L2750279-5		L2750279-6		L2750279-7		L2750279-8		WG3783592-2
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	26-Apr-23		26-Apr-23		27-Apr-23		27-Apr-23		n/a
Extraction Date	4-May-23		4-May-23		4-May-23		4-May-23		4-May-23
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**%**
Naphthalene	637	B	279		195	B	114	B	113.8
2-Methylnaphthalene	123		59.5		46.4		<12	U	106.1
1-Methylnaphthalene	62.8		35.8		26.3		<12	U	112.8
Acenaphthylene	29.7		<12	U	<12	U	<12	U	104.5
Acenaphthene	16.6		<12	U	<12	U	<12	U	87.7
Fluorene	21.7		43.8	M	12.7		<12	U	93.5
Phenanthrene	188		798		125		<12	U	110.3
Anthracene	12.7		12.6		<12	U	<12	U	103.3
Fluoranthene	45.9		92.5		37.4		<12	U	108.3
Pyrene	43.6		88.7		44.5		<12	U	108.8
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	114.0
Chrysene/Triphenylene	14.2		15.7		<12	U	<12	U	100.2
Benzo(b)Fluoranthene	32.6	B	32.3	B	15.9	B	<12	U	107.8
Benzo(k)Fluoranthene	21.4		19.7		14.2		<12	U	107.2
Benzo(e)Pyrene	<12	U	<12	U	<12	U	<12	U	106.3
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	119.6
Perylene	<12	U	18.2		<12	U	<12	U	132.0
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	103.7
Dibenzo(a,h/a,c)Anthracene	<12	U	<12	U	<12	U	<12	U	98.5
Benzo(g,h,i)Perylene	<12	U	<12	U	<12	U	<12	U	100.8
Additional Analytes									
Tetralin	84.2	M,B	93.8	B	88.8	B	66.8	B	NS
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	NS
Biphenyl	86.8	M,B	103		61.7	B	19.3	B	NS
o-Terphenyl	<12	U	13.6		<12	U	<12	U	NS
1-Methylphenanthrene	<12	U	<12	U	<12	U	<12	U	NS
9-Methylphenanthrene	19.7		73.1		12.6		<12	U	NS
2-methylanthracene	<12	U	26.5		<12	U	<12	U	NS
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U	NS
m-terphenyl	<12	U	<12	U	<12	U	<12	U	NS
p-terphenyl	<12	U	<12	U	<12	U	<12	U	NS
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	NS
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	NS
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U	NS
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U	NS
Picene	<60	U	<60	U	<60	U	<60	U	NS
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U	NS
Coronene	<60	U	<60	U	<60	U	<60	U	NS
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**
1-Methylnaphthalene-D10	127.3		107.1		129.7		109.6		NS
Fluorene D10	115.3		93.3		101.2		98.0		NS
Terphenyl D14(Surr.)	110.4		98.9		111.3		109.2		NS
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**
Naphthalene D8	45.9		76.0		100.8		105.4		59.3
2-Methylnaphthalene-D10	40.3		70.8		78.2		99.0		61.5
Acenaphthylene D8	39.5		54.3		78.6		86.8		59.2
Phenanthrene D10	52.7		74.2		108.4		125.1		81.3
Anthracene-D10	41.3		57.9		85.6		98.5		73.0
Fluoranthene D10	48.5		61.5		98.1		118.6		90.2
Benz(a)Anthracene-D12	40.1		41.2		72.4		89.8		90.0
Chrysene D12	48.0		55.4		97.0		118.9		99.2
Benzo(b)Fluoranthene-D12	45.1		51.3		94.5		118.1		100.5
Benzo(k)Fluoranthene-D12	48.6		55.4		101.3		127.8		102.2
Benzo(a)Pyrene D12	42.5		39.7		65.6		82.0		80.9
Perylene D12	33.2		20.2		21.9		19.4		60.2
Indeno(1,2,3,cd)Pyrene-D12	34.6		33.6		55.2		84.3		87.3
Dibenz(a,h)Anthracene-D14	38.6		38.5		63.9		92.0		87.1
Benzo(g,h,i)Perylene D12	38.6		44.4		70.6		91.8		93.3

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
NS	Indicates that this compound was not spiked.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3783592-1	Extraction Date	4-May-23
Analysis Method	PAH by CARB 429		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Nick Schrobilgen
--e-signature--
31-May-2023

Run Information	**Run 1**
Filename	23052519.D
Run Date	5/26/2023 3:24
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US2879735H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.68	132	
2-Methylnaphthalene	3.26	<12	U
1-Methylnaphthalene	3.37	<12	U
Acenaphthylene	4.38	<12	U
Acenaphthene	4.68	<12	U
Fluorene	5.60	<12	U
Phenanthrene	7.78	<12	U
Anthracene	7.89	<12	U
Fluoranthene	11.16	<12	U
Pyrene	11.79	<12	U
Benzo(a)Anthracene	15.69	<12	U
Chrysene/Triphenylene	15.80	<12	U
Benzo(b)Fluoranthene	19.02	23.1	M
Benzo(k)Fluoranthene	19.08	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	2.55	73.3	
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.78	27.7	
o-Terphenyl	9.05	<12	U
1-Methylphenanthrene	9.32	<12	U
9-Methylphenanthrene	9.44	<12	U
2-methylanthracene	9.50	<12	U
9,10-dimethylanthracene	11.96	<12	U
m-terphenyl	12.20	<12	U
p-terphenyl	12.68	<12	U
Benzo(a)fluorene	12.96	<12	U
Benzo(b)fluorene	13.18	<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	0	NS
Fluorene D10	0	NS
Terphenyl D14(Surr.)	0	NS

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.67	92.6	50-150
2-Methylnaphthalene-D10	600	3.23	87.6	50-150
Acenaphthylene D8	600	4.37	71.1	50-150
Phenanthrene D10	600	7.72	102.5	50-150
Anthracene-D10	600	7.84	83.7	50-150
Fluoranthene D10	600	11.11	87.3	50-150
Benz(a)Anthracene-D12	600	15.63	56.8	50-150
Chrysene D12	600	15.75	74.1	50-150
Benzo(b)Fluoranthene-D12	600	18.96	68.3	50-150
Benzo(k)Fluoranthene-D12	600	19.06	73.7	50-150
Benzo(a)Pyrene D12	600	19.86	49.3	50-150
Perylene D12	600	20.08	19.3	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.41	38.9	50-150
Dibenz(a,h)Anthracene-D14	600	23.59	41.1	50-150
Benzo(g,h,i)Perylene D12	600	24.35	51.0	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
NS	Indicates that this compound was not spiked.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-1	Extraction Date	4-May-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Nick Schrobilgen
--e-signature--
31-May-2023

Run Information	**Run 1**
Filename	23052523.D
Run Date	5/26/2023 5:54
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US2879735H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	2.69	237		B
2-Methylnaphthalene	3.26	64.3		
1-Methylnaphthalene	3.37	35.6		
Acenaphthylene	4.35	<12	U	
Acenaphthene	4.68	<12	U	
Fluorene	5.59	48.8		
Phenanthrene	7.78	943		
Anthracene	7.89	16.5		
Fluoranthene	11.16	151		
Pyrene	11.81	129		
Benzo(a)Anthracene	15.69	<12	U	
Chrysene/Triphenylene	15.81	21.8		
Benzo(b)Fluoranthene	19.03	16.6	M	B
Benzo(k)Fluoranthene	19.09	<12	U	
Benzo(e)Pyrene	NotFnd	<12	U	
Benzo(a)Pyrene	NotFnd	<12	U	
Perylene	NotFnd	<12	U	
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U	
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U	
Benzo(g,h,i)Perylene	NotFnd	<12	U	
Additional Analytes				
Tetralin	2.56	77.2		B
2-Chloronaphthalene	NotFnd	<12	U	
Biphenyl	3.78	56.6		B
o-Terphenyl	9.05	17.5		
1-Methylphenanthrene	NotFnd	<12	U	
9-Methylphenanthrene	9.44	87.2		
2-methylanthracene	9.50	33.1		
9,10-dimethylanthracene	NotFnd	<12	U	
m-terphenyl	12.20	<12	U	
p-terphenyl	12.68	<12	U	
Benzo(a)fluorene	NotFnd	<12	U	
Benzo(b)fluorene	NotFnd	<12	U	
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U	
3-Methylcholanthrene	21.06	<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	3.34	107.7
Fluorene D10	600	5.54	100.6
Terphenyl D14(Surr.)	600	12.61	112.2

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	117.9	50-150
2-Methylnaphthalene-D10	600	3.23	110.5	50-150
Acenaphthylene D8	600	4.37	92.3	50-150
Phenanthrene D10	600	7.72	134.8	50-150
Anthracene-D10	600	7.85	97.0	50-150
Fluoranthene D10	600	11.11	127.5	50-150
Benz(a)Anthracene-D12	600	15.63	97.4	50-150
Chrysene D12	600	15.75	130.5	50-150
Benzo(b)Fluoranthene-D12	600	18.96	122.8	50-150
Benzo(k)Fluoranthene-D12	600	19.05	132.7	50-150
Benzo(a)Pyrene D12	600	19.85	90.8	50-150
Perylene D12	600	20.09	64.4	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.41	74.0	50-150
Dibenz(a,h)Anthracene-D14	600	23.59	84.6	50-150
Benzo(g,h,i)Perylene D12	600	24.35	94.7	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-2	Extraction Date	4-May-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Nick Schrobilgen
--e-signature--
31-May-2023

Run Information	**Run 1**
Filename	23052524.D
Run Date	5/26/2023 6:31
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US2879735H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	2.69	2490		
2-Methylnaphthalene	3.26	290		
1-Methylnaphthalene	3.37	210		
Acenaphthylene	4.39	162		
Acenaphthene	4.68	31.0		
Fluorene	5.59	68.3	M	
Phenanthrene	7.77	819		
Anthracene	7.89	14.8		
Fluoranthene	11.16	119		
Pyrene	11.80	73.8		
Benzo(a)Anthracene	15.69	<12	U	
Chrysene/Triphenylene	15.81	53.6		
Benzo(b)Fluoranthene	19.03	41.9	M	B
Benzo(k)Fluoranthene	19.10	17.9	M	
Benzo(e)Pyrene	19.77	<12	U	
Benzo(a)Pyrene	NotFnd	<12	U	
Perylene	NotFnd	<12	U	
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U	
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U	
Benzo(g,h,i)Perylene	NotFnd	<12	U	
Additional Analytes				
Tetralin	2.56	88.8		B
2-Chloronaphthalene	NotFnd	<12	U	
Biphenyl	3.78	132		B
o-Terphenyl	9.05	<12	U	
1-Methylphenanthrene	NotFnd	<12	U	
9-Methylphenanthrene	9.44	84.2		
2-methylanthracene	9.50	34.0		
9,10-dimethylanthracene	NotFnd	<12	U	
m-terphenyl	12.20	14.8		
p-terphenyl	12.67	<12	U	
Benzo(a)fluorene	12.94	<12	U	
Benzo(b)fluorene	13.17	<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	3.34	106.7
Fluorene D10	600	5.54	99.1
Terphenyl D14(Surr.)	600	12.61	111.3

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	96.1	50-150
2-Methylnaphthalene-D10	600	3.23	89.4	50-150
Acenaphthylene D8	600	4.37	72.6	50-150
Phenanthrene D10	600	7.72	111.6	50-150
Anthracene-D10	600	7.84	76.2	50-150
Fluoranthene D10	600	11.11	104.6	50-150
Benz(a)Anthracene-D12	600	15.63	78.7	50-150
Chrysene D12	600	15.75	107.9	50-150
Benzo(b)Fluoranthene-D12	600	18.96	107.3	50-150
Benzo(k)Fluoranthene-D12	600	19.06	115.2	50-150
Benzo(a)Pyrene D12	600	19.85	68.5	50-150
Perylene D12	600	20.09	47.1	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.41	67.7	50-150
Dibenz(a,h)Anthracene-D14	600	23.59	75.3	50-150
Benzo(g,h,i)Perylene D12	600	24.35	86.8	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-3	Extraction Date	4-May-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Nick Schrobilgen
--e-signature--
31-May-2023

Run Information	**Run 1**
Filename	23052525.D
Run Date	5/26/2023 7:09
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US2879735H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	2.69	495		B
2-Methylnaphthalene	3.26	44.2		
1-Methylnaphthalene	3.38	29.7	M	
Acenaphthylene	NotFnd	<12	U	
Acenaphthene	4.68	22.0		
Fluorene	5.59	13.5	M	
Phenanthrene	7.78	137		
Anthracene	7.89	<12	U	
Fluoranthene	11.16	47.0		
Pyrene	11.81	75.8		
Benzo(a)Anthracene	15.70	<12	U	
Chrysene/Triphenylene	15.81	16.6		
Benzo(b)Fluoranthene	19.02	30.6		B
Benzo(k)Fluoranthene	19.09	22.0		
Benzo(e)Pyrene	NotFnd	<12	U	
Benzo(a)Pyrene	NotFnd	<12	U	
Perylene	NotFnd	<12	U	
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U	
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U	
Benzo(g,h,i)Perylene	NotFnd	<12	U	
Additional Analytes				
Tetralin	2.56	89.3	M	B
2-Chloronaphthalene	NotFnd	<12	U	
Biphenyl	3.79	67.6		B
o-Terphenyl	9.05	<12	U	
1-Methylphenanthrene	NotFnd	<12	U	
9-Methylphenanthrene	9.44	13.3		
2-methylanthracene	9.51	<12	U	
9,10-dimethylanthracene	NotFnd	<12	U	
m-terphenyl	12.20	<12	U	
p-terphenyl	12.68	<12	U	
Benzo(a)fluorene	NotFnd	<12	U	
Benzo(b)fluorene	13.16	<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	3.34	135.2
Fluorene D10	600	5.54	136.4
Terphenyl D14(Surr.)	600	12.61	109.7

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	48.5	50-150
2-Methylnaphthalene-D10	600	3.23	42.7	50-150
Acenaphthylene D8	600	4.37	48.6	50-150
Phenanthrene D10	600	7.72	58.4	50-150
Anthracene-D10	600	7.85	49.5	50-150
Fluoranthene D10	600	11.11	54.8	50-150
Benz(a)Anthracene-D12	600	15.63	46.0	50-150
Chrysene D12	600	15.75	55.2	50-150
Benzo(b)Fluoranthene-D12	600	18.96	52.9	50-150
Benzo(k)Fluoranthene-D12	600	19.06	56.6	50-150
Benzo(a)Pyrene D12	600	19.85	55.7	50-150
Perylene D12	600	20.09	40.8	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.41	50.1	50-150
Dibenz(a,h)Anthracene-D14	600	23.58	52.9	50-150
Benzo(g,h,i)Perylene D12	600	24.35	49.3	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(16 THRU 20) BLANK1**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-4	Extraction Date	4-May-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Nick Schrobilgen
--e-signature--
31-May-2023

Run Information	**Run 1**
Filename	23052521.D
Run Date	5/26/2023 4:39
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US2879735H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.69	142	B
2-Methylnaphthalene	3.26	<12	U
1-Methylnaphthalene	3.37	<12	U
Acenaphthylene	4.38	<12	U
Acenaphthene	4.68	<12	U
Fluorene	5.59	<12	U
Phenanthrene	7.78	<12	U
Anthracene	7.89	<12	U
Fluoranthene	11.15	<12	U
Pyrene	11.79	<12	U
Benzo(a)Anthracene	15.69	<12	U
Chrysene/Triphenylene	15.80	<12	U
Benzo(b)Fluoranthene	19.02	17.4	B
Benzo(k)Fluoranthene	19.09	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	2.56	80.0	B
2-Chloronaphthalene	3.81	<12	U
Biphenyl	3.78	40.2	B
o-Terphenyl	9.05	<12	U
1-Methylphenanthrene	9.31	<12	U
9-Methylphenanthrene	9.44	<12	U
2-methylanthracene	9.50	<12	U
9,10-dimethylanthracene	11.96	<12	U
m-terphenyl	12.20	<12	U
p-terphenyl	12.67	<12	U
Benzo(a)fluorene	12.97	<12	U
Benzo(b)fluorene	13.18	<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	3.34	107.6
Fluorene D10	600	5.54	94.9
Terphenyl D14(Surr.)	600	12.61	111.7

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	90.0	50-150
2-Methylnaphthalene-D10	600	3.23	85.7	50-150
Acenaphthylene D8	600	4.37	75.1	50-150
Phenanthrene D10	600	7.72	105.5	50-150
Anthracene-D10	600	7.84	86.3	50-150
Fluoranthene D10	600	11.11	104.2	50-150
Benz(a)Anthracene-D12	600	15.63	86.8	50-150
Chrysene D12	600	15.75	109.6	50-150
Benzo(b)Fluoranthene-D12	600	18.96	111.5	50-150
Benzo(k)Fluoranthene-D12	600	19.06	118.1	50-150
Benzo(a)Pyrene D12	600	19.86	93.2	50-150
Perylene D12	600	20.09	77.7	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.41	94.8	50-150
Dibenz(a,h)Anthracene-D14	600	23.59	95.6	50-150
Benzo(g,h,i)Perylene D12	600	24.35	100.1	50-150

U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-5	Extraction Date	4-May-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Nick Schrobilgen
--e-signature--
31-May-2023

Run Information	**Run 1**
Filename	23052526.D
Run Date	5/26/2023 7:46
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US2879735H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	2.69	637		B
2-Methylnaphthalene	3.26	123		
1-Methylnaphthalene	3.38	62.8		
Acenaphthylene	4.39	29.7		
Acenaphthene	4.68	16.6		
Fluorene	5.59	21.7		
Phenanthrene	7.78	188		
Anthracene	7.89	12.7		
Fluoranthene	11.16	45.9		
Pyrene	11.81	43.6		
Benzo(a)Anthracene	15.70	<12	U	
Chrysene/Triphenylene	15.81	14.2		
Benzo(b)Fluoranthene	19.02	32.6		B
Benzo(k)Fluoranthene	19.09	21.4		
Benzo(e)Pyrene	19.77	<12	U	
Benzo(a)Pyrene	NotFnd	<12	U	
Perylene	NotFnd	<12	U	
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U	
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U	
Benzo(g,h,i)Perylene	NotFnd	<12	U	
Additional Analytes				
Tetralin	2.56	84.2 M		B
2-Chloronaphthalene	NotFnd	<12	U	
Biphenyl	3.78	86.8 M		B
o-Terphenyl	NotFnd	<12	U	
1-Methylphenanthrene	NotFnd	<12	U	
9-Methylphenanthrene	9.44	19.7		
2-methylanthracene	9.50	<12	U	
9,10-dimethylanthracene	NotFnd	<12	U	
m-terphenyl	12.19	<12	U	
p-terphenyl	12.68	<12	U	
Benzo(a)fluorene	12.94	<12	U	
Benzo(b)fluorene	13.20	<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	3.34	127.3
Fluorene D10	600	5.54	115.3
Terphenyl D14(Surr.)	600	12.61	110.4

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	45.9	50-150
2-Methylnaphthalene-D10	600	3.23	40.3	50-150
Acenaphthylene D8	600	4.37	39.5	50-150
Phenanthrene D10	600	7.72	52.7	50-150
Anthracene-D10	600	7.85	41.3	50-150
Fluoranthene D10	600	11.11	48.5	50-150
Benz(a)Anthracene-D12	600	15.64	40.1	50-150
Chrysene D12	600	15.75	48.0	50-150
Benzo(b)Fluoranthene-D12	600	18.96	45.1	50-150
Benzo(k)Fluoranthene-D12	600	19.06	48.6	50-150
Benzo(a)Pyrene D12	600	19.85	42.5	50-150
Perylene D12	600	20.09	33.2	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.41	34.6	50-150
Dibenz(a,h)Anthracene-D14	600	23.58	38.6	50-150
Benzo(g,h,i)Perylene D12	600	24.35	38.6	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	26-Apr-23
ALS Sample ID	L2750279-6	Extraction Date	4-May-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Nick Schrobilgen
--e-signature--
31-May-2023

Run Information	**Run 1**
Filename	23052527.D
Run Date	5/26/2023 8:24
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US2879735H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.69	279	B
2-Methylnaphthalene	3.26	59.5	
1-Methylnaphthalene	3.37	35.8	
Acenaphthylene	4.39	<12	U
Acenaphthene	4.68	<12	U
Fluorene	5.59	43.8	M
Phenanthrene	7.78	798	
Anthracene	7.89	12.6	
Fluoranthene	11.16	92.5	
Pyrene	11.81	88.7	
Benzo(a)Anthracene	15.69	<12	U
Chrysene/Triphenylene	15.81	15.7	
Benzo(b)Fluoranthene	19.02	32.3	B
Benzo(k)Fluoranthene	19.09	19.7	
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	20.14	18.2	
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	2.56	93.8	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.78	103	B
o-Terphenyl	9.05	13.6	
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.44	73.1	
2-methylanthracene	9.50	26.5	
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.20	<12	U
p-terphenyl	12.68	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	13.18	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	28.26	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.34	107.1
Fluorene D10	600	5.54	93.3
Terphenyl D14(Surr.)	600	12.61	98.9

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.68	76.0	50-150
2-Methylnaphthalene-D10	600	3.23	70.8	50-150
Acenaphthylene D8	600	4.37	54.3	50-150
Phenanthrene D10	600	7.72	74.2	50-150
Anthracene-D10	600	7.84	57.9	50-150
Fluoranthene D10	600	11.11	61.5	50-150
Benz(a)Anthracene-D12	600	15.63	41.2	50-150
Chrysene D12	600	15.75	55.4	50-150
Benzo(b)Fluoranthene-D12	600	18.96	51.3	50-150
Benzo(k)Fluoranthene-D12	600	19.06	55.4	50-150
Benzo(a)Pyrene D12	600	19.86	39.7	50-150
Perylene D12	600	20.08	20.2	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.41	33.6	50-150
Dibenz(a,h)Anthracene-D14	600	23.59	38.5	50-150
Benzo(g,h,i)Perylene D12	600	24.35	44.4	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-7	Extraction Date	4-May-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Nick Schrobilgen
--e-signature--
31-May-2023

Run Information	**Run 1**
Filename	23052528.D
Run Date	5/26/2023 9:01
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US2879735H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.68	195	B
2-Methylnaphthalene	3.26	46.4	
1-Methylnaphthalene	3.37	26.3	
Acenaphthylene	4.39	<12	U
Acenaphthene	4.68	<12	U
Fluorene	5.59	12.7	
Phenanthrene	7.77	125	
Anthracene	7.89	<12	U
Fluoranthene	11.16	37.4	
Pyrene	11.80	44.5	
Benzo(a)Anthracene	15.69	<12	U
Chrysene/Triphenylene	15.81	<12	U
Benzo(b)Fluoranthene	19.03	15.9	B
Benzo(k)Fluoranthene	19.03	14.2	
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	2.56	88.8	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.78	61.7	B
o-Terphenyl	9.05	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.44	12.6	
2-methylanthracene	9.51	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.20	<12	U
p-terphenyl	12.67	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	13.17	<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	3.34	129.7
Fluorene D10	600	5.54	101.2
Terphenyl D14(Surr.)	600	12.61	111.3

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.67	100.8	50-150
2-Methylnaphthalene-D10	600	3.23	78.2	50-150
Acenaphthylene D8	600	4.37	78.6	50-150
Phenanthrene D10	600	7.72	108.4	50-150
Anthracene-D10	600	7.84	85.6	50-150
Fluoranthene D10	600	11.11	98.1	50-150
Benz(a)Anthracene-D12	600	15.63	72.4	50-150
Chrysene D12	600	15.75	97.0	50-150
Benzo(b)Fluoranthene-D12	600	18.96	94.5	50-150
Benzo(k)Fluoranthene-D12	600	19.06	101.3	50-150
Benzo(a)Pyrene D12	600	19.86	65.6	50-150
Perylene D12	600	20.08	21.9	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.41	55.2	50-150
Dibenz(a,h)Anthracene-D14	600	23.59	63.9	50-150
Benzo(g,h,i)Perylene D12	600	24.35	70.6	50-150

U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-SVOC-(36 THRU 40) BLANK2**	Sampling Date	27-Apr-23
ALS Sample ID	L2750279-8	Extraction Date	4-May-23
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Nick Schrobilgen
--e-signature--
31-May-2023

Run Information	**Run 1**
Filename	23052522.D
Run Date	5/26/2023 5:17
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US2879735H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	2.68	114		B
2-Methylnaphthalene	3.26	<12	U	
1-Methylnaphthalene	3.37	<12	U	
Acenaphthylene	4.38	<12	U	
Acenaphthene	4.68	<12	U	
Fluorene	5.59	<12	U	
Phenanthrene	7.77	<12	U	
Anthracene	7.89	<12	U	
Fluoranthene	11.16	<12	U	
Pyrene	11.80	<12	U	
Benzo(a)Anthracene	15.69	<12	U	
Chrysene/Triphenylene	15.80	<12	U	
Benzo(b)Fluoranthene	19.03	<12	U	
Benzo(k)Fluoranthene	19.10	<12	U	
Benzo(e)Pyrene	NotFnd	<12	U	
Benzo(a)Pyrene	NotFnd	<12	U	
Perylene	NotFnd	<12	U	
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U	
Dibenzo(a,h/a,c)Anthracene	NotFnd	<12	U	
Benzo(g,h,i)Perylene	NotFnd	<12	U	
Additional Analytes				
Tetralin	2.56	66.8		B
2-Chloronaphthalene	NotFnd	<12	U	
Biphenyl	3.78	19.3		B
o-Terphenyl	9.05	<12	U	
1-Methylphenanthrene	9.19	<12	U	
9-Methylphenanthrene	9.45	<12	U	
2-methylanthracene	9.51	<12	U	
9,10-dimethylanthracene	11.96	<12	U	
m-terphenyl	12.20	<12	U	
p-terphenyl	12.67	<12	U	
Benzo(a)fluorene	12.96	<12	U	
Benzo(b)fluorene	13.18	<12	U	
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U	
3-Methylcholanthrene	NotFnd	<60	U	
Picene	24.18	<60	U	
Dibenzo(a,e)pyrene	NotFnd	<60	U	
Coronene	NotFnd	<60	U	

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	600	3.34	109.6
Fluorene D10	600	5.54	98
Terphenyl D14(Surr.)	600	12.61	109.2

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.67	105.4	50-150
2-Methylnaphthalene-D10	600	3.23	99.0	50-150
Acenaphthylene D8	600	4.37	86.8	50-150
Phenanthrene D10	600	7.72	125.1	50-150
Anthracene-D10	600	7.84	98.5	50-150
Fluoranthene D10	600	11.11	118.6	50-150
Benz(a)Anthracene-D12	600	15.63	89.8	50-150
Chrysene D12	600	15.75	118.9	50-150
Benzo(b)Fluoranthene-D12	600	18.96	118.1	50-150
Benzo(k)Fluoranthene-D12	600	19.06	127.8	50-150
Benzo(a)Pyrene D12	600	19.86	82.0	50-150
Perylene D12	600	20.08	19.4	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.41	84.3	50-150
Dibenz(a,h)Anthracene-D14	600	23.59	92.0	50-150
Benzo(g,h,i)Perylene D12	600	24.35	91.8	50-150

U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3783592-2	Extraction Date	4-May-23
Analysis Method	PAH by CARB 429		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3783592

Approved:
Nick Schrobilgen
--e-signature--
31-May-2023

Run Information	**Run 1**
Filename	23052515.D
Run Date	5/26/2023 0:55
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP-5MS US2879735H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	2.68	113.8		50-150
2-Methylnaphthalene	600	3.26	106.1		50-150
1-Methylnaphthalene	600	3.37	112.8		50-150
Acenaphthylene	600	4.38	104.5		50-150
Acenaphthene	600	4.68	87.7		50-150
Fluorene	600	5.59	93.5		50-150
Phenanthrene	600	7.77	110.3		50-150
Anthracene	600	7.89	103.3		50-150
Fluoranthene	600	11.16	108.3		50-150
Pyrene	600	11.80	108.8		50-150
Benzo(a)Anthracene	600	15.70	114		50-150
Chrysene/Triphenylene	600	15.82	100.2		50-150
Benzo(b)Fluoranthene	600	19.02	107.8		50-150
Benzo(k)Fluoranthene	600	19.11	107.2		50-150
Benzo(e)Pyrene	600	19.77	106.3		50-150
Benzo(a)Pyrene	600	19.91	119.6		50-150
Perylene	600	20.15	132		50-150
Indeno(1,2,3-cd)Pyrene	600	23.49	103.7		50-150
Dibenzo(a,h/a,c)Anthracene	600	23.70	98.5		50-150
Benzo(g,h,i)Perylene	600	24.45	100.8		50-150
Field Sampling Standards	**ng spiked**		**% Rec**		
1-Methylnaphthalene-D10	0		NS		
Fluorene D10	0		NS		
Terphenyl D14(Surr.)	0		NS		
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.67	59.3		30-150
2-Methylnaphthalene-D10	600	3.23	61.5		30-150
Acenaphthylene D8	600	4.37	59.2		30-150
Phenanthrene D10	600	7.72	81.3		50-150
Anthracene-D10	600	7.84	73.0		50-150
Fluoranthene D10	600	11.11	90.2		50-150
Benz(a)Anthracene-D12	600	15.63	90.0		50-150
Chrysene D12	600	15.75	99.2		50-150
Benzo(b)Fluoranthene-D12	600	18.96	100.5		50-150
Benzo(k)Fluoranthene-D12	600	19.05	102.2		50-150
Benzo(a)Pyrene D12	600	19.85	80.9		30-150
Perylene D12	600	20.08	60.2		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.41	87.3		50-150
Dibenz(a,h)Anthracene-D14	600	23.58	87.1		50-150
Benzo(g,h,i)Perylene D12	600	24.35	93.3		50-150

NS Indicates that this compound was not spiked.

APPENDIX 16

Acid Gas Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22230
Date:	APR 24/23
Test No.:	1
Test Location:	UNIT 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	645.2
Initial Wt:	745.9
Final Wt:	867.0
1 Gain:	121.1
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	659.7
Initial Wt:	762.4
Final Wt:	770.7
2 Gain:	8.3
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	600.5
Final Wt:	618.0
3 Gain:	17.5
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.0
With Imp. 1,2,3 Soln:	595.7
After Rinse:	709.0
Total TS3:	427.0

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	992.0
Final Wt:	1001.6
4 Gain:	9.6

Box ID: 13

CWTR = 1+2+3:	146.9
WCBDA= 4:	9.6

SAMPLE ID: 23-22230-M26A- 1

Train Loaded By:	DT
Train Recovered By:	DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22230

Date: APR 24/23

Test No.: 2

Test Location: UNIT 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO_4	
Empty Wt:	562.5
Initial Wt:	669.0
Final Wt:	877.5
1 Gain:	208.5
Colour:	Clear

Impinger #2 0.1 N H_2SO_4	
Empty Wt:	649.5
Initial Wt:	753.0
Final Wt:	702.2
2 Gain:	−50.8
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	612.0
Final Wt:	616.2
3 Gain:	4.2
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.5
With Imp. 1,2,3 Soln:	650.7
After Rinse:	759.5
Total TS3:	477.0

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	975.0
Final Wt:	984.7
4 Gain:	9.7

Box ID:

CWTR = 1+2+3: 161.9

WCBDA= 4: 9.7

SAMPLE ID: 23-22230-M26A- 2

Train Loaded By: DT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22230
Date:	Apr 24/23
Test No.:	3
Test Location:	Unit 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO_4	
Empty Wt:	643.7
Initial Wt:	744.4
Final Wt:	879.7
1 Gain:	135.3
Colour:	clear

Impinger #2 0.1 N H_2SO_4	
Empty Wt:	694.8
Initial Wt:	797.0
Final Wt:	825.0
2 Gain:	28.0
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	600.5
Final Wt:	605.0
3 Gain:	4.5
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.0
With Imp. 1,2,3 Soln:	649.8
After Rinse:	753.5
Total TS3:	471.5

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	977.8
Final Wt:	991.5
4 Gain:	13.7

Box ID: A

CWTR = 1+2+3:	167.8
WCBDA= 4:	13.7

SAMPLE ID: 23-22230-M26A-~~1~~ 3

Train Loaded By:

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22230

Date: APR 24/23

Test No.: BLANK 1

Test Location:

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
Gain:	1
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
Gain:	4

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
Gain:	2
Colour:	

Box ID:

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
Gain:	3
Colour:	

CWTR = 1+2+3:

WCBDA= 4:

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.5
With Imp. 1,2,3 Soln:	491.2
After Rinse:	582.5
Total TS3:	300.0

SAMPLE ID: 23-22230-M26A- BLANK 1

Train Loaded By:

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22230
Date:	Apr 25/23
Test No.:	1
Test Location:	unit 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	643.7
Initial Wt:	745.0
Final Wt:	873.0
1 Gain:	128.0
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	694.8
Initial Wt:	794.8
Final Wt:	831.3
2 Gain:	36.5
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	600.5
Final Wt:	607.0
3 Gain:	6.5
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.5
With Imp. 1,2,3 Soln:	651.0
After Rinse:	774.0
Total TS3:	

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	891.5
Final Wt:	1004.0
4 Gain:	12.5

Box ID: A

CWTR = 1+2+3:	171.0
WCBDA= 4:	12.5

SAMPLE ID: 23-22230-M26A- 4

Train Loaded By:

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22230
Date:	Apr 25/23
Test No.:	2
Test Location:	unit 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	562.4
Initial Wt:	661.0
Final Wt:	795.0
1 Gain:	134.0
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	649.5
Initial Wt:	~~650.5~~
Final Wt:	783.5
2 Gain:	~~133.0~~
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	611.6
Final Wt:	616.6
3 Gain:	5.0
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.8
With Imp. 1,2,3 Soln:	645.3
After Rinse:	745.8
Total TS3:	464.0

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	982.5
Final Wt:	991.5
4 Gain:	9.5

Box ID: B

172.0

CWTR = 1+2+3: ~~172.0~~

WCBDA= 4: 9.5

SAMPLE ID: 23-22230-M26A- 5

Train Loaded By: DT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22230
Date:	Apr. 25/23
Test No.:	3
Test Location:	unit 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	643.5
Initial Wt:	755.7
Final Wt:	879.5
1 Gain:	123.8
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	694.0
Initial Wt:	789.5
Final Wt:	818.2
2 Gain:	28.7
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	600.0
Final Wt:	603.6
3 Gain:	3.6
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	283.5
With Imp. 1,2,3 Soln:	642.9
After Rinse:	745.0
Total TS3:	461.5

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	1004.0
Final Wt:	1016.9
4 Gain:	12.9

Box ID:

CWTR = 1+2+3:	156.1
WCBDA= 4:	12.9

SAMPLE ID: 23-22230-M26A-

Train Loaded By:

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 22230

Date: APR 25/23

Test No.: BLANK 2

Test Location:

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger 4

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Box ID:

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

CWTR = 1+2+3:

WCBDA= 4:

CONTAINER TS3 WEIGHTS	
Empty Wt:	2820
With Imp. 1,2,3 Soln:	482.5
After Rinse:	590.0
Total TS3:	308.0

SAMPLE ID: 23-22230-M26A- BLANK 2

Train Loaded By:

Train Recovered By: BT

APPENDIX 17

VOST Analytical Report
(21 pages)

Your P.O. #: 22230-J2904
Your Project #: 22230
Site Location: COVANTA

Attention: CHRIS BELORE

ORTECH Environmental
804 Southdown Road
Mississauga, ON
CANADA L5J 2Y4

Report Date: 2023/05/11
Report #: R7625389
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3C0579
Received: 2023/04/28, 13:45

Sample Matrix: Stack Sampling Train
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
VOST EPA5041A, 8260C for 0030, 0031	7	N/A	2023/05/03	BRL SOP-00302	EPA5041A, 8260C
VOST EPA5041A, 8260C for 0030, 0031	1	N/A	2023/05/05	BRL SOP-00302	EPA5041A, 8260C

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Your P.O. #: 22230-J2904
Your Project #: 22230
Site Location: COVANTA

Attention: CHRIS BELORE

ORTECH Environmental
804 Southdown Road
Mississauga, ON
CANADA L5J 2Y4

Report Date: 2023/05/11
Report #: R7625389
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3C0579
Received: 2023/04/28, 13:45

Encryption Key

Clayton Johnson
CET LEAD-Air Toxics, Source Evaluation
11 May 2023 19:39:09

Please direct all questions regarding this Certificate of Analysis to:
Clayton Johnson, CET LEAD-Air Toxics, Source Evaluation
Email: Clayton.Johnson@bureauveritas.com
Phone# (905)817-5769

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C3C0579
Report Date: 2023/05/11

ORTECH Environmental
Client Project #: 22230
Site Location: COVANTA
Your P.O. #: 22230-J2904

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Bureau Veritas ID		VRG028	VRG029	VRG030			
Sampling Date		2023/04/26	2023/04/26	2023/04/26			
	UNITS	23-22230-VOST-S FIELD BLANK	23-22230-VOST-1 T1	23-22230-VOST-2 T2	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.050	<0.050	<0.050	0.050	0.020	8643084
Vinyl Chloride	ug	<0.050	<0.050	<0.050	0.050	0.013	8643084
Bromomethane	ug	<0.050	<0.050	<0.050	0.050	0.015	8643084
Trichlorofluoromethane (FREON 11)	ug	<0.050	<0.050	<0.050	0.050	0.010	8643084
Acetone (2-Propanone)	ug	<0.050	0.052	<0.050	0.050	0.025	8643084
1,1-Dichloroethylene	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
Methylene Chloride(Dichloromethane)	ug	<0.050	<0.050	<0.050	0.050	0.020	8643084
trans-1,2-Dichloroethylene	ug	<0.050	<0.050	<0.050	0.050	0.010	8643084
Chloroform	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
1,2-Dichloroethane	ug	<0.050	<0.050	<0.050	0.050	0.0070	8643084
Methyl Ethyl Ketone (2-Butanone)	ug	<0.050	<0.050	<0.050	0.050	0.036	8643084
1,1,1-Trichloroethane	ug	<0.050	<0.050	<0.050	0.050	0.014	8643084
Carbon Tetrachloride	ug	<0.050	<0.050	<0.050	0.050	0.016	8643084
Benzene	ug	<0.050	<0.050	<0.050	0.050	0.0010	8643084
1,1,2-Trichloroethane	ug	<0.050	<0.050	<0.050	0.050	0.016	8643084
1,2-Dichloropropane	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
Trichloroethylene	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
Bromodichloromethane	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
Dibromochloromethane	ug	<0.050	<0.050	<0.050	0.050	0.0090	8643084
Toluene	ug	<0.050	0.279	<0.050	0.050	0.014	8643084
Ethylene Dibromide	ug	<0.050	<0.050	<0.050	0.050	0.010	8643084
Tetrachloroethylene	ug	<0.050	<0.050	<0.050	0.050	0.018	8643084
Chlorobenzene	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
Ethylbenzene	ug	<0.050	<0.050	<0.050	0.050	0.014	8643084
m / p-Xylene	ug	<0.10	<0.10	<0.10	0.10	0.015	8643084
Styrene	ug	<0.050	<0.050	<0.050	0.050	0.012	8643084
o-Xylene	ug	<0.050	<0.050	<0.050	0.050	0.015	8643084
Bromoform	ug	<0.050	<0.050	<0.050	0.050	0.014	8643084
Surrogate Recovery (%)							
Bromofluorobenzene	%	103	103	105	N/A	N/A	8643084
D10-Ethylbenzene (F5)	%	101	101	99	N/A	N/A	8643084
D4-1,2-Dichloroethane	%	105	107	104	N/A	N/A	8643084
D8-Toluene	%	104	103	102	N/A	N/A	8643084

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Bureau Veritas ID		VRG031	VRG074	VRG076			
Sampling Date		2023/04/26	2023/04/26	2023/04/26			
	UNITS	23-22230-VOST-3 T3	23-22230-VOST-8 T1	23-22230-VOST-10 T3	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.050	<0.050	<0.050	0.050	0.020	8643084
Vinyl Chloride	ug	<0.050	<0.050	<0.050	0.050	0.013	8643084
Bromomethane	ug	<0.050	<0.050	<0.050	0.050	0.015	8643084
Trichlorofluoromethane (FREON 11)	ug	<0.050	<0.050	<0.050	0.050	0.010	8643084
Acetone (2-Propanone)	ug	<0.050	<0.050	<0.050	0.050	0.025	8643084
1,1-Dichloroethylene	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
Methylene Chloride(Dichloromethane)	ug	<0.050	<0.050	<0.050	0.050	0.020	8643084
trans-1,2-Dichloroethylene	ug	<0.050	<0.050	<0.050	0.050	0.010	8643084
Chloroform	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
1,2-Dichloroethane	ug	<0.050	<0.050	<0.050	0.050	0.0070	8643084
Methyl Ethyl Ketone (2-Butanone)	ug	<0.050	<0.050	<0.050	0.050	0.036	8643084
1,1,1-Trichloroethane	ug	<0.050	<0.050	<0.050	0.050	0.014	8643084
Carbon Tetrachloride	ug	<0.050	<0.050	<0.050	0.050	0.016	8643084
Benzene	ug	<0.050	<0.050	<0.050	0.050	0.0010	8643084
1,1,2-Trichloroethane	ug	<0.050	<0.050	<0.050	0.050	0.016	8643084
1,2-Dichloropropane	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
Trichloroethylene	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
Bromodichloromethane	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
Dibromochloromethane	ug	<0.050	<0.050	<0.050	0.050	0.0090	8643084
Toluene	ug	<0.050	5.66	3.74	0.050	0.014	8643084
Ethylene Dibromide	ug	<0.050	<0.050	<0.050	0.050	0.010	8643084
Tetrachloroethylene	ug	<0.050	<0.050	<0.050	0.050	0.018	8643084
Chlorobenzene	ug	<0.050	<0.050	<0.050	0.050	0.011	8643084
Ethylbenzene	ug	<0.050	<0.050	<0.050	0.050	0.014	8643084
m / p-Xylene	ug	<0.10	0.11	<0.10	0.10	0.015	8643084
Styrene	ug	<0.050	<0.050	<0.050	0.050	0.012	8643084
o-Xylene	ug	<0.050	<0.050	<0.050	0.050	0.015	8643084
Bromoform	ug	<0.050	<0.050	<0.050	0.050	0.014	8643084
Surrogate Recovery (%)							
Bromofluorobenzene	%	104	102	103	N/A	N/A	8643084
D10-Ethylbenzene (FS)	%	108	95	103	N/A	N/A	8643084
D4-1,2-Dichloroethane	%	106	107	108	N/A	N/A	8643084
D8-Toluene	%	102	102	103	N/A	N/A	8643084

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Bureau Veritas Job #: C3C0579
Report Date: 2023/05/11

ORTECH Environmental
Client Project #: 22230
Site Location: COVANTA
Your P.O. #: 22230-J2904

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Bureau Veritas ID		VRG077				VRG078			
Sampling Date		2023/04/26				2023/04/26			
	UNITS	23-22230-VOST-11 T4	RDL	MDL	QC Batch	23-22230-VOST-TRIP BLANK	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.50	0.50	0.20	8648411	<0.050	0.050	0.020	8643084
Vinyl Chloride	ug	<0.50	0.50	0.13	8648411	<0.050	0.050	0.013	8643084
Bromomethane	ug	<0.50	0.50	0.15	8648411	<0.050	0.050	0.015	8643084
Trichlorofluoromethane (FREON 11)	ug	<0.50	0.50	0.10	8648411	<0.050	0.050	0.010	8643084
Acetone (2-Propanone)	ug	<0.50	0.50	0.25	8648411	<0.050	0.050	0.025	8643084
1,1-Dichloroethylene	ug	<0.50	0.50	0.11	8648411	<0.050	0.050	0.011	8643084
Methylene Chloride(Dichloromethane)	ug	<0.50	0.50	0.20	8648411	<0.050	0.050	0.020	8643084
trans-1,2-Dichloroethylene	ug	<0.50	0.50	0.10	8648411	<0.050	0.050	0.010	8643084
Chloroform	ug	<0.50	0.50	0.11	8648411	<0.050	0.050	0.011	8643084
1,2-Dichloroethane	ug	<0.50	0.50	0.070	8648411	<0.050	0.050	0.0070	8643084
Methyl Ethyl Ketone (2-Butanone)	ug	<0.50	0.50	0.36	8648411	<0.050	0.050	0.036	8643084
1,1,1-Trichloroethane	ug	<0.50	0.50	0.14	8648411	<0.050	0.050	0.014	8643084
Carbon Tetrachloride	ug	<0.50	0.50	0.16	8648411	<0.050	0.050	0.016	8643084
Benzene	ug	<0.50	0.50	0.010	8648411	<0.050	0.050	0.0010	8643084
1,1,2-Trichloroethane	ug	<0.50	0.50	0.16	8648411	<0.050	0.050	0.016	8643084
1,2-Dichloropropane	ug	<0.50	0.50	0.11	8648411	<0.050	0.050	0.011	8643084
Trichloroethylene	ug	<0.50	0.50	0.11	8648411	<0.050	0.050	0.011	8643084
Bromodichloromethane	ug	<0.50	0.50	0.11	8648411	<0.050	0.050	0.011	8643084
Dibromochloromethane	ug	<0.50	0.50	0.090	8648411	<0.050	0.050	0.0090	8643084
Toluene	ug	15.4	1.0	0.28	8648411	<0.050	0.050	0.014	8643084
Ethylene Dibromide	ug	<0.50	0.50	0.10	8648411	<0.050	0.050	0.010	8643084
Tetrachloroethylene	ug	<0.50	0.50	0.18	8648411	<0.050	0.050	0.018	8643084
Chlorobenzene	ug	<0.50	0.50	0.11	8648411	<0.050	0.050	0.011	8643084
Ethylbenzene	ug	<0.50	0.50	0.14	8648411	<0.050	0.050	0.014	8643084
m / p-Xylene	ug	<1.0	1.0	0.15	8648411	<0.10	0.10	0.015	8643084
Styrene	ug	<0.50	0.50	0.12	8648411	<0.050	0.050	0.012	8643084
o-Xylene	ug	<0.50	0.50	0.15	8648411	<0.050	0.050	0.015	8643084
Bromoform	ug	<0.50	0.50	0.14	8648411	<0.050	0.050	0.014	8643084
Surrogate Recovery (%)									
Bromofluorobenzene	%	74	N/A	N/A	8648411	102	N/A	N/A	8643084
D10-Ethylbenzene (FS)	%	94	N/A	N/A	8648411	106	N/A	N/A	8643084
D4-1,2-Dichloroethane	%	100	N/A	N/A	8648411	106	N/A	N/A	8643084
D8-Toluene	%	91	N/A	N/A	8648411	102	N/A	N/A	8643084

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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TEST SUMMARY

Bureau Veritas ID: VRG028 **Collected:** 2023/04/26
Sample ID: 23-22230-VOST-5 FIELD BLANK **Shipped:**
Matrix: Stack Sampling Train **Received:** 2023/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	8643084	N/A	2023/05/03	Yujie Yan

Bureau Veritas ID: VRG029 **Collected:** 2023/04/26
Sample ID: 23-22230-VOST-1 T1 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2023/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	8643084	N/A	2023/05/03	Yujie Yan

Bureau Veritas ID: VRG030 **Collected:** 2023/04/26
Sample ID: 23-22230-VOST-2 T2 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2023/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	8643084	N/A	2023/05/03	Yujie Yan

Bureau Veritas ID: VRG031 **Collected:** 2023/04/26
Sample ID: 23-22230-VOST-3 T3 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2023/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	8643084	N/A	2023/05/03	Yujie Yan

Bureau Veritas ID: VRG074 **Collected:** 2023/04/26
Sample ID: 23-22230-VOST-8 T1 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2023/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	8643084	N/A	2023/05/03	Yujie Yan

Bureau Veritas ID: VRG076 **Collected:** 2023/04/26
Sample ID: 23-22230-VOST-10 T3 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2023/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	8643084	N/A	2023/05/03	Yujie Yan

Bureau Veritas ID: VRG077 **Collected:** 2023/04/26
Sample ID: 23-22230-VOST-11 T4 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2023/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	8648411	N/A	2023/05/05	Yujie Yan

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Bureau Veritas Job #: C3C0579
Report Date: 2023/05/11

ORTECH Environmental
Client Project #: 22230
Site Location: COVANTA
Your P.O. #: 22230-J2904

TEST SUMMARY

Bureau Veritas ID: VRG078
Sample ID: 23-22230-VOST- TRIP BLANK
Matrix: Stack Sampling Train

Collected: 2023/04/26
Shipped:
Received: 2023/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	8643084	N/A	2023/05/03	Yujie Yan

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GENERAL COMMENTS

Sample VRG075-01 (23-22230-VOST-9 T2) : No data available for this sample, the sample boke during analysis.

Sample VRG074 [23-22230-VOST-8 T1] : Toluene is over the calibration range. Data should be considered an estimate only.

Sample VRG076 [23-22230-VOST-10 T3] : Toluene is over the calibration range. Data should be considered an estimate only.

Sample VRG077 [23-22230-VOST-11 T4] : Sample was analyzed at a 10x dilution. Toluene was analyzed at a 20x dilution. The DLs were adjusted accordingly.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8643084	YYA	Spiked Blank	Bromofluorobenzene	2023/05/03		98	%	43 - 131
			D10-Ethylbenzene (FS)	2023/05/03		96	%	47 - 157
			D4-1,2-Dichloroethane	2023/05/03		102	%	64 - 133
			D8-Toluene	2023/05/03		100	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2023/05/03		113	%	50 - 150
			Vinyl Chloride	2023/05/03		105	%	50 - 150
			Bromomethane	2023/05/03		104	%	50 - 150
			Trichlorofluoromethane (FREON 11)	2023/05/03		109	%	50 - 150
			Acetone (2-Propanone)	2023/05/03		65	%	50 - 150
			1,1-Dichloroethylene	2023/05/03		115	%	50 - 150
			Methylene Chloride(Dichloromethane)	2023/05/03		111	%	50 - 150
			trans-1,2-Dichloroethylene	2023/05/03		112	%	50 - 150
			Chloroform	2023/05/03		112	%	50 - 150
			1,2-Dichloroethane	2023/05/03		106	%	50 - 150
			Methyl Ethyl Ketone (2-Butanone)	2023/05/03		73	%	50 - 150
			1,1,1-Trichloroethane	2023/05/03		107	%	50 - 150
			Carbon Tetrachloride	2023/05/03		107	%	50 - 150
			Benzene	2023/05/03		107	%	50 - 150
			1,1,2-Trichloroethane	2023/05/03		104	%	50 - 150
			1,2-Dichloropropane	2023/05/03		106	%	50 - 150
			Trichloroethylene	2023/05/03		102	%	50 - 150
			Bromodichloromethane	2023/05/03		107	%	50 - 150
			Dibromochloromethane	2023/05/03		106	%	50 - 150
			Toluene	2023/05/03		105	%	50 - 150
			Ethylene Dibromide	2023/05/03		103	%	50 - 150
			Tetrachloroethylene	2023/05/03		107	%	50 - 150
			Chlorobenzene	2023/05/03		105	%	50 - 150
			Ethylbenzene	2023/05/03		105	%	50 - 150
			m / p-Xylene	2023/05/03		106	%	50 - 150
			Styrene	2023/05/03		104	%	50 - 150
			o-Xylene	2023/05/03		105	%	50 - 150
			Bromoform	2023/05/03		106	%	50 - 150
8643084	YYA	Method Blank	Bromofluorobenzene	2023/05/03		104	%	43 - 131
			D10-Ethylbenzene (FS)	2023/05/03		98	%	47 - 157
			D4-1,2-Dichloroethane	2023/05/03		106	%	64 - 133
			D8-Toluene	2023/05/03		103	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2023/05/03	<0.050		ug	
			Vinyl Chloride	2023/05/03	<0.050		ug	
			Bromomethane	2023/05/03	<0.050		ug	
			Trichlorofluoromethane (FREON 11)	2023/05/03	<0.050		ug	
			Acetone (2-Propanone)	2023/05/03	<0.050		ug	
			1,1-Dichloroethylene	2023/05/03	<0.050		ug	
			Methylene Chloride(Dichloromethane)	2023/05/03	<0.050		ug	
			trans-1,2-Dichloroethylene	2023/05/03	<0.050		ug	
			Chloroform	2023/05/03	<0.050		ug	
			1,2-Dichloroethane	2023/05/03	<0.050		ug	
			Methyl Ethyl Ketone (2-Butanone)	2023/05/03	<0.050		ug	
			1,1,1-Trichloroethane	2023/05/03	<0.050		ug	
			Carbon Tetrachloride	2023/05/03	<0.050		ug	
			Benzene	2023/05/03	<0.050		ug	
			1,1,2-Trichloroethane	2023/05/03	<0.050		ug	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			1,2-Dichloropropane	2023/05/03	<0.050		ug	
			Trichloroethylene	2023/05/03	<0.050		ug	
			Bromodichloromethane	2023/05/03	<0.050		ug	
			Dibromochloromethane	2023/05/03	<0.050		ug	
			Toluene	2023/05/03	<0.050		ug	
			Ethylene Dibromide	2023/05/03	<0.050		ug	
			Tetrachloroethylene	2023/05/03	<0.050		ug	
			Chlorobenzene	2023/05/03	<0.050		ug	
			Ethylbenzene	2023/05/03	<0.050		ug	
			m / p-Xylene	2023/05/03	<0.10		ug	
			Styrene	2023/05/03	<0.050		ug	
			o-Xylene	2023/05/03	<0.050		ug	
			Bromoform	2023/05/03	<0.050		ug	
8648411	YYA	Spiked Blank	Bromofluorobenzene	2023/05/05		98	%	43 - 131
			D10-Ethylbenzene (FS)	2023/05/05		98	%	47 - 157
			D4-1,2-Dichloroethane	2023/05/05		103	%	64 - 133
			D8-Toluene	2023/05/05		102	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2023/05/05		106	%	50 - 150
			Vinyl Chloride	2023/05/05		94	%	50 - 150
			Bromomethane	2023/05/05		74	%	50 - 150
			Trichlorofluoromethane (FREON 11)	2023/05/05		93	%	50 - 150
			Acetone (2-Propanone)	2023/05/05		85	%	50 - 150
			1,1-Dichloroethylene	2023/05/05		100	%	50 - 150
			Methylene Chloride(Dichloromethane)	2023/05/05		100	%	50 - 150
			trans-1,2-Dichloroethylene	2023/05/05		99	%	50 - 150
			Chloroform	2023/05/05		104	%	50 - 150
			1,2-Dichloroethane	2023/05/05		99	%	50 - 150
			Methyl Ethyl Ketone (2-Butanone)	2023/05/05		84	%	50 - 150
			1,1,1-Trichloroethane	2023/05/05		99	%	50 - 150
			Carbon Tetrachloride	2023/05/05		99	%	50 - 150
			Benzene	2023/05/05		100	%	50 - 150
			1,1,2-Trichloroethane	2023/05/05		100	%	50 - 150
			1,2-Dichloropropane	2023/05/05		101	%	50 - 150
			Trichloroethylene	2023/05/05		97	%	50 - 150
			Bromodichloromethane	2023/05/05		100	%	50 - 150
			Dibromochloromethane	2023/05/05		101	%	50 - 150
			Toluene	2023/05/05		101	%	50 - 150
			Ethylene Dibromide	2023/05/05		101	%	50 - 150
			Tetrachloroethylene	2023/05/05		102	%	50 - 150
			Chlorobenzene	2023/05/05		99	%	50 - 150
			Ethylbenzene	2023/05/05		99	%	50 - 150
			m / p-Xylene	2023/05/05		101	%	50 - 150
			Styrene	2023/05/05		102	%	50 - 150
			o-Xylene	2023/05/05		102	%	50 - 150
			Bromoform	2023/05/05		100	%	50 - 150
8648411	YYA	Method Blank	Bromofluorobenzene	2023/05/05		104	%	43 - 131
			D10-Ethylbenzene (FS)	2023/05/05		91	%	47 - 157
			D4-1,2-Dichloroethane	2023/05/05		107	%	64 - 133
			D8-Toluene	2023/05/05		103	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2023/05/05	<0.050		ug	
			Vinyl Chloride	2023/05/05	<0.050		ug	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Bromomethane	2023/05/05	<0.050		ug	
			Trichlorofluoromethane (FREON 11)	2023/05/05	<0.050		ug	
			Acetone (2-Propanone)	2023/05/05	<0.050		ug	
			1,1-Dichloroethylene	2023/05/05	<0.050		ug	
			Methylene Chloride(Dichloromethane)	2023/05/05	<0.050		ug	
			trans-1,2-Dichloroethylene	2023/05/05	<0.050		ug	
			Chloroform	2023/05/05	<0.050		ug	
			1,2-Dichloroethane	2023/05/05	<0.050		ug	
			Methyl Ethyl Ketone (2-Butanone)	2023/05/05	<0.050		ug	
			1,1,1-Trichloroethane	2023/05/05	<0.050		ug	
			Carbon Tetrachloride	2023/05/05	<0.050		ug	
			Benzene	2023/05/05	<0.050		ug	
			1,1,2-Trichloroethane	2023/05/05	<0.050		ug	
			1,2-Dichloropropane	2023/05/05	<0.050		ug	
			Trichloroethylene	2023/05/05	<0.050		ug	
			Bromodichloromethane	2023/05/05	<0.050		ug	
			Dibromochloromethane	2023/05/05	<0.050		ug	
			Toluene	2023/05/05	<0.050		ug	
			Ethylene Dibromide	2023/05/05	<0.050		ug	
			Tetrachloroethylene	2023/05/05	<0.050		ug	
			Chlorobenzene	2023/05/05	<0.050		ug	
			Ethylbenzene	2023/05/05	<0.050		ug	
			m / p-Xylene	2023/05/05	<0.10		ug	
			Styrene	2023/05/05	<0.050		ug	
			o-Xylene	2023/05/05	<0.050		ug	
			Bromoform	2023/05/05	<0.050		ug	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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Bureau Veritas Job #: C3C0579
Report Date: 2023/05/11

ORTECH Environmental
Client Project #: 22230
Site Location: COVANTA
Your P.O. #: 22230-J2904

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anke Macfarlane, Laboratory Manager, VOC

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

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Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: Method Blank

Field ID#: Method Blank

Number of TICs found: NA

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: VRG028

Field ID#: 23-22230-VOST-5 FIELD BLANK

Number of TICs found: NA

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#:	VRG029
Field ID#:	23-22230-VOST-1 T1

Number of TICs found:_____NA_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#:	VRG030
Field ID#:	23-22230-VOST-2 T2

Number of TICs found:_____NA_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#:	VRG031
Field ID#:	23-22230-VOST-3 T3

Number of TICs found:_____NA_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#:	VRG074
Field ID#:	23-22230-VOST-8 T1

Number of TICs found: 1

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.	000098-82-8	Cumene	11.15	0.05	93
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#:	VRG076
Field ID#:	23-22230-VOST-10 T3

Number of TICs found:_____NA_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#:	VRG077
Field ID#:	23-22230-VOST-11 T4

Number of TICs found:_____NA_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.5ug			
2.		Cumene < 0.5ug			
3.		1,3,5-Trimethylbenzene < 0.5 ug			
4.		Trichlorotrifluoroethane < 0.5ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: VRG078

Field ID#: 23-22230-VOST-TRIP BLANK

Number of TICs found:_____NA_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.05ug			
2.		Cumene < 0.05ug			
3.		1,3,5-Trimethylbenzene < 0.05 ug			
4.		Trichlorotrifluoroethane < 0.05ug			

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: 22230
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22230-J2903

L2750278-COFC

Test Number	Test Location	ORTECH Sample ID 23-22230-	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	112.0	162.4	163.2	176.0	181.2
2	APC Outlet #1	ALD-2		ALD-2	111.7	158.4	161.0	179.2	190.0
3	APC Outlet #1	ALD-3		ALD-3	112.5	162.5	165.8	192.0	201.9
Blank 1	APC Outlet #1	Blank 1		ALD-4	111.9	160.8	160.7	181.3	190.9
1	APC Outlet #2	ALD-5		ALD-5	112.0	161.1	161.4	171.4	182.2
2	APC Outlet #2	ALD-6		ALD-6	113.0	161.6	163.7	179.7	189.7
3	APC Outlet #2	ALD-7		ALD-7	111.7	165.6	167.6	171.6	184.0
Blank 2	APC Outlet #2	Blank 2		ALD-8	111.9	165.6	165.3	177.1	189.6
				~~ALD-9~~	111.9	162.0			
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				~~ALD-10~~	111.0	161.0			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: _____ Date: Apr 28/23

Relinquished to: AARAV BHATIA Date: 28-Apr-2023 13:00

5.7°C

APPENDIX 19

Aldehydes Analytical Report
(17 pages)

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2750278		Mississauga, ON
Date of Report	19-May-23		L5J 2Y4
Date of Sample Receipt	28-Apr-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS: **Aldehydes as benzyloxime derivatives by SIM GC/MS**

Poor LCS recoveries for acrolein observed in this batch. No acrolein was observed in the samples. Acrolein reporting limits were raised a factor of 20 to compensate for the likelihood of low recoveries in the samples similar to the LCS in the batch.

The laboratoy method blank and the field blank showed formaldehyde levels similar to the levels observed in the samples.

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		23-22230-ALD-1 TEST#1 APC OUTLET#1		23-22230-ALD-2 TEST#2 APC OUTLET#1		23-22230-ALD-3 TEST#3 APC OUTLET#1		23-22230-ALD-BLANK1		23-22230-ALD-4 TEST#1 APC OUTLET#2	
ALS Sample ID	WG3783467-1		L2750278-1		L2750278-2		L2750278-3		L2750278-4		L2750278-5	
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		26-Apr-23		26-Apr-23		26-Apr-23		26-Apr-23		26-Apr-23	
Extraction Date	4-May-23		4-May-23		4-May-23		4-May-23		4-May-23		4-May-23	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Formaldehyde	0.23		0.53		0.57		0.58		0.42		0.60	
Acetaldehyde	<0.1	U	1.16		2.09		2.15		<0.1	U	2.21	
Acrolein	<2	U	<2	U	<2	U	<2	U	<2	U	<2	U

U Indicates that this compound was not detected above the LOD.

ALS Environmental

Sample Analysis Summary Report

Sample Name	23-22230-ALD-5 TEST#2 APC OUTLET#2		23-22230-ALD-6 TEST#3 APC OUTLET#2		23-22230-ALD-BLANK2		FIELD BHA & SPIKE	FIELD BHA BLANK		Laboratory Control Sample
ALS Sample ID	L2750278-6		L2750278-7		L2750278-8		L2750278-9	L2750278-10		WG3783467-2
Sample Size	1		1		1		1	1		1
Sample units	Train		Train		Train		Sample	Sample		n/a
Moisture Content	n/a		n/a		n/a		n/a	n/a		n/a
Matrix	Stack		Stack		Stack		Stack	Stack		QC
Sampling Date	26-Apr-23		26-Apr-23		26-Apr-23		26-Apr-23	26-Apr-23		n/a
Extraction Date	4-May-23		4-May-23		4-May-23		4-May-23	4-May-23		4-May-23
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**% Rec**	**ug/sample**		**% Rec**
Formaldehyde	0.45		0.49		0.35		88	0.47		95
Acetaldehyde	1.54		2.4		<0.1	U	68	<0.1	U	49
Acrolein	<2	U	<2	U	<2	U	6	<2	U	6

U Indicates that this compound was not detected above the LOD.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample
ALS Sample ID	WG3783467-4
Sample Size	1
Sample units	n/a
Moisture Content	n/a
Matrix	Low level
Sampling Date	n/a
Extraction Date	4-May-23

Target Analytes	% Rec
Formaldehyde	60
Acetaldehyde	82
Acrolein	5

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3783467-1	Extraction Date	4-May-23
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--
17-May-2023

Run Information	**Run 1**
Filename	23051615.D
Run Date	5/16/2023 20:33
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.17	0.23		
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<2	U	
Acrolein (B)	NotFnd	<2	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.23
Acetaldehyde	<0.1
Acrolein	<2

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-ALD-1 TEST#1 APC OUTLET#1**	Sampling Date	26-Apr-23
ALS Sample ID	L2750278-1	Extraction Date	4-May-23
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--
17-May-2023

Run Information	**Run 1**
Filename	23051634.D
Run Date	5/17/2023 13:07
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	9.16	0.53		
Acetaldehyde (B)	14.15	0.47	M	
Acetaldehyde (A)	14.52	0.69	M	
Acrolein (A)	NotFnd	<2	U	
Acrolein (B)	NotFnd	<2	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.53
Acetaldehyde	1.16
Acrolein	<2

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-ALD-2 TEST#2 APC OUTLET#1**	Sampling Date	26-Apr-23
ALS Sample ID	L2750278-2	Extraction Date	4-May-23
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--
17-May-2023

Run Information	**Run 1**
Filename	23051624.D
Run Date	5/17/2023 2:30
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.16	0.57		
Acetaldehyde (B)	14.15	0.92		
Acetaldehyde (A)	14.52	1.17		
Acrolein (A)	NotFnd	<2	U	
Acrolein (B)	NotFnd	<2	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.57
Acetaldehyde	2.09
Acrolein	<2

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-ALD-3 TEST#3 APC OUTLET#1**	Sampling Date	26-Apr-23
ALS Sample ID	L2750278-3	Extraction Date	4-May-23
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--
17-May-2023

Run Information	**Run 1**
Filename	23051625.D
Run Date	5/17/2023 3:10
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.16	0.58		
Acetaldehyde (B)	14.15	0.91		
Acetaldehyde (A)	14.51	1.24		
Acrolein (A)	NotFnd	<2	U	
Acrolein (B)	NotFnd	<2	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.58
Acetaldehyde	2.15
Acrolein	<2

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-ALD-BLANK1**	Sampling Date	26-Apr-23
ALS Sample ID	L2750278-4	Extraction Date	4-May-23
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--
17-May-2023

Run Information	**Run 1**
Filename	23051620.D
Run Date	5/16/2023 23:51
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	9.17	0.42		
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<2	U	
Acrolein (B)	NotFnd	<2	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.42
Acetaldehyde	<0.1
Acrolein	<2

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-ALD-4 TEST#1 APC OUTLET#2**	Sampling Date	26-Apr-23
ALS Sample ID	L2750278-5	Extraction Date	4-May-23
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--
17-May-2023

Run Information	**Run 1**
Filename	23051626.D
Run Date	5/17/2023 3:49
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.16	0.6		
Acetaldehyde (B)	14.15	0.92		
Acetaldehyde (A)	14.51	1.29		
Acrolein (A)	NotFnd	<2	U	
Acrolein (B)	NotFnd	<2	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.6
Acetaldehyde	2.21
Acrolein	<2

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-ALD-5 TEST#2 APC OUTLET#2**	Sampling Date	26-Apr-23
ALS Sample ID	L2750278-6	Extraction Date	4-May-23
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--
17-May-2023

Run Information	**Run 1**
Filename	23051627.D
Run Date	5/17/2023 4:29
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.16	0.45		
Acetaldehyde (B)	14.15	0.63	M	
Acetaldehyde (A)	14.51	0.91	M	
Acrolein (A)	NotFnd	<2	U	
Acrolein (B)	NotFnd	<2	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.45
Acetaldehyde	1.54
Acrolein	<2

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-ALD-6 TEST#3 APC OUTLET#2**	Sampling Date	26-Apr-23
ALS Sample ID	L2750278-7	Extraction Date	4-May-23
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--
17-May-2023

Run Information	**Run 1**
Filename	23051628.D
Run Date	5/17/2023 5:09
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.17	0.49		
Acetaldehyde (B)	14.15	0.99	M	
Acetaldehyde (A)	14.51	1.41	M	
Acrolein (A)	NotFnd	<2	U	
Acrolein (B)	NotFnd	<2	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.49
Acetaldehyde	2.4
Acrolein	<2

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**23-22230-ALD-BLANK2**	Sampling Date	26-Apr-23
ALS Sample ID	L2750278-8	Extraction Date	4-May-23
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--
17-May-2023

Run Information	**Run 1**
Filename	23051621.D
Run Date	5/17/2023 0:31
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	9.17	0.35		
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<2	U	
Acrolein (B)	NotFnd	<2	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.35
Acetaldehyde	<0.1
Acrolein	<2

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**FIELD BHA & SPIKE**	Sampling Date	26-Apr-23
ALS Sample ID	L2750278-9	Extraction Date	4-May-23
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	Stack		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
17-May-2023

Run Information	**Run 1**
Filename	23051616.D
Run Date	5/16/2023 21:12
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	10	9.16	88		
Acetaldehyde (B)	10	14.14	30		
Acetaldehyde (A)	10	14.50	38		
Acrolein (A)	10	18.72	4		
Acrolein (B)	10	19.82	2		
Total Aldehydes					
Formaldehyde			88		50-150
Acetaldehyde			68		50-150
Acrolein			6		50-150

ALS Life Sciences

Sample Analysis Report

Sample Name	**FIELD BHA BLANK**	Sampling Date	26-Apr-23
ALS Sample ID	L2750278-10	Extraction Date	4-May-23
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
17-May-2023

Run Information	**Run 1**
Filename	23051622.D
Run Date	5/17/2023 1:11
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	9.16	0.47		
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<2	U	
Acrolein (B)	NotFnd	<2	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.47
Acetaldehyde	<0.1
Acrolein	<2

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	WG3783467-2	Extraction Date	4-May-23
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--
17-May-2023

Run Information	**Run 1**
Filename	23051612.D
Run Date	5/16/2023 18:33
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	12.5	9.16	95		
Acetaldehyde (B)	12.5	14.15	23		
Acetaldehyde (A)	12.5	14.51	26		
Acrolein (A)	12.5	18.73	4		
Acrolein (B)	12.5	19.82	2		
Total Aldehydes					
Formaldehyde			95		50-150
Acetaldehyde			49		50-150
Acrolein			6		50-150

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3783467-4	Extraction Date	4-May-23
Analysis Method	SIM GC/MS		
Analysis Type	Low-level LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
17-May-2023

Run Information	**Run 1**
Filename	23051611.D
Run Date	5/16/2023 17:54
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	9.16	60		
Acetaldehyde (B)	2.5	14.16	39		
Acetaldehyde (A)	2.5	14.52	43		
Acrolein (A)	2.5	18.74	3		
Acrolein (B)	2.5	19.83	2		
Total Aldehydes					
Formaldehyde			60		50-150
Acetaldehyde			82		50-150
Acrolein			5		50-150

APPENDIX 20

SVOC and VOST Proof Data
(18 pages)

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2749409		Mississauga, ON L5J 2Y4
Date of Report	10-Apr-23		Canada
Date of Sample Receipt	23-Mar-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS: **PCDD/F by EPA M23**

Proof consists of the pooled solvent rinses of ten sets of sampling glassware.
No target analytes were positively identified in the proof.
Glassware is approved for the collection of samples for DX analysis.

Certified by:

Sabrina Jin
Technical Specialist

ALS Life Sciences

Sample Analysis summary Report

Sample Name	10X SETS GLASSWARE PROOF
ALS Sample ID	L2749409-40
Sample Size	1
Sample size units	sample
Percent Moisture	n/a
Sample Matrix	Media prep
Sampling Date	n/a
Extraction Date	29-Mar-23

Target Analytes	pg/sample
2,3,7,8-TCDD	<2.5
1,2,3,7,8-PeCDD	<3.5
1,2,3,4,7,8-HxCDD	<4.7
1,2,3,6,7,8-HxCDD	<4.9
1,2,3,7,8,9-HxCDD	<4.8
1,2,3,4,6,7,8-HpCDD	<5.5
OCDD	<7.0
2,3,7,8-TCDF	<1.3
1,2,3,7,8-PeCDF	<7.4
2,3,4,7,8-PeCDF	<6.6
1,2,3,4,7,8-HxCDF	<2.0
1,2,3,6,7,8-HxCDF	<2.1
2,3,4,6,7,8-HxCDF	<1.8
1,2,3,7,8,9-HxCDF	<2.5
1,2,3,4,6,7,8-HpCDF	<2.8
1,2,3,4,7,8,9-HpCDF	<1.7
OCDF	<3.6
Extraction Standards	
13C12-2,3,7,8-TCDD	68
13C12-1,2,3,7,8-PeCDD	62
13C12-1,2,3,6,7,8-HxCDD	92
13C12-1,2,3,4,6,7,8-HpCDD	126
13C12-OCDD	113
13C12-2,3,7,8-TCDF	69
13C12-1,2,3,7,8-PeCDF	65
13C12-1,2,3,6,7,8-HxCDF	112
13C12-1,2,3,4,6,7,8-HpCDF	105
Homologue Group Totals	**pg/sample**
Total-TCDD	<2.5
Total-PeCDD	<3.5
Total-HxCDD	<4.9
Total-HpCDD	<5.5
Total-TCDF	<1.3
Total-PeCDF	<7.4
Total-HxCDF	<2.5
Total-HpCDF	<2.8
Toxic Equivalency - (WHO 2005)	
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	5.36
Upper Bound PCDD/F TEQ (WHO 2005)	10.7

ALS Life Sciences

Quality Control Summary Report

Sample Name	Method Blank
ALS Sample ID	WG3782098-1
Sample Size	1
Sample size units	sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	29-Mar-23
Target Analytes	**pg/sample**
2,3,7,8-TCDD	<0.97
1,2,3,7,8-PeCDD	<1.8
1,2,3,4,7,8-HxCDD	<2.9
1,2,3,6,7,8-HxCDD	<3.3
1,2,3,7,8,9-HxCDD	<4.1
1,2,3,4,6,7,8-HpCDD	<5.8
OCDD	<11
2,3,7,8-TCDF	<1.1
1,2,3,7,8-PeCDF	<1.3
2,3,4,7,8-PeCDF	<2.0
1,2,3,4,7,8-HxCDF	<3.7
1,2,3,6,7,8-HxCDF	<3.7
2,3,4,6,7,8-HxCDF	<4.1
1,2,3,7,8,9-HxCDF	<5.7
1,2,3,4,6,7,8-HpCDF	<3.2
1,2,3,4,7,8,9-HpCDF	<1.7
OCDF	<5.0
Extraction Standards	
13C12-2,3,7,8-TCDD	66
13C12-1,2,3,7,8-PeCDD	72
13C12-1,2,3,6,7,8-HxCDD	59
13C12-1,2,3,4,6,7,8-HpCDD	67
13C12-OCDD	57
13C12-2,3,7,8-TCDF	63
13C12-1,2,3,7,8-PeCDF	67
13C12-1,2,3,6,7,8-HxCDF	54
13C12-1,2,3,4,6,7,8-HpCDF	57
Homologue Group Totals	**pg/sample**
Total-TCDD	<0.97
Total-PeCDD	<1.8
Total-HxCDD	<4.1
Total-HpCDD	<5.8
Total-TCDF	<1.1
Total-PeCDF	<2.0
Total-HxCDF	<5.7
Total-HpCDF	<3.2
Toxic Equivalency - (WHO 2005)	
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	3.19
Upper Bound PCDD/F TEQ (WHO 2005)	6.38

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#:	L2749409		Mississauga ON L5J 2Y4
Date of Report	10-Apr-23		
Date of Sample Receipt	23-Mar-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS: **PCB Congeners by GC/MS/MS**

Reporting units of pg/g are equivalent to ng/Kg
Reporting units of ng/g are equivalent to µg/Kg

Target analyte data are reported on an as-received basis.

Proof consists of the pooled solvent rinses of ten sets of sampling glassware.
Levels of some targets were detected in the proof.
Glassware is approved for the collection of samples for PCB analysis.

Co-elutions may cause a high bias to selected PCDD/PCDF or PCB analytical results. Secondary column confirmations to uniquely define the toxic congeners for PCB targets or for PCDD/F targets is recommended where it is of value to resolve such sources of potential high bias.

Certified by: _____
Sabrina Jin
Technical Specialist

ALS Life sciences

Quality Control Summary Report

Sample Name	Method Blank	10X SETS GLASSWARE PROOF
ALS Sample ID	WG3782098-1	L2749409-40
Sample Size	1	1
Sample size units	sample	sample
Percent Moisture	n/a	n/a
Sample Matrix	QC	Media prep
Sampling Date	n/a	n/a
Extraction Date	31-Mar-23	31-Mar-23
Dioxin-like Polychlorinated Biphenyls		
PCB-81	<7.3	<20
PCB-77	<8.4	<28
PCB-123	<9.2	<29
PCB-118	<9.0	287
PCB-114	<8.7	<31
PCB-105	<13	96.1
PCB-126	<10	<52
PCB-167	<12	<78
PCB-156	<10	<32
PCB-157	<7.1	<33
PCB-169	<10	<28
PCB-189	<13	<34
Toxic Equivalency (WHO 2005)	**pg/sample**	**pg/sample**
Lower Bound TEQ - PCB	0.00	0.0115
Upper Bound TEQ - PCB	1.31	6.07
Marker Polychlorinated Biphenyls	**ng/sample**	**ng/sample**
PCB-28	0.0035	0.272
PCB-52	<0.0054	1.4
PCB-101	<0.0061	1.07
PCB-153	<0.011	<0.090
PCB-138	<0.017	0.142
PCB-180	<0.0097	<0.030
Upper Bound Sum of Marker PCBs	0.0617	3.29

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#:	L2749409		Mississauga, ON L5J 2Y4
Date of Report	11-Apr-23		Canada
Date of Sample Receipt	23-Mar-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Proof consists of the pooled solvent rinses of 10 sets of sampling glassware.
Low levels of some targets were detected in the proof and blank.
Glassware is approved for the collection of samples for PAH analysis.

Certified by:

Sabrina Jin
Technical Specialist

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		10X SETS GLASSWARE PROOF	
ALS Sample ID	WG3782098-1		L2749409-40	
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	29-Mar-23		29-Mar-23	
Target Analytes	**ng/sample**		**ng/sample**	
Naphthalene	28.2	M	45.2	M,B
2-Methylnaphthalene	<10	U	<10	U
1-Methylnaphthalene	<10	U	<10	U
Acenaphthylene	<10	U	<10	U
Acenaphthene	<10	U	<10	U
Fluorene	<10	U	<10	U
Phenanthrene	<10	U	36.4	
Anthracene	<10	U	<10	U
Fluoranthene	<10	U	<10	U
Pyrene	<10	U	<10	U
Benzo(a)Anthracene	<10	U	<10	U
Chrysene/Triphenylene	<10	U	<10	U
Benzo(b)Fluoranthene	<10	U	<10	U
Benzo(k)Fluoranthene	<10	U	<10	U
Benzo(e)Pyrene	<10	U	<10	U
Benzo(a)Pyrene	<10	U	<10	U
Perylene	<10	U	<10	U
Indeno(1,2,3-cd)Pyrene	<10	U	<10	U
Dibenzo(a,h/a,c)Anthracene	<10	U	<10	U
Benzo(g,h,i)Perylene	<10	U	<10	U
Additional Analytes				
Tetralin	26.2		36.3	B
2-Chloronaphthalene	<10	U	<10	U
Biphenyl	<10	U	<10	U
o-Terphenyl	<10	U	<10	U
1-Methylphenanthrene	<10	U	<10	U
9-Methylphenanthrene	<10	U	<10	U
2-methylanthracene	<10	U	<10	U
9,10-dimethylanthracene	<10	U	<10	U
m-terphenyl	<10	U	<10	U
p-terphenyl	<10	U	<10	U
Benzo(a)fluorene	<10	U	<10	U
Benzo(b)fluorene	<10	U	<10	U
7,12-Dimethylbenzo(a)anthracene	<10	U	<10	U
3-Methylcholanthrene	<10	U	<10	U
Picene	<10	U	<10	U
Dibenzo(a,e)pyrene	<10	U	<10	U
Coronene	<10	U	<10	U
Field Sampling Standards	**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	NS		NS	
Fluorene D10	NS		NS	
Terphenyl D14(Surr.)	NS		NS	
Extraction Standards	**% Rec**		**% Rec**	
Naphthalene D8	100.3		86.9	
2-Methylnaphthalene-D10	98.9		86.7	
Acenaphthylene D8	91.8		104.8	
Phenanthrene D10	102.6		77.7	
Anthracene-D10	102.1		96.8	
Fluoranthene D10	95.3		105.4	
Benz(a)Anthracene-D12	90.8		149.3	
Chrysene D12	92.8		109.2	
Benzo(b)Fluoranthene-D12	103.3		123.5	
Benzo(k)Fluoranthene-D12	87.8		93.9	
Benzo(a)Pyrene D12	104.4		121.3	
Perylene D12	98.9		117.8	
Indeno(1,2,3,cd)Pyrene-D12	93.6		98.3	
Dibenz(a,h)Anthracene-D14	77.1		80.4	
Benzo(g,h,i)Perylene D12	96.6		87.7	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
NS	Indicates that this compound was not spiked.

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#:	L2749409		Mississauga, ON, L5J 2Y4
Date of Report	17-Apr-23		Canada
Date of Sample Receipt	23-Mar-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covarita

COMMENTS: **CB by LRGC/MS - Isotope dilution**

Proof consists of the pooled solvent rinses of 10 sets of sampling glassware.
No targets were detected in the proof and blank.
Glassware is approved for the collection of samples for CB analysis.

Certified by:

Sabrina Jin
Technical Specialist

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		10X SETS GLASSWARE PROOF	
ALS Sample ID	WG3782098-1		L2749409-40	
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	29-Mar-23		29-Mar-23	
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	62		64	
13C6-1,2,3-Trichlorobenzene	80		82	
13C6-1,2,3,4-Tetrachlorobenzene	60		73	
13C6-Pentachlorobenzene	58		73	
13C6-Hexachlorobenzene	44		59	

U Indicates that this compound was not detected above the LOD.

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2749409		Mississauga, ON L5J 2Y4
Date of Report	17-Apr-23		Canada
Date of Sample Receipt	23-Mar-23	**Client Contact:**	Chris Belore
		Client Project ID:	22230 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Proof consists of the pooled solvent rinses of 10 sets of sampling glassware.
No targets were detected in the proof and blank.
Glassware is approved for the collection of samples for CP analysis.

Certified by:

Sabrina Jin
Technical Specialist

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		10X SETS GLASSWARE PROOF	
ALS Sample ID	WG3782098-1		L2749409-40	
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	29-Mar-23		29-Mar-23	
Target Analytes	**ng/sample**		**ng/sample**	
2-Chlorophenol	<50	U	<50	U
3-Chlorophenol	<50	U	<50	U
4-Chlorophenol	<50	U	<50	U
2,6-Dichlorophenol	<50	U	<50	U
2,4/2,5-Dichlorophenol	<50	U	<50	U
3,5-Dichlorophenol	<50	U	<50	U
2,3-Dichlorophenol	<50	U	<50	U
3,4-Dichlorophenol	<50	U	<50	U
2,4,6-Trichlorophenol	<50	U	<50	U
2,3,6-Trichlorophenol	<50	U	<50	U
2,3,5-Trichlorophenol	<50	U	<50	U
2,4,5-Trichlorophenol	<50	U	<50	U
2,3,4-Trichlorophenol	<50	U	<50	U
3,4,5-Trichlorophenol	<50	U	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<50	U	<50	U
2,3,4,5-Tetrachlorophenol	<50	U	<50	U
Pentachlorophenol	<50	U	<50	U
Hexachlorophene	<50	U	<50	U
Extraction Standards	**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	78		85	
13C6-2,4-Dichlorophenol (ES)	86		90	
13C6-2,4,5-Trichlorophenol (ES)	56		60	
13C6-2,3,4,5-Tetrachlorophenol (ES)	54		56	
13C6-Pentachlorophenol (ES)	45		34	

U Indicates that this compound was not detected above the LOR.

Your P.O. #: 22230-J2904
Your Project #: 22230
Site#: MEDIA PREP
Site Location: DYEC-2023 TESTING PROGRAM

Attention: David Utley

ORTECH Environmental
804 Southdown Road
Mississauga, ON
CANADA L5J 2Y4

Report Date: 2023/04/18
Report #: R7592317
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C382444
Received: 2023/03/23, 15:57

Sample Matrix: Air Sampling Media
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
VOST EPA5041A, 8260C for 0030, 0031	1	N/A	2023/04/18	BRL SOP-00302	EPA5041A, 8260C

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your P.O. #: 22230-J2904
Your Project #: 22230
Site#: MEDIA PREP
Site Location: DYEC-2023 TESTING PROGRAM

Attention: David Utley
ORTECH Environmental
804 Southdown Road
Mississauga, ON
CANADA L5J 2Y4

Report Date: 2023/04/18
Report #: R7592317
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C382444
Received: 2023/03/23, 15:57

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas
18 Apr 2023 14:44:10

Please direct all questions regarding this Certificate of Analysis to:
Clayton Johnson, CET LEAD-Air Toxics, Source Evaluation
Email: Clayton.Johnson@bureauveritas.com
Phone# (905)817-5769

==========

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Bureau Veritas ID		VJF158			
Sampling Date		2023/03/23 16:02			
	UNITS	VOST PROOF 1-16	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.050	0.050	0.020	8613928
Chloromethane	ug	<0.050	0.050	0.015	8613928
Vinyl Chloride	ug	<0.050	0.050	0.013	8613928
Bromomethane	ug	<0.050	0.050	0.015	8613928
Chloroethane	ug	<0.050	0.050	0.0090	8613928
Trichlorofluoromethane (FREON 11)	ug	<0.050	0.050	0.010	8613928
Acetone (2-Propanone)	ug	<0.050	0.050	0.025	8613928
1,1-Dichloroethylene	ug	<0.050	0.050	0.011	8613928
Iodomethane	ug	<0.050	0.050	0.015	8613928
Carbon Disulfide	ug	<0.050	0.050	0.026	8613928
Methylene Chloride(Dichloromethane)	ug	<0.050	0.050	0.020	8613928
1,1-Dichloroethane	ug	<0.050	0.050	0.012	8613928
trans-1,2-Dichloroethylene	ug	<0.050	0.050	0.010	8613928
cis-1,2-Dichloroethylene	ug	<0.050	0.050	0.010	8613928
Chloroform	ug	<0.050	0.050	0.011	8613928
1,2-Dichloroethane	ug	<0.050	0.050	0.0070	8613928
Methyl Ethyl Ketone (2-Butanone)	ug	<0.050	0.050	0.036	8613928
1,1,1-Trichloroethane	ug	<0.050	0.050	0.014	8613928
Carbon Tetrachloride	ug	<0.050	0.050	0.016	8613928
Benzene	ug	<0.050	0.050	0.0010	8613928
1,1,2-Trichloroethane	ug	<0.050	0.050	0.016	8613928
1,2-Dichloropropane	ug	<0.050	0.050	0.011	8613928
Trichloroethylene	ug	<0.050	0.050	0.011	8613928
Dibromomethane	ug	<0.050	0.050	0.010	8613928
Bromodichloromethane	ug	<0.050	0.050	0.011	8613928
cis-1,3-Dichloropropene	ug	<0.050	0.050	0.010	8613928
trans-1,3-Dichloropropene	ug	<0.050	0.050	0.0070	8613928
Dibromochloromethane	ug	<0.050	0.050	0.0090	8613928
Methyl Isobutyl Ketone	ug	<0.050	0.050	0.019	8613928
Methyl Butyl Ketone (2-Hexanone)	ug	<0.050	0.050	0.031	8613928
Toluene	ug	<0.050	0.050	0.014	8613928
Ethylene Dibromide	ug	<0.050	0.050	0.010	8613928
Tetrachloroethylene	ug	<0.050	0.050	0.018	8613928
Chlorobenzene	ug	<0.050	0.050	0.011	8613928

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Bureau Veritas ID		VJF158			
Sampling Date		2023/03/23 16:02			
	UNITS	VOST PROOF 1-16	RDL	MDL	QC Batch
1,1,1,2-Tetrachloroethane	ug	<0.050	0.050	0.010	8613928
Ethylbenzene	ug	<0.050	0.050	0.014	8613928
m / p-Xylene	ug	<0.10	0.10	0.015	8613928
Styrene	ug	<0.050	0.050	0.012	8613928
o-Xylene	ug	<0.050	0.050	0.015	8613928
Bromoform	ug	<0.050	0.050	0.014	8613928
1,1,2,2-Tetrachloroethane	ug	<0.050	0.050	0.014	8613928
1,2,3-Trichloropropane	ug	<0.050	0.050	0.015	8613928
1,3-Dichlorobenzene	ug	<0.050	0.050	0.020	8613928
1,4-Dichlorobenzene	ug	<0.050	0.050	0.020	8613928
1,2-Dichlorobenzene	ug	<0.050	0.050	0.020	8613928
Surrogate Recovery (%)					
Bromofluorobenzene	%	102	N/A	N/A	8613928
D10-Ethylbenzene (FS)	%	104	N/A	N/A	8613928
D4-1,2-Dichloroethane	%	109	N/A	N/A	8613928
D8-Toluene	%	104	N/A	N/A	8613928

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Bureau Veritas Job #: C382444
Report Date: 2023/04/18

ORTECH Environmental
Client Project #: 22230
Site Location: DYEC-2023 TESTING PROGRAM
Your P.O. #: 22230-J2904

TEST SUMMARY

Bureau Veritas ID: VJF158
Sample ID: VOST PROOF 1-16
Matrix: Air Sampling Media

Collected: 2023/03/23
Shipped:
Received: 2023/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	8613928	N/A	2023/04/18	Yujie Yan

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

GENERAL COMMENTS

Results relate only to the items tested.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C382444
Report Date: 2023/04/18

ORTECH Environmental
Client Project #: 22230
Site Location: DYEC-2023 TESTING PROGRAM
Your P.O. #: 22230-J2904

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anke Macfarlane, Laboratory Manager, VOC

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, LSN 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

APPENDIX 21

ORTECH Equipment Calibration Data
(29 pages)

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 21, 2023
Probe/Pitot ID	S8
MII Number	B03769
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	03-SOP-007

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	DOUG

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0017
(0.25")	9.96	0.240	0.340	0.840	0.0033
	11.32	0.310	0.430	0.849	0.0057
	13.94	0.470	0.670	0.837	0.0059
	16.39	0.650	0.910	0.845	0.0017
			Mean	0.843	0.0036
Without Nozzle	7.61	0.140	0.195	0.847	0.0034
	9.65	0.225	0.320	0.838	0.0054
	11.32	0.310	0.430	0.849	0.0052
	13.79	0.460	0.650	0.841	0.0026
	16.27	0.640	0.900	0.843	0.0006
			Mean	0.843	0.0034

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

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 4
Meter Mll Number	COE 20090
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.20	in Hg
Theoretical Critical Vacuum	13.8	in Hg
System Leak Check	<0.001 @ 25"	
Calibration Date	February 21, 2023	
Calibration Technician	J. Grollman	
Reviewed and Accepted By		

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice DH	Volume Initial	Volume Final	Avg. DGM Temp Initial	Avg. DGM Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Q)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F			°F	°F	in Hg
10.0	0.30	139.962	143.022	70.0	70.0	UR-40	0.2352	70.0	70.0	26.5
10.0	0.58	143.022	147.331	67.0	68.5	UR-48	0.3308	70.0	70.0	25.5
13.0	1.10	103.980	111.674	68.5	70.0	UR-55	0.4520	70.0	70.0	24.0
10.0	2.00	111.674	119.260	70.0	71.0	UR-63	0.5874	70.0	70.0	23.0
10.0	3.70	129.620	139.962	70.0	70.0	UR-73	0.8107	70.0	70.0	20.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
2.977	0.298	2.983	0.298	1.002	0.000	0.298	1.896	-0.018
4.213	0.421	4.196	0.420	0.996	-0.006	0.420	1.853	-0.061
7.512	0.578	7.453	0.573	0.992	-0.010	0.573	1.883	-0.032
7.406	0.741	7.450	0.745	1.006	0.004	0.745	2.027	0.112
10.149	1.015	10.283	1.028	1.013	0.011	1.028	1.968	0.054
			DGMCF	1.002			1.915	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	**February 22, 2023**
Calibrated By	I. GROLLMAN
Reviewed and Accepted By	[signature]

Fluke Calibrator Output (COE 20024) (°F)	**Tredicator Display Value**		**Percent Difference**
	Before Adjustment (°F)	**After Adjustment (°F)**	**(%)**
32	34	32	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		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	FEB 22, 2025	Calibrated By	J. GIROUARD
Manometer Number	Team 1	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	Dual 3		
MII Number	COE 20008		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.155	NA	0.155	0.0
0-1.0	0.510		0.513	0.6
	0.960		0.961	0.1
	2.60		2.60	0.0
1.0-10.0	6.45		6.46	0.2
	9.21		9.20	-0.1

Percent Difference = (Ref. Manometer - Instrument Reading) x 100
Ref. Manometer

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 21, 2023
Probe/Pitot ID	S6
MII Number	B03767
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	03-SOP-007

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0029
(0.25")	9.96	0.240	0.340	0.840	0.0021
	11.86	0.340	0.480	0.841	0.0006
	14.80	0.530	0.740	0.846	0.0041
	16.52	0.660	0.940	0.837	0.0043
			Mean	0.842	0.0028
Without Nozzle	8.13	0.160	0.220	0.852	0.0069
	9.96	0.240	0.335	0.846	0.0005
	11.14	0.300	0.420	0.845	0.0008
	13.64	0.450	0.630	0.845	0.0008
	16.52	0.660	0.935	0.840	0.0058
			Mean	0.845	0.0029

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

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team # 3
Meter MII Number	COE 20093
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	28.94	in Hg
Theoretical Critical Vacuum	13.7	in Hg
System Leak Check	<.001 @ 26"	
Calibration Date	February 21, 2023	
Calibration Technician	J. Grollman	
Reviewed and Accepted By		

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice DH	Volume Initial	Volume Final	Avg. DGM Temp Initial	Avg. DGM Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Q)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F			°F	°F	in Hg
10.0	0.30	79.910	82.932	70.0	69.0	UR-40	0.2352	70.0	70.0	24.0
11.0	0.60	110.340	115.080	71.0	71.0	UR-48	0.3308	70.0	70.0	23.0
10.0	1.30	122.756	128.665	71.0	71.0	UR-55	0.4520	70.0	70.0	21.5
10.0	2.10	115.080	122.756	70.0	71.0	UR-63	0.5874	70.0	70.0	20.0
10.0	3.90	99.895	110.340	71.0	71.0	UR-73	0.8107	70.0	70.0	17.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
2.917	0.292	2.957	0.296	1.014	0.012	0.296	1.930	-0.148
4.566	0.415	4.574	0.416	1.002	0.000	0.416	1.952	-0.127
5.702	0.570	5.682	0.568	0.996	-0.006	0.568	2.265	0.187
7.429	0.743	7.384	0.738	0.994	-0.008	0.738	2.166	0.088
10.145	1.015	10.191	1.019	1.005	0.002	1.019	2.112	0.034
			DGMCF	1.002			2.078	DH@ Average

Individual values of DGM calibration factor (Y) must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value (Y) must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP116
MII	A12007
Date	FEB 21, 2023
Calibrated By	J. GROLLMAN
Reviewed and Accepted By	DG

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	N/A	0.0
70	70		0.0
100	100		0.0
200	200		0.0
250	251		-0.4
300	301		-0.3
400	399		0.3
500	498		0.4
600	599		0.2
700	701		-0.1
800	800		0.0
900	901		-0.1
1000	1001		-0.1
1100	1101		-0.1
1200	1201		-0.1
1250	1251		-0.1

$$\% \text{ Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH Environmental
Manometer Calibration Data

Date	FEB 21, 2023	Calibrated By	J SHROLL-MAY
Manometer Number	Team 3	Signature	
Manometer MII Numbe	COE 20093	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Back Leg

Manometer Scale "H_2O	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.260	NA	0.268	3.0
0-1.0	0.560		0.575	2.6
	0.950		0.970	2.1
	1.52		1.51	-0.7
1.0-10.0	5.10		5.08	-0.4
	9.30		9.25	-0.5

Percent Difference = (Ref. Manometer - Instrument Reading) x 100
Ref. Manometer

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 21, 2023
Probe/Pitot ID	S1
MII Number	B03761
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	03-SOP-007

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	8.13	0.160	0.225	0.843	0.0023
(0.25")	10.17	0.250	0.355	0.839	0.0018
	11.50	0.320	0.450	0.843	0.0023
	14.09	0.480	0.690	0.834	0.0069
	17.01	0.700	0.980	0.845	0.0042
			Mean	0.841	0.0035
Without Nozzle	8.01	0.155	0.215	0.849	0.0071
	9.96	0.240	0.340	0.840	0.0018
	11.50	0.320	0.450	0.843	0.0013
	13.79	0.460	0.650	0.841	0.0007
	16.39	0.650	0.930	0.836	0.0059
			Mean	0.842	0.0034

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 22, 2023
Probe/Pitot ID	PM 10 2.5
MII Number	COE 20132
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	03-SOP-007

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Nozzle Size inches	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
NA	8.13	0.160	0.225	0.843	0.0016
	9.75	0.230	0.325	0.841	0.0037
	10.95	0.290	0.410	0.841	0.0039
	13.33	0.430	0.600	0.846	0.0016
	16.08	0.625	0.860	0.852	0.0076
			Mean	0.844	0.0037

Note: Pitots must always be used in the orientation that they are calibrated in.

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 1
Meter MII Number	COE 20094
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.59	in Hg
Theoretical Critical Vacuum	14.0	in Hg
System Leak Check	< 0.001 @ 26"	
Calibration Date	February 22, 2023	
Calibration Technician	JAY GROLLMAN	
Reviewed and Accepted By	D. DUG	

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice DH	Volume Initial	Volume Final	Avg. DGM Temp Initial	Avg. DGM Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Q)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F			°F	°F	in Hg
10.0	0.26	4.055	7.227	69.0	69.0	UR-40	0.2352	70.0	70.0	23.0
10.0	0.53	7.227	11.685	69.0	69.0	UR-48	0.3308	70.0	70.0	22.0
10.0	1.10	11.685	17.803	69.0	69.0	UR-55	0.4520	70.0	70.0	20.0
10.0	2.00	17.803	25.742	68.5	68.5	UR-63	0.5874	70.0	70.0	18.5
12.0	3.80	25.742	38.849	68.5	70.0	UR-73	0.8107	70.0	70.0	15.5

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	
3.133	0.313	3.023	0.302	0.965	0.004	0.302	1.600	-0.164
4.406	0.441	4.252	0.425	0.965	0.004	0.425	1.649	-0.115
6.056	0.606	5.810	0.581	0.959	-0.002	0.581	1.833	0.069
7.883	0.788	7.550	0.755	0.958	-0.003	0.755	1.974	0.210
13.054	1.088	12.504	1.042	0.958	-0.003	1.042	1.969	0.205
			DGMCF	0.961			1.764	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	FEBRUARY 22, 2025
Calibrated By	JAY GROLLMAN
Reviewed and Accepted By	

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	252		-0.8
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	700		0.0
800	800		0.0
900	900		0.0
1000	1000		0.0
1100	1100		0.0
1200	1201		-0.1
1250	1251		-0.1

$$\% \text{ Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH

Manometer Calibration Data

Date	FEBRUARY 22, 2023	Calibrated By	JAY FRIEDMAN
Manometer Number	Team 1	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	Dual 3		
MII Number	COE 20008		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.165	NA	0.166	0.6
0-1.0	0.490		0.497	1.4
	0.962		0.968	0.6
	1.50		1.48	-1.4
1.0-10.0	4.21		4.24	0.7
	9.18		9.15	0.0

Percent Difference = (Ref. Manometer - Instrument Reading) x 100
Ref. Manometer

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

Dry Gas Meter Calibration Data

Calibration Procedure	**03-J004**
Meter Number	**Vost 5**
Date	**April 4, 2023**
Barometric Pressure	**29.56**
System Leak Check	**<.01lpm @ 21.5 "Hg**

MII NUMBERS	
DGM	**COE 20018**
Gasometer	**A01463**
Barometer	**COE 20028**

Calibrated By	**Brayden Pacheco**
Signature	Brayden Pacheco
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

DGMCF= $\frac{\text{Vstd } ft^3}{\text{Vdgm } ft^3}$ $\frac{\text{Tdgm } °F+460}{\text{Tstd } °F+460}$ $\frac{\text{Pbar (in. Hg)}}{\text{(Pbar in. Hg+DGMPressure/13.6)}}$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C	Factor	min.	lpm
54.90	47.90	7.00	0.329	20.0	192.90	202.15	0.327	23.0	1.0	23.0	1.016	20	0.5
47.90	39.80	8.10	0.381	20.0	202.15	212.80	0.376	24.0	1.0	24.0	1.024	20	0.5
53.80	45.80	8.00	0.376	20.0	212.80	223.50	0.378	25.0	1.0	25.0	1.010	20	0.5

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE
0.5Lpm 1.017

Revision June 5, 2007

ORTECH
Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Jenco 765**
MII	**COE 20018**
Date	**April 4, 2023**
Calibrated By	**Brayden Pacheco**
Signature	Brayden Pacheco
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	**Tredicator Display Value**		**Percent Difference**
	Before Adjustment (°C)	**After Adjustment (°C)**	**(%)**
0	0	0	0.0
20	19	20	0.0
50		50	0.0
100		101	-1.0
150		151	-0.7
200		200	0.0
300		299	0.3
400		400	0.0
500		500	0.0
600		600	0.0

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	**03-J004**
Meter Number	**M05498**
Date	**March 28, 2023**
Barometric Pressure	**29.68**
System Leak Check	**<.01 @ 21" Hg**

MII NUMBERS	
DGM	**M05498**
Gasometer	**A01463**
Barometer	**COE 20028**

Calibrated By	**Brayden Pacheco**
Signature	Brayden Pacheco
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

DGMCF= $\frac{\text{Vstd } ft^3}{\text{Vdgm } ft^3}$ $\frac{\text{Tdgm } °F+460}{\text{Tstd } °F+460}$ $\frac{\text{Pbar ("Hg)}}{\text{(Pbar "Hg+DGMPressure/13.6)}}$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C	Factor	min.	lpm
55.40	47.90	7.50	0.353	20.0	521.60	531.70	0.357	21.5	3.4	23.0	0.986	20	0.5
56.40	49.10	7.30	0.343	20.0	531.70	541.65	0.351	23.5	3.4	24.0	0.981	20	0.5
57.10	49.90	7.20	0.339	20.0	541.65	551.35	0.343	23.5	3.4	24.0	0.992	20	0.5

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE

0.5 Lpm	0.986

Revision June 5, 2007

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Nutech**
MII	**M05498**
Date	**March 28, 2023**
Calibrated By	**Brayden Pacheco**
Signature	Brayden Pacheco
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
20	20		0.0
50	50		0.0
100	101		-1.0
150	151		-0.7
200	200		0.0
300	301		-0.3
400	400		0.0
500	500		0.0
600	601		-0.2

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 25, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.18	B1	0.995	C				
High	89.4	A2	89.15	B2						
Mid	44.7	A4	43.65	B4			44.5	D4	-1.9	E4
Low	22.35	A3	22.2	B3			22.2	D3	-0.2	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.18	0	0.18
Mid	43.65	44.5	-0.8

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value. Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 25, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.18	B1	0.995 C				
High	89.4	A2	89.15	B2					
Mid	44.7	A4	43.65	B4		44.5	D4	-1.9	E4
Low	22.35	A3	22.2	B3		22.2	D3	-0.2	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	44.5	45.2	-0.7

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 25, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.18	B1	0.995	C				
High	89.4	A2	89.15	B2						
Mid	44.7	A4	43.65	B4			44.5	D4	-1.9	E4
Low	22.35	A3	22.2	B3			22.2	D3	-0.2	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	45.2	43.9	1.3

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 25, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC OUTLET	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.15	B1	0.997	C				
High	89.4	A2	89.3	B2						
Mid	44.7	A4	45	B4			44.6	D4	1.0	E4
Low	22.35	A3	22	B3			22.3	D3	-1.3	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.

Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	45	44.8	0.2

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.

Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 25, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC OUTLET	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.15	B1	0.997	C				
High	89.4	A2	89.3	B2						
Mid	44.7	A4	45	B4			44.6	D4	1.0	E4
Low	22.35	A3	22	B3			22.3	D3	-1.3	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	44.8	43.9	0.9

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 25, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC OUTLET	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.15	B1	0.997	C				
High	89.4	A2	89.3	B2						
Mid	44.7	A4	45	B4			44.6	D4	1.0	E4
Low	22.35	A3	22	B3			22.3	D3	-1.3	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	43.9	44.4	-0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 24, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench INLET	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.001	C				
High	89.4	A2	89.5	B2						
Mid	44.7	A4	43.95	B4			44.8	D4	-1.8	E4
Low	22.35	A3	22.8	B3			22.4	D3	1.9	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	43.95	44.0	0.0

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 24, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench INLET	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.001	C				
High	89.4	A2	89.5	B2						
Mid	44.7	A4	43.95	B4			44.8	D4	-1.8	E4
Low	22.35	A3	22.8	B3			22.4	D3	1.9	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	44.0	44.9	-0.9

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 24, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench INLET	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.001				
High	89.4	A2	89.5	B2	C				
Mid	44.7	A4	43.95	B4		44.8	D4	-1.8	E4
Low	22.35	A3	22.8	B3		22.4	D3	1.9	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	44.9	44.5	0.4

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 24, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	0.998	C				
High	89.4	A2	89.25	B2						
Mid	44.7	A4	44.2	B4			44.6	D4	-1.0	E4
Low	22.35	A3	21.5	B3			22.3	D3	-3.6	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	44.2	44.6	-0.4

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 24, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	0.998	C				
High	89.4	A2	89.25	B2						
Mid	44.7	A4	44.2	B4			44.6	D4	-1.0	E4
Low	22.35	A3	21.5	B3			22.3	D3	-3.6	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	44.6	44.7	0.0

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22230	Date:	April 24, 2023
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	0.998	C				
High	89.4	A2	89.25	B2						
Mid	44.7	A4	44.2	B4			44.6	D4	-1.0	E4
Low	22.35	A3	21.5	B3			22.3	D3	-3.6	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	44.65	45.3	-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	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

APPENDIX 22

Particulate and Metals Test Emission Calculations
(28 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 - Partculate & Metals
Date:	April 24 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.40	mm
DRY REF GAS VOLUME SAMPLED	3.670	m^3
AVGERGE ISOKINETICITY	98.8	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.8	°C
AVERAGE GAS MOISTURE BY VOLUME	14.7	%
AVERAGE GAS VELOCITY	17.91	m/s
BAROMETRIC PRESSURE (Station)	100.847	Kpa
STATIC PRESSURE	-2.515	Kpa
ABSOLUTE GAS PRESSURE	98.332	Kpa
OXYGEN CONCENTRATION	9.08	%
CARBON DIOXIDE CONCENTRATION	10.02	%
CARBON MONOXIDE CONCENTRATION	12.5	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.46	m^3/s
DRY REF GAS FLOWRATE	15.77	Rm^3/s
DRY ADJ GAS FLOWRATE	18.83	Rm^3/s
WET REF GAS FLOWRATE	18.50	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.4	mg
	-FILTER	0.1	mg
	-TOTAL	0.5	mg
DRY REF GAS VOLUME SAMPLED		3.670	m^3
PARTICULATE CONC. - ACTUAL		0.081	mg/m^3
PARTICULATE CONC. - DRY REF		0.136	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.114	mg/m^3
PARTICULATE CONC. - WET REF		0.116	mg/m^3
PARTICULATE EMISSION RATE		0.002149	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	April 24 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	0.4		
Barometric Pressure	29.78 "Hg	**CWTR (g)**	445.1		
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	20		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.24 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.08
CO2%	10.02
COppm	12.5

Measured H2O
14.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	12.11	0.85	280	64	65	65	2.1	3.5		19.16	
	2.5	13.99	0.83	281	53	65	65	2.1	3.5		18.94	**98.2**
	5	15.88	0.84	282	51	65	66	2.1	3.5		19.07	**100.0**
2	7.5	17.75	0.82	282	50	65	67	2.1	3.5		18.84	**98.3**
	10	19.62	0.83	282	49	66	68	2.1	3.5		18.96	**99.4**
	12.5	21.49	0.82	282	49	66	69	2.1	3.5		18.84	**98.6**
3	15	23.34	0.79	282	49	66	70	2.1	3.5		18.50	**98.1**
	17.5	25.17	0.76	282	49	66	70	2	3.5		18.14	**98.7**
	20	26.98	0.79	282	50	67	71	2	3.5		18.50	**99.5**
4	22.5	28.78	0.73	282	50	67	72	2	3.5		17.78	**96.9**
	25	30.56	0.72	282	50	68	72	1.9	3.5		17.66	**99.6**
	27.5	32.32	0.68	282	50	68	72	1.8	3.5		17.16	**99.0**
5	30	34.00	0.65	282	50	68	73	1.8	3.0		16.78	**97.3**
	32.5	35.67	0.66	281	50	69	73	1.7	3.0		16.89	**98.8**
	35	37.32	0.67	282	50	69	74	1.7	3.0		17.03	**96.7**
6	37.5	39.02	0.62	282	50	69	74	1.7	3.0		16.38	**98.8**
	40	40.63	0.62	283	51	70	74	1.5	3.0		16.40	**97.3**
	42.5	42.24	0.62	284	51	70	74	1.5	3.0		16.41	**97.2**
7	45	43.89	0.71	284	51	70	75	1.6	3.0		17.56	**99.7**
	47.5	45.64	0.7	284	51	71	75	1.8	3.5		17.43	**98.8**
	50	47.38	0.71	284	50	71	75	1.8	3.5		17.56	**98.9**
8	52.5	49.13	0.75	285	50	71	76	1.8	3.5		18.06	**98.7**
	55	50.92	0.77	285	50	71	76	1.9	3.9		18.30	**98.2**
	57.5	52.73	0.8	286	50	72	76	1.9	3.9		18.66	**98.1**
9	60	54.57	0.82	287	50	72	76	2	4.0		18.91	**97.8**
	62.5	56.45	0.82	287	50	72	77	2.1	4.0		18.91	**98.8**
	65	58.33	0.81	287	50	72	77	2.1	4.0		18.79	**98.7**
10	67.5	60.21	0.76	285	50	72	77	2.1	4.0		18.18	**99.3**
	70	62.05	0.75	285	50	73	77	2	4.0		18.06	**100.2**
	72.5	63.88	0.75	285	50	73	77	2	4.0		18.06	**100.2**
11	75	65.73	0.67	285	50	73	77	2	4.0		17.07	**101.3**
	77.5	67.39	0.68	283	50	73	77	1.6	3.5		17.17	**96.2**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	April 24 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	0.4		
Barometric Pressure	29.78 "Hg	**CWTR (g)**	445.1		
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	20		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.24 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.08
CO2%	10.02
COppm	12.5

Measured H2O
14.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	69.11	0.69	283	50	73	77	1.7	3.5		17.30	**98.7**
12	82.5	70.84	0.68	283	50	73	77	1.7	3.5		17.17	**98.5**
	85	72.57	0.66	284	50	73	78	1.8	3.5		16.93	**99.3**
	87.5	74.29	0.66	284	50	74	78	1.7	3.5		16.93	**100.2**
	90	76.09								0.24		**104.7**
1	0	76.33	0.89	285	60	73	73	2.2	3.5		19.67	
	2.5	78.35	0.92	288	50	73	74	2.2	3.5		20.04	**102.0**
	5	80.31	0.91	288	50	73	74	2.2	4.0		19.93	**97.4**
2	7.5	82.27	0.91	289	49	73	75	2.2	4.0		19.94	**97.9**
	10	84.22	0.91	289	47	73	76	2.2	4.0		19.94	**97.4**
	12.5	86.21	0.92	289	49	73	76	2.3	4.0		20.05	**99.3**
3	15	88.19	0.87	289	49	73	77	2.3	4.0		19.50	**98.3**
	17.5	90.12	0.87	289	50	73	77	2.3	4.0		19.50	**98.4**
	20	92.03	0.89	289	49	73	77	2.3	4.0		19.72	**97.4**
4	22.5	94.02	0.89	290	49	74	78	2.3	4.0		19.74	**100.4**
	25	96.00	0.84	290	49	74	78	2.2	4.0		19.17	**99.7**
	27.5	97.96	0.82	290	49	74	78	2.2	4.0		18.94	**101.6**
5	30	99.81	0.69	290	48	74	78	2	4.0		17.38	**97.1**
	32.5	101.52	0.7	290	49	74	78	1.7	3.5		17.50	**97.8**
	35	103.25	0.71	290	48	74	78	1.7	3.5		17.63	**98.1**
6	37.5	105.01	0.61	290	48	74	78	1.8	4.0		16.34	**99.1**
	40	106.62	0.62	290	48	74	78	1.5	3.5		16.47	**97.8**
	42.5	108.23	0.62	290	48	75	78	1.5	3.5		16.47	**97.0**
7	45	109.87	0.7	290	48	74	78	1.6	3.5		17.50	**98.7**
	47.5	111.62	0.7	290	48	75	78	1.8	4.0		17.50	**99.2**
	50	113.38	0.72	290	48	75	78	1.8	4.0		17.75	**99.7**
8	52.5	115.15	0.75	290	48	75	78	1.8	4.0		18.12	**98.9**
	55	116.96	0.73	290	47	75	78	1.9	4.0		17.87	**99.1**
	57.5	118.76	0.73	290	47	75	79	1.9	4.0		17.87	**99.9**
9	60	120.56	0.77	290	48	75	79	1.9	4.0		18.36	**99.8**
	62.5	122.39	0.75	290	48	75	79	2	4.0		18.12	**98.8**
	65	124.22	0.78	290	48	75	79	2	4.0		18.48	**100.2**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	April 24 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	0.4		
Barometric Pressure	29.78 "Hg	**CWTR (g)**	445.1		
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	20		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.24 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.08
CO2%	10.02
COppm	12.5

Measured H2O
14.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
10	67.5	126.05	0.69	290	48	75	79	2	4.0		17.38	**98.2**
	70	127.75	0.7	280	48	75	79	1.6	3.5		17.39	**97.0**
	72.5	129.48	0.68	280	47	75	79	1.8	4.0		17.14	**97.3**
11	75	131.22	0.58	283	47	75	79	1.8	4.0		15.86	**99.3**
	77.5	132.80	0.57	283	47	75	79	1.5	3.5		15.72	**97.8**
	80	134.42	0.56	280	47	75	78	1.5	3.5		15.55	**101.1**
12	82.5	136.01	0.59	280	47	75	78	1.4	3.5		15.96	**100.0**
	85	137.55	0.59	280	47	75	78	1.4	3.5		15.96	**94.3**
	87.5	139.18	0.63	280	47	75	78	1.5	3.5		16.49	**99.8**
	90	140.83										**97.8**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - Partculate & Metals
Date:	April 24 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.40	mm
DRY REF GAS VOLUME SAMPLED	3.679	m^3
AVGERGE ISOKINETICITY	98.9	%
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	142.6	°C
AVERAGE GAS MOISTURE BY VOLUME	14.9	%
AVERAGE GAS VELOCITY	18.04	m/s
BAROMETRIC PRESSURE (Station)	100.914	Kpa
STATIC PRESSURE	-2.515	Kpa
ABSOLUTE GAS PRESSURE	98.399	Kpa
OXYGEN CONCENTRATION	9.11	%
CARBON DIOXIDE CONCENTRATION	9.87	%
CARBON MONOXIDE CONCENTRATION	7.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.65	m^3/s
DRY REF GAS FLOWRATE	15.79	Rm^3/s
DRY ADJ GAS FLOWRATE	18.80	Rm^3/s
WET REF GAS FLOWRATE	18.56	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.7	mg
	-FILTER	0.1	mg
	-TOTAL	0.8	mg
DRY REF GAS VOLUME SAMPLED		3.679	m^3
PARTICULATE CONC. - ACTUAL		0.129	mg/m^3
PARTICULATE CONC. - DRY REF		0.217	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.183	mg/m^3
PARTICULATE CONC. - WET REF		0.185	mg/m^3
PARTICULATE EMISSION RATE		0.003433	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	April 24 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	0.7		
Barometric Pressure	29.8 "Hg	**CWTR (g)**	450.7		
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	24.1		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.48 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.11
CO2%	9.87
COppm	7.7

Measured H2O
14.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	43.92	0.88	280	65	68	68	2.1	3.5		19.50	
	2.5	45.96	0.9	287	60	68	69	2.1	4.0		19.82	**104.4**
	5	47.87	0.9	289	57	68	70	2.1	4.0		19.84	**97.0**
2	7.5	49.83	0.89	289	56	69	71	2.2	4.0		19.73	**99.6**
	10	51.77	0.89	289	55	69	72	2.2	4.0		19.73	**99.0**
	12.5	53.72	0.88	289	55	69	73	2.2	4.0		19.62	**99.4**
3	15	55.66	0.87	289	55	70	74	2.2	4.0		19.51	**99.3**
	17.5	57.58	0.88	289	54	70	75	2.2	4.0		19.62	**98.7**
	20	59.51	0.87	290	54	71	75	2.2	4.0		19.52	**98.5**
4	22.5	61.45	0.8	290	54	71	76	2.2	4.0		18.72	**99.6**
	25	63.30	0.79	290	54	72	76	2	3.9		18.60	**98.9**
	27.5	65.14	0.8	290	53	72	76	2	3.9		18.72	**98.9**
5	30	66.98	0.7	290	53	72	77	2	3.9		17.51	**98.3**
	32.5	68.67	0.71	290	53	72	77	1.7	3.5		17.64	**96.4**
	35	70.42	0.72	290	53	73	77	1.8	3.5		17.76	**99.0**
6	37.5	72.17	0.61	290	53	73	77	1.8	3.5		16.35	**98.3**
	40	73.76	0.59	290	53	73	77	1.5	3.0		16.08	**97.0**
	42.5	75.36	0.6	290	53	73	77	1.5	3.0		16.21	**99.2**
7	45	76.97	0.67	290	53	74	78	1.5	3.0		17.13	**99.0**
	47.5	78.68	0.66	289	52	74	78	1.7	3.5		16.99	**99.3**
	50	80.40	0.69	289	52	74	78	1.7	3.5		17.37	**100.6**
8	52.5	82.11	0.7	289	52	74	78	1.7	3.5		17.50	**97.8**
	55	83.86	0.69	289	52	74	78	1.8	3.5		17.37	**99.4**
	57.5	85.60	0.67	289	52	74	79	1.8	3.5		17.12	**99.6**
9	60	87.32	0.7	289	52	75	79	1.7	3.5		17.50	**99.8**
	62.5	89.07	0.72	288	52	75	79	1.8	3.5		17.74	**99.2**
	65	90.83	0.7	288	52	75	79	1.8	3.5		17.49	**98.3**
10	67.5	92.58	0.67	288	52	75	79	1.8	3.5		17.11	**99.2**
	70	94.29	0.7	283	51	75	79	1.7	3.5		17.43	**99.1**
	72.5	96.05	0.7	283	50	75	79	1.8	3.5		17.43	**99.4**
11	75	97.80	0.51	283	48	75	79	1.8	3.5		14.88	**98.8**
	77.5	99.29	0.55	283	48	75	79	1.3	3.0		15.45	**98.6**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	April 24 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	0.7		
Barometric Pressure	29.8 "Hg	**CWTR (g)**	450.7		
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	24.1		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.48 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.11
CO2%	9.87
COppm	7.7

Measured H2O
14.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	100.87	0.57	283	47	75	79	1.4	3.0		15.73	**100.5**
12	82.5	102.40	0.57	283	47	75	79	1.4	3.0		15.73	**95.7**
	85	103.96	0.56	283	46	75	79	1.5	3.0		15.59	**97.5**
	87.5	105.54	0.57	283	46	75	79	1.5	3.0		15.73	**99.7**
	90	107.11								0.48		**98.2**
1	0	107.59	0.87	285	52	75	75	2.2	4.0		19.46	
	2.5	109.44	0.89	289	46	75	76	2.2	4.0		19.73	**94.3**
	5	111.41	0.9	290	43	75	77	2.2	4.0		19.86	**99.4**
2	7.5	113.40	0.91	290	42	75	77	2.3	4.0		19.97	**99.9**
	10	115.38	0.9	291	42	75	78	2.3	4.0		19.87	**98.8**
	12.5	117.36	0.91	291	42	75	78	2.3	4.0		19.98	**99.4**
3	15	119.34	0.86	291	42	75	79	2.3	4.0		19.42	**98.8**
	17.5	121.29	0.85	291	41	75	79	2.2	4.0		19.31	**100.0**
	20	123.24	0.84	290	41	75	79	2.2	4.0		19.18	**100.6**
4	22.5	125.16	0.79	290	41	75	79	2.1	4.0		18.60	**99.6**
	25	127.01	0.8	290	41	75	79	2	4.0		18.72	**98.9**
	27.5	128.88	0.79	290	41	76	79	2	4.0		18.60	**99.3**
5	30	130.75	0.74	290	41	76	79	2	4.0		18.01	**99.8**
	32.5	132.55	0.8	290	41	76	79	1.9	3.9		18.72	**99.3**
	35	134.39	0.75	291	41	76	79	2	4.0		18.14	**97.6**
6	37.5	136.19	0.68	291	41	76	79	1.9	3.9		17.27	**98.7**
	40	137.88	0.67	291	41	76	79	1.7	3.5		17.14	**97.3**
	42.5	139.60	0.66	291	41	76	79	1.7	3.5		17.02	**99.7**
7	45	141.31	0.74	291	41	76	79	1.7	3.5		18.02	**99.9**
	47.5	143.10	0.75	291	41	76	79	2	4.0		18.14	**98.7**
	50	144.91	0.72	291	41	76	79	1.9	4.0		17.77	**99.2**
8	52.5	146.67	0.74	291	41	76	79	1.8	3.9		18.02	**98.5**
	55	148.46	0.75	290	41	76	79	1.9	4.0		18.13	**98.8**
	57.5	150.26	0.74	290	41	76	79	1.9	4.0		18.01	**98.6**
9	60	152.06	0.75	290	41	76	79	1.9	4.0		18.13	**99.3**
	62.5	153.86	0.77	290	42	76	79	1.9	4.0		18.37	**98.6**
	65	155.69	0.75	290	42	76	79	2	4.0		18.13	**98.9**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Partculate & Metals	**Test Location:**	APC Outlet No. 1
Date:	April 24 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	0.7		
Barometric Pressure	29.8 "Hg	**CWTR (g)**	450.7		
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	24.1		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.48 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.11
CO2%	9.87
COppm	7.7

Measured H2O
14.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
10	67.5	157.53	0.79	290	42	76	79	2	4.0		18.60	**100.8**
	70	159.36	0.8	289	42	76	79	2	4.0		18.71	**97.7**
	72.5	161.21	0.8	289	42	76	79	2	4.0		18.71	**98.1**
11	75	163.09	0.7	289	42	76	79	2.1	4.0		17.50	**99.7**
	77.5	164.85	0.7	289	42	76	79	1.8	3.9		17.50	**99.8**
	80	166.61	0.71	289	42	76	79	1.8	3.9		17.62	**99.7**
12	82.5	168.37	0.72	289	43	76	79	1.8	3.9		17.75	**99.0**
	85	170.15	0.69	289	43	76	79	1.9	4.0		17.37	**99.4**
	87.5	171.86	0.7	289	43	76	79	1.8	3.9		17.50	**97.6**
	90	173.61										**99.1**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - Particulate & Metals
Date:	April 25, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	3.978	m^3
AVGERGE ISOKINETICITY	100.5	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.0	°C
AVERAGE GAS MOISTURE BY VOLUME	16.9	%
AVERAGE GAS VELOCITY	19.32	m/s
BAROMETRIC PRESSURE (Station)	101.185	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	98.645	Kpa
OXYGEN CONCENTRATION	8.82	%
CARBON DIOXIDE CONCENTRATION	10.09	%
CARBON MONOXIDE CONCENTRATION	11.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.55	m^3/s
DRY REF GAS FLOWRATE	16.71	Rm^3/s
DRY ADJ GAS FLOWRATE	20.39	Rm^3/s
WET REF GAS FLOWRATE	20.11	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.3	mg
	-FILTER	0.1	mg
	-TOTAL	1.4	mg
DRY REF GAS VOLUME SAMPLED		3.978	m^3
PARTICULATE CONC. - ACTUAL		0.206	mg/m^3
PARTICULATE CONC. - DRY REF		0.352	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.288	mg/m^3
PARTICULATE CONC. - WET REF		0.293	mg/m^3
PARTICULATE EMISSION RATE		0.005881	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:	April 25, 2023	**Operator:**	RW

Pitot Factor	0.843	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	1.3		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	563.8		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	29.7		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.46 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.82
CO2%	10.09
COppm	11.7

Measured H2O
16.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	55.01	0.68	278	61	61	60	2.1	5.5		17.19	
	2.5	56.90	0.71	278	60	61	61	1.8	6.0		17.56	**113.0**
	5	58.62	0.71	278	61	61	63	1.8	6.0		17.56	**100.5**
2	7.5	60.38	0.79	278	58	61	65	1.95	6.0		18.52	**102.6**
	10	62.19	0.79	273	56	61	66	1.95	6.0		18.46	**99.9**
	12.5	63.99	0.82	274	54	62	68	2.05	6.5		18.82	**98.9**
3	15	65.84	0.77	273	53	62	70	2	6.5		18.23	**99.6**
	17.5	67.65	0.77	273	52	62	71	2	6.5		18.23	**100.3**
	20	69.47	0.79	278	51	62	73	2.1	6.5		18.52	**100.7**
4	22.5	71.32	0.77	279	50	63	74	2	6.5		18.30	**101.3**
	25	73.15	0.79	279	49	63	74	2.1	6.5		18.54	**101.3**
	27.5	75.02	0.83	279	48	63	75	2.15	6.5		19.00	**102.2**
5	30	76.92	0.8	279	47	63	76	2.1	6.5		18.65	**101.3**
	32.5	78.77	0.8	279	47	64	76	2.1	6.5		18.65	**100.3**
	35	80.66	0.8	279	47	64	77	2.1	6.5		18.65	**102.4**
6	37.5	82.54	0.78	280	47	64	77	2.1	6.5		18.43	**101.8**
	40	84.38	0.81	280	47	64	77	2.1	6.5		18.78	**100.9**
	42.5	86.25	0.83	281	47	65	78	2.15	7.0		19.02	**100.7**
7	45	88.19	0.76	281	47	65	78	1.95	7.0		18.20	**103.0**
	47.5	90.02	0.76	282	47	65	78	1.95	7.0		18.22	**101.5**
	50	91.79	0.75	282	47	65	78	1.9	6.5		18.10	**98.3**
8	52.5	93.57	0.75	283	47	65	78	1.9	6.5		18.11	**99.5**
	55	95.36	0.83	282	47	66	79	2.1	7.0		19.04	**100.1**
	57.5	97.25	0.83	283	47	66	79	2.1	7.0		19.05	**100.3**
9	60	99.12	0.9	284	47	66	79	2.2	7.0		19.85	**99.3**
	62.5	101.04	0.91	284	47	66	79	2.25	7.0		19.96	**98.0**
	65	103.03	0.88	284	48	67	79	2.2	7.0		19.63	**101.0**
10	67.5	104.96	0.91	283	48	68	79	2.3	7.0		19.95	**99.5**
	70	106.95	0.92	283	48	67	80	2.3	7.0		20.06	**100.7**
	72.5	108.93	0.92	283	48	67	80	2.35	7.0		20.06	**99.7**
11	75	110.95	0.91	283	48	67	80	2.35	7.0		19.95	**101.7**
	77.5	112.96	0.95	282	48	67	80	2.4	7.5		20.37	**101.8**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	April 25, 2023	**Operator:**	RW

Pitot Factor	0.843	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	1.3		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	563.8		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	29.7		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.46 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.82
CO2%	10.09
COppm	11.7

Measured H2O
16.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
	80	114.98	0.93	283	49	68	79	2.4	7.5		20.17	**100.0**
12	82.5	116.99	0.95	282	49	67	79	2.4	7.5		20.37	**100.7**
	85	119.02	0.97	283	49	68	79	2.4	7.5		20.59	**100.6**
	87.5	121.05	0.98	283	49	67	79	2.45	7.5		20.70	**99.6**
	90	123.10								0.46		**100.1**
1	0	123.56	0.98	281	55	67	72	2.4	7.5		20.67	
	2.5	125.59	0.99	284	51	67	73	2.45	7.5		20.82	**99.7**
	5	127.64	1	284	49	67	74	2.45	7.5		20.92	**100.3**
2	7.5	129.67	1.1	284	49	67	75	2.6	8.0		21.95	**98.7**
	10	131.77	1.1	285	48	67	76	2.7	8.0		21.96	**97.3**
	12.5	133.92	1.1	285	49	67	77	2.7	8.0		21.96	**99.6**
3	15	136.08	1	284	49	67	78	2.5	8.0		20.92	**100.0**
	17.5	138.15	1	285	50	67	78	2.5	8.0		20.94	**100.3**
	20	140.23	1.1	285	50	67	78	2.7	8.0		21.96	**100.8**
4	22.5	142.38	0.96	286	51	67	79	2.4	8.0		20.53	**99.4**
	25	144.41	0.96	286	50	67	79	2.4	8.0		20.53	**100.4**
	27.5	146.46	0.96	286	51	67	79	2.35	8.0		20.53	**101.4**
5	30	148.49	0.96	286	51	67	79	2.35	8.0		20.53	**100.4**
	32.5	150.52	0.92	286	52	67	79	2.2	8.0		20.10	**100.4**
	35	152.44	0.76	286	52	67	79	1.95	7.0		18.27	**96.9**
6	37.5	154.26	0.74	285	50	67	79	1.9	7.0		18.01	**101.0**
	40	156.04	0.8	285	48	67	79	2	7.0		18.73	**100.1**
	42.5	157.88	0.77	287	47	67	79	1.95	7.0		18.40	**99.5**
7	45	159.69	0.84	286	46	67	79	2.1	7.0		19.20	**99.9**
	47.5	161.57	0.84	286	45	67	79	2.15	7.0		19.20	**99.3**
	50	163.48	0.84	285	44	67	79	2.15	7.0		19.19	**100.9**
8	52.5	165.39	0.85	285	44	67	79	2.15	7.5		19.30	**100.8**
	55	167.32	0.86	285	44	67	79	2.15	7.5		19.42	**101.3**
	57.5	169.23	0.9	285	43	67	79	2.2	7.5		19.86	**99.6**
9	60	171.18	0.85	285	43	67	79	2.15	7.5		19.30	**99.5**
	62.5	173.08	0.87	284	43	67	79	2.25	8.0		19.52	**99.7**
	65	175.08	0.87	285	43	67	79	2.2	8.0		19.53	**103.7**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	April 25, 2023	**Operator:**	RW

Pitot Factor	0.843	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	1.3		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	563.8		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	29.7		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.46 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.82
CO2%	10.09
COppm	11.7

Measured H2O
16.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
10	67.5	177.06	0.83	284	43	67	79	2.1	7.5		19.06	**102.7**
	70	178.95	0.81	283	43	67	79	2.05	7.5		18.82	**100.3**
	72.5	180.81	0.82	283	43	67	79	2.1	7.5		18.94	**99.8**
11	75	182.69	0.76	283	43	67	79	1.95	7.0		18.23	**100.3**
	77.5	184.51	0.76	283	44	67	79	1.95	7.0		18.23	**100.8**
	80	186.32	0.76	281	44	67	79	1.95	7.0		18.20	**100.3**
12	82.5	188.13	0.76	281	44	67	79	1.95	7.0		18.20	**100.1**
	85	189.94	0.73	281	44	67	79	1.9	7.0		17.84	**100.1**
	87.5	191.72	0.73	280	44	67	79	1.9	7.0		17.83	**100.5**
	90	193.50										**100.4**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - Partculate & Metals
Date:	April 25 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.40	mm
DRY REF GAS VOLUME SAMPLED	3.726	m^3
AVGERGE ISOKINETICITY	99.7	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.0	°C
AVERAGE GAS MOISTURE BY VOLUME	15.5	%
AVERAGE GAS VELOCITY	18.11	m/s
BAROMETRIC PRESSURE (Station)	101.185	Kpa
STATIC PRESSURE	-2.689	Kpa
ABSOLUTE GAS PRESSURE	98.496	Kpa
OXYGEN CONCENTRATION	9.16	%
CARBON DIOXIDE CONCENTRATION	10.83	%
CARBON MONOXIDE CONCENTRATION	16.9	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.76	m^3/s
DRY REF GAS FLOWRATE	15.87	Rm^3/s
DRY ADJ GAS FLOWRATE	18.82	Rm^3/s
WET REF GAS FLOWRATE	18.78	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		3.726	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 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	April 25 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	480.4		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	21.2		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.39 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.16
CO2%	10.83
COppm	16.9

Measured H2O
15.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	75.33	0.8	280	59	62	62	1.9	3.0		18.57	
	2.5	77.13	0.79	278	53	63	63	1.9	3.0		18.42	**98.6**
	5	78.92	0.83	279	52	63	64	1.9	3.0		18.90	**98.4**
2	7.5	80.75	0.83	280	51	63	65	2	3.0		18.91	**98.1**
	10	82.62	0.84	280	51	63	66	2.1	3.5		19.02	**100.2**
	12.5	84.48	0.85	280	51	64	67	2.1	3.5		19.14	**99.0**
3	15	86.38	0.79	280	52	64	68	2.1	3.5		18.45	**100.4**
	17.5	88.20	0.84	281	52	65	69	2	3.0		19.04	**99.6**
	20	90.08	0.86	281	53	65	70	2.1	3.5		19.26	**99.7**
4	22.5	91.97	0.84	282	54	66	70	2.1	3.5		19.05	**98.9**
	25	93.85	0.82	282	54	66	71	2.1	3.5		18.82	**99.6**
	27.5	95.69	0.83	282	55	66	71	2	3.5		18.94	**98.5**
5	30	97.56	0.77	282	55	67	71	2.1	3.5		18.24	**99.5**
	32.5	99.35	0.76	283	55	67	72	1.9	3.0		18.13	**98.8**
	35	101.15	0.79	283	56	68	72	2	3.5		18.49	**99.9**
6	37.5	102.97	0.71	284	56	68	72	2	3.5		17.54	**99.0**
	40	104.69	0.68	284	56	68	72	1.8	3.0		17.16	**98.8**
	42.5	106.41	0.69	284	57	68	73	1.8	3.0		17.29	**100.9**
7	45	108.11	0.75	284	57	69	73	1.7	3.0		18.02	**98.9**
	47.5	109.89	0.76	284	57	69	73	1.9	3.5		18.14	**99.2**
	50	111.70	0.79	285	57	69	73	2	3.5		18.51	**100.3**
8	52.5	113.53	0.79	285	57	69	74	2	3.5		18.51	**99.5**
	55	115.36	0.77	286	57	70	74	2	3.5		18.29	**99.4**
	57.5	117.19	0.74	286	58	70	74	2	3.5		17.93	**100.7**
9	60	118.97	0.77	286	58	70	74	1.9	3.5		18.29	**99.9**
	62.5	120.75	0.76	286	57	70	74	1.9	3.5		18.17	**97.9**
	65	122.58	0.79	286	55	70	74	2	3.5		18.52	**101.3**
10	67.5	124.48	0.81	285	52	71	75	2	3.5		18.74	**103.2**
	70	126.30	0.8	284	52	71	75	1.9	3.5		18.62	**97.4**
	72.5	128.14	0.78	285	51	71	75	2	3.5		18.39	**99.0**
11	75	129.97	0.74	281	51	71	75	2	3.5		17.87	**99.8**
	77.5	131.76	0.77	280	51	71	75	1.9	3.5		18.21	**99.9**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	April 25 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	480.4		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	21.2		
Nozzle	0.2521 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%	9.16
CO2%	10.83
COppm	16.9

Measured H2O
15.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	133.54	0.76	281	51	71	75	1.9	3.5		18.11	**97.3**
12	82.5	135.36	0.75	280	50	71	75	2	3.5		17.98	**100.3**
	85	137.19	0.77	280	50	72	76	2	3.5		18.21	**101.4**
	87.5	139.03	0.78	280	50	72	76	2	3.5		18.33	**100.5**
	90	140.88								0.39		**100.4**
1	0	141.27	0.83	285	58	71	72	2	3.5		18.97	
	2.5	143.15	0.85	282	51	71	72	2	3.5		19.16	**99.7**
	5	145.04	0.84	285	50	71	72	2.1	3.9		19.09	**98.8**
2	7.5	146.94	0.83	284	49	71	73	2.1	3.9		18.96	**100.2**
	10	148.85	0.87	285	49	71	74	2.1	3.9		19.43	**101.1**
	12.5	150.79	0.88	285	49	71	74	2.2	4.0		19.54	**100.3**
3	15	152.72	0.83	285	49	71	75	2.2	4.0		18.97	**99.2**
	17.5	154.62	0.85	285	49	71	75	2.1	3.9		19.20	**100.5**
	20	156.55	0.82	285	50	71	75	2.2	4.0		18.86	**100.8**
4	22.5	158.42	0.79	285	50	71	75	2.1	3.9		18.51	**99.5**
	25	160.24	0.8	285	51	72	75	2	3.5		18.63	**98.6**
	27.5	162.06	0.79	285	51	72	75	2	3.5		18.51	**97.9**
5	30	163.91	0.74	285	51	72	76	2	3.5		17.92	**100.2**
	32.5	165.68	0.74	286	51	72	76	1.9	3.5		17.93	**98.9**
	35	167.45	0.73	286	50	72	76	1.9	3.5		17.81	**99.0**
6	37.5	169.22	0.65	286	50	72	76	1.9	3.5		16.80	**99.6**
	40	170.84	0.68	286	50	72	75	1.6	3.5		17.19	**96.6**
	42.5	172.54	0.69	286	50	72	76	1.8	3.5		17.31	**99.2**
7	45	174.28	0.69	287	50	72	76	1.8	3.5		17.32	**100.7**
	47.5	176.03	0.67	287	50	72	76	1.8	3.9		17.07	**101.4**
	50	177.73	0.67	287	50	72	76	1.7	3.5		17.07	**99.9**
8	52.5	179.42	0.67	287	50	72	76	1.7	3.5		17.07	**99.3**
	55	181.12	0.72	287	50	72	76	1.7	3.5		17.70	**99.9**
	57.5	182.88	0.72	286	50	72	76	1.8	3.9		17.68	**99.8**
9	60	184.67	0.74	286	50	72	76	1.9	4.0		17.93	**101.4**
	62.5	186.47	0.71	286	50	72	76	1.9	4.0		17.56	**100.6**
	65	188.27	0.72	286	50	72	76	1.9	4.0		17.68	**102.7**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	April 25 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	480.4		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	21.2		
Nozzle	0.2521 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%	9.16
CO2%	10.83
COppm	16.9

Measured H2O
15.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
10	67.5	190.01	0.69	285	50	73	76	1.8	3.9		17.30	**98.6**
	70	191.73	0.67	285	50	73	76	1.8	3.9		17.05	**99.4**
	72.5	193.44	0.68	285	50	73	76	1.7	3.5		17.17	**100.3**
11	75	195.13	0.64	285	50	73	76	1.7	3.5		16.66	**98.4**
	77.5	196.78	0.63	285	50	73	76	1.6	3.5		16.53	**99.0**
	80	198.43	0.65	285	50	73	76	1.6	3.5		16.79	**99.7**
12	82.5	200.12	0.65	285	50	73	76	1.7	3.5		16.79	**100.6**
	85	201.80	0.68	285	50	73	76	1.7	3.5		17.17	**100.0**
	87.5	203.49	0.64	285	50	73	76	1.7	3.5		16.66	**98.4**
	90	205.21										**103.2**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - Partculate & Metals
Date:	April 25 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.842
DGM CORRECTION FACTOR		1.002
NOZZLE DIAMETER		6.40 mm
DRY REF GAS VOLUME SAMPLED		3.706 m^3
AVGERGE ISOKINETICITY		99.4 %
STACK DIAMETER		1.37 m
LENGTH		0.00 m
WIDTH		0.00 m
AREA OF STACK or DUCT		1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE		140.1 °C
AVERAGE GAS MOISTURE BY VOLUME		15.0 %
AVERAGE GAS VELOCITY		17.98 m/s
BAROMETRIC PRESSURE (Station)		101.185 Kpa
STATIC PRESSURE		-2.689 Kpa
ABSOLUTE GAS PRESSURE		98.496 Kpa
OXYGEN CONCENTRATION		9.16 %
CARBON DIOXIDE CONCENTRATION		10.92 %
CARBON MONOXIDE CONCENTRATION		15.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE		26.57 m^3/s
DRY REF GAS FLOWRATE		15.83 Rm^3/s
DRY ADJ GAS FLOWRATE		18.78 Rm^3/s
WET REF GAS FLOWRATE		18.64 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.4 mg
	-FILTER	0.1 mg
	-TOTAL	1.5 mg
DRY REF GAS VOLUME SAMPLED		3.706 m^3
PARTICULATE CONC. - ACTUAL		0.241 mg/m^3
PARTICULATE CONC. - DRY REF		0.405 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.341 mg/m^3
PARTICULATE CONC. - WET REF		0.344 mg/m^3
PARTICULATE EMISSION RATE		0.006408 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	April 25 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	1.4		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	460.7		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	21		
Nozzle	0.2521 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%	9.16
CO2%	10.92
COppm	15.3

Measured H2O
15.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	5.61	0.84	280	61	68	68	2.1	4.0		19.00	
	2.5	7.59	0.88	280	57	68	68	2.1	4.0		19.45	**104.3**
	5	9.49	0.89	285	54	68	68	2.1	4.0		19.62	**97.8**
2	7.5	11.43	0.9	286	53	68	69	2.2	4.0		19.75	**99.6**
	10	13.37	0.9	286	53	68	70	2.2	4.0		19.75	**99.0**
	12.5	15.30	0.9	286	54	68	71	2.2	4.0		19.75	**98.4**
3	15	17.23	0.9	285	55	69	72	2.2	4.0		19.73	**98.3**
	17.5	19.17	0.85	285	55	69	72	2.1	4.0		19.18	**98.6**
	20	20.90	0.85	286	53	69	72	2.1	4.0		19.19	**90.4**
4	22.5	22.55	0.85	286	51	69	73	2.1	4.0		19.19	**86.3**
	25	24.85	0.88	286	49	70	74	2.2	4.0		19.53	**120.2**
	27.5	26.77	0.89	286	48	70	74	2.2	4.0		19.64	**98.5**
5	30	28.71	0.73	285	49	74	74	2	4.0		17.77	**98.9**
	32.5	30.54	0.69	285	47	70	74	2	4.0		17.28	**102.5**
	35	32.24	0.7	285	46	70	74	1.7	3.5		17.40	**98.3**
6	37.5	33.96	0.7	285	46	70	74	1.8	3.5		17.40	**98.7**
	40	35.68	0.69	285	46	71	75	1.8	3.5		17.28	**98.7**
	42.5	37.41	0.63	285	45	71	75	1.8	3.5		16.51	**99.8**
7	45	39.02	0.61	285	45	71	75	1.6	3.4		16.25	**97.2**
	47.5	40.67	0.59	284	45	71	75	1.6	3.4		15.97	**101.2**
	50	42.29	0.6	284	45	71	75	1.5	3.0		16.10	**101.0**
8	52.5	43.87	0.62	284	45	71	75	1.5	3.0		16.37	**97.6**
	55	45.48	0.6	283	45	72	75	1.6	3.4		16.09	**97.9**
	57.5	47.13	0.64	283	45	72	75	1.6	3.4		16.62	**101.8**
9	60	48.79	0.68	283	45	72	76	1.6	3.4		17.13	**99.2**
	62.5	50.49	0.7	283	45	72	76	1.7	3.5		17.38	**98.5**
	65	52.24	0.73	284	45	72	76	1.8	3.5		17.76	**99.9**
10	67.5	54.00	0.73	281	45	72	76	1.9	4.0		17.73	**98.5**
	70	55.76	0.7	281	45	72	76	1.9	4.0		17.36	**98.3**
	72.5	57.50	0.72	280	45	72	76	1.8	3.5		17.59	**99.3**
11	75	59.24	0.7	280	45	73	77	1.8	3.5		17.35	**97.8**
	77.5	60.98	0.71	280	45	73	77	1.8	3.5		17.47	**99.0**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	April 25 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	1.4		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	460.7		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	21		
Nozzle	0.2521 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%	9.16
CO2%	10.92
COppm	15.3

Measured H2O
15.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	62.75	0.7	280	45	73	77	1.9	4.0		17.35	**100.0**
12	82.5	64.51	0.73	280	45	73	77	1.9	4.0		17.71	**100.2**
	85	66.27	0.75	280	46	73	76	1.9	4.0		17.95	**98.1**
	87.5	68.08	0.74	280	46	73	77	2	4.0		17.83	**99.6**
	90	69.89								0.39		**100.2**
1	0	70.28	0.85	285	51	73	73	2.1	4.0		19.18	
	2.5	72.18	0.88	286	46	72	73	2.1	4.0		19.53	**98.9**
	5	74.12	0.88	287	44	72	74	2.2	4.0		19.54	**99.4**
2	7.5	76.07	0.86	287	44	72	75	2.2	4.0		19.32	**99.9**
	10	78.02	0.88	287	44	72	75	2.2	4.0		19.54	**100.9**
	12.5	79.95	0.83	287	44	72	76	2.2	4.0		18.98	**98.8**
3	15	81.84	0.82	286	44	73	76	2.1	4.0		18.85	**99.5**
	17.5	83.72	0.79	286	44	73	76	2.1	4.0		18.50	**99.4**
	20	85.56	0.79	286	44	73	77	2	4.0		18.50	**99.1**
4	22.5	87.39	0.76	286	44	73	77	2	4.0		18.15	**98.4**
	25	89.19	0.79	285	44	73	77	2	4.0		18.49	**98.7**
	27.5	91.04	0.78	286	44	73	77	2	4.0		18.38	**99.5**
5	30	92.88	0.72	286	45	73	77	2	4.0		17.66	**99.6**
	32.5	94.63	0.73	286	45	73	77	1.8	3.5		17.78	**98.6**
	35	96.40	0.74	286	45	74	77	1.9	3.5		17.91	**99.0**
6	37.5	98.18	0.65	286	45	74	77	1.9	3.5		16.78	**98.8**
	40	99.84	0.66	287	45	74	77	1.6	3.5		16.92	**98.3**
	42.5	101.53	0.67	287	45	74	77	1.7	3.5		17.05	**99.3**
7	45	103.23	0.71	287	45	74	79	1.7	3.5		17.55	**99.2**
	47.5	104.98	0.75	287	45	74	78	1.8	3.5		18.04	**99.0**
	50	106.79	0.72	287	45	75	78	2	4.0		17.67	**99.8**
8	52.5	108.59	0.72	286	45	74	78	1.9	4.0		17.66	**101.2**
	55	110.35	0.74	285	48	75	78	1.8	3.5		17.89	**99.0**
	57.5	112.14	0.76	286	46	74	78	1.9	4.0		18.15	**99.1**
9	60	113.98	0.75	285	46	74	78	2	4.0		18.01	**100.7**
	62.5	115.82	0.73	285	46	74	78	2	4.0		17.77	**101.3**
	65	117.60	0.7	285	46	74	78	1.9	4.0		17.40	**99.4**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	April 25 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	1.002	**Probe (mg)**	1.4		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	460.7		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	21		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.39 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.16
CO2%	10.92
COppm	15.3

Measured H2O
15.0 %

				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 %**
10	67.5	119.36	0.73	281	45	74	78	1.8	3.5		17.73	**100.3**
	70	121.13	0.71	281	45	74	78	1.9	4.0		17.48	**98.5**
	72.5	122.91	0.75	282	45	74	78	1.9	4.0		17.98	**100.5**
11	75	124.73	0.73	282	45	75	78	2	4.0		17.74	**100.0**
	77.5	126.55	0.73	281	45	75	78	1.9	4.0		17.73	**101.3**
	80	128.32	0.71	281	45	75	79	1.9	4.0		17.48	**98.4**
12	82.5	130.09	0.7	280	45	75	79	1.9	4.0		17.35	**99.7**
	85	131.82	0.69	280	45	75	79	1.8	3.5		17.22	**98.1**
	87.5	133.58	0.7	280	45	75	79	1.8	3.5		17.35	**100.5**
	90	135.35										**100.3**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - Partculate & Metals
Date:	April 25 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.40	mm
DRY REF GAS VOLUME SAMPLED	3.786	m^3
AVGERGE ISOKINETICITY	101.1	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.3	°C
AVERAGE GAS MOISTURE BY VOLUME	16.6	%
AVERAGE GAS VELOCITY	18.47	m/s
BAROMETRIC PRESSURE (Station)	101.219	Kpa
STATIC PRESSURE	-2.689	Kpa
ABSOLUTE GAS PRESSURE	98.530	Kpa
OXYGEN CONCENTRATION	8.98	%
CARBON DIOXIDE CONCENTRATION	10.85	%
CARBON MONOXIDE CONCENTRATION	15.1	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.30	m^3/s
DRY REF GAS FLOWRATE	15.91	Rm^3/s
DRY ADJ GAS FLOWRATE	19.16	Rm^3/s
WET REF GAS FLOWRATE	19.10	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.9	mg
	-FILTER	0.2	mg
	-TOTAL	1.1	mg
DRY REF GAS VOLUME SAMPLED		3.786	m^3
PARTICULATE CONC. - ACTUAL		0.169	mg/m^3
PARTICULATE CONC. - DRY REF		0.291	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.241	mg/m^3
PARTICULATE CONC. - WET REF		0.242	mg/m^3
PARTICULATE EMISSION RATE		0.004623	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 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	April 25 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.2		
DGMCF	1.002	**Probe (mg)**	0.9		
Barometric Pressure	29.89 "Hg	**CWTR (g)**	533.4		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	22.5		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.41 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.98
CO2%	10.85
COppm	15.1

Measured H2O
16.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	37.12	0.95	280	52	69	69	2.4	4.0		20.28	
	2.5	39.11	0.92	287	47	69	69	2.4	4.0		20.05	**100.0**
	5	41.10	0.93	287	46	69	70	2.3	4.0		20.16	**102.1**
2	7.5	43.09	0.93	287	45	69	71	2.3	4.0		20.16	**101.4**
	10	45.07	0.92	287	44	70	73	2.3	4.0		20.05	**100.8**
	12.5	47.05	0.95	287	45	69	73	2.3	4.0		20.38	**101.1**
3	15	49.09	0.94	287	45	70	74	2.4	4.0		20.27	**102.6**
	17.5	51.13	0.94	287	46	70	74	2.4	4.0		20.27	**102.9**
	20	53.13	0.91	287	46	71	75	2.3	4.0		19.94	**100.9**
4	22.5	55.13	0.85	287	47	71	75	2.3	4.0		19.27	**102.4**
	25	56.74	0.82	287	47	72	76	2.1	4.0		18.93	**85.3**
	27.5	58.60	0.85	288	47	72	76	2.4	4.0		19.29	**100.0**
5	30	60.47	0.83	287	47	72	77	2.2	4.0		19.05	**98.9**
	32.5	62.19	0.81	288	47	72	77	2	4.0		18.83	**91.9**
	35	64.09	0.81	289	47	73	77	2.2	4.0		18.84	**102.8**
6	37.5	65.95	0.83	288	47	72	77	2	4.0		19.06	**100.6**
	40	67.84	0.79	289	48	73	77	2.1	4.0		18.61	**101.0**
	42.5	69.66	0.78	289	48	73	77	2	4.0		18.49	**99.7**
7	45	71.47	0.77	288	48	73	77	2	4.0		18.36	**99.7**
	47.5	73.33	0.73	288	48	73	77	2	4.0		17.87	**103.1**
	50	75.11	0.74	287	48	74	78	1.8	3.5		17.98	**101.3**
8	52.5	76.94	0.73	288	48	74	78	2	4.0		17.87	**103.2**
	55	78.72	0.75	288	48	74	78	1.9	4.0		18.12	**101.1**
	57.5	80.51	0.77	287	48	74	78	1.9	4.0		18.34	**100.3**
9	60	82.35	0.8	287	48	74	78	2	4.0		18.70	**101.7**
	62.5	84.21	0.82	288	49	75	79	2	4.0		18.94	**100.9**
	65	86.09	0.83	288	48	75	79	2.1	4.0		19.06	**100.6**
10	67.5	87.98	0.84	288	49	75	79	2.1	4.0		19.17	**100.5**
	70	89.90	0.86	288	48	75	79	2.1	4.0		19.40	**101.5**
	72.5	91.85	0.86	289	48	77	81	2.2	4.0		19.41	**101.9**
11	75	93.79	0.66	289	48	76	80	2.2	4.0		17.01	**101.1**
	77.5	95.49	0.64	285	48	75	79	1.6	3.5		16.70	**101.3**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	April 25 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.2		
DGMCF	1.002	**Probe (mg)**	0.9		
Barometric Pressure	29.89 "Hg	**CWTR (g)**	533.4		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	22.5		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.41 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.98
CO2%	10.85
COppm	15.1

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 %
	80	97.14	0.6	285	48	76	81	1.6	3.5		16.17	**99.6**
12	82.5	98.77	0.6	285	48	75	80	1.5	3.5		16.17	**101.4**
	85	100.39	0.59	285	48	78	80	1.5	3.5		16.04	**100.9**
	87.5	102.04	0.59	285	48	76	79	1.6	3.5		16.04	**103.4**
	90	103.66								0.41		**101.8**
1	0	104.07	0.88	285	57	74	75	2.2	4.0		19.58	
	2.5	106.03	0.9	286	48	75	75	2.2	4.0		19.82	**101.6**
	5	108.01	0.92	286	47	74	76	2.3	4.0		20.04	**101.4**
2	7.5	110.00	0.89	286	47	75	77	2.3	4.0		19.71	**100.8**
	10	111.99	0.89	287	47	75	77	2.3	4.0		19.72	**102.3**
	12.5	113.97	0.9	285	48	75	78	2.3	4.0		19.81	**101.9**
3	15	115.94	0.87	286	48	75	78	2.3	4.0		19.49	**100.6**
	17.5	117.88	0.88	286	48	77	80	2.2	4.0		19.60	**100.8**
	20	119.84	0.87	285	48	75	78	2.2	4.0		19.47	**100.9**
4	22.5	121.78	0.8	285	48	76	79	2.2	4.0		18.67	**100.7**
	25	123.63	0.81	287	49	75	81	2	4.0		18.81	**100.0**
	27.5	125.50	0.82	286	49	76	80	2.1	4.0		18.92	**100.4**
5	30	127.41	0.8	286	48	75	79	2.1	4.0		18.69	**101.9**
	32.5	129.31	0.73	286	47	75	78	2.1	4.0		17.85	**102.8**
	35	131.08	0.75	286	47	75	79	1.8	4.0		18.09	**100.4**
6	37.5	132.92	0.66	287	46	75	79	2	4.0		16.98	**102.8**
	40	134.65	0.65	286	46	76	79	1.7	3.5		16.84	**103.1**
	42.5	136.31	0.68	287	47	76	79	1.6	3.5		17.24	**99.5**
7	45	138.03	0.72	287	46	75	78	1.7	3.5		17.74	**100.8**
	47.5	139.81	0.71	286	46	75	78	1.9	4.0		17.60	**101.6**
	50	141.57	0.72	287	46	75	79	1.8	4.0		17.74	**101.1**
8	52.5	143.34	0.74	287	46	76	80	1.9	4.0		17.98	**101.0**
	55	145.10	0.7	286	46	76	79	1.9	4.0		17.48	**98.9**
	57.5	146.86	0.7	286	46	75	78	1.9	4.0		17.48	**101.7**
9	60	148.62	0.73	286	46	75	78	1.8	4.0		17.85	**101.9**
	62.5	150.41	0.74	285	46	80	83	1.9	4.0		17.96	**101.4**
	65	152.23	0.77	288	46	76	79	2	4.0		18.36	**101.4**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Partculate & Metals	**Test Location:**	APC Outlet No. 2
Date:	April 25 2023	**Operator:**	BP

Pitot Factor	0.842	**Filter (mg)**	0.2		
DGMCF	1.002	**Probe (mg)**	0.9		
Barometric Pressure	29.89 "Hg	**CWTR (g)**	533.4		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	22.5		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.41 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.98
CO2%	10.85
COppm	15.1

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 %
10	67.5	154.09	0.75	284	46	75	79	2	4.0		18.07	**102.6**
	70	155.93	0.74	284	46	75	79	2	4.0		17.95	**102.7**
	72.5	157.74	0.74	284	46	75	79	1.9	4.0		17.95	**101.7**
11	75	159.54	0.67	284	46	75	79	1.9	4.0		17.08	**101.1**
	77.5	161.25	0.66	284	46	75	79	1.7	3.5		16.95	**100.9**
	80	162.94	0.69	284	46	75	79	1.7	3.5		17.33	**100.5**
12	82.5	164.69	0.7	284	46	76	79	1.8	4.0		17.46	**101.7**
	85	166.47	0.69	284	46	76	79	1.8	4.0		17.33	**102.7**
	87.5	168.24	0.68	284	46	75	78	1.8	4.0		17.20	**102.8**
	90	170.08										**107.9**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	4 - Particulate and Metals
Date:	April 26, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.842
DGM CORRECTION FACTOR		0.961
NOZZLE DIAMETER		6.40 mm
DRY REF GAS VOLUME SAMPLED		3.909 m^3
AVGERGE ISOKINETICITY		99.3 %
STACK DIAMETER		1.37 m
LENGTH		0.00 m
WIDTH		0.00 m
AREA OF STACK or DUCT		1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE		139.0 °C
AVERAGE GAS MOISTURE BY VOLUME		16.3 %
AVERAGE GAS VELOCITY		19.22 m/s
BAROMETRIC PRESSURE (Station)		101.321 Kpa
STATIC PRESSURE		-2.689 Kpa
ABSOLUTE GAS PRESSURE		98.632 Kpa
OXYGEN CONCENTRATION		9.08 %
CARBON DIOXIDE CONCENTRATION		10.64 %
CARBON MONOXIDE CONCENTRATION		16.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE		28.40 m^3/s
DRY REF GAS FLOWRATE		16.73 Rm^3/s
DRY ADJ GAS FLOWRATE		19.97 Rm^3/s
WET REF GAS FLOWRATE		20.00 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.5 mg
	-FILTER	0.1 mg
	-TOTAL	0.6 mg
DRY REF GAS VOLUME SAMPLED		3.909 m^3
PARTICULATE CONC. - ACTUAL		0.090 mg/m^3
PARTICULATE CONC. - DRY REF		0.154 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.129 mg/m^3
PARTICULATE CONC. - WET REF		0.128 mg/m^3
PARTICULATE EMISSION RATE		0.002568 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.:	4 - Particulate and Metals	**Test Location:**	APC Outlet No. 2
Date:	April 26, 2023	**Operator:**	RW

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	0.961	**Probe (mg)**	0.5		
Barometric Pressure	29.92 "Hg	**CWTR (g)**	537.7		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	23.5		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.38 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.08
CO2%	10.64
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	25.85	0.95	280	58	61	60	2	3.0		20.26	
	2.5	27.81	1.1	281	54	61	60	2.1	3.0		21.82	**95.6**
	5	29.81	1.1	281	53	61	60	2.1	3.0		21.82	**90.8**
2	7.5	31.92	1	281	50	62	61	2.1	3.5		20.81	**95.7**
	10	33.82	1.1	281	49	62	61	2.2	3.5		21.82	**90.2**
	12.5	35.89	1	281	48	62	61	2.2	3.5		20.81	**93.8**
3	15	37.95	0.95	281	47	63	61	2.1	3.5		20.28	**97.9**
	17.5	39.98	0.94	281	47	63	61	2.1	3.5		20.17	**98.8**
	20	42.01	0.94	281	47	64	61	2.1	3.5		20.17	**99.4**
4	22.5	44.03	0.92	281	46	64	61	2.1	3.5		19.96	**98.8**
	25	46.05	0.9	281	46	65	61	2.1	3.5		19.74	**99.8**
	27.5	48.07	0.9	281	46	65	61	2.1	3.5		19.74	**100.8**
5	30	50.08	0.82	281	46	65	61	1.9	3.5		18.84	**100.4**
	32.5	52.02	0.8	281	46	65	61	1.9	3.5		18.61	**101.4**
	35	53.89	0.79	281	45	66	62	1.9	3.5		18.49	**99.0**
6	37.5	55.79	0.7	281	44	66	62	1.7	3.0		17.41	**101.0**
	40	57.61	0.74	281	44	66	62	1.7	3.0		17.90	**102.7**
	42.5	59.44	0.72	281	44	67	62	1.7	3.0		17.65	**100.5**
7	45	61.27	0.75	281	44	67	62	1.8	3.0		18.02	**101.8**
	47.5	63.14	0.76	281	43	67	62	1.8	3.0		18.14	**101.9**
	50	64.97	0.76	281	43	67	62	1.8	3.0		18.14	**99.1**
8	52.5	66.85	0.8	282	43	67	63	1.9	3.5		18.62	**101.8**
	55	68.73	0.82	282	43	67	62	1.9	3.5		18.85	**99.2**
	57.5	70.67	0.85	282	43	68	63	1.9	3.5		19.19	**101.2**
9	60	72.59	0.85	282	43	68	63	1.9	3.5		19.19	**98.2**
	62.5	74.53	0.85	282	43	68	63	1.9	3.5		19.19	**99.2**
	65	76.43	0.84	282	43	68	63	1.9	3.5		19.08	**97.2**
10	67.5	78.38	0.82	282	43	68	63	1.9	3.5		18.85	**100.3**
	70	80.31	0.82	282	44	68	63	1.9	3.5		18.85	**100.5**
	72.5	82.24	0.82	282	44	68	63	1.9	3.5		18.85	**100.5**
11	75	84.16	0.8	282	43	68	64	1.9	3.5		18.62	**100.0**
	77.5	86.08	0.8	282	43	68	64	1.9	3.5		18.62	**101.1**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	4 - Particulate and Metals	**Test Location:**	APC Outlet No. 2
Date:	April 26, 2023	**Operator:**	RW

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	0.961	**Probe (mg)**	0.5		
Barometric Pressure	29.92 "Hg	**CWTR (g)**	537.7		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	23.5		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.38 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.08
CO2%	10.64
COppm	16.5

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	80	88.02	0.8	282	43	68	64	1.9	3.5		18.62	**102.2**
12	82.5	89.93	0.7	282	43	68	64	1.7	3.5		17.42	**100.6**
	85	91.74	0.7	282	44	68	64	1.7	3.5		17.42	**101.8**
	87.5	93.55	0.7	282	44	68	64	1.7	3.5		17.42	**101.8**
	90	95.35								0.38		**101.3**
1	0	95.73	0.85	282	54	64	63	1.9	3.5		19.19	
	2.5	97.64	1	283	45	63	63	2.2	3.5		20.83	**98.0**
	5	99.64	0.98	283	40	64	63	2.1	3.5		20.62	**94.9**
2	7.5	101.61	1	283	39	63	63	2.2	3.5		20.83	**94.3**
	10	103.68	1	284	39	64	63	2.2	3.5		20.85	**98.2**
	12.5	105.76	1	284	39	64	63	2.2	3.5		20.85	**98.6**
3	15	107.83	1	284	40	65	63	2.2	3.5		20.85	**98.2**
	17.5	109.92	1	285	40	65	63	2.2	3.5		20.86	**99.0**
	20	111.99	1	285	40	66	63	2.2	3.5		20.86	**98.1**
4	22.5	114.08	0.95	285	40	66	63	2.1	3.5		20.33	**99.0**
	25	116.10	0.94	285	40	67	64	2.1	3.5		20.23	**98.1**
	27.5	118.15	0.91	285	40	67	63	2.1	3.5		19.90	**99.9**
5	30	120.20	0.85	285	40	67	64	1.9	3.5		19.23	**101.7**
	32.5	122.15	0.85	285	41	67	64	1.9	3.5		19.23	**99.9**
	35	124.06	0.85	284	41	68	64	2	3.5		19.22	**97.9**
6	37.5	126.06	0.75	284	40	68	64	1.8	3.5		18.05	**102.3**
	40	127.93	0.75	284	41	68	64	1.8	3.5		18.05	**101.8**
	42.5	129.81	0.75	284	41	68	64	1.7	3.5		18.05	**102.4**
7	45	131.63	0.8	284	41	68	64	1.8	3.5		18.65	**99.1**
	47.5	133.54	0.8	283	40	68	64	1.8	3.5		18.63	**100.7**
	50	135.42	0.8	283	40	69	65	1.8	3.5		18.63	**99.0**
8	52.5	137.30	0.81	283	40	68	64	1.9	3.5		18.75	**98.9**
	55	139.30	0.85	283	40	69	64	1.9	3.5		19.21	**104.7**
	57.5	141.15	0.83	283	40	68	64	1.9	3.5		18.98	**94.5**
9	60	143.00	0.83	283	39	68	65	1.9	3.5		18.98	**95.7**
	62.5	144.92	0.85	282	40	68	64	1.9	3.5		19.19	**99.2**
	65	146.83	0.85	282	39	69	65	1.9	3.5		19.19	**97.6**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	4 - Particulate and Metals	**Test Location:**	APC Outlet No. 2
Date:	April 26, 2023	**Operator:**	RW

Pitot Factor	0.842	**Filter (mg)**	0.1		
DGMCF	0.961	**Probe (mg)**	0.5		
Barometric Pressure	29.92 "Hg	**CWTR (g)**	537.7		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	23.5		
Nozzle	0.2521 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.38 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.08
CO2%	10.64
COppm	16.5

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
10	67.5	148.81	0.86	281	39	69	65	2	3.5		19.29	**101.0**
	70	150.80	0.87	281	40	69	65	2	3.5		19.41	**100.8**
	72.5	152.75	0.87	281	40	69	65	2	3.5		19.41	**98.2**
11	75	154.70	0.8	281	40	69	65	1.8	3.5		18.61	**98.2**
	77.5	156.61	0.8	281	40	69	65	1.8	3.5		18.61	**100.3**
	80	158.50	0.79	281	40	69	65	1.8	3.5		18.49	**99.2**
12	82.5	160.40	0.7	281	40	69	65	1.6	3.5		17.41	**100.4**
	85	162.18	0.7	281	40	69	65	1.6	3.5		17.41	**99.9**
	87.5	164.01	0.7	281	40	69	65	1.6	3.5		17.41	**102.7**
	90	165.83										**102.1**

APPENDIX 23

Particle Size Distribution Test Emission Calculations
(12 pages)

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	April 25, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 1

Project No.: 22230
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	0.961
Pitot Factor	0.844
Barometric Pressure (" Hg)	29.88
Static Pressure ("H_2O)	-10.20
Oxygen Content (%)	9.01
Carbon Dioxide Content (%)	10.17
Carbon Monoxide Content (PPM)	11.7
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.9 l/min*
Cyclone Qs_{actual}	0.59 ft^3/min	16.6 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.9 Rft^{3*}	1.186 Rm^{3*}
Average Cyclone I Cut Diameter		10.23 µm
Average Cyclone IV Cut Diameter		2.35 µm
Average Isokineticity		92.1 %
Stack Gas Physical Parameters		
B_{ws}	15.7 % v/v	
Average m	220.1 (dimensionless)	
M_d	29.99 lbs/lbs mole	
M_w	28.10 lbs/lbs mole	
Average T_s	282 °F	139 °C
Average U_s	61.5 ft/s	18.7 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	58768 ACFM	27.7 m^3/s
Wet Reference Q_s	41413 SCFM*	19.5 Rm^3/s*
Dry Reference Q_s	34893 SCFM*	16.5 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.59 mg/Rm^{3*}	0.0097 g/s
Total Part. (b)	3.63 mg/Rm^{3*}	0.060 g/s
PM_{10} Part. (b)	3.46 mg/Rm^{3*}	0.057 g/s
$PM_{2.5}$ Part. (b)	3.37 mg/Rm^{3*}	0.056 g/s
Cond. Part.	3.04 mg/Rm^{3*}	0.050 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	476.0	650.0	767.0	949.8	
final volume or weight (ml or mg)	630.0	650.0	767.0	958.8	
gain in volume or weight (ml or mg)	154.0	0.0	0.0	9.0	0.0
				TOTAL	163.0

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.2	<0.1	0.3	<0.1	3.6

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: April 25, 2023	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22230
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	10.5	97.29	0.84	0.35	281	60	60	0.38	4.0	62.8	10.34	2.40	89.1
	2	10.5	10.5	100.93	0.82	0.35	284	60	60	0.38	4.0	62.2	10.27	2.37	91.3
	3	21.0	10.2	104.59	0.83	0.35	285	61	60	0.38	4.0	62.6	10.42	2.43	89.1
	4	31.2	9.9	108.10	0.80	0.35	284	62	60	0.38	4.0	61.4	10.12	2.31	94.4
	5	41.1	9.5	111.65	0.70	0.35	284	62	60	0.38	4.0	57.5	10.17	2.33	100.2
	6	50.7	9.5	115.04	0.69	0.35	281	63	61	0.38	4.0	56.9	10.34	2.40	98.2
		60.1		118.33											
1	1	0.00	10.5	118.33	0.97	0.35	281	62	61	0.38	4.0	67.5	10.07	2.29	86.1
	2	10.5	11.0	122.10	0.96	0.35	281	62	61	0.38	4.0	67.2	10.19	2.34	85.1
	3	21.4	10.2	125.99	0.90	0.35	281	62	61	0.38	4.0	65.0	10.28	2.37	86.8
	4	31.7	9.8	129.57	0.80	0.35	281	63	62	0.38	4.0	61.3	10.12	2.31	94.1
	5	41.5	9.2	133.08	0.70	0.35	280	63	62	0.38	4.0	57.3	10.25	2.36	98.6
	6	50.7	9.2	136.32	0.67	0.35	280	63	62	0.38	4.0	56.1	10.17	2.33	102.1
		59.9		139.60											
Averages					**0.81**		**282**	**61**		**0.38**		**61.5**	**10.23**	**2.35**	**92.1**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	April 25, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 1

Project No.: 22230
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	0.961
Pitot Factor	0.844
Barometric Pressure (" Hg)	29.88
Static Pressure ("H_2O)	-10.20
Oxygen Content (%)	9.59
Carbon Dioxide Content (%)	9.61
Carbon Monoxide Content (PPM)	8.8
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.9 l/min*
Cyclone Qs_{actual}	0.59 ft^3/min	16.7 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.1 Rft^3*	1.192 Rm^3*
Average Cyclone I Cut Diameter		10.36 µm
Average Cyclone IV Cut Diameter		2.35 µm
Average Isokineticity		95.0 %
Stack Gas Physical Parameters		
B_{ws}	14.7 % v/v	
Average m	222.7 (dimensionless)	
M_d	29.92 lbs/lbs mole	
M_w	28.17 lbs/lbs mole	
Average T_s	288 °F	142 °C
Average U_s	60.9 ft/s	18.6 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	58207 ACFM	27.5 m^3/s
Wet Reference Q_s	40703 SCFM*	19.2 Rm^3/s*
Dry Reference Q_s	34721 SCFM*	16.4 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.67 mg/Rm^3*	0.0110 g/s
Total Part. (b)	5.12 mg/Rm^3*	0.084 g/s
PM_{10} Part. (b)	4.78 mg/Rm^3*	0.078 g/s
$PM_{2.5}$ Part. (b)	4.70 mg/Rm^3*	0.077 g/s
Cond. Part.	4.45 mg/Rm^3*	0.073 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	527.0	672.5	739.6	921.9	
final volume or weight (ml or mg)	667.9	673.5	738.8	931.9	
gain in volume or weight (ml or mg)	140.9	1.0	-0.8	10.0	0.0
				TOTAL	151.1

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.4	<0.1	0.2	<0.1	5.3

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: April 25, 2023	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 22230
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 1	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
2	1	0.00	10.2	39.68	0.87	0.35	285	62	61	0.38	3.0	64.0	10.28	2.38	89.0
	2	10.2	10.1	43.32	0.85	0.35	287	61	60	0.38	3.0	63.4	10.41	2.43	88.7
	3	20.3	10.2	46.85	0.80	0.35	286	61	60	0.38	3.0	61.4	10.17	2.33	94.4
	4	30.5	10.0	50.52	0.76	0.35	286	62	61	0.38	3.0	59.9	10.42	2.43	93.6
	5	40.5	9.3	54.01	0.65	0.35	286	63	61	0.38	3.0	55.4	10.34	2.40	102.3
	6	49.8	9.3	57.31	0.61	0.35	287	63	61	0.38	3.0	53.7	10.25	2.36	107.0
		59.1		60.63											
1	1	0.00	11.0	60.63	0.96	0.35	289	63	62	0.38	3.0	67.4	10.48	2.46	82.8
	2	11.0	10.9	64.45	0.97	0.35	289	63	63	0.38	3.0	67.8	10.11	2.31	86.7
	3	21.9	10.6	68.45	0.85	0.35	290	64	62	0.38	3.0	63.5	10.29	2.38	90.4
	4	32.5	10.0	72.23	0.78	0.35	289	64	63	0.38	3.0	60.8	10.33	2.40	93.9
	5	42.5	9.3	75.78	0.70	0.35	289	64	63	0.38	3.0	57.6	9.25	1.98	115.8
	6	51.8	9.1	79.66	0.66	0.35	289	64	62	0.38	3.0	55.9	11.99	3.10	82.7
		60.9		82.29											
Averages					**0.79**		**288**	**62**		**0.38**		**60.9**	**10.36**	**2.35**	**95.0**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	April 25, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 1

Project No.: 22230
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	0.961
Pitot Factor	0.844
Barometric Pressure (" Hg)	29.88
Static Pressure ("H_2O)	-10.20
Oxygen Content (%)	9.09
Carbon Dioxide Content (%)	9.94
Carbon Monoxide Content (PPM)	10.6
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	10.0 l/min*
Cyclone Qs_{actual}	0.59 ft^3/min	16.8 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.4 Rft^3*	1.200 Rm^3*
Average Cyclone I Cut Diameter		10.17 µm
Average Cyclone IV Cut Diameter		2.33 µm
Average Isokineticity		98.1 %
Stack Gas Physical Parameters		
B_{ws}	15.4 % v/v	
Average m	220.1 (dimensionless)	
M_d	29.95 lbs/lbs mole	
M_w	28.11 lbs/lbs mole	
Average T_s	281 °F	138 °C
Average U_s	58.2 ft/s	17.8 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	55667 ACFM	26.3 m^3/s
Wet Reference Q_s	39294 SCFM*	18.5 Rm^3/s*
Dry Reference Q_s	33224 SCFM*	15.7 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	2.67 mg/Rm^3*	0.0418 g/s
Total Part. (b)	7.42 mg/Rm^3*	0.116 g/s
PM_{10} Part. (b)	6.75 mg/Rm^3*	0.106 g/s
$PM_{2.5}$ Part. (b)	5.58 mg/Rm^3*	0.088 g/s
Cond. Part.	4.75 mg/Rm^3*	0.074 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	476.0	650.0	767.0	958.8	
final volume or weight (ml or mg)	627.4	650.6	766.1	969.0	
gain in volume or weight (ml or mg)	151.4	0.6	-0.9	10.2	0.0
				TOTAL	161.3

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.8	1.4	0.9	<0.1	5.7

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: April 25, 2023	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22230
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	10.5	82.39	0.92	0.35	286	63	62	0.38	4.0	66.0	10.10	2.30	88.5
	2	10.5	10.4	86.20	0.89	0.35	288	62	62	0.38	4.0	65.0	10.28	2.38	87.9
	3	20.9	10.1	89.87	0.76	0.35	284	62	62	0.38	4.0	59.9	10.26	2.37	95.1
	4	31.0	9.8	93.44	0.68	0.35	283	62	62	0.38	4.0	56.6	9.87	2.21	106.0
	5	40.9	9.1	97.11	0.66	0.35	281	64	63	0.38	4.0	55.7	10.11	2.30	103.9
	6	50.0	8.8	100.40	0.59	0.35	278	65	63	0.38	4.0	52.5	10.20	2.34	108.3
		58.8		103.55											
1	1	0.00	11.1	103.55	0.82	0.35	280	65	64	0.38	4.0	62.0	10.17	2.33	92.3
	2	11.1	11.1	107.52	0.80	0.35	280	65	64	0.38	4.0	61.3	10.28	2.37	92.0
	3	22.2	10.4	111.45	0.77	0.35	277	66	64	0.38	4.0	60.0	10.24	2.35	94.1
	4	32.6	10.0	115.15	0.67	0.35	278	66	64	0.38	4.0	56.0	10.25	2.36	100.8
	5	42.6	9.4	118.69	0.58	0.35	277	66	65	0.38	4.0	52.0	10.14	2.31	110.0
	6	52.0	9.2	122.10	0.58	0.35	276	66	65	0.38	4.0	52.0	10.14	2.31	109.8
		61.2		125.41											
Averages					**0.73**		**281**	**64**		**0.38**		**58.2**	**10.17**	**2.33**	**98.1**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date: April 24, 2023	**Project No.:** 22230
Client: Covanta	**Operator:** DU
Plant: DYEC	
Location: Courtice, Ontario	
Test No.: 1	
Test Location: APC Outlet No. 2	

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.961
Pitot Factor	0.844
Barometric Pressure (" Hg)	29.78
Static Pressure ("H_2O)	-10.80
Oxygen Content (%)	9.43
Carbon Dioxide Content (%)	10.40
Carbon Monoxide Content (PPM)	12.7
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.36 Rft^3/min*	10.1 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	16.9 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.6 Rft^3*	1.208 Rm^3*
Average Cyclone I Cut Diameter		10.14 µm
Average Cyclone IV Cut Diameter		2.32 µm
Average Isokineticity		91.7 %
Stack Gas Physical Parameters		
B_{ws}	15.1 % v/v	
Average m	220.4 (dimensionless)	
M_d	30.04 lbs/lbs mole	
M_w	28.22 lbs/lbs mole	
Average T_s	281 °F	138 °C
Average U_s	62.5 ft/s	19.0 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	59706 ACFM	28.2 m^3/s
Wet Reference Q_s	41932 SCFM*	19.8 Rm^3/s*
Dry Reference Q_s	35604 SCFM*	16.8 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.66 mg/Rm^3*	0.0278 g/s
Total Part. (b)	10.93 mg/Rm^3*	0.184 g/s
PM_{10} Part. (b)	10.35 mg/Rm^3*	0.174 g/s
$PM_{2.5}$ Part. (b)	10.27 mg/Rm^3*	0.173 g/s
Cond. Part.	9.27 mg/Rm^3*	0.156 g/s

(a) does not include condensibles

(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	527.2	672.3	741.2	905.2	
final volume or weight (ml or mg)	677.2	672.5	739.9	914.2	
gain in volume or weight (ml or mg)	150.0	0.2	-1.3	9.0	0.0
				TOTAL	157.9

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.7	<0.1	1.1	0.1	11.2

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: April 24, 2023	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22230
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	67.46	0.98	0.35	279	65	65	0.38	2.5	67.8	10.27	2.37	83.4
	2	10.5	10.5	71.20	0.92	0.35	279	65	65	0.38	3.0	65.7	10.55	2.48	82.8
	3	21.0	10.1	74.80	0.84	0.35	280	65	65	0.38	4.0	62.8	10.01	2.26	93.5
	4	31.1	10.0	78.52	0.82	0.35	279	68	65	0.38	4.0	62.0	10.72	2.55	85.8
	5	41.1	9.6	81.87	0.76	0.35	280	69	66	0.38	4.0	59.7	9.90	2.22	99.9
	6	50.7	9.2	85.50	0.73	0.35	281	69	66	0.38	4.0	58.6	10.25	2.36	97.1
		59.9		88.81											
1	1	0.00	10.4	88.81	0.88	0.35	280	68	66	0.38	4.0	64.3	9.77	2.17	94.5
	2	10.4	10.3	92.80	0.96	0.35	282	68	67	0.38	4.0	67.2	10.20	2.34	85.3
	3	20.7	10.1	96.52	0.90	0.35	283	68	67	0.38	4.0	65.1	10.17	2.33	88.6
	4	30.8	9.9	100.20	0.83	0.35	282	68	67	0.38	4.0	62.5	9.93	2.23	95.3
	5	40.7	9.7	103.92	0.74	0.35	282	68	66	0.38	4.0	59.0	9.82	2.19	102.5
	6	50.5	9.6	107.63	0.64	0.35	282	68	66	0.38	4.0	54.9	10.13	2.31	105.5
		60.1		111.14											
Averages					**0.83**		**281**	**67**		**0.38**		**62.5**	**10.14**	**2.32**	**91.7**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	April 24, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 2

Project No.: 22230
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	0.961
Pitot Factor	0.844
Barometric Pressure (" Hg)	29.79
Static Pressure ("H_2O)	-10.80
Oxygen Content (%)	9.38
Carbon Dioxide Content (%)	10.44
Carbon Monoxide Content (PPM)	15.9
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}	0.59 ft^3/min	16.6 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.8 Rft^3*	1.182 Rm^3*
Average Cyclone I Cut Diameter		10.27 µm
Average Cyclone IV Cut Diameter		2.38 µm
Average Isokineticity		90.5 %
Stack Gas Physical Parameters		
B_{ws}	15.3 % v/v	
Average m	221.2 (dimensionless)	
M_d	30.05 lbs/lbs mole	
M_w	28.20 lbs/lbs mole	
Average T_s	284 °F	140 °C
Average U_s	62.4 ft/s	19.0 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	59624 ACFM	28.1 m^3/s
Wet Reference Q_s	41701 SCFM*	19.7 Rm^3/s*
Dry Reference Q_s	35315 SCFM*	16.7 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.01 mg/Rm^3*	0.0169 g/s
Total Part. (b)	4.91 mg/Rm^3*	0.082 g/s
PM_{10} Part. (b)	4.23 mg/Rm^3*	0.070 g/s
$PM_{2.5}$ Part. (b)	4.06 mg/Rm^3*	0.068 g/s
Cond. Part.	3.89 mg/Rm^3*	0.065 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	476.0	650.0	767.8	941.5	
final volume or weight (ml or mg)	625.8	650.0	767.0	949.8	
gain in volume or weight (ml or mg)	149.8	0.0	-0.8	8.3	0.0
				TOTAL	157.3

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.8	0.2	0.1	<0.1	4.6

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: April 24, 2023	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 22230
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	11.37	0.98	0.35	284	65	64	0.38	4.0	68.0	10.32	2.39	83.1
	2	10.9	10.5	15.20	0.97	0.35	285	64	64	0.38	4.0	67.7	10.09	2.30	86.4
	3	21.4	10.1	19.03	0.84	0.35	284	65	64	0.38	4.0	63.0	10.25	2.36	90.6
	4	31.4	9.9	22.61	0.81	0.35	284	66	64	0.38	4.0	61.8	10.19	2.34	93.1
	5	41.4	9.6	26.18	0.76	0.35	284	66	64	0.38	4.0	59.9	10.36	2.41	93.9
	6	51.0	9.4	29.54	0.65	0.35	284	67	65	0.38	4.0	55.4	10.38	2.41	101.3
		60.3		32.83											
1	1	0.00	10.3	32.83	0.88	0.35	284	67	65	0.38	4.0	64.5	10.40	2.42	86.8
	2	10.3	10.8	36.43	0.92	0.35	283	67	66	0.38	4.0	65.9	10.53	2.47	83.4
	3	21.0	10.4	40.13	0.88	0.35	284	67	66	0.38	4.0	64.5	10.17	2.33	89.5
	4	31.5	10.0	43.89	0.84	0.35	285	67	66	0.38	4.0	63.0	10.26	2.37	90.6
	5	41.5	9.4	47.46	0.76	0.35	284	68	66	0.38	4.0	59.9	10.16	2.33	96.5
	6	50.9	8.8	50.88	0.64	0.35	284	68	66	0.38	4.0	55.0	10.20	2.35	104.5
		59.7		54.04											
Averages					**0.83**		**284**	**66**		**0.38**		**62.4**	**10.27**	**2.38**	**90.5**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	April 24, 2023
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 2

Project No.: 22230
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	0.961
Pitot Factor	0.844
Barometric Pressure (" Hg)	29.80
Static Pressure ("H_2O)	-10.80
Oxygen Content (%)	9.04
Carbon Dioxide Content (%)	10.66
Carbon Monoxide Content (PPM)	16.5
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}	0.59 ft^3/min	16.8 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.1 Rft^3*	1.192 Rm^3*
Average Cyclone I Cut Diameter		10.18 µm
Average Cyclone IV Cut Diameter		2.33 µm
Average Isokineticity		92.5 %
Stack Gas Physical Parameters		
B_{ws}	15.7 % v/v	
Average m	220.3 (dimensionless)	
M_d	30.07 lbs/lbs mole	
M_w	28.18 lbs/lbs mole	
Average T_s	283 °F	139 °C
Average U_s	61.9 ft/s	18.9 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	59161 ACFM	27.9 m^3/s
Wet Reference Q_s	41466 SCFM*	19.6 Rm^3/s*
Dry Reference Q_s	34967 SCFM*	16.5 Rm^3/s*

Summary of Particulate Emission Rates	**Dry Ref. Conc.**	**Emission Rate**
Total Part. (a)	2.10 mg/Rm^3*	0.0346 g/s
Total Part. (b)	7.13 mg/Rm^3*	0.118 g/s
PM_{10} Part. (b)	5.96 mg/Rm^3*	0.098 g/s
$PM_{2.5}$ Part. (b)	5.20 mg/Rm^3*	0.086 g/s
Cond. Part.	5.04 mg/Rm^3*	0.083 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	**Impinger 1**	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**
initial volume or weight (ml or mg)	527.0	672.5	739.9	914.2	
final volume or weight (ml or mg)	682.2	672.8	739.6	921.9	
gain in volume or weight (ml or mg)	155.2	0.3	-0.3	7.7	0.0
				TOTAL	**162.9**

Particulate Weight Gains	**>10mm**	**<10mm, >2.5mm**	**<2.5mm**	**back-up filter**	**cond. part.**
particulate weight gains (mg)	1.4	0.9	<0.1	<0.1	6.0

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: April 24, 2023	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22230
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	54.15	0.96	0.35	279	65	65	0.38	3.0	67.1	9.92	2.23	88.2
	2	10.9	10.8	58.19	0.94	0.35	282	65	65	0.38	3.0	66.5	10.10	2.30	87.1
	3	21.8	10.1	62.11	0.80	0.35	282	67	65	0.38	3.0	61.4	10.11	2.31	94.3
	4	31.9	9.9	65.76	0.75	0.35	282	67	65	0.38	3.0	59.4	10.18	2.33	96.5
	5	41.8	9.6	69.31	0.72	0.35	282	67	65	0.38	3.0	58.2	10.20	2.34	98.2
	6	51.4	8.9	72.74	0.64	0.35	283	67	65	0.38	3.0	54.9	10.07	2.29	106.1
		60.3		75.97											
1	1	0.00	10.3	75.97	0.90	0.35	283	66	65	0.38	3.0	65.2	10.16	2.33	88.4
	2	10.3	10.6	79.68	0.94	0.35	284	66	65	0.38	3.0	66.6	10.36	2.41	84.2
	3	20.9	10.3	83.37	0.88	0.35	285	66	65	0.38	3.0	64.5	9.93	2.24	92.5
	4	31.2	10.1	87.20	0.84	0.35	284	67	65	0.38	3.0	63.0	10.57	2.49	86.6
	5	41.3	9.6	90.63	0.76	0.35	283	67	65	0.38	3.0	59.9	10.22	2.35	95.4
	6	50.9	8.8	94.05	0.66	0.35	284	67	65	0.38	3.0	55.8	10.34	2.40	100.8
		59.7		97.14											
Averages					**0.82**		**283**	**66**		**0.38**		**61.9**	**10.18**	**2.33**	**92.5**

APPENDIX 24

Acid Gases Test Emission Calculations
(12 pages)

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	1 - M26A
Date:	April 24, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	1.234	m^3
AVGERGE ISOKINETICITY	97.8	%
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	135.9	°C
AVERAGE GAS MOISTURE BY VOLUME	14.7	%
AVERAGE GAS VELOCITY	17.93	m/s
BAROMETRIC PRESSURE (Station)	100.847	Kpa
STATIC PRESSURE	-2.515	Kpa
ABSOLUTE GAS PRESSURE	98.332	Kpa
OXYGEN CONCENTRATION	9.16	%
CARBON DIOXIDE CONCENTRATION	9.96	%
CARBON MONOXIDE CONCENTRATION	16.5	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.49	m^3/s
DRY REF GAS FLOWRATE	15.98	Rm^3/s
DRY ADJ GAS FLOWRATE	18.95	Rm^3/s
WET REF GAS FLOWRATE	18.74	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.234	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No. 1
Date:	April 24, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.78 "Hg	**CWTR (g)**	146.9		
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	9.6		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	9.16
CO2%	9.96
COppm	16.5

Measured H2O
14.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	0	87.56	0.75	276	58	60	59	1.9	6.0		17.97	
	5	90.80	0.75	276	41	60	59	1.75	6.0		17.97	**90.2**
	10	94.16	0.75	276	41	60	59	1.8	6.5		17.97	**93.5**
	15	97.72	0.75	276	42	60	59	1.8	6.5		17.97	**99.0**
	20	101.23	0.73	276	43	60	59	1.8	6.5		17.73	**97.6**
	25	104.83	0.72	276	43	60	59	1.75	6.0		17.61	**101.5**
	30	108.33	0.7	276	44	60	59	1.75	6.5		17.36	**99.4**
	35	111.51	0.72	276	44	60	59	1.8	6.5		17.61	**91.6**
	40	115.45	0.74	277	45	60	60	1.8	6.5		17.86	**111.9**
	45	118.97	0.77	278	46	60	60	1.8	6.5		18.23	**98.6**
	50	122.44	0.77	278	45	61	60	1.8	6.5		18.23	**95.3**
	55	125.97	0.8	279	45	61	60	1.85	6.5		18.60	**96.9**
	60	129.62										**98.3**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	2 - M26A
Date:	April 24, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	1.285	m^3
AVGERGE ISOKINETICITY	97.8	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.6	°C
AVERAGE GAS MOISTURE BY VOLUME	15.4	%
AVERAGE GAS VELOCITY	19.00	m/s
BAROMETRIC PRESSURE (Station)	100.847	Kpa
STATIC PRESSURE	-2.515	Kpa
ABSOLUTE GAS PRESSURE	98.332	Kpa
OXYGEN CONCENTRATION	9.24	%
CARBON DIOXIDE CONCENTRATION	9.87	%
CARBON MONOXIDE CONCENTRATION	9.1	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.07	m^3/s
DRY REF GAS FLOWRATE	16.65	Rm^3/s
DRY ADJ GAS FLOWRATE	19.61	Rm^3/s
WET REF GAS FLOWRATE	19.68	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.285	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No. 1
Date:	April 24, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.78 "Hg	**CWTR (g)**	161.9		
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	9.7		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	9.24
CO2%	9.87
COppm	9.1

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	0	30.34	0.85	278	56	61	59	1.8	5.0		19.19	
	5	33.84	0.85	283	43	60	59	1.9	5.0		19.25	**92.1**
	10	37.36	0.84	283	43	60	62	2	5.0		19.14	**93.0**
	15	41.02	0.81	283	44	61	66	2	5.0		18.79	**97.0**
	20	44.65	0.83	284	45	61	70	2.1	5.0		19.04	**97.5**
	25	48.38	0.83	284	45	62	72	2.1	5.0		19.04	**98.7**
	30	52.08	0.83	284	46	62	74	2.2	5.0		19.04	**97.6**
	35	55.92	0.83	284	46	63	75	2.15	5.0		19.04	**101.2**
	40	59.74	0.81	285	46	63	76	2.05	5.0		18.82	**100.4**
	45	63.46	0.81	284	46	64	77	2.05	5.0		18.81	**99.0**
	50	67.18	0.81	284	47	64	77	2.05	5.0		18.81	**98.7**
	55	70.89	0.83	284	47	64	78	2.1	5.0		19.04	**98.4**
	60	74.68										**99.3**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	3 - M26A
Date:	April 24, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	1.272	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	139.8	°C
AVERAGE GAS MOISTURE BY VOLUME	16.2	%
AVERAGE GAS VELOCITY	18.64	m/s
BAROMETRIC PRESSURE (Station)	100.881	Kpa
STATIC PRESSURE	-2.515	Kpa
ABSOLUTE GAS PRESSURE	98.366	Kpa
OXYGEN CONCENTRATION	8.85	%
CARBON DIOXIDE CONCENTRATION	10.22	%
CARBON MONOXIDE CONCENTRATION	13.1	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.54	m^3/s
DRY REF GAS FLOWRATE	16.16	Rm^3/s
DRY ADJ GAS FLOWRATE	19.67	Rm^3/s
WET REF GAS FLOWRATE	19.31	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.272	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - M26A	**Test Location:**	APC Outlet No. 1
Date:	April 24, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.79 "Hg	**CWTR (g)**	167.8		
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	13.7		
Nozzle	0.2528 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%	8.85
CO2%	10.22
COppm	13.1

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 %
4	0	75.02	0.78	281	59	61	60	1.8	5.5		18.44	
	5	78.62	0.8	283	48	61	61	1.85	5.5		18.70	**99.9**
	10	82.15	0.8	283	44	61	65	1.9	5.5		18.70	**96.8**
	15	85.69	0.78	283	43	61	69	2	6.0		18.46	**96.7**
	20	89.32	0.78	283	43	61	72	2	6.0		18.46	**100.0**
	25	92.97	0.8	284	44	62	74	2.1	6.0		18.71	**100.3**
	30	96.69	0.78	284	45	63	75	2.1	6.0		18.48	**100.7**
	35	100.33	0.78	284	45	64	76	2.1	6.0		18.48	**99.6**
	40	104.04	0.83	284	46	64	77	2.1	6.0		19.06	**101.4**
	45	107.90	0.8	284	47	65	78	2.05	6.0		18.71	**102.1**
	50	111.61	0.8	285	49	65	78	2.05	6.0		18.72	**99.8**
	55	115.33	0.8	285	51	65	79	2.05	6.0		18.72	**100.1**
	60	119.00										**98.7**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	1 - M26A
Date:	April 25, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	1.298	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	135.9	°C
AVERAGE GAS MOISTURE BY VOLUME	16.1	%
AVERAGE GAS VELOCITY	18.74	m/s
BAROMETRIC PRESSURE (Station)	101.151	Kpa
STATIC PRESSURE	-2.689	Kpa
ABSOLUTE GAS PRESSURE	98.462	Kpa
OXYGEN CONCENTRATION	9.3	%
CARBON DIOXIDE CONCENTRATION	10.69	%
CARBON MONOXIDE CONCENTRATION	19.3	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.68	m^3/s
DRY REF GAS FLOWRATE	16.44	Rm^3/s
DRY ADJ GAS FLOWRATE	19.27	Rm^3/s
WET REF GAS FLOWRATE	19.61	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.298	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No. 2
Date:	April 25, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.87 "Hg	**CWTR (g)**	171		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	12.5		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft³	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	9.3
CO2%	10.69
COppm	19.3

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	0	19.32	0.72	273	57	58	58	1.8	5.5		17.58	
	5	22.88	0.77	274	44	58	58	1.9	5.5		18.19	**103.0**
	10	26.42	0.77	275	42	58	60	1.9	5.5		18.21	**99.1**
	15	29.97	0.77	275	41	58	64	1.95	5.5		18.21	**99.3**
	20	33.55	0.83	276	42	59	67	2.05	6.0		18.92	**99.7**
	25	37.22	0.83	277	42	59	69	2.1	6.0		18.93	**98.2**
	30	40.96	0.86	277	43	60	71	2.2	6.0		19.27	**100.0**
	35	44.77	0.86	277	44	60	73	2.2	6.0		19.27	**99.8**
	40	48.70	0.82	278	45	61	74	2.05	6.0		18.83	**102.7**
	45	52.39	0.85	278	46	61	74	2.1	6.0		19.17	**98.6**
	50	56.16	0.85	279	46	62	75	2.15	6.0		19.18	**99.0**
	55	59.98	0.84	280	47	62	75	2.1	6.0		19.08	**100.2**
	60	63.77										**100.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	2 - M26A
Date:	April 25, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	1.312	m^3
AVGERGE ISOKINETICITY	99.3	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	137.6	°C
AVERAGE GAS MOISTURE BY VOLUME	15.8	%
AVERAGE GAS VELOCITY	19.07	m/s
BAROMETRIC PRESSURE (Station)	101.185	Kpa
STATIC PRESSURE	-2.689	Kpa
ABSOLUTE GAS PRESSURE	98.496	Kpa
OXYGEN CONCENTRATION	9.13	%
CARBON DIOXIDE CONCENTRATION	10.95	%
CARBON MONOXIDE CONCENTRATION	13.2	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.18	m^3/s
DRY REF GAS FLOWRATE	16.73	Rm^3/s
DRY ADJ GAS FLOWRATE	19.90	Rm^3/s
WET REF GAS FLOWRATE	19.89	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.312	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No. 2
Date:	April 25, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	172		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	9.5		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	9.13
CO2%	10.95
COppm	13.2

Measured H2O
15.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
4	0	64.72	0.84	278	58	58	58	2.05	8.0		19.03	
	5	68.45	0.91	280	44	58	58	2.15	8.0		19.83	**100.1**
	10	72.26	0.86	280	43	58	61	2.1	8.0		19.28	**98.4**
	15	76.00	0.8	280	43	58	65	1.95	8.0		18.60	**99.0**
	20	79.60	0.76	279	43	59	68	1.9	8.0		18.11	**98.4**
	25	83.20	0.81	279	43	60	70	2.05	8.0		18.70	**100.5**
	30	86.91	0.81	279	44	60	71	2.05	8.0		18.70	**100.1**
	35	90.58	0.85	280	44	61	72	2.1	9.0		19.17	**98.9**
	40	94.39	0.85	280	45	61	72	2.1	9.0		19.17	**100.1**
	45	98.19	0.85	280	46	62	73	2.1	9.0		19.17	**99.9**
	50	101.97	0.9	280	48	62	73	2.15	9.0		19.73	**99.2**
	55	105.82	0.87	281	50	62	74	2.1	9.0		19.41	**98.2**
	60	109.62										**98.5**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	3 - M26A
Date:	April 25, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	1.278	m^3
AVGERGE ISOKINETICITY	99.3	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	137.6	°C
AVERAGE GAS MOISTURE BY VOLUME	15.2	%
AVERAGE GAS VELOCITY	18.46	m/s
BAROMETRIC PRESSURE (Station)	101.185	Kpa
STATIC PRESSURE	-2.689	Kpa
ABSOLUTE GAS PRESSURE	98.496	Kpa
OXYGEN CONCENTRATION	9.19	%
CARBON DIOXIDE CONCENTRATION	10.88	%
CARBON MONOXIDE CONCENTRATION	15.2	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.28	m^3/s
DRY REF GAS FLOWRATE	16.31	Rm^3/s
DRY ADJ GAS FLOWRATE	19.29	Rm^3/s
WET REF GAS FLOWRATE	19.25	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.278	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - M26A	**Test Location:**	APC Outlet No. 2
Date:	April 25, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.88 "Hg	**CWTR (g)**	156.1		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	12.9		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		1	

Combustion Gases	
O2%	9.19
CO2%	10.88
COppm	15.2

Measured H2O
15.2 %

				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 %**
4	0	9.99	0.79	278	59	60	61	1.9	6.0		18.43	
	5	13.61	0.79	280	50	60	62	1.95	6.0		18.46	**99.1**
	10	17.24	0.83	280	44	60	66	2.05	6.0		18.92	**99.4**
	15	20.98	0.83	280	44	60	70	2.05	6.0		18.92	**99.5**
	20	24.72	0.82	280	44	61	72	2.05	6.0		18.81	**99.2**
	25	28.45	0.79	280	45	61	74	2	6.0		18.46	**99.2**
	30	32.13	0.79	280	45	62	75	2	6.0		18.46	**99.5**
	35	35.81	0.81	280	46	63	76	2.05	6.0		18.69	**99.3**
	40	39.53	0.78	280	48	63	76	1.95	6.0		18.34	**99.0**
	45	43.17	0.78	280	50	63	77	1.95	6.0		18.34	**98.7**
	50	46.85	0.74	279	52	64	77	1.9	6.0		17.85	**99.7**
	55	50.52	0.74	279	53	64	77	1.9	6.0		17.85	**101.9**
	60	54.01										**96.9**

APPENDIX 25

SVOC Test Emission Calculations
(18 pages)

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 - SVOC
Date:	April 26, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	5.125	m^3
AVGERGE ISOKINETICITY	99.6	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.3	°C
AVERAGE GAS MOISTURE BY VOLUME	16.3	%
AVERAGE GAS VELOCITY	18.68	m/s
BAROMETRIC PRESSURE (Station)	101.321	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	98.781	Kpa
OXYGEN CONCENTRATION	8.67	%
CARBON DIOXIDE CONCENTRATION	10.37	%
CARBON MONOXIDE CONCENTRATION	9.5	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.60	m^3/s
DRY REF GAS FLOWRATE	16.28	Rm^3/s
DRY ADJ GAS FLOWRATE	20.12	Rm^3/s
WET REF GAS FLOWRATE	19.46	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		5.125	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	April 26, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.92 "Hg	**CWTR (g)**	710.3		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	22.5		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.19 ft³	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.67
CO2%	10.37
COppm	9.5

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	894.09	0.96	275	56	57	57	2.2	7.5		20.33	
	5	897.91	0.98	280	44	57	57	2.25	8.0		20.61	**96.2**
2	10	901.81	0.97	281	43	58	60	2.3	8.0		20.52	**97.5**
	15	905.75	0.97	281	42	58	64	2.35	8.5		20.52	**98.7**
3	20	909.73	0.97	281	42	58	67	2.4	8.5		20.52	**99.3**
	25	913.75	0.97	282	42	59	69	2.4	8.5		20.53	**100.1**
4	30	917.77	0.97	283	42	60	70	2.4	8.5		20.54	**99.8**
	35	921.83	0.87	283	43	60	72	2.2	8.5		19.46	**100.7**
5	40	925.74	0.77	283	43	61	72	1.95	8.0		18.30	**102.2**
	45	929.35	0.72	283	43	61	73	1.8	7.5		17.70	**100.1**
6	50	932.81	0.65	282	44	62	74	1.7	7.5		16.80	**99.1**
	55	936.16	0.65	282	45	62	74	1.7	7.5		16.80	**100.7**
7	60	939.90	0.67	281	48	61	60	1.6	8.0		17.05	**112.4**
	65	942.20	0.7	283	46	60	62	1.8	8.0		17.45	**69.0**
8	70	945.58	0.81	284	45	60	66	2.05	8.5		18.78	**99.3**
	75	949.24	0.81	284	45	61	69	2.05	9.0		18.78	**99.7**
9	80	952.97	0.7	283	45	61	71	1.8	8.5		17.45	**101.2**
	85	956.41	0.77	284	46	62	72	1.95	8.5		18.32	**100.1**
10	90	960.05	0.77	283	46	62	74	1.95	8.5		18.30	**100.9**
	95	963.64	0.74	282	46	62	74	1.9	8.5		17.93	**99.3**
11	100	967.21	0.68	282	47	63	75	1.75	8.5		17.19	**100.6**
	105	970.61	0.71	283	47	63	75	1.8	8.5		17.58	**99.7**
12	110	974.07	0.72	283	47	63	76	1.8	8.5		17.70	**99.4**
	115	977.58	0.74	283	47	64	76	1.9	8.5		17.94	**100.1**
	120	981.14								0.19		**100.0**
1	0	981.33	0.9	281	55	63	67	2.25	9.5		19.76	
	5	985.17	0.95	284	48	63	71	2.3	9.5		20.34	**98.7**
2	10	989.13	0.95	285	47	63	72	2.35	10.0		20.36	**98.9**
	15	993.14	0.91	284	48	63	73	2.2	9.5		19.91	**100.2**
3	20	997.07	0.84	284	49	63	74	2.1	9.5		19.13	**100.1**
	25	1000.88	0.85	283	49	64	75	2.25	9.5		19.23	**100.9**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	April 26, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.92 "Hg	**CWTR (g)**	710.3		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	22.5		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.19 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%	8.67
CO2%	10.37
COppm	9.5

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	30	1004.78	0.82	282	50	64	75	2.1	9.0		18.87	**102.4**
	35	1008.49	0.83	283	51	64	75	2.1	9.0		19.00	**99.1**
5	40	1012.24	0.76	284	51	64	76	1.95	9.0		18.20	**99.6**
	45	1015.86	0.75	284	52	64	76	1.95	9.0		18.08	**100.4**
6	50	1019.59	0.74	284	52	64	76	1.95	9.0		17.95	**104.2**
	55	1023.13	0.69	283	53	65	77	1.8	9.0		17.33	**99.5**
7	60	1026.61	0.76	284	52	65	77	1.95	9.0		18.20	**101.0**
	65	1030.21	0.76	284	51	65	77	1.95	9.0		18.20	**99.7**
8	70	1033.81	0.8	284	49	65	76	2.1	9.5		18.67	**99.7**
	75	1037.51	0.78	284	48	65	76	2.05	9.5		18.43	**100.0**
9	80	1041.17	0.78	283	47	65	76	2.05	9.5		18.42	**100.2**
	85	1044.93	0.82	284	47	65	76	2.1	9.5		18.90	**102.8**
10	90	1048.72	0.82	283	47	65	76	2.1	9.5		18.89	**101.2**
	95	1052.46	0.82	283	47	65	76	2.2	9.5		18.89	**99.8**
11	100	1056.21	0.73	283	47	65	76	1.75	9.0		17.82	**100.1**
	105	1059.62	0.73	282	47	65	76	1.8	9.0		17.81	**96.3**
12	110	1063.09	0.79	282	47	65	76	2.1	9.5		18.53	**98.0**
	115	1066.84	0.81	282	47	65	76	2.05	9.5		18.76	**101.9**
	120	1070.62										**101.4**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - SVOC
Date:	April 26, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	5.217	m^3
AVGERGE ISOKINETICITY	99.9	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	138.2	°C
AVERAGE GAS MOISTURE BY VOLUME	16.0	%
AVERAGE GAS VELOCITY	18.86	m/s
BAROMETRIC PRESSURE (Station)	101.287	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	98.747	Kpa
OXYGEN CONCENTRATION	8.77	%
CARBON DIOXIDE CONCENTRATION	10.18	%
CARBON MONOXIDE CONCENTRATION	8.3	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.86	m^3/s
DRY REF GAS FLOWRATE	16.54	Rm^3/s
DRY ADJ GAS FLOWRATE	20.26	Rm^3/s
WET REF GAS FLOWRATE	19.68	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		5.217	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	April 26, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.91 "Hg	**CWTR (g)**	708.5		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	20		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.44 ft³	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.77
CO2%	10.18
COppm	8.3

Measured H2O
16.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	71.72	0.72	275	56	57	57	1.8	8.0		17.60	
	5	75.18	0.72	282	46	59	61	1.8	8.0		17.68	**100.1**
2	10	78.58	0.82	283	43	59	64	2.05	9.0		18.89	**98.3**
	15	82.17	0.81	281	41	60	67	2.05	9.0		18.74	**97.1**
3	20	85.86	0.8	281	41	60	69	2.05	9.0		18.63	**99.9**
	25	89.55	0.8	282	40	61	70	2.05	9.0		18.64	**100.3**
4	30	93.21	0.8	282	40	61	72	2.05	9.0		18.64	**99.4**
	35	96.86	0.8	282	40	62	73	2.05	9.0		18.64	**98.9**
5	40	100.77	0.8	281	40	62	73	2.05	9.0		18.63	**105.7**
	45	104.72	0.8	282	40	62	73	2.05	9.0		18.64	**106.7**
6	50	108.39	0.78	282	40	63	73	1.95	9.5		18.41	**99.2**
	55	112.02	0.78	282	40	63	74	2.05	10.0		18.41	**99.3**
7	60	115.72	0.68	282	40	63	74	1.7	9.0		17.19	**101.1**
	65	119.14	0.68	282	41	63	74	1.7	9.0		17.19	**100.0**
8	70	122.56	0.79	282	41	63	75	2.05	10.0		18.52	**100.0**
	75	126.27	0.79	281	41	63	75	2.05	10.0		18.51	**100.7**
9	80	130.03	0.83	281	41	64	75	2.1	10.0		18.97	**102.0**
	85	133.80	0.87	282	41	64	74	2.25	11.0		19.44	**99.7**
10	90	137.71	0.87	281	41	64	74	2.25	11.0		19.43	**101.2**
	95	141.68	0.95	281	41	64	74	2.25	11.0		20.30	**102.6**
11	100	145.63	0.96	281	41	64	74	2.4	11.0		20.41	**97.7**
	105	149.65	0.96	281	42	64	73	2.2	11.0		20.41	**99.0**
12	110	153.70	0.94	282	42	64	73	2.25	11.0		20.21	**99.8**
	115	157.66	0.96	282	42	64	73	2.25	11.0		20.42	**98.7**
	120	161.70								0.44		**99.6**
1	0	162.14	0.91	273	49	63	66	2.2	11.0		19.76	
	5	165.88	0.88	280	43	63	69	2.25	11.0		19.52	**94.8**
2	10	169.79	0.92	281	42	63	70	2.2	11.0		19.98	**101.0**
	15	173.66	0.91	281	42	63	71	2.2	11.0		19.87	**97.7**
3	20	177.52	0.9	281	42	63	72	2.2	11.0		19.76	**97.9**
	25	181.40	0.88	281	42	63	72	2.2	11.0		19.54	**98.9**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	April 26, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.91 "Hg	**CWTR (g)**	708.5		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	20		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.44 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.77
CO2%	10.18
COppm	8.3

Measured H2O
16.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
4	30	185.29	0.81	281	43	63	72	2.25	11.0		18.74	**100.3**
	35	189.12	0.83	281	43	63	73	2.15	11.0		18.97	**102.9**
5	40	192.87	0.82	282	44	64	73	2.1	11.0		18.87	**99.4**
	45	196.59	0.79	283	44	64	74	2.1	11.0		18.54	**99.2**
6	50	200.27	0.73	283	44	64	74	2	11.0		17.82	**99.9**
	55	203.86	0.72	283	44	64	74	1.85	11.0		17.70	**101.4**
7	60	207.39	0.72	283	45	64	74	1.85	11.0		17.70	**100.4**
	65	210.92	0.78	283	45	64	75	1.85	11.0		18.42	**100.4**
8	70	214.58	0.77	283	45	64	75	2	11.0		18.30	**99.9**
	75	218.22	0.79	283	45	64	74	1.95	11.0		18.54	**100.0**
9	80	221.89	0.81	284	45	64	74	2	11.0		18.78	**99.6**
	85	225.58	0.8	284	45	65	74	2.05	11.0		18.67	**99.0**
10	90	229.30	0.77	284	46	65	74	2.05	11.0		18.31	**100.4**
	95	232.93	0.82	280	46	64	74	1.95	11.0		18.85	**99.8**
11	100	236.62	0.83	280	46	64	74	2	11.0		18.96	**98.1**
	105	240.46	0.81	271	46	64	74	2.1	11.0		18.62	**101.5**
12	110	244.08	0.87	271	46	64	74	2.05	11.0		19.29	**96.3**
	115	247.91	0.86	271	46	64	74	2.2	11.5		19.18	**98.3**
	120	251.83										**101.2**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - SVOC
Date:	April 27, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.843	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.42	mm
DRY REF GAS VOLUME SAMPLED	5.156	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	136.8	°C
AVERAGE GAS MOISTURE BY VOLUME	16.2	%
AVERAGE GAS VELOCITY	18.68	m/s
BAROMETRIC PRESSURE (Station)	101.355	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	98.815	Kpa
OXYGEN CONCENTRATION	8.77	%
CARBON DIOXIDE CONCENTRATION	10.22	%
CARBON MONOXIDE CONCENTRATION	8.8	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.61	m^3/s
DRY REF GAS FLOWRATE	16.40	Rm^3/s
DRY ADJ GAS FLOWRATE	20.09	Rm^3/s
WET REF GAS FLOWRATE	19.58	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		5.156	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	April 27, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.93 "Hg	**CWTR (g)**	720.5		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	15		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.31 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.77
CO2%	10.22
COppm	8.8

Measured H2O
16.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	253.06	0.97	274	51	55	54	2	8.0		20.42	
	5	256.82	0.9	280	43	55	55	2.15	8.0		19.75	**94.5**
2	10	260.56	0.91	280	42	55	58	2.1	8.5		19.86	**97.9**
	15	264.29	0.96	281	41	55	61	2.1	8.5		20.41	**96.8**
3	20	268.07	0.96	281	41	56	64	2.15	9.0		20.41	**95.3**
	25	271.90	0.93	282	41	56	66	2.2	9.0		20.10	**96.2**
4	30	275.81	0.91	283	42	57	68	2.25	9.5		19.90	**99.7**
	35	279.72	0.87	283	42	58	69	2.25	9.5		19.46	**100.5**
5	40	283.58	0.76	283	43	58	70	2.2	9.5		18.18	**101.3**
	45	287.18	0.77	283	43	59	71	1.95	9.0		18.30	**101.0**
6	50	290.76	0.71	284	44	60	72	1.95	9.0		17.59	**99.5**
	55	294.26	0.66	284	44	60	72	1.85	8.5		16.96	**101.2**
7	60	297.64	0.7	284	44	60	73	1.7	8.5		17.46	**101.3**
	65	301.04	0.76	284	44	61	73	1.75	8.0		18.20	**98.9**
8	70	304.53	0.75	284	44	61	74	1.85	8.5		18.08	**97.3**
	75	308.08	0.77	283	44	61	74	1.9	8.5		18.30	**99.6**
9	80	311.64	0.78	283	44	62	74	1.9	9.0		18.42	**98.5**
	85	315.21	0.82	284	44	62	74	1.95	9.0		18.90	**98.0**
10	90	318.89	0.75	284	45	62	74	2.05	9.0		18.08	**98.6**
	95	322.50	0.75	283	45	62	75	1.95	9.0		18.06	**101.2**
11	100	326.09	0.71	282	45	63	75	1.95	9.0		17.56	**100.4**
	105	329.62	0.71	282	45	63	75	1.8	9.0		17.56	**101.3**
12	110	333.09	0.7	234	45	63	75	1.8	8.5		16.87	**99.6**
	115	336.57	0.71	233	45	63	75	1.8	9.0		16.97	**97.3**
	120	340.50								0.31		**109.0**
1	0	340.81	0.88	245	38	62	63	2	10.0		19.06	
	5	344.60	0.89	282	39	64	65	2.15	10.5		19.67	**96.5**
2	10	348.48	0.96	283	40	64	68	2.25	11.0		20.44	**100.4**
	15	352.39	0.95	283	40	64	70	2.25	11.0		20.33	**97.2**
3	20	356.34	1	283	41	65	72	2.35	11.0		20.86	**98.6**
	25	360.38	0.96	284	41	66	74	2.4	11.5		20.45	**98.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	April 27, 2023	**Operator:**	TT

Pitot Factor	0.843	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.93 "Hg	**CWTR (g)**	720.5		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	15		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.31 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.77
CO2%	10.22
COppm	8.8

Measured H2O
16.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
4	30	364.39	0.87	285	41	66	75	2.35	11.5		19.48	**99.1**
	35	368.33	0.83	284	40	67	76	2.35	11.5		19.02	**102.2**
5	40	372.11	0.8	284	39	67	77	2.1	11.0		18.67	**100.1**
	45	375.79	0.78	283	39	68	78	2.05	10.5		18.42	**99.1**
6	50	379.47	0.71	284	40	68	79	2.05	10.5		17.59	**100.1**
	55	382.98	0.73	284	39	69	79	1.85	10.0		17.83	**100.1**
7	60	386.53	0.77	284	39	69	80	1.85	10.0		18.32	**99.7**
	65	390.23	0.79	284	39	69	80	2.05	10.5		18.55	**101.1**
8	70	393.95	0.78	284	40	69	80	2.1	10.5		18.43	**100.4**
	75	397.65	0.74	283	40	70	80	2.05	10.5		17.94	**100.5**
9	80	401.26	0.77	283	40	70	80	1.9	10.0		18.30	**100.5**
	85	404.98	0.79	282	40	70	81	2.05	10.5		18.53	**101.5**
10	90	408.72	0.78	282	40	70	81	2.05	11.0		18.41	**100.6**
	95	412.45	0.8	282	41	70	81	2.1	11.0		18.64	**101.0**
11	100	416.19	0.76	282	42	71	81	2.05	10.5		18.17	**100.0**
	105	419.91	0.77	256	43	71	81	2.05	11.0		17.97	**101.9**
12	110	423.64	0.76	255	44	71	81	2.05	11.0		17.84	**99.7**
	115	427.34	0.78	255	45	71	81	2.05	11.0		18.07	**99.5**
	120	431.11										**100.1**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - SVOC
Date:	April 26, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.841	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	5.063	m^3
AVGERGE ISOKINETICITY	98.7	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.8	°C
AVERAGE GAS MOISTURE BY VOLUME	15.1	%
AVERAGE GAS VELOCITY	18.72	m/s
BAROMETRIC PRESSURE (Station)	101.321	Kpa
STATIC PRESSURE	-2.689	Kpa
ABSOLUTE GAS PRESSURE	98.632	Kpa
OXYGEN CONCENTRATION	9.08	%
CARBON DIOXIDE CONCENTRATION	10.63	%
CARBON MONOXIDE CONCENTRATION	18.1	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.66	m^3/s
DRY REF GAS FLOWRATE	16.46	Rm^3/s
DRY ADJ GAS FLOWRATE	19.65	Rm^3/s
WET REF GAS FLOWRATE	19.40	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		5.063	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	April 26, 2023	**Operator:**	bp

Pitot Factor	0.841	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.92 "Hg	**CWTR (g)**	647		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	16.8		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.44 ft³	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.08
CO2%	10.63
COppm	18.1

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	71.06	0.6	284	63	63	63	1.3	3.9		16.09	
	5	74.11	0.59	284	58	63	64	1.3	3.9		15.95	**97.1**
2	10	77.10	0.56	284	55	63	66	1.4	4.0		15.54	**95.9**
	15	80.10	0.55	284	54	64	68	1.4	4.5		15.40	**98.6**
3	20	83.08	0.83	284	53	65	69	1.3	4.5		18.92	**98.5**
	25	86.47	0.86	283	53	65	70	2	5.0		19.25	**91.0**
4	30	90.08	0.83	284	53	66	71	2.1	6.0		18.92	**95.2**
	35	93.86	0.78	284	53	67	72	2.3	6.5		18.34	**101.4**
5	40	97.46	0.8	284	53	68	72	1.8	5.5		18.58	**99.5**
	45	101.02	0.8	284	54	68	72	1.9	5.5		18.58	**96.9**
6	50	104.65	0.79	285	54	69	73	2	6.0		18.47	**98.9**
	55	108.30	0.8	285	54	69	74	2	6.0		18.59	**99.9**
7	60	111.88	0.75	286	55	70	74	1.9	6.0		18.01	**97.3**
	65	115.39	0.73	286	53	70	74	1.8	6.0		17.77	**98.5**
8	70	118.89	0.85	286	52	71	75	1.8	6.0		19.17	**99.5**
	75	122.59	0.86	287	51	71	75	2	6.0		19.30	**97.3**
9	80	126.38	0.9	287	51	71	75	2.1	6.5		19.74	**99.2**
	85	130.29	0.92	286	50	72	75	2.2	6.5		19.95	**100.1**
10	90	134.23	0.95	286	51	72	76	2.2	6.5		20.27	**99.6**
	95	138.24	0.91	286	51	72	76	2.3	7.0		19.84	**99.7**
11	100	142.15	0.95	286	52	73	76	2.2	6.5		20.27	**99.3**
	105	146.15	0.92	286	53	73	76	2.3	7.0		19.95	**99.3**
12	110	150.06	0.91	285	53	73	76	2.2	7.0		19.83	**98.7**
	115	153.97	0.89	285	53	73	77	2.2	7.0		19.61	**99.1**
	120	157.93								0.44		**101.4**
1	0	158.37	0.62	285	59	72	72	1.5	5.0		16.36	
	5	161.54	0.71	284	49	71	72	1.5	5.5		17.50	**97.7**
2	10	164.88	0.73	284	47	71	73	1.7	6.0		17.75	**96.2**
	15	168.36	0.71	284	47	72	75	1.8	6.0		17.50	**98.8**
3	20	171.84	0.89	285	47	73	77	1.8	6.0		19.61	**99.9**
	25	175.69	0.9	287	47	72	76	2.2	7.0		19.74	**98.5**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	April 26, 2023	**Operator:**	bp

Pitot Factor	0.841	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.92 "Hg	**CWTR (g)**	647		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	16.8		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.44 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.08
CO2%	10.63
COppm	18.1

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	30	179.60	0.87	287	47	72	75	2.2	7.0		19.41	**99.9**
	35	183.42	0.86	287	48	73	76	2.1	7.0		19.30	**99.4**
5	40	187.23	0.79	287	48	73	76	2.1	7.0		18.50	**99.5**
	45	190.86	0.77	287	49	74	77	1.9	6.9		18.26	**98.9**
6	50	194.47	0.75	287	49	73	77	1.9	6.9		18.02	**99.4**
	55	197.98	0.77	286	48	73	77	1.8	6.5		18.25	**98.0**
7	60	201.57	0.69	286	48	73	77	1.9	6.9		17.28	**98.8**
	65	204.95	0.71	286	48	73	77	1.7	6.0		17.52	**98.3**
8	70	208.37	0.78	286	49	74	77	1.7	6.0		18.37	**98.0**
	75	211.94	0.77	286	49	74	77	1.9	6.9		18.25	**97.5**
9	80	215.56	0.89	286	49	74	77	1.9	6.9		19.62	**99.6**
	85	219.47	0.87	286	49	74	77	2.2	7.5		19.40	**100.1**
10	90	223.29	0.91	286	50	74	77	2.1	7.5		19.84	**98.9**
	95	227.24	0.92	286	50	74	79	2.2	7.5		19.95	**100.0**
11	100	231.19	0.95	285	50	78	79	2.2	8.0		20.26	**99.3**
	105	235.23	0.96	286	49	75	77	2.3	8.0		20.38	**99.5**
12	110	239.27	0.99	285	46	75	82	2.3	8.0		20.68	**99.5**
	115	243.40	0.98	285	48	75	78	2.4	8.0		20.57	**99.7**
	120	247.57										**101.6**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - SVOC
Date:	April 26, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.841	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	5.074	m^3
AVGERGE ISOKINETICITY	99.6	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.5	°C
AVERAGE GAS MOISTURE BY VOLUME	15.7	%
AVERAGE GAS VELOCITY	18.74	m/s
BAROMETRIC PRESSURE (Station)	101.287	Kpa
STATIC PRESSURE	-2.689	Kpa
ABSOLUTE GAS PRESSURE	98.598	Kpa
OXYGEN CONCENTRATION	9.08	%
CARBON DIOXIDE CONCENTRATION	10.50	%
CARBON MONOXIDE CONCENTRATION	17.1	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.69	m^3/s
DRY REF GAS FLOWRATE	16.36	Rm^3/s
DRY ADJ GAS FLOWRATE	19.54	Rm^3/s
WET REF GAS FLOWRATE	19.43	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		5.074	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	April 26, 2023	**Operator:**	bp

Pitot Factor	0.841	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.91 "Hg	**CWTR (g)**	681.3		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	16		
Nozzle	0.251 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%	9.08
CO2%	10.50
COppm	17.1

Measured H2O
15.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	48.04	0.99	284	62	68	68	2.3	5.0		20.70	
	5	52.02	0.98	284	58	68	69	2.3	5.0		20.60	**98.4**
2	10	56.02	0.98	284	54	68	71	2.3	5.5		20.60	**99.3**
	15	60.04	0.99	285	51	69	72	2.3	5.5		20.72	**99.7**
3	20	64.10	0.97	285	49	70	73	2.4	6.0		20.51	**100.0**
	25	68.12	0.95	285	48	70	74	2.3	6.0		20.29	**99.9**
4	30	72.09	0.92	285	47	71	75	2.3	6.0		19.97	**99.6**
	35	75.97	0.91	285	47	71	75	2.3	6.0		19.86	**98.7**
5	40	79.84	0.84	285	47	74	76	2.1	5.5		19.08	**99.0**
	45	83.61	0.84	285	47	72	76	2.1	5.5		19.08	**99.9**
6	50	87.41	0.75	286	46	74	77	1.9	5.0		18.04	**100.9**
	55	91.04	0.72	286	45	74	76	1.9	5.0		17.68	**101.7**
7	60	94.57	0.82	286	45	73	76	1.7	5.0		18.87	**101.1**
	65	98.14	0.79	285	45	73	76	2	5.5		18.51	**95.8**
8	70	101.83	0.84	285	45	73	77	2	5.5		19.08	**100.9**
	75	105.56	0.82	285	45	73	77	2	5.5		18.85	**98.8**
9	80	109.29	0.8	285	45	73	77	2	5.5		18.62	**100.0**
	85	112.97	0.86	286	45	73	77	2	5.5		19.32	**99.9**
10	90	116.74	0.85	286	45	74	77	2.1	6.0		19.21	**98.8**
	95	120.57	0.84	285	45	74	77	2.1	6.0		19.08	**100.9**
11	100	124.34	0.75	285	45	74	77	2	5.5		18.03	**99.8**
	105	127.88	0.75	284	46	74	77	1.8	5.0		18.02	**99.2**
12	110	131.44	0.65	284	46	74	77	1.8	5.0		16.77	**99.6**
	115	134.74	0.62	284	46	74	77	1.6	5.0		16.38	**99.2**
	120	138.01								0.38		**100.6**
1	0	138.39	0.99	285	53	73	73	2.4	6.0		20.72	
	5	142.45	0.94	286	47	73	75	2.4	6.5		20.20	**99.6**
2	10	146.46	0.93	285	46	73	75	2.3	6.0		20.08	**100.8**
	15	150.40	0.93	285	45	73	76	2.3	6.0		20.08	**99.5**
3	20	154.38	0.9	285	45	73	76	2.3	6.0		19.75	**100.4**
	25	158.29	0.92	285	45	73	77	2.2	6.0		19.97	**100.3**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	April 26, 2023	**Operator:**	bp

Pitot Factor	0.841	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.91 "Hg	**CWTR (g)**	681.3		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	16		
Nozzle	0.251 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%	9.08
CO2%	10.50
COppm	17.1

Measured H2O
15.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
4	30	162.18	0.88	285	45	73	77	2.2	6.0		19.53	**98.5**
	35	166.06	0.9	286	45	74	77	2.2	6.0		19.77	**100.5**
5	40	169.95	0.84	286	45	74	77	2.2	6.0		19.10	**99.6**
	45	173.67	0.82	286	46	74	77	2	6.0		18.87	**98.6**
6	50	177.38	0.71	286	46	74	77	2	6.0		17.56	**99.5**
	55	180.78	0.72	286	46	74	77	1.7	5.5		17.68	**98.0**
7	60	184.24	0.73	285	46	74	77	1.8	5.5		17.79	**98.9**
	65	187.78	0.71	285	46	74	77	1.8	5.5		17.54	**100.5**
8	70	191.24	0.76	285	46	74	77	1.7	5.5		18.15	**99.6**
	75	194.88	0.75	285	46	74	77	1.9	6.0		18.03	**101.2**
9	80	198.43	0.75	285	46	74	77	1.8	5.5		18.03	**99.4**
	85	202.01	0.78	284	46	74	78	1.9	6.0		18.38	**100.3**
10	90	205.63	0.7	283	46	74	78	1.9	6.0		17.40	**99.3**
	95	209.05	0.69	283	46	74	78	1.7	5.5		17.27	**98.9**
11	100	212.47	0.64	283	47	74	78	1.7	5.5		16.63	**99.6**
	105	215.75	0.65	283	47	74	77	1.6	5.5		16.76	**99.2**
12	110	219.08	0.62	283	47	75	78	1.6	5.5		16.37	**100.0**
	115	222.33	0.6	283	47	74	78	1.5	5.0		16.11	**99.7**
	120	225.45										**97.4**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - SVOC
Date:	April 27, 2023

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.841	
DGM CORRECTION FACTOR	1.002	
NOZZLE DIAMETER	6.38	mm
DRY REF GAS VOLUME SAMPLED	5.110	m^3
AVGERGE ISOKINETICITY	99.7	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.9	°C
AVERAGE GAS MOISTURE BY VOLUME	15.4	%
AVERAGE GAS VELOCITY	18.78	m/s
BAROMETRIC PRESSURE (Station)	101.422	Kpa
STATIC PRESSURE	-2.689	Kpa
ABSOLUTE GAS PRESSURE	98.733	Kpa
OXYGEN CONCENTRATION	9.16	%
CARBON DIOXIDE CONCENTRATION	10.56	%
CARBON MONOXIDE CONCENTRATION	11.9	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.75	m^3/s
DRY REF GAS FLOWRATE	16.47	Rm^3/s
DRY ADJ GAS FLOWRATE	19.53	Rm^3/s
WET REF GAS FLOWRATE	19.48	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		5.110	m^3
PARTICULATE CONC. - ACTUAL		0.000	mg/m^3
PARTICULATE CONC. - DRY REF		0.000	mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000	mg/m^3
PARTICULATE CONC. - WET REF		0.000	mg/m^3
PARTICULATE EMISSION RATE		0.000000	g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	April 27, 2023	**Operator:**	bp

Pitot Factor	0.841	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.95 "Hg	**CWTR (g)**	671.1		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	12.7		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.36 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.16
CO2%	10.56
COppm	11.9

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	26.10	0.99	284	60	61	62	2.3	6.5		20.67	
	5	29.96	0.94	285	47	62	62	2.3	7.0		20.15	**96.4**
2	10	33.86	0.96	285	47	62	64	2.3	7.0		20.37	**99.9**
	15	37.84	0.93	284	46	62	65	2.3	7.0		20.03	**100.7**
3	20	41.72	0.9	284	46	63	66	2.2	7.0		19.71	**99.6**
	25	45.50	0.91	284	46	63	67	2.1	6.9		19.82	**98.4**
4	30	49.36	0.84	284	46	64	68	2.2	7.0		19.04	**99.8**
	35	53.04	0.84	284	47	65	68	2	6.5		19.04	**98.9**
5	40	56.73	0.81	284	47	65	69	2	6.5		18.70	**99.0**
	45	60.38	0.83	284	48	66	70	2	6.5		18.92	**99.7**
6	50	64.05	0.72	285	48	66	70	2	6.5		17.64	**98.8**
	55	67.50	0.7	285	48	67	71	1.7	6.0		17.39	**99.8**
7	60	70.93	0.77	285	48	67	71	1.7	6.0		18.24	**100.4**
	65	74.52	0.78	285	49	68	72	1.9	6.5		18.36	**100.2**
8	70	78.11	0.78	285	49	68	72	1.9	6.5		18.36	**99.4**
	75	81.72	0.76	286	49	68	72	1.9	6.5		18.13	**99.9**
9	80	85.26	0.77	286	49	69	73	1.8	6.5		18.25	**99.3**
	85	88.87	0.76	285	49	69	73	1.9	6.5		18.12	**100.4**
10	90	92.41	0.82	285	50	70	73	1.8	6.5		18.82	**99.1**
	95	96.06	0.83	286	51	70	74	2	7.0		18.95	**98.2**
11	100	99.79	0.77	284	50	70	74	2	7.0		18.23	**99.8**
	105	103.42	0.75	284	50	70	74	1.9	7.0		17.99	**100.7**
12	110	106.97	0.74	284	50	70	74	1.8	6.5		17.87	**99.8**
	115	110.47	0.79	284	51	71	74	1.8	6.5		18.46	**99.0**
	120	114.09								0.36		**99.0**
1	0	114.45	0.95	285	59	71	71	2.3	8.0		20.26	
	5	118.45	0.99	289	53	71	72	2.3	8.0		20.74	**100.2**
2	10	122.48	0.92	285	52	71	72	2.4	8.5		19.94	**99.1**
	15	126.40	0.93	285	52	70	73	2.2	8.0		20.05	**99.8**
3	20	130.30	0.92	285	53	71	74	2.2	8.0		19.94	**98.7**
	25	134.24	0.97	286	53	71	74	2.3	8.5		20.49	**100.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	April 27, 2023	**Operator:**	bp

Pitot Factor	0.841	**Filter (mg)**	0		
DGMCF	1.002	**Probe (mg)**	0		
Barometric Pressure	29.95 "Hg	**CWTR (g)**	671.1		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	12.7		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.36 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.16
CO2%	10.56
COppm	11.9

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	30	138.28	0.87	287	53	71	74	2.4	9.0		19.41	**100.0**
	35	142.11	0.89	287	54	71	74	2.1	8.0		19.64	**100.2**
5	40	146.02	0.84	287	54	71	74	2.2	8.5		19.08	**101.0**
	45	149.72	0.83	287	54	72	75	2	8.0		18.96	**98.4**
6	50	153.42	0.75	288	54	72	75	2	8.0		18.04	**98.8**
	55	156.94	0.76	288	54	72	75	1.8	7.5		18.16	**98.9**
7	60	160.54	0.74	288	54	72	76	1.9	8.0		17.92	**100.5**
	65	164.08	0.76	288	53	73	76	2.2	9.0		18.16	**100.0**
8	70	167.79	0.78	288	52	73	76	1.8	7.5		18.40	**103.4**
	75	171.39	0.76	287	52	73	76	1.9	8.0		18.15	**99.0**
9	80	174.99	0.79	287	52	73	76	1.9	8.0		18.50	**100.2**
	85	178.67	0.82	287	51	73	76	2	8.0		18.85	**100.5**
10	90	182.37	0.84	287	51	73	76	2	8.0		19.08	**99.2**
	95	186.15	0.82	287	51	74	77	2.1	8.5		18.85	**100.1**
11	100	189.88	0.71	285	51	74	77	2	8.0		17.52	**99.8**
	105	193.40	0.69	284	52	74	77	1.8	7.5		17.26	**101.1**
12	110	196.84	0.62	284	51	74	77	1.7	7.0		16.36	**100.1**
	115	200.09	0.63	284	52	74	77	1.5	7.0		16.49	**99.8**
	120	203.35										**99.2**

APPENDIX 26

ORTECH Total Hydrocarbon CEM Data
(4 pages)

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 1 Quench Inlet

Test No. 1 April 25, 2023			Test No. 2 April 25, 2023			Test No. 3 April 25, 2023		
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
08:35	0.0		10:15	0.0		11:30	0.0	
08:36	0.0		10:16	0.0		11:31	0.0	
08:37	0.0		10:17	0.0		11:32	0.0	
08:38	0.0		10:18	0.0		11:33	0.0	
08:39	0.0		10:19	0.0		11:34	0.0	
08:40	0.0		10:20	0.0		11:35	0.0	
08:41	0.0		10:21	0.0		11:36	0.0	
08:42	0.0		10:22	0.0		11:37	0.0	
08:43	0.0		10:23	0.0		11:38	0.0	
08:44	0.0	0.0	10:24	0.0	0.0	11:39	0.0	0.0
08:45	0.0	0.0	10:25	0.0	0.0	11:40	0.0	0.0
08:46	0.0	0.0	10:26	0.0	0.0	11:41	0.0	0.0
08:47	0.0	0.0	10:27	0.0	0.0	11:42	0.0	0.0
08:48	0.0	0.0	10:28	0.0	0.0	11:43	0.0	0.0
08:49	0.0	0.0	10:29	0.0	0.0	11:44	0.0	0.0
08:50	0.0	0.0	10:30	0.0	0.0	11:45	0.0	0.0
08:51	0.0	0.0	10:31	0.0	0.0	11:46	0.0	0.0
08:52	0.0	0.0	10:32	0.0	0.0	11:47	0.0	0.0
08:53	0.0	0.0	10:33	0.0	0.0	11:48	0.0	0.0
08:54	0.0	0.0	10:34	1.6	0.2	11:49	0.0	0.0
08:55	0.3	0.0	10:35	1.9	0.4	11:50	0.0	0.0
08:56	0.2	0.0	10:36	1.6	0.5	11:51	0.0	0.0
08:57	0.2	0.1	10:37	1.1	0.6	11:52	0.0	0.0
08:58	0.1	0.1	10:38	0.5	0.7	11:53	0.0	0.0
08:59	0.1	0.1	10:39	0.4	0.7	11:54	0.0	0.0
09:00	0.1	0.1	10:40	0.4	0.8	11:55	0.0	0.0
09:01	0.2	0.1	10:41	0.3	0.8	11:56	0.0	0.0
09:02	0.1	0.1	10:42	0.2	0.8	11:57	0.0	0.0
09:03	0.0	0.1	10:43	0.1	0.8	11:58	0.0	0.0
09:04	0.0	0.1	10:44	0.0	0.7	11:59	0.0	0.0
09:05	0.0	0.1	10:45	0.0	0.5	12:00	0.0	0.0
09:06	0.0	0.1	10:46	0.0	0.3	12:01	0.0	0.0
09:07	0.0	0.1	10:47	0.0	0.2	12:02	0.0	0.0
09:08	0.0	0.0	10:48	0.0	0.1	12:03	0.0	0.0
09:09	0.0	0.0	10:49	0.0	0.1	12:04	0.0	0.0
09:10	0.0	0.0	10:50	0.0	0.1	12:05	0.0	0.0
09:11	0.0	0.0	10:51	0.0	0.0	12:06	0.0	0.0
09:12	0.0	0.0	10:52	0.0	0.0	12:07	0.0	0.0
09:13	0.0	0.0	10:53	0.0	0.0	12:08	0.0	0.0
09:14	0.0	0.0	10:54	0.0	0.0	12:09	0.0	0.0
09:15	0.0	0.0	10:55	0.0	0.0	12:10	0.0	0.0
09:16	0.0	0.0	10:56	0.0	0.0	12:11	0.0	0.0
09:17	0.0	0.0	10:57	0.0	0.0	12:12	0.0	0.0
09:18	0.0	0.0	10:58	0.0	0.0	12:13	0.0	0.0
09:19	0.0	0.0	10:59	0.0	0.0	12:14	0.0	0.0
09:20	0.0	0.0	11:00	0.0	0.0	12:15	0.0	0.0
09:21	0.0	0.0	11:01	0.0	0.0	12:16	0.0	0.0
09:22	0.0	0.0	11:02	0.0	0.0	12:17	0.0	0.0
09:23	0.0	0.0	11:03	0.0	0.0	12:18	0.0	0.0
09:24	0.0	0.0	11:04	0.0	0.0	12:19	0.0	0.0
09:25	0.0	0.0	11:05	0.0	0.0	12:20	0.0	0.0
09:26	0.0	0.0	11:06	0.0	0.0	12:21	0.0	0.0
09:27	0.0	0.0	11:07	0.0	0.0	12:22	0.0	0.0
09:28	0.0	0.0	11:08	0.0	0.0	12:23	0.0	0.0
09:29	0.0	0.0	11:09	0.0	0.0	12:24	0.0	0.0
09:30	0.0	0.0	11:10	0.0	0.0	12:25	0.0	0.0
09:31	0.0	0.0	11:11	0.0	0.0	12:26	0.0	0.0
09:32	0.0	0.0	11:12	0.0	0.0	12:27	0.0	0.0
09:33	0.0	0.0	11:13	0.0	0.0	12:28	0.0	0.0
09:34	0.0	0.0	11:14	0.0	0.0	12:29	0.0	0.0
09:35	0.0	0.0	11:15	0.0	0.0	12:30	0.0	0.0
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	0.3	0.1	Max	1.9	0.8	Max	0.0	0.0
Avg	0.0	0.0	Avg	0.1	0.2	Avg	0.0	0.0

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 1 APC Outlet

Test No. 1 April 25, 2023			Test No. 2 April 25, 2023			Test No. 3 April 25, 2023		
	THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
08:35	1.0		10:15	0.0		11:30	0.0	
08:36	0.6		10:16	0.0		11:31	0.0	
08:37	0.0		10:17	0.2		11:32	0.0	
08:38	0.0		10:18	0.8		11:33	0.0	
08:39	0.0		10:19	0.8		11:34	0.0	
08:40	0.0		10:20	0.3		11:35	0.0	
08:41	0.0		10:21	0.0		11:36	0.0	
08:42	0.1		10:22	0.0		11:37	0.0	
08:43	0.0		10:23	0.1		11:38	0.0	
08:44	0.0	0.2	10:24	0.9	0.3	11:39	0.0	0.0
08:45	0.0	0.1	10:25	1.8	0.5	11:40	0.0	0.0
08:46	0.0	0.0	10:26	2.2	0.7	11:41	0.0	0.0
08:47	0.0	0.0	10:27	0.6	0.7	11:42	0.0	0.0
08:48	0.0	0.0	10:28	0.0	0.7	11:43	0.0	0.0
08:49	0.0	0.0	10:29	0.0	0.6	11:44	0.0	0.0
08:50	0.0	0.0	10:30	0.0	0.6	11:45	0.0	0.0
08:51	0.0	0.0	10:31	0.0	0.6	11:46	0.0	0.0
08:52	0.0	0.0	10:32	0.0	0.6	11:47	0.0	0.0
08:53	0.0	0.0	10:33	0.4	0.6	11:48	0.0	0.0
08:54	0.0	0.0	10:34	0.3	0.5	11:49	0.0	0.0
08:55	0.0	0.0	10:35	0.1	0.4	11:50	0.0	0.0
08:56	0.0	0.0	10:36	0.0	0.1	11:51	0.0	0.0
08:57	0.0	0.0	10:37	0.0	0.1	11:52	0.0	0.0
08:58	0.0	0.0	10:38	0.0	0.1	11:53	0.0	0.0
08:59	0.0	0.0	10:39	0.3	0.1	11:54	0.0	0.0
09:00	0.0	0.0	10:40	1.0	0.2	11:55	0.0	0.0
09:01	0.0	0.0	10:41	1.1	0.3	11:56	0.0	0.0
09:02	0.0	0.0	10:42	1.1	0.4	11:57	0.0	0.0
09:03	0.0	0.0	10:43	0.6	0.5	11:58	0.0	0.0
09:04	0.0	0.0	10:44	0.1	0.4	11:59	0.0	0.0
09:05	0.0	0.0	10:45	0.0	0.4	12:00	0.0	0.0
09:06	0.0	0.0	10:46	0.0	0.4	12:01	0.0	0.0
09:07	0.0	0.0	10:47	0.0	0.4	12:02	0.0	0.0
09:08	0.0	0.0	10:48	0.8	0.5	12:03	0.0	0.0
09:09	0.0	0.0	10:49	1.3	0.6	12:04	0.0	0.0
09:10	0.0	0.0	10:50	0.6	0.6	12:05	0.0	0.0
09:11	0.0	0.0	10:51	0.2	0.5	12:06	0.0	0.0
09:12	0.0	0.0	10:52	0.0	0.4	12:07	0.0	0.0
09:13	0.0	0.0	10:53	0.0	0.3	12:08	0.0	0.0
09:14	0.0	0.0	10:54	0.0	0.3	12:09	0.0	0.0
09:15	0.0	0.0	10:55	0.0	0.3	12:10	0.0	0.0
09:16	0.0	0.0	10:56	0.1	0.3	12:11	0.0	0.0
09:17	0.0	0.0	10:57	0.3	0.3	12:12	0.0	0.0
09:18	0.0	0.0	10:58	0.1	0.3	12:13	0.0	0.0
09:19	0.0	0.0	10:59	0.0	0.1	12:14	0.0	0.0
09:20	0.0	0.0	11:00	0.0	0.1	12:15	0.0	0.0
09:21	0.0	0.0	11:01	0.0	0.1	12:16	0.0	0.0
09:22	0.0	0.0	11:02	0.0	0.1	12:17	0.0	0.0
09:23	0.0	0.0	11:03	0.0	0.1	12:18	0.0	0.0
09:24	0.0	0.0	11:04	0.0	0.1	12:19	0.0	0.0
09:25	0.0	0.0	11:05	0.0	0.1	12:20	0.0	0.0
09:26	0.0	0.0	11:06	0.0	0.0	12:21	0.0	0.0
09:27	0.0	0.0	11:07	0.0	0.0	12:22	0.0	0.0
09:28	0.0	0.0	11:08	0.0	0.0	12:23	0.0	0.0
09:29	0.0	0.0	11:09	0.0	0.0	12:24	0.0	0.0
09:30	0.0	0.0	11:10	0.0	0.0	12:25	0.0	0.0
09:31	0.0	0.0	11:11	0.0	0.0	12:26	0.0	0.0
09:32	0.0	0.0	11:12	0.0	0.0	12:27	0.0	0.0
09:33	0.0	0.0	11:13	0.0	0.0	12:28	0.0	0.0
09:34	0.5	0.0	11:14	0.0	0.0	12:29	0.0	0.0
09:35	1.0	0.1	11:15	0.0	0.0	12:30	0.0	0.0
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	1.0	0.2	Max	2.2	0.7	Max	0.0	0.0
Avg	0.1	0.0	Avg	0.3	0.3	Avg	0.0	0.0

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet

Test No. 1 April 24, 2023			Test No. 2 April 24, 2023			Test No. 3 April 24, 2023		
	THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
11:30	0.6		12:50	0.0		14:25	0.0	
11:31	0.5		12:51	0.0		14:26	0.0	
11:32	0.5		12:52	0.0		14:27	0.0	
11:33	0.4		12:53	0.0		14:28	0.0	
11:34	0.4		12:54	0.0		14:29	0.0	
11:35	0.4		12:55	0.0		14:30	0.0	
11:36	0.4		12:56	0.0		14:31	0.0	
11:37	0.4		12:57	0.0		14:32	0.0	
11:38	0.4		12:58	0.0		14:33	0.0	
11:39	0.4	0.4	12:59	0.0	0.0	14:34	0.0	0.0
11:40	0.4	0.4	13:00	0.0	0.0	14:35	0.0	0.0
11:41	0.4	0.4	13:01	0.0	0.0	14:36	0.2	0.0
11:42	0.3	0.4	13:02	0.0	0.0	14:37	0.1	0.0
11:43	0.2	0.4	13:03	0.0	0.0	14:38	0.1	0.0
11:44	0.2	0.3	13:04	0.0	0.0	14:39	0.1	0.1
11:45	0.2	0.3	13:05	0.0	0.0	14:40	0.0	0.1
11:46	0.1	0.3	13:06	0.0	0.0	14:41	0.0	0.1
11:47	0.2	0.3	13:07	0.0	0.0	14:42	0.1	0.1
11:48	0.2	0.3	13:08	0.0	0.0	14:43	0.0	0.1
11:49	0.1	0.2	13:09	0.0	0.0	14:44	0.0	0.1
11:50	0.1	0.2	13:10	0.0	0.0	14:45	0.0	0.1
11:51	0.1	0.2	13:11	0.0	0.0	14:46	0.0	0.0
11:52	0.1	0.2	13:12	0.0	0.0	14:47	0.0	0.0
11:53	0.1	0.1	13:13	0.0	0.0	14:48	0.0	0.0
11:54	0.1	0.1	13:14	0.0	0.0	14:49	0.0	0.0
11:55	0.5	0.2	13:15	0.0	0.0	14:50	0.0	0.0
11:56	0.5	0.2	13:16	0.0	0.0	14:51	0.0	0.0
11:57	0.5	0.2	13:17	0.0	0.0	14:52	0.0	0.0
11:58	0.6	0.3	13:18	0.0	0.0	14:53	0.0	0.0
11:59	0.8	0.3	13:19	0.0	0.0	14:54	0.0	0.0
12:00	1.2	0.5	13:20	0.0	0.0	14:55	0.0	0.0
12:01	1.2	0.6	13:21	0.0	0.0	14:56	0.0	0.0
12:02	1.2	0.7	13:22	0.0	0.0	14:57	0.0	0.0
12:03	1.0	0.8	13:23	0.0	0.0	14:58	0.0	0.0
12:04	0.6	0.8	13:24	0.0	0.0	14:59	0.0	0.0
12:05	0.5	0.8	13:25	0.0	0.0	15:00	0.4	0.0
12:06	0.5	0.8	13:26	0.0	0.0	15:01	0.7	0.1
12:07	0.5	0.8	13:27	0.0	0.0	15:02	0.0	0.1
12:08	0.4	0.8	13:28	15.6	1.6	15:03	0.0	0.1
12:09	0.3	0.7	13:29	3.8	2.0	15:04	0.0	0.1
12:10	0.2	0.6	13:30	2.9	2.2	15:05	0.0	0.1
12:11	0.3	0.6	13:31	2.2	2.5	15:06	0.0	0.1
12:12	0.3	0.5	13:32	1.4	2.6	15:07	0.0	0.1
12:13	0.3	0.4	13:33	0.0	2.6	15:08	0.0	0.1
12:14	0.3	0.4	13:34	0.0	2.6	15:09	0.0	0.1
12:15	0.4	0.4	13:35	0.0	2.6	15:10	0.0	0.1
12:16	0.5	0.4	13:36	0.0	2.6	15:11	0.0	0.0
12:17	0.7	0.4	13:37	0.0	2.6	15:12	7.7	0.8
12:18	1.0	0.4	13:38	0.0	1.0	15:13	4.5	1.2
12:19	1.4	0.5	13:39	0.0	0.7	15:14	2.4	1.5
12:20	2.2	0.7	13:40	0.0	0.4	15:15	1.8	1.6
12:21	2.6	1.0	13:41	0.0	0.1	15:16	0.4	1.7
12:22	0.8	1.0	13:42	0.0	0.0	15:17	0.4	1.7
12:23	0.2	1.0	13:43	0.0	0.0	15:18	0.0	1.7
12:24	0.1	1.0	13:44	0.0	0.0	15:19	0.0	1.7
12:25	0.0	0.9	13:45	0.0	0.0	15:20	0.0	1.7
12:26	0.0	0.9	13:46	0.0	0.0	15:21	0.0	1.7
12:27	0.0	0.8	13:47	0.0	0.0	15:22	0.0	0.9
12:28	0.0	0.7	13:48	0.0	0.0	15:23	0.0	0.5
12:29	0.0	0.6	13:49	0.0	0.0	15:24	0.0	0.3
12:30	0.0	0.4	13:50	0.0	0.0	15:25	0.0	0.1
Min	0.0	0.1	Min	0.0	0.0	Min	0.0	0.0
Max	2.6	1.0	Max	15.6	2.6	Max	7.7	1.7
Avg	0.5	0.5	Avg	0.4	0.5	Avg	0.3	0.4

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 2 APC Outlet

Test No. 1 April 24, 2023			Test No. 2 April 24, 2023			Test No. 3 April 24, 2023		
	THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
11:30	0.0		12:50	0.6		14:25	0.9	
11:31	0.1		12:51	0.8		14:26	0.8	
11:32	0.3		12:52	1.1		14:27	0.8	
11:33	0.2		12:53	0.7		14:28	0.7	
11:34	0.1		12:54	0.5		14:29	1.1	
11:35	0.0		12:55	0.2		14:30	1.2	
11:36	0.0		12:56	0.2		14:31	1.1	
11:37	0.0		12:57	0.6		14:32	0.8	
11:38	0.0		12:58	0.6		14:33	0.9	
11:39	0.0	0.1	12:59	0.5	0.6	14:34	1.3	1.0
11:40	0.0	0.1	13:00	0.4	0.5	14:35	0.7	1.0
11:41	0.0	0.1	13:01	0.6	0.5	14:36	0.6	0.9
11:42	0.0	0.0	13:02	0.8	0.5	14:37	0.4	0.9
11:43	0.0	0.0	13:03	0.7	0.5	14:38	0.3	0.8
11:44	0.0	0.0	13:04	0.5	0.5	14:39	0.3	0.8
11:45	0.0	0.0	13:05	0.3	0.5	14:40	0.2	0.7
11:46	0.0	0.0	13:06	0.6	0.5	14:41	0.1	0.6
11:47	0.0	0.0	13:07	0.7	0.5	14:42	0.0	0.5
11:48	0.0	0.0	13:08	0.4	0.5	14:43	0.0	0.4
11:49	0.0	0.0	13:09	0.0	0.5	14:44	0.0	0.3
11:50	0.0	0.0	13:10	0.0	0.4	14:45	0.0	0.2
11:51	0.0	0.0	13:11	0.0	0.4	14:46	0.0	0.1
11:52	0.0	0.0	13:12	0.0	0.3	14:47	0.0	0.1
11:53	0.0	0.0	13:13	0.0	0.2	14:48	0.0	0.1
11:54	0.0	0.0	13:14	0.0	0.2	14:49	0.0	0.0
11:55	0.0	0.0	13:15	0.0	0.2	14:50	0.0	0.0
11:56	0.0	0.0	13:16	0.0	0.1	14:51	0.0	0.0
11:57	0.0	0.0	13:17	0.0	0.0	14:52	0.0	0.0
11:58	0.0	0.0	13:18	0.0	0.0	14:53	0.0	0.0
11:59	0.0	0.0	13:19	0.0	0.0	14:54	0.0	0.0
12:00	0.0	0.0	13:20	0.0	0.0	14:55	0.0	0.0
12:01	0.0	0.0	13:21	0.0	0.0	14:56	0.0	0.0
12:02	0.0	0.0	13:22	0.0	0.0	14:57	0.0	0.0
12:03	0.1	0.0	13:23	0.0	0.0	14:58	0.0	0.0
12:04	0.5	0.1	13:24	0.0	0.0	14:59	0.0	0.0
12:05	0.5	0.1	13:25	0.0	0.0	15:00	0.0	0.0
12:06	0.3	0.1	13:26	0.0	0.0	15:01	0.0	0.0
12:07	0.1	0.1	13:27	0.0	0.0	15:02	0.0	0.0
12:08	0.1	0.2	13:28	0.0	0.0	15:03	0.0	0.0
12:09	0.3	0.2	13:29	0.0	0.0	15:04	0.0	0.0
12:10	0.3	0.2	13:30	0.0	0.0	15:05	0.0	0.0
12:11	0.0	0.2	13:31	0.0	0.0	15:06	0.0	0.0
12:12	0.1	0.2	13:32	0.0	0.0	15:07	0.0	0.0
12:13	0.3	0.2	13:33	0.0	0.0	15:08	0.0	0.0
12:14	0.1	0.2	13:34	0.0	0.0	15:09	0.0	0.0
12:15	0.0	0.2	13:35	0.0	0.0	15:10	0.0	0.0
12:16	0.0	0.1	13:36	0.0	0.0	15:11	0.0	0.0
12:17	0.0	0.1	13:37	0.0	0.0	15:12	0.0	0.0
12:18	0.0	0.1	13:38	0.0	0.0	15:13	0.0	0.0
12:19	0.0	0.1	13:39	0.0	0.0	15:14	0.0	0.0
12:20	0.0	0.1	13:40	0.0	0.0	15:15	0.0	0.0
12:21	0.0	0.1	13:41	0.0	0.0	15:16	0.0	0.0
12:22	0.0	0.1	13:42	0.0	0.0	15:17	0.0	0.0
12:23	0.0	0.0	13:43	0.1	0.0	15:18	0.0	0.0
12:24	0.0	0.0	13:44	0.2	0.0	15:19	0.0	0.0
12:25	0.0	0.0	13:45	0.0	0.0	15:20	0.0	0.0
12:26	0.0	0.0	13:46	0.0	0.0	15:21	0.0	0.0
12:27	0.0	0.0	13:47	0.0	0.0	15:22	0.0	0.0
12:28	0.0	0.0	13:48	0.1	0.0	15:23	0.0	0.0
12:29	0.0	0.0	13:49	0.0	0.0	15:24	0.0	0.0
12:30	0.0	0.0	13:50	0.0	0.0	15:25	0.0	0.0
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	0.5	0.2	Max	1.1	0.6	Max	1.3	1.0
Avg	0.1	0.1	Avg	0.2	0.2	Avg	0.2	0.2

APPENDIX 27

Dispersion Modelling Results
for the April 2023 Testing Program
(17 pages)

TECHNICAL MEMORANDUM

DATE July 26, 2023 **Project No.** 23600585

TO Lydia Kwan
Covanta Durham York Renewable Energy LP

CC Poornitha Suresh

FROM Katie Armstrong **EMAIL katherine.armstrong@wsp.com**

CALPUFF MODELLING FOR APRIL 2023 VOLUNTARY SOURCE TESTING AT DURHAM YORK ENERGY CENTRE

1.0 INTRODUCTION

Covanta Durham York Renewable Energy LP (Covanta) operates the Durham York Energy Centre (DYEC) under the multi-media Environmental Compliance Approval (ECA) 7306-8FDKNX, as amended. The 2011 ECA application was supported with an Emission Summary and Dispersion Modelling (ESDM) Report prepared by WSP Canada Inc. (WSP), using the CALPUFF dispersion model version 6.263, with results compared to Ministry of Environment, Conservation and Parks (MECP) Point of Impingement (POI) standards listed in Schedule 3 of Ontario Regulation (O.Reg.) 419/05 as of 2011.

In 2020, MECP requested that the CALPUFF modelling for DYEC be updated to use more recent meteorological data and an updated version of the CALPUFF dispersion model. Following consultation with MECP, including their provisional review and approval of the new meteorological files and updated CALPUFF modelling input files, formal approval was requested in August 2021 under Sections 7 (1) and 13 (1) of O.Reg. 419/05 for use of a specified dispersion model (CALPUFF version 7.2.1) and site-specific meteorological data for the 2014-2018 data period. Formal approval was received in December 2021.

Condition 7, Testing, Monitoring and Auditing, of the ECA requires annual source testing to be completed at the DYEC for over 100 contaminants as well as assessing the impact of the contaminants. According to the ECA Schedule “E” Source Testing Procedures, a source testing report is required that includes the following:

> *8. (7) the results of dispersion calculations in accordance with the O.Reg. 419/05, indicating the maximum concentration of the test contaminants, at the point of impingement.*
>
> *8. (8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the test contaminants.*

This memorandum summarizes the dispersion calculations/modelling results for the Voluntary April 2023 source testing program with the aid of the updated CALPUFF model and other input data sets as used in the 2011 ESDM Report and 2007 Environmental Assessment (EA) and compares the results to O.Reg. 419/05 Schedule 3 limits as last updated April 2023.

2.0 EMISSION RATES

Voluntary source testing was completed by Ortech Environmental in April 2023 for each of the two combustion train units and results were provided to WSP on a mass per time basis. Three tests were completed for each unit and averaged. The average emission rates for each unit were then summed together to provide the total stack emission rate of each contaminant to be modelled. Where source testing results indicated that the measured concentration is below the detection limit, the full detection limit was used as the emission rate for conservatism.

Emission rates for which source testing data was available were converted to grams per second (g/s) and are provided in an updated Site-wide Emission Inventory included in Appendix A. This emission inventory includes emissions from silo filling and diesel generator testing taken from the ESDM report, in addition to source test emissions from the main stack.

In response to clarifications provided by the MECP of December 9, 2016, two different emission rates were calculated for Total Particulate Matter:

1. Filterable fraction emission rate only; and
2. Total Particulate Matter (Sum of condensable and filterable fractions).

As source testing for the condensable fraction of total particulate matter is not required pursuant to Schedule “D”: of the ECA, the condensable content of $PM_{2.5}$ was used.

3.0 MODELLING

In response to an MECP request in 2020, the CALPUFF modelling software and CALMET meteorological data have been updated. The MECP reviewed and approved the meteorological data and modelling input files in May 2021, prior to model execution. The following models and pre- and post-processors were used in the assessment:

- CALMET diagnostic meteorological model (v. 6.5.0, level 150223);
- CALPUFF dispersion model (v. 7.2.1, level 150618);
- CALPOST post processor (v. 7.1.0, Level 141010);
- BPIP building downwash pre-processor (v. 04274);
- POSTUTIL post processor (v.7.0.0, Level 150207).

These model versions are updates from those used in the original 2011 ESDM report. Formal approval for their use was requested and approved under s7(1) and s13(1) of O.Reg. 419/05. Dispersion Modelling inputs are described in the following subsections.

3.1 Model Domain

The Model domain used in this assessment was modified slightly from the 2007 Environmental Assessment (EA) and ESDM Report. It extends 40 km by 40 km and is centred approximately 5 km north of the Site. This domain covers more than the air quality study area but will ensure that plumes are tracked beyond the furthest receptor locations to ensure the worst-case ground level concentrations are considered at all receptors.

3.2 Meteorology, Land Use and Terrain Data

The meteorology and terrain data used in this assessment were updated from those used in the 2007 Environmental Assessment (EA) and 2011 ESDM Report.

Meteorological data was updated using observation data from surface stations and large-scale mesoscale meteorological data from the Weather Research and Forecasting (WRF) model between 2014 – 2018, inclusive. The CALMET output files were submitted to MECP for review and approval prior to use in the modelling.

Terrain data was downloaded from the MECP's database of regional terrain data for modelling (MECP, 2017b) and processed using the CALPUFF pre-processor, TERREL.

3.3 Receptors

The receptors used in this assessment are similar to the receptors used in the 2011 ESDM Report but receptors at the edge of the domain were modified slightly to reflect the change in domain size. They include gridded ground level receptors to meet the requirements of O.Reg. 419/05 in addition to 400 discrete receptors to represent locations of interest, which were reviewed and updated in 2022. They include hospitals, nursing homes, schools, daycares, Senior citizen centres, the nearest residential receptors, specific watersheds and water bodies and parks.

3.4 Building Downwash

The buildings used in this assessment to represent building downwash are the same as the buildings used in the ESDM Report. Building wake effects were considered in this assessment using the U.S. EPA's Building Profile Input Program (BPIP-ISC). The inputs into this pre-processor include the coordinates and heights of the buildings and stacks. The output data from BPIP is used in the building wake effect calculations. No changes were made to the BPIP input or output file for this assessment.

3.5 Deposition

CALPUFF has the capability to account for wet and dry deposition of substances that would reduce ground level concentrations at POIs. However, the deposition algorithm has not been implemented for conservatism and to maintain consistency with the ESDM report and the previous EA for maximum POI predictions.

3.6 Thermal Internal Boundary Layer

CALPUFF contains an option to account for sub-grid coastal influences on plume dispersion such as the development of a thermal internal boundary layer (TIBL). Given the proximity of the proposed Facility to Lake Ontario (approximately 500 m) and the grid size (250 m), variations in coastline location within the grid cells near the proposed facility were accounted for in the dispersion modelling. To achieve this, a digitized sub-grid coastline, extending to the boundaries of the air quality study area was included as an additional input. This is consistent with the approach used in the ESDM report.

3.7 Averaging Times and Conversions

CALPUFF can predict 1-hour average values. Many of the relevant Schedule 3 standards are based on a 24-hour averaging time, which is also provided by CALPUFF. Several of the modelled contaminants have averaging periods less than 1 hour. For these contaminants, the 1-hour average concentration was converted using the conversion factors listed in Table 4-1 of Air Dispersion Modelling Guidance for Ontario (ADMGO). For example, the hourly concentrations can be converted to a 10-min average by multiplying the hour value by 1.65. This is consistent with the approach used in the ESDM report.

In 2016, a number of O.Reg 419/05 standards were updated or modified to include annual average Point of Impingement (POI) limits. CALPUFF can predict annual average values, therefore the CALPOST input file was modified to provide this output in addition to outputs for the 1 hour, 24 hour and 30-day averaging periods already provided.

3.8 Chemical Transformation

For the purposes of assessing project contributions to Secondary Particulate Matter (SPM) formation, chemical transformation was considered in the CALPUFF modelling of particulate matter. To model the chemical transformation of emitted NO, NO_2 and SO_2 into HNO_3, NO_3 and SO_4, CALPUFFs RIVAD/ARM3 mechanism was used. Monthly background ozone concentrations are required to generate SPM as well as setting the MCHEM Flag to 3 for particulate matter model runs. The monthly background ozone data used are consistent with the 2007 EA, as requested by MECP, and is summarised below in Table 1.

Table 1: Background Ozone Concentrations used for Chemical Transformation Modelling(1)

Month	Ozone Concentrations (ppb)
January	13.70
February	18.50
March	24.22
April	11.09
May	32.29
June	33.63
July	16.32
August	21.33
September	12.63
October	15.39
November	17.10
December	20.91

1 – Ozone levels from Courtice Road Station (2007-2008)

Chemical transformations were only modelled to calculate additional concentrations of particulate matter that is created as part of secondary transformations. Reported concentrations of NO_2 and SO_2 do not include the effects of depletion due to chemical transformation. The flag MCHEM is set to 0 for model runs used to produce concentrations of all other contaminants. This is consistent with the approach used in the 2011 ESDM report.

3.9 Dispersion Modelling Options

The options used in the CALPUFF dispersion model are summarized in the Table 2. The model options used were reviewed in consultation with MECP but are generally consistent with those used in the ESDM Report. In the ESDM report, Exhibit 9 indicated that Puff splitting was used, however this was a typographical error and this option was not actually used in the modelling. To maintain consistency with the ESDM report, puff splitting was not modelled for this assessment.

Table 2: CALPUFF Options and Flags

Flag	Value used in 2011 ESDM Report	Value Used in this Assessment	Comments
MGAUSS	1	1	Vertical distribution used in the near field
MCTADJ	3	3	Terrain adjustment method (3 used for partial plume path adjustment)
MCTSG	0	0	Subgrid-Scale complex terrain flag
MSLUG	0	0	Near-field puffs modelled as elongated
MTRANS	1	1	Transitional Plume Rise modelled
MTIP	1	1	Stack-tip downwash
MBDW	2	2	Method used to simulate building downwash 1 = ISC method; 2 = PRIME method
MSHEAR	0	0	Vertical wind shear modelled above stack top
MSPLIT	0*	0	Puff splitting allowed 0 = No; 1 = Yes ** NB: Value of "1" reported in ESDM Report but value of "0" actually used in ESDM Report modelling*
MCHEM	3 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	3 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	Chemical Transformation Scheme 0 = chemical transformation not modeled 3 = transformation rates computed internally (RIVAD/ARM3 Scheme)
MAQCHEM	0	0	Aqueous phase transformation flag (only used if MCHEM =1 or 3)

Flag	Value used in 2011 ESDM Report	Value Used in this Assessment	Comments
MWET	0	0	Wet removal modelled 0 = NO; 1 = Yes
MDRY	0	0	Dry deposition modelled 0 = NO; 1 = Yes
MTILT	0	0	Gravitational settling (plume tilt) modelled
MDISP	2	2	Methods used to compute dispersion coefficients 2 = (dispersion coefficients from internally calculated sigma v, sigma w using micrometeorological variables (u*, w*, L, etc.)
MTURBVW	3	3	Sigma measurements used (Used only if MDISP = 1or 5)
MDISP2	3	3	Back-up method used to compute dispersion when measured turbulence data are missing (Used only if MDISP=1 or 5)
MTAULY	0	0	Method used for Lagrangian timescale for Sigma-y (used only if MDISP=1,2 or MSIDP2=1,2)
MTAUADV	0	0	Method used for Advective-Decay timescale for Turbulence (used only if MDISP=2 or MDISP2=2)
MCTURB	1	1	Method used to compute turbulence sigma-v & sigma-w using micrometeorological variables (Used only if MDISP = 2 or MDISP2 = 2)
MROUGH	0	0	PG sigma y,z adjusted for roughness
MPARTL	1	1	Partial plume penetration of elevated inversion
MTINV	0	0	Strength of temp inversion provided in PROFILE.DAT extended records
MPDF	1	1	Probability Distribution Function used for dispersion under convective conditions 0 = NO; 1 = Yes
MSGTIBL	1	1	Sub-grid TIBL module used for shoreline
MBCON	0	0	Boundary conditions (concentration) modeled
MFOG	0	0	Configure for FOG Model output
MREG	0	0	Test options specified to see if they conform to regulatory values

3.10 Source Parameters

Stack exhaust temperature and flow rate were updated to match the stack characteristics at the time of source testing. All other source parameters are consistent with those used in the ESDM Report. The source parameters modelled are provided in Table 3, below:

Table 3: Modelled Source Parameters

Source ID	Stack Height [m]	Stack Diameter [m]	Flow Rate [m³/s]	Exit Velocity [m/s]	Exhaust Temperature [K]
STCK1	87.6 (No Change)	1.7 (No Change)	55.09 (UPDATED)	24.27 (UPDATED)	412.09 (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]	51.52	37.47	31.23	1.32	0.17	0.06
Dispersion Factor with meteorological anomaly removal [µg/m³ per g/s]	17.10	12.43	10.36	1.15	0.17	0.06

The average emission rate for each contaminant presented in Appendix A was multiplied by the applicable dispersion factor above to calculate the maximum point of impingement concentration for emissions from the main stack. The modelled POI concentrations were compared to the 2018 Schedule 3 standards listed in O.Reg. 419/05 and in the case of $PM_{2.5}$ and PM_{10}, the Ontario Ambient Air Quality Criteria (AAQC).

The MECP updated the list of standards and guidelines for facilities to assess their emissions against, namely the Air Contaminants Benchmark (ACB) List, dated April 2023, which includes standards and guidelines (Benchmark 1) and screening levels (Benchmark 2). The ACB List is required to be used to assess point of impingement (POI) concentrations of contaminants released into the air.

Contaminants released by the Facility that do not have Benchmark 1 standards or guidelines in the ACB List are considered to be 'Contaminants with No MECP POI Limits'. Where applicable, predicted POI concentrations of Contaminants with No MECP POI Limits were screened against the Benchmark 2 screening levels in the ACB List or the de minimus limit.

The modelled concentrations of all compounds assessed were below their relevant MECP standards. The Emission Summary Table has been updated and is included in Appendix B. It has been modified to include reference to the new ACB List and to meet the requirements of the updated MECP guidance document "Procedure for preparing an Emission Summary and Dispersion Modelling Report" (PIBs 3614e04.1, March 2018). Results are presented both with and without meteorological anomaly removal but only the results with meteorological anomaly removal are presented as a percentage of the relevant limit.

The contaminant with the highest predicted concentration relative to O.Reg. 419/05 standard is Nitrogen Oxides at 11% of the relevant limit.

5.0 SUMMARY OF MODELLING UPDATES

The dispersion modelling for the DYEC was updated to reflect data obtained from Voluntary April 2023 source testing. A summary of the changes made to the modelling are provided in Table 5, below.

Table 5: ECA Concordance Table

Modelling Inputs	Changes from 2011 ESDM Report
Emission Rates	Updated to use April 2023 Source Testing Data. List of contaminants assessed expanded to include all contaminants for which source testing data was performed.
Model and Model Version	Updated model versions in consultation with MECP (See section 3.0)
Meteorology and Terrain data	Updated meteorological and terrain data prepared in consultation with MECP (See Section 3.2)
Receptors	Minor modifications made to receptors located on outskirts of modelling grid to reflect updated domain (See Section 3.3)
Building Downwash	No Change
Deposition	No Change
Chemical Transformations	No Change
Thermal Internal Boundary Layer	No Change
Averaging Times and Conversions	CALPOST input file was modified to generate annual averaging to account for new O.Reg. 419/05 standards introduced in 2016 that include annual averaging periods.
Dispersion Modelling Options	No Change
Background Air Quality Concentrations	Ozone background data used in secondary particulate modelling consistent with the EA.
Emission Summary Table	Updated to include 2023 O.Reg. 419/05 standards introduced after the ECA was approved and contaminants that were not included in the ESDM report but for which source testing data was available.

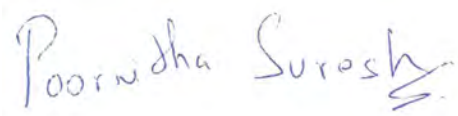
6.0 CONCLUSIONS

This assessment was completed to document compliance with Condition 8(7) and 8(8) of Schedule E of the ECA for the DYEC. The results of this assessment demonstrate that the Facility is operating in compliance with the POI limits listed in s.20 of O. Reg. 419/05.

7.0 CLOSURE

We trust this memorandum meets your needs at this time. Should you have any questions please contact the undersigned.

WSP Canada Inc.



Poornitha Suresh, M.Eng.
Air Quality Specialist

Katherine Armstrong, M.Sc.
Team Lead - Air Quality Modelling and Approvals

PS/KSA/ng

https://wsponlinecan.sharepoint.com/sites/ca-ca00079061462/shared documents/05. technical/report/22515701-tm-rev0 covanta updated modelling memo 10july2023 copy.docx

APPENDIX A

Site-Wide Emission Inventory

Appendix A
Site-Wide Emission Inventory

Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
1A	Main Stack - Spring 2023 Source Testing Conditions	55.09	139.7	1.7	87.6	(680538, 4860346)	1 – methylnaphthalene	90-12-0	4.26E-07	1,24, annual	ST	Above-Average	100%
							1,1,2-Trichloroethane	79-00-5	1.69E-04	1,24, annual	ST	Above-Average	100%
							1,2,3,4-tetrachlorobenzene	634-66-2	7.70E-08	1,24, annual	ST	Above-Average	100%
							1,2,3-trichlorobenzene	87-61-6	7.70E-08	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	120-82-1	1.72E-07	1,24, annual	ST	Above-Average	100%
							1,2,4,5-Tetrachlorobenzene	95-94-3	7.70E-08	1,24, annual	ST	Above-Average	100%
							1,2-Dichlorobenzene	95-50-1	6.24E-07	1,24, annual	ST	Above-Average	100%
							1,2-Dichloroethane	107-06-2	1.69E-04	1,24, annual	ST	Above-Average	100%
							1,2-Dichloropropane	78-87-5	1.69E-04	1,24, annual	ST	Above-Average	100%
							1,3,5-trichlorobenzene	108-70-3	7.70E-08	1,24, annual	ST	Above-Average	100%
							1,3-Butadiene	106-99-0	1.69E-04	1,24, annual	ST	Above-Average	100%
							1,3-Dichlorobenzene	541-73-1	9.13E-07	1,24, annual	ST	Above-Average	100%
							1,4-Dichlorobenzene	106-46-7	8.72E-07	1,24, annual	ST	Above-Average	100%
							1-Methylphenanthrene	832-69-9	7.70E-08	1,24, annual	ST	Above-Average	100%
							2 – methylnaphthalene	91-57-6	6.68E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,5-tetrachlorophenol	4901-51-3	3.85E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,6-Tetrachlorophenol	58-90-2	3.85E-07	1,24, annual	ST	Above-Average	100%
							2,3,4-trichlorophenol	15950-66-0	3.85E-07	1,24, annual	ST	Above-Average	100%
							2,3,5,6-tetrachlorophenol	935-95-5	3.85E-07	1,24, annual	ST	Above-Average	100%
							2,3,5-trichlorophenol	933-78-8	3.85E-07	1,24, annual	ST	Above-Average	100%
							2,3,6-trichlorophenol	933-75-5	3.85E-07	1,24, annual	ST	Above-Average	100%
							2,3-dichlorophenol	576-24-9	3.85E-07	1,24, annual	ST	Above-Average	100%
							2,4,5-trichlorophenol	95-95-4	3.85E-07	1,24, annual	ST	Above-Average	100%
							2,4,6-Trichlorophenol	88-06-2	3.85E-07	1,24, annual	ST	Above-Average	100%
							2,4-Dichlorophenol	120-83-2	3.85E-07	1,24, annual	ST	Above-Average	100%
							2,6-dichlorophenol	87-65-0	3.85E-07	1,24, annual	ST	Above-Average	100%
							2-Butanone	78-93-3	1.69E-04	1,24, annual	ST	Above-Average	100%
							2-Chloronaphthalene	91-58-7	7.70E-08	1,24, annual	ST	Above-Average	100%
							2-Methylanthracene	613-12-7	1.38E-07	1,24, annual	ST	Above-Average	100%
							2-monochlorophenol	95-57-8	3.85E-07	1,24, annual	ST	Above-Average	100%
							3,4,5-trichlorophenol	609-19-8	3.85E-07	1,24, annual	ST	Above-Average	100%
							3,4-dichlorophenol	95-77-2	3.85E-07	1,24, annual	ST	Above-Average	100%
							3,5-dichlorophenol	591-35-5	3.85E-07	1,24, annual	ST	Above-Average	100%
							3-Methylcholanthrene	56-49-5	3.85E-07	1,24, annual	ST	Above-Average	100%
							3-monochlorophenol	108-43-0	3.85E-07	1,24, annual	ST	Above-Average	100%
							4-monochlorophenol	106-48-9	3.85E-07	1,24, annual	ST	Above-Average	100%
							7,12-Dimethylbenzo(a)anthracene	57-97-6	7.73E-08	1,24, annual	ST	Above-Average	100%
							9,10-Dimethylanthracene	781-43-1	7.73E-08	1,24, annual	ST	Above-Average	100%
							9-Methylphenanthrene	883-20-5	3.09E-07	1,24, annual	ST	Above-Average	100%
							Acenaphthene	83-32-9	1.13E-07	1,24, annual	ST	Above-Average	7%
							Acenaphthylene	208-96-8	2.54E-07	1,24, annual	ST	Above-Average	8%
							Acetaldehyde	75-07-0	1.92E-03	1,24, annual	ST	Above-Average	100%
							Acetone	67-64-1	1.70E-04	1,24, annual	ST	Above-Average	100%
							Acrolein	107-02-8	2.00E-03	1,24, annual	ST	Above-Average	100%
							Ammonia	7664-41-7	2.32E-02	1,24, annual	ST	Above-Average	100%
							Anthracene	120-12-7	8.61E-08	1,24, annual	ST	Above-Average	18%
							Antimony	7440-36-0	2.06E-06	1,24, annual	ST	Above-Average	100%
							Arsenic	7440-38-2	1.70E-06	1,24, annual	ST	Above-Average	100%
							Barium	7440-39-3	1.94E-05	1,24, annual	ST	Above-Average	100%
							Benzene	71-43-2	1.69E-04	1,24, annual	ST	Above-Average	40%
							Benzo(a)anthracene	56-55-3	7.70E-08	1,24, annual	ST	Above-Average	27%
							Benzo(a)fluorene	238-84-6	7.70E-08	1,24, annual	ST	Above-Average	100%
							Benzo(a)pyrene	50-32-8	7.70E-08	1,24, annual	ST	Above-Average	48%
							Benzo(b)fluoranthene	205-99-2	1.82E-07	1,24, annual	ST	Above-Average	33%
							Benzo(b)fluorene	243-17-4	7.70E-08	1,24, annual	ST	Above-Average	100%
							Benzo(e)pyrene	192-97-2	7.70E-08	1,24, annual	ST	Above-Average	100%
							Benzo(g,h,i)perylene	191-24-2	7.70E-08	1,24, annual	ST	Above-Average	100%
							Benzo(k)fluoranthene	207-08-9	1.15E-07	1,24, annual	ST	Above-Average	62%
							Beryllium	7440-41-7	1.70E-06	1,24, annual	ST	Above-Average	100%
							Biphenyl	92-51-3	5.43E-07	1,24, annual	ST	Above-Average	100%
							Bromodichloromethane	75-27-4	1.69E-04	1,24, annual	ST	Above-Average	100%
							Bromoform	75-25-2	1.69E-04	1,24, annual	ST	Above-Average	100%
							Bromomethane	74-83-9	1.69E-04	1,24, annual	ST	Above-Average	100%
							Cadmium	7440-43-9	3.93E-06	1,24, annual	ST	Above-Average	100%
							Carbon Monoxide	630-08-0	4.87E-01	1,24, annual	ST	Above-Average	66%
							Carbon tetrachloride	56-23-5	1.69E-04	1,24, annual	ST	Above-Average	100%
							Chlorobenzene	108-90-7	8.86E-06	1,24, annual	ST	Above-Average	100%
							Chloroform	67-66-3	1.69E-04	1,24, annual	ST	Above-Average	100%
							Chromium (hexavalent)	18540-29-9	3.69E-05	1,24, annual	ST	Above-Average	100%
							Chrysene	218-01-9	1.42E-07	1,24, annual	ST	Above-Average	22%
							Cobalt	7440-48-4	1.28E-06	1,24, annual	ST	Above-Average	100%
							Copper	7440-50-8	7.62E-05	1,24, annual	ST	Above-Average	100%
							Coronene	191-07-1	3.85E-07	1,24, annual	ST	Above-Average	100%
							Cumene (Isopropylbenzene)	98-82-8	1.69E-04	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,c)anthracene	215-58-7	7.70E-08	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,e)pyrene	192-65-4	3.80E-07	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,h)anthracene	53-70-3	7.70E-08	1,24, annual	ST	Above-Average	40%
							Dibromochloromethane	124-48-1	1.69E-04	1,24, annual	ST	Above-Average	100%
							Dichlorodifluoromethane	75-71-8	1.69E-04	1,24, annual	ST	Above-Average	100%
							Dichloroethene, 1,1 -	75-34-3	1.69E-04	1,24, annual	ST	Above-Average	100%
							Dichloromethane	75-09-2	1.69E-04	1,24, annual	ST	Above-Average	100%
							Dioxins, Furans and Dioxin- like PCBs	N/A	0.00033 µg TEQ/s	1,24, annual	ST	Above-Average	100%
							Ethylbenzene	100-41-4	1.69E-04	1,24, annual	ST	Above-Average	100%
							Ethylene Dibromide	106-93-4	1.69E-04	1,24, annual	ST	Above-Average	100%
							Fluoranthene	206-44-0	5.30E-07	1,24, annual	ST	Above-Average	29%
							Fluorides	7664-39-3	3.93E-03	1,24, annual	ST	Above-Average	100%
							Fluorene	86-73-7	2.24E-07	1,24, annual	ST	Above-Average	5%
							Formaldehyde	50-00-0	5.40E-04	1,24, annual	ST	Above-Average	95%
							Hexachlorobenzene	118-74-1	7.70E-08	1,24, annual	ST	Above-Average	100%
							Hydrogen Chloride	7647-01-0	1.35E-01	1,24, annual	ST	Above-Average	100%
							Indeno(1,2,3 – cd)pyrene	193-39-5	7.73E-08	1,24, annual	ST	Above-Average	36%
							Lead	7439-92-1	8.41E-06	1,24, annual	ST	Above-Average	100%
							M&P-Xylene	179601-23-1	3.41E-04	1,24, annual	ST	Above-Average	100%
							Mercury	7439-97-6	3.36E-06	1,24, annual	ST	Above-Average	100%
							Mesitylene (1,3,5-Trimethylbenzene)	108-67-8	1.69E-04	1,24, annual	ST	Above-Average	100%
							Molybdenum	7439-98-7	3.15E-04	1,24, annual	ST	Above-Average	100%
							m-Terphenyl	92-06-8	7.99E-08	1,24, annual	ST	Above-Average	100%
							Naphthalene	91-20-3	4.60E-06	1,24, annual	ST	Above-Average	10%
							Nickel	7440-02-0	2.75E-05	1,24, annual	ST	Above-Average	100%
							Nitrogen Oxides	10102-44-0	4.29E+00	1,24, annual	ST	Above-Average	44%
							Nitrogen Oxides	10102-44-0	4.29E+00	1,24, annual	ST	Above-Average	44%
							O-terphenyl	84-15-1	8.45E-08	1,24, annual	ST	Above-Average	100%
							O-Xylene	95-47-6	1.69E-04	1,24, annual	ST	Above-Average	100%
							Pentachlorobenzene	608-93-5	7.70E-08	1,24, annual	ST	Above-Average	100%
							Pentachlorophenol	87-86-5	3.85E-07	1,24, annual	ST	Above-Average	100%
							Perylene	198-55-0	8.37E-08	1,24, annual	ST	Above-Average	100%
							Phenanthrene	85-01-8	3.21E-06	1,24, annual	ST	Above-Average	19%
							Picene	213-46-7	3.85E-07	1,24, annual	ST	Above-Average	100%
							PM10 (Condensable and Filterable)	N/A	1.95E-01	1,24, annual	ST	Above-Average	76%
							PM10 (Filterable Only)	N/A	2.76E-02	1,24, annual	ST	Above-Average	100%
							PM2.5 (Condensable and Filterable)	N/A	1.82E-01	1,24, annual	ST	Above-Average	75%
							PM2.5 (Filterable Only)	N/A	1.50E-02	1,24, annual	ST	Above-Average	100%
							Polychlorinated Biphenyls (PCB)	N/A	3.30E-04	1,24, annual	ST	Above-Average	100%
							p-Terphenyl	92-94-4	7.70E-08	1,24, annual	ST	Above-Average	100%
							Pyrene	129-00-0	4.86E-07	1,24, annual	ST	Above-Average	29%

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 [%]
							Selenium	7782-49-2	8.51E-06	1,24, annual	ST	Above-Average	100%
							Silver	7440-22-4	1.70E-06	1,24, annual	ST	Above-Average	100%
							Styrene	100-42-5	1.69E-04	1,24, annual	ST	Above-Average	100%
							Sulphur Dioxide	7446-09-5	2.54E-03	1,24, annual	ST	Above-Average	12%
							Tetrachloroethene	127-18-4	1.69E-04	1,24, annual	ST	Above-Average	100%
							Tetralin	119-64-2	5.58E-07	1,24, annual	ST	Above-Average	100%
							Thallium	7440-28-0	1.70E-06	1,24, annual	ST	Above-Average	100%
							Toluene	108-88-3	5.56E-03	1,24, annual	ST	Above-Average	98%
							Total Chromium (and compounds)	7440-47-3	3.69E-05	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Condensable and Filterable)	N/A	1.75E-01	1,24, annual	ST	Above-Average	70%
							Total Particulate Matter (Filterable Only)	N/A	8.35E-03	1,24, annual	ST	Above-Average	29%
							trans,1,2-Dichloroethene	156-60-5	1.69E-04	1,24, annual	ST	Above-Average	100%
							Trichloroethane, 1,1,1 -	71-55-6	1.69E-04	1,24, annual	ST	Above-Average	100%
							Trichloroethene	79-01-6	1.69E-04	1,24, annual	ST	Above-Average	100%
							Trichloroethylene, 1,1,2 -	79-01-6	1.69E-04	1,24, annual	ST	Above-Average	100%
							Trichlorofluoromethane	75-69-4	1.69E-04	1,24, annual	ST	Above-Average	100%
							Trichlorotrifluoroethane	76-13-1	1.69E-04	1,24, annual	ST	Above-Average	100%
							Vanadium	7440-62-2	1.29E-06	1,24, annual	ST	Above-Average	100%
							Vinyl chloride	75-01-4	1.69E-04	1,24, annual	ST	Above-Average	100%
							Xylenes, m-, p- and o-	1330-20-7	5.10E-04	1,24, annual	ST	Above-Average	89%
							Zinc	7440-66-6	2.23E-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	4%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	4%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	4%
		0.31	Ambient	0.10	4.8768	(680513,4860 332)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	4%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	4%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	4%
		0.31	Ambient	0.10	3.9624	(680517,4860 333)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	4%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	4%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	4%
		0.31	Ambient	0.10	12.4	(680537,4860 391)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	4%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	4%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	4%
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	34%
							Nitrogen Oxides	10102-44-0	1.12E+00	½	EF	Marginal	12%
							Sulphur Dioxide	7446-09-5	1.88E-02	½	EF	Above-Average	88%
							Total Particulate Matter	N/A	3.25E-02	½	EF	Above-Average	13%
							Filterable TSP	N/A	2.03E-02	½	EF	Above-Average	71%
							PM_{10}	N/A	1.88E-02	½	EF	Above-Average	7%
							$PM_{2.5}$	N/A	1.88E-02	½	EF	Above-Average	8%
							Sulphuric Acid	7664-93-9	2.88E-04	½	EC	Above-Average	100%
							Benzene	71-43-2	2.54E-04	½	EF	Marginal	60%
							Toluene	108-88-3	9.21E-05	½	EF	Marginal	2%
							Xylenes, m-, p- and o-	1330-20-7	6.32E-05	½	EF	Marginal	11%
							Propylene	115-07-1	9.14E-04	½	EF	Marginal	100%
							Formaldehyde	50-00-0	2.58E-05	½	EF	Marginal	5%
							Acetaldehyde	75-07-0	8.26E-06	½	EF	Marginal	<1%
							Acrolein	107-02-8	2.58E-06	½	EF	Marginal	<1%
							Naphthalene	91-20-3	4.26E-05	½	EF	Marginal	90%
							Acenaphthylene	208-96-8	3.02E-06	½	EF	Marginal	92%
							Acenaphthene	83-32-9	1.53E-06	½	EF	Marginal	93%
							Fluorene	86-73-7	4.19E-06	½	EF	Marginal	95%
							Phenanthrene	85-01-8	1.34E-05	½	EF	Marginal	81%
							Anthracene	120-12-7	4.03E-07	½	EF	Marginal	82%
							Fluoranthene	206-44-0	1.32E-06	½	EF	Marginal	71%
							Pyrene	129-00-0	1.22E-06	½	EF	Marginal	71%
							Benzo(a)anthracene	56-55-3	2.04E-07	½	EF	Marginal	73%
							Chrysene	218-01-9	5.01E-07	½	EF	Marginal	78%
							Benzo(b)fluoranthene	205-99-2	3.64E-07	½	EF	Marginal	67%
							Benzo(k)fluoranthene	207-08-9	7.14E-08	½	EF	Marginal	38%
							Benzo(a)pyrene	50-32-8	8.42E-08	¼	EF	Marginal	52%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.36E-07	½	EF	Marginal	64%
							Dibenzo(a,h)anthracene	53-70-3	1.13E-07	½	EF	Marginal	60%
							Benzo(ghi)perylene	191-24-2	1.82E-07	½	EF	Marginal	100%

APPENDIX B

Emission Summary Table

Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration Before Meteorological Anomaly Removal [µg/m³]	Maximum POI Concentration After Meteorological Anomaly Removal [µg/m³]	Averaging Period	MECP POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MECP Limit [%]	Notes	Version Date of ACB List (i.e. Version 2.0 - April 2018)
1 – methylnaphthalene	90-12-0	4.26E-07	CALPUFF	5.63E-07	4.88E-07	24-hour	35.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
1,2,4 – Trichlorobenzene	120-82-1	1.72E-07	CALPUFF	2.28E-07	1.97E-07	24-hour	400	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
1,2,4,5-Tetrachlorobenzene	95-94-3	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	1	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
1,2-Dichlorobenzene	95-50-1	6.24E-07	CALPUFF	1.95E-05	6.47E-06	1-hour	30500	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
2 – methylnaphthalene	91-57-6	6.68E-07	CALPUFF	8.83E-07	7.66E-07	24-hour	35.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
2,3,4,6-Tetrachlorophenol	58-90-2	3.85E-07	CALPUFF	5.09E-07	4.41E-07	24-hour	0.75	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
2,4,6-Trichlorophenol	88-06-2	3.85E-07	CALPUFF	5.09E-07	4.41E-07	24-hour	1.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
2,4-Dichlorophenol	120-83-2	3.85E-07	CALPUFF	5.09E-07	4.41E-07	24-hour	33.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
3-Methylcholanthrene	56-49-5	3.85E-07	CALPUFF	5.09E-07	4.41E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
7,12-Dimethylbenzo(a)anthracene	57-97-6	7.73E-08	CALPUFF	1.02E-07	8.85E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Acenaphthene	83-32-9	1.13E-07	CALPUFF	1.49E-07	1.29E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Acenaphthylene	208-96-8	2.54E-07	CALPUFF	3.36E-07	2.91E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Acetaldehyde	75-07-0	1.92E-03	CALPUFF	2.54E-03	2.20E-03	24-hour	500	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Acetaldehyde	75-07-0	1.92E-03	CALPUFF	2.54E-03	2.20E-03	24-hour	5000	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Acrolein	107-02-8	2.00E-03	CALPUFF	2.64E-03	2.29E-03	24-hour	0.4	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Acrolein	107-02-8	2.00E-03	CALPUFF	6.25E-02	2.07E-02	1-hour	4.5	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Ammonia	7664-41-7	2.32E-02	CALPUFF	3.07E-02	2.66E-02	24-hour	100	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Ammonia	7664-41-7	2.32E-02	CALPUFF	3.07E-02	2.66E-02	24-hour	1000	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Anthracene	120-12-7	8.61E-08	CALPUFF	1.14E-07	9.87E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Antimony	7440-36-0	2.06E-06	CALPUFF	2.72E-06	2.36E-06	24-hour	25	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Arsenic	7440-38-2	1.70E-06	CALPUFF	2.25E-06	1.95E-06	24-hour	0.3	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Barium	7440-39-3	1.94E-05	CALPUFF	2.57E-05	2.23E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Benzene	71-43-2	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	0.45	Health	Sch. 3	Standard	B1	<1%	Note 7, Table 2, 3 URT - Note 8, Table 4	Version 3.0 April 2023
Benzene	71-43-2	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	100	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Benzene	71-43-2	1.69E-04	CALPUFF	9.57E-06	9.57E-06	Annual	4.5	—	—	AAV	—	0%		Version 3.0 April 2023
Benzo(a)anthracene	56-55-3	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Benzo(a)fluorene	238-84-6	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Benzo(a)pyrene	50-32-8	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.00001	Health	Sch. 3	Standard	B1	<1%	Notes 6, 7, Table 2, 3 URT - Note 8, Table 4	Version 3.0 April 2023
Benzo(a)pyrene	50-32-8	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.005	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Benzo(a)pyrene	50-32-8	7.70E-08	CALPUFF	4.35E-09	4.35E-09	Annual	0.0001	—	—	AAV	—	0%		Version 3.0 April 2023
Benzo(b)fluoranthene	205-99-2	1.82E-07	CALPUFF	2.40E-07	2.08E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Benzo(b)fluorene	243-17-4	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Benzo(e)pyrene	192-97-2	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Benzo(g,h,i)perylene	191-24-2	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Benzo(k)fluoranthene	207-08-9	1.15E-07	CALPUFF	1.52E-07	1.31E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Beryllium	7440-41-7	1.70E-06	CALPUFF	2.25E-06	1.95E-06	24-hour	0.01	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Biphenyl	92-51-3	5.43E-07	CALPUFF	7.17E-07	6.22E-07	24-hour	170	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Bromodichloromethane	75-27-4	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	350	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Bromoform	75-25-2	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	55	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Bromomethane	74-83-9	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	1350	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Cadmium	7440-43-9	3.93E-06	CALPUFF	5.19E-06	4.50E-06	24-hour	0.025	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Cadmium	7440-43-9	3.93E-06	CALPUFF	5.19E-06	4.50E-06	24-hour	0.25	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Carbon Monoxide	630-08-0	4.87E-01	CALPUFF	1.83E+01	6.06E+00	½-hour	6000	Health	Sch. 3	Standard	B1	<1%	Note 17	Version 3.0 April 2023
Carbon tetrachloride	56-23-5	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	2.4	Health	Sch. 3	Standard	B1	<1%	URT - Note B, Table 4	Version 3.0 April 2023
Carbon tetrachloride	56-23-5	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	24	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Chlorobenzene	108-90-7	8.86E-06	CALPUFF	2.77E-04	9.19E-05	1-hour	3500	Health Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11	Version 3.0 April 2023
Chlorobenzene	108-90-7	8.86E-06	CALPUFF	4.57E-04	1.52E-04	10-minute	4,500	Health Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11	Version 3.0 April 2023
Chloroform	67-66-3	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Chloroform	67-66-3	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	100	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Chromium (hexavalent)	18540-29-9	3.69E-05	CALPUFF	2.09E-06	2.09E-06	Annual	0.00014	Health	Sch. 3	Standard	B1	1%	Notes 7, 29, Tables 2, 3 URT - Note 8, Table 4	Version 3.0 April 2023
Chromium (hexavalent)	18540-29-9	3.69E-05	CALPUFF	4.88E-05	4.23E-05	24-hour	0.07	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Chromium (hexavalent)	18540-29-9	3.69E-05	CALPUFF	2.09E-06	2.09E-06	Annual	0.0014	—	—	AAV	—	0%		Version 3.0 April 2023
Chrysene	218-01-9	1.42E-07	CALPUFF	1.88E-07	1.63E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Cobalt	7440-48-4	1.28E-06	CALPUFF	1.69E-06	1.46E-06	24-hour	0.1	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Copper	7440-50-8	7.62E-05	CALPUFF	1.01E-04	8.73E-05	24-hour	50	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Dibenzo(a,c)anthracene	215-58-7	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Dibenzo(a,h)anthracene	53-70-3	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Dichlorodifluoromethane	75-71-8	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	500000	Health	Sch. 3	Guideline	B1	<1%	Note 15	Version 3.0 April 2023
Dichloroethene, 1,1 -	75-34-3	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	165	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Dichloroethene, 1,1 -	75-34-3	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	1650	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Dichloromethane	75-09-2	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	220	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023

Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration Before Meteorological Anomaly Removal [µg/m³]	Maximum POI Concentration After Meteorological Anomaly Removal [µg/m³]	Averaging Period	MECP POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MECP Limit [%]	Notes	Version Date of ACB List (i.e. Version 2.0 - April 2018)
Dichloromethane	75-09-2	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	22000	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Dioxins, Furans and Dioxin- like PCBs	N/A	0.00033 µg TEQ/s	CALPUFF	0.00044 pg TEQ/m³	0.00038 pg TEQ/m³	24-hour	0.1 pg TEQ/m³	—	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Ethylbenzene	100-41-4	1.69E-04	CALPUFF	8.72E-03	2.89E-03	10-minute	1900	Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11	Version 3.0 April 2023
Ethylbenzene	100-41-4	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	1000	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Ethylbenzene	100-41-4	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	10000	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Ethylene Dibromide	106-93-4	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	3	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Fluoranthene	206-44-0	5.30E-07	CALPUFF	7.00E-07	6.07E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Fluorene	86-73-7	2.24E-07	CALPUFF	2.96E-07	2.57E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Fluorides	7664-39-3	3.93E-03	CALPUFF	5.19E-03	4.50E-03	24-hour	0.86	Vegetation	Sch. 3	Standard	B1	<1%	Notes 10, 24	Version 3.0 April 2023
Fluorides	7664-39-3	3.93E-03	CALPUFF	6.51E-04	6.51E-04	30-day	0.34	Vegetation	Sch. 3	Standard	B1	<1%	Notes 10, 24	Version 3.0 April 2023
Formaldehyde	50-00-0	5.40E-04	CALPUFF	7.14E-04	6.19E-04	24-hour	65	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Hexachlorobenzene	118-74-1	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.011	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Hexachlorobenzene	118-74-1	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	0.01	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Hydrogen Chloride	7647-01-0	1.35E-01	CALPUFF	1.78E-01	1.54E-01	24-hour	20	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Hydrogen Chloride	7647-01-0	1.35E-01	CALPUFF	1.78E-01	1.54E-01	24-hour	200	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Indeno(1,2,3 – cd)pyrene	193-39-5	7.73E-08	CALPUFF	1.02E-07	8.85E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Lead	7439-92-1	8.41E-06	CALPUFF	1.11E-05	9.63E-06	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Lead	7439-92-1	8.41E-06	CALPUFF	1.39E-06	1.39E-06	30-day	0.2	Health	Sch. 3	Standard	B1	<1%	Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Lead	7439-92-1	8.41E-06	CALPUFF	1.11E-05	9.63E-06	24-hour	2	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Mercury	7439-97-6	3.36E-06	CALPUFF	4.44E-06	3.85E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Mercury	7439-97-6	3.36E-06	CALPUFF	4.44E-06	3.85E-06	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Molybdenum	7439-98-7	3.15E-04	CALPUFF	4.16E-04	3.61E-04	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Naphthalene	91-20-3	4.60E-06	CALPUFF	6.08E-06	5.27E-06	24-hour	22.5	Health Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11	Version 3.0 April 2023
Naphthalene	91-20-3	4.60E-06	CALPUFF	2.37E-04	7.87E-05	10-minute	50	Health Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11	Version 3.0 April 2023
Nickel	7440-02-0	2.75E-05	CALPUFF	1.55E-06	1.55E-06	Annual	0.04	Health	Sch. 3	Standard	B1	<1%	Note 7, Table 2, 3 URT - Note 8, Table 4	Version 3.0 April 2023
Nickel	7440-02-0	2.75E-05	CALPUFF	3.63E-05	3.15E-05	24-hour	2	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Nickel	7440-02-0	2.75E-05	CALPUFF	1.55E-06	1.55E-06	Annual	0.4	—	—	AAV	—	0%		Version 3.0 April 2023
Nitrogen Oxides	10102-44-0	4.29E+00	CALPUFF	5.67E+00	4.92E+00	24-hour	200	Health	Sch. 3	Standard	B1	2%	Notes 10, 28	Version 3.0 April 2023
Nitrogen Oxides	10102-44-0	4.29E+00	CALPUFF	1.34E+02	4.45E+01	1-hour	400	Health	Sch. 3	Standard	B1	11%	Notes 10, 28	Version 3.0 April 2023
O-terphenyl	84-15-1	8.45E-08	CALPUFF	1.12E-07	9.69E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Pentachlorobenzene	608-93-5	7.70E-08	CALPUFF	1.02E-07	8.82E-08	24-hour	80	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Pentachlorophenol	87-86-5	3.85E-07	CALPUFF	5.09E-07	4.41E-07	24-hour	20	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Perylene	198-55-0	8.37E-08	CALPUFF	1.11E-07	9.59E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Phenanthrene	85-01-8	3.21E-06	CALPUFF	4.24E-06	3.67E-06	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
PM10 (Condensable and Filterable)	N/A	1.95E-01	CALPUFF	2.57E-01	2.23E-01	24-hour	50	Particulate	—	AAQC	—	<1%		Version 3.0 April 2023
PM10 (Filterable Only)	N/A	2.76E-02	CALPUFF	3.65E-02	3.16E-02	24-hour	50	Particulate	—	AAQC	—	<1%		Version 3.0 April 2023
PM2.5 (Condensable and Filterable)	N/A	1.82E-01	CALPUFF	2.41E-01	2.09E-01	24-hour	27	Particulate	—	AAQC	—	1%		Version 3.0 April 2023
PM2.5 (Filterable Only)	N/A	1.50E-02	CALPUFF	1.98E-02	1.72E-02	24-hour	27	Particulate	—	AAQC	—	<1%		Version 3.0 April 2023
Pyrene	129-00-0	4.86E-07	CALPUFF	6.42E-07	5.57E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Version 3.0 April 2023
Selenium	7782-49-2	8.51E-06	CALPUFF	1.12E-05	9.75E-06	24-hour	10	Health	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Silver	7440-22-4	1.70E-06	CALPUFF	2.25E-06	1.95E-06	24-hour	1	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Sulphur Dioxide	7446-09-5	2.54E-03	CALPUFF	7.93E-02	2.63E-02	1-hour	100	Health & Vegetation	Sch. 3	Standard	B1	<1%	Effective date - July 1, 2023 Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Sulphur Dioxide	7446-09-5	2.54E-03	CALPUFF	1.44E-04	1.44E-04	annual	10	Health & Vegetation	Sch. 3	Standard	B1	<1%	Effective date - July 1, 2023 Note 10 URT - Note 8, Table 4	Version 3.0 April 2023
Sulphur Dioxide	7446-09-5	2.54E-03	CALPUFF	7.93E-02	2.63E-02	1-hour	690	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Sulphur Dioxide	7446-09-5	2.54E-03	CALPUFF	7.93E-02	2.63E-02	1-hour	690	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Tetrachloroethene	127-18-4	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	360	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Tetrachloroethene	127-18-4	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	3600	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Tetralin	119-64-2	5.58E-07	CALPUFF	7.38E-07	6.40E-07	24-hour	151.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Thallium	7440-28-0	1.70E-06	CALPUFF	2.25E-06	1.95E-06	24-hour	0.5	Health	Sch. 3	SL-JSL	B2	Below B2		Version 3.0 April 2023
Toluene	108-88-3	5.56E-03	CALPUFF	7.34E-03	6.37E-03	24-hour	2000	Odour	Sch. 3	Guideline	B1	<1%	To be updated - Note 13	Version 3.0 April 2023
Total Chromium (and compounds)	7440-47-3	3.69E-05	CALPUFF	4.88E-05	4.23E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 22 URT - Note 8, Table 4	Version 3.0 April 2023
Total Chromium (and compounds)	7440-47-3	3.69E-05	CALPUFF	4.88E-05	4.23E-05	24-hour	5	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Total Particulate Matter (Condensable and Filterable)	N/A	1.75E-01	CALPUFF	2.32E-01	2.01E-01	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Total Particulate Matter (Filterable only)	N/A	8.35E-03	CALPUFF	1.10E-02	9.57E-03	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%		Version 3.0 April 2023
Trichloroethane, 1,1,1 -	71-55-6	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	115000	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Trichloroethene	79-01-6	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	12	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023

Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration Before Meteorological Anomaly Removal [µg/m³]	Maximum POI Concentration After Meteorological Anomaly Removal [µg/m³]	Averaging Period	MECP POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MECP Limit [%]	Notes	Version Date of ACB List (i.e. Version 2.0 - April 2018)
Trichloroethene	79-01-6	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	1200	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Trichloroethylene, 1,1,2 -	79-01-6	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	12	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Trichloroethylene, 1,1,2 -	79-01-6	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	1200	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Trichlorofluoromethane	75-69-4	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	6000	Health	Sch. 3	Guideline	B1	<1%	Note 15	Version 3.0 April 2023
Vanadium	7440-62-2	1.29E-06	CALPUFF	1.71E-06	1.48E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023
Vinyl chloride	75-01-4	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4	Version 3.0 April 2023
Vinyl chloride	75-01-4	1.69E-04	CALPUFF	2.24E-04	1.94E-04	24-hour	100	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Xylenes, m-, p- and o-	1330-20-7	5.10E-04	CALPUFF	2.63E-02	8.73E-03	10-minute	3000	Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11, 19	Version 3.0 April 2023
Xylenes, m-, p- and o-	1330-20-7	5.10E-04	CALPUFF	6.74E-04	5.85E-04	24-hour	730	Health	Sch. 3	Standard	B1	<1%	Notes 10, 19 URT - Note 8, Table 4	Version 3.0 April 2023
Xylenes, m-, p- and o-	1330-20-7	5.10E-04	CALPUFF	6.74E-04	5.85E-04	24-hour	7300	—	Sch. 6	URT	—	Below URT		Version 3.0 April 2023
Zinc	7440-66-6	2.23E-04	CALPUFF	2.95E-04	2.56E-04	24-hour	120	Particulate	Sch. 3	Standard	B1	<1%		Version 3.0 April 2023

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
24-Apr-23	8:00	9.54	11		0		109		2		0	9
24-Apr-23	9:00	8.98	9		0		113		2		0	8
24-Apr-23	10:00	9.16	16		0		111		2		0	8
24-Apr-23	11:00	9.15	9	11.3	0		104		2		0	8
24-Apr-23	12:00	9.12	10	11.0	0		109		2		0	8
24-Apr-23	13:00	8.76	13	12.0	0		110		1		0	8
24-Apr-23	14:00	9.10	11	10.8	0		112		1		0	8
24-Apr-23	15:00	9.24	9	10.8	0		108		2		0	8
24-Apr-23	16:00	9.00	6	9.8	0		114		2		0	8
24-Apr-23	17:00	8.94	5	7.8	0		104		1		0	8
24-Apr-23	18:00	8.95	8	7.0	0		117		1		0	8
24-Apr-23	19:00	9.16	9	7.0	0		108		1		0	8
24-Apr-23	20:00	9.41	8	7.5	0		110		1		0	8
24-Apr-23	21:00	8.98	13	9.5	0		112		1		0	8
24-Apr-23	22:00	8.86	7	9.3	0		111		1		0	8
24-Apr-23	23:00	8.89	11	9.8	0		107		1		0	8
25-Apr-23	0:00	9.05	8	9.8	0		112		2		0	8
25-Apr-23	1:00	8.94	6	8.0	0		106		1		0	8
25-Apr-23	2:00	8.62	6	7.8	0		105		1		0	8
25-Apr-23	3:00	8.82	10	7.5	0		104		1		0	8
25-Apr-23	4:00	9.09	7	7.3	0		110		1		0	8
25-Apr-23	5:00	8.74	7	7.5	0		118		1		0	8
25-Apr-23	6:00	9.03	7	7.8	0		114		1		0	8
25-Apr-23	7:00	8.69	11	8.0	0	0.0	112	110	1	1.3	0	8
25-Apr-23	8:00	9.06	9	8.5	0	0.0	105	110	1	1.3	0	8
25-Apr-23	9:00	9.02	12	9.8	0	0.0	109	110	1	1.3	0	8
25-Apr-23	10:00	9.08	12	11.0	0	0.0	109	110	1	1.2	0	8
25-Apr-23	11:00	10.03	9	10.5	0	0.0	110	110	1	1.2	0	9
25-Apr-23	12:00	9.33	9	10.5	0	0.0	112	110	1	1.1	0	8
25-Apr-23	13:00	9.03	12	10.5	0	0.0	108	110	1	1.1	0	8
25-Apr-23	14:00	9.12	7	9.3	0	0.0	108	110	1	1.1	0	8
25-Apr-23	15:00	8.97	12	10.0	0	0.0	115	110	0	1.0	0	8
25-Apr-23	16:00	8.88	13	11.0	0	0.0	111	110	0	1.0	0	8
25-Apr-23	17:00	8.60	9	10.3	0	0.0	108	110	0	0.9	0	8
25-Apr-23	18:00	8.81	6	10.0	0	0.0	110	110	1	0.9	0	8
25-Apr-23	19:00	9.01	7	8.8	0	0.0	109	110	1	0.9	0	8
25-Apr-23	20:00	9.36	10	8.0	0	0.0	108	110	0	0.9	0	8
25-Apr-23	21:00	9.00	9	8.0	0	0.0	112	110	0	0.8	0	8
25-Apr-23	22:00	9.03	10	9.0	0	0.0	110	110	1	0.8	0	8
25-Apr-23	23:00	9.28	7	9.0	1	0.0	107	110	1	0.8	0	8
26-Apr-23	0:00	9.18	8	8.5	0	0.0	110	110	1	0.8	2	8
26-Apr-23	1:00	9.07	9	8.5	0	0.0	106	110	1	0.8	1	8
26-Apr-23	2:00	9.22	8	8.0	0	0.0	108	110	1	0.8	0	8
26-Apr-23	3:00	9.00	9	8.5	0	0.0	106	110	0	0.8	0	8
26-Apr-23	4:00	8.80	8	8.5	0	0.0	119	110	0	0.7	0	8
26-Apr-23	5:00	9.16	10	8.8	0	0.0	109	110	1	0.7	0	8
26-Apr-23	6:00	9.00	8	8.8	0	0.0	116	110	1	0.7	0	8
26-Apr-23	7:00	8.75	11	9.3	0	0.0	114	110	1	0.7	0	8
26-Apr-23	8:00	8.61	10	9.8	0	0.0	108	110	1	0.7	0	8
26-Apr-23	9:00	8.60	8	9.3	0	0.0	109	110	1	0.7	0	8
26-Apr-23	10:00	8.76	14	10.8	0	0.0	114	110	1	0.7	0	8
26-Apr-23	11:00	8.80	6	9.5	0	0.0	108	110	1	0.7	0	8
26-Apr-23	12:00	8.56	6	8.5	0	0.0	112	110	1	0.7	0	8
26-Apr-23	13:00	8.76	11	9.3	0	0.0	108	110	1	0.7	0	8
26-Apr-23	14:00	9.13	9	8.0	0	0.0	109	110	1	0.7	0	8
26-Apr-23	15:00	8.81	6	8.0	0	0.0	110	110	1	0.8	0	8
26-Apr-23	16:00	8.73	6	8.0	0	0.0	110	110	1	0.8	0	8
26-Apr-23	17:00	8.48	6	6.8	0	0.0	108	110	1	0.8	0	8
26-Apr-23	18:00	8.82	10	7.0	0	0.0	114	110	1	0.8	0	8
26-Apr-23	19:00	9.21	17	9.8	0	0.0	111	110	1	0.8	0	8
26-Apr-23	20:00	8.82	12	11.3	0	0.0	106	110	0	0.8	0	8
26-Apr-23	21:00	8.93	11	12.5	0	0.0	110	110	0	0.8	0	8
26-Apr-23	22:00	8.93	13	13.3	0	0.0	109	110	0	0.8	0	8
26-Apr-23	23:00	9.01	9	11.3	0	0.0	108	110	0	0.8	0	8
27-Apr-23	0:00	8.80	9	10.5	0	0.0	109	110	1	0.8	0	8
27-Apr-23	1:00	8.68	7	9.5	0	0.0	112	110	1	0.8	0	8
27-Apr-23	2:00	9.13	7	8.0	0	0.0	109	110	1	0.8	0	8
27-Apr-23	3:00	9.07	10	8.3	0	0.0	116	111	1	0.8	0	8
27-Apr-23	4:00	9.10	8	8.0	0	0.0	118	111	0	0.8	0	8
27-Apr-23	5:00	8.91	7	8.0	0	0.0	105	111	1	0.8	0	8
27-Apr-23	6:00	8.92	8	8.3	0	0.0	118	111	1	0.8	0	8
27-Apr-23	7:00	8.80	7	7.5	0	0.0	113	111	1	0.8	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	Rolling 24-hr	1-hr	1-hr
27-Apr-23	8:00	9.17	8	7.5	0	0.0	106	111	0.8	0	8
27-Apr-23	9:00	8.98	10	8.3	0	0.0	115	111	0.8	0	8
27-Apr-23	10:00	8.81	7	8.0	0	0.0	111	111	0.8	0	8
27-Apr-23	11:00	8.76	6	7.8	0	0.0	104	110	0.8	0	8
27-Apr-23	12:00	8.61	9	8.0	0	0.0	110	110	0.8	0	8
27-Apr-23	13:00	8.69	8	7.5	0	0.0	111	111	0.8	0	8
27-Apr-23	14:00	8.87	10	8.3	0	0.0	111	111	0.8	0	8
27-Apr-23	15:00	8.49	6	8.3	0	0.0	110	111	0.8	0	7
27-Apr-23	16:00	8.69	9	7.9	0	0.0	107	110	0.8	0	8
	Min	8.48	5	6.8	0	0	104	110	0.7	0	7
	Max	10.03	17	13.3	1	0.04	119	111	1.3	2	9
	Avg	8.96	9	9.0	0.01	0.02	110	110	0.8	0	8
	Std Dev	0.25	2.4	1.4	0.1	0.0	3.47	0.3	0.2	0	0.2

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
24-Apr-23	8:00	9.53	13		0		117		4		0	9
24-Apr-23	9:00	9.35	16		0		110		3		0	8
24-Apr-23	10:00	9.32	11		0		108		3		0	8
24-Apr-23	11:00	9.55	15	13.8	0		114		3		0	9
24-Apr-23	12:00	9.15	13	13.8	0		106		4		0	8
24-Apr-23	13:00	9.26	13	13.0	0		112		3		0	8
24-Apr-23	14:00	9.59	19	15.0	0		106		3		0	9
24-Apr-23	15:00	8.86	15	15.0	0		113		3		0	8
24-Apr-23	16:00	9.03	23	17.5	4		112		4		0	8
24-Apr-23	17:00	9.02	10	16.8	0		103		4		0	8
24-Apr-23	18:00	9.29	13	15.3	0		107		3		0	8
24-Apr-23	19:00	9.40	16	15.5	0		110		3		0	8
24-Apr-23	20:00	9.10	16	13.8	0		109		3		0	8
24-Apr-23	21:00	9.07	13	14.5	0		110		4		0	8
24-Apr-23	22:00	9.15	15	15.0	0		112		4		0	8
24-Apr-23	23:00	9.39	16	15.0	0		103		3		0	9
25-Apr-23	0:00	9.40	18	15.5	0		113		3		0	8
25-Apr-23	1:00	9.49	13	15.5	0		112		3		0	9
25-Apr-23	2:00	9.23	15	15.5	0		109		3		0	8
25-Apr-23	3:00	9.78	15	15.3	0		108		3		0	9
25-Apr-23	4:00	10.51	20	15.8	0		114		4		0	10
25-Apr-23	5:00	9.55	19	17.3	0		104		4		0	8
25-Apr-23	6:00	9.28	20	18.5	0		113		3		0	8
25-Apr-23	7:00	9.05	15	18.5	0	0.2	117	110	3	3.3	0	8
25-Apr-23	8:00	9.29	19	18.3	0	0.2	108	110	3	3.3	0	8
25-Apr-23	9:00	9.09	17	17.8	0	0.2	109	110	3	3.3	0	8
25-Apr-23	10:00	9.06	13	16.0	0	0.2	111	110	3	3.3	0	8
25-Apr-23	11:00	9.17	16	16.3	0	0.2	108	110	3	3.3	0	8
25-Apr-23	12:00	9.22	16	15.5	0	0.2	109	110	3	3.3	0	8
25-Apr-23	13:00	9.38	19	16.0	0	0.2	120	110	3	3.3	0	8
25-Apr-23	14:00	8.93	11	15.5	0	0.2	103	110	3	3.3	0	8
25-Apr-23	15:00	8.87	8	13.5	0	0.2	110	110	3	3.3	0	8
25-Apr-23	16:00	9.13	10	12.0	0	0.0	106	110	3	3.2	0	8
25-Apr-23	17:00	9.10	12	10.3	0	0.0	115	110	3	3.2	0	8
25-Apr-23	18:00	8.84	14	11.0	0	0.0	107	110	3	3.2	0	8
25-Apr-23	19:00	8.96	18	13.5	0	0.0	113	110	3	3.2	0	8
25-Apr-23	20:00	9.88	14	14.5	0	0.0	105	110	3	3.2	0	9
25-Apr-23	21:00	9.64	16	15.5	0	0.0	112	110	3	3.1	0	9
25-Apr-23	22:00	9.98	19	16.8	5	0.2	108	110	5	3.2	0	9
25-Apr-23	23:00	10.57	19	17.0	1	0.3	110	110	4	3.2	0	10
26-Apr-23	0:00	10.47	17	17.8	0	0.3	112	110	3	3.2	0	10
26-Apr-23	1:00	10.07	13	17.0	0	0.3	110	110	3	3.2	0	9
26-Apr-23	2:00	10.01	14	15.8	0	0.3	104	110	3	3.2	0	9
26-Apr-23	3:00	9.83	18	15.5	0	0.3	99	109	3	3.2	0	9
26-Apr-23	4:00	9.76	16	15.3	0	0.3	117	110	3	3.2	0	9
26-Apr-23	5:00	9.51	21	17.3	0	0.3	108	110	4	3.2	0	8
26-Apr-23	6:00	9.05	12	16.8	0	0.3	117	110	3	3.2	0	8
26-Apr-23	7:00	9.16	18	16.8	0	0.3	106	109	3	3.2	0	8
26-Apr-23	8:00	8.89	15	16.5	0	0.3	112	110	3	3.2	0	8
26-Apr-23	9:00	8.99	17	15.5	0	0.3	107	110	3	3.2	0	8
26-Apr-23	10:00	9.12	15	16.3	0	0.3	112	110	3	3.2	0	8
26-Apr-23	11:00	9.15	15	15.5	0	0.3	106	110	3	3.2	0	8
26-Apr-23	12:00	9.10	21	17.0	0	0.3	113	110	3	3.2	0	8
26-Apr-23	13:00	8.95	17	17.0	0	0.3	118	110	3	3.2	0	8
26-Apr-23	14:00	9.11	19	18.0	0	0.3	101	110	3	3.2	0	8
26-Apr-23	15:00	8.93	14	17.8	0	0.3	117	110	3	3.2	0	8
26-Apr-23	16:00	9.15	12	15.5	0	0.3	101	110	3	3.2	0	8
26-Apr-23	17:00	9.15	22	16.8	0	0.3	110	109	3	3.2	0	8
26-Apr-23	18:00	9.05	20	17.0	0	0.3	107	109	3	3.2	0	8
26-Apr-23	19:00	9.28	24	19.5	0	0.3	109	109	3	3.2	0	8
26-Apr-23	20:00	9.02	19	21.3	0	0.3	109	109	3	3.2	0	8
26-Apr-23	21:00	9.18	33	24.0	0	0.3	109	109	3	3.2	0	8
26-Apr-23	22:00	9.09	24	25.0	0	0.0	109	109	3	3.1	0	8
26-Apr-23	23:00	9.09	19	23.8	0	0.0	107	109	3	3.0	0	8
27-Apr-23	0:00	9.02	33	27.3	0	0.0	112	109	2	3.0	0	8
27-Apr-23	1:00	8.98	30	26.5	0	0.0	109	109	2	3.0	0	8
27-Apr-23	2:00	9.25	23	26.3	0	0.0	114	110	3	3.0	0	8
27-Apr-23	3:00	9.27	9	23.8	0	0.0	122	111	3	3.0	0	8
27-Apr-23	4:00	9.18	8	17.5	0	0.0	123	111	3	3.0	0	8
27-Apr-23	5:00	9.23	13	13.3	0	0.0	118	111	4	3.0	0	8
27-Apr-23	6:00	8.96	11	10.3	0	0.0	123	111	3	3.0	0	8
27-Apr-23	7:00	9.11	9	10.3	0	0.0	108	112	3	3.0	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
27-Apr-23	8:00	9.14	13	11.5	0	0.0	105	111	2	2.9	0	8
27-Apr-23	9:00	9.12	9	10.5	0	0.0	109	111	3	2.9	0	8
27-Apr-23	10:00	9.07	11	10.5	0	0.0	111	111	3	2.9	0	8
27-Apr-23	11:00	9.31	12	11.3	0	0.0	110	111	2	2.9	0	8
27-Apr-23	12:00	9.24	17	12.3	0	0.0	109	111	2	2.8	0	8
27-Apr-23	13:00	9.01	14	13.5	0	0.0	110	111	2	2.8	0	8
27-Apr-23	14:00	9.13	13	14.0	0	0.0	110	111	2	2.8	0	8
27-Apr-23	15:00	8.96	13	14.3	0	0.0	111	111	3	2.8	0	8
27-Apr-23	16:00	8.82	15	13.6	0	0.0	107	111	2	2.7	0	8
	Min	8.82	8	10.3	0	0	99	109	2	2.7	0	8
	Max	10.57	33	27.3	5	0.3	123	112	5	3.3	0	10
	Avg	9.28	16	16.1	0.12	0.13	110	110	3	3.1	0	8
	Std Dev	0.37	4.9	3.6	0.7	0.1	4.79	0.7	0.5	0.2	0	0.5

Note: All times are Eastern Standard Time