



Report:

Reworld Durham York Renewable Energy L.P
Durham York Energy Centre
2024 Voluntary Compliance Emission Testing Program

Date: March 28, 2025



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EXECUTIVE SUMMARY

Alliance Technical Group (ATG), formerly ORTECH Consulting Inc., completed a voluntary compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between December 2 to December 5, 2024. The voluntary emission testing program was performed at the request of the Regions of Durham and York. The current test program is the ninth 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 to date is provided below:

Test Program	Test Date	Report No.
2015 Compliance	September/October 2015	21546
2016 Voluntary	May 2016	21656
2016 Compliance	October/November 2016	21698
2017 Voluntary	May 2017	21754
2017 Compliance	October 2017	21800
2018 Voluntary	May/June 2018	21840
2018 Compliance	September 2018	21880
2019 Voluntary	June 2019	21936
2019 Compliance	September 2019	21960
2020 Voluntary	June 2020	22001
2020 Compliance	November 2020	22050
2021 Voluntary	June 2021	22081
2021 Compliance	November/December 2021	22085
2022 Voluntary	May 2022	22158
2022 Compliance	November/December 2022	22160
2023 Voluntary	April 2023	22230
2023 Compliance	September/October 2023	22235
2024 Compliance	March 2024	22327
2024 Voluntary	December 2024	AST-2024-4547

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.

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. 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	ATG per US EPA Method 25A

Sampling, analysis and reporting were conducted following the procedures detailed in the Pre-Test Plan with the following exception. During the Voluntary Source Test conducted from December 2 to December 5, 2024, the facility encountered unforeseen operational challenges with Boiler No. 2 which impacted the testing process. While two test runs were completed for Semi-Volatile Organic Compounds (SVOC) on Boiler No. 2, an operational issue arose during the third test. The third test was rescheduled for the second week of December, but the issue remained unresolved, forcing the facility to take a feed stop on Boiler No. 2 on December 10 to carry out necessary repairs. Despite the facility's efforts to resolve the issue quickly, the malfunction made it impossible to proceed with the third SVOC test on Boiler No. 2. The SVOC results for Boiler No. 1 are from the triplicate tests conducted as per the Pre-Test Plan.

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

Since relative accuracy and system bias testing was conducted in August 2024, 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 (December 2 to December 5, 2024) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ATG on December 3 and December 4, 2024, was used to assess the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

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

The MECP "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provides an updated framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs. This document was replaced by "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", with the most recent version published on November 5, 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)*	-	-	-	374	-
Average Combustion Zone Temp. (°C)*	-	-	-	1295	-
Steam (tonnes/day)*	-	-	-	795	-
MSW Combusted (tonnes/day)*	-	-	-	202	-
NO _x Reagent Injection Rate (liters/day)*	-	-	-	571	-
Carbon Injection (kg/day)*	-	-	-	125	-
Lime Injection (kg/day)*	-	-	-	3320	-
Filterable Particulate (mg/Rm ³) ⁽¹⁾	<0.34	<0.45	<0.32	<0.37	9
PM ₁₀ with Condensable (mg/Rm ³) ⁽¹⁾	<6.60	<5.31	<5.02	<5.65	-
PM _{2.5} with Condensable (mg/Rm ³) ⁽¹⁾	<6.32	<5.04	<4.74	<5.37	-
Hydrogen Fluoride (mg/Rm ³) ⁽¹⁾	<0.11	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm ³) ⁽¹⁾	0.62	0.59	0.58	0.60	-
Cadmium (µg/Rm ³) ⁽¹⁾	0.051	3.17	<0.022	<1.08	7
Lead (µg/Rm ³) ⁽¹⁾	0.26	0.49	0.11	0.29	50
Mercury (µg/Rm ³) ⁽¹⁾	<0.13	<0.14	<0.13	<0.13	15
Antimony (µg/Rm ³) ⁽¹⁾	<0.045	<0.045	<0.045	<0.045	-
Arsenic (µg/Rm ³) ⁽¹⁾	<0.11	<0.11	<0.11	<0.11	-
Barium (µg/Rm ³) ⁽¹⁾	11.0	11.3	11.1	11.1	-
Beryllium (µg/Rm ³) ⁽¹⁾	<0.045	<0.045	<0.045	<0.045	-
Chromium (µg/Rm ³) ⁽¹⁾	0.78	0.92	0.69	0.80	-
Cobalt (µg/Rm ³) ⁽¹⁾	0.040	<0.045	<0.045	<0.043	-
Copper (µg/Rm ³) ⁽¹⁾	1.45	1.14	1.00	1.20	-
Molybdenum (µg/Rm ³) ⁽¹⁾	4.12	4.05	4.03	4.07	-
Nickel (µg/Rm ³) ⁽¹⁾	0.47	1.41	0.39	0.75	-
Selenium (µg/Rm ³) ⁽¹⁾	<0.22	<0.23	<0.22	<0.22	-
Silver (µg/Rm ³) ⁽¹⁾	<0.045	<0.045	<0.045	<0.045	-
Thallium (µg/Rm ³) ⁽¹⁾	<0.045	<0.045	<0.045	<0.045	-
Vanadium (µg/Rm ³) ⁽¹⁾	<0.11	<0.11	<0.11	<0.11	-
Zinc (µg/Rm ³) ⁽¹⁾	11.8	12.0	10.5	11.4	-
Dioxins and Furans (pg TEQ/Rm ³) ⁽³⁾	<2.67	<2.26	<1.82	<2.25	60
Total Chlorobenzenes (ng/Rm ³) ⁽¹⁾	<490	<429	<333	<417	-
Total Chlorophenols (ng/Rm ³) ⁽¹⁾	<465	<460	<474	<466	-
Total PAHs (ng/Rm ³) ⁽¹⁾	<157	<608	<196	<320	-
VOCs (µg/Rm ³) ⁽¹⁾	<45.9	<23.8	<28.2	<32.6	-
Aldehydes (µg/Rm ³) ⁽¹⁾	<393	<517	<589	<499	-
Total VOCs (µg/Rm ³) ^{(1) (4)}	<439	<541	<617	<532	-
Quench Inlet Organic Matter (THC) (ppm, dry) ⁽²⁾	3.1	1.0	0.6	1.6	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)*	-	-	-	374	-
Average Combustion Zone Temp. (°C)*	-	-	-	1199	-
Steam (tonnes/day)*	-	-	-	793	-
MSW Combusted (tonnes/day)*	-	-	-	210	-
NO _x Reagent Injection Rate (liters/day)*	-	-	-	562	-
Carbon Injection (kg/day)*	-	-	-	124	-
Lime Injection (kg/day)*	-	-	-	3347	-
Filterable Particulate (mg/Rm ³) ⁽¹⁾	<0.39	<0.47	<0.32	<0.39	9
PM ₁₀ with Condensable (mg/Rm ³) ⁽¹⁾	<4.99	<4.25	<3.70	<4.32	-
PM _{2.5} with Condensable (mg/Rm ³) ⁽¹⁾	<4.71	<3.98	<3.42	<4.04	-
Hydrogen Fluoride (mg/Rm ³) ⁽¹⁾	<0.11	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm ³) ⁽¹⁾	0.53	0.54	0.51	0.53	-
Cadmium (µg/Rm ³) ⁽¹⁾	1.51	0.11	0.032	0.55	7
Lead (µg/Rm ³) ⁽¹⁾	0.38	0.44	0.37	0.39	50
Mercury (µg/Rm ³) ⁽¹⁾	<0.14	0.028	<0.13	<0.099	15
Antimony (µg/Rm ³) ⁽¹⁾	<0.046	<0.047	<0.045	<0.046	-
Arsenic (µg/Rm ³) ⁽¹⁾	<0.11	<0.12	<0.11	<0.12	-
Barium (µg/Rm ³) ⁽¹⁾	10.9	11.6	10.7	11.1	-
Beryllium (µg/Rm ³) ⁽¹⁾	<0.046	<0.047	<0.045	<0.046	-
Chromium (µg/Rm ³) ⁽¹⁾	0.81	0.95	0.78	0.85	-
Cobalt (µg/Rm ³) ⁽¹⁾	0.046	0.064	<0.023	<0.044	-
Copper (µg/Rm ³) ⁽¹⁾	1.51	1.45	2.05	1.67	-
Molybdenum (µg/Rm ³) ⁽¹⁾	4.02	4.26	3.84	4.04	-
Nickel (µg/Rm ³) ⁽¹⁾	0.53	1.03	0.45	0.67	-
Selenium (µg/Rm ³) ⁽¹⁾	<0.23	<0.24	<0.23	<0.23	-
Silver (µg/Rm ³) ⁽¹⁾	<0.046	<0.047	<0.045	<0.046	-
Thallium (µg/Rm ³) ⁽¹⁾	<0.046	<0.047	<0.045	<0.046	-
Vanadium (µg/Rm ³) ⁽¹⁾	<0.11	<0.12	<0.11	<0.12	-
Zinc (µg/Rm ³) ⁽¹⁾	10.9	15.7	12.2	12.9	-
Dioxins and Furans (pg TEQ/Rm ³) ⁽³⁾	<2.90	<2.35	-	<2.63	60
Total Chlorobenzenes (ng/Rm ³) ⁽¹⁾	<243	<416	-	<330	-
Total Chlorophenols (ng/Rm ³) ⁽¹⁾	<490	<492	-	<491	-
Total PAHs (ng/Rm ³) ⁽¹⁾	<180	<167	-	<174	-
VOCs (µg/Rm ³) ⁽¹⁾	<34.6	<26.2	<26.7	<29.2	-
Aldehydes (µg/Rm ³) ⁽¹⁾	<663	<768	<714	<715	-
Total VOCs (µg/Rm ³) ^{(1) (4)}	<698	<794	<741	<744	-
Quench Inlet Organic Matter (THC) (ppm, dry) ⁽²⁾	0.5	0.3	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⁾	5.8	13.3	26.0	40
	Hydrogen Chloride (mg/Rm ³) ⁽²⁾	0.1	0.6	1.1	9
	Nitrogen Oxides (mg/Rm ³) ⁽²⁾	110	111	111	121
	Sulphur Dioxide (mg/Rm ³) ⁽²⁾	3.5	7.2	10.6	35
Boiler No. 2	Carbon Monoxide (mg/Rm ³) ⁽¹⁾	9.8	15.8	26.5	40
	Hydrogen Chloride (mg/Rm ³) ⁽²⁾	1.5	2.1	3.3	9
	Nitrogen Oxides (mg/Rm ³) ⁽²⁾	108	109	110	121
	Sulphur Dioxide (mg/Rm ³) ⁽²⁾	0	1.8	4.3	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. (formerly Golder Associates). A summary of the results are provided in the tables appended to this report (Appendix 27) based on calculated ground level Point of Impingement (POI) concentrations for the average total Main Stack emissions. As shown in the tables, the calculated impingement concentrations for all the contaminants were well below the relevant MECP standards.

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

- The facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation during the stack test periods. Testing was conducted at a steam production rate of greater than 780 tonnes of steam per day for each Boiler (approximately 96.6% 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

Alliance Technical Group (ATG), formerly ORTECH Consulting Inc., completed a voluntary compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between December 2 to December 5, 2024. The voluntary emission testing program was performed at the request of the Regions of Durham and York. The current test program is the ninth 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 to date is provided below:

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2020 Compliance	November 2020	22050
2021 Voluntary	June 2021	22081
2021 Compliance	November/December 2021	22085
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2023 Voluntary	April 2023	22230
2023 Compliance	September/October 2023	22235
2024 Compliance	March 2024	22327
2024 Voluntary	December 2024	AST-2024-4547

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 October 3, 2024. 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 December 2 and December 5, 2024. Note due to a process upset condition only two semi-volatile organic compounds tests could be completed at Boiler No. 2.

2. PROCESS DESCRIPTION

DYEC is a thermal treatment facility with a maximum thermal treatment rate of 140,000 tonnes/year of municipal solid waste (MSW), as established by the Amended ECA. ECA Notice No. 2, dated December 23, 2021, allows the facility to receive and thermally treat up to 142,000 tonnes/year of MSW for the 2021 operating year. The maximum continuous rating (MCR) for the facility is defined as 218 tonnes per day, per unit, of MSW with a heat content of 13 MJ/kg per train. The steam production MCR is 33.64 tonnes per hour for each Boiler.

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

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

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

2.1 Control Equipment

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

2.2 Continuous Emission Monitoring Systems

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

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

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

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

Sampling, analysis and reporting were conducted following the procedures detailed in the Pre-Test Plan with the following exception. During the Voluntary Source Test conducted from December 2 to December 5, 2024, the facility encountered unforeseen operational challenges with Boiler No. 2 which impacted the testing process. While two test runs were completed for Semi-Volatile Organic Compounds (SVOC) on Boiler No. 2, an operational issue arose during the third test. The third test was rescheduled for the second week of December, but the issue remained unresolved, forcing the facility to take a feed stop on Boiler No. 2 on December 10 to carry out necessary repairs. Despite the facility's efforts to resolve the issue quickly, the malfunction made it impossible to proceed with the third SVOC test on Boiler No. 2. The SVOC results for Boiler No. 1 are from the triplicate tests conducted as per the Pre-Test Plan.

Since relative accuracy and system bias testing was conducted in August 2024, 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 (December 2 to December 5, 2024) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ATG on December 3 and December 4, 2024, was used to assess 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 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 $\text{PM}_{2.5}$ 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, impinger and 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, XAD-2 trap outlet and impinger outlet temperatures
- 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 m³/min or 4% of the estimated average sampling rate, whichever is less. All 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 H₂SO₄
- 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 m³/min or 4% of the estimated average sampling rate, whichever is less.

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

4.6 Volatile Organic Compounds

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

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

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 August 2024, 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 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 December 2, 2024 at 0:00 to December 5, 2024 at 16:00, was used to assess 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 ATG 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 December 3 and December 4, 2024. The total hydrocarbon data measured at the Quench Inlet sample locations was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA.

5. SAMPLE RECOVERY AND ANALYSIS

All sample analysis was performed by ALS Canada Ltd., except for volatile organic compounds. Volatile Organic compounds were analyzed by Eurofins. 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 mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

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

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

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

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

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

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

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

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

5.2 Particle Size Distribution

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

The particle size distribution (PSD) samples were recovered in much the same way as the particulate samples from the particulate and metals trains. Following the conclusion of each test performed with the PSD trains, the probe was disconnected and all openings sealed with Teflon tape. The sample recoveries were performed in the on-site 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, PM₁₀ 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 PM₁₀. The PM₁₀ cup and connecting parts were rinsed with acetone in a glass sample container to determine particulate less than PM₁₀ 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 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 a one piece trap and condenser was used, 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 mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

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

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

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

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

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

5.5 Volatile Organics Train Recovery

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

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

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

The VOST analytical report is provided in Appendix 17.

5.6 Aldehydes

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

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

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

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

6. INTERNAL AND EXTERNAL QA/QC PROGRAM

6.1 General

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

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

6.2 Pre-Test Activities

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

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

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

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

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

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

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

As part of the 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 $120^{\circ}\text{C} \pm 14^{\circ}\text{C}$ 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 ATG when to commence sampling each day.

6.4 Sample Recovery, Handling and Custody

The sample identification scheme and system for handling and processing samples was initiated as part of the 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 ATG 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 ATG number for sample identification.

The 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 was received as a record of the chain of custody for the samples.

6.5 Analytical Results

A one-piece condenser and XAD-2 trap was used 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 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 7.5% well within the acceptable limit of less than $\pm 20\%$, 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 84-104%, except for barium in the HF digest (74%). 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 87-101%. The acceptable limit is 70-130% of the true value.

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

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

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

Mercury Analysis

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

- One duplicate sample analysis was performed for each fraction. However, mercury was not detected on any of the fractions in quantities greater than the detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. The recovery result was 95% within the acceptable limit of 90-110% of the true value.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. The recovery result was 96%, 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 5.5%, well within the acceptable limit of less than $\pm 20\%$ 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 101% for hydrogen chloride, 102% for hydrogen fluoride and 103% for ammonia, within the acceptable range of 90-110%.
- A matrix spike (spike confirmation) sample was analyzed with every 20 samples to confirm the identity of each peak. The recovery results of the matrix spike sample were 107% for hydrogen chloride, 100% for hydrogen fluoride and 97% 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 12.5 μg Laboratory Control Sample were 86% for acetaldehyde, 92% for formaldehyde and 66% for acrolein. The recoveries for the 2.5 μg Laboratory Control Sample were 100% for acetaldehyde, 78% for formaldehyde and 59% for acrolein. The low recoveries may indicate a low bias in the sample data.

Formaldehyde and acetaldehyde were detected in both blank samples in quantities similar to those found in the test samples. Formaldehyde was also detected in the method blank. The test sample data may be biased high 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 83-114% which indicates good extraction efficiency and provides a high degree of confidence in the results obtained from the dioxin and furan test trains.

Per the chlorophenol analytical report, the recoveries of 2,6-dichlorophenol and 2,4,6-trichlorophenol were below the method control limit for the laboratory control sample but within limits for the low level LCS. As a result, the detection limit for 2,4,6-trichlorophenol has been elevated. Also, the recoveries of 13C6-2,4-dichlorophenol were very low and below the method control limit. As a result, the detection limits were elevated for the associated target analytes. Similarly, the detection limit was elevated for pentachlorophenol for Boiler No. 1 Test No. 3.

Per the PAH analytical report, the recoveries of some of the labelled extraction standards were below the method control limits. However, no impact to data quality is expected.

6.5.5 Volatile Organic Compound Analysis QA/QC

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.

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

The analytical report includes the field standards, internal standards and surrogate standards used. The surrogate recoveries for each of the surrogates should be between 50-150%. The recoveries for each sample were between 70 – 101%.

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 (December 2 to December 5, 2024) by the DYEC CEMS. Total hydrocarbon concentrations were also measured at the BH Outlet and Quench Inlet by ATG on December 3 and December 4, 2024.

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	138
Moisture by Volume (%)	15.8	15.8
Velocity (m/s)	17.9	18.2
Static Pressure (kPa)	-2.71	-2.80
Absolute Pressure (kPa)	96.9	96.9
Carbon Dioxide by Volume (%)**	10.4	10.7
Oxygen by Volume (%)**	8.71	8.92

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

** dry basis, measured by DYEC CEMS

7.3 Volumetric Flowrate Data

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

Volumetric Flowrate	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Actual Flowrate (m ³ /s)	26.5	26.9
Dry Reference Flowrate (Rm ³ /s)**	15.4	15.7
Dry Adjusted Flowrate (Rm ³ /s)***	19.0	19.1
Wet Reference Flowrate (Rm ³ /s)**	18.3	18.7

* 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)	<0.26	<0.28
Dry Reference Conc. (mg/Rm ³)*	<0.45	<0.48
Dry Adjusted Conc. (mg/Rm ³)**	<0.37	<0.39
Wet Reference Conc. (mg/Rm ³)*	<0.38	<0.40
Emission Rate (mg/s)	<7.10	<7.41

* 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 (<0.37 mg/Rm³, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (<0.39 mg/Rm³, adjusted to 11% oxygen) were well below the maximum limit (9 mg/Rm³, adjusted to 11% oxygen) stated in the ECA.

The amount of particulate matter detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 1 BH Outlet was <0.6 mg and <0.4 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 <0.6 mg and <0.4 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. PM₁₀ 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)	<0.68	<0.69	<0.49	<0.49
Dry Reference Conc. (mg/Rm ³)*	<1.18	<1.18	<0.84	<0.84
Dry Adjusted Conc. (mg/Rm ³)**	<0.97	<0.97	<0.69	<0.70
Wet Reference Conc. (mg/Rm ³)*	<1.00	<1.00	<0.72	<0.71
Emission Rate (mg/s)	<18.3	<18.8	<13.1	<13.4

* at 25°C and 1 atmosphere

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

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

Condensable Particulate Emission Parameter	Inorganic Fraction		Organic Fraction	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m ³)	2.40	1.58	0.89	0.77
Dry Reference Conc. (mg/Rm ³)*	4.17	2.72	1.55	1.32
Dry Adjusted Conc. (mg/Rm ³)**	3.41	2.25	1.26	1.09
Wet Reference Conc. (mg/Rm ³)*	3.54	2.30	1.31	1.11
Emission Rate (mg/s)	64.5	43.5	24.0	21.0

* 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 0.8 mg for the inorganic fraction and 0.9 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 0.7 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 PM₁₀ and PM_{2.5} results, including condensable particulate matter, are summarized below for each Boiler:

PM ₁₀ and PM _{2.5} + Condensable Emission Parameter	PM ₁₀ + Condensable		PM _{2.5} + Condensable	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m ³)	<3.98	<3.04	<3.78	<2.84
Dry Reference Conc. (mg/Rm ³)*	<6.90	<5.22	<6.56	<4.88
Dry Adjusted Conc. (mg/Rm ³)**	<5.65	<4.32	<5.37	<4.04
Wet Reference Conc. (mg/Rm ³)*	<5.85	<4.41	<5.57	<4.13
Emission Rate (mg/s)	<107	<83.3	<102	<77.9

* at 25°C and 1 atmosphere

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

7.5 Acid Gases

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

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

Acid Gases Emission Parameter	Hydrogen Chloride		Hydrogen Fluoride		Ammonia	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (mg/m ³)	2.23	2.11	<0.074	<0.077	0.43	0.37
Dry Reference Conc. (mg/Rm ³)*	3.82	3.58	<0.13	<0.13	0.73	0.63
Dry Adjusted Conc. (mg/Rm ³)**	3.12	2.98	<0.10	<0.11	0.60	0.53
Wet Reference Conc. (mg/Rm ³)*	3.19	3.00	<0.11	<0.11	0.61	0.53
Emission Rate (mg/s)	59.9	56.1	<1.99	<2.06	11.5	9.91
Dry Adjusted Conc. (ppm)**	2.10	2.00	<0.13	<0.13	0.86	0.76

* 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 December 2 to December 5, 2024 for each Boiler.

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

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

Combustion Gases Emission Parameter		In-Stack ECA Limit	Maximum Concentration	
			Boiler No. 1	Boiler No. 2
BH Outlet	Oxygen (% , 1-hr)	-	9.45	12.8
	Carbon Monoxide (mg/Rm ³ , 4-hr)*	≤ 40	26.0	26.5
	Sulphur Dioxide (mg/Rm ³ , 24-hr)*	≤ 35	10.6	4.3
	Nitrogen Oxides (mg/Rm ³ , 24-hr)*	≤ 121	111	110
	Hydrogen Chloride (mg/Rm ³ , 24-hr)*	≤ 9	1.1	3.3
	Total Hydrocarbons (mg/Rm ³ , 1-hr)*	-	1	0.6
Quench Inlet	Oxygen (% , 1-hr)	≥ 6	9	12

* dry at reference conditions, adjusted to 11% oxygen

** dry at reference conditions

Total hydrocarbon concentration data was measured by ATG on December 3 and December 4, 2024 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)*	-	0.4	0.6
	Total Hydrocarbons (10-minute)**	-	0.4	0.6
Quench Inlet	Total Hydrocarbons (1-minute)*	-	1.6	0.4
	Total Hydrocarbons (10-minute)**	50	1.6	0.4

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

** ppm dry basis, expressed as equivalent methane (average of each 60 minute test calculated using the 10-minute rolling average)

The one-minute average total hydrocarbon data and the 10-minute total hydrocarbon data measured by ATG 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. ($\mu\text{g}/\text{m}^3$)	<0.77	0.39
Dry Reference Conc. ($\mu\text{g}/\text{Rm}^3$)*	<1.32	0.66
Dry Adjusted Conc. ($\mu\text{g}/\text{Rm}^3$)**	<1.08	0.55
Wet Reference Conc. ($\mu\text{g}/\text{Rm}^3$)*	<1.12	0.55
Emission Rate (mg/s)	<0.021	0.010

* 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. ($\mu\text{g}/\text{m}^3$)	0.20	0.28
Dry Reference Conc. ($\mu\text{g}/\text{Rm}^3$)*	0.35	0.48
Dry Adjusted Conc. ($\mu\text{g}/\text{Rm}^3$)**	0.29	0.39
Wet Reference Conc. ($\mu\text{g}/\text{Rm}^3$)*	0.30	0.40
Emission Rate (mg/s)	0.0055	0.0075

* 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 $\mu\text{g}/\text{Rm}^3$, adjusted to 11% oxygen for cadmium and 50 $\mu\text{g}/\text{Rm}^3$, 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 in two of the three tests at 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. ($\mu\text{g}/\text{m}^3$)	<0.095	<0.070
Dry Reference Conc. ($\mu\text{g}/\text{Rm}^3$)*	<0.16	<0.12
Dry Adjusted Conc. ($\mu\text{g}/\text{Rm}^3$)**	<0.13	<0.099
Wet Reference Conc. ($\mu\text{g}/\text{Rm}^3$)*	<0.14	<0.10
Emission Rate (mg/s)	<0.0026	<0.0019

* at 25°C and 1 atmosphere

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

The mercury dry adjusted concentrations were well below the maximum in-stack emission limit stated in the ECA of 15 $\mu\text{g}/\text{Rm}^3$, adjusted to 11% oxygen.

7.9 Semi-Volatile Organic Emission Data

Two semi-volatile organic compounds tests were completed at Boiler No. 2 due to a process upset condition.

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 $\text{C}_{12}\text{H}_8\text{O}_2$ and $\text{C}_{12}\text{H}_8\text{O}$, 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 ₇ ClO ₂	2
	D2CDD	2	C ₁₂ H ₆ Cl ₂ O ₂	10
	T3CDD	3	C ₁₂ H ₅ Cl ₃ O ₂	14
	T4CDD	4	C ₁₂ H ₄ Cl ₄ O ₂	22
	P5CDD	5	C ₁₂ H ₃ Cl ₅ O ₂	14
	H6CDD	6	C ₁₂ H ₂ Cl ₆ O ₂	10
	H7CDD	7	C ₁₂ H ₁ Cl ₇ O ₂	2
	O8CDD	8	C ₁₂ Cl ₈ O ₂	1
Furans	M1CDF	1	C ₁₂ H ₇ ClO	4
	D2CDF	2	C ₁₂ H ₆ Cl ₂ O	16
	T3CDF	3	C ₁₂ H ₅ Cl ₃ O	28
	T4CDF	4	C ₁₂ H ₄ Cl ₄ O	38
	P5CDF	5	C ₁₂ H ₃ Cl ₅ O	28
	H6CDF	6	C ₁₂ H ₂ Cl ₆ O	16
	H7CDF	7	C ₁₂ H ₁ Cl ₇ O	4
	O8CDF	8	C ₁₂ Cl ₈ O	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 for Boiler No. 1 (Appendix 1) and Table 24 to Table 31 for Boiler No. 2 (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)	0.080	0.092
Dry Reference Conc. (ng/Rm ³)*	0.14	0.16
Dry Adjusted Conc. (ng/Rm ³)**	0.11	0.13
Wet Reference Conc. (ng/Rm ³)*	0.12	0.13
Emission Rate (ng/s)	2.05	2.45

* 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)	<0.011	0.022
Dry Reference Conc. (ng/Rm ³)*	<0.019	0.038
Dry Adjusted Conc. (ng/Rm ³)**	<0.015	0.031
Wet Reference Conc. (ng/Rm ³)*	<0.016	0.032
Emission Rate (ng/s)	<0.28	0.60

* 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 for Boiler No. 1 and Table 32 for Boiler No. 2. 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 for Boiler No. 1 (Appendix 1) and Table 33 to Table 40 for Boiler No. 2 (Appendix 2). 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 Boiler No. 1 and Table 41 for Boiler No. 2. The blank analyses were not subtracted from the test sample analyses during the calculation of the dioxin and furan isomer emission data.

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

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

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

The MECP “Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality”, dated April 2012, provided a new framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs. This document was replaced by “Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants”, with the most recent version published on November 5, 2023, however the dioxin and furan toxicity equivalent calculation methodology remains the same.

Tables 44 to 49 show Boiler No. 1 (Appendix 1) dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using the full detection limit for those compounds not detected. Table 50 shows the dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using half the detection limit for those compounds not detected. Tables 42 to 47 show Boiler No. 2 (Appendix 2) dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using the full detection limit for those compounds not detected. Table 48 (Appendix 2) shows 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 Table 48 in 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 PCBs Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (pg TEQ/m ³)	1.57	1.65
Dry Reference Conc. (pg TEQ/Rm ³)*	2.67	2.81
Dry Adjusted Conc. (pg TEQ/Rm ³)**	2.15	2.33
Wet Reference Conc. (pg TEQ/Rm ³)*	2.25	2.37
Emission Rate (ng TEQ/s)	0.040	0.044

* 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 Table 44B in 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)*	<2.25	<2.63

* 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/Rm³, 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 C₆H₆. Chlorobenzene congener groups have the molecular formulae C₆H₅Cl, C₆H₄Cl₂, C₆H₃Cl₃, C₆H₂Cl₄, C₆HCl₅ and C₆Cl₆. 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 C₆H₅OH. Chlorophenol congener groups have the molecular formulae C₆H₄ClOH, C₆H₃Cl₂OH, C₆H₂Cl₃OH, C₆HCl₄OH and C₆Cl₅OH.

Chlorobenzene congener and isomer analytical results and emission data are given in Table 51 to Table 59 for BH Outlet No. 1 (Appendix 1). Chlorobenzene congener and isomer analytical results and emission data are given in Table 49 to Table 56 for BH Outlet No. 2 (Appendix 2).

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)	<304	<235
Dry Reference Conc. (ng/Rm ³)*	<517	<398
Dry Adjusted Conc. (ng/Rm ³)**	<417	<330
Wet Reference Conc. (ng/Rm ³)*	<436	<336
Emission Rate (µg/s)	<7.76	<6.23

* 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 (Appendix 1) and Table 57 (Appendix 2). 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 BH Outlet No. 1 (Appendix 1). Chlorophenol congener and isomer analytical results and emission data is given in Table 58 to Table 65 for BH Outlet No. 2 (Appendix 2).

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)	<339	<349
Dry Reference Conc. (ng/Rm ³)*	<577	<593
Dry Adjusted Conc. (ng/Rm ³)**	<466	<491
Wet Reference Conc. (ng/Rm ³)*	<486	<500
Emission Rate (µg/s)	<8.67	<9.30

* 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 (Appendix 1) and Table 66 (Appendix 2). 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.

PAH analytical results and emission data is given in Table 71 to Table 79 for BH Outlet No. 1 (Appendix 1). PAH analytical results and emission data is given in Table 67 to Table 74 for BH Outlet No. 2 (Appendix 2).

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)	<234	<123
Dry Reference Conc. (ng/Rm ³)*	<397	<209
Dry Adjusted Conc. (ng/Rm ³)**	<320	<174
Wet Reference Conc. (ng/Rm ³)*	<335	<177
Emission Rate (µg/s)	<5.99	<3.29

* at 25°C and 1 atmosphere

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

Table 80 (Appendix 1) and Table 75 (Appendix 2) 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 BH Outlet No. 1 and BH Outlet No. 2 is presented in Table 81 (Appendix 1) and Table 76 (Appendix 2), respectively.

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)	212	340	152	167	<1.71	<1.92
Dry Reference Conc. (µg/Rm ³)*	361	579	258	284	<2.91	<3.27
Dry Adjusted Conc. (µg/Rm ³)**	290	477	207	235	<2.34	<2.70
Wet Reference Conc. (µg/Rm ³)*	305	487	217	239	<2.45	<2.75
Emission Rate (mg/s)	5.44	9.02	3.88	4.43	<0.044	<0.051

* 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 compounds analytical results and emission data is given in Table 82 to Table 90 for BH Outlet No. 1 (Appendix 1). Volatile organic compounds analytical results and emission data is given in Table 77 to Table 85 for BH Outlet No. 2 (Appendix 2).

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. ($\mu\text{g}/\text{m}^3$)	<23.7	<20.6
Dry Reference Conc. ($\mu\text{g}/\text{Rm}^3$)*	<40.5	<35.1
Dry Adjusted Conc. ($\mu\text{g}/\text{Rm}^3$)**	<32.6	<29.2
Wet Reference Conc. ($\mu\text{g}/\text{Rm}^3$)*	<34.1	<29.7
Emission Rate (mg/s)	<0.60	<0.56

* 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. ($\mu\text{g}/\text{Rm}^3$)*	<662	<901
Dry Adjusted Conc. ($\mu\text{g}/\text{Rm}^3$)**	<532	<744
Emission Rate (mg/s)	<9.96	<14.1

* 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 (Appendix 1) and Table 86 (Appendix 2). Test sample analyses were not blank corrected during the calculation of the emission data.

8. DISPERSION MODELLING

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

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

The predicted ground level Point of Impingement (POI) concentrations, calculated based on the average total emission rate, for each contaminant included in the December 2024 emission testing program was well below the applicable standard, guideline or upper risk threshold. The contaminant with the highest predicted concentrations relative to the standard was nitrogen oxides (11% of the 1-hour standard and 2% of the 24-hour standard with meteorological anomaly removal) and chromium (hexavalent) (1% of the annual standard), all other contaminants were 1% or less than the relevant standard with meteorological anomaly removal.

Note the particulate and metals sampling train collects total chromium, including metallic, divalent, trivalent and hexavalent forms of chromium. For the predicted POI, it was assumed all chromium collected was hexavalent chromium; this is a conservative assumption and may overestimate the hexavalent chromium emissions from the facility. The chromium emission data was also assessed against the chromium (metallic, divalent and trivalent forms) standard and was <1% of the standard with meteorological anomaly removal.

9. FACILITY PROCESS DATA

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

- Hydrogen Chloride (mg/Rm³, adjusted to 11% oxygen)
- Nitrogen Oxides (mg/Rm³, adjusted to 11% oxygen)
- Sulphur Dioxide (mg/Rm³, adjusted to 11% oxygen)
- Carbon Monoxide (mg/Rm³, adjusted to 11% oxygen)
- Oxygen (% volume, dry)
- Total Hydrocarbons (mg/Rm³, 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 December 2 to December 5, 2024 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 ATG and can be provided upon request.

The facility process data was also supplied by DYEC personnel for each test day. Hourly process data has been retained by Reworld 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
02-Dec-24	370	0	1194	1307	1216	799	782	197	196	544	543	125	124	3314	3353
03-Dec-24	379	0	0	1282	1189	799	798	206	219	550	539	125	124	3361	3236
04-Dec-24	378	0	666	1283	1191	800	794	212	216	625	586	125	124	3473	3567
05-Dec-24	369	1112	1592	1310	1199	780	798	194	210	564	578	125	124	3131	3230
Average	374	0	0	1295	1199	795	793	202	210	571	562	125	124	3320	3347

* 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 780 tonnes of steam per day for each Boiler (approximately 96.6% of maximum continuous rating). The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler).
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in the ECA.
- Using CALPUFF dispersion modelling techniques (using Version 7.2.1 level 150618 as approved by the MECP in December 2021), the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below the current standards in Regulation 419/05 (Schedule 3) under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

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

Since relative accuracy and system bias testing was conducted in August 2024, 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 (December 2 to December 5, 2024) 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 ATG on December 3 and December 4, 2024 at the Quench Inlet and BH Outlet sampling locations. The total hydrocarbon data measured by ATG 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)*	-	-	-	374	-
Average Combustion Zone Temp. (°C)*	-	-	-	1295	-
Steam (tonnes/day)*	-	-	-	795	-
MSW Combusted (tonnes/day)*	-	-	-	202	-
NO _x Reagent Injection Rate (liters/day)*	-	-	-	571	-
Carbon Injection (kg/day)*	-	-	-	125	-
Lime Injection (kg/day)*	-	-	-	3320	-
Filterable Particulate (mg/Rm ³) ⁽¹⁾	<0.34	<0.45	<0.32	<0.37	9
PM ₁₀ with Condensable (mg/Rm ³) ⁽¹⁾	<6.60	<5.31	<5.02	<5.65	-
PM _{2.5} with Condensable (mg/Rm ³) ⁽¹⁾	<6.32	<5.04	<4.74	<5.37	-
Hydrogen Fluoride (mg/Rm ³) ⁽¹⁾	<0.11	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm ³) ⁽¹⁾	0.62	0.59	0.58	0.60	-
Cadmium (µg/Rm ³) ⁽¹⁾	0.051	3.17	<0.022	<1.08	7
Lead (µg/Rm ³) ⁽¹⁾	0.26	0.49	0.11	0.29	50
Mercury (µg/Rm ³) ⁽¹⁾	<0.13	<0.14	<0.13	<0.13	15
Antimony (µg/Rm ³) ⁽¹⁾	<0.045	<0.045	<0.045	<0.045	-
Arsenic (µg/Rm ³) ⁽¹⁾	<0.11	<0.11	<0.11	<0.11	-
Barium (µg/Rm ³) ⁽¹⁾	11.0	11.3	11.1	11.1	-
Beryllium (µg/Rm ³) ⁽¹⁾	<0.045	<0.045	<0.045	<0.045	-
Chromium (µg/Rm ³) ⁽¹⁾	0.78	0.92	0.69	0.80	-
Cobalt (µg/Rm ³) ⁽¹⁾	0.040	<0.045	<0.045	<0.043	-
Copper (µg/Rm ³) ⁽¹⁾	1.45	1.14	1.00	1.20	-
Molybdenum (µg/Rm ³) ⁽¹⁾	4.12	4.05	4.03	4.07	-
Nickel (µg/Rm ³) ⁽¹⁾	0.47	1.41	0.39	0.75	-
Selenium (µg/Rm ³) ⁽¹⁾	<0.22	<0.23	<0.22	<0.22	-
Silver (µg/Rm ³) ⁽¹⁾	<0.045	<0.045	<0.045	<0.045	-
Thallium (µg/Rm ³) ⁽¹⁾	<0.045	<0.045	<0.045	<0.045	-
Vanadium (µg/Rm ³) ⁽¹⁾	<0.11	<0.11	<0.11	<0.11	-
Zinc (µg/Rm ³) ⁽¹⁾	11.8	12.0	10.5	11.4	-
Dioxins and Furans (pg TEQ/Rm ³) ⁽³⁾	<2.67	<2.26	<1.82	<2.25	60
Total Chlorobenzenes (ng/Rm ³) ⁽¹⁾	<490	<429	<333	<417	-
Total Chlorophenols (ng/Rm ³) ⁽¹⁾	<465	<460	<474	<466	-
Total PAHs (ng/Rm ³) ⁽¹⁾	<157	<608	<196	<320	-
VOCs (µg/Rm ³) ⁽¹⁾	<45.9	<23.8	<28.2	<32.6	-
Aldehydes (µg/Rm ³) ⁽¹⁾	<393	<517	<589	<499	-
Total VOCs (µg/Rm ³) ^{(1) (4)}	<439	<541	<617	<532	-
Quench Inlet Organic Matter (THC) (ppm, dry) ⁽²⁾	3.1	1.0	0.6	1.6	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)*	-	-	-	374	-
Average Combustion Zone Temp. (°C)*	-	-	-	1199	-
Steam (tonnes/day)*	-	-	-	793	-
MSW Combusted (tonnes/day)*	-	-	-	210	-
NO _x Reagent Injection Rate (liters/day)*	-	-	-	562	-
Carbon Injection (kg/day)*	-	-	-	124	-
Lime Injection (kg/day)*	-	-	-	3347	-
Filterable Particulate (mg/Rm ³) ⁽¹⁾	<0.39	<0.47	<0.32	<0.39	9
PM ₁₀ with Condensable (mg/Rm ³) ⁽¹⁾	<4.99	<4.25	<3.70	<4.32	-
PM _{2.5} with Condensable (mg/Rm ³) ⁽¹⁾	<4.71	<3.98	<3.42	<4.04	-
Hydrogen Fluoride (mg/Rm ³) ⁽¹⁾	<0.11	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm ³) ⁽¹⁾	0.53	0.54	0.51	0.53	-
Cadmium (µg/Rm ³) ⁽¹⁾	1.51	0.11	0.032	0.55	7
Lead (µg/Rm ³) ⁽¹⁾	0.38	0.44	0.37	0.39	50
Mercury (µg/Rm ³) ⁽¹⁾	<0.14	0.028	<0.13	<0.099	15
Antimony (µg/Rm ³) ⁽¹⁾	<0.046	<0.047	<0.045	<0.046	-
Arsenic (µg/Rm ³) ⁽¹⁾	<0.11	<0.12	<0.11	<0.12	-
Barium (µg/Rm ³) ⁽¹⁾	10.9	11.6	10.7	11.1	-
Beryllium (µg/Rm ³) ⁽¹⁾	<0.046	<0.047	<0.045	<0.046	-
Chromium (µg/Rm ³) ⁽¹⁾	0.81	0.95	0.78	0.85	-
Cobalt (µg/Rm ³) ⁽¹⁾	0.046	0.064	<0.023	<0.044	-
Copper (µg/Rm ³) ⁽¹⁾	1.51	1.45	2.05	1.67	-
Molybdenum (µg/Rm ³) ⁽¹⁾	4.02	4.26	3.84	4.04	-
Nickel (µg/Rm ³) ⁽¹⁾	0.53	1.03	0.45	0.67	-
Selenium (µg/Rm ³) ⁽¹⁾	<0.23	<0.24	<0.23	<0.23	-
Silver (µg/Rm ³) ⁽¹⁾	<0.046	<0.047	<0.045	<0.046	-
Thallium (µg/Rm ³) ⁽¹⁾	<0.046	<0.047	<0.045	<0.046	-
Vanadium (µg/Rm ³) ⁽¹⁾	<0.11	<0.12	<0.11	<0.12	-
Zinc (µg/Rm ³) ⁽¹⁾	10.9	15.7	12.2	12.9	-
Dioxins and Furans (pg TEQ/Rm ³) ⁽³⁾	<2.90	<2.35	-	<2.63	60
Total Chlorobenzenes (ng/Rm ³) ⁽¹⁾	<243	<416	-	<330	-
Total Chlorophenols (ng/Rm ³) ⁽¹⁾	<490	<492	-	<491	-
Total PAHs (ng/Rm ³) ⁽¹⁾	<180	<167	-	<174	-
VOCs (µg/Rm ³) ⁽¹⁾	<34.6	<26.2	<26.7	<29.2	-
Aldehydes (µg/Rm ³) ⁽¹⁾	<663	<768	<714	<715	-
Total VOCs (µg/Rm ³) ^{(1) (4)}	<698	<794	<741	<744	-
Quench Inlet Organic Matter (THC) (ppm, dry) ⁽²⁾	0.5	0.3	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⁾	5.8	13.3	26.0	40
	Hydrogen Chloride (mg/Rm ³) ⁽²⁾	0.1	0.6	1.1	9
	Nitrogen Oxides (mg/Rm ³) ⁽²⁾	110	111	111	121
	Sulphur Dioxide (mg/Rm ³) ⁽²⁾	3.5	7.2	10.6	35
Boiler No. 2	Carbon Monoxide (mg/Rm ³) ⁽¹⁾	9.8	15.8	26.5	40
	Hydrogen Chloride (mg/Rm ³) ⁽²⁾	1.5	2.1	3.3	9
	Nitrogen Oxides (mg/Rm ³) ⁽²⁾	108	109	110	121
	Sulphur Dioxide (mg/Rm ³) ⁽²⁾	0	1.8	4.3	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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1
Isokinetic Sampling Train Test Schedules

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time* min
		Start	Finish	
1	December 3, 2024	13:39	16:50	180
2	December 4, 2024	9:04	12:13	180
3	December 4, 2024	13:02	16:10	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time* min
		Start	Finish	
1	December 5, 2024	8:12	10:15	120
2	December 5, 2024	10:52	12:55	120
3	December 5, 2024	13:36	15:39	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time* min
		Start	Finish	
1	December 4, 2024	9:07	10:07	60
2	December 4, 2024	10:46	11:46	60
3	December 4, 2024	11:57	12:57	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time* min
		Start	Finish	
1	December 2, 2024	9:10	14:03	240
2	December 2, 2024	15:03	19:10	240
3	December 3, 2024	8:28	12:37	240

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

TABLE 2
Reworld Durham York Renewable Energy L.P.
Boiler No. 1
Organic Compounds Test Schedules

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period		Sampling Time min
		Start	Finish	
1	December 2, 2024	13:14	14:14	60
2	December 2, 2024	14:17	15:17	60
3	December 2, 2024	15:20	16:20	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time min
		Start	Finish	
1	December 2, 2024	9:40	10:20	40
2	December 2, 2024	10:28	11:08	40
3	December 2, 2024	11:15	11:55	40
4	December 2, 2024	12:02	12:42	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period		Sampling Time min
			Start	Finish	
BH Outlet	1	December 3, 2024	10:50	11:50	60
BH Outlet	2	December 3, 2024	12:10	13:10	60
BH Outlet	3	December 3, 2024	13:20	14:20	60
Quench Inlet	1	December 3, 2024	10:50	11:50	60
Quench Inlet	2	December 3, 2024	12:10	13:10	60
Quench Inlet	3	December 3, 2024	13:20	14:20	60

TABLE 3
Reworld Durham York Renewable Energy L.P.
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	0.839	1.010	6.37	3.653	100.0
2	0.839	1.008	6.37	3.635	99.0
3	0.839	1.008	6.37	3.590	99.4

Particle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm ³ *	Percentage of Isokineticity %
1	0.843	0.995	4.51	1.185	98.7
2	0.843	0.995	4.51	1.181	99.6
3	0.843	0.995	4.51	1.187	95.8

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm ³ *	Percentage of Isokineticity %
1	0.842	1.010	6.34	1.212	98.3
2	0.842	1.010	6.34	1.212	98.9
3	0.842	1.010	6.34	1.173	97.7

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	0.839	1.010	6.37	4.569	99.2
2	0.839	1.010	6.37	4.613	98.4
3	0.839	1.010	6.37	4.652	99.2

* Dry at 25°C and 1 atmosphere

TABLE 4
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Stack Gas Physical Parameters

Particulate and Metals Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	16.5	18.2	-2.76	98.2	10.5	8.80
2	138	15.8	18.4	-2.76	96.5	10.5	8.77
3	139	16.9	18.5	-2.76	95.8	10.4	8.54
Average	139	16.4	18.4	-2.76	96.8	10.5	8.70

Particle Size Distribution Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	14.9	18.1	-2.74	95.5	10.2	8.88
2	141	15.2	17.8	-2.81	95.7	10.4	8.56
3	141	15.2	18.5	-2.81	96.1	10.2	8.95
Average	141	15.1	18.1	-2.79	95.8	10.3	8.80

Acid Gases Trains **

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	137	15.2	18.4	-2.76	96.8	10.4	9.04
2	139	15.8	18.6	-2.76	96.5	10.6	8.65
3	139	15.2	18.1	-2.76	96.1	10.2	8.92
Average	138	15.4	18.4	-2.76	96.5	10.4	8.87

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	16.1	17.3	-2.54	97.7	10.5	8.54
2	140	15.6	17.4	-2.54	98.0	10.4	8.57
3	138	15.8	17.3	-2.61	98.3	10.7	8.77
Average	140	15.8	17.3	-2.56	98.0	10.5	8.63

* Dry basis, measured by the DYEC CEMS

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

TABLE 5
Reworld Durham York Renewable Energy L.P.
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 $\text{Rm}^3/\text{s}^{**}$	Wet Reference Flowrate Rm^3/s^*
1	26.9	15.7	19.2	18.8
2	27.1	15.8	19.3	18.7
3	27.3	15.5	19.4	18.7
Average	27.1	15.7	19.3	18.7

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s^*	Dry Adjusted Flowrate $\text{Rm}^3/\text{s}^{**}$	Wet Reference Flowrate Rm^3/s^*
1	26.8	15.4	18.7	18.1
2	26.4	15.2	18.9	18.0
3	27.4	15.9	19.2	18.7
Average	26.9	15.5	18.9	18.3

Acid Gases Trains ***

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s^*	Dry Adjusted Flowrate $\text{Rm}^3/\text{s}^{**}$	Wet Reference Flowrate Rm^3/s^*
1	27.2	16.0	19.2	18.9
2	27.5	15.9	19.7	18.9
3	26.8	15.6	18.9	18.4
Average	27.1	15.8	19.3	18.7

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s^*	Dry Adjusted Flowrate $\text{Rm}^3/\text{s}^{**}$	Wet Reference Flowrate Rm^3/s^*
1	25.5	14.9	18.5	17.7
2	25.7	15.1	18.8	17.9
3	25.5	15.1	18.5	17.9
Average	25.6	15.0	18.6	17.9

* At 25°C and 1 atmosphere

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

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

TABLE 6
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Particulate Emission Data

Test No.	Particulate Collected			Dry Gas Volume Sampled Rm ³ *	Actual mg/m ³	Particulate Concentration			Particulate Emission Rate mg/s
	Main Filter	Probe Rinse	Total			Dry Reference	Dry Adjusted	Wet Reference	
	mg	mg	mg			mg/Rm ³ *	mg/Rm ³ **	mg/Rm ³ *	
1	<0.6	0.9	<1.5	3.653	<0.24	<0.41	<0.34	<0.34	<6.45
2	<0.6	1.4	<2.0	3.635	<0.32	<0.55	<0.45	<0.46	<8.69
3	<0.6	0.8	<1.4	3.590	<0.23	<0.39	<0.32	<0.33	<6.16
Average					<0.26	<0.45	<0.37	<0.38	<7.10
Blank	<0.6	<0.4	<1.0						

* At 25 °C and 1 atmosphere

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

TABLE 7
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
PM_{2.5} and PM₁₀ Emission Data

PM_{2.5}

Test No.	Total Collected	Dry Volume Sampled	PM _{2.5} Concentration				Emission Rate
	mg	Rm ³ *	Actual mg/m ³	Dry Reference mg/Rm ³ *	Dry Adjusted mg/Rm ³ **	Wet Reference mg/Rm ³ *	mg/s
1	<1.0	1.185	<0.48	<0.84	<0.69	<0.72	<13.0
2	<1.0	1.181	<0.49	<0.85	<0.68	<0.72	<12.9
3	<1.0	1.187	<0.49	<0.84	<0.70	<0.72	<13.4
Average			<0.49	<0.84	<0.69	<0.72	<13.1
Blank	<1.0						

PM₁₀

Test No.	Total Collected	Dry Volume Sampled	PM ₁₀ Concentration				Emission Rate
	mg	Rm ³ *	Actual mg/m ³	Dry Reference mg/Rm ³ *	Dry Adjusted mg/Rm ³ **	Wet Reference mg/Rm ³ *	mg/s
1	<1.4	1.185	<0.68	<1.18	<0.97	<1.01	<18.2
2	<1.4	1.181	<0.68	<1.19	<0.95	<1.00	<18.0
3	<1.4	1.187	<0.68	<1.18	<0.98	<1.00	<18.8
Average			<0.68	<1.18	<0.97	<1.00	<18.3
Blank	<1.4						

* At 25 °C and 1 atmosphere

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

TABLE 8
Reworld Durham York Renewable Energy L.P.
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	6.8	1.185	3.30	5.74	4.73	4.88	88.4
2	4.0	1.181	1.95	3.39	2.72	2.86	51.5
3	4.0	1.187	1.96	3.37	2.79	2.87	53.6
Average			2.40	4.17	3.41	3.54	64.5
Blank	0.8						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm ³ *	Organic Condensable Particulate Concentration				Emission Rate mg/s
			Actual mg/m ³	Dry Reference mg/Rm ³ *	Dry Adjusted mg/Rm ^{3**}	Wet Reference mg/Rm ³ *	
1	1.3	1.185	0.63	1.10	0.90	0.93	16.9
2	2.4	1.181	1.17	2.03	1.63	1.72	30.9
3	1.8	1.187	0.88	1.52	1.26	1.29	24.1
Average			0.89	1.55	1.26	1.31	24.0
Blank	0.9						

* At 25 °C and 1 atmosphere

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

TABLE 9
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Halides and Ammonia Emission Data

Hydrogen Chloride

Test No.	HCl Collected	Dry Volume Sampled	Hydrogen Chloride Concentration				HCl Emission Rate
	mg	Rm ³ *	Actual mg/m ³	Dry Reference mg/Rm ³ *	Dry Adjusted mg/Rm ^{3**}	Wet Reference mg/Rm ³ *	mg/s
1	4.09	1.212	1.97	3.37	2.76	2.82	53.0
2	5.03	1.212	2.42	4.15	3.39	3.47	65.2
3	4.61	1.173	2.29	3.93	3.21	3.28	61.7
Average			2.23	3.82	3.12	3.19	59.9
Blank	<0.154						

Hydrogen Fluoride

Test No.	HF Collected	Dry Volume Sampled	Hydrogen Fluoride Concentration				HF Emission Rate
	mg	Rm ³ *	Actual mg/m ³	Dry Reference mg/Rm ³ *	Dry Adjusted mg/Rm ^{3**}	Wet Reference mg/Rm ³ *	mg/s
1	<0.158	1.212	<0.076	<0.13	<0.11	<0.11	<2.05
2	<0.155	1.212	<0.075	<0.13	<0.10	<0.11	<2.01
3	<0.144	1.173	<0.072	<0.12	<0.10	<0.10	<1.93
Average			<0.074	<0.13	<0.10	<0.11	<1.99
Blank	<0.106						

Ammonia

Test No.	Ammonia Collected	Dry Volume Sampled	Ammonia Concentration				Ammonia Emission Rate
	mg	Rm ³ *	Actual mg/m ³	Dry Reference mg/Rm ³ *	Dry Adjusted mg/Rm ^{3**}	Wet Reference mg/Rm ³ *	mg/s
1	0.922	1.212	0.44	0.76	0.62	0.64	11.9
2	0.874	1.212	0.42	0.72	0.59	0.60	11.3
3	0.831	1.173	0.41	0.71	0.58	0.59	11.1
Average			0.43	0.73	0.60	0.61	11.5
Blank	<0.020						

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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1
Combustion Gas Analyses

Data measured by the DYEC CEMS from December 2 to December 5, 2024

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (% , 1 hr Avg)	7.73	8.68	9.45
BH Outlet	Carbon Monoxide (mg/Rm ³ , 1 hr Avg) *	5	13	31
BH Outlet	Carbon Monoxide (mg/Rm ³ , 4 hr Avg) *	5.8	13.3	26.0
BH Outlet	Sulphur Dioxide (mg/Rm ³ , 1 hr Avg) *	0	5.3	66
BH Outlet	Sulphur Dioxide (mg/Rm ³ , 24 hr Avg) *	3.5	7.2	10.6
BH Outlet	Nitrogen Oxides (mg/Rm ³ , 1 hr Avg) *	96	110	134
BH Outlet	Nitrogen Oxides (mg/Rm ³ , 24 hr Avg) *	110	111	111
BH Outlet	Hydrogen Chloride (mg/Rm ³ , 1 hr Avg) *	0	1	4
BH Outlet	Hydrogen Chloride (mg/Rm ³ , 24 hr Avg) *	0.1	0.6	1.1
BH Outlet	Total Hydrocarbons (mg/Rm ³ , 1 hr Avg) *	1	1	1
Quench Inlet	Oxygen (% , 1 hr Avg)	6	8	9

Data measured by the Alliance CEMS on December 3, 2024

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.6	2.7
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	0.6
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	1.7
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.4	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	3.1	15.0
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	1.0	9.4
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.6	4.7
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		1.6	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	3.4	7.4
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0.3	0.9	1.9
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.6	1.4
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		1.6	

* Reference conditions, dry basis adjusted to 11% oxygen

TABLE 11
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Metals Analyses Test No. 1

Metal	Probe & Filter	Impingers	Total
	Hydrofluoric Acid Digest	& Rinses	Collected
	µg	µg	µg
Antimony	<0.20	<0.10	<0.20
Arsenic	<1.0	<0.50	<0.50
Barium	49.2	<2.5	49.2
Beryllium	<0.20	<0.10	<0.20
Cadmium	0.11	0.12	0.23
Chromium	2.80	0.67	3.47
Cobalt	<0.20	0.18	0.18
Copper	3.40	3.07	6.47
Lead	<0.50	1.16	1.16
Mercury *	<0.022	<0.60	<0.60
Molybdenum	18.4	<0.10	18.4
Nickel	1.45	0.65	2.10
Selenium	<2.0	<1.0	<1.00
Silver	<0.20	<0.10	<0.20
Thallium	<0.20	<0.10	<0.20
Vanadium	<1.0	<0.50	<0.50
Zinc	46.6	6.20	52.8
Total			<137

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.20	<0.10	<0.20
Arsenic	<1.0	<0.50	<0.50
Barium	50.1	<2.5	50.1
Beryllium	<0.20	<0.10	<0.20
Cadmium	14.0	0.090	14.1
Chromium	3.40	0.70	4.10
Cobalt	<0.20	<0.10	<0.20
Copper	3.60	1.48	5.08
Lead	<0.50	2.18	2.18
Mercury *	<0.022	<0.60	<0.60
Molybdenum	18.0	<0.10	18.0
Nickel	5.37	0.87	6.24
Selenium	<2.0	<1.0	<1.00
Silver	<0.20	<0.10	<0.20
Thallium	<0.20	<0.10	<0.20
Vanadium	<1.0	<0.50	<0.50
Zinc	48.1	5.00	53.1
Total			<156

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter	Impingers	Total
	Hydrofluoric Acid Digest	& Rinses	Collected
	µg	µg	µg
Antimony	<0.20	<0.10	<0.20
Arsenic	<1.0	<0.50	<0.50
Barium	49.9	<2.5	49.9
Beryllium	<0.20	<0.10	<0.20
Cadmium	<0.10	<0.050	<0.10
Chromium	2.60	0.52	3.12
Cobalt	<0.20	<0.10	<0.20
Copper	3.70	0.80	4.50
Lead	<0.50	0.50	0.50
Mercury *	<0.022	<0.58	<0.58
Molybdenum	18.1	<0.10	18.1
Nickel	1.33	0.41	1.74
Selenium	<2.0	<1.0	<1.00
Silver	<0.20	<0.10	<0.20
Thallium	<0.20	<0.10	<0.20
Vanadium	<1.0	<0.50	<0.50
Zinc	42.3	4.70	47.0
Total			<129

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 1

Metal	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^{3*}$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^{3**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^{3*}$	Emission Rate mg/s
Antimony	<0.20	<0.032	<0.055	<0.045	<0.046	<0.00086
Arsenic	<0.50	<0.080	<0.14	<0.11	<0.11	<0.0021
Barium	49.2	7.86	13.5	11.0	11.2	0.21
Beryllium	<0.20	<0.032	<0.055	<0.045	<0.046	<0.00086
Cadmium	0.23	0.037	0.063	0.051	0.053	0.00099
Chromium	3.47	0.55	0.95	0.78	0.79	0.015
Cobalt	0.18	0.029	0.049	0.04	0.041	0.00077
Copper	6.47	1.03	1.77	1.45	1.48	0.028
Lead	1.16	0.19	0.32	0.26	0.27	0.0050
Mercury	<0.60	<0.096	<0.16	<0.13	<0.14	<0.0026
Molybdenum	18.4	2.94	5.04	4.12	4.21	0.079
Nickel	2.10	0.34	0.57	0.47	0.48	0.0090
Selenium	<1.00	<0.16	<0.27	<0.22	<0.23	<0.0043
Silver	<0.20	<0.032	<0.055	<0.045	<0.046	<0.00086
Thallium	<0.20	<0.032	<0.055	<0.045	<0.046	<0.00086
Vanadium	<0.50	<0.080	<0.14	<0.11	<0.11	<0.0021
Zinc	52.8	8.44	14.5	11.8	12.1	0.23
Total	<137	<22.0	<37.6	<30.8	<31.4	<0.59

Dry Gas Volume Sampled (Rm^{3*}) :	3.653
Actual Flowrate (m^3/s) :	26.9
Dry Reference Flowrate (Rm^3/s^*) :	15.7
Dry Adjusted Flowrate ($\text{Rm}^3/\text{s}^{**}$) :	19.2
Wet Reference Flowrate (Rm^3/s^*) :	18.8

* At 25°C and 1 atmosphere

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

TABLE 15
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 2

Metal	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3^{**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Emission Rate mg/s
Antimony	<0.20	<0.032	<0.055	<0.045	<0.046	<0.00087
Arsenic	<0.50	<0.080	<0.14	<0.11	<0.12	<0.0022
Barium	50.1	8.04	13.8	11.3	11.6	0.22
Beryllium	<0.20	<0.032	<0.055	<0.045	<0.046	<0.00087
Cadmium	14.1	2.26	3.88	3.17	3.28	0.061
Chromium	4.10	0.66	1.13	0.92	0.95	0.018
Cobalt	<0.20	<0.032	<0.055	<0.045	<0.046	<0.00087
Copper	5.08	0.81	1.40	1.14	1.18	0.022
Lead	2.18	0.35	0.60	0.49	0.51	0.0095
Mercury	<0.60	<0.096	<0.17	<0.14	<0.14	<0.0026
Molybdenum	18.0	2.89	4.95	4.05	4.18	0.078
Nickel	6.24	1.00	1.72	1.41	1.45	0.027
Selenium	<1.00	<0.16	<0.28	<0.23	<0.23	<0.0043
Silver	<0.20	<0.032	<0.055	<0.045	<0.046	<0.00087
Thallium	<0.20	<0.032	<0.055	<0.045	<0.046	<0.00087
Vanadium	<0.50	<0.080	<0.14	<0.11	<0.12	<0.0022
Zinc	53.1	8.52	14.6	12.0	12.3	0.23
Total	<156	<25.1	<43.1	<35.2	<36.4	<0.68

Dry Gas Volume Sampled (Rm^3^*) :	3.635
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s^*) :	15.8
Dry Adjusted Flowrate ($\text{Rm}^3/\text{s}^{**}$) :	19.3
Wet Reference Flowrate (Rm^3/s^*) :	18.7

* At 25°C and 1 atmosphere

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

TABLE 16
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 3

Metal	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3^{**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Emission Rate mg/s
Antimony	<0.20	<0.032	<0.056	<0.045	<0.046	<0.00086
Arsenic	<0.50	<0.079	<0.14	<0.11	<0.12	<0.0022
Barium	49.9	7.89	13.9	11.1	11.5	0.22
Beryllium	<0.20	<0.032	<0.056	<0.045	<0.046	<0.00086
Cadmium	<0.10	<0.016	<0.028	<0.022	<0.023	<0.00043
Chromium	3.12	0.49	0.87	0.69	0.72	0.013
Cobalt	<0.20	<0.032	<0.056	<0.045	<0.046	<0.00086
Copper	4.50	0.71	1.25	1.00	1.04	0.019
Lead	0.50	0.079	0.14	0.11	0.12	0.0022
Mercury	<0.58	<0.092	<0.16	<0.13	<0.13	<0.0025
Molybdenum	18.1	2.86	5.04	4.03	4.18	0.078
Nickel	1.74	0.28	0.48	0.39	0.40	0.0075
Selenium	<1.00	<0.16	<0.28	<0.22	<0.23	<0.0043
Silver	<0.20	<0.032	<0.056	<0.045	<0.046	<0.00086
Thallium	<0.20	<0.032	<0.056	<0.045	<0.046	<0.00086
Vanadium	<0.50	<0.079	<0.14	<0.11	<0.12	<0.0022
Zinc	47.0	7.43	13.1	10.5	10.9	0.20
Total	<129	<20.3	<35.8	<28.6	<29.7	<0.55

Dry Gas Volume Sampled (Rm^3^*) :	3.590
Actual Flowrate (m^3/s) :	27.3
Dry Reference Flowrate (Rm^3/s^*) :	15.5
Dry Adjusted Flowrate ($\text{Rm}^3/\text{s}^{**}$) :	19.4
Wet Reference Flowrate (Rm^3/s^*) :	18.7

* At 25°C and 1 atmosphere

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

TABLE 17
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Metal Actual Concentrations

Metal	Actual Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	%
Antimony	<0.032	<0.032	<0.032	<0.032	0.7
Arsenic	<0.080	<0.080	<0.079	<0.080	0.7
Barium	7.86	8.04	7.89	7.93	1.2
Beryllium	<0.032	<0.032	<0.032	<0.032	0.7
Cadmium	0.037	2.26	<0.016	<0.77	167
Chromium	0.55	0.66	0.49	0.57	14.6
Cobalt	0.029	<0.032	<0.032	<0.031	5.8
Copper	1.03	0.81	0.71	0.85	19.3
Lead	0.19	0.35	0.079	0.20	66.6
Mercury	<0.096	<0.096	<0.092	<0.095	2.6
Molybdenum	2.94	2.89	2.86	2.90	1.4
Nickel	0.34	1.00	0.28	0.54	75.0
Selenium	<0.16	<0.16	<0.16	<0.16	0.7
Silver	<0.032	<0.032	<0.032	<0.032	0.7
Thallium	<0.032	<0.032	<0.032	<0.032	0.7
Vanadium	<0.080	<0.080	<0.079	<0.080	0.7
Zinc	8.44	8.52	7.43	8.13	7.4
Total	<22.0	<25.1	<20.3	<22.5	10.8

TABLE 18
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Metal Dry Reference Concentrations

Metal	Dry Reference Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	$\mu\text{g}/\text{Rm}^3^*$	$\mu\text{g}/\text{Rm}^3^*$	$\mu\text{g}/\text{Rm}^3^*$	$\mu\text{g}/\text{Rm}^3^*$	%
Antimony	<0.055	<0.055	<0.056	<0.055	0.9
Arsenic	<0.14	<0.14	<0.14	<0.14	0.9
Barium	13.5	13.8	13.9	13.7	1.6
Beryllium	<0.055	<0.055	<0.056	<0.055	0.9
Cadmium	0.063	3.88	<0.028	<1.32	167
Chromium	0.95	1.13	0.87	0.98	13.5
Cobalt	0.049	<0.055	<0.056	<0.053	6.6
Copper	1.77	1.40	1.25	1.47	18.1
Lead	0.32	0.60	0.14	0.35	65.9
Mercury	<0.16	<0.17	<0.16	<0.16	1.1
Molybdenum	5.04	4.95	5.04	5.01	1.0
Nickel	0.57	1.72	0.48	0.93	74.2
Selenium	<0.27	<0.28	<0.28	<0.28	0.9
Silver	<0.055	<0.055	<0.056	<0.055	0.9
Thallium	<0.055	<0.055	<0.056	<0.055	0.9
Vanadium	<0.14	<0.14	<0.14	<0.14	0.9
Zinc	14.5	14.6	13.1	14.1	5.9
Total	<37.6	<43.1	<35.8	<38.8	9.7

* At 25°C and 1 atmosphere

TABLE 19
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Metal Dry Adjusted Concentrations

Metal	Dry Adjusted Concentration				Coefficient of Variation %
	Test No. 1 $\mu\text{g/Rm}^{3**}$	Test No. 2 $\mu\text{g/Rm}^{3**}$	Test No. 3 $\mu\text{g/Rm}^{3**}$	Average $\mu\text{g/Rm}^{3**}$	
Antimony	<0.045	<0.045	<0.045	<0.045	0.6
Arsenic	<0.11	<0.11	<0.11	<0.11	0.6
Barium	11.0	11.3	11.1	11.1	1.2
Beryllium	<0.045	<0.045	<0.045	<0.045	0.6
Cadmium	0.051	3.17	<0.022	<1.08	167
Chromium	0.78	0.92	0.69	0.80	14.5
Cobalt	0.040	<0.045	<0.045	<0.043	6.0
Copper	1.45	1.14	1.00	1.20	19.1
Lead	0.26	0.49	0.11	0.29	66.6
Mercury	<0.13	<0.14	<0.13	<0.13	2.5
Molybdenum	4.12	4.05	4.03	4.07	1.1
Nickel	0.47	1.41	0.39	0.75	75.0
Selenium	<0.22	<0.23	<0.22	<0.22	0.6
Silver	<0.045	<0.045	<0.045	<0.045	0.6
Thallium	<0.045	<0.045	<0.045	<0.045	0.6
Vanadium	<0.11	<0.11	<0.11	<0.11	0.6
Zinc	11.8	12.0	10.5	11.4	7.3
Total	<30.8	<35.2	<28.6	<31.5	10.7

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

TABLE 20
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	µg/Rm ³ *	µg/Rm ³ *	µg/Rm ³ *	%
Antimony	<0.046	<0.046	<0.046	<0.046	0.8
Arsenic	<0.11	<0.12	<0.12	<0.12	0.8
Barium	11.2	11.6	11.5	11.5	1.8
Beryllium	<0.046	<0.046	<0.046	<0.046	0.8
Cadmium	0.053	3.28	<0.023	<1.12	167
Chromium	0.79	0.95	0.72	0.82	14.5
Cobalt	0.041	<0.046	<0.046	<0.045	6.7
Copper	1.48	1.18	1.04	1.23	18.2
Lead	0.27	0.51	0.12	0.30	66.7
Mercury	<0.14	<0.14	<0.13	<0.14	2.0
Molybdenum	4.21	4.18	4.18	4.19	0.3
Nickel	0.48	1.45	0.40	0.78	75.1
Selenium	<0.23	<0.23	<0.23	<0.23	0.8
Silver	<0.046	<0.046	<0.046	<0.046	0.8
Thallium	<0.046	<0.046	<0.046	<0.046	0.8
Vanadium	<0.11	<0.12	<0.12	<0.12	0.8
Zinc	12.1	12.3	10.9	11.8	6.8
Total	<31.4	<36.4	<29.7	<32.5	10.7

* At 25°C and 1 atmosphere

TABLE 21
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Metal Emission Rates

Metal	Emission Rate				Coefficient of Variation %
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	
Antimony	<0.00086	<0.00087	<0.00086	<0.00086	0.6
Arsenic	<0.0021	<0.0022	<0.0022	<0.0022	0.6
Barium	0.21	0.22	0.22	0.21	1.5
Beryllium	<0.00086	<0.00087	<0.00086	<0.00086	0.6
Cadmium	0.00099	0.061	<0.00043	<0.021	167
Chromium	0.015	0.018	0.013	0.015	14.4
Cobalt	0.00077	<0.00087	<0.00086	<0.00084	6.4
Copper	0.028	0.022	0.019	0.023	18.5
Lead	0.0050	0.0095	0.0022	0.0055	66.6
Mercury	<0.0026	<0.0026	<0.0025	<0.0026	2.1
Molybdenum	0.079	0.078	0.078	0.078	0.7
Nickel	0.0090	0.027	0.0075	0.015	75.0
Selenium	<0.0043	<0.0043	<0.0043	<0.0043	0.6
Silver	<0.00086	<0.00087	<0.00086	<0.00086	0.6
Thallium	<0.00086	<0.00087	<0.00086	<0.00086	0.6
Vanadium	<0.0021	<0.0022	<0.0022	<0.0022	0.6
Zinc	0.23	0.23	0.20	0.22	6.9
Total	<0.59	<0.68	<0.55	<0.61	10.6

TABLE 22
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Metal Emission Data

Metal	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3^{**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Emission Rate mg/s
Antimony	<0.032	<0.055	<0.045	<0.046	<0.00086
Arsenic	<0.080	<0.14	<0.11	<0.12	<0.0022
Barium	7.93	13.7	11.1	11.5	0.21
Beryllium	<0.032	<0.055	<0.045	<0.046	<0.00086
Cadmium	<0.77	<1.32	<1.08	<1.12	<0.021
Chromium	0.57	0.98	0.80	0.82	0.015
Cobalt	<0.031	<0.053	<0.043	<0.045	<0.00084
Copper	0.85	1.47	1.20	1.23	0.023
Lead	0.20	0.35	0.29	0.30	0.0055
Mercury	<0.095	<0.16	<0.13	<0.14	<0.0026
Molybdenum	2.90	5.01	4.07	4.19	0.078
Nickel	0.54	0.93	0.75	0.78	0.015
Selenium	<0.16	<0.28	<0.22	<0.23	<0.0043
Silver	<0.032	<0.055	<0.045	<0.046	<0.00086
Thallium	<0.032	<0.055	<0.045	<0.046	<0.00086
Vanadium	<0.080	<0.14	<0.11	<0.12	<0.0022
Zinc	8.13	14.1	11.4	11.8	0.22
Total	<22.5	<38.8	<31.5	<32.5	<0.61

* At 25°C and 1 atmosphere

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

TABLE 23
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Blank Train Metal Analyses

Metal	Probe & Filter	Impingers	Total
	Hydrofluoric Acid Digest	& Rinses	Collected
	µg	µg	µg
Antimony	<0.20	<0.10	<0.20
Arsenic	<1.0	<0.50	<0.50
Barium	46.6	<2.5	46.6
Beryllium	<0.20	<0.10	<0.20
Cadmium	<0.10	<0.050	<0.10
Chromium	2.60	<0.50	2.60
Cobalt	<0.20	<0.10	<0.20
Copper	4.40	1.05	5.45
Lead	<0.50	0.60	0.60
Mercury *	<0.022	<0.26	<0.26
Molybdenum	18.3	<0.10	18.3
Nickel	0.98	0.29	1.27
Selenium	<2.0	<1.0	<1.00
Silver	<0.20	<0.10	<0.20
Thallium	<0.20	<0.10	<0.20
Vanadium	<1.0	<0.50	<0.50
Zinc	33.1	<3.0	33.1
Total			<111

* 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
Reworld Durham York Renewable Energy L.P.
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/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	ng/s
Tetrachlorodibenzo-p-dioxins	66.7	0.0085	0.015	0.012	0.012	0.22
Pentachlorodibenzo-p-dioxins	63.3	0.0081	0.014	0.011	0.012	0.21
Hexachlorodibenzo-p-dioxins	228	0.029	0.050	0.040	0.042	0.74
Heptachlorodibenzo-p-dioxins	239	0.031	0.052	0.042	0.044	0.78
Octachlorodibenzo-p-dioxin	123	0.016	0.027	0.022	0.023	0.40
Total	720	0.092	0.16	0.13	0.13	2.35

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	ng/s
Tetrachlorodibenzofurans	18.2	0.0023	0.0040	0.0032	0.0034	0.059
Pentachlorodibenzofurans	18.8	0.0024	0.0041	0.0033	0.0035	0.061
Hexachlorodibenzofurans	42.3	0.0054	0.0093	0.0075	0.0078	0.14
Heptachlorodibenzofurans	24.5	0.0031	0.0054	0.0043	0.0045	0.080
Octachlorodibenzofuran	<13	<0.0017	<0.0028	<0.0023	<0.0024	<0.042
Total	<117	<0.015	<0.026	<0.021	<0.022	<0.38

Dry Gas Volume Sampled (Rm ^{3*}) :	4.569
Actual Flowrate (m ³ /s) :	25.5
Dry Reference Flowrate (Rm ³ /s*) :	14.9
Dry Adjusted Flowrate (Rm ³ /s**) :	18.5
Wet Reference Flowrate (Rm ³ /s*) :	17.7

* 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 25
Reworld Durham York Renewable Energy L.P.
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/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	ng/s
Tetrachlorodibenzo-p-dioxins	40.1	0.0051	0.0087	0.0070	0.0073	0.13
Pentachlorodibenzo-p-dioxins	55.0	0.0070	0.012	0.0096	0.010	0.18
Hexachlorodibenzo-p-dioxins	217	0.028	0.047	0.038	0.040	0.71
Heptachlorodibenzo-p-dioxins	215	0.027	0.047	0.037	0.039	0.70
Octachlorodibenzo-p-dioxin	124	0.016	0.027	0.022	0.023	0.41
Total	651	0.083	0.14	0.11	0.12	2.13

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	ng/s
Tetrachlorodibenzofurans	<3.7	<0.00047	<0.00080	<0.00064	<0.00068	<0.012
Pentachlorodibenzofurans	5.24	0.00067	0.0011	0.00091	0.00096	0.017
Hexachlorodibenzofurans	44.9	0.0057	0.0097	0.0078	0.0082	0.15
Heptachlorodibenzofurans	6.31	0.00080	0.0014	0.0011	0.0012	0.021
Octachlorodibenzofuran	15.9	0.0020	0.0034	0.0028	0.0029	0.052
Total	<76.1	<0.0097	<0.016	<0.013	<0.014	<0.25

Dry Gas Volume Sampled (Rm ^{3*}) :	4.613
Actual Flowrate (m ³ /s) :	25.7
Dry Reference Flowrate (Rm ³ /s*) :	15.1
Dry Adjusted Flowrate (Rm ³ /s**) :	18.8
Wet Reference Flowrate (Rm ³ /s*) :	17.9

* 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 26
Reworld Durham York Renewable Energy L.P.
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/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	ng/s
Tetrachlorodibenzo-p-dioxins	36.3	0.0046	0.0078	0.0064	0.0066	0.12
Pentachlorodibenzo-p-dioxins	69.6	0.0089	0.015	0.012	0.013	0.23
Hexachlorodibenzo-p-dioxins	176	0.022	0.038	0.031	0.032	0.57
Heptachlorodibenzo-p-dioxins	154	0.020	0.033	0.027	0.028	0.50
Octachlorodibenzo-p-dioxin	81.2	0.010	0.017	0.014	0.015	0.26
Total	517	0.066	0.11	0.091	0.094	1.68

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	ng/s
Tetrachlorodibenzofurans	6.32	0.00080	0.0014	0.0011	0.0011	0.021
Pentachlorodibenzofurans	22.5	0.0029	0.0048	0.0039	0.0041	0.073
Hexachlorodibenzofurans	19.3	0.0025	0.0041	0.0034	0.0035	0.063
Heptachlorodibenzofurans	10.4	0.0013	0.0022	0.0018	0.0019	0.034
Octachlorodibenzofuran	7.36	0.00094	0.0016	0.0013	0.0013	0.024
Total	65.9	0.0084	0.014	0.012	0.012	0.21

Dry Gas Volume Sampled (Rm ^{3*}) :	4.652
Actual Flowrate (m ³ /s) :	25.5
Dry Reference Flowrate (Rm ³ /s*) :	15.1
Dry Adjusted Flowrate (Rm ³ /s**) :	18.5
Wet Reference Flowrate (Rm ³ /s*) :	17.9

* 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 27
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Test No. 1	Actual Concentration			Coefficient of Variation
		Test No. 2	Test No. 3	Average	
	ng/m ³	ng/m ³	ng/m ³	ng/m ³	%
Tetrachlorodibenzo-p-dioxins	0.0085	0.0051	0.0046	0.0061	35.0
Pentachlorodibenzo-p-dioxins	0.0081	0.0070	0.0089	0.0080	11.7
Hexachlorodibenzo-p-dioxins	0.029	0.028	0.022	0.026	13.4
Heptachlorodibenzo-p-dioxins	0.031	0.027	0.020	0.026	21.8
Octachlorodibenzo-p-dioxin	0.016	0.016	0.010	0.014	22.5
Total	0.092	0.083	0.066	0.080	16.6

Furans

Congener Group	Test No. 1	Actual Concentration			Coefficient of Variation
		Test No. 2	Test No. 3	Average	
	ng/m ³	ng/m ³	ng/m ³	ng/m ³	%
Tetrachlorodibenzofurans	0.0023	<0.00047	0.00080	<0.0012	82.4
Pentachlorodibenzofurans	0.0024	0.00067	0.0029	0.0020	58.6
Hexachlorodibenzofurans	0.0054	0.0057	0.0025	0.0045	39.8
Heptachlorodibenzofurans	0.0031	0.00080	0.0013	0.0018	69.7
Octachlorodibenzofuran	<0.0017	0.0020	0.00094	<0.0015	35.9
Total	<0.015	<0.0097	0.0084	<0.011	31.5

TABLE 28
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Tetrachlorodibenzo-p-dioxins	0.015	0.0087	0.0078	0.010	35.6
Pentachlorodibenzo-p-dioxins	0.014	0.012	0.015	0.014	11.3
Hexachlorodibenzo-p-dioxins	0.050	0.047	0.038	0.045	14.0
Heptachlorodibenzo-p-dioxins	0.052	0.047	0.033	0.044	22.4
Octachlorodibenzo-p-dioxin	0.027	0.027	0.017	0.024	23.0
Total	0.16	0.14	0.11	0.14	17.2

Furans

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Tetrachlorodibenzofurans	0.0040	<0.00080	0.0014	<0.0020	83.0
Pentachlorodibenzofurans	0.0041	0.0011	0.0048	0.0034	58.3
Hexachlorodibenzofurans	0.0093	0.0097	0.0041	0.0077	40.1
Heptachlorodibenzofurans	0.0054	0.0014	0.0022	0.0030	70.3
Octachlorodibenzofuran	<0.0028	0.0034	0.0016	<0.0026	36.3
Total	<0.026	<0.016	0.014	<0.019	32.2

* At 25°C and 1 atmosphere

TABLE 29
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration				Coefficient of Variation %
	Test No. 1 ng/Rm ³ *	Test No. 2 ng/Rm ³ *	Test No. 3 ng/Rm ³ *	Average ng/Rm ³ *	
Tetrachlorodibenzo-p-dioxins	0.012	0.0070	0.0064	0.0084	35.2
Pentachlorodibenzo-p-dioxins	0.011	0.0096	0.012	0.011	12.1
Hexachlorodibenzo-p-dioxins	0.040	0.038	0.031	0.036	13.3
Heptachlorodibenzo-p-dioxins	0.042	0.037	0.027	0.036	21.8
Octachlorodibenzo-p-dioxin	0.022	0.022	0.014	0.019	22.3
Total	0.13	0.11	0.091	0.11	16.6

Furans

Congener Group	Dry Adjusted Concentration				Coefficient of Variation %
	Test No. 1 ng/Rm ³ *	Test No. 2 ng/Rm ³ *	Test No. 3 ng/Rm ³ *	Average ng/Rm ³ *	
Tetrachlorodibenzofurans	0.0032	<0.00064	0.0011	<0.0017	82.6
Pentachlorodibenzofurans	0.0033	0.00091	0.0039	0.0027	58.8
Hexachlorodibenzofurans	0.0075	0.0078	0.0034	0.0062	39.6
Heptachlorodibenzofurans	0.0043	0.0011	0.0018	0.0024	70.0
Octachlorodibenzofuran	<0.0023	0.0028	0.0013	<0.0021	35.6
Total	<0.021	<0.013	0.012	<0.015	31.7

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

TABLE 30
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Tetrachlorodibenzo-p-dioxins	0.012	0.0073	0.0066	0.0087	35.5
Pentachlorodibenzo-p-dioxins	0.012	0.010	0.013	0.011	11.3
Hexachlorodibenzo-p-dioxins	0.042	0.040	0.032	0.038	14.0
Heptachlorodibenzo-p-dioxins	0.044	0.039	0.028	0.037	22.3
Octachlorodibenzo-p-dioxin	0.023	0.023	0.015	0.020	22.9
Total	0.13	0.12	0.094	0.12	17.1

Furans

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Tetrachlorodibenzofurans	0.0034	<0.00068	0.0011	<0.0017	82.8
Pentachlorodibenzofurans	0.0035	0.00096	0.0041	0.0028	58.3
Hexachlorodibenzofurans	0.0078	0.0082	0.0035	0.0065	40.1
Heptachlorodibenzofurans	0.0045	0.0012	0.0019	0.0025	70.2
Octachlorodibenzofuran	<0.0024	0.0029	0.0013	<0.0022	36.3
Total	<0.022	<0.014	0.012	<0.016	32.0

* At 25°C and 1 atmosphere

TABLE 31
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate			Average ng/s	Coefficient of Variation %
	Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s		
Tetrachlorodibenzo-p-dioxins	0.22	0.13	0.12	0.16	34.8
Pentachlorodibenzo-p-dioxins	0.21	0.18	0.23	0.20	11.3
Hexachlorodibenzo-p-dioxins	0.74	0.71	0.57	0.68	13.5
Heptachlorodibenzo-p-dioxins	0.78	0.70	0.50	0.66	21.9
Octachlorodibenzo-p-dioxin	0.40	0.41	0.26	0.36	22.6
Total	2.35	2.13	1.68	2.05	16.6

Furans

Congener Group	Emission Rate			Average ng/s	Coefficient of Variation %
	Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s		
Tetrachlorodibenzofurans	0.059	<0.012	0.021	<0.031	82.2
Pentachlorodibenzofurans	0.061	0.017	0.073	0.050	58.4
Hexachlorodibenzofurans	0.14	0.15	0.063	0.12	40.0
Heptachlorodibenzofurans	0.080	0.021	0.034	0.045	69.5
Octachlorodibenzofuran	<0.042	0.052	0.024	<0.039	36.3
Total	<0.38	<0.25	0.21	<0.28	31.3

TABLE 32
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.0061	0.010	0.0084	0.0087	0.16
Pentachlorodibenzo-p-dioxins	0.0080	0.014	0.011	0.011	0.20
Hexachlorodibenzo-p-dioxins	0.026	0.045	0.036	0.038	0.68
Heptachlorodibenzo-p-dioxins	0.026	0.044	0.036	0.037	0.66
Octachlorodibenzo-p-dioxin	0.014	0.024	0.019	0.020	0.36
Total	0.080	0.14	0.11	0.12	2.05

Furans

Congener Group	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate ng/s
Tetrachlorodibenzofurans	<0.0012	<0.0020	<0.0017	<0.0017	<0.031
Pentachlorodibenzofurans	0.0020	0.0034	0.0027	0.0028	0.050
Hexachlorodibenzofurans	0.0045	0.0077	0.0062	0.0065	0.12
Heptachlorodibenzofurans	0.0018	0.0030	0.0024	0.0025	0.045
Octachlorodibenzofuran	<0.0015	<0.0026	<0.0021	<0.0022	<0.039
Total	<0.011	<0.019	<0.015	<0.016	<0.28

* At 25°C and 1 atmosphere

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

TABLE 33
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train	Method Blank
	pg	pg
Tetrachlorodibenzo-p-dioxins	<1.0	<2.0
Pentachlorodibenzo-p-dioxins	<1.4	<2.1
Hexachlorodibenzo-p-dioxins	<1.1	<1.5
Heptachlorodibenzo-p-dioxins	<2.4	3.43
Octachlorodibenzo-p-dioxin	7.23	6.52
Total	<13.1	<15.6

Furans

Congener Group	Blank Train	Method Blank
	pg	pg
Tetrachlorodibenzofurans	<1.3	<2.0
Pentachlorodibenzofurans	2.10	<1.1
Hexachlorodibenzofurans	<0.58	<1.2
Heptachlorodibenzofurans	<1.4	<1.8
Octachlorodibenzofuran	<2.1	<2.2
Total	<7.5	<8.30

"<" 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected pg	Actual Concentration pg/m ³	Dry Reference Concentration pg/Rm ³ *	Dry Adjusted Concentration pg/Rm ³ **	Wet Reference Concentration pg/Rm ³ *	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.9	<0.24	<0.42	<0.33	<0.35	<0.0062
12378-pentachlorodibenzo-p-dioxin	<3.3	<0.42	<0.72	<0.58	<0.61	<0.011
123478-hexachlorodibenzo-p-dioxin	<5.4	<0.69	<1.18	<0.95	<0.99	<0.018
123678-hexachlorodibenzo-p-dioxin	15.8	2.02	3.46	2.79	2.91	0.052
123789-hexachlorodibenzo-p-dioxin	9.43	1.21	2.06	1.66	1.74	0.031
1234678-heptachlorodibenzo-p-dioxin	118	15.1	25.8	20.8	21.7	0.38
Octachlorodibenzo-p-dioxin	123	15.7	26.9	21.7	22.7	0.40
2378-tetrachlorodibenzofuran	<3.3	<0.42	<0.72	<0.58	<0.61	<0.011
12378-pentachlorodibenzofuran	5.86	0.75	1.28	1.03	1.08	0.019
23478-pentachlorodibenzofuran	8.89	1.14	1.95	1.57	1.64	0.029
123478-hexachlorodibenzofuran	3.58	0.46	0.78	0.63	0.66	0.012
123678-hexachlorodibenzofuran	<5.7	<0.73	<1.25	<1.00	<1.05	<0.019
234678-hexachlorodibenzofuran	<6.8	<0.87	<1.49	<1.20	<1.25	<0.022
123789-hexachlorodibenzofuran	<2.8	<0.36	<0.61	<0.49	<0.52	<0.0091
1234678-heptachlorodibenzofuran	24.5	3.13	5.36	4.32	4.51	0.080
1234789-heptachlorodibenzofuran	<3.6	<0.46	<0.79	<0.63	<0.66	<0.012
Octachlorodibenzofuran	<13	<1.66	<2.85	<2.29	<2.40	<0.042
PCB 81	<5.3	<0.68	<1.16	<0.93	<0.98	<0.017
PCB 77	94.0	12.0	20.6	16.6	17.3	0.31
PCB 123	32.8	4.19	7.18	5.78	6.04	0.11
PCB 118	2060	263	451	363	380	6.72
PCB 114	50.5	6.46	11.1	8.90	9.30	0.16
PCB 105	488	62.4	107	86.0	89.9	1.59
PCB 126	<4.8	<0.61	<1.05	<0.85	<0.88	<0.016
PCB 167	14.3	1.83	3.13	2.52	2.63	0.047
PCB 156/157	30.8	3.94	6.74	5.43	5.67	0.10
PCB 169	<3.2	<0.41	<0.70	<0.56	<0.59	<0.010
PCB 189	<1.6	<0.20	<0.35	<0.28	<0.29	<0.0052
Total Dioxins & Furans Only	<355	<45.4	<77.7	<62.6	<65.4	<1.16
Total PCBs Only	<2785	<356	<610	<491	<513	<9.08
Total Dioxins & Furans and PCBs	<3140	<402	<687	<554	<579	<10.2

Dry Gas Volume Sampled (Rm ³ *) :	4.569
Actual Flowrate (m ³ /s) :	25.5
Dry Reference Flowrate (Rm ³ /s*) :	14.9
Dry Adjusted Flowrate (Rm ³ /s**) :	18.5
Wet Reference Flowrate (Rm ³ /s*) :	17.7

* 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 35
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected pg	Actual Concentration pg/m ³	Dry Reference Concentration pg/Rm ³ *	Dry Adjusted Concentration pg/Rm ³ **	Wet Reference Concentration pg/Rm ³ *	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	2.50	0.32	0.54	0.44	0.46	0.0082
12378-pentachlorodibenzo-p-dioxin	3.75	0.48	0.81	0.65	0.69	0.012
123478-hexachlorodibenzo-p-dioxin	5.95	0.76	1.29	1.04	1.09	0.019
123678-hexachlorodibenzo-p-dioxin	12.4	1.58	2.69	2.16	2.27	0.041
123789-hexachlorodibenzo-p-dioxin	6.59	0.84	1.43	1.15	1.21	0.022
1234678-heptachlorodibenzo-p-dioxin	105	13.4	22.8	18.3	19.2	0.34
Octachlorodibenzo-p-dioxin	124	15.8	26.9	21.6	22.7	0.41
2378-tetrachlorodibenzofuran	<3.7	<0.47	<0.80	<0.64	<0.68	<0.012
12378-pentachlorodibenzofuran	<4.3	<0.55	<0.93	<0.75	<0.79	<0.014
23478-pentachlorodibenzofuran	4.24	0.54	0.92	0.74	0.78	0.014
123478-hexachlorodibenzofuran	3.64	0.46	0.79	0.63	0.67	0.012
123678-hexachlorodibenzofuran	4.24	0.54	0.92	0.74	0.78	0.014
234678-hexachlorodibenzofuran	9.37	1.19	2.03	1.63	1.71	0.031
123789-hexachlorodibenzofuran	2.82	0.36	0.61	0.49	0.52	0.0092
1234678-heptachlorodibenzofuran	<18	<2.29	<3.90	<3.13	<3.29	<0.059
1234789-heptachlorodibenzofuran	<5.6	<0.71	<1.21	<0.98	<1.02	<0.018
Octachlorodibenzofuran	15.9	2.03	3.45	2.77	2.91	0.052
PCB 81	50.4	6.42	10.9	8.78	9.22	0.16
PCB 77	1100	140	238	192	201	3.60
PCB 123	210	26.7	45.5	36.6	38.4	0.69
PCB 118	11100	1414	2406	1933	2030	36.3
PCB 114	282	35.9	61.1	49.1	51.6	0.92
PCB 105	2930	373	635	510	536	9.59
PCB 126	17.5	2.23	3.79	3.05	3.20	0.057
PCB 167	53.0	6.75	11.5	9.23	9.69	0.17
PCB 156/157	130	16.6	28.2	22.6	23.8	0.43
PCB 169	<2.6	<0.33	<0.56	<0.45	<0.48	<0.0085
PCB 189	<1.6	<0.20	<0.35	<0.28	<0.29	<0.0052
Total Dioxins & Furans Only	<332	<42.3	<72.0	<57.8	<60.7	<1.09
Total PCBs Only	<15877	<2022	<3442	<2764	<2903	<52.0
Total Dioxins & Furans and PCBs	<16209	<2065	<3514	<2822	<2964	<53.1

Dry Gas Volume Sampled (Rm ³ *) :	4.613
Actual Flowrate (m ³ /s) :	25.7
Dry Reference Flowrate (Rm ³ /s*) :	15.1
Dry Adjusted Flowrate (Rm ³ /s**) :	18.8
Wet Reference Flowrate (Rm ³ /s*) :	17.9

* 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 36
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected pg	Actual Concentration pg/m ³	Dry Reference Concentration pg/Rm ³ *	Dry Adjusted Concentration pg/Rm ^{3**}	Wet Reference Concentration pg/Rm ³ *	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.8	<0.23	<0.39	<0.32	<0.33	<0.0058
12378-pentachlorodibenzo-p-dioxin	2.53	0.32	0.54	0.44	0.46	0.0082
123478-hexachlorodibenzo-p-dioxin	4.29	0.55	0.92	0.75	0.78	0.014
123678-hexachlorodibenzo-p-dioxin	8.6	1.09	1.85	1.51	1.56	0.028
123789-hexachlorodibenzo-p-dioxin	4.18	0.53	0.90	0.73	0.76	0.014
1234678-heptachlorodibenzo-p-dioxin	80.3	10.2	17.3	14.1	14.6	0.26
Octachlorodibenzo-p-dioxin	81.2	10.3	17.5	14.2	14.7	0.26
2378-tetrachlorodibenzofuran	<2.8	<0.36	<0.60	<0.49	<0.51	<0.0091
12378-pentachlorodibenzofuran	4.76	0.61	1.02	0.84	0.86	0.015
23478-pentachlorodibenzofuran	5.27	0.67	1.13	0.92	0.96	0.017
123478-hexachlorodibenzofuran	<2.5	<0.32	<0.54	<0.44	<0.45	<0.0081
123678-hexachlorodibenzofuran	<3.3	<0.42	<0.71	<0.58	<0.60	<0.011
234678-hexachlorodibenzofuran	5.42	0.69	1.17	0.95	0.98	0.018
123789-hexachlorodibenzofuran	2.50	0.32	0.54	0.44	0.45	0.0081
1234678-heptachlorodibenzofuran	<14	<1.78	<3.01	<2.46	<2.54	<0.045
1234789-heptachlorodibenzofuran	4.51	0.57	0.97	0.79	0.82	0.015
Octachlorodibenzofuran	7.36	0.94	1.58	1.29	1.33	0.024
PCB 81	<3.1	<0.39	<0.67	<0.54	<0.56	<0.010
PCB 77	86.8	11.0	18.7	15.2	15.7	0.28
PCB 123	29.4	3.74	6.32	5.16	5.33	0.095
PCB 118	1570	200	337	275	285	5.10
PCB 114	<32	<4.07	<6.88	<5.61	<5.80	<0.10
PCB 105	413	52.6	88.8	72.5	74.9	1.34
PCB 126	5.24	0.67	1.13	0.92	0.95	0.017
PCB 167	11.1	1.41	2.39	1.95	2.01	0.036
PCB 156/157	31.0	3.95	6.66	5.44	5.62	0.10
PCB 169	<3.1	<0.39	<0.67	<0.54	<0.56	<0.010
PCB 189	<2.5	<0.32	<0.54	<0.44	<0.45	<0.0081
Total Dioxins & Furans Only	<235	<30.0	<50.6	<41.3	<42.7	<0.76
Total PCBs Only	<2187	<278	<470	<384	<397	<7.10
Total Dioxins & Furans and PCBs	<2423	<308	<521	<425	<439	<7.86

Dry Gas Volume Sampled (Rm ³ *) :	4.652
Actual Flowrate (m ³ /s) :	25.5
Dry Reference Flowrate (Rm ³ /s*) :	15.1
Dry Adjusted Flowrate (Rm ³ /s**) :	18.5
Wet Reference Flowrate (Rm ³ /s*) :	17.9

* At 25°C and 1 atmosphere

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

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

TABLE 37
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	pg/m ³	pg/m ³	pg/m ³	pg/m ³	%
2378-tetrachlorodibenzo-p-dioxin	<0.24	0.32	<0.23	<0.26	18.2
12378-pentachlorodibenzo-p-dioxin	<0.42	0.48	0.32	<0.41	19.4
123478-hexachlorodibenzo-p-dioxin	<0.69	0.76	0.55	<0.66	16.3
123678-hexachlorodibenzo-p-dioxin	2.02	1.58	1.09	1.56	29.6
123789-hexachlorodibenzo-p-dioxin	1.21	0.84	0.53	0.86	39.3
1234678-heptachlorodibenzo-p-dioxin	15.1	13.4	10.2	12.9	19.2
Octachlorodibenzo-p-dioxin	15.7	15.8	10.3	14.0	22.5
2378-tetrachlorodibenzofuran	<0.42	<0.47	<0.36	<0.42	13.8
12378-pentachlorodibenzofuran	0.75	<0.55	0.61	<0.63	16.4
23478-pentachlorodibenzofuran	1.14	0.54	0.67	0.78	40.1
123478-hexachlorodibenzofuran	0.46	0.46	<0.32	<0.41	19.9
123678-hexachlorodibenzofuran	<0.73	0.54	<0.42	<0.56	27.7
234678-hexachlorodibenzofuran	<0.87	1.19	0.69	<0.92	27.8
123789-hexachlorodibenzofuran	<0.36	0.36	0.32	<0.35	6.8
1234678-heptachlorodibenzofuran	3.13	<2.29	<1.78	<2.40	28.4
1234789-heptachlorodibenzofuran	<0.46	<0.71	0.57	<0.58	21.7
Octachlorodibenzofuran	<1.66	2.03	0.94	<1.54	35.9
PCB 81	<0.68	6.42	<0.39	<2.50	136
PCB 77	12.0	140	11.0	54.4	136
PCB 123	4.19	26.7	3.74	11.6	114
PCB 118	263	1414	200	626	109
PCB 114	6.46	35.9	<4.07	<15.5	115
PCB 105	62.4	373	52.6	163	112
PCB 126	<0.61	2.23	0.67	<1.17	78.4
PCB 167	1.83	6.75	1.41	3.33	89.1
PCB 156/157	3.94	16.6	3.95	8.15	89.4
PCB 169	<0.41	<0.33	<0.39	<0.38	11.0
PCB 189	<0.20	<0.20	<0.32	<0.24	27.2
Total Dioxins & Furans Only	<45.4	<42.3	<30.0	<39.2	20.8
Total PCBs Only	<356	<2022	<278	<886	111
Total Dioxins & Furans and PCBs	<402	<2065	<308	<925	107

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

TABLE 38
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	pg/Rm ³ *	pg/Rm ³ *	pg/Rm ³ *	%
2378-tetrachlorodibenzo-p-dioxin	<0.42	0.54	<0.39	<0.45	18.4
12378-pentachlorodibenzo-p-dioxin	<0.72	0.81	0.54	<0.69	19.8
123478-hexachlorodibenzo-p-dioxin	<1.18	1.29	0.92	<1.13	16.7
123678-hexachlorodibenzo-p-dioxin	3.46	2.69	1.85	2.66	30.3
123789-hexachlorodibenzo-p-dioxin	2.06	1.43	0.90	1.46	39.9
1234678-heptachlorodibenzo-p-dioxin	25.8	22.8	17.3	21.9	19.8
Octachlorodibenzo-p-dioxin	26.9	26.9	17.5	23.8	23.0
2378-tetrachlorodibenzofuran	<0.72	<0.80	<0.60	<0.71	14.2
12378-pentachlorodibenzofuran	1.28	<0.93	1.02	<1.08	16.8
23478-pentachlorodibenzofuran	1.95	0.92	1.13	1.33	40.6
123478-hexachlorodibenzofuran	0.78	0.79	<0.54	<0.70	20.4
123678-hexachlorodibenzofuran	<1.25	0.92	<0.71	<0.96	28.3
234678-hexachlorodibenzofuran	<1.49	2.03	1.17	<1.56	28.0
123789-hexachlorodibenzofuran	<0.61	0.61	0.54	<0.59	7.3
1234678-heptachlorodibenzofuran	5.36	<3.90	<3.01	<4.09	29.0
1234789-heptachlorodibenzofuran	<0.79	<1.21	0.97	<0.99	21.6
Octachlorodibenzofuran	<2.85	3.45	1.58	<2.62	36.3
PCB 81	<1.16	10.9	<0.67	<4.25	136
PCB 77	20.6	238	18.7	92.6	137
PCB 123	7.18	45.5	6.32	19.7	114
PCB 118	451	2406	337	1065	109
PCB 114	11.1	61.1	<6.88	<26.4	115
PCB 105	107	635	88.8	277	112
PCB 126	<1.05	3.79	1.13	<1.99	78.5
PCB 167	3.13	11.5	2.39	5.67	89.2
PCB 156/157	6.74	28.2	6.66	13.9	89.5
PCB 169	<0.70	<0.56	<0.67	<0.64	11.1
PCB 189	<0.35	<0.35	<0.54	<0.41	26.5
Total Dioxins & Furans Only	<77.7	<72.0	<50.6	<66.7	21.4
Total PCBs Only	<610	<3442	<470	<1507	111
Total Dioxins & Furans and PCBs	<687	<3514	<521	<1574	107

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1 pg/Rm ³ *	Test No. 2 pg/Rm ³ *	Test No. 3 pg/Rm ³ *	Average pg/Rm ³ *	
2378-tetrachlorodibenzo-p-dioxin	<0.33	0.44	<0.32	<0.36	17.7
12378-pentachlorodibenzo-p-dioxin	<0.58	0.65	0.44	<0.56	19.0
123478-hexachlorodibenzo-p-dioxin	<0.95	1.04	0.75	<0.91	15.9
123678-hexachlorodibenzo-p-dioxin	2.79	2.16	1.51	2.15	29.7
123789-hexachlorodibenzo-p-dioxin	1.66	1.15	0.73	1.18	39.4
1234678-heptachlorodibenzo-p-dioxin	20.8	18.3	14.1	17.7	19.1
Octachlorodibenzo-p-dioxin	21.7	21.6	14.2	19.2	22.3
2378-tetrachlorodibenzofuran	<0.58	<0.64	<0.49	<0.57	13.4
12378-pentachlorodibenzofuran	1.03	<0.75	0.84	<0.87	16.7
23478-pentachlorodibenzofuran	1.57	0.74	0.92	1.08	40.4
123478-hexachlorodibenzofuran	0.63	0.63	<0.44	<0.57	19.7
123678-hexachlorodibenzofuran	<1.00	0.74	<0.58	<0.77	27.8
234678-hexachlorodibenzofuran	<1.20	1.63	0.95	<1.26	27.3
123789-hexachlorodibenzofuran	<0.49	0.49	0.44	<0.47	6.5
1234678-heptachlorodibenzofuran	4.32	<3.13	<2.46	<3.30	28.5
1234789-heptachlorodibenzofuran	<0.63	<0.98	0.79	<0.80	21.3
Octachlorodibenzofuran	<2.29	2.77	1.29	<2.12	35.6
PCB 81	<0.93	8.78	<0.54	<3.42	136
PCB 77	16.6	192	15.2	74.4	136
PCB 123	5.78	36.6	5.16	15.8	113
PCB 118	363	1933	275	857	109
PCB 114	8.90	49.1	<5.61	<21.2	114
PCB 105	86.0	510	72.5	223	112
PCB 126	<0.85	3.05	0.92	<1.60	77.9
PCB 167	2.52	9.23	1.95	4.57	88.7
PCB 156/157	5.43	22.6	5.44	11.2	88.9
PCB 169	<0.56	<0.45	<0.54	<0.52	11.4
PCB 189	<0.28	<0.28	<0.44	<0.33	27.4
Total Dioxins & Furans Only	<62.6	<57.8	<41.3	<53.9	20.7
Total PCBs Only	<491	<2764	<384	<1213	111
Total Dioxins & Furans and PCBs	<554	<2822	<425	<1267	106

* 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
Reworld Durham York Renewable Energy L.P.
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/Rm ^{3*}	pg/Rm ^{3*}	pg/Rm ^{3*}	pg/Rm ^{3*}	%
2378-tetrachlorodibenzo-p-dioxin	<0.35	0.46	<0.33	<0.38	18.4
12378-pentachlorodibenzo-p-dioxin	<0.61	0.69	0.46	<0.58	19.7
123478-hexachlorodibenzo-p-dioxin	<0.99	1.09	0.78	<0.95	16.7
123678-hexachlorodibenzo-p-dioxin	2.91	2.27	1.56	2.25	30.1
123789-hexachlorodibenzo-p-dioxin	1.74	1.21	0.76	1.23	39.8
1234678-heptachlorodibenzo-p-dioxin	21.7	19.2	14.6	18.5	19.7
Octachlorodibenzo-p-dioxin	22.7	22.7	14.7	20.0	22.9
2378-tetrachlorodibenzofuran	<0.61	<0.68	<0.51	<0.60	14.2
12378-pentachlorodibenzofuran	1.08	<0.79	0.86	<0.91	16.7
23478-pentachlorodibenzofuran	1.64	0.78	0.96	1.12	40.5
123478-hexachlorodibenzofuran	0.66	0.67	<0.45	<0.59	20.4
123678-hexachlorodibenzofuran	<1.05	0.78	<0.60	<0.81	28.2
234678-hexachlorodibenzofuran	<1.25	1.71	0.98	<1.32	28.1
123789-hexachlorodibenzofuran	<0.52	0.52	0.45	<0.49	7.3
1234678-heptachlorodibenzofuran	4.51	<3.29	<2.54	<3.45	28.9
1234789-heptachlorodibenzofuran	<0.66	<1.02	0.82	<0.84	21.7
Octachlorodibenzofuran	<2.40	2.91	1.33	<2.21	36.3
PCB 81	<0.98	9.22	<0.56	<3.59	136
PCB 77	17.3	201	15.7	78.1	137
PCB 123	6.04	38.4	5.33	16.6	114
PCB 118	380	2030	285	898	109
PCB 114	9.30	51.6	<5.80	<22.2	115
PCB 105	89.9	536	74.9	234	112
PCB 126	<0.88	3.20	0.95	<1.68	78.6
PCB 167	2.63	9.69	2.01	4.78	89.2
PCB 156/157	5.67	23.8	5.62	11.7	89.5
PCB 169	<0.59	<0.48	<0.56	<0.54	11.0
PCB 189	<0.29	<0.29	<0.45	<0.35	26.6
Total Dioxins & Furans Only	<65.4	<60.7	<42.7	<56.3	21.3
Total PCBs Only	<513	<2903	<397	<1271	111
Total Dioxins & Furans and PCBs	<579	<2964	<439	<1327	107

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.0062	0.0082	<0.0058	<0.0067	18.7
12378-pentachlorodibenzo-p-dioxin	<0.011	0.012	0.0082	<0.010	19.7
123478-hexachlorodibenzo-p-dioxin	<0.018	0.019	0.014	<0.017	16.6
123678-hexachlorodibenzo-p-dioxin	0.052	0.041	0.028	0.040	29.6
123789-hexachlorodibenzo-p-dioxin	0.031	0.022	0.014	0.022	39.2
1234678-heptachlorodibenzo-p-dioxin	0.38	0.34	0.26	0.33	19.2
Octachlorodibenzo-p-dioxin	0.40	0.41	0.26	0.36	22.6
2378-tetrachlorodibenzofuran	<0.011	<0.012	<0.0091	<0.011	14.2
12378-pentachlorodibenzofuran	0.019	<0.014	0.015	<0.016	16.1
23478-pentachlorodibenzofuran	0.029	0.014	0.017	0.020	39.8
123478-hexachlorodibenzofuran	0.012	0.012	<0.0081	<0.011	20.1
123678-hexachlorodibenzofuran	<0.019	0.014	<0.011	<0.014	27.5
234678-hexachlorodibenzofuran	<0.022	0.031	0.018	<0.023	28.3
123789-hexachlorodibenzofuran	<0.0091	0.0092	0.0081	<0.0088	7.0
1234678-heptachlorodibenzofuran	0.080	<0.059	<0.045	<0.061	28.3
1234789-heptachlorodibenzofuran	<0.012	<0.018	0.015	<0.015	22.2
Octachlorodibenzofuran	<0.042	0.052	0.024	<0.039	36.3
PCB 81	<0.017	0.16	<0.010	<0.064	136
PCB 77	0.31	3.60	0.28	1.40	137
PCB 123	0.11	0.69	0.095	0.30	114
PCB 118	6.72	36.3	5.10	16.0	110
PCB 114	0.16	0.92	<0.10	<0.40	115
PCB 105	1.59	9.59	1.34	4.17	112
PCB 126	<0.016	0.057	0.017	<0.030	78.9
PCB 167	0.047	0.17	0.036	0.085	89.6
PCB 156/157	0.10	0.43	0.10	0.21	89.8
PCB 169	<0.010	<0.0085	<0.010	<0.0097	10.6
PCB 189	<0.0052	<0.0052	<0.0081	<0.0062	26.9
Total Dioxins & Furans Only	<1.16	<1.09	<0.76	<1.00	20.9
Total PCBs Only	<9.08	<52.0	<7.10	<22.7	112
Total Dioxins & Furans and PCBs	<10.2	<53.1	<7.86	<23.7	107

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

TABLE 42
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m ³	Dry Reference Concentration pg/Rm ^{3*}	Dry Adjusted Concentration pg/Rm ^{3**}	Wet Reference Concentration pg/Rm ^{3*}	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.26	<0.45	<0.36	<0.38	<0.0067
12378-pentachlorodibenzo-p-dioxin	<0.41	<0.69	<0.56	<0.58	<0.010
123478-hexachlorodibenzo-p-dioxin	<0.66	<1.13	<0.91	<0.95	<0.017
123678-hexachlorodibenzo-p-dioxin	1.56	2.66	2.15	2.25	0.040
123789-hexachlorodibenzo-p-dioxin	0.86	1.46	1.18	1.23	0.022
1234678-heptachlorodibenzo-p-dioxin	12.9	21.9	17.7	18.5	0.33
Octachlorodibenzo-p-dioxin	14.0	23.8	19.2	20.0	0.36
2378-tetrachlorodibenzofuran	<0.42	<0.71	<0.57	<0.60	<0.011
12378-pentachlorodibenzofuran	<0.63	<1.08	<0.87	<0.91	<0.016
23478-pentachlorodibenzofuran	0.78	1.33	1.08	1.12	0.020
123478-hexachlorodibenzofuran	<0.41	<0.70	<0.57	<0.59	<0.011
123678-hexachlorodibenzofuran	<0.56	<0.96	<0.77	<0.81	<0.014
234678-hexachlorodibenzofuran	<0.92	<1.56	<1.26	<1.32	<0.023
123789-hexachlorodibenzofuran	<0.35	<0.59	<0.47	<0.49	<0.0088
1234678-heptachlorodibenzofuran	<2.40	<4.09	<3.30	<3.45	<0.061
1234789-heptachlorodibenzofuran	<0.58	<0.99	<0.80	<0.84	<0.015
Octachlorodibenzofuran	<1.54	<2.62	<2.12	<2.21	<0.039
PCB 81	<2.50	<4.25	<3.42	<3.59	<0.064
PCB 77	54.4	92.6	74.4	78.1	1.40
PCB 123	11.6	19.7	15.8	16.6	0.30
PCB 118	626	1065	857	898	16.0
PCB 114	<15.5	<26.4	<21.2	<22.2	<0.40
PCB 105	163	277	223	234	4.17
PCB 126	<1.17	<1.99	<1.60	<1.68	<0.030
PCB 167	3.33	5.67	4.57	4.78	0.085
PCB 156/157	8.15	13.9	11.2	11.7	0.21
PCB 169	<0.38	<0.64	<0.52	<0.54	<0.0097
PCB 189	<0.24	<0.41	<0.33	<0.35	<0.0062
Total Dioxins & Furans Only	<39.2	<66.7	<53.9	<56.3	<1.00
Total PCBs Only	<886	<1507	<1213	<1271	<22.7
Total Dioxins & Furans and PCBs	<925	<1574	<1267	<1327	<23.7

* At 25°C and 1 atmosphere

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

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

TABLE 43
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Method Blank pg
2378-tetrachlorodibenzo-p-dioxin	<1.0	<2.0
12378-pentachlorodibenzo-p-dioxin	<1.4	<2.1
123478-hexachlorodibenzo-p-dioxin	<1.1	<1.5
123678-hexachlorodibenzo-p-dioxin	<1.1	<1.5
123789-hexachlorodibenzo-p-dioxin	<1.1	<1.5
1234678-heptachlorodibenzo-p-dioxin	<2.4	3.43
Octachlorodibenzo-p-dioxin	7.23	6.52
2378-tetrachlorodibenzofuran	<1.3	<2.0
12378-pentachlorodibenzofuran	2.10	<2.8
23478-pentachlorodibenzofuran	<0.86	<1.0
123478-hexachlorodibenzofuran	<0.51	<1.0
123678-hexachlorodibenzofuran	<0.47	<0.94
234678-hexachlorodibenzofuran	<0.50	<1.0
123789-hexachlorodibenzofuran	<0.58	<1.2
1234678-heptachlorodibenzofuran	<1.3	<1.6
1234789-heptachlorodibenzofuran	<1.4	<1.8
Octachlorodibenzofuran	<2.1	<2.2
PCB 81	<2.8	<4.7
PCB 77	<2.6	<4.7
PCB 123	<3.0	<3.6
PCB 118	10.5	<5.7
PCB 114	<2.9	<3.7
PCB 105	<4.5	<3.5
PCB 126	<2.9	<3.6
PCB 167	<1.4	<2.4
PCB 156/157	3.54	<3.2
PCB 169	<1.4	<2.4
PCB 189	<1.0	<2.3
Total Dioxins & Furans Only	<26.5	<34.1
Total PCBs Only	<36.5	<39.8
Total Dioxins & Furans and PCBs	<63.0	<73.9

"<" 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration			
		Test No. 1 pg TEQ/m ³	Test No. 2 pg TEQ/m ³	Test No. 3 pg TEQ/m ³	Average pg TEQ/m ³
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.24	0.32	<0.23	<0.26
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.42	0.48	0.32	<0.41
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.069	0.076	0.055	<0.066
123678-hexachlorodibenzo-p-dioxin	0.10000	0.20	0.16	0.11	0.16
123789-hexachlorodibenzo-p-dioxin	0.10000	0.12	0.084	0.053	0.086
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.15	0.13	0.10	0.13
Octachlorodibenzo-p-dioxin	0.00030	0.0047	0.0047	0.0031	0.0042
2378-tetrachlorodibenzofuran	0.10000	<0.042	<0.047	<0.036	<0.042
12378-pentachlorodibenzofuran	0.03000	0.022	<0.016	0.018	<0.019
23478-pentachlorodibenzofuran	0.30000	0.34	0.16	0.20	0.23
123478-hexachlorodibenzofuran	0.10000	0.046	0.046	<0.032	<0.041
123678-hexachlorodibenzofuran	0.10000	<0.073	0.054	<0.042	<0.056
234678-hexachlorodibenzofuran	0.10000	<0.087	0.12	0.069	<0.092
123789-hexachlorodibenzofuran	0.10000	<0.036	0.036	0.032	<0.035
1234678-heptachlorodibenzofuran	0.01000	0.031	<0.023	<0.018	<0.024
1234789-heptachlorodibenzofuran	0.01000	<0.0046	<0.0071	0.0057	<0.0058
Octachlorodibenzofuran	0.00030	<0.00050	0.00061	0.00028	<0.00046
PCB 81	0.00030	<0.00020	0.0019	<0.00012	<0.00075
PCB 77	0.00010	0.0012	0.014	0.0011	0.0054
PCB 123	0.00003	0.00013	0.00080	0.00011	0.00035
PCB 118	0.00003	0.0079	0.042	0.0060	0.019
PCB 114	0.00003	0.00019	0.0011	<0.00012	<0.00046
PCB 105	0.00003	0.0019	0.011	0.0016	0.0049
PCB 126	0.10000	<0.061	0.22	0.067	<0.12
PCB 167	0.00003	0.000055	0.00020	0.000042	0.00010
PCB 156/157	0.00003	0.00012	0.00050	0.00012	0.00024
PCB 169	0.03000	<0.012	<0.0099	<0.012	<0.011
PCB 189	0.00003	<0.0000061	<0.0000061	<0.0000095	<0.0000073
Total Dioxins & Furans Only		<1.90	<1.76	<1.33	<1.66
Total PCBs Only		<0.085	<0.30	<0.088	<0.16
Total Dioxins & Furans and PCBs		<1.98	<2.07	<1.41	<1.82

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
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	Test No. 2 pg TEQ/Rm ³ *	Test No. 3 pg TEQ/Rm ³ *	Average pg TEQ/Rm ³ *
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.42	0.54	<0.39	<0.45
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.72	0.81	0.54	<0.69
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.12	0.13	0.092	<0.11
123678-hexachlorodibenzo-p-dioxin	0.10000	0.35	0.27	0.18	0.27
123789-hexachlorodibenzo-p-dioxin	0.10000	0.21	0.14	0.090	0.15
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.26	0.23	0.17	0.22
Octachlorodibenzo-p-dioxin	0.00030	0.0081	0.0081	0.0052	0.0071
2378-tetrachlorodibenzofuran	0.10000	<0.072	<0.080	<0.060	<0.071
12378-pentachlorodibenzofuran	0.03000	0.038	<0.028	0.031	<0.032
23478-pentachlorodibenzofuran	0.30000	0.58	0.28	0.34	0.40
123478-hexachlorodibenzofuran	0.10000	0.078	0.079	<0.054	<0.070
123678-hexachlorodibenzofuran	0.10000	<0.12	0.092	<0.071	<0.096
234678-hexachlorodibenzofuran	0.10000	<0.15	0.20	0.12	<0.16
123789-hexachlorodibenzofuran	0.10000	<0.061	0.061	0.054	<0.059
1234678-heptachlorodibenzofuran	0.01000	0.054	<0.039	<0.030	<0.041
1234789-heptachlorodibenzofuran	0.01000	<0.0079	<0.012	0.0097	<0.0099
Octachlorodibenzofuran	0.00030	<0.00085	0.0010	0.00047	<0.00079
PCB 81	0.00030	<0.00035	0.0033	<0.00020	<0.0013
PCB 77	0.00010	0.0021	0.024	0.0019	0.0093
PCB 123	0.00003	0.00022	0.0014	0.00019	0.00059
PCB 118	0.00003	0.014	0.072	0.010	0.032
PCB 114	0.00003	0.00033	0.0018	<0.00021	<0.00079
PCB 105	0.00003	0.0032	0.019	0.0027	0.0083
PCB 126	0.10000	<0.11	0.38	0.11	<0.20
PCB 167	0.00003	0.000094	0.00034	0.000072	0.00017
PCB 156/157	0.00003	0.00020	0.00085	0.00020	0.00042
PCB 169	0.03000	<0.021	<0.017	<0.020	<0.019
PCB 189	0.00003	<0.000011	<0.000010	<0.000016	<0.000012
Total Dioxins & Furans Only		<3.24	<3.00	<2.24	<2.83
Total PCBs Only		<0.15	<0.52	<0.15	<0.27
Total Dioxins & Furans and PCBs		<3.39	<3.52	<2.39	<3.10

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity	Dry Adjusted Concentration			
	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average
	Factor	pg TEQ/Rm ^{3*}	pg TEQ/Rm ^{3*}	pg TEQ/Rm ^{3*}	pg TEQ/Rm ^{3*}
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.33	0.44	<0.32	<0.36
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.58	0.65	0.44	<0.56
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.095	0.10	0.075	<0.091
123678-hexachlorodibenzo-p-dioxin	0.10000	0.28	0.22	0.15	0.22
123789-hexachlorodibenzo-p-dioxin	0.10000	0.17	0.11	0.073	0.12
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.21	0.18	0.14	0.18
Octachlorodibenzo-p-dioxin	0.00030	0.0065	0.0065	0.0043	0.0058
2378-tetrachlorodibenzofuran	0.10000	<0.058	<0.064	<0.049	<0.057
12378-pentachlorodibenzofuran	0.03000	0.031	<0.022	0.025	<0.026
23478-pentachlorodibenzofuran	0.30000	0.47	0.22	0.28	0.32
123478-hexachlorodibenzofuran	0.10000	0.063	0.063	<0.044	<0.057
123678-hexachlorodibenzofuran	0.10000	<0.10	0.074	<0.058	<0.077
234678-hexachlorodibenzofuran	0.10000	<0.12	0.16	0.095	<0.13
123789-hexachlorodibenzofuran	0.10000	<0.049	0.049	0.044	<0.047
1234678-heptachlorodibenzofuran	0.01000	0.043	<0.031	<0.025	<0.033
1234789-heptachlorodibenzofuran	0.01000	<0.0063	<0.0098	0.0079	<0.0080
Octachlorodibenzofuran	0.00030	<0.00069	0.00083	0.00039	<0.00064
PCB 81	0.00030	<0.00028	0.0026	<0.00016	<0.0010
PCB 77	0.00010	0.0017	0.019	0.0015	0.0074
PCB 123	0.00003	0.00017	0.0011	0.00015	0.00048
PCB 118	0.00003	0.011	0.058	0.0083	0.026
PCB 114	0.00003	0.00027	0.0015	<0.00017	<0.00064
PCB 105	0.00003	0.0026	0.015	0.0022	0.0067
PCB 126	0.10000	<0.085	0.30	0.092	<0.16
PCB 167	0.00003	0.000076	0.00028	0.000058	0.00014
PCB 156/157	0.00003	0.00016	0.00068	0.00016	0.00034
PCB 169	0.03000	<0.017	<0.014	<0.016	<0.016
PCB 189	0.00003	<0.0000085	<0.0000084	<0.000013	<0.000010
Total Dioxins & Furans Only		<2.61	<2.41	<1.83	<2.28
Total PCBs Only		<0.12	<0.42	<0.12	<0.22
Total Dioxins & Furans and PCBs		<2.73	<2.83	<1.95	<2.50

* 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
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	Test No. 2 pg TEQ/Rm ³ *	Test No. 3 pg TEQ/Rm ³ *	Average pg TEQ/Rm ³ *
2378-tetrachlorodibenzo-p-dioxin	1.00000	0.17	0.44	0.16	0.25
12378-pentachlorodibenzo-p-dioxin	1.00000	0.29	0.65	0.44	0.46
123478-hexachlorodibenzo-p-dioxin	0.10000	0.048	0.10	0.075	0.075
123678-hexachlorodibenzo-p-dioxin	0.10000	0.28	0.22	0.15	0.22
123789-hexachlorodibenzo-p-dioxin	0.10000	0.17	0.11	0.073	0.12
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.21	0.18	0.14	0.18
Octachlorodibenzo-p-dioxin	0.00030	0.0065	0.0065	0.0043	0.0058
2378-tetrachlorodibenzofuran	0.10000	0.029	0.032	0.025	0.029
12378-pentachlorodibenzofuran	0.03000	0.031	0.011	0.025	0.022
23478-pentachlorodibenzofuran	0.30000	0.47	0.22	0.28	0.32
123478-hexachlorodibenzofuran	0.10000	0.063	0.063	0.022	0.049
123678-hexachlorodibenzofuran	0.10000	0.050	0.074	0.029	0.051
234678-hexachlorodibenzofuran	0.10000	0.060	0.16	0.095	0.11
123789-hexachlorodibenzofuran	0.10000	0.025	0.049	0.044	0.039
1234678-heptachlorodibenzofuran	0.01000	0.043	0.016	0.012	0.024
1234789-heptachlorodibenzofuran	0.01000	0.0032	0.0049	0.0079	0.0053
Octachlorodibenzofuran	0.00030	0.00034	0.00083	0.00039	0.00052
PCB 81	0.00030	0.00014	0.0026	0.000082	0.00095
PCB 77	0.00010	0.0017	0.019	0.0015	0.0074
PCB 123	0.00003	0.00017	0.0011	0.00015	0.00048
PCB 118	0.00003	0.011	0.058	0.0083	0.026
PCB 114	0.00003	0.00027	0.0015	0.000084	0.00061
PCB 105	0.00003	0.0026	0.015	0.0022	0.0067
PCB 126	0.10000	0.042	0.30	0.092	0.15
PCB 167	0.00003	0.000076	0.00028	0.000058	0.00014
PCB 156/157	0.00003	0.00016	0.00068	0.00016	0.00034
PCB 169	0.03000	0.0085	0.0068	0.0082	0.0078
PCB 189	0.00003	0.0000042	0.0000042	0.0000066	0.0000050
Total Dioxins & Furans Only		1.94	2.35	1.58	1.96
Total PCBs Only		0.067	0.41	0.11	0.20
Total Dioxins & Furans and PCBs		2.01	2.76	1.70	2.15

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Test No. 1	Dry Adjusted Concentration		
		pg TEQ/Rm ³ *	Test No. 2 pg TEQ/Rm ³ *	Test No. 3 pg TEQ/Rm ³ *	Average pg TEQ/Rm ³ *
2378-tetrachlorodibenzo-p-dioxin	1.00	<0.33	0.44	<0.32	<0.36
12378-pentachlorodibenzo-p-dioxin	0.50	<0.29	0.33	0.22	<0.28
123478-hexachlorodibenzo-p-dioxin	0.10	<0.095	0.10	0.075	<0.091
123678-hexachlorodibenzo-p-dioxin	0.10	0.28	0.22	0.15	0.22
123789-hexachlorodibenzo-p-dioxin	0.10	0.17	0.11	0.073	0.12
1234678-heptachlorodibenzo-p-dioxin	0.01	0.21	0.18	0.14	0.18
Octachlorodibenzo-p-dioxin	0.00	0.022	0.022	0.014	0.019
2378-tetrachlorodibenzofuran	0.10	<0.058	<0.064	<0.049	<0.057
12378-pentachlorodibenzofuran	0.05	0.052	<0.037	0.042	<0.044
23478-pentachlorodibenzofuran	0.50	0.78	0.37	0.46	0.54
123478-hexachlorodibenzofuran	0.10	0.063	0.063	<0.044	<0.057
123678-hexachlorodibenzofuran	0.10	<0.10	0.074	<0.058	<0.077
234678-hexachlorodibenzofuran	0.10	<0.12	0.16	0.095	<0.13
123789-hexachlorodibenzofuran	0.10	<0.049	0.049	0.044	<0.047
1234678-heptachlorodibenzofuran	0.01	0.043	<0.031	<0.025	<0.033
1234789-heptachlorodibenzofuran	0.01	<0.0063	<0.0098	0.0079	<0.0080
Octachlorodibenzofuran	0.00	<0.0023	0.0028	0.0013	<0.0021
Total Dioxins & Furans		<2.67	<2.26	<1.82	<2.25
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
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	Test No. 2 pg TEQ/Rm ³ *	Test No. 3 pg TEQ/Rm ³ *	Average pg TEQ/Rm ³ *
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.35	0.46	<0.33	<0.38
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.61	0.69	0.46	<0.58
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.099	0.11	0.078	<0.095
123678-hexachlorodibenzo-p-dioxin	0.10000	0.29	0.23	0.16	0.22
123789-hexachlorodibenzo-p-dioxin	0.10000	0.17	0.12	0.076	0.12
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.22	0.19	0.15	0.19
Octachlorodibenzo-p-dioxin	0.00030	0.0068	0.0068	0.0044	0.0060
2378-tetrachlorodibenzofuran	0.10000	<0.061	<0.068	<0.051	<0.060
12378-pentachlorodibenzofuran	0.03000	0.032	<0.024	0.026	<0.027
23478-pentachlorodibenzofuran	0.30000	0.49	0.23	0.29	0.34
123478-hexachlorodibenzofuran	0.10000	0.066	0.067	<0.045	<0.059
123678-hexachlorodibenzofuran	0.10000	<0.11	0.078	<0.060	<0.081
234678-hexachlorodibenzofuran	0.10000	<0.13	0.17	0.098	<0.13
123789-hexachlorodibenzofuran	0.10000	<0.052	0.052	0.045	<0.049
1234678-heptachlorodibenzofuran	0.01000	0.045	<0.033	<0.025	<0.034
1234789-heptachlorodibenzofuran	0.01000	<0.0066	<0.010	0.0082	<0.0084
Octachlorodibenzofuran	0.00030	<0.00072	0.00087	0.00040	<0.00066
PCB 81	0.00030	<0.00029	0.0028	<0.00017	<0.0011
PCB 77	0.00010	0.0017	0.020	0.0016	0.0078
PCB 123	0.00003	0.00018	0.0012	0.00016	0.00050
PCB 118	0.00003	0.011	0.061	0.0085	0.027
PCB 114	0.00003	0.00028	0.0015	<0.00017	<0.00067
PCB 105	0.00003	0.0027	0.016	0.0022	0.0070
PCB 126	0.10000	<0.088	0.32	0.095	<0.17
PCB 167	0.00003	0.000079	0.00029	0.000060	0.00014
PCB 156/157	0.00003	0.00017	0.00071	0.00017	0.00035
PCB 169	0.03000	<0.018	<0.014	<0.017	<0.016
PCB 189	0.00003	<0.0000088	<0.0000088	<0.000014	<0.000010
Total Dioxins & Furans Only		<2.73	<2.53	<1.89	<2.38
Total PCBs Only		<0.12	<0.44	<0.12	<0.23
Total Dioxins & Furans and PCBs		<2.85	<2.97	<2.02	<2.61

* 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
Reworld Durham York Renewable Energy L.P.
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	<0.0062	0.0082	<0.0058	<0.0067
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.011	0.012	0.0082	<0.010
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.0018	0.0019	0.0014	<0.0017
123678-hexachlorodibenzo-p-dioxin	0.10000	0.0052	0.0041	0.0028	0.0040
123789-hexachlorodibenzo-p-dioxin	0.10000	0.0031	0.0022	0.0014	0.0022
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.0038	0.0034	0.0026	0.0033
Octachlorodibenzo-p-dioxin	0.00030	0.00012	0.00012	0.000079	0.00011
2378-tetrachlorodibenzofuran	0.10000	<0.0011	<0.0012	<0.00091	<0.0011
12378-pentachlorodibenzofuran	0.03000	0.00057	<0.00042	0.00046	<0.00049
23478-pentachlorodibenzofuran	0.30000	0.0087	0.0042	0.0051	0.0060
123478-hexachlorodibenzofuran	0.10000	0.0012	0.0012	<0.00081	<0.0011
123678-hexachlorodibenzofuran	0.10000	<0.0019	0.0014	<0.0011	<0.0014
234678-hexachlorodibenzofuran	0.10000	<0.0022	0.0031	0.0018	<0.0023
123789-hexachlorodibenzofuran	0.10000	<0.00091	0.00092	0.00081	<0.00088
1234678-heptachlorodibenzofuran	0.01000	0.00080	<0.00059	<0.00045	<0.00061
1234789-heptachlorodibenzofuran	0.01000	<0.00012	<0.00018	0.00015	<0.00015
Octachlorodibenzofuran	0.00030	<0.000013	0.000016	0.0000072	<0.000012
PCB 81	0.00030	<0.0000052	0.000049	<0.0000030	<0.000019
PCB 77	0.00010	0.000031	0.00036	0.000028	0.00014
PCB 123	0.00003	0.0000032	0.000021	0.0000029	0.0000089
PCB 118	0.00003	0.00020	0.0011	0.00015	0.00048
PCB 114	0.00003	0.0000049	0.000028	<0.0000031	<0.000012
PCB 105	0.00003	0.000048	0.00029	0.000040	0.00013
PCB 126	0.10000	<0.0016	0.0057	0.0017	<0.0030
PCB 167	0.00003	0.0000014	0.000005	0.0000011	0.0000026
PCB 156/157	0.00003	0.0000030	0.000013	0.0000030	0.0000063
PCB 169	0.03000	<0.00031	<0.00026	<0.00030	<0.00029
PCB 189	0.00003	<0.00000016	<0.00000016	<0.00000024	<0.00000019
Total Dioxins & Furans Only		<0.048	<0.045	<0.034	<0.043
Total PCBs Only		<0.0022	<0.0078	<0.0022	<0.0041
Total Dioxins & Furans and PCBs		<0.051	<0.053	<0.036	<0.047

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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m ³	Dry Reference Concentration pg TEQ/Rm ^{3*}	Dry Adjusted Concentration pg TEQ/Rm ^{3**}	Wet Reference Concentration pg TEQ/Rm ^{3*}	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.26	<0.45	<0.36	<0.38	<0.0067
12378-pentachlorodibenzo-p-dioxin	<0.41	<0.69	<0.56	<0.58	<0.010
123478-hexachlorodibenzo-p-dioxin	<0.066	<0.11	<0.091	<0.095	<0.0017
123678-hexachlorodibenzo-p-dioxin	0.16	0.27	0.22	0.22	0.0040
123789-hexachlorodibenzo-p-dioxin	0.086	0.15	0.12	0.12	0.0022
1234678-heptachlorodibenzo-p-dioxin	0.13	0.22	0.18	0.19	0.0033
Octachlorodibenzo-p-dioxin	0.0042	0.0071	0.0058	0.0060	0.00011
2378-tetrachlorodibenzofuran	<0.042	<0.071	<0.057	<0.060	<0.0011
12378-pentachlorodibenzofuran	<0.019	<0.032	<0.026	<0.027	<0.00049
23478-pentachlorodibenzofuran	0.23	0.40	0.32	0.34	0.0060
123478-hexachlorodibenzofuran	<0.041	<0.070	<0.057	<0.059	<0.0011
123678-hexachlorodibenzofuran	<0.056	<0.096	<0.077	<0.081	<0.0014
234678-hexachlorodibenzofuran	<0.092	<0.16	<0.13	<0.13	<0.0023
123789-hexachlorodibenzofuran	<0.035	<0.059	<0.047	<0.049	<0.00088
1234678-heptachlorodibenzofuran	<0.024	<0.041	<0.033	<0.034	<0.00061
1234789-heptachlorodibenzofuran	<0.0058	<0.0099	<0.0080	<0.0084	<0.00015
Octachlorodibenzofuran	<0.00046	<0.00079	<0.00064	<0.00066	<0.000012
PCB 81	<0.00075	<0.0013	<0.0010	<0.0011	<0.000019
PCB 77	0.0054	0.0093	0.0074	0.0078	0.00014
PCB 123	0.00035	0.00059	0.00048	0.00050	0.0000089
PCB 118	0.019	0.032	0.026	0.027	0.00048
PCB 114	<0.00046	<0.00079	<0.00064	<0.00067	<0.000012
PCB 105	0.0049	0.0083	0.0067	0.0070	0.00013
PCB 126	<0.12	<0.20	<0.16	<0.17	<0.0030
PCB 167	0.00010	0.00017	0.00014	0.00014	0.0000026
PCB 156/157	0.00024	0.00042	0.00034	0.00035	0.0000063
PCB 169	<0.011	<0.019	<0.016	<0.016	<0.00029
PCB 189	<0.0000073	<0.000012	<0.000010	<0.000010	<0.00000019
Total Dioxins & Furans Only	<1.66	<2.83	<2.28	<2.38	<0.043
Total PCBs Only	<0.16	<0.27	<0.22	<0.23	<0.0041
Total Dioxins & Furans and PCBs	<1.82	<3.10	<2.50	<2.61	<0.047

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/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	0.18	0.31	0.254	0.27	0.0047
12378-pentachlorodibenzo-p-dioxin	0.34	0.57	0.46	0.48	0.0086
123478-hexachlorodibenzo-p-dioxin	0.055	0.093	0.075	0.079	0.0014
123678-hexachlorodibenzo-p-dioxin	0.16	0.27	0.22	0.22	0.0040
123789-hexachlorodibenzo-p-dioxin	0.086	0.15	0.12	0.12	0.0022
1234678-heptachlorodibenzo-p-dioxin	0.13	0.22	0.18	0.19	0.0033
Octachlorodibenzo-p-dioxin	0.0042	0.0071	0.0058	0.0060	0.00011
2378-tetrachlorodibenzofuran	0.021	0.035	0.029	0.030	0.00053
12378-pentachlorodibenzofuran	0.016	0.028	0.022	0.023	0.00042
23478-pentachlorodibenzofuran	0.23	0.40	0.32	0.34	0.0060
123478-hexachlorodibenzofuran	0.036	0.061	0.049	0.052	0.00092
123678-hexachlorodibenzofuran	0.037	0.063	0.051	0.053	0.00095
234678-hexachlorodibenzofuran	0.077	0.13	0.11	0.11	0.0020
123789-hexachlorodibenzofuran	0.029	0.049	0.039	0.041	0.00073
1234678-heptachlorodibenzofuran	0.017	0.029	0.024	0.025	0.00044
1234789-heptachlorodibenzofuran	0.0039	0.0066	0.0053	0.0055	0.000099
Octachlorodibenzofuran	0.00038	0.00065	0.00052	0.00054	0.0000097
PCB 81	0.00070	0.0012	0.00095	0.0010	0.000018
PCB 77	0.0054	0.0093	0.0074	0.0078	0.00014
PCB 123	0.00035	0.00059	0.00048	0.00050	0.0000089
PCB 118	0.019	0.032	0.026	0.027	0.00048
PCB 114	0.00044	0.00076	0.00061	0.00064	0.000011
PCB 105	0.0049	0.0083	0.0067	0.0070	0.00013
PCB 126	0.11	0.18	0.15	0.15	0.0027
PCB 167	0.00010	0.00017	0.00014	0.00014	0.0000026
PCB 156/157	0.00024	0.00042	0.00034	0.00035	0.0000063
PCB 169	0.0057	0.0097	0.0078	0.0081	0.00015
PCB 189	0.0000036	0.0000062	0.0000050	0.0000052	0.000000093
Total Dioxins & Furans Only	1.42	2.42	1.96	2.04	0.036
Total PCBs Only	0.14	0.24	0.20	0.21	0.0037
Total Dioxins & Furans and PCBs	1.57	2.67	2.15	2.25	0.040

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
Monochlorobenzene	2180	279	477	384	402	7.11
1,3-Dichlorobenzene	155	19.8	33.9	27.3	28.6	0.51
1,4-Dichlorobenzene	140	17.9	30.6	24.7	25.8	0.46
1,2-Dichlorobenzene	123	15.7	26.9	21.7	22.7	0.40
Total Dichlorobenzene	418	53.5	91.5	73.7	77.0	1.36
1,3,5-trichlorobenzene	72.3	9.25	15.8	12.7	13.3	0.24
1,2,4-trichlorobenzene	39.6	5.06	8.67	6.98	7.30	0.13
1,2,3-trichlorobenzene	20.3	2.60	4.44	3.58	3.74	0.066
Total Trichlorobenzene	132	16.9	28.9	23.3	24.4	0.43
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.53	<2.63	<2.12	<2.21	<0.039
1,2,3,4-tetrachlorobenzene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Total Tetrachlorobenzene	<24.0	<3.07	<5.25	<4.23	<4.42	<0.078
Pentachlorobenzene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Hexachlorobenzene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Total Chlorobenzenes	<2778	<355	<608	<490	<512	<9.06

Dry Gas Volume Sampled (Rm ^{3*}) :	4.569
Actual Flowrate (m ³ /s) :	25.5
Dry Reference Flowrate (Rm ³ /s*) :	14.9
Dry Adjusted Flowrate (Rm ³ /s**) :	18.5
Wet Reference Flowrate (Rm ³ /s*) :	17.7

* 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 52
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
Monochlorobenzene	1830	233	397	319	335	5.99
1,3-Dichlorobenzene	165	21.0	35.8	28.7	30.2	0.54
1,4-Dichlorobenzene	147	18.7	31.9	25.6	26.9	0.48
1,2-Dichlorobenzene	133	16.9	28.8	23.2	24.3	0.44
Total Dichlorobenzene	445	56.7	96.5	77.5	81.4	1.46
1,3,5-trichlorobenzene	74.8	9.53	16.2	13.0	13.7	0.24
1,2,4-trichlorobenzene	42.0	5.35	9.10	7.31	7.68	0.14
1,2,3-trichlorobenzene	22.8	2.90	4.94	3.97	4.17	0.075
Total Trichlorobenzene	140	17.8	30.3	24.3	25.5	0.46
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	12.6	1.60	2.73	2.19	2.30	0.041
1,2,3,4-tetrachlorobenzene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Total Tetrachlorobenzene	<24.6	<3.13	<5.33	<4.28	<4.50	<0.081
Pentachlorobenzene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Hexachlorobenzene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Total Chlorobenzenes	<2463	<314	<534	<429	<450	<8.06

Dry Gas Volume Sampled (Rm ^{3*}) :	4.613
Actual Flowrate (m ³ /s) :	25.7
Dry Reference Flowrate (Rm ³ /s*) :	15.1
Dry Adjusted Flowrate (Rm ³ /s**) :	18.8
Wet Reference Flowrate (Rm ³ /s*) :	17.9

* 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 53
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
Monochlorobenzene	1390	177	299	244	252	4.51
1,3-Dichlorobenzene	123	15.7	26.4	21.6	22.3	0.40
1,4-Dichlorobenzene	112	14.3	24.1	19.7	20.3	0.36
1,2-Dichlorobenzene	98.0	12.5	21.1	17.2	17.8	0.32
Total Dichlorobenzene	333	42.4	71.6	58.4	60.4	1.08
1,3,5-trichlorobenzene	68.8	8.76	14.8	12.1	12.5	0.22
1,2,4-trichlorobenzene	37.8	4.81	8.13	6.63	6.85	0.12
1,2,3-trichlorobenzene	21.9	2.79	4.71	3.84	3.97	0.071
Total Trichlorobenzene	129	16.4	27.6	22.5	23.3	0.42
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.53	<2.58	<2.11	<2.18	<0.039
1,2,3,4-tetrachlorobenzene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Total Tetrachlorobenzene	<24.0	<3.05	<5.16	<4.21	<4.35	<0.078
Pentachlorobenzene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Hexachlorobenzene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Total Chlorobenzenes	<1900	<242	<408	<333	<344	<6.17

Dry Gas Volume Sampled (Rm ^{3*}) :	4.652
Actual Flowrate (m ³ /s) :	25.5
Dry Reference Flowrate (Rm ³ /s*) :	15.1
Dry Adjusted Flowrate (Rm ³ /s**) :	18.5
Wet Reference Flowrate (Rm ³ /s*) :	17.9

* 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 54
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	ng/m ³	ng/m ³	ng/m ³	ng/m ³	%
Monochlorobenzene	279	233	177	230	22.2
1,3-Dichlorobenzene	19.8	21.0	15.7	18.8	14.9
1,4-Dichlorobenzene	17.9	18.7	14.3	17.0	14.0
1,2-Dichlorobenzene	15.7	16.9	12.5	15.0	15.3
Total Dichlorobenzene	53.5	56.7	42.4	50.8	14.7
1,3,5-trichlorobenzene	9.25	9.53	8.76	9.18	4.2
1,2,4-trichlorobenzene	5.06	5.35	4.81	5.08	5.3
1,2,3-trichlorobenzene	2.60	2.90	2.79	2.76	5.6
Total Trichlorobenzene	16.9	17.8	16.4	17.0	4.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.53	1.60	<1.53	<1.56	2.7
1,2,3,4-tetrachlorobenzene	<1.53	<1.53	<1.53	<1.53	0.3
Total Tetrachlorobenzene	<3.07	<3.13	<3.05	<3.09	1.4
Pentachlorobenzene	<1.53	<1.53	<1.53	<1.53	0.3
Hexachlorobenzene	<1.53	<1.53	<1.53	<1.53	0.3
Total Chlorobenzenes	<355	<314	<242	<304	18.9

TABLE 55
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Monochlorobenzene	477	397	299	391	22.8
1,3-Dichlorobenzene	33.9	35.8	26.4	32.0	15.4
1,4-Dichlorobenzene	30.6	31.9	24.1	28.9	14.5
1,2-Dichlorobenzene	26.9	28.8	21.1	25.6	15.8
Total Dichlorobenzene	91.5	96.5	71.6	86.5	15.2
1,3,5-trichlorobenzene	15.8	16.2	14.8	15.6	4.7
1,2,4-trichlorobenzene	8.67	9.10	8.13	8.63	5.7
1,2,3-trichlorobenzene	4.44	4.94	4.71	4.70	5.3
Total Trichlorobenzene	28.9	30.3	27.6	28.9	4.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.63	2.73	<2.58	<2.65	2.9
1,2,3,4-tetrachlorobenzene	<2.63	<2.60	<2.58	<2.60	0.9
Total Tetrachlorobenzene	<5.25	<5.33	<5.16	<5.25	1.7
Pentachlorobenzene	<2.63	<2.60	<2.58	<2.60	0.9
Hexachlorobenzene	<2.63	<2.60	<2.58	<2.60	0.9
Total Chlorobenzenes	<608	<534	<408	<517	19.5

* At 25°C and 1 atmosphere

TABLE 56
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation %
	Test No. 1 ng/Rm ³ *	Test No. 2 ng/Rm ³ *	Test No. 3 ng/Rm ³ *	Average ng/Rm ³ *	
Monochlorobenzene	384	319	244	316	22.3
1,3-Dichlorobenzene	27.3	28.7	21.6	25.9	14.6
1,4-Dichlorobenzene	24.7	25.6	19.7	23.3	13.7
1,2-Dichlorobenzene	21.7	23.2	17.2	20.7	15.0
Total Dichlorobenzene	73.7	77.5	58.4	69.9	14.4
1,3,5-trichlorobenzene	12.7	13.0	12.1	12.6	3.9
1,2,4-trichlorobenzene	6.98	7.31	6.63	6.98	4.9
1,2,3-trichlorobenzene	3.58	3.97	3.84	3.80	5.3
Total Trichlorobenzene	23.3	24.3	22.5	23.4	3.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.12	2.19	<2.11	<2.14	2.3
1,2,3,4-tetrachlorobenzene	<2.12	<2.09	<2.11	<2.10	0.6
Total Tetrachlorobenzene	<4.23	<4.28	<4.21	<4.24	0.9
Pentachlorobenzene	<2.12	<2.09	<2.11	<2.10	0.6
Hexachlorobenzene	<2.12	<2.09	<2.11	<2.10	0.6
Total Chlorobenzenes	<490	<429	<333	<417	18.9

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

TABLE 57
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Monochlorobenzene	402	335	252	329	22.7
1,3-Dichlorobenzene	28.6	30.2	22.3	27.0	15.4
1,4-Dichlorobenzene	25.8	26.9	20.3	24.3	14.5
1,2-Dichlorobenzene	22.7	24.3	17.8	21.6	15.8
Total Dichlorobenzene	77.0	81.4	60.4	72.9	15.2
1,3,5-trichlorobenzene	13.3	13.7	12.5	13.2	4.7
1,2,4-trichlorobenzene	7.30	7.68	6.85	7.28	5.7
1,2,3-trichlorobenzene	3.74	4.17	3.97	3.96	5.4
Total Trichlorobenzene	24.4	25.5	23.3	24.4	4.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.21	2.30	<2.18	<2.23	3.0
1,2,3,4-tetrachlorobenzene	<2.21	<2.19	<2.18	<2.19	0.8
Total Tetrachlorobenzene	<4.42	<4.50	<4.35	<4.42	1.7
Pentachlorobenzene	<2.21	<2.19	<2.18	<2.19	0.8
Hexachlorobenzene	<2.21	<2.19	<2.18	<2.19	0.8
Total Chlorobenzenes	<512	<450	<344	<436	19.4

* At 25°C and 1 atmosphere

TABLE 58
Reworld Durham York Renewable Energy L.P.
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	7.11	5.99	4.51	5.87	22.2
1,3-Dichlorobenzene	0.51	0.54	0.40	0.48	15.2
1,4-Dichlorobenzene	0.46	0.48	0.36	0.43	14.3
1,2-Dichlorobenzene	0.40	0.44	0.32	0.38	15.7
Total Dichlorobenzene	1.36	1.46	1.08	1.30	15.0
1,3,5-trichlorobenzene	0.24	0.24	0.22	0.23	4.6
1,2,4-trichlorobenzene	0.13	0.14	0.12	0.13	5.7
1,2,3-trichlorobenzene	0.066	0.075	0.071	0.071	6.0
Total Trichlorobenzene	0.43	0.46	0.42	0.44	4.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.039	0.041	<0.039	<0.040	3.2
1,2,3,4-tetrachlorobenzene	<0.039	<0.039	<0.039	<0.039	0.4
Total Tetrachlorobenzene	<0.078	<0.081	<0.078	<0.079	1.8
Pentachlorobenzene	<0.039	<0.039	<0.039	<0.039	0.4
Hexachlorobenzene	<0.039	<0.039	<0.039	<0.039	0.4
Total Chlorobenzenes	<9.06	<8.06	<6.17	<7.76	18.9

TABLE 59
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
Monochlorobenzene	230	391	316	329	5.87
1,3-Dichlorobenzene	18.8	32.0	25.9	27.0	0.48
1,4-Dichlorobenzene	17.0	28.9	23.3	24.3	0.43
1,2-Dichlorobenzene	15.0	25.6	20.7	21.6	0.38
Total Dichlorobenzene	50.8	86.5	69.9	72.9	1.30
1,3,5-trichlorobenzene	9.18	15.6	12.6	13.2	0.23
1,2,4-trichlorobenzene	5.08	8.63	6.98	7.28	0.13
1,2,3-trichlorobenzene	2.76	4.70	3.80	3.96	0.071
Total Trichlorobenzene	17.0	28.9	23.4	24.4	0.44
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.56	<2.65	<2.14	<2.23	<0.040
1,2,3,4-tetrachlorobenzene	<1.53	<2.60	<2.10	<2.19	<0.039
Total Tetrachlorobenzene	<3.09	<5.25	<4.24	<4.42	<0.079
Pentachlorobenzene	<1.53	<2.60	<2.10	<2.19	<0.039
Hexachlorobenzene	<1.53	<2.60	<2.10	<2.19	<0.039
Total Chlorobenzenes	<304	<517	<417	<436	<7.76

* At 25°C and 1 atmosphere

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

TABLE 60
Reworld Durham York Renewable Energy L.P.
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	22.5	19.6
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<46.5	<43.6
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	<143	<140

"<" 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
2-monochlorophenol	<60	<7.67	<13.1	<10.6	<11.1	<0.20
3 & 4-monochlorophenol	<300	<38.4	<65.7	<52.9	<55.3	<0.98
Total Monochlorophenols	<360	<46.0	<78.8	<63.5	<66.3	<1.17
2,6-dichlorophenol	<300	<38.4	<65.7	<52.9	<55.3	<0.98
2,4 & 2,5-dichlorophenol	<300	<38.4	<65.7	<52.9	<55.3	<0.98
3,5-dichlorophenol	<300	<38.4	<65.7	<52.9	<55.3	<0.98
2,3-dichlorophenol	<300	<38.4	<65.7	<52.9	<55.3	<0.98
3,4-dichlorophenol	<300	<38.4	<65.7	<52.9	<55.3	<0.98
Total Dichlorophenols	<1500	<192	<328	<264	<276	<4.89
2,4,6-trichlorophenol	<300	<38.4	<65.7	<52.9	<55.3	<0.98
2,3,6-trichlorophenol	<60	<7.67	<13.1	<10.6	<11.1	<0.20
2,3,5-trichlorophenol	<60	<7.67	<13.1	<10.6	<11.1	<0.20
2,4,5-trichlorophenol	<60	<7.67	<13.1	<10.6	<11.1	<0.20
2,3,4-trichlorophenol	<60	<7.67	<13.1	<10.6	<11.1	<0.20
3,4,5-trichlorophenol	<60	<7.67	<13.1	<10.6	<11.1	<0.20
Total Trichlorophenols	<600	<76.7	<131	<106	<111	<1.96
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.67	<13.1	<10.6	<11.1	<0.20
2,3,4,5-tetrachlorophenol	<60	<7.67	<13.1	<10.6	<11.1	<0.20
Total Tetrachlorophenols	<120	<15.3	<26.3	<21.2	<22.1	<0.39
Pentachlorophenol	<60	<7.67	<13.1	<10.6	<11.1	<0.20
Total Chlorophenols	<2640	<338	<578	<465	<486	<8.61

Dry Gas Volume Sampled (Rm ^{3*}) :	4.569
Actual Flowrate (m ³ /s) :	25.5
Dry Reference Flowrate (Rm ³ /s*) :	14.9
Dry Adjusted Flowrate (Rm ³ /s**) :	18.5
Wet Reference Flowrate (Rm ³ /s*) :	17.7

* 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 62
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
2-monochlorophenol	<60	<7.64	<13.0	<10.4	<11.0	<0.20
3 & 4-monochlorophenol	<300	<38.2	<65.0	<52.2	<54.9	<0.98
Total Monochlorophenols	<360	<45.9	<78.0	<62.7	<65.8	<1.18
2,6-dichlorophenol	<300	<38.2	<65.0	<52.2	<54.9	<0.98
2,4 & 2,5-dichlorophenol	<300	<38.2	<65.0	<52.2	<54.9	<0.98
3,5-dichlorophenol	<300	<38.2	<65.0	<52.2	<54.9	<0.98
2,3-dichlorophenol	<300	<38.2	<65.0	<52.2	<54.9	<0.98
3,4-dichlorophenol	<300	<38.2	<65.0	<52.2	<54.9	<0.98
Total Dichlorophenols	<1500	<191	<325	<261	<274	<4.91
2,4,6-trichlorophenol	<300	<38.2	<65.0	<52.2	<54.9	<0.98
2,3,6-trichlorophenol	<60	<7.64	<13.0	<10.4	<11.0	<0.20
2,3,5-trichlorophenol	<60	<7.64	<13.0	<10.4	<11.0	<0.20
2,4,5-trichlorophenol	<60	<7.64	<13.0	<10.4	<11.0	<0.20
2,3,4-trichlorophenol	<60	<7.64	<13.0	<10.4	<11.0	<0.20
3,4,5-trichlorophenol	<60	<7.64	<13.0	<10.4	<11.0	<0.20
Total Trichlorophenols	<600	<76.4	<130.1	<104	<110	<1.96
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.64	<13.0	<10.4	<11.0	<0.20
2,3,4,5-tetrachlorophenol	<60	<7.64	<13.0	<10.4	<11.0	<0.20
Total Tetrachlorophenols	<120	<15.3	<26.0	<20.9	<21.9	<0.39
Pentachlorophenol	<60	<7.64	<13.0	<10.4	<11.0	<0.20
Total Chlorophenols	<2640	<336	<572	<460	<483	<8.64

Dry Gas Volume Sampled (Rm ^{3*}) :	4.613
Actual Flowrate (m ³ /s) :	25.7
Dry Reference Flowrate (Rm ³ /s*) :	15.1
Dry Adjusted Flowrate (Rm ³ /s**) :	18.8
Wet Reference Flowrate (Rm ³ /s*) :	17.9

* 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 63
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
2-monochlorophenol	<60	<7.64	<12.9	<10.5	<10.9	<0.19
3 & 4-monochlorophenol	<300	<38.2	<64.5	<52.6	<54.4	<0.97
Total Monochlorophenols	<360	<45.8	<77.4	<63.2	<65.3	<1.17
2,6-dichlorophenol	<300	<38.2	<64.5	<52.6	<54.4	<0.97
2,4 & 2,5-dichlorophenol	<300	<38.2	<64.5	<52.6	<54.4	<0.97
3,5-dichlorophenol	<300	<38.2	<64.5	<52.6	<54.4	<0.97
2,3-dichlorophenol	<300	<38.2	<64.5	<52.6	<54.4	<0.97
3,4-dichlorophenol	<300	<38.2	<64.5	<52.6	<54.4	<0.97
Total Dichlorophenols	<1500	<191	<322	<263	<272	<4.87
2,4,6-trichlorophenol	<300	<38.2	<64.5	<52.6	<54.4	<0.97
2,3,6-trichlorophenol	<60	<7.64	<12.9	<10.5	<10.9	<0.19
2,3,5-trichlorophenol	<60	<7.64	<12.9	<10.5	<10.9	<0.19
2,4,5-trichlorophenol	<60	<7.64	<12.9	<10.5	<10.9	<0.19
2,3,4-trichlorophenol	<60	<7.64	<12.9	<10.5	<10.9	<0.19
3,4,5-trichlorophenol	<60	<7.64	<12.9	<10.5	<10.9	<0.19
Total Trichlorophenols	<600	<76.4	<129	<105	<109	<1.95
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.64	<12.9	<10.5	<10.9	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.64	<12.9	<10.5	<10.9	<0.19
Total Tetrachlorophenols	<120	<15.3	<25.8	<21.1	<21.8	<0.39
Pentachlorophenol	<120	<15.3	<25.8	<21.1	<21.8	<0.39
Total Chlorophenols	<2700	<344	<580	<474	<490	<8.76

Dry Gas Volume Sampled (Rm ^{3*}) :	4.652
Actual Flowrate (m ³ /s) :	25.5
Dry Reference Flowrate (Rm ³ /s*) :	15.1
Dry Adjusted Flowrate (Rm ³ /s**) :	18.5
Wet Reference Flowrate (Rm ³ /s*) :	17.9

* At 25°C and 1 atmosphere

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

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

TABLE 64
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	ng/m ³	ng/m ³	ng/m ³	ng/m ³	%
2-monochlorophenol	<7.67	<7.64	<7.64	<7.65	0.3
3 & 4-monochlorophenol	<38.4	<38.2	<38.2	<38.3	0.3
Total Monochlorophenols	<46.0	<45.9	<45.8	<45.9	0.3
2,6-dichlorophenol	<38.4	<38.2	<38.2	<38.3	0.3
2,4 & 2,5-dichlorophenol	<38.4	<38.2	<38.2	<38.3	0.3
3,5-dichlorophenol	<38.4	<38.2	<38.2	<38.3	0.3
2,3-dichlorophenol	<38.4	<38.2	<38.2	<38.3	0.3
3,4-dichlorophenol	<38.4	<38.2	<38.2	<38.3	0.3
Total Dichlorophenols	<192	<191	<191	<191	0.3
2,4,6-trichlorophenol	<38.4	<38.2	<38.2	<38.3	0.3
2,3,6-trichlorophenol	<7.67	<7.64	<7.64	<7.65	0.3
2,3,5-trichlorophenol	<7.67	<7.64	<7.64	<7.65	0.3
2,4,5-trichlorophenol	<7.67	<7.64	<7.64	<7.65	0.3
2,3,4-trichlorophenol	<7.67	<7.64	<7.64	<7.65	0.3
3,4,5-trichlorophenol	<7.67	<7.64	<7.64	<7.65	0.3
Total Trichlorophenols	<76.7	<76.4	<76.4	<76.5	0.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.67	<7.64	<7.64	<7.65	0.3
2,3,4,5-tetrachlorophenol	<7.67	<7.64	<7.64	<7.65	0.3
Total Tetrachlorophenols	<15.3	<15.3	<15.3	<15.3	0.3
Pentachlorophenol	<7.67	<7.64	<15.3	<10.2	43.1
Total Chlorophenols	<338	<336	<344	<339	1.2

TABLE 65
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1 ng/Rm ³ *	Test No. 2 ng/Rm ³ *	Test No. 3 ng/Rm ³ *	Average ng/Rm ³ *	
2-monochlorophenol	<13.1	<13.0	<12.9	<13.0	0.9
3 & 4-monochlorophenol	<65.7	<65.0	<64.5	<65.1	0.9
Total Monochlorophenols	<78.8	<78.0	<77.4	<78.1	0.9
2,6-dichlorophenol	<65.7	<65.0	<64.5	<65.1	0.9
2,4 & 2,5-dichlorophenol	<65.7	<65.0	<64.5	<65.1	0.9
3,5-dichlorophenol	<65.7	<65.0	<64.5	<65.1	0.9
2,3-dichlorophenol	<65.7	<65.0	<64.5	<65.1	0.9
3,4-dichlorophenol	<65.7	<65.0	<64.5	<65.1	0.9
Total Dichlorophenols	<328	<325	<322	<325	0.9
2,4,6-trichlorophenol	<65.7	<65.0	<64.5	<65.1	0.9
2,3,6-trichlorophenol	<13.1	<13.0	<12.9	<13.0	0.9
2,3,5-trichlorophenol	<13.1	<13.0	<12.9	<13.0	0.9
2,4,5-trichlorophenol	<13.1	<13.0	<12.9	<13.0	0.9
2,3,4-trichlorophenol	<13.1	<13.0	<12.9	<13.0	0.9
3,4,5-trichlorophenol	<13.1	<13.0	<12.9	<13.0	0.9
Total Trichlorophenols	<131	<130.1	<129	<130	0.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<13.1	<13.0	<12.9	<13.0	0.9
2,3,4,5-tetrachlorophenol	<13.1	<13.0	<12.9	<13.0	0.9
Total Tetrachlorophenols	<26.3	<26.0	<25.8	<26.0	0.9
Pentachlorophenol	<13.1	<13.0	<25.8	<17.3	42.4
Total Chlorophenols	<578	<572	<580	<577	0.7

* At 25°C and 1 atmosphere

TABLE 66
Reworld Durham York Renewable Energy L.P.
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/Rm ^{3*}	ng/Rm ^{3*}	ng/Rm ^{3*}	ng/Rm ^{3*}	%
2-monochlorophenol	<10.6	<10.4	<10.5	<10.5	0.6
3 & 4-monochlorophenol	<52.9	<52.2	<52.6	<52.6	0.6
Total Monochlorophenols	<63.5	<62.7	<63.2	<63.1	0.6
2,6-dichlorophenol	<52.9	<52.2	<52.6	<52.6	0.6
2,4 & 2,5-dichlorophenol	<52.9	<52.2	<52.6	<52.6	0.6
3,5-dichlorophenol	<52.9	<52.2	<52.6	<52.6	0.6
2,3-dichlorophenol	<52.9	<52.2	<52.6	<52.6	0.6
3,4-dichlorophenol	<52.9	<52.2	<52.6	<52.6	0.6
Total Dichlorophenols	<264	<261	<263	<263	0.6
2,4,6-trichlorophenol	<52.9	<52.2	<52.6	<52.6	0.6
2,3,6-trichlorophenol	<10.6	<10.4	<10.5	<10.5	0.6
2,3,5-trichlorophenol	<10.6	<10.4	<10.5	<10.5	0.6
2,4,5-trichlorophenol	<10.6	<10.4	<10.5	<10.5	0.6
2,3,4-trichlorophenol	<10.6	<10.4	<10.5	<10.5	0.6
3,4,5-trichlorophenol	<10.6	<10.4	<10.5	<10.5	0.6
Total Trichlorophenols	<106	<104	<105	<105	0.6
2,3,5,6/2,3,4,6-tetrachlorophenol	<10.6	<10.4	<10.5	<10.5	0.6
2,3,4,5-tetrachlorophenol	<10.6	<10.4	<10.5	<10.5	0.6
Total Tetrachlorophenols	<21.2	<20.9	<21.1	<21.0	0.6
Pentachlorophenol	<10.6	<10.4	<21.1	<14.0	43.4
Total Chlorophenols	<465	<460	<474	<466	1.5

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

TABLE 67
Reworld Durham York Renewable Energy L.P.
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/Rm ^{3*}	ng/Rm ^{3*}	ng/Rm ^{3*}	ng/Rm ^{3*}	%
2-monochlorophenol	<11.1	<11.0	<10.9	<11.0	0.8
3 & 4-monochlorophenol	<55.3	<54.9	<54.4	<54.8	0.8
Total Monochlorophenols	<66.3	<65.8	<65.3	<65.8	0.8
2,6-dichlorophenol	<55.3	<54.9	<54.4	<54.8	0.8
2,4 & 2,5-dichlorophenol	<55.3	<54.9	<54.4	<54.8	0.8
3,5-dichlorophenol	<55.3	<54.9	<54.4	<54.8	0.8
2,3-dichlorophenol	<55.3	<54.9	<54.4	<54.8	0.8
3,4-dichlorophenol	<55.3	<54.9	<54.4	<54.8	0.8
Total Dichlorophenols	<276	<274	<272	<274	0.8
2,4,6-trichlorophenol	<55.3	<54.9	<54.4	<54.8	0.8
2,3,6-trichlorophenol	<11.1	<11.0	<10.9	<11.0	0.8
2,3,5-trichlorophenol	<11.1	<11.0	<10.9	<11.0	0.8
2,4,5-trichlorophenol	<11.1	<11.0	<10.9	<11.0	0.8
2,3,4-trichlorophenol	<11.1	<11.0	<10.9	<11.0	0.8
3,4,5-trichlorophenol	<11.1	<11.0	<10.9	<11.0	0.8
Total Trichlorophenols	<111	<110	<109	<110	0.8
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.1	<11.0	<10.9	<11.0	0.8
2,3,4,5-tetrachlorophenol	<11.1	<11.0	<10.9	<11.0	0.8
Total Tetrachlorophenols	<22.1	<21.9	<21.8	<21.9	0.8
Pentachlorophenol	<11.1	<11.0	<21.8	<14.6	42.5
Total Chlorophenols	<486	<483	<490	<486	0.7

* At 25°C and 1 atmosphere

TABLE 68
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate			Average µg/s	Coefficient of Variation %
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s		
2-monochlorophenol	<0.20	<0.20	<0.19	<0.20	0.4
3 & 4-monochlorophenol	<0.98	<0.98	<0.97	<0.98	0.4
Total Monochlorophenols	<1.17	<1.18	<1.17	<1.17	0.4
2,6-dichlorophenol	<0.98	<0.98	<0.97	<0.98	0.4
2,4 & 2,5-dichlorophenol	<0.98	<0.98	<0.97	<0.98	0.4
3,5-dichlorophenol	<0.98	<0.98	<0.97	<0.98	0.4
2,3-dichlorophenol	<0.98	<0.98	<0.97	<0.98	0.4
3,4-dichlorophenol	<0.98	<0.98	<0.97	<0.98	0.4
Total Dichlorophenols	<4.89	<4.91	<4.87	<4.89	0.4
2,4,6-trichlorophenol	<0.98	<0.98	<0.97	<0.98	0.4
2,3,6-trichlorophenol	<0.20	<0.20	<0.19	<0.20	0.4
2,3,5-trichlorophenol	<0.20	<0.20	<0.19	<0.20	0.4
2,4,5-trichlorophenol	<0.20	<0.20	<0.19	<0.20	0.4
2,3,4-trichlorophenol	<0.20	<0.20	<0.19	<0.20	0.4
3,4,5-trichlorophenol	<0.20	<0.20	<0.19	<0.20	0.4
Total Trichlorophenols	<1.96	<1.96	<1.95	<1.96	0.4
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.20	<0.20	<0.19	<0.20	0.4
2,3,4,5-tetrachlorophenol	<0.20	<0.20	<0.19	<0.20	0.4
Total Tetrachlorophenols	<0.39	<0.39	<0.39	<0.39	0.4
Pentachlorophenol	<0.20	<0.20	<0.39	<0.26	42.9
Total Chlorophenols	<8.61	<8.64	<8.76	<8.67	0.9

TABLE 69
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
2-monochlorophenol	<7.65	<13.0	<10.5	<11.0	<0.20
3 & 4-monochlorophenol	<38.3	<65.1	<52.6	<54.8	<0.98
Total Monochlorophenols	<45.9	<78.1	<63.1	<65.8	<1.17
2,6-dichlorophenol	<38.3	<65.1	<52.6	<54.8	<0.98
2,4 & 2,5-dichlorophenol	<38.3	<65.1	<52.6	<54.8	<0.98
3,5-dichlorophenol	<38.3	<65.1	<52.6	<54.8	<0.98
2,3-dichlorophenol	<38.3	<65.1	<52.6	<54.8	<0.98
3,4-dichlorophenol	<38.3	<65.1	<52.6	<54.8	<0.98
Total Dichlorophenols	<191	<325	<263	<274	<4.89
2,4,6-trichlorophenol	<38.3	<65.1	<52.6	<54.8	<0.98
2,3,6-trichlorophenol	<7.65	<13.0	<10.5	<11.0	<0.20
2,3,5-trichlorophenol	<7.65	<13.0	<10.5	<11.0	<0.20
2,4,5-trichlorophenol	<7.65	<13.0	<10.5	<11.0	<0.20
2,3,4-trichlorophenol	<7.65	<13.0	<10.5	<11.0	<0.20
3,4,5-trichlorophenol	<7.65	<13.0	<10.5	<11.0	<0.20
Total Trichlorophenols	<76.5	<130	<105	<110	<1.96
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.65	<13.0	<10.5	<11.0	<0.20
2,3,4,5-tetrachlorophenol	<7.65	<13.0	<10.5	<11.0	<0.20
Total Tetrachlorophenols	<15.3	<26.0	<21.0	<21.9	<0.39
Pentachlorophenol	<10.2	<17.3	<14.0	<14.6	<0.26
Total Chlorophenols	<339	<577	<466	<486	<8.67

* At 25°C and 1 atmosphere

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

TABLE 70
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Media Blank Total ng	Blank Train Total ng
2-monochlorophenol	<60	<60
3 & 4-monochlorophenol	<300	<300
Total Monochlorophenols	<360	<360
2,6-dichlorophenol	<300	<300
2,4 & 2,5-dichlorophenol	<300	<300
3,5-dichlorophenol	<300	<300
2,3-dichlorophenol	<300	<300
3,4-dichlorophenol	<300	<300
Total Dichlorophenols	<1500	<1500
2,4,6-trichlorophenol	<300	<300
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	<600	<600
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	<2640	<2640

"<" 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
Reworld Durham York Renewable Energy L.P.
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/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	µg/s
Acenaphthene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Acenaphthylene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Anthracene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Benzo(a)Anthracene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Benzo(b)Fluoranthene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Benzo(k/j)Fluoranthene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Benzo(a)fluorene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Benzo(b)fluorene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Benzo(g,h,i)Perylene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Benzo(a)Pyrene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Benzo(e)Pyrene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Biphenyl	24.8	3.17	5.43	4.37	4.57	0.081
2-Chloronaphthalene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Chrysene/Triphenylene/Benzo(b)anthracene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Coronene	<60	<7.67	<13.1	<10.6	<11.1	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Dibenzo(a,e)pyrene	<60	<7.67	<13.1	<10.6	<11.1	<0.20
9,10-dimethylanthracene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Fluoranthene	20.6	2.63	4.51	3.63	3.80	0.067
Fluorene	14.6	1.87	3.20	2.57	2.69	0.048
Indeno(1,2,3-cd)Pyrene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
2-methylanthracene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
3-Methylcholanthrene	<60	<7.67	<13.1	<10.6	<11.1	<0.20
1-Methylnaphthalene	16.7	2.14	3.66	2.94	3.08	0.054
2-Methylnaphthalene	29.6	3.79	6.48	5.22	5.45	0.097
1-Methylphenanthrene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
9-Methylphenanthrene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Naphthalene	113	14.5	24.7	19.9	20.8	0.37
Perylene	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Phenanthrene	107	13.7	23.4	18.9	19.7	0.35
Picene	<60	<7.67	<13.1	<10.6	<11.1	<0.20
Pyrene	15.5	1.98	3.39	2.73	2.86	0.051
Tetralin	21.2	2.71	4.64	3.74	3.91	0.069
m-terphenyl	<12	<1.53	<2.63	<2.12	<2.21	<0.039
o-Terphenyl	<12	<1.53	<2.63	<2.12	<2.21	<0.039
p-terphenyl	<12	<1.53	<2.63	<2.12	<2.21	<0.039
Total	<891	<114	<195	<157	<164	<2.91

Dry Gas Volume Sampled (Rm ^{3*}) :	4.569
Actual Flowrate (m ³ /s) :	25.5
Dry Reference Flowrate (Rm ³ /s*) :	14.9
Dry Adjusted Flowrate (Rm ³ /s**) :	18.5
Wet Reference Flowrate (Rm ³ /s*) :	17.7

* 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 72
Reworld Durham York Renewable Energy L.P.
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/m ³	ng/Rm ³ **	ng/Rm ³ ***	ng/Rm ³ **	µg/s
Acenaphthene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Acenaphthylene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Anthracene	62.9	8.01	13.6	11.0	11.5	0.21
Benzo(a)Anthracene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Benzo(b)Fluoranthene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Benzo(k/j)Fluoranthene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Benzo(a)fluorene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Benzo(b)fluorene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Benzo(g,h,i)Perylene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Benzo(a)Pyrene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Benzo(e)Pyrene	12.7	1.62	2.75	2.21	2.32	0.042
Biphenyl	77.9	9.92	16.9	13.6	14.2	0.25
2-Chloronaphthalene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Chrysene/Triphenylene/Benzo(b)anthracene	28.5	3.63	6.18	4.96	5.21	0.093
Coronene	<60	<7.64	<13.0	<10.4	<11.0	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Dibenzo(a,e)pyrene	<60	<7.64	<13.0	<10.4	<11.0	<0.20
9,10-dimethylanthracene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Fluoranthene	346	44.1	75.0	60.2	63.3	1.13
Fluorene	73.4	9.35	15.9	12.8	13.4	0.24
Indeno(1,2,3-cd)Pyrene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
2-methylanthracene	25.4	3.24	5.51	4.42	4.64	0.083
3-Methylcholanthrene	<60	<7.64	<13.0	<10.4	<11.0	<0.20
1-Methylnaphthalene	32.2	4.10	6.98	5.61	5.89	0.11
2-Methylnaphthalene	57.6	7.34	12.5	10.0	10.5	0.19
1-Methylphenanthrene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
9-Methylphenanthrene	80.0	10.2	17.3	13.9	14.6	0.26
Naphthalene	126	16.0	27.3	21.9	23.0	0.41
Perylene	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Phenanthrene	1800	229	390	313	329	5.89
Picene	<60	<7.64	<13.0	<10.4	<11.0	<0.20
Pyrene	266	33.9	57.7	46.3	48.6	0.87
Tetralin	23.3	2.97	5.05	4.06	4.26	0.076
m-terphenyl	<12	<1.53	<2.60	<2.09	<2.19	<0.039
o-Terphenyl	21.5	2.74	4.66	3.74	3.93	0.070
p-terphenyl	<12	<1.53	<2.60	<2.09	<2.19	<0.039
Total	<3489	<444	<756	<608	<638	<11.4

Dry Gas Volume Sampled (Rm ³ *) :	4.613
Actual Flowrate (m ³ /s) :	25.7
Dry Reference Flowrate (Rm ³ /s*) :	15.1
Dry Adjusted Flowrate (Rm ³ /s**) :	18.8
Wet Reference Flowrate (Rm ³ /s*) :	17.9

* 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 73
Reworld Durham York Renewable Energy L.P.
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/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	µg/s
Acenaphthene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Acenaphthylene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Anthracene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Benzo(a)Anthracene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Benzo(b)Fluoranthene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Benzo(k/j)Fluoranthene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Benzo(a)fluorene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Benzo(b)fluorene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Benzo(g,h,i)Perylene	14.8	1.88	3.18	2.60	2.68	0.048
Benzo(a)Pyrene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Benzo(e)Pyrene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Biphenyl	53.9	6.86	11.6	9.46	9.77	0.17
2-Chloronaphthalene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Chrysene/Triphenylene/Benzo(b)anthracene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Coronene	<60	<7.64	<12.9	<10.5	<10.9	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Dibenzo(a,e)pyrene	<60	<7.64	<12.9	<10.5	<10.9	<0.19
9,10-dimethylanthracene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Fluoranthene	31.7	4.04	6.81	5.56	5.75	0.10
Fluorene	26.5	3.37	5.70	4.65	4.81	0.086
Indeno(1,2,3-cd)Pyrene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
2-methylanthracene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
3-Methylcholanthrene	<60	<7.64	<12.9	<10.5	<10.9	<0.19
1-Methylnaphthalene	28.2	3.59	6.06	4.95	5.11	0.092
2-Methylnaphthalene	52.5	6.68	11.3	9.21	9.52	0.17
1-Methylphenanthrene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
9-Methylphenanthrene	15.0	1.91	3.22	2.63	2.72	0.049
Naphthalene	138	17.6	29.7	24.2	25.0	0.45
Perylene	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Phenanthrene	204	26.0	43.9	35.8	37.0	0.66
Picene	<60	<7.64	<12.9	<10.5	<10.9	<0.19
Pyrene	28.4	3.62	6.10	4.98	5.15	0.092
Tetralin	21.8	2.77	4.69	3.82	3.95	0.071
m-terphenyl	<12	<1.53	<2.58	<2.11	<2.18	<0.039
o-Terphenyl	<12	<1.53	<2.58	<2.11	<2.18	<0.039
p-terphenyl	<12	<1.53	<2.58	<2.11	<2.18	<0.039
Total	<1119	<142	<240	<196	<203	<3.63

Dry Gas Volume Sampled (Rm ^{3*}) :	4.652
Actual Flowrate (m ³ /s) :	25.5
Dry Reference Flowrate (Rm ³ /s*) :	15.1
Dry Adjusted Flowrate (Rm ³ /s**) :	18.5
Wet Reference Flowrate (Rm ³ /s*) :	17.9

* At 25°C and 1 atmosphere

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

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

TABLE 74
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	ng/m ³	ng/m ³	ng/m ³	ng/m ³	%
Acenaphthene	<1.53	<1.53	<1.53	<1.53	0.3
Acenaphthylene	<1.53	<1.53	<1.53	<1.53	0.3
Anthracene	<1.53	8.01	<1.53	<3.69	101
Benzo(a)Anthracene	<1.53	<1.53	<1.53	<1.53	0.3
Benzo(b)Fluoranthene	<1.53	<1.53	<1.53	<1.53	0.3
Benzo(k/j)Fluoranthene	<1.53	<1.53	<1.53	<1.53	0.3
Benzo(a)fluorene	<1.53	<1.53	<1.53	<1.53	0.3
Benzo(b)fluorene	<1.53	<1.53	<1.53	<1.53	0.3
Benzo(g,h,i)Perylene	<1.53	<1.53	1.88	<1.65	12.3
Benzo(a)Pyrene	<1.53	<1.53	<1.53	<1.53	0.3
Benzo(e)Pyrene	<1.53	1.62	<1.53	<1.56	3.2
Biphenyl	3.17	9.92	6.86	6.65	50.8
2-Chloronaphthalene	<1.53	<1.53	<1.53	<1.53	0.3
Chrysene/Triphenylene/Benzo(b)anthracene	<1.53	3.63	<1.53	<2.23	54.3
Coronene	<7.67	<7.64	<7.64	<7.65	0.3
Dibenzo(a,c/a,h)Anthracene	<1.53	<1.53	<1.53	<1.53	0.3
Dibenzo(a,e)pyrene	<7.67	<7.64	<7.64	<7.65	0.3
9,10-dimethylanthracene	<1.53	<1.53	<1.53	<1.53	0.3
7,12-Dimethylbenzo(a)anthracene	<1.53	<1.53	<1.53	<1.53	0.3
Fluoranthene	2.63	44.1	4.04	16.9	139
Fluorene	1.87	9.35	3.37	4.86	81.4
Indeno(1,2,3-cd)Pyrene	<1.53	<1.53	<1.53	<1.53	0.3
2-methylanthracene	<1.53	3.24	<1.53	<2.10	46.9
3-Methylcholanthrene	<7.67	<7.64	<7.64	<7.65	0.3
1-Methylnaphthalene	2.14	4.10	3.59	3.28	31.1
2-Methylnaphthalene	3.79	7.34	6.68	5.93	31.8
1-Methylphenanthrene	<1.53	<1.53	<1.53	<1.53	0.3
9-Methylphenanthrene	<1.53	10.2	1.91	<4.54	108
Naphthalene	14.5	16.0	17.6	16.0	9.7
Perylene	<1.53	<1.53	<1.53	<1.53	0.3
Phenanthrene	13.7	229	26.0	89.6	135
Picene	<7.67	<7.64	<7.64	<7.65	0.3
Pyrene	1.98	33.9	3.62	13.2	137
Tetralin	2.71	2.97	2.77	2.82	4.7
m-terphenyl	<1.53	<1.53	<1.53	<1.53	0.3
o-Terphenyl	<1.53	2.74	<1.53	<1.93	36.1
p-terphenyl	<1.53	<1.53	<1.53	<1.53	0.3
Total	<114	<444	<142	<234	78.4

TABLE 75
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Acenaphthene	<2.63	<2.60	<2.58	<2.60	0.9
Acenaphthylene	<2.63	<2.60	<2.58	<2.60	0.9
Anthracene	<2.63	13.6	<2.58	<6.28	101
Benzo(a)Anthracene	<2.63	<2.60	<2.58	<2.60	0.9
Benzo(b)Fluoranthene	<2.63	<2.60	<2.58	<2.60	0.9
Benzo(k/j)Fluoranthene	<2.63	<2.60	<2.58	<2.60	0.9
Benzo(a)fluorene	<2.63	<2.60	<2.58	<2.60	0.9
Benzo(b)fluorene	<2.63	<2.60	<2.58	<2.60	0.9
Benzo(g,h,i)Perylene	<2.63	<2.60	3.18	<2.80	11.7
Benzo(a)Pyrene	<2.63	<2.60	<2.58	<2.60	0.9
Benzo(e)Pyrene	<2.63	2.75	<2.58	<2.65	3.4
Biphenyl	5.43	16.9	11.6	11.3	50.7
2-Chloronaphthalene	<2.63	<2.60	<2.58	<2.60	0.9
Chrysene/Triphenylene/Benzo(b)anthracene	<2.63	6.18	<2.58	<3.79	54.4
Coronene	<13.1	<13.0	<12.9	<13.0	0.9
Dibenzo(a,c/a,h)Anthracene	<2.63	<2.60	<2.58	<2.60	0.9
Dibenzo(a,e)pyrene	<13.1	<13.0	<12.9	<13.0	0.9
9,10-dimethylanthracene	<2.63	<2.60	<2.58	<2.60	0.9
7,12-Dimethylbenzo(a)anthracene	<2.63	<2.60	<2.58	<2.60	0.9
Fluoranthene	4.51	75.0	6.81	28.8	139
Fluorene	3.20	15.9	5.70	8.27	81.5
Indeno(1,2,3-cd)Pyrene	<2.63	<2.60	<2.58	<2.60	0.9
2-methylanthracene	<2.63	5.51	<2.58	<3.57	46.9
3-Methylcholanthrene	<13.1	<13.0	<12.9	<13.0	0.9
1-Methylnaphthalene	3.66	6.98	6.06	5.57	30.9
2-Methylnaphthalene	6.48	12.5	11.3	10.1	31.5
1-Methylphenanthrene	<2.63	<2.60	<2.58	<2.60	0.9
9-Methylphenanthrene	<2.63	17.3	3.22	<7.73	108
Naphthalene	24.7	27.3	29.7	27.2	9.1
Perylene	<2.63	<2.60	<2.58	<2.60	0.9
Phenanthrene	23.4	390	43.9	152	135
Picene	<13.1	<13.0	<12.9	<13.0	0.9
Pyrene	3.39	57.7	6.10	22.4	137
Tetralin	4.64	5.05	4.69	4.79	4.7
m-terphenyl	<2.63	<2.60	<2.58	<2.60	0.9
o-Terphenyl	<2.63	4.66	<2.58	<3.29	36.1
p-terphenyl	<2.63	<2.60	<2.58	<2.60	0.9
Total	<195	<756	<240	<397	78.5

* At 25°C and 1 atmosphere

TABLE 76
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Acenaphthene	<2.12	<2.09	<2.11	<2.10	0.6
Acenaphthylene	<2.12	<2.09	<2.11	<2.10	0.6
Anthracene	<2.12	11.0	<2.11	<5.06	101
Benzo(a)Anthracene	<2.12	<2.09	<2.11	<2.10	0.6
Benzo(b)Fluoranthene	<2.12	<2.09	<2.11	<2.10	0.6
Benzo(k/j)Fluoranthene	<2.12	<2.09	<2.11	<2.10	0.6
Benzo(a)fluorene	<2.12	<2.09	<2.11	<2.10	0.6
Benzo(b)fluorene	<2.12	<2.09	<2.11	<2.10	0.6
Benzo(g,h,i)Perylene	<2.12	<2.09	2.60	<2.27	12.6
Benzo(a)Pyrene	<2.12	<2.09	<2.11	<2.10	0.6
Benzo(e)Pyrene	<2.12	2.21	<2.11	<2.14	2.7
Biphenyl	4.37	13.6	9.46	9.13	50.4
2-Chloronaphthalene	<2.12	<2.09	<2.11	<2.10	0.6
Chrysene/Triphenylene/Benzo(b)anthracene	<2.12	4.96	<2.11	<3.06	53.8
Coronene	<10.6	<10.4	<10.5	<10.5	0.6
Dibenzo(a,c/a,h)Anthracene	<2.12	<2.09	<2.11	<2.10	0.6
Dibenzo(a,e)pyrene	<10.6	<10.4	<10.5	<10.5	0.6
9,10-dimethylanthracene	<2.12	<2.09	<2.11	<2.10	0.6
7,12-Dimethylbenzo(a)anthracene	<2.12	<2.09	<2.11	<2.10	0.6
Fluoranthene	3.63	60.2	5.56	23.1	139
Fluorene	2.57	12.8	4.65	6.67	80.9
Indeno(1,2,3-cd)Pyrene	<2.12	<2.09	<2.11	<2.10	0.6
2-methylanthracene	<2.12	4.42	<2.11	<2.88	46.3
3-Methylcholanthrene	<10.6	<10.4	<10.5	<10.5	0.6
1-Methylnaphthalene	2.94	5.61	4.95	4.50	30.8
2-Methylnaphthalene	5.22	10.0	9.21	8.15	31.6
1-Methylphenanthrene	<2.12	<2.09	<2.11	<2.10	0.6
9-Methylphenanthrene	<2.12	13.9	2.63	<6.23	107
Naphthalene	19.9	21.9	24.2	22.0	9.8
Perylene	<2.12	<2.09	<2.11	<2.10	0.6
Phenanthrene	18.9	313	35.8	123	135
Picene	<10.6	<10.4	<10.5	<10.5	0.6
Pyrene	2.73	46.3	4.98	18.0	136
Tetralin	3.74	4.06	3.82	3.87	4.3
m-terphenyl	<2.12	<2.09	<2.11	<2.10	0.6
o-Terphenyl	<2.12	3.74	<2.11	<2.65	35.5
p-terphenyl	<2.12	<2.09	<2.11	<2.10	0.6
Total	<157	<608	<196	<320	77.9

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

TABLE 77
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Acenaphthene	<2.21	<2.19	<2.18	<2.19	0.8
Acenaphthylene	<2.21	<2.19	<2.18	<2.19	0.8
Anthracene	<2.21	11.5	<2.18	<5.30	101
Benzo(a)Anthracene	<2.21	<2.19	<2.18	<2.19	0.8
Benzo(b)Fluoranthene	<2.21	<2.19	<2.18	<2.19	0.8
Benzo(k/j)Fluoranthene	<2.21	<2.19	<2.18	<2.19	0.8
Benzo(a)fluorene	<2.21	<2.19	<2.18	<2.19	0.8
Benzo(b)fluorene	<2.21	<2.19	<2.18	<2.19	0.8
Benzo(g,h,i)Perylene	<2.21	<2.19	2.68	<2.36	11.8
Benzo(a)Pyrene	<2.21	<2.19	<2.18	<2.19	0.8
Benzo(e)Pyrene	<2.21	2.32	<2.18	<2.24	3.4
Biphenyl	4.57	14.2	9.77	9.53	50.8
2-Chloronaphthalene	<2.21	<2.19	<2.18	<2.19	0.8
Chrysene/Triphenylene/Benzo(b)anthracene	<2.21	5.21	<2.18	<3.20	54.5
Coronene	<11.1	<11.0	<10.9	<11.0	0.8
Dibenzo(a,c/a,h)Anthracene	<2.21	<2.19	<2.18	<2.19	0.8
Dibenzo(a,e)pyrene	<11.1	<11.0	<10.9	<11.0	0.8
9,10-dimethylantracene	<2.21	<2.19	<2.18	<2.19	0.8
7,12-Dimethylbenzo(a)anthracene	<2.21	<2.19	<2.18	<2.19	0.8
Fluoranthene	3.80	63.3	5.75	24.3	139
Fluorene	2.69	13.4	4.81	6.97	81.5
Indeno(1,2,3-cd)Pyrene	<2.21	<2.19	<2.18	<2.19	0.8
2-methylantracene	<2.21	4.64	<2.18	<3.01	47.0
3-Methylcholanthrene	<11.1	<11.0	<10.9	<11.0	0.8
1-Methylnaphthalene	3.08	5.89	5.11	4.69	30.9
2-Methylnaphthalene	5.45	10.5	9.52	8.50	31.6
1-Methylphenanthrene	<2.21	<2.19	<2.18	<2.19	0.8
9-Methylphenanthrene	<2.21	14.6	2.72	<6.52	108
Naphthalene	20.8	23.0	25.0	23.0	9.2
Perylene	<2.21	<2.19	<2.18	<2.19	0.8
Phenanthrene	19.7	329	37.0	129	135
Picene	<11.1	<11.0	<10.9	<11.0	0.8
Pyrene	2.86	48.6	5.15	18.9	137
Tetralin	3.91	4.26	3.95	4.04	4.8
m-terphenyl	<2.21	<2.19	<2.18	<2.19	0.8
o-Terphenyl	<2.21	3.93	<2.18	<2.77	36.2
p-terphenyl	<2.21	<2.19	<2.18	<2.19	0.8
Total	<164	<638	<203	<335	78.5

* At 25°C and 1 atmosphere

TABLE 78
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate			Average µg/s	Coefficient of Variation %
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s		
Acenaphthene	<0.039	<0.039	<0.039	<0.039	0.4
Acenaphthylene	<0.039	<0.039	<0.039	<0.039	0.4
Anthracene	<0.039	0.21	<0.039	<0.095	102
Benzo(a)Anthracene	<0.039	<0.039	<0.039	<0.039	0.4
Benzo(b)Fluoranthene	<0.039	<0.039	<0.039	<0.039	0.4
Benzo(k/j)Fluoranthene	<0.039	<0.039	<0.039	<0.039	0.4
Benzo(a)fluorene	<0.039	<0.039	<0.039	<0.039	0.4
Benzo(b)fluorene	<0.039	<0.039	<0.039	<0.039	0.4
Benzo(g,h,i)Perylene	<0.039	<0.039	0.048	<0.042	12.1
Benzo(a)Pyrene	<0.039	<0.039	<0.039	<0.039	0.4
Benzo(e)Pyrene	<0.039	0.042	<0.039	<0.040	3.7
Biphenyl	0.081	0.25	0.17	0.17	51.2
2-Chloronaphthalene	<0.039	<0.039	<0.039	<0.039	0.4
Chrysene/Triphenylene/Benzo(b)anthracene	<0.039	0.093	<0.039	<0.057	54.8
Coronene	<0.20	<0.20	<0.19	<0.20	0.4
Dibenzo(a,c/a,h)Anthracene	<0.039	<0.039	<0.039	<0.039	0.4
Dibenzo(a,e)pyrene	<0.20	<0.20	<0.19	<0.20	0.4
9,10-dimethylanthracene	<0.039	<0.039	<0.039	<0.039	0.4
7,12-Dimethylbenzo(a)anthracene	<0.039	<0.039	<0.039	<0.039	0.4
Fluoranthene	0.067	1.13	0.10	0.43	139
Fluorene	0.048	0.24	0.086	0.12	81.8
Indeno(1,2,3-cd)Pyrene	<0.039	<0.039	<0.039	<0.039	0.4
2-methylanthracene	<0.039	0.083	<0.039	<0.054	47.4
3-Methylcholanthrene	<0.20	<0.20	<0.19	<0.20	0.4
1-Methylnaphthalene	0.054	0.11	0.092	0.084	31.4
2-Methylnaphthalene	0.097	0.19	0.17	0.15	32.1
1-Methylphenanthrene	<0.039	<0.039	<0.039	<0.039	0.4
9-Methylphenanthrene	<0.039	0.26	0.049	<0.12	108
Naphthalene	0.37	0.41	0.45	0.41	9.7
Perylene	<0.039	<0.039	<0.039	<0.039	0.4
Phenanthrene	0.35	5.89	0.66	2.30	135
Picene	<0.20	<0.20	<0.19	<0.20	0.4
Pyrene	0.051	0.87	0.092	0.34	137
Tetralin	0.069	0.076	0.071	0.072	5.2
m-terphenyl	<0.039	<0.039	<0.039	<0.039	0.4
o-Terphenyl	<0.039	0.070	<0.039	<0.049	36.6
p-terphenyl	<0.039	<0.039	<0.039	<0.039	0.4
Total	<2.91	<11.4	<3.63	<5.99	78.9

TABLE 79
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
Acenaphthene	<1.53	<2.60	<2.10	<2.19	<0.039
Acenaphthylene	<1.53	<2.60	<2.10	<2.19	<0.039
Anthracene	<3.69	<6.28	<5.06	<5.30	<0.095
Benzo(a)Anthracene	<1.53	<2.60	<2.10	<2.19	<0.039
Benzo(b)Fluoranthene	<1.53	<2.60	<2.10	<2.19	<0.039
Benzo(k/j)Fluoranthene	<1.53	<2.60	<2.10	<2.19	<0.039
Benzo(a)fluorene	<1.53	<2.60	<2.10	<2.19	<0.039
Benzo(b)fluorene	<1.53	<2.60	<2.10	<2.19	<0.039
Benzo(g,h,i)Perylene	<1.65	<2.80	<2.27	<2.36	<0.042
Benzo(a)Pyrene	<1.53	<2.60	<2.10	<2.19	<0.039
Benzo(e)Pyrene	<1.56	<2.65	<2.14	<2.24	<0.040
Biphenyl	6.65	11.3	9.13	9.53	0.17
2-Chloronaphthalene	<1.53	<2.60	<2.10	<2.19	<0.039
Chrysene/Triphenylene/Benzo(b)anthracene	<2.23	<3.79	<3.06	<3.20	<0.057
Coronene	<7.65	<13.0	<10.5	<11.0	<0.20
Dibenzo(a,c/a,h)Anthracene	<1.53	<2.60	<2.10	<2.19	<0.039
Dibenzo(a,e)pyrene	<7.65	<13.0	<10.5	<11.0	<0.20
9,10-dimethylanthracene	<1.53	<2.60	<2.10	<2.19	<0.039
7,12-Dimethylbenzo(a)anthracene	<1.53	<2.60	<2.10	<2.19	<0.039
Fluoranthene	16.9	28.8	23.1	24.3	0.43
Fluorene	4.86	8.27	6.67	6.97	0.12
Indeno(1,2,3-cd)Pyrene	<1.53	<2.60	<2.10	<2.19	<0.039
2-methylanthracene	<2.10	<3.57	<2.88	<3.01	<0.054
3-Methylcholanthrene	<7.65	<13.0	<10.5	<11.0	<0.20
1-Methylnaphthalene	3.28	5.57	4.50	4.69	0.084
2-Methylnaphthalene	5.93	10.1	8.15	8.50	0.15
1-Methylphenanthrene	<1.53	<2.60	<2.10	<2.19	<0.039
9-Methylphenanthrene	<4.54	<7.73	<6.23	<6.52	<0.12
Naphthalene	16.0	27.2	22.0	23.0	0.41
Perylene	<1.53	<2.60	<2.10	<2.19	<0.039
Phenanthrene	89.6	152	123	129	2.30
Picene	<7.65	<13.0	<10.5	<11.0	<0.20
Pyrene	13.2	22.4	18.0	18.9	0.34
Tetralin	2.82	4.79	3.87	4.04	0.072
m-terphenyl	<1.53	<2.60	<2.10	<2.19	<0.039
o-Terphenyl	<1.93	<3.29	<2.65	<2.77	<0.049
p-terphenyl	<1.53	<2.60	<2.10	<2.19	<0.039
Total	<234	<397	<320	<335	<5.99

* At 25°C and 1 atmosphere

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

TABLE 80
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Method Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k/j)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	<12	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene/Benzo(b)anthracene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylantracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylantracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	<12	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	45.1	152
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	12.4	<12
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<670	<776

"<" 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Acetaldehyde, Formaldehyde and Acrolein Emission Data

Acetaldehyde

Test No.	Total Collected	Dry Volume Sampled	Acetaldehyde Concentration				Acetaldehyde Emission Rate
	μg	Rm^3*	Actual $\mu\text{g}/\text{m}^3$	Dry Reference $\mu\text{g}/\text{Rm}^3*$	Dry Adjusted $\mu\text{g}/\text{Rm}^{3**}$	Wet Reference $\mu\text{g}/\text{Rm}^3*$	
1	9.70	0.0358	158	271	217	227	4.02
2	12.6	0.0328	226	384	308	324	5.80
3	14.8	0.0345	253	429	344	362	6.48
Average			212	361	290	305	5.44
Blank Train	14.0						
Method Blank	<0.1						

Formaldehyde

Test No.	Total Collected	Dry Volume Sampled	Formaldehyde Concentration				Formaldehyde Emission Rate
	μg	Rm^3*	Actual $\mu\text{g}/\text{m}^3$	Dry Reference $\mu\text{g}/\text{Rm}^3*$	Dry Adjusted $\mu\text{g}/\text{Rm}^{3**}$	Wet Reference $\mu\text{g}/\text{Rm}^3*$	
1	7.75	0.0358	126	216	173	182	3.21
2	8.41	0.0328	151	256	206	216	3.87
3	10.4	0.0345	178	301	242	254	4.55
Average			152	258	207	217	3.88
Blank Train	6.07						
Method Blank	3.19						

Acrolein

Test No.	Total Collected	Dry Volume Sampled	Acrolein Concentration				Acrolein Emission Rate
	μg	Rm^3*	Actual $\mu\text{g}/\text{m}^3$	Dry Reference $\mu\text{g}/\text{Rm}^3*$	Dry Adjusted $\mu\text{g}/\text{Rm}^{3**}$	Wet Reference $\mu\text{g}/\text{Rm}^3*$	
1	<0.1	0.0358	<1.63	<2.79	<2.24	<2.34	<0.041
2	<0.1	0.0328	<1.80	<3.05	<2.45	<2.57	<0.046
3	<0.1	0.0345	<1.71	<2.90	<2.33	<2.45	<0.044
Average			<1.71	<2.91	<2.34	<2.45	<0.044
Blank Train	<0.1						
Method Blank	<0.1						

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

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
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3^{**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Emission Rate mg/s
Acetone	0.45	11.0	18.8	15.1	15.8	0.28
Benzene	0.018	0.44	0.75	0.60	0.63	0.011
Bromodichloromethane	0.0084	0.20	0.35	0.28	0.29	0.0052
Bromoform	<0.0055	<0.13	<0.23	<0.18	<0.19	<0.0034
Bromomethane	<0.028	<0.68	<1.17	<0.94	<0.98	<0.017
1,3-Butadiene	<0.029	<0.71	<1.21	<0.97	<1.02	<0.018
2-Butanone	<0.066	<1.61	<2.75	<2.21	<2.31	<0.041
Carbon Tetrachloride	<0.0075	<0.18	<0.31	<0.25	<0.26	<0.0047
Chloroform	0.028	0.68	1.17	0.94	0.98	0.017
Cumene (Isopropylbenzene)	<0.0030	<0.073	<0.13	<0.10	<0.11	<0.0019
Dibromochloromethane	<0.0037	<0.090	<0.15	<0.12	<0.13	<0.0023
Dichlorodifluoromethane	<0.013	<0.32	<0.54	<0.44	<0.46	<0.0081
1,2-Dichloroethane	0.011	0.27	0.46	0.37	0.39	0.0068
trans,1,2-Dichloroethene	<0.0037	<0.090	<0.15	<0.12	<0.13	<0.0023
1,1-Dichloroethene	<0.0043	<0.10	<0.18	<0.14	<0.15	<0.0027
1,2-Dichloropropane	<0.0018	<0.044	<0.075	<0.060	<0.063	<0.0011
Ethylbenzene	<0.0028	<0.068	<0.12	<0.094	<0.098	<0.0017
Ethylene Dibromide	<0.0073	<0.18	<0.30	<0.24	<0.26	<0.0045
Mesitylene (1,3,5-Trimethylbenzene)	<0.0026	<0.063	<0.11	<0.087	<0.091	<0.0016
Methylene Chloride	0.13	3.17	5.42	4.36	4.56	0.081
Styrene	<0.0066	<0.16	<0.28	<0.22	<0.23	<0.0041
Tetrachloroethene	<0.0060	<0.15	<0.25	<0.20	<0.21	<0.0037
Toluene	0.48	11.7	20.0	16.1	16.8	0.30
1,1,1-Trichloroethane	<0.0097	<0.24	<0.40	<0.33	<0.34	<0.0060
Trichloroethene/1,1,2-Trichloroethene	<0.0066	<0.16	<0.28	<0.22	<0.23	<0.0041
Trichlorotrifluoroethane	<0.0095	<0.23	<0.40	<0.32	<0.33	<0.0059
Trichlorofluoromethane	0.0066	0.16	0.28	0.22	0.23	0.0041
M&P-Xylene	0.0080	0.19	0.33	0.27	0.28	0.0050
O-Xylene	<0.0035	<0.085	<0.15	<0.12	<0.12	<0.0022
Vinyl Chloride	<0.0064	<0.16	<0.27	<0.21	<0.22	<0.0040
Total	<1.37	<33.3	<56.9	<45.9	<47.9	<0.85

Dry Gas Volume Sampled (Rm^3^*) :	0.0240
Actual Flowrate (m^3/s) :	25.5
Dry Reference Flowrate (Rm^3/s^*) :	14.9
Dry Adjusted Flowrate ($\text{Rm}^3/\text{s}^{**}$) :	18.5
Wet Reference Flowrate (Rm^3/s^*) :	17.7

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

TABLE 83
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 2

Compound	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3^{**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Emission Rate mg/s
Acetone	<0.15	<4.08	<6.98	<5.62	<5.87	<0.10
Benzene	0.019	0.52	0.88	0.71	0.74	0.013
Bromodichloromethane	0.0072	0.20	0.33	0.27	0.28	0.0050
Bromoform	<0.0055	<0.15	<0.26	<0.21	<0.22	<0.0038
Bromomethane	<0.028	<0.76	<1.30	<1.05	<1.10	<0.019
1,3-Butadiene	<0.029	<0.79	<1.35	<1.09	<1.14	<0.020
2-Butanone	<0.066	<1.79	<3.07	<2.47	<2.58	<0.046
Carbon Tetrachloride	<0.0075	<0.20	<0.35	<0.28	<0.29	<0.0052
Chloroform	0.023	0.63	1.07	0.86	0.90	0.016
Cumene (Isopropylbenzene)	<0.0030	<0.082	<0.14	<0.11	<0.12	<0.0021
Dibromochloromethane	<0.0037	<0.10	<0.17	<0.14	<0.14	<0.0026
Dichlorodifluoromethane	<0.013	<0.35	<0.60	<0.49	<0.51	<0.0090
1,2-Dichloroethane	0.0089	0.24	0.41	0.33	0.35	0.0062
trans,1,2-Dichloroethene	<0.0037	<0.10	<0.17	<0.14	<0.14	<0.0026
1,1-Dichloroethene	<0.0043	<0.12	<0.20	<0.16	<0.17	<0.0030
1,2-Dichloropropane	<0.0018	<0.049	<0.084	<0.067	<0.070	<0.0012
Ethylbenzene	<0.0028	<0.076	<0.13	<0.10	<0.11	<0.0019
Ethylene Dibromide	<0.0073	<0.20	<0.34	<0.27	<0.29	<0.0051
Mesitylene (1,3,5-Trimethylbenzene)	<0.0026	<0.071	<0.12	<0.097	<0.10	<0.0018
Methylene Chloride	0.13	3.53	6.05	4.87	5.09	0.090
Styrene	<0.0066	<0.18	<0.31	<0.25	<0.26	<0.0046
Tetrachloroethene	<0.0060	<0.16	<0.28	<0.22	<0.23	<0.0042
Toluene	0.059	1.60	2.74	2.21	2.31	0.041
1,1,1-Trichloroethane	<0.0097	<0.26	<0.45	<0.36	<0.38	<0.0067
Trichloroethene/1,1,2-Trichloroethene	<0.0066	<0.18	<0.31	<0.25	<0.26	<0.0046
Trichlorotrifluoroethane	<0.0095	<0.26	<0.44	<0.36	<0.37	<0.0066
Trichlorofluoromethane	0.0055	0.15	0.26	0.21	0.22	0.0038
M&P-Xylene	<0.0070	<0.19	<0.33	<0.26	<0.27	<0.0049
O-Xylene	<0.0035	<0.10	<0.16	<0.13	<0.14	<0.0024
Vinyl Chloride	<0.0064	<0.17	<0.30	<0.24	<0.25	<0.0044
Total	<0.64	<17.3	<29.6	<23.8	<24.9	<0.44

Dry Gas Volume Sampled (Rm^3) :	0.0215
Actual Flowrate (m^3/s) :	25.5
Dry Reference Flowrate (Rm^3/s^*) :	14.9
Dry Adjusted Flowrate ($\text{Rm}^3/\text{s}^{**}$) :	18.5
Wet Reference Flowrate (Rm^3/s^*) :	17.7

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

TABLE 84
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 3

Compound	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3^{**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Emission Rate mg/s
Acetone	0.25	7.42	12.7	10.2	10.7	0.19
Benzene	0.018	0.53	0.91	0.74	0.77	0.014
Bromodichloromethane	0.0063	0.19	0.32	0.26	0.27	0.0048
Bromoform	<0.0055	<0.16	<0.28	<0.22	<0.24	<0.0042
Bromomethane	<0.028	<0.83	<1.42	<1.14	<1.20	<0.021
1,3-Butadiene	<0.029	<0.86	<1.47	<1.19	<1.24	<0.022
2-Butanone	<0.066	<1.96	<3.35	<2.70	<2.82	<0.050
Carbon Tetrachloride	<0.0075	<0.22	<0.38	<0.31	<0.32	<0.0057
Chloroform	0.021	0.62	1.07	0.86	0.90	0.016
Cumene (Isopropylbenzene)	<0.0030	<0.089	<0.15	<0.12	<0.13	<0.0023
Dibromochloromethane	<0.0037	<0.11	<0.19	<0.15	<0.16	<0.0028
Dichlorodifluoromethane	<0.013	<0.39	<0.66	<0.53	<0.56	<0.0098
1,2-Dichloroethane	0.0080	0.24	0.41	0.33	0.34	0.0061
trans,1,2-Dichloroethene	<0.0037	<0.11	<0.19	<0.15	<0.16	<0.0028
1,1-Dichloroethene	<0.0043	<0.13	<0.22	<0.18	<0.18	<0.0033
1,2-Dichloropropane	<0.0018	<0.053	<0.091	<0.074	<0.077	<0.0014
Ethylbenzene	<0.0028	<0.083	<0.14	<0.11	<0.12	<0.0021
Ethylene Dibromide	<0.0073	<0.22	<0.37	<0.30	<0.31	<0.0055
Mesitylene (1,3,5-Trimethylbenzene)	<0.0026	<0.077	<0.13	<0.11	<0.11	<0.0020
Methylene Chloride	0.093	2.76	4.72	3.80	3.97	0.070
Styrene	<0.0066	<0.20	<0.34	<0.27	<0.28	<0.0050
Tetrachloroethene	<0.0060	<0.18	<0.30	<0.25	<0.26	<0.0045
Toluene	0.055	1.63	2.79	2.25	2.35	0.042
1,1,1-Trichloroethane	<0.0097	<0.29	<0.49	<0.40	<0.41	<0.0073
Trichloroethene/1,1,2-Trichloroethene	<0.0066	<0.20	<0.34	<0.27	<0.28	<0.0050
Trichlorotrifluoroethane	<0.0095	<0.28	<0.48	<0.39	<0.41	<0.0072
Trichlorofluoromethane	<0.0053	<0.16	<0.27	<0.22	<0.23	<0.0040
M&P-Xylene	<0.0070	<0.21	<0.36	<0.29	<0.30	<0.0053
O-Xylene	<0.0035	<0.10	<0.18	<0.14	<0.15	<0.0026
Vinyl Chloride	<0.0064	<0.19	<0.32	<0.26	<0.27	<0.0048
Total	<0.69	<20.5	<35.0	<28.2	<29.5	<0.52

Dry Gas Volume Sampled (Rm^3^*) :	0.0197
Actual Flowrate (m^3/s) :	25.5
Dry Reference Flowrate (Rm^3/s^*) :	14.9
Dry Adjusted Flowrate ($\text{Rm}^3/\text{s}^{**}$) :	18.5
Wet Reference Flowrate (Rm^3/s^*) :	17.7

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

TABLE 85
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Volatile Organic Actual Concentrations

Compound	Actual Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	%
Acetone	11.0	<4.08	7.42	<7.48	46.0
Benzene	0.44	0.52	0.53	0.50	10.3
Bromodichloromethane	0.20	0.20	0.19	0.20	4.5
Bromoform	<0.13	<0.15	<0.16	<0.15	9.8
Bromomethane	<0.68	<0.76	<0.83	<0.76	9.8
1,3-Butadiene	<0.71	<0.79	<0.86	<0.78	9.8
2-Butanone	<1.61	<1.79	<1.96	<1.79	9.8
Carbon Tetrachloride	<0.18	<0.20	<0.22	<0.20	9.8
Chloroform	0.68	0.63	0.62	0.64	5.2
Cumene (Isopropylbenzene)	<0.073	<0.082	<0.089	<0.081	9.8
Dibromochloromethane	<0.090	<0.10	<0.11	<0.10	9.8
Dichlorodifluoromethane	<0.32	<0.35	<0.39	<0.35	9.8
1,2-Dichloroethane	0.27	0.24	0.24	0.25	6.6
trans,1,2-Dichloroethene	<0.090	<0.10	<0.11	<0.10	9.8
1,1-Dichloroethene	<0.10	<0.12	<0.13	<0.12	9.8
1,2-Dichloropropane	<0.044	<0.049	<0.053	<0.049	9.8
Ethylbenzene	<0.068	<0.076	<0.083	<0.076	9.8
Ethylene Dibromide	<0.18	<0.20	<0.22	<0.20	9.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.063	<0.071	<0.077	<0.070	9.8
Methylene Chloride	3.17	3.53	2.76	3.15	12.3
Styrene	<0.16	<0.18	<0.20	<0.18	9.8
Tetrachloroethene	<0.15	<0.16	<0.18	<0.16	9.8
Toluene	11.7	1.60	1.63	4.97	117
1,1,1-Trichloroethane	<0.24	<0.26	<0.29	<0.26	9.8
Trichloroethene/1,1,2-Trichloroethene	<0.16	<0.18	<0.20	<0.18	9.8
Trichlorotrifluoroethane	<0.23	<0.26	<0.28	<0.26	9.8
Trichlorofluoromethane	0.16	0.15	<0.16	<0.16	3.7
M&P-Xylene	0.19	<0.19	<0.21	<0.20	4.6
O-Xylene	<0.085	<0.10	<0.10	<0.09	9.8
Vinyl Chloride	<0.16	<0.17	<0.19	<0.17	9.8
Total	<33.3	<17.3	<20.5	<23.7	35.7

TABLE 86
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation %
	Test No. 1 $\mu\text{g}/\text{Rm}^3^*$	Test No. 2 $\mu\text{g}/\text{Rm}^3^*$	Test No. 3 $\mu\text{g}/\text{Rm}^3^*$	Average $\mu\text{g}/\text{Rm}^3^*$	
Acetone	18.8	<6.98	12.7	<12.8	46.0
Benzene	0.75	0.88	0.91	0.85	10.3
Bromodichloromethane	0.35	0.33	0.32	0.33	4.5
Bromoform	<0.23	<0.26	<0.28	<0.25	9.8
Bromomethane	<1.17	<1.30	<1.42	<1.30	9.8
1,3-Butadiene	<1.21	<1.35	<1.47	<1.34	9.8
2-Butanone	<2.75	<3.07	<3.35	<3.06	9.8
Carbon Tetrachloride	<0.31	<0.35	<0.38	<0.35	9.8
Chloroform	1.17	1.07	1.07	1.10	5.2
Cumene (Isopropylbenzene)	<0.13	<0.14	<0.15	<0.14	9.8
Dibromochloromethane	<0.15	<0.17	<0.19	<0.17	9.8
Dichlorodifluoromethane	<0.54	<0.60	<0.66	<0.60	9.8
1,2-Dichloroethane	0.46	0.41	0.41	0.43	6.6
trans,1,2-Dichloroethene	<0.15	<0.17	<0.19	<0.17	9.8
1,1-Dichloroethene	<0.18	<0.20	<0.22	<0.20	9.8
1,2-Dichloropropane	<0.075	<0.084	<0.091	<0.083	9.8
Ethylbenzene	<0.12	<0.13	<0.14	<0.13	9.8
Ethylene Dibromide	<0.30	<0.34	<0.37	<0.34	9.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.11	<0.12	<0.13	<0.12	9.8
Methylene Chloride	5.42	6.05	4.72	5.39	12.3
Styrene	<0.28	<0.31	<0.34	<0.31	9.8
Tetrachloroethene	<0.25	<0.28	<0.30	<0.28	9.8
Toluene	20.0	2.74	2.79	8.51	117
1,1,1-Trichloroethane	<0.40	<0.45	<0.49	<0.45	9.8
Trichloroethene/1,1,2-Trichloroethene	<0.28	<0.31	<0.34	<0.31	9.8
Trichlorotrifluoroethane	<0.40	<0.44	<0.48	<0.44	9.8
Trichlorofluoromethane	0.28	0.26	<0.27	<0.27	3.7
M&P-Xylene	0.33	<0.33	<0.36	<0.34	4.6
O-Xylene	<0.15	<0.16	<0.18	<0.16	9.8
Vinyl Chloride	<0.27	<0.30	<0.32	<0.30	9.8
Total	<56.9	<29.6	<35.0	<40.5	35.7

* At 25°C and 1 atmosphere

TABLE 87
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1 µg/Rm ³ *	Test No. 2 µg/Rm ³ *	Test No. 3 µg/Rm ³ *	Average µg/Rm ³ *	
Acetone	15.1	<5.62	10.2	<10.3	46.0
Benzene	0.60	0.71	0.74	0.68	10.3
Bromodichloromethane	0.28	0.27	0.26	0.27	4.5
Bromoform	<0.18	<0.21	<0.22	<0.21	9.8
Bromomethane	<0.94	<1.05	<1.14	<1.04	9.8
1,3-Butadiene	<0.97	<1.09	<1.19	<1.08	9.8
2-Butanone	<2.21	<2.47	<2.70	<2.46	9.8
Carbon Tetrachloride	<0.25	<0.28	<0.31	<0.28	9.8
Chloroform	0.94	0.86	0.86	0.89	5.2
Cumene (Isopropylbenzene)	<0.10	<0.11	<0.12	<0.11	9.8
Dibromochloromethane	<0.12	<0.14	<0.15	<0.14	9.8
Dichlorodifluoromethane	<0.44	<0.49	<0.53	<0.48	9.8
1,2-Dichloroethane	0.37	0.33	0.33	0.34	6.6
trans,1,2-Dichloroethene	<0.12	<0.14	<0.15	<0.14	9.8
1,1-Dichloroethene	<0.14	<0.16	<0.18	<0.16	9.8
1,2-Dichloropropane	<0.060	<0.067	<0.074	<0.067	9.8
Ethylbenzene	<0.094	<0.10	<0.11	<0.10	9.8
Ethylene Dibromide	<0.24	<0.27	<0.30	<0.27	9.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.087	<0.097	<0.11	<0.097	9.8
Methylene Chloride	4.36	4.87	3.80	4.34	12.3
Styrene	<0.22	<0.25	<0.27	<0.25	9.8
Tetrachloroethene	<0.20	<0.22	<0.25	<0.22	9.8
Toluene	16.1	2.21	2.25	6.86	117
1,1,1-Trichloroethane	<0.33	<0.36	<0.40	<0.36	9.8
Trichloroethene/1,1,2-Trichloroethene	<0.22	<0.25	<0.27	<0.25	9.8
Trichlorotrifluoroethane	<0.32	<0.36	<0.39	<0.35	9.8
Trichlorofluoromethane	0.22	0.21	<0.22	<0.21	3.7
M&P-Xylene	0.27	<0.26	<0.29	<0.27	4.6
O-Xylene	<0.12	<0.13	<0.14	<0.13	9.8
Vinyl Chloride	<0.21	<0.24	<0.26	<0.24	9.8
Total	<45.9	<23.8	<28.2	<32.6	35.7

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

TABLE 88
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Test No. 1	Wet Reference Concentration		Average	Coefficient of Variation
	$\mu\text{g}/\text{Rm}^3^*$	Test No. 2 $\mu\text{g}/\text{Rm}^3^*$	Test No. 3 $\mu\text{g}/\text{Rm}^3^*$	$\mu\text{g}/\text{Rm}^3^*$	%
Acetone	15.8	<5.87	10.7	<10.8	46.0
Benzene	0.63	0.74	0.77	0.71	10.3
Bromodichloromethane	0.29	0.28	0.27	0.28	4.5
Bromoform	<0.19	<0.22	<0.24	<0.21	9.8
Bromomethane	<0.98	<1.10	<1.20	<1.09	9.8
1,3-Butadiene	<1.02	<1.14	<1.24	<1.13	9.8
2-Butanone	<2.31	<2.58	<2.82	<2.57	9.8
Carbon Tetrachloride	<0.26	<0.29	<0.32	<0.29	9.8
Chloroform	0.98	0.90	0.90	0.93	5.2
Cumene (Isopropylbenzene)	<0.11	<0.12	<0.13	<0.12	9.8
Dibromochloromethane	<0.13	<0.14	<0.16	<0.14	9.8
Dichlorodifluoromethane	<0.46	<0.51	<0.56	<0.51	9.8
1,2-Dichloroethane	0.39	0.35	0.34	0.36	6.6
trans,1,2-Dichloroethene	<0.13	<0.14	<0.16	<0.14	9.8
1,1-Dichloroethene	<0.15	<0.17	<0.18	<0.17	9.8
1,2-Dichloropropane	<0.063	<0.070	<0.077	<0.070	9.8
Ethylbenzene	<0.098	<0.11	<0.12	<0.11	9.8
Ethylene Dibromide	<0.26	<0.29	<0.31	<0.28	9.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.091	<0.10	<0.11	<0.10	9.8
Methylene Chloride	4.56	5.09	3.97	4.54	12.3
Styrene	<0.23	<0.26	<0.28	<0.26	9.8
Tetrachloroethene	<0.21	<0.23	<0.26	<0.23	9.8
Toluene	16.8	2.31	2.35	7.17	117
1,1,1-Trichloroethane	<0.34	<0.38	<0.41	<0.38	9.8
Trichloroethene/1,1,2-Trichloroethene	<0.23	<0.26	<0.28	<0.26	9.8
Trichlorotrifluoroethane	<0.33	<0.37	<0.41	<0.37	9.8
Trichlorofluoromethane	0.23	0.22	<0.23	<0.22	3.7
M&P-Xylene	0.28	<0.27	<0.30	<0.28	4.6
O-Xylene	<0.12	<0.14	<0.15	<0.14	9.8
Vinyl Chloride	<0.22	<0.25	<0.27	<0.25	9.8
Total	<47.9	<24.9	<29.5	<34.1	35.7

* At 25°C and 1 atmosphere

TABLE 89
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate			Average mg/s	Coefficient of Variation %
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s		
Acetone	0.28	<0.10	0.19	<0.19	46.0
Benzene	0.011	0.013	0.014	0.013	10.3
Bromodichloromethane	0.0052	0.0050	0.0048	0.0050	4.5
Bromoform	<0.0034	<0.0038	<0.0042	<0.0038	9.8
Bromomethane	<0.017	<0.019	<0.021	<0.019	9.8
1,3-Butadiene	<0.018	<0.020	<0.022	<0.020	9.8
2-Butanone	<0.041	<0.046	<0.050	<0.046	9.8
Carbon Tetrachloride	<0.0047	<0.0052	<0.0057	<0.0052	9.8
Chloroform	0.017	0.016	0.016	0.016	5.2
Cumene (Isopropylbenzene)	<0.0019	<0.0021	<0.0023	<0.0021	9.8
Dibromochloromethane	<0.0023	<0.0026	<0.0028	<0.0026	9.8
Dichlorodifluoromethane	<0.0081	<0.0090	<0.0098	<0.0090	9.8
1,2-Dichloroethane	0.0068	0.0062	0.0061	0.0063	6.6
trans,1,2-Dichloroethene	<0.0023	<0.0026	<0.0028	<0.0026	9.8
1,1-Dichloroethene	<0.0027	<0.0030	<0.0033	<0.0030	9.8
1,2-Dichloropropane	<0.0011	<0.0012	<0.0014	<0.0012	9.8
Ethylbenzene	<0.0017	<0.0019	<0.0021	<0.0019	9.8
Ethylene Dibromide	<0.0045	<0.0051	<0.0055	<0.0050	9.8
Mesitylene (1,3,5-Trimethylbenzene)	<0.0016	<0.0018	<0.0020	<0.0018	9.8
Methylene Chloride	0.081	0.090	0.070	0.080	12.3
Styrene	<0.0041	<0.0046	<0.0050	<0.0046	9.8
Tetrachloroethene	<0.0037	<0.0042	<0.0045	<0.0041	9.8
Toluene	0.30	0.041	0.042	0.13	117
1,1,1-Trichloroethane	<0.0060	<0.0067	<0.0073	<0.0067	9.8
Trichloroethene/1,1,2-Trichloroethene	<0.0041	<0.0046	<0.0050	<0.0046	9.8
Trichlorotrifluoroethane	<0.0059	<0.0066	<0.0072	<0.0066	9.8
Trichlorofluoromethane	0.0041	0.0038	<0.0040	<0.0040	3.7
M&P-Xylene	0.0050	<0.0049	<0.0053	<0.0050	4.6
O-Xylene	<0.0022	<0.0024	<0.0026	<0.0024	9.8
Vinyl Chloride	<0.0040	<0.0044	<0.0048	<0.0044	9.8
Total	<0.85	<0.44	<0.52	<0.60	35.7

TABLE 90
Reworld Durham York Renewable Energy L.P.
Boiler No. 1 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3$ *	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3$ *	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3$ *	Emission Rate mg/s
Acetone	<7.48	<12.8	<10.3	<10.8	<0.19
Benzene	0.50	0.85	0.68	0.71	0.013
Bromodichloromethane	0.20	0.33	0.27	0.28	0.0050
Bromoform	<0.15	<0.25	<0.21	<0.21	<0.0038
Bromomethane	<0.76	<1.30	<1.04	<1.09	<0.019
1,3-Butadiene	<0.78	<1.34	<1.08	<1.13	<0.020
2-Butanone	<1.79	<3.06	<2.46	<2.57	<0.046
Carbon Tetrachloride	<0.20	<0.35	<0.28	<0.29	<0.0052
Chloroform	0.64	1.10	0.89	0.93	0.016
Cumene (Isopropylbenzene)	<0.081	<0.14	<0.11	<0.12	<0.0021
Dibromochloromethane	<0.10	<0.17	<0.14	<0.14	<0.0026
Dichlorodifluoromethane	<0.35	<0.60	<0.48	<0.51	<0.0090
1,2-Dichloroethane	0.25	0.43	0.34	0.36	0.0063
trans,1,2-Dichloroethene	<0.10	<0.17	<0.14	<0.14	<0.0026
1,1-Dichloroethene	<0.12	<0.20	<0.16	<0.17	<0.0030
1,2-Dichloropropane	<0.049	<0.083	<0.067	<0.070	<0.0012
Ethylbenzene	<0.076	<0.13	<0.10	<0.11	<0.0019
Ethylene Dibromide	<0.20	<0.34	<0.27	<0.28	<0.0050
Mesitylene (1,3,5-Trimethylbenzene)	<0.070	<0.12	<0.097	<0.10	<0.0018
Methylene Chloride	3.15	5.39	4.34	4.54	0.080
Styrene	<0.18	<0.31	<0.25	<0.26	<0.0046
Tetrachloroethene	<0.16	<0.28	<0.22	<0.23	<0.0041
Toluene	4.97	8.51	6.86	7.17	0.13
1,1,1-Trichloroethane	<0.26	<0.45	<0.36	<0.38	<0.0067
Trichloroethene/1,1,2-Trichloroethene	<0.18	<0.31	<0.25	<0.26	<0.0046
Trichlorotrifluoroethane	<0.26	<0.44	<0.35	<0.37	<0.0066
Trichlorofluoromethane	<0.16	<0.27	<0.21	<0.22	<0.0040
M&P-Xylene	<0.20	<0.34	<0.27	<0.28	<0.0050
O-Xylene	<0.09	<0.16	<0.13	<0.14	<0.0024
Vinyl Chloride	<0.17	<0.30	<0.24	<0.25	<0.0044
Total	<23.7	<40.5	<32.6	<34.1	<0.60

* At 25°C and 1 atmosphere

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

TABLE 91
Reworld Durham York Renewable Energy L.P.
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	<0.15	<0.15	<0.15
Benzene	<0.0036	<0.0036	<0.0036
Bromodichloromethane	<0.0017	<0.0017	<0.0017
Bromoform	<0.0055	<0.0055	<0.0055
Bromomethane	<0.028	<0.028	<0.028
1,3-Butadiene	<0.029	<0.029	<0.029
2-Butanone	<0.066	<0.066	<0.066
Carbon Tetrachloride	<0.0075	<0.0075	<0.0075
Chloroform	<0.0081	<0.0081	<0.0081
Cumene (Isopropylbenzene)	<0.0030	<0.0030	<0.0030
Dibromochloromethane	<0.0037	<0.0037	<0.0037
Dichlorodifluoromethane	<0.013	<0.013	<0.013
1,2-Dichloroethane	<0.0060	<0.0060	<0.0060
trans,1,2-Dichloroethene	<0.0037	<0.0037	<0.0037
1,1-Dichloroethene	<0.0043	<0.0043	<0.0043
1,2-Dichloropropane	<0.0018	<0.0018	<0.0018
Ethylbenzene	<0.0028	<0.0028	<0.0028
Ethylene Dibromide	<0.0073	<0.0073	<0.0073
Mesitylene (1,3,5-Trimethylbenzene)	<0.0026	<0.0026	<0.0026
Methylene Chloride	0.12	0.35	<0.086
Styrene	<0.0066	<0.0066	<0.0066
Tetrachloroethene	<0.0060	<0.0060	<0.0060
Toluene	0.013	0.055	<0.012
1,1,1-Trichloroethane	<0.0097	<0.0097	<0.0097
Trichloroethene/1,1,2-Trichloroethene	<0.0066	<0.0066	<0.0066
Trichlorotrifluoroethane	<0.0095	<0.0095	<0.0095
Trichlorofluoromethane	<0.0053	<0.0053	<0.0053
M&P-Xylene	<0.0070	<0.0070	<0.0070
O-Xylene	<0.0035	<0.0035	<0.0035
Vinyl Chloride	<0.0064	<0.0064	<0.0064
Total	<0.54	<0.81	<0.51

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 (88 pages)

TABLE 1
Reworld Durham York Renewable Energy L.P.
Boiler No. 2
Isokinetic Sampling Train Test Schedules

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time* min
		Start	Finish	
1	December 3, 2024	9:20	12:33	180
2	December 3, 2024	13:42	16:57	180
3	December 5, 2024	8:12	11:19	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time* min
		Start	Finish	
1	December 4, 2024	9:15	11:17	120
2	December 4, 2024	12:05	14:07	120
3	December 4, 2024	14:51	16:54	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time* min
		Start	Finish	
1	December 3, 2024	9:12	10:12	60
2	December 3, 2024	11:07	12:07	60
3	December 3, 2024	12:14	13:14	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time* min
		Start	Finish	
1	December 2, 2024	9:45	13:54	240
2	December 2, 2024	14:48	18:55	240

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

TABLE 2
Reworld Durham York Renewable Energy L.P.
Boiler No. 2
Organic Compounds Test Schedules

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period		Sampling Time min
		Start	Finish	
1	December 2, 2024	13:10	14:10	60
2	December 2, 2024	14:16	15:16	60
3	December 2, 2024	15:18	16:18	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time min
		Start	Finish	
1	December 2, 2024	9:45	10:25	40
2	December 2, 2024	10:36	11:16	40
3	December 2, 2024	11:24	12:04	40
4	December 2, 2024	12:09	12:49	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period		Sampling Time min
			Start	Finish	
BH Outlet	1	December 4, 2024	9:00	10:00	60
BH Outlet	2	December 4, 2024	10:15	11:15	60
BH Outlet	3	December 4, 2024	11:30	12:30	60
Quench Inlet	1	December 4, 2024	9:00	10:00	60
Quench Inlet	2	December 4, 2024	10:15	11:15	60
Quench Inlet	3	December 4, 2024	11:30	12:30	60

TABLE 3
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Stack Gas Sampling Parameters

Particulate and Metals Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm ³ *	Percentage of Isokineticity %
1	0.842	1.008	6.34	3.650	98.7
2	0.842	1.008	6.34	3.485	100.9
3	0.839	1.008	6.38	3.609	97.5

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	0.843	0.995	4.51	1.193	95.0
2	0.843	0.995	4.51	1.193	96.7
3	0.843	0.995	4.51	1.174	94.5

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm ³ *	Percentage of Isokineticity %
1	0.845	0.995	6.14	1.166	99.9
2	0.845	0.995	6.14	1.133	101.5
3	0.845	0.995	6.14	1.132	101.1

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	0.845	1.008	6.12	4.483	98.6
2	0.845	1.008	6.12	4.428	100.0

* Dry at 25°C and 1 atmosphere

TABLE 4
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Stack Gas Physical Parameters

Particulate and Metals Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	138	15.7	18.3	-2.71	98.2	10.6	9.11
2	137	17.0	17.4	-2.71	98.2	10.7	8.80
3	138	15.4	18.6	-2.79	95.4	10.5	8.83
Average	138	16.0	18.1	-2.74	97.3	10.6	8.91

Particle Size Distribution Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	138	16.0	18.9	-3.09	96.1	10.5	9.10
2	138	15.0	18.0	-3.09	95.8	10.6	8.80
3	136	15.9	18.7	-3.09	95.5	10.7	8.83
Average	137	15.6	18.5	-3.09	95.8	10.6	8.91

Acid Gases Trains **

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	138	14.8	18.3	-2.71	98.2	10.5	9.23
2	139	15.9	17.8	-2.71	98.2	10.5	9.10
3	140	16.5	18.0	-2.71	98.2	10.7	8.92
Average	139	15.7	18.0	-2.71	98.2	10.6	9.08

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	138	15.7	18.2	-2.56	97.7	10.7	8.99
2	138	16.0	17.8	-2.56	97.7	10.8	8.86
Average	138	15.9	18.0	-2.56	97.7	10.8	8.93

* Dry basis, measured by the DYEC CEMS

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

TABLE 5
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Stack Gas Volumetric Flowrates

Particulate and Metals Trains

Test No.	Actual Flowrate m ³ /s	Dry Reference Flowrate Rm ³ /s *	Dry Adjusted Flowrate Rm ³ /s **	Wet Reference Flowrate Rm ³ /s*
1	27.0	16.0	19.1	19.0
2	25.7	15.0	18.3	18.1
3	27.5	15.9	19.4	18.8
Average	26.7	15.6	18.9	18.6

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	27.9	16.2	19.3	19.2
2	26.7	15.7	19.2	18.4
3	27.6	15.9	19.4	19.0
Average	27.4	15.9	19.3	18.9

Acid Gases Trains ***

Test No.	Actual Flowrate m ³ /s	Dry Reference Flowrate Rm ³ /s *	Dry Adjusted Flowrate Rm ³ /s **	Wet Reference Flowrate Rm ³ /s*
1	27.0	16.2	19.1	19.0
2	26.3	15.5	18.5	18.4
3	26.6	15.6	18.8	18.6
Average	26.6	15.8	18.8	18.7

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m ³ /s	Dry Reference Flowrate Rm ³ /s *	Dry Adjusted Flowrate Rm ³ /s **	Wet Reference Flowrate Rm ³ /s*
1	27.0	15.9	19.1	18.8
2	26.3	15.5	18.8	18.4
Average	26.6	15.7	19.0	18.6

* At 25°C and 1 atmosphere

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

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

TABLE 6
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Particulate Emission Data

Test No.	Particulate Collected			Dry Gas Volume Sampled Rm ³ *	Actual mg/m ³	Particulate Concentration			Particulate Emission Rate mg/s
	Main Filter	Probe Rinse	Total			Dry Reference	Dry Adjusted	Wet Reference	
	mg	mg	mg			mg/Rm ³ *	mg/Rm ³ **	mg/Rm ³ *	
1	<0.6	1.1	<1.7	3.650	<0.28	<0.47	<0.39	<0.39	<7.47
2	<0.6	1.4	<2.0	3.485	<0.34	<0.57	<0.47	<0.48	<8.60
3	<0.6	0.8	<1.4	3.609	<0.22	<0.39	<0.32	<0.33	<6.16
Average					<0.28	<0.48	<0.39	<0.40	<7.41
Blank	<0.6	<0.4	<1.0						

* At 25 °C and 1 atmosphere

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

TABLE 7
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
PM_{2.5} and PM₁₀ Emission Data

PM_{2.5}

Test No.	Total Collected	Dry Volume Sampled	PM _{2.5} Concentration				Emission Rate
	mg	Rm ^{3*}	Actual mg/m ³	Dry Reference mg/Rm ^{3*}	Dry Adjusted mg/Rm ^{3**}	Wet Reference mg/Rm ^{3*}	mg/s
1	<1.0	1.193	<0.49	<0.84	<0.70	<0.71	<13.6
2	<1.0	1.193	<0.49	<0.84	<0.69	<0.72	<13.2
3	<1.0	1.174	<0.49	<0.85	<0.70	<0.71	<13.5
Average			<0.49	<0.84	<0.70	<0.71	<13.4
Blank	<1.0						

PM₁₀

Test No.	Total Collected	Dry Volume Sampled	PM ₁₀ Concentration				Emission Rate
	mg	Rm ^{3*}	Actual mg/m ³	Dry Reference mg/Rm ^{3*}	Dry Adjusted mg/Rm ^{3**}	Wet Reference mg/Rm ^{3*}	mg/s
1	<1.4	1.193	<0.68	<1.17	<0.98	<0.99	<19.0
2	<1.4	1.193	<0.69	<1.17	<0.96	<1.00	<18.4
3	<1.4	1.174	<0.69	<1.19	<0.98	<1.00	<19.0
Average			<0.69	<1.18	<0.97	<1.00	<18.8
Blank	<1.4						

* At 25 °C and 1 atmosphere

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

TABLE 8
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Condensable Particulate Emission Data

Inorganic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm ³ *	Inorganic Condensable Particulate Concentration				Emission Rate mg/s
			Actual mg/m ³	Dry Reference mg/Rm ³ *	Dry Adjusted mg/Rm ^{3**}	Wet Reference mg/Rm ³ *	
1	3.9	1.193	1.90	3.27	2.74	2.76	53.0
2	3.0	1.193	1.48	2.51	2.06	2.15	39.5
3	2.8	1.174	1.37	2.39	1.96	2.00	37.9
Average			1.58	2.72	2.25	2.30	43.5
Blank	0.5						

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	1.8	1.193	0.88	1.51	1.27	1.27	24.4
2	1.8	1.193	0.89	1.51	1.23	1.29	23.7
3	1.1	1.174	0.54	0.94	0.77	0.78	14.9
Average			0.77	1.32	1.09	1.11	21.0
Blank	0.7						

* At 25 °C and 1 atmosphere

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

TABLE 9
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Halides and Ammonia Emission Data

Hydrogen Chloride

Test No.	HCl Collected	Dry Volume Sampled	Hydrogen Chloride Concentration				HCl Emission Rate
	mg	Rm ³ *	Actual mg/m ³	Dry Reference mg/Rm ³ *	Dry Adjusted mg/Rm ³ **	Wet Reference mg/Rm ³ *	mg/s
1	4.26	1.166	2.17	3.65	3.07	3.08	58.6
2	3.90	1.133	2.04	3.44	2.89	2.90	55.2
3	4.12	1.132	2.13	3.64	2.98	3.02	54.5
Average			2.11	3.58	2.98	3.00	56.1
Blank	<0.151						

Hydrogen Fluoride

Test No.	HF Collected	Dry Volume Sampled	Hydrogen Fluoride Concentration				HF Emission Rate
	mg	Rm ³ *	Actual mg/m ³	Dry Reference mg/Rm ³ *	Dry Adjusted mg/Rm ³ **	Wet Reference mg/Rm ³ *	mg/s
1	<0.148	1.166	<0.075	<0.13	<0.11	<0.11	<2.04
2	<0.150	1.133	<0.079	<0.13	<0.11	<0.11	<2.12
3	<0.152	1.132	<0.078	<0.13	<0.11	<0.11	<2.01
Average			<0.077	<0.13	<0.11	<0.11	<2.06
Blank	<0.104						

Ammonia

Test No.	Ammonia Collected	Dry Volume Sampled	Ammonia Concentration				Ammonia Emission Rate
	mg	Rm ³ *	Actual mg/m ³	Dry Reference mg/Rm ³ *	Dry Adjusted mg/Rm ³ **	Wet Reference mg/Rm ³ *	mg/s
1	0.734	1.166	0.37	0.63	0.53	0.53	10.1
2	0.728	1.133	0.38	0.64	0.54	0.54	10.3
3	0.704	1.132	0.36	0.62	0.51	0.52	9.32
Average			0.37	0.63	0.53	0.53	9.91
Blank	<0.020						

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
Reworld Durham York Renewable Energy L.P.
Boiler No. 2
Combustion Gas Analyses

Data measured by the DYEC CEMS from December 2 to December 5, 2024

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (% , 1 hr Avg)	8.00	8.93	12.75
BH Outlet	Carbon Monoxide (mg/Rm ³ , 1 hr Avg) *	7	16	40
BH Outlet	Carbon Monoxide (mg/Rm ³ , 4 hr Avg) *	9.8	15.8	26.5
BH Outlet	Sulphur Dioxide (mg/Rm ³ , 1 hr Avg) *	0	1.71	27
BH Outlet	Sulphur Dioxide (mg/Rm ³ , 24 hr Avg) *	0	1.78	4.3
BH Outlet	Nitrogen Oxides (mg/Rm ³ , 1 hr Avg) *	97	109	130
BH Outlet	Nitrogen Oxides (mg/Rm ³ , 24 hr Avg) *	108	109	110
BH Outlet	Hydrogen Chloride (mg/Rm ³ , 1 hr Avg) *	0	2	5
BH Outlet	Hydrogen Chloride (mg/Rm ³ , 24 hr Avg) *	1.5	2.1	3.3
BH Outlet	Total Hydrocarbons (mg/Rm ³ , 1 hr Avg) *	0.1	0.3	0.6
Quench Inlet	Oxygen (% , 1 hr Avg)	7	8	12

Data measured by the Alliance CEMS on December 4, 2024

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.5	6.9
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.4	5.8
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0.4	1.0	6.3
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.6	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.5	5.2
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	3.1
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	2.9
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.4	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.5	0.9
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.3	0.7
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.4	0.8
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		0.4	

* Reference conditions, dry basis adjusted to 11% oxygen

TABLE 11
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Metals Analyses Test No. 1

Metal	Probe & Filter	Impingers	Total
	Hydrofluoric Acid Digest	& Rinses	Collected
	µg	µg	µg
Antimony	<0.20	<0.10	<0.20
Arsenic	<1.0	<0.50	<0.50
Barium	47.6	<2.5	47.6
Beryllium	<0.20	<0.10	<0.20
Cadmium	6.48	0.12	6.60
Chromium	2.80	0.72	3.52
Cobalt	<0.20	0.20	0.20
Copper	3.80	2.77	6.57
Lead	0.72	0.92	1.64
Mercury *	<0.022	<0.61	<0.61
Molybdenum	17.5	<0.10	17.5
Nickel	1.37	0.92	2.29
Selenium	<2.0	<1.0	<1.00
Silver	<0.20	<0.10	<0.20
Thallium	<0.20	<0.10	<0.20
Vanadium	<1.0	<0.50	<0.50
Zinc	40.3	7.00	47.3
Total			<137

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter	Impingers	Total
	Hydrofluoric Acid Digest	& Rinses	Collected
	µg	µg	µg
Antimony	<0.20	<0.10	<0.20
Arsenic	<1.0	<0.50	<0.50
Barium	49.3	<2.5	49.3
Beryllium	<0.20	<0.10	<0.20
Cadmium	0.23	0.22	0.45
Chromium	3.30	0.75	4.05
Cobalt	<0.20	0.27	0.27
Copper	3.50	2.65	6.15
Lead	0.56	1.30	1.86
Mercury *	0.12	<0.62	0.12
Molybdenum	18.1	<0.10	18.1
Nickel	1.64	2.73	4.37
Selenium	<2.0	<1.0	<1.00
Silver	<0.20	<0.10	<0.20
Thallium	<0.20	<0.10	<0.20
Vanadium	<1.0	<0.50	<0.50
Zinc	59.8	7.00	66.8
Total			<154

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter	Impingers	Total
	Hydrofluoric Acid Digest	& Rinses	Collected
	µg	µg	µg
Antimony	<0.20	<0.10	<0.20
Arsenic	<1.0	<0.50	<0.50
Barium	47.1	<2.5	47.1
Beryllium	<0.20	<0.10	<0.20
Cadmium	<0.10	0.14	0.14
Chromium	2.80	0.64	3.44
Cobalt	<0.20	<0.10	<0.10
Copper	3.80	5.23	9.03
Lead	0.56	1.07	1.63
Mercury *	<0.022	<0.56	<0.56
Molybdenum	16.9	<0.10	16.9
Nickel	1.37	0.61	1.98
Selenium	<2.0	<1.0	<1.00
Silver	<0.20	<0.10	<0.20
Thallium	<0.20	<0.10	<0.20
Vanadium	<1.0	<0.50	<0.50
Zinc	46.5	7.20	53.7
Total			<137

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 1

Metal	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^{3*}$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^{3**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^{3*}$	Emission Rate mg/s
Antimony	<0.20	<0.032	<0.055	<0.046	<0.046	<0.00088
Arsenic	<0.50	<0.081	<0.14	<0.11	<0.12	<0.0022
Barium	47.6	7.73	13.0	10.9	11.0	0.21
Beryllium	<0.20	<0.032	<0.055	<0.046	<0.046	<0.00088
Cadmium	6.60	1.07	1.81	1.51	1.52	0.029
Chromium	3.52	0.57	0.96	0.81	0.81	0.015
Cobalt	0.20	0.032	0.055	0.046	0.046	0.00088
Copper	6.57	1.07	1.80	1.51	1.52	0.029
Lead	1.64	0.27	0.45	0.38	0.38	0.0072
Mercury	<0.61	<0.099	<0.17	<0.14	<0.14	<0.0027
Molybdenum	17.5	2.84	4.79	4.02	4.04	0.077
Nickel	2.29	0.37	0.63	0.53	0.53	0.010
Selenium	<1.00	<0.16	<0.27	<0.23	<0.23	<0.0044
Silver	<0.20	<0.032	<0.055	<0.046	<0.046	<0.00088
Thallium	<0.20	<0.032	<0.055	<0.046	<0.046	<0.00088
Vanadium	<0.50	<0.081	<0.14	<0.11	<0.12	<0.0022
Zinc	47.3	7.68	13.0	10.9	10.9	0.21
Total	<137	<22.2	<37.4	<31.4	<31.5	<0.60

Dry Gas Volume Sampled (Rm^{3*}) :	3.650
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^{3}/s^*) :	16.0
Dry Adjusted Flowrate ($\text{Rm}^{3}/\text{s}^{**}$) :	19.1
Wet Reference Flowrate (Rm^{3}/s^*) :	19.0

* At 25°C and 1 atmosphere

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

TABLE 15
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 2

Metal	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^{3*}$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^{3**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^{3*}$	Emission Rate mg/s
Antimony	<0.20	<0.033	<0.057	<0.047	<0.048	<0.00086
Arsenic	<0.50	<0.084	<0.14	<0.12	<0.12	<0.0022
Barium	49.3	8.26	14.1	11.6	11.7	0.21
Beryllium	<0.20	<0.033	<0.057	<0.047	<0.048	<0.00086
Cadmium	0.45	0.075	0.13	0.11	0.11	0.0019
Chromium	4.05	0.68	1.16	0.95	0.96	0.017
Cobalt	0.27	0.045	0.077	0.064	0.064	0.0012
Copper	6.15	1.03	1.76	1.45	1.46	0.026
Lead	1.86	0.31	0.53	0.44	0.44	0.0080
Mercury	0.12	0.020	0.035	0.028	0.029	0.00052
Molybdenum	18.1	3.03	5.19	4.26	4.30	0.078
Nickel	4.37	0.73	1.25	1.03	1.04	0.019
Selenium	<1.00	<0.17	<0.29	<0.24	<0.24	<0.0043
Silver	<0.20	<0.033	<0.057	<0.047	<0.048	<0.00086
Thallium	<0.20	<0.033	<0.057	<0.047	<0.048	<0.00086
Vanadium	<0.50	<0.084	<0.14	<0.12	<0.12	<0.0022
Zinc	66.8	11.2	19.2	15.7	15.9	0.29
Total	<154	<25.8	<44.3	<36.3	<36.7	<0.66

Dry Gas Volume Sampled (Rm^{3*}) :	3.485
Actual Flowrate (m^3/s) :	25.7
Dry Reference Flowrate (Rm^{3}/s^*) :	15.0
Dry Adjusted Flowrate ($\text{Rm}^{3}/\text{s}^{**}$) :	18.3
Wet Reference Flowrate (Rm^{3}/s^*) :	18.1

* At 25°C and 1 atmosphere

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

TABLE 16
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 3

Metal	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3^{**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Emission Rate mg/s
Antimony	<0.20	<0.032	<0.055	<0.045	<0.047	<0.00088
Arsenic	<0.50	<0.080	<0.14	<0.11	<0.12	<0.0022
Barium	47.1	7.55	13.1	10.7	11.0	0.21
Beryllium	<0.20	<0.032	<0.055	<0.045	<0.047	<0.00088
Cadmium	0.14	0.022	0.039	0.032	0.033	0.00062
Chromium	3.44	0.55	0.95	0.78	0.81	0.015
Cobalt	<0.10	<0.016	<0.028	<0.023	<0.023	<0.00044
Copper	9.03	1.45	2.50	2.05	2.12	0.040
Lead	1.63	0.26	0.45	0.37	0.38	0.0072
Mercury	<0.56	<0.090	<0.16	<0.13	<0.13	<0.0025
Molybdenum	16.9	2.71	4.68	3.84	3.96	0.074
Nickel	1.98	0.32	0.55	0.45	0.46	0.0087
Selenium	<1.00	<0.16	<0.28	<0.23	<0.23	<0.0044
Silver	<0.20	<0.032	<0.055	<0.045	<0.047	<0.00088
Thallium	<0.20	<0.032	<0.055	<0.045	<0.047	<0.00088
Vanadium	<0.50	<0.080	<0.14	<0.11	<0.12	<0.0022
Zinc	53.7	8.60	14.9	12.2	12.6	0.24
Total	<137	<22.0	<38.1	<31.2	<32.2	<0.61

Dry Gas Volume Sampled (Rm^3^*) :	3.609
Actual Flowrate (m^3/s) :	27.5
Dry Reference Flowrate (Rm^3/s^*) :	15.9
Dry Adjusted Flowrate ($\text{Rm}^3/\text{s}^{**}$) :	19.4
Wet Reference Flowrate (Rm^3/s^*) :	18.8

* At 25°C and 1 atmosphere

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

TABLE 17
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Metal Actual Concentrations

Metal	Test No. 1	Actual Concentration		Average	Coefficient of Variation
	$\mu\text{g}/\text{m}^3$	Test No. 2	Test No. 3		
	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	%
Antimony	<0.032	<0.033	<0.032	<0.033	2.3
Arsenic	<0.081	<0.084	<0.080	<0.082	2.3
Barium	7.73	8.26	7.55	7.84	4.7
Beryllium	<0.032	<0.033	<0.032	<0.033	2.3
Cadmium	1.07	0.075	0.022	0.39	152
Chromium	0.57	0.68	0.55	0.60	11.4
Cobalt	0.032	0.045	<0.016	<0.031	46.9
Copper	1.07	1.03	1.45	1.18	19.5
Lead	0.27	0.31	0.26	0.28	9.9
Mercury	<0.099	0.020	<0.090	<0.070	61.8
Molybdenum	2.84	3.03	2.71	2.86	5.7
Nickel	0.37	0.73	0.32	0.47	47.6
Selenium	<0.16	<0.17	<0.16	<0.16	2.3
Silver	<0.032	<0.033	<0.032	<0.033	2.3
Thallium	<0.032	<0.033	<0.032	<0.033	2.3
Vanadium	<0.081	<0.084	<0.080	<0.082	2.3
Zinc	7.68	11.2	8.60	9.16	19.9
Total	<22.2	<25.8	<22.0	<23.3	9.3

TABLE 18
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Metal Dry Reference Concentrations

Metal	Dry Reference Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	µg/Rm ³ *	µg/Rm ³ *	µg/Rm ³ *	µg/Rm ³ *	%
Antimony	<0.055	<0.057	<0.055	<0.056	2.4
Arsenic	<0.14	<0.14	<0.14	<0.14	2.4
Barium	13.0	14.1	13.1	13.4	4.7
Beryllium	<0.055	<0.057	<0.055	<0.056	2.4
Cadmium	1.81	0.13	0.039	0.66	151
Chromium	0.96	1.16	0.95	1.03	11.4
Cobalt	0.055	0.077	<0.028	<0.053	46.7
Copper	1.80	1.76	2.50	2.02	20.6
Lead	0.45	0.53	0.45	0.48	10.1
Mercury	<0.17	0.035	<0.16	<0.12	61.5
Molybdenum	4.79	5.19	4.68	4.89	5.5
Nickel	0.63	1.25	0.55	0.81	47.7
Selenium	<0.27	<0.29	<0.28	<0.28	2.4
Silver	<0.055	<0.057	<0.055	<0.056	2.4
Thallium	<0.055	<0.057	<0.055	<0.056	2.4
Vanadium	<0.14	<0.14	<0.14	<0.14	2.4
Zinc	13.0	19.2	14.9	15.7	20.3
Total	<37.4	<44.3	<38.1	<39.9	9.5

* At 25°C and 1 atmosphere

TABLE 19
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Metal Dry Adjusted Concentrations

Metal	Dry Adjusted Concentration				Coefficient of Variation %
	Test No. 1 $\mu\text{g}/\text{Rm}^{3**}$	Test No. 2 $\mu\text{g}/\text{Rm}^{3**}$	Test No. 3 $\mu\text{g}/\text{Rm}^{3**}$	Average $\mu\text{g}/\text{Rm}^{3**}$	
Antimony	<0.046	<0.047	<0.045	<0.046	1.8
Arsenic	<0.11	<0.12	<0.11	<0.12	1.8
Barium	10.9	11.6	10.7	11.1	4.2
Beryllium	<0.046	<0.047	<0.045	<0.046	1.8
Cadmium	1.51	0.11	0.032	0.55	152
Chromium	0.81	0.95	0.78	0.85	10.9
Cobalt	0.046	0.064	<0.023	<0.044	46.5
Copper	1.51	1.45	2.05	1.67	19.9
Lead	0.38	0.44	0.37	0.39	9.4
Mercury	<0.14	0.028	<0.13	<0.099	61.9
Molybdenum	4.02	4.26	3.84	4.04	5.2
Nickel	0.53	1.03	0.45	0.67	47.1
Selenium	<0.23	<0.24	<0.23	<0.23	1.8
Silver	<0.046	<0.047	<0.045	<0.046	1.8
Thallium	<0.046	<0.047	<0.045	<0.046	1.8
Vanadium	<0.11	<0.12	<0.11	<0.12	1.8
Zinc	10.9	15.7	12.2	12.9	19.4
Total	<31.4	<36.3	<31.2	<32.9	8.8

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

TABLE 20
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Metal Wet Reference Concentrations

Metal	Wet Reference Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	µg/Rm ³ *	µg/Rm ³ *	µg/Rm ³ *	µg/Rm ³ *	%
Antimony	<0.046	<0.048	<0.047	<0.047	1.5
Arsenic	<0.12	<0.12	<0.12	<0.12	1.5
Barium	11.0	11.7	11.0	11.2	3.7
Beryllium	<0.046	<0.048	<0.047	<0.047	1.5
Cadmium	1.52	0.11	0.033	0.55	152
Chromium	0.81	0.96	0.81	0.86	10.3
Cobalt	0.046	0.064	<0.023	<0.045	45.8
Copper	1.52	1.46	2.12	1.70	21.4
Lead	0.38	0.44	0.38	0.40	9.0
Mercury	<0.14	0.029	<0.13	<0.10	61.9
Molybdenum	4.04	4.30	3.96	4.10	4.4
Nickel	0.53	1.04	0.46	0.68	46.5
Selenium	<0.23	<0.24	<0.23	<0.23	1.5
Silver	<0.046	<0.048	<0.047	<0.047	1.5
Thallium	<0.046	<0.048	<0.047	<0.047	1.5
Vanadium	<0.12	<0.12	<0.12	<0.12	1.5
Zinc	10.9	15.9	12.6	13.1	19.3
Total	<31.5	<36.7	<32.2	<33.5	8.4

* At 25°C and 1 atmosphere

TABLE 21
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Metal Emission Rates

Metal	Emission Rate				Coefficient of Variation %
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	
Antimony	<0.00088	<0.00086	<0.00088	<0.00087	1.2
Arsenic	<0.0022	<0.0022	<0.0022	<0.0022	1.2
Barium	0.21	0.21	0.21	0.21	1.2
Beryllium	<0.00088	<0.00086	<0.00088	<0.00087	1.2
Cadmium	0.029	0.0019	0.00062	0.010	152
Chromium	0.015	0.017	0.015	0.016	7.8
Cobalt	0.00088	0.0012	<0.00044	<0.00083	44.0
Copper	0.029	0.026	0.040	0.032	22.4
Lead	0.0072	0.0080	0.0072	0.0075	6.4
Mercury	<0.0027	0.00052	<0.0025	<0.0019	62.9
Molybdenum	0.077	0.078	0.074	0.076	2.3
Nickel	0.010	0.019	0.0087	0.013	43.8
Selenium	<0.0044	<0.0043	<0.0044	<0.0044	1.2
Silver	<0.00088	<0.00086	<0.00088	<0.00087	1.2
Thallium	<0.00088	<0.00086	<0.00088	<0.00087	1.2
Vanadium	<0.0022	<0.0022	<0.0022	<0.0022	1.2
Zinc	0.21	0.29	0.24	0.24	16.6
Total	<0.60	<0.66	<0.61	<0.62	5.8

TABLE 22
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Metal Emission Data

Metal	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^{3*}$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^{3**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^{3*}$	Emission Rate mg/s
Antimony	<0.033	<0.056	<0.046	<0.047	<0.00087
Arsenic	<0.082	<0.14	<0.12	<0.12	<0.0022
Barium	7.84	13.4	11.1	11.2	0.21
Beryllium	<0.033	<0.056	<0.046	<0.047	<0.00087
Cadmium	0.39	0.66	0.55	0.55	0.010
Chromium	0.60	1.03	0.85	0.86	0.016
Cobalt	<0.031	<0.053	<0.044	<0.045	<0.00083
Copper	1.18	2.02	1.67	1.70	0.032
Lead	0.28	0.48	0.39	0.40	0.0075
Mercury	<0.070	<0.12	<0.099	<0.10	<0.0019
Molybdenum	2.86	4.89	4.04	4.10	0.076
Nickel	0.47	0.81	0.67	0.68	0.013
Selenium	<0.16	<0.28	<0.23	<0.23	<0.0044
Silver	<0.033	<0.056	<0.046	<0.047	<0.00087
Thallium	<0.033	<0.056	<0.046	<0.047	<0.00087
Vanadium	<0.082	<0.14	<0.12	<0.12	<0.0022
Zinc	9.16	15.7	12.9	13.1	0.24
Total	<23.3	<39.9	<32.9	<33.5	<0.62

* At 25°C and 1 atmosphere

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

TABLE 23
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Blank Train Metal Analyses

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.20	<0.10	<0.20
Arsenic	<1.0	<0.50	<0.50
Barium	49.7	<2.5	49.7
Beryllium	<0.20	<0.10	<0.20
Cadmium	<0.10	<0.050	<0.10
Chromium	3.40	<0.50	3.40
Cobalt	<0.20	<0.10	<0.10
Copper	4.60	1.72	6.32
Lead	<0.50	1.30	1.30
Mercury *	<0.022	<0.23	<0.23
Molybdenum	18.0	<0.10	18.0
Nickel	1.00	0.17	1.17
Selenium	<2.0	<1.0	<1.00
Silver	<0.20	<0.10	<0.20
Thallium	<0.20	<0.10	<0.20
Vanadium	<1.0	<0.50	<0.50
Zinc	32.7	<3.0	32.7
Total			<116

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	ng/s
Tetrachlorodibenzo-p-dioxins	79.4	0.010	0.018	0.015	0.015	0.28
Pentachlorodibenzo-p-dioxins	108	0.014	0.024	0.020	0.020	0.38
Hexachlorodibenzo-p-dioxins	252	0.033	0.056	0.047	0.048	0.89
Heptachlorodibenzo-p-dioxins	235	0.031	0.052	0.044	0.044	0.83
Octachlorodibenzo-p-dioxin	111	0.015	0.025	0.021	0.021	0.39
Total	785	0.10	0.18	0.15	0.15	2.79

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	ng/s
Tetrachlorodibenzofurans	20.4	0.0027	0.0046	0.0038	0.0038	0.072
Pentachlorodibenzofurans	57.3	0.0075	0.013	0.011	0.011	0.20
Hexachlorodibenzofurans	51.4	0.0068	0.011	0.0095	0.0097	0.18
Heptachlorodibenzofurans	51.2	0.0067	0.011	0.0095	0.0097	0.18
Octachlorodibenzofuran	27.5	0.0036	0.0061	0.0051	0.0052	0.098
Total	208	0.027	0.046	0.039	0.039	0.74

Dry Gas Volume Sampled (Rm ^{3*}) :	4.483
Actual Flowrate (m ³ /s) :	27.0
Dry Reference Flowrate (Rm ³ /s*) :	15.9
Dry Adjusted Flowrate (Rm ³ /s**) :	19.1
Wet Reference Flowrate (Rm ³ /s*) :	18.8

* At 25°C and 1 atmosphere

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

TABLE 25
Reworld Durham York Renewable Energy L.P.
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/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	ng/s
Tetrachlorodibenzo-p-dioxins	80.4	0.011	0.018	0.015	0.015	0.28
Pentachlorodibenzo-p-dioxins	38.1	0.0051	0.0086	0.0071	0.0072	0.13
Hexachlorodibenzo-p-dioxins	222	0.030	0.050	0.041	0.042	0.78
Heptachlorodibenzo-p-dioxins	174	0.023	0.039	0.032	0.033	0.61
Octachlorodibenzo-p-dioxin	89.3	0.012	0.020	0.017	0.017	0.31
Total	603.8	0.080	0.14	0.11	0.11	2.11

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	ng/s
Tetrachlorodibenzofurans	10.1	0.0013	0.0023	0.0019	0.0019	0.035
Pentachlorodibenzofurans	17.9	0.0024	0.0040	0.0033	0.0034	0.063
Hexachlorodibenzofurans	47.9	0.0064	0.011	0.0089	0.0091	0.17
Heptachlorodibenzofurans	36.5	0.0049	0.0082	0.0068	0.0069	0.13
Octachlorodibenzofuran	17.8	0.0024	0.0040	0.0033	0.0034	0.062
Total	130	0.017	0.029	0.024	0.025	0.46

Dry Gas Volume Sampled (Rm ^{3*}) :	4.428
Actual Flowrate (m ³ /s) :	26.3
Dry Reference Flowrate (Rm ³ /s*) :	15.5
Dry Adjusted Flowrate (Rm ³ /s**) :	18.8
Wet Reference Flowrate (Rm ³ /s*) :	18.4

* At 25°C and 1 atmosphere

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

TABLE 26
Reworld Durham York Renewable Energy L.P.
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	Average	
	ng/m ³	ng/m ³	ng/m ³	%
Tetrachlorodibenzo-p-dioxins	0.010	0.011	0.011	1.8
Pentachlorodibenzo-p-dioxins	0.014	0.0051	0.0096	66.9
Hexachlorodibenzo-p-dioxins	0.033	0.030	0.031	8.0
Heptachlorodibenzo-p-dioxins	0.031	0.023	0.027	20.2
Octachlorodibenzo-p-dioxin	0.015	0.012	0.013	14.4
Total	0.10	0.080	0.092	17.6

Furans

Congener Group	Actual Concentration			Coefficient of Variation
	Test No. 1	Test No. 2	Average	
	ng/m ³	ng/m ³	ng/m ³	%
Tetrachlorodibenzofurans	0.0027	0.0013	0.0020	46.9
Pentachlorodibenzofurans	0.0075	0.0024	0.0050	73.4
Hexachlorodibenzofurans	0.0068	0.0064	0.0066	4.1
Heptachlorodibenzofurans	0.0067	0.0049	0.0058	22.8
Octachlorodibenzofuran	0.0036	0.0024	0.0030	29.4
Total	0.027	0.017	0.022	31.6

TABLE 27
Reworld Durham York Renewable Energy L.P.
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	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Tetrachlorodibenzo-p-dioxins	0.018	0.018	0.018	1.8
Pentachlorodibenzo-p-dioxins	0.024	0.0086	0.016	67.0
Hexachlorodibenzo-p-dioxins	0.056	0.050	0.053	8.1
Heptachlorodibenzo-p-dioxins	0.052	0.039	0.046	20.2
Octachlorodibenzo-p-dioxin	0.025	0.020	0.022	14.5
Total	0.18	0.14	0.16	17.6

Furans

Congener Group	Dry Reference Concentration			Coefficient of Variation
	Test No. 1	Test No. 2	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Tetrachlorodibenzofurans	0.0046	0.0023	0.0034	47.0
Pentachlorodibenzofurans	0.013	0.0040	0.0084	73.5
Hexachlorodibenzofurans	0.011	0.011	0.011	4.1
Heptachlorodibenzofurans	0.011	0.0082	0.0098	22.9
Octachlorodibenzofuran	0.0061	0.0040	0.0051	29.4
Total	0.046	0.029	0.038	31.6

* At 25°C and 1 atmosphere

TABLE 28
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration			Coefficient of Variation %
	Test No. 1 ng/Rm ³ *	Test No. 2 ng/Rm ³ *	Average ng/Rm ³ *	
Tetrachlorodibenzo-p-dioxins	0.015	0.015	0.015	1.1
Pentachlorodibenzo-p-dioxins	0.020	0.0071	0.014	67.5
Hexachlorodibenzo-p-dioxins	0.047	0.041	0.044	8.8
Heptachlorodibenzo-p-dioxins	0.044	0.032	0.038	20.9
Octachlorodibenzo-p-dioxin	0.021	0.017	0.019	15.1
Total	0.15	0.11	0.13	18.3

Furans

Congener Group	Dry Adjusted Concentration			Coefficient of Variation %
	Test No. 1 ng/Rm ³ *	Test No. 2 ng/Rm ³ *	Average ng/Rm ³ *	
Tetrachlorodibenzofurans	0.0038	0.0019	0.0028	47.6
Pentachlorodibenzofurans	0.011	0.0033	0.0070	74.0
Hexachlorodibenzofurans	0.0095	0.0089	0.0092	4.8
Heptachlorodibenzofurans	0.0095	0.0068	0.0082	23.5
Octachlorodibenzofuran	0.0051	0.0033	0.0042	30.1
Total	0.039	0.024	0.031	32.3

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

TABLE 29
Reworld Durham York Renewable Energy L.P.
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	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Tetrachlorodibenzo-p-dioxins	0.015	0.015	0.015	1.5
Pentachlorodibenzo-p-dioxins	0.020	0.0072	0.014	67.2
Hexachlorodibenzo-p-dioxins	0.048	0.042	0.045	8.4
Heptachlorodibenzo-p-dioxins	0.044	0.033	0.039	20.5
Octachlorodibenzo-p-dioxin	0.021	0.017	0.019	14.7
Total	0.15	0.11	0.13	17.9

Furans

Congener Group	Wet Reference Concentration			Coefficient of Variation
	Test No. 1	Test No. 2	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Tetrachlorodibenzofurans	0.0038	0.0019	0.0029	47.2
Pentachlorodibenzofurans	0.011	0.0034	0.0071	73.7
Hexachlorodibenzofurans	0.0097	0.0091	0.0094	4.4
Heptachlorodibenzofurans	0.0097	0.0069	0.0083	23.1
Octachlorodibenzofuran	0.0052	0.0034	0.0043	29.7
Total	0.039	0.025	0.032	31.9

* At 25°C and 1 atmosphere

TABLE 30
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate			Coefficient of Variation %
	Test No. 1 ng/s	Test No. 2 ng/s	Average ng/s	
Tetrachlorodibenzo-p-dioxins	0.28	0.28	0.28	0.0
Pentachlorodibenzo-p-dioxins	0.38	0.13	0.26	68.4
Hexachlorodibenzo-p-dioxins	0.89	0.78	0.84	9.9
Heptachlorodibenzo-p-dioxins	0.83	0.61	0.72	22.0
Octachlorodibenzo-p-dioxin	0.39	0.31	0.35	16.2
Total	2.79	2.11	2.45	19.4

Furans

Congener Group	Emission Rate			Coefficient of Variation %
	Test No. 1 ng/s	Test No. 2 ng/s	Average ng/s	
Tetrachlorodibenzofurans	0.072	0.035	0.054	48.6
Pentachlorodibenzofurans	0.20	0.063	0.13	74.8
Hexachlorodibenzofurans	0.18	0.17	0.17	5.9
Heptachlorodibenzofurans	0.18	0.13	0.15	24.6
Octachlorodibenzofuran	0.098	0.062	0.080	31.2
Total	0.74	0.46	0.60	33.3

TABLE 31
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.011	0.018	0.015	0.015	0.28
Pentachlorodibenzo-p-dioxins	0.0096	0.016	0.014	0.014	0.26
Hexachlorodibenzo-p-dioxins	0.031	0.053	0.044	0.045	0.84
Heptachlorodibenzo-p-dioxins	0.027	0.046	0.038	0.039	0.72
Octachlorodibenzo-p-dioxin	0.013	0.022	0.019	0.019	0.35
Total	0.092	0.16	0.13	0.13	2.45

Furans

Congener Group	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate ng/s
Tetrachlorodibenzofurans	0.0020	0.0034	0.0028	0.0029	0.054
Pentachlorodibenzofurans	0.0050	0.0084	0.0070	0.0071	0.13
Hexachlorodibenzofurans	0.0066	0.011	0.0092	0.0094	0.17
Heptachlorodibenzofurans	0.0058	0.0098	0.0082	0.0083	0.15
Octachlorodibenzofuran	0.0030	0.0051	0.0042	0.0043	0.080
Total	0.022	0.038	0.031	0.032	0.60

* At 25°C and 1 atmosphere

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

TABLE 32
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Method Blank pg
Tetrachlorodibenzo-p-dioxins	<1.4	<2.0
Pentachlorodibenzo-p-dioxins	<1.3	<2.1
Hexachlorodibenzo-p-dioxins	4.92	<1.5
Heptachlorodibenzo-p-dioxins	3.59	3.43
Octachlorodibenzo-p-dioxin	13.6	6.52
Total	<24.8	<15.6

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<1.7	<2.0
Pentachlorodibenzofurans	<0.77	<1.1
Hexachlorodibenzofurans	<1.3	<1.2
Heptachlorodibenzofurans	<1.2	<1.8
Octachlorodibenzofuran	<2.9	<2.2
Total	<7.87	<8.30

"<" 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 33
Reworld Durham York Renewable Energy L.P.
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/m ³	pg/Rm ^{3*}	pg/Rm ^{3**}	pg/Rm ^{3*}	ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.9	<0.25	<0.42	<0.35	<0.36	<0.0067
12378-pentachlorodibenzo-p-dioxin	3.57	0.47	0.80	0.66	0.67	0.013
123478-hexachlorodibenzo-p-dioxin	<5.7	<0.75	<1.27	<1.06	<1.08	<0.020
123678-hexachlorodibenzo-p-dioxin	<16	<2.10	<3.57	<2.97	<3.02	<0.057
123789-hexachlorodibenzo-p-dioxin	<8.8	<1.16	<1.96	<1.63	<1.66	<0.031
1234678-heptachlorodibenzo-p-dioxin	121	15.9	27.0	22.5	22.8	0.43
Octachlorodibenzo-p-dioxin	111	14.6	24.8	20.6	20.9	0.39
2378-tetrachlorodibenzofuran	<1.7	<0.22	<0.38	<0.32	<0.32	<0.0060
12378-pentachlorodibenzofuran	3.86	0.51	0.86	0.72	0.73	0.014
23478-pentachlorodibenzofuran	7.27	0.95	1.62	1.35	1.37	0.026
123478-hexachlorodibenzofuran	<5.4	<0.71	<1.20	<1.00	<1.02	<0.019
123678-hexachlorodibenzofuran	8.89	1.17	1.98	1.65	1.68	0.032
234678-hexachlorodibenzofuran	13.8	1.81	3.08	2.56	2.60	0.049
123789-hexachlorodibenzofuran	3.64	0.48	0.81	0.68	0.69	0.013
1234678-heptachlorodibenzofuran	32.7	4.30	7.29	6.07	6.17	0.12
1234789-heptachlorodibenzofuran	4.45	0.58	0.99	0.83	0.84	0.016
Octachlorodibenzofuran	27.5	3.61	6.13	5.11	5.19	0.098
PCB 81	<4.7	<0.62	<1.05	<0.87	<0.89	<0.017
PCB 77	181	23.8	40.4	33.6	34.1	0.64
PCB 123	33.6	4.41	7.49	6.24	6.34	0.12
PCB 118	2530	332	564	470	477	8.97
PCB 114	56.0	7.36	12.5	10.4	10.6	0.20
PCB 105	642	84.3	143	119	121	2.28
PCB 126	<11.0	<1.44	<2.45	<2.04	<2.08	<0.039
PCB 167	18.0	2.36	4.02	3.34	3.40	0.064
PCB 156/157	41.5	5.45	9.26	7.71	7.83	0.15
PCB 169	<3.9	<0.51	<0.87	<0.72	<0.74	<0.014
PCB 189	<3.7	<0.49	<0.83	<0.69	<0.70	<0.013
Total Dioxins & Furans Only	<377	<49.5	<84.1	<70.0	<71.2	<1.34
Total PCBs Only	<3525	<463	<786	<655	<665	<12.5
Total Dioxins & Furans and PCBs	<3903	<513	<871	<725	<736	<13.8

Dry Gas Volume Sampled (Rm ^{3*}) :	4.483
Actual Flowrate (m ³ /s) :	27.0
Dry Reference Flowrate (Rm ³ /s*) :	15.9
Dry Adjusted Flowrate (Rm ³ /s**) :	19.1
Wet Reference Flowrate (Rm ³ /s*) :	18.8

* At 25°C and 1 atmosphere

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

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

TABLE 34
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected pg	Actual Concentration pg/m ³	Dry Reference Concentration pg/Rm ^{3*}	Dry Adjusted Concentration pg/Rm ^{3**}	Wet Reference Concentration pg/Rm ^{3*}	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.6	<0.21	<0.36	<0.30	<0.30	<0.0056
12378-pentachlorodibenzo-p-dioxin	3.36	0.45	0.76	0.63	0.64	0.012
123478-hexachlorodibenzo-p-dioxin	5.19	0.69	1.17	0.97	0.99	0.018
123678-hexachlorodibenzo-p-dioxin	14.5	1.93	3.27	2.70	2.76	0.051
123789-hexachlorodibenzo-p-dioxin	7.45	0.99	1.68	1.39	1.42	0.026
1234678-heptachlorodibenzo-p-dioxin	89.6	11.9	20.2	16.7	17.0	0.31
Octachlorodibenzo-p-dioxin	89.3	11.9	20.2	16.6	17.0	0.31
2378-tetrachlorodibenzofuran	<2.9	<0.39	<0.65	<0.54	<0.55	<0.010
12378-pentachlorodibenzofuran	<4.4	<0.59	<0.99	<0.82	<0.84	<0.015
23478-pentachlorodibenzofuran	<4.9	<0.65	<1.11	<0.91	<0.93	<0.017
123478-hexachlorodibenzofuran	<4.0	<0.53	<0.90	<0.74	<0.76	<0.014
123678-hexachlorodibenzofuran	<5.9	<0.79	<1.33	<1.10	<1.12	<0.021
234678-hexachlorodibenzofuran	12.2	1.62	2.76	2.27	2.32	0.043
123789-hexachlorodibenzofuran	1.89	0.25	0.43	0.35	0.36	0.0066
1234678-heptachlorodibenzofuran	22.2	2.95	5.01	4.13	4.22	0.078
1234789-heptachlorodibenzofuran	5.97	0.79	1.35	1.11	1.14	0.021
Octachlorodibenzofuran	17.8	2.37	4.02	3.31	3.39	0.062
PCB 81	<3.3	<0.44	<0.75	<0.61	<0.63	<0.012
PCB 77	81.2	10.8	18.3	15.1	15.4	0.28
PCB 123	15.8	2.10	3.57	2.94	3.01	0.055
PCB 118	1270	169	287	236	242	4.45
PCB 114	27.6	3.67	6.23	5.14	5.25	0.097
PCB 105	326	43.4	73.6	60.7	62.0	1.14
PCB 126	3.23	0.43	0.73	0.60	0.61	0.011
PCB 167	11.9	1.58	2.69	2.22	2.26	0.042
PCB 156/157	24.0	3.19	5.42	4.47	4.57	0.084
PCB 169	<3.1	<0.41	<0.70	<0.58	<0.59	<0.011
PCB 189	<2.7	<0.36	<0.61	<0.50	<0.51	<0.0095
Total Dioxins & Furans Only	<293.2	<39.02	<66.21	<54.58	<55.77	<1.026
Total PCBs Only	<1769	<235	<399	<329	<337	<6.19
Total Dioxins & Furans and PCBs	<2062	<274	<466	<384	<392	<7.22

Dry Gas Volume Sampled (Rm ^{3*}) :	4.428
Actual Flowrate (m ³ /s) :	26.3
Dry Reference Flowrate (Rm ³ /s*) :	15.5
Dry Adjusted Flowrate (Rm ³ /s**) :	18.8
Wet Reference Flowrate (Rm ³ /s*) :	18.4

* At 25°C and 1 atmosphere

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

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

TABLE 35
Reworld Durham York Renewable Energy L.P.
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	Average	
	pg/m ³	pg/m ³	pg/m ³	%
2378-tetrachlorodibenzo-p-dioxin	<0.25	<0.21	<0.23	11.2
12378-pentachlorodibenzo-p-dioxin	0.47	0.45	0.46	3.4
123478-hexachlorodibenzo-p-dioxin	<0.75	0.69	<0.72	5.7
123678-hexachlorodibenzo-p-dioxin	<2.10	1.93	<2.02	6.0
123789-hexachlorodibenzo-p-dioxin	<1.16	0.99	<1.07	10.8
1234678-heptachlorodibenzo-p-dioxin	15.9	11.9	13.9	20.2
Octachlorodibenzo-p-dioxin	14.6	11.9	13.2	14.4
2378-tetrachlorodibenzofuran	<0.22	<0.39	<0.30	37.8
12378-pentachlorodibenzofuran	0.51	<0.59	<0.55	10.2
23478-pentachlorodibenzofuran	0.95	<0.65	<0.80	26.6
123478-hexachlorodibenzofuran	<0.71	<0.53	<0.62	20.2
123678-hexachlorodibenzofuran	1.17	<0.79	<0.98	27.7
234678-hexachlorodibenzofuran	1.81	1.62	1.72	7.8
123789-hexachlorodibenzofuran	0.48	0.25	0.36	43.9
1234678-heptachlorodibenzofuran	4.30	2.95	3.63	26.2
1234789-heptachlorodibenzofuran	0.58	0.79	0.69	21.5
Octachlorodibenzofuran	3.61	2.37	2.99	29.4
PCB 81	<0.62	<0.44	<0.53	23.8
PCB 77	23.8	10.8	17.3	53.0
PCB 123	4.41	2.10	3.26	50.1
PCB 118	332	169	251	46.1
PCB 114	7.36	3.67	5.51	47.2
PCB 105	84.3	43.4	63.9	45.3
PCB 126	<1.44	0.43	<0.94	76.6
PCB 167	2.36	1.58	1.97	28.0
PCB 156/157	5.45	3.19	4.32	36.9
PCB 169	<0.51	<0.41	<0.46	15.2
PCB 189	<0.49	<0.36	<0.42	21.2
Total Dioxins & Furans Only	<49.5	<39.0	<44.3	16.8
Total PCBs Only	<463	<235	<349	46.1
Total Dioxins & Furans and PCBs	<513	<274	<394	42.8

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

TABLE 36
Reworld Durham York Renewable Energy L.P.
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	Average	
	pg/Rm ³ *	pg/Rm ³ *	pg/Rm ³ *	%
2378-tetrachlorodibenzo-p-dioxin	<0.42	<0.36	<0.39	11.3
12378-pentachlorodibenzo-p-dioxin	0.80	0.76	0.78	3.4
123478-hexachlorodibenzo-p-dioxin	<1.27	1.17	<1.22	5.8
123678-hexachlorodibenzo-p-dioxin	<3.57	3.27	<3.42	6.1
123789-hexachlorodibenzo-p-dioxin	<1.96	1.68	<1.82	10.9
1234678-heptachlorodibenzo-p-dioxin	27.0	20.2	23.6	20.2
Octachlorodibenzo-p-dioxin	24.8	20.2	22.5	14.5
2378-tetrachlorodibenzofuran	<0.38	<0.65	<0.52	37.7
12378-pentachlorodibenzofuran	0.86	<0.99	<0.93	10.1
23478-pentachlorodibenzofuran	1.62	<1.11	<1.36	26.7
123478-hexachlorodibenzofuran	<1.20	<0.90	<1.05	20.2
123678-hexachlorodibenzofuran	1.98	<1.33	<1.66	27.8
234678-hexachlorodibenzofuran	3.08	2.76	2.92	7.8
123789-hexachlorodibenzofuran	0.81	0.43	0.62	44.0
1234678-heptachlorodibenzofuran	7.29	5.01	6.15	26.2
1234789-heptachlorodibenzofuran	0.99	1.35	1.17	21.5
Octachlorodibenzofuran	6.13	4.02	5.08	29.4
PCB 81	<1.05	<0.75	<0.90	23.9
PCB 77	40.4	18.3	29.4	53.1
PCB 123	7.49	3.57	5.53	50.2
PCB 118	564	287	426	46.1
PCB 114	12.5	6.23	9.36	47.3
PCB 105	143	73.6	108	45.4
PCB 126	<2.45	0.73	<1.59	76.6
PCB 167	4.02	2.69	3.35	28.0
PCB 156/157	9.26	5.42	7.34	37.0
PCB 169	<0.87	<0.70	<0.79	15.3
PCB 189	<0.83	<0.61	<0.72	21.2
Total Dioxins & Furans Only	<84.1	<66.2	<75.2	16.9
Total PCBs Only	<786	<399	<593	46.1
Total Dioxins & Furans and PCBs	<871	<466	<668	42.8

* At 25°C and 1 atmosphere

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

TABLE 37
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration			Coefficient of Variation
	Test No. 1 pg/Rm ³ *	Test No. 2 pg/Rm ³ *	Average pg/Rm ³ *	
2378-tetrachlorodibenzo-p-dioxin	<0.35	<0.30	<0.33	11.9
12378-pentachlorodibenzo-p-dioxin	0.66	0.63	0.64	4.1
123478-hexachlorodibenzo-p-dioxin	<1.06	0.97	<1.01	6.4
123678-hexachlorodibenzo-p-dioxin	<2.97	2.70	<2.84	6.8
123789-hexachlorodibenzo-p-dioxin	<1.63	1.39	<1.51	11.6
1234678-heptachlorodibenzo-p-dioxin	22.5	16.7	19.6	20.9
Octachlorodibenzo-p-dioxin	20.6	16.6	18.6	15.1
2378-tetrachlorodibenzofuran	<0.32	<0.54	<0.43	37.1
12378-pentachlorodibenzofuran	0.72	<0.82	<0.77	9.4
23478-pentachlorodibenzofuran	1.35	<0.91	<1.13	27.4
123478-hexachlorodibenzofuran	<1.00	<0.74	<0.87	20.9
123678-hexachlorodibenzofuran	1.65	<1.10	<1.37	28.4
234678-hexachlorodibenzofuran	2.56	2.27	2.42	8.5
123789-hexachlorodibenzofuran	0.68	0.35	0.51	44.6
1234678-heptachlorodibenzofuran	6.07	4.13	5.10	26.9
1234789-heptachlorodibenzofuran	0.83	1.11	0.97	20.8
Octachlorodibenzofuran	5.11	3.31	4.21	30.1
PCB 81	<0.87	<0.61	<0.74	24.6
PCB 77	33.6	15.1	24.4	53.7
PCB 123	6.24	2.94	4.59	50.8
PCB 118	470	236	353	46.7
PCB 114	10.4	5.14	7.77	47.9
PCB 105	119	60.7	90.0	46.0
PCB 126	<2.04	0.60	<1.32	77.1
PCB 167	3.34	2.22	2.78	28.7
PCB 156/157	7.71	4.47	6.09	37.6
PCB 169	<0.72	<0.58	<0.65	16.0
PCB 189	<0.69	<0.50	<0.59	21.9
Total Dioxins & Furans Only	<70.0	<54.6	<62.3	17.5
Total PCBs Only	<655	<329	<492	46.8
Total Dioxins & Furans and PCBs	<725	<384	<554	43.5

* 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 38
Reworld Durham York Renewable Energy L.P.
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	Average	
	pg/Rm ³ *	pg/Rm ³ *	pg/Rm ³ *	%
2378-tetrachlorodibenzo-p-dioxin	<0.36	<0.30	<0.33	11.5
12378-pentachlorodibenzo-p-dioxin	0.67	0.64	0.66	3.7
123478-hexachlorodibenzo-p-dioxin	<1.08	0.99	<1.03	6.0
123678-hexachlorodibenzo-p-dioxin	<3.02	2.76	<2.89	6.4
123789-hexachlorodibenzo-p-dioxin	<1.66	1.42	<1.54	11.2
1234678-heptachlorodibenzo-p-dioxin	22.8	17.0	19.9	20.5
Octachlorodibenzo-p-dioxin	20.9	17.0	19.0	14.7
2378-tetrachlorodibenzofuran	<0.32	<0.55	<0.44	37.4
12378-pentachlorodibenzofuran	0.73	<0.84	<0.78	9.8
23478-pentachlorodibenzofuran	1.37	<0.93	<1.15	27.0
123478-hexachlorodibenzofuran	<1.02	<0.76	<0.89	20.5
123678-hexachlorodibenzofuran	1.68	<1.12	<1.40	28.0
234678-hexachlorodibenzofuran	2.60	2.32	2.46	8.1
123789-hexachlorodibenzofuran	0.69	0.36	0.52	44.2
1234678-heptachlorodibenzofuran	6.17	4.22	5.20	26.5
1234789-heptachlorodibenzofuran	0.84	1.14	0.99	21.2
Octachlorodibenzofuran	5.19	3.39	4.29	29.7
PCB 81	<0.89	<0.63	<0.76	24.2
PCB 77	34.1	15.4	24.8	53.3
PCB 123	6.34	3.01	4.67	50.4
PCB 118	477	242	359	46.4
PCB 114	10.6	5.25	7.91	47.5
PCB 105	121	62.0	91.6	45.6
PCB 126	<2.08	0.61	<1.34	76.8
PCB 167	3.40	2.26	2.83	28.3
PCB 156/157	7.83	4.57	6.20	37.2
PCB 169	<0.74	<0.59	<0.66	15.6
PCB 189	<0.70	<0.51	<0.61	21.5
Total Dioxins & Furans Only	<71.2	<55.8	<63.5	17.1
Total PCBs Only	<665	<337	<501	46.4
Total Dioxins & Furans and PCBs	<736	<392	<564	43.1

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate		Average	Coefficient of Variation
	Test No. 1	Test No. 2		
	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.0067	<0.0056	<0.0062	13.0
12378-pentachlorodibenzo-p-dioxin	0.013	0.012	0.012	5.2
123478-hexachlorodibenzo-p-dioxin	<0.020	0.018	<0.019	7.5
123678-hexachlorodibenzo-p-dioxin	<0.057	0.051	<0.054	7.9
123789-hexachlorodibenzo-p-dioxin	<0.031	0.026	<0.029	12.7
1234678-heptachlorodibenzo-p-dioxin	0.43	0.31	0.37	22.0
Octachlorodibenzo-p-dioxin	0.39	0.31	0.35	16.2
2378-tetrachlorodibenzofuran	<0.0060	<0.010	<0.0081	36.0
12378-pentachlorodibenzofuran	0.014	<0.015	<0.015	8.3
23478-pentachlorodibenzofuran	0.026	<0.017	<0.021	28.4
123478-hexachlorodibenzofuran	<0.019	<0.014	<0.017	22.0
123678-hexachlorodibenzofuran	0.032	<0.021	<0.026	29.5
234678-hexachlorodibenzofuran	0.049	0.043	0.046	9.6
123789-hexachlorodibenzofuran	0.013	0.0066	0.0098	45.6
1234678-heptachlorodibenzofuran	0.12	0.078	0.097	27.9
1234789-heptachlorodibenzofuran	0.016	0.021	0.018	19.7
Octachlorodibenzofuran	0.098	0.062	0.080	31.2
PCB 81	<0.017	<0.012	<0.014	25.6
PCB 77	0.64	0.28	0.46	54.6
PCB 123	0.12	0.055	0.087	51.8
PCB 118	8.97	4.45	6.71	47.7
PCB 114	0.20	0.097	0.15	48.9
PCB 105	2.28	1.14	1.71	47.0
PCB 126	<0.039	0.011	<0.025	77.9
PCB 167	0.064	0.042	0.053	29.7
PCB 156/157	0.15	0.084	0.12	38.6
PCB 169	<0.014	<0.011	<0.012	17.1
PCB 189	<0.013	<0.0095	<0.011	23.0
Total Dioxins & Furans Only	<1.34	<1.03	<1.18	18.6
Total PCBs Only	<12.5	<6.19	<9.35	47.7
Total Dioxins & Furans and PCBs	<13.8	<7.22	<10.5	44.5

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

TABLE 40
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m ³	Dry Reference Concentration pg/Rm ^{3*}	Dry Adjusted Concentration pg/Rm ^{3**}	Wet Reference Concentration pg/Rm ^{3*}	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.23	<0.39	<0.33	<0.33	<0.0062
12378-pentachlorodibenzo-p-dioxin	0.46	0.78	0.64	0.66	0.012
123478-hexachlorodibenzo-p-dioxin	<0.72	<1.22	<1.01	<1.03	<0.019
123678-hexachlorodibenzo-p-dioxin	<2.02	<3.42	<2.84	<2.89	<0.054
123789-hexachlorodibenzo-p-dioxin	<1.07	<1.82	<1.51	<1.54	<0.029
1234678-heptachlorodibenzo-p-dioxin	13.9	23.6	19.6	19.9	0.37
Octachlorodibenzo-p-dioxin	13.2	22.5	18.6	19.0	0.35
2378-tetrachlorodibenzofuran	<0.30	<0.52	<0.43	<0.44	<0.0081
12378-pentachlorodibenzofuran	<0.55	<0.93	<0.77	<0.78	<0.015
23478-pentachlorodibenzofuran	<0.80	<1.36	<1.13	<1.15	<0.021
123478-hexachlorodibenzofuran	<0.62	<1.05	<0.87	<0.89	<0.017
123678-hexachlorodibenzofuran	<0.98	<1.66	<1.37	<1.40	<0.026
234678-hexachlorodibenzofuran	1.72	2.92	2.42	2.46	0.046
123789-hexachlorodibenzofuran	0.36	0.62	0.51	0.52	0.0098
1234678-heptachlorodibenzofuran	3.63	6.15	5.10	5.20	0.097
1234789-heptachlorodibenzofuran	0.69	1.17	0.97	0.99	0.018
Octachlorodibenzofuran	2.99	5.08	4.21	4.29	0.080
PCB 81	<0.53	<0.90	<0.74	<0.76	<0.014
PCB 77	17.3	29.4	24.4	24.8	0.46
PCB 123	3.26	5.53	4.59	4.67	0.087
PCB 118	251	426	353	359	6.71
PCB 114	5.51	9.36	7.77	7.91	0.15
PCB 105	63.9	108	90.0	91.6	1.71
PCB 126	<0.94	<1.59	<1.32	<1.34	<0.025
PCB 167	1.97	3.35	2.78	2.83	0.053
PCB 156/157	4.32	7.34	6.09	6.20	0.12
PCB 169	<0.46	<0.79	<0.65	<0.66	<0.012
PCB 189	<0.42	<0.72	<0.59	<0.61	<0.011
Total Dioxins & Furans Only	<44.3	<75.2	<62.3	<63.5	<1.18
Total PCBs Only	<349	<593	<492	<501	<9.35
Total Dioxins & Furans and PCBs	<394	<668	<554	<564	<10.5

* 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 41
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Method Blank pg
2378-tetrachlorodibenzo-p-dioxin	<1.4	<2.0
12378-pentachlorodibenzo-p-dioxin	<1.3	<2.1
123478-hexachlorodibenzo-p-dioxin	<0.81	<1.5
123678-hexachlorodibenzo-p-dioxin	2.88	<1.5
123789-hexachlorodibenzo-p-dioxin	<0.79	<1.5
1234678-heptachlorodibenzo-p-dioxin	<6.3	3.43
Octachlorodibenzo-p-dioxin	13.6	6.52
2378-tetrachlorodibenzofuran	<1.7	<2.0
12378-pentachlorodibenzofuran	<1.6	<2.8
23478-pentachlorodibenzofuran	<0.71	<1.0
123478-hexachlorodibenzofuran	<1.1	<1.0
123678-hexachlorodibenzofuran	<1.1	<0.94
234678-hexachlorodibenzofuran	<1.1	<1.0
123789-hexachlorodibenzofuran	<1.3	<1.2
1234678-heptachlorodibenzofuran	<1.1	<1.6
1234789-heptachlorodibenzofuran	<1.2	<1.8
Octachlorodibenzofuran	<2.9	<2.2
PCB 81	<3.1	<4.7
PCB 77	<3.1	<4.7
PCB 123	<2.7	<3.6
PCB 118	9.24	<5.7
PCB 114	<2.7	<3.7
PCB 105	<2.7	<3.5
PCB 126	<2.8	<3.6
PCB 167	<2.1	<2.4
PCB 156/157	<2.8	<3.2
PCB 169	<2.2	<2.4
PCB 189	<1.8	<2.3
Total Dioxins & Furans Only	<40.9	<34.1
Total PCBs Only	<35.2	<39.8
Total Dioxins & Furans and PCBs	<76.1	<73.9

"<" 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 42
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration		
		Test No. 1 pg TEQ/m ³	Test No. 2 pg TEQ/m ³	Average pg TEQ/m ³
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.25	<0.21	<0.23
12378-pentachlorodibenzo-p-dioxin	1.00000	0.47	0.45	0.46
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.075	0.069	<0.072
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.21	0.19	<0.20
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.12	0.099	<0.11
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.16	0.12	0.14
Octachlorodibenzo-p-dioxin	0.00030	0.0044	0.0036	0.0040
2378-tetrachlorodibenzofuran	0.10000	<0.022	<0.039	<0.030
12378-pentachlorodibenzofuran	0.03000	0.015	<0.018	<0.016
23478-pentachlorodibenzofuran	0.30000	0.29	<0.20	<0.24
123478-hexachlorodibenzofuran	0.10000	<0.071	<0.053	<0.062
123678-hexachlorodibenzofuran	0.10000	0.12	<0.079	<0.098
234678-hexachlorodibenzofuran	0.10000	0.18	0.16	0.17
123789-hexachlorodibenzofuran	0.10000	0.048	0.025	0.036
1234678-heptachlorodibenzofuran	0.01000	0.043	0.030	0.036
1234789-heptachlorodibenzofuran	0.01000	0.0058	0.0079	0.0069
Octachlorodibenzofuran	0.00030	0.0011	0.00071	0.00090
PCB 81	0.00030	<0.00019	<0.00013	<0.00016
PCB 77	0.00010	0.0024	0.0011	0.0017
PCB 123	0.00003	0.00013	0.000063	0.000098
PCB 118	0.00003	0.010	0.0051	0.0075
PCB 114	0.00003	0.00022	0.00011	0.00017
PCB 105	0.00003	0.0025	0.0013	0.0019
PCB 126	0.10000	<0.14	0.043	<0.094
PCB 167	0.00003	0.000071	0.000048	0.000059
PCB 156/157	0.00003	0.00016	0.000096	0.00013
PCB 169	0.03000	<0.015	<0.012	<0.014
PCB 189	0.00003	<0.000015	<0.000011	<0.000013
Total Dioxins & Furans Only		<2.07	<1.75	<1.91
Total PCBs Only		<0.18	<0.063	<0.12
Total Dioxins & Furans and PCBs		<2.25	<1.82	<2.03

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 43
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	Test No. 2 pg TEQ/Rm ³ *	Average pg TEQ/Rm ³ *
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.42	<0.36	<0.39
12378-pentachlorodibenzo-p-dioxin	1.00000	0.80	0.76	0.78
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.13	0.12	<0.12
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.36	0.33	<0.34
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.20	0.17	<0.18
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.27	0.20	0.24
Octachlorodibenzo-p-dioxin	0.00030	0.0074	0.0061	0.0067
2378-tetrachlorodibenzofuran	0.10000	<0.038	<0.065	<0.052
12378-pentachlorodibenzofuran	0.03000	0.026	<0.030	<0.028
23478-pentachlorodibenzofuran	0.30000	0.49	<0.33	<0.41
123478-hexachlorodibenzofuran	0.10000	<0.12	<0.090	<0.11
123678-hexachlorodibenzofuran	0.10000	0.20	<0.13	<0.17
234678-hexachlorodibenzofuran	0.10000	0.31	0.28	0.29
123789-hexachlorodibenzofuran	0.10000	0.081	0.043	0.062
1234678-heptachlorodibenzofuran	0.01000	0.073	0.050	0.062
1234789-heptachlorodibenzofuran	0.01000	0.0099	0.013	0.012
Octachlorodibenzofuran	0.00030	0.0018	0.0012	0.0015
PCB 81	0.00030	<0.00031	<0.00022	<0.00027
PCB 77	0.00010	0.0040	0.0018	0.0029
PCB 123	0.00003	0.00022	0.00011	0.00017
PCB 118	0.00003	0.017	0.0086	0.013
PCB 114	0.00003	0.00037	0.00019	0.00028
PCB 105	0.00003	0.0043	0.0022	0.0033
PCB 126	0.10000	<0.25	0.073	<0.16
PCB 167	0.00003	0.00012	0.000081	0.00010
PCB 156/157	0.00003	0.00028	0.00016	0.00022
PCB 169	0.03000	<0.026	<0.021	<0.024
PCB 189	0.00003	<0.000025	<0.000018	<0.000022
Total Dioxins & Furans Only		<3.52	<2.98	<3.25
Total PCBs Only		<0.30	<0.11	<0.20
Total Dioxins & Furans and PCBs		<3.82	<3.08	<3.45

* 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 44
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	Test No. 2 pg TEQ/Rm ³ *	Average pg TEQ/Rm ³ *
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.35	<0.30	<0.33
12378-pentachlorodibenzo-p-dioxin	1.00000	0.66	0.63	0.64
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.11	0.097	<0.10
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.30	0.27	<0.28
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.16	0.14	<0.15
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.22	0.17	0.20
Octachlorodibenzo-p-dioxin	0.00030	0.0062	0.0050	0.0056
2378-tetrachlorodibenzofuran	0.10000	<0.032	<0.054	<0.043
12378-pentachlorodibenzofuran	0.03000	0.022	<0.025	<0.023
23478-pentachlorodibenzofuran	0.30000	0.40	<0.27	<0.34
123478-hexachlorodibenzofuran	0.10000	<0.10	<0.074	<0.087
123678-hexachlorodibenzofuran	0.10000	0.17	<0.11	<0.14
234678-hexachlorodibenzofuran	0.10000	0.26	0.23	0.24
123789-hexachlorodibenzofuran	0.10000	0.068	0.035	0.051
1234678-heptachlorodibenzofuran	0.01000	0.061	0.041	0.051
1234789-heptachlorodibenzofuran	0.01000	0.0083	0.011	0.0097
Octachlorodibenzofuran	0.00030	0.0015	0.00099	0.0013
PCB 81	0.00030	<0.00026	<0.00018	<0.00022
PCB 77	0.00010	0.0034	0.0015	0.0024
PCB 123	0.00003	0.00019	0.000088	0.00014
PCB 118	0.00003	0.014	0.0071	0.011
PCB 114	0.00003	0.00031	0.00015	0.00023
PCB 105	0.00003	0.0036	0.0018	0.0027
PCB 126	0.10000	<0.20	0.060	<0.13
PCB 167	0.00003	0.00010	0.000066	0.000083
PCB 156/157	0.00003	0.00023	0.00013	0.00018
PCB 169	0.03000	<0.022	<0.017	<0.020
PCB 189	0.00003	<0.000021	<0.000015	<0.000018
Total Dioxins & Furans Only		<2.93	<2.45	<2.69
Total PCBs Only		<0.25	<0.089	<0.17
Total Dioxins & Furans and PCBs		<3.18	<2.54	<2.86

* 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 44A
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	Test No. 2 pg TEQ/Rm ³ *	Average pg TEQ/Rm ³ *
2378-tetrachlorodibenzo-p-dioxin	1.00000	0.18	0.15	0.16
12378-pentachlorodibenzo-p-dioxin	1.00000	0.66	0.63	0.64
123478-hexachlorodibenzo-p-dioxin	0.10000	0.053	0.097	0.075
123678-hexachlorodibenzo-p-dioxin	0.10000	0.15	0.27	0.21
123789-hexachlorodibenzo-p-dioxin	0.10000	0.082	0.14	0.11
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.22	0.17	0.20
Octachlorodibenzo-p-dioxin	0.00030	0.0062	0.0050	0.0056
2378-tetrachlorodibenzofuran	0.10000	0.016	0.027	0.021
12378-pentachlorodibenzofuran	0.03000	0.022	0.012	0.017
23478-pentachlorodibenzofuran	0.30000	0.40	0.14	0.27
123478-hexachlorodibenzofuran	0.10000	0.050	0.037	0.044
123678-hexachlorodibenzofuran	0.10000	0.17	0.055	0.11
234678-hexachlorodibenzofuran	0.10000	0.26	0.23	0.24
123789-hexachlorodibenzofuran	0.10000	0.068	0.035	0.051
1234678-heptachlorodibenzofuran	0.01000	0.061	0.041	0.051
1234789-heptachlorodibenzofuran	0.01000	0.0083	0.011	0.0097
Octachlorodibenzofuran	0.00030	0.0015	0.00099	0.0013
PCB 81	0.00030	0.00013	0.000092	0.00011
PCB 77	0.00010	0.0034	0.0015	0.0024
PCB 123	0.00003	0.00019	0.000088	0.00014
PCB 118	0.00003	0.014	0.0071	0.011
PCB 114	0.00003	0.00031	0.00015	0.00023
PCB 105	0.00003	0.0036	0.0018	0.0027
PCB 126	0.10000	0.10	0.060	0.081
PCB 167	0.00003	0.00010	0.000066	0.000083
PCB 156/157	0.00003	0.00023	0.00013	0.00018
PCB 169	0.03000	0.011	0.0087	0.0098
PCB 189	0.00003	0.000010	0.0000075	0.0000089
Total Dioxins & Furans Only		2.41	2.04	2.22
Total PCBs Only		0.13	0.080	0.11
Total Dioxins & Furans and PCBs		2.54	2.12	2.33

* 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 44B
Reworld Durham York Renewable Energy L.P.
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	Test No. 2	Average
		pg TEQ/Rm ³ *	pg TEQ/Rm ³ *	pg TEQ/Rm ³ *
2378-tetrachlorodibenzo-p-dioxin	1.00	<0.35	<0.30	<0.33
12378-pentachlorodibenzo-p-dioxin	0.50	0.33	0.31	0.32
123478-hexachlorodibenzo-p-dioxin	0.10	<0.11	0.097	<0.10
123678-hexachlorodibenzo-p-dioxin	0.10	<0.30	0.27	<0.28
123789-hexachlorodibenzo-p-dioxin	0.10	<0.16	0.14	<0.15
1234678-heptachlorodibenzo-p-dioxin	0.01	0.22	0.17	0.20
Octachlorodibenzo-p-dioxin	0.001	0.021	0.017	0.019
2378-tetrachlorodibenzofuran	0.10	<0.032	<0.054	<0.043
12378-pentachlorodibenzofuran	0.05	0.036	<0.041	<0.038
23478-pentachlorodibenzofuran	0.50	0.67	<0.46	<0.57
123478-hexachlorodibenzofuran	0.10	<0.10	<0.074	<0.087
123678-hexachlorodibenzofuran	0.10	0.17	<0.11	<0.14
234678-hexachlorodibenzofuran	0.10	0.26	0.23	0.24
123789-hexachlorodibenzofuran	0.10	0.068	0.035	0.051
1234678-heptachlorodibenzofuran	0.01	0.061	0.041	0.051
1234789-heptachlorodibenzofuran	0.01	0.0083	0.011	0.0097
Octachlorodibenzofuran	0.001	0.0051	0.0033	0.0042
Total Dioxins & Furans		<2.90	<2.35	<2.63
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 45
Reworld Durham York Renewable Energy L.P.
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/Rm ³ *	Test No. 2 pg TEQ/Rm ³ *	Average pg TEQ/Rm ³ *
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.36	<0.30	<0.33
12378-pentachlorodibenzo-p-dioxin	1.00000	0.67	0.64	0.66
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.11	0.099	<0.10
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.30	0.28	<0.29
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.17	0.14	<0.15
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.23	0.17	0.20
Octachlorodibenzo-p-dioxin	0.00030	0.0063	0.0051	0.0057
2378-tetrachlorodibenzofuran	0.10000	<0.032	<0.055	<0.044
12378-pentachlorodibenzofuran	0.03000	0.022	<0.025	<0.023
23478-pentachlorodibenzofuran	0.30000	0.41	<0.28	<0.35
123478-hexachlorodibenzofuran	0.10000	<0.10	<0.076	<0.089
123678-hexachlorodibenzofuran	0.10000	0.17	<0.11	<0.14
234678-hexachlorodibenzofuran	0.10000	0.26	0.23	0.25
123789-hexachlorodibenzofuran	0.10000	0.069	0.036	0.052
1234678-heptachlorodibenzofuran	0.01000	0.062	0.042	0.052
1234789-heptachlorodibenzofuran	0.01000	0.0084	0.011	0.0099
Octachlorodibenzofuran	0.00030	0.0016	0.0010	0.0013
PCB 81	0.00030	<0.00027	<0.00019	<0.00023
PCB 77	0.00010	0.0034	0.0015	0.0025
PCB 123	0.00003	0.00019	0.000090	0.00014
PCB 118	0.00003	0.014	0.0072	0.011
PCB 114	0.00003	0.00032	0.00016	0.00024
PCB 105	0.00003	0.0036	0.0019	0.0027
PCB 126	0.10000	<0.21	0.061	<0.13
PCB 167	0.00003	0.00010	0.000068	0.000085
PCB 156/157	0.00003	0.00023	0.00014	0.00019
PCB 169	0.03000	<0.022	<0.018	<0.020
PCB 189	0.00003	<0.000021	<0.000015	<0.000018
Total Dioxins & Furans Only		<2.98	<2.51	<2.74
Total PCBs Only		<0.25	<0.090	<0.17
Total Dioxins & Furans and PCBs		<3.23	<2.60	<2.91

* 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
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Test No. 1	Emission Rate	
		ng TEQ/s	Test No. 2 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.0067	<0.0056	<0.0062
12378-pentachlorodibenzo-p-dioxin	1.00000	0.013	0.012	0.012
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.0020	0.0018	<0.0019
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.0057	0.0051	<0.0054
123789-hexachlorodibenzo-p-dioxin	0.10000	<0.0031	0.0026	<0.0029
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.0043	0.0031	0.0037
Octachlorodibenzo-p-dioxin	0.00030	0.00012	0.000094	0.00011
2378-tetrachlorodibenzofuran	0.10000	<0.00060	<0.0010	<0.00081
12378-pentachlorodibenzofuran	0.03000	0.00041	<0.00046	<0.00044
23478-pentachlorodibenzofuran	0.30000	0.0077	<0.0051	<0.0064
123478-hexachlorodibenzofuran	0.10000	<0.0019	<0.0014	<0.0017
123678-hexachlorodibenzofuran	0.10000	0.0032	<0.0021	<0.0026
234678-hexachlorodibenzofuran	0.10000	0.0049	0.0043	0.0046
123789-hexachlorodibenzofuran	0.10000	0.0013	0.00066	0.00098
1234678-heptachlorodibenzofuran	0.01000	0.0012	0.00078	0.00097
1234789-heptachlorodibenzofuran	0.01000	0.00016	0.00021	0.00018
Octachlorodibenzofuran	0.00030	0.000029	0.000019	0.000024
PCB 81	0.00030	<0.0000050	<0.0000035	<0.0000042
PCB 77	0.00010	0.000064	0.000028	0.000046
PCB 123	0.00003	0.0000036	0.0000017	0.0000026
PCB 118	0.00003	0.00027	0.00013	0.00020
PCB 114	0.00003	0.0000060	0.0000029	0.0000044
PCB 105	0.00003	0.000068	0.000034	0.000051
PCB 126	0.10000	<0.0039	0.0011	<0.0025
PCB 167	0.00003	0.0000019	0.0000012	0.0000016
PCB 156/157	0.00003	0.0000044	0.0000025	0.0000035
PCB 169	0.03000	<0.00041	<0.00033	<0.00037
PCB 189	0.00003	<0.00000039	<0.00000028	<0.00000034
Total Dioxins & Furans Only		<0.056	<0.046	<0.051
Total PCBs Only		<0.0047	<0.0017	<0.0032
Total Dioxins & Furans and PCBs		<0.061	<0.048	<0.054

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 47
Reworld Durham York Renewable Energy L.P.
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	<0.23	<0.39	<0.33	<0.33	<0.0062
12378-pentachlorodibenzo-p-dioxin	0.46	0.78	0.64	0.66	0.012
123478-hexachlorodibenzo-p-dioxin	<0.072	<0.12	<0.10	<0.10	<0.0019
123678-hexachlorodibenzo-p-dioxin	<0.20	<0.34	<0.28	<0.29	<0.0054
123789-hexachlorodibenzo-p-dioxin	<0.11	<0.18	<0.15	<0.15	<0.0029
1234678-heptachlorodibenzo-p-dioxin	0.14	0.24	0.20	0.20	0.0037
Octachlorodibenzo-p-dioxin	0.0040	0.0067	0.0056	0.0057	0.00011
2378-tetrachlorodibenzofuran	<0.030	<0.052	<0.043	<0.044	<0.00081
12378-pentachlorodibenzofuran	<0.016	<0.028	<0.023	<0.023	<0.00044
23478-pentachlorodibenzofuran	<0.24	<0.41	<0.34	<0.35	<0.0064
123478-hexachlorodibenzofuran	<0.062	<0.11	<0.087	<0.089	<0.0017
123678-hexachlorodibenzofuran	<0.098	<0.17	<0.14	<0.14	<0.0026
234678-hexachlorodibenzofuran	0.17	0.29	0.24	0.25	0.0046
123789-hexachlorodibenzofuran	0.036	0.062	0.051	0.052	0.00098
1234678-heptachlorodibenzofuran	0.036	0.062	0.051	0.052	0.00097
1234789-heptachlorodibenzofuran	0.0069	0.012	0.0097	0.0099	0.00018
Octachlorodibenzofuran	0.00090	0.0015	0.0013	0.0013	0.000024
PCB 81	<0.00016	<0.00027	<0.00022	<0.00023	<0.0000042
PCB 77	0.0017	0.0029	0.0024	0.0025	0.000046
PCB 123	0.000098	0.00017	0.00014	0.00014	0.0000026
PCB 118	0.0075	0.013	0.011	0.011	0.00020
PCB 114	0.00017	0.00028	0.00023	0.00024	0.0000044
PCB 105	0.0019	0.0033	0.0027	0.0027	0.000051
PCB 126	<0.094	<0.16	<0.13	<0.13	<0.0025
PCB 167	0.000059	0.00010	0.000083	0.000085	0.0000016
PCB 156/157	0.00013	0.00022	0.00018	0.00019	0.0000035
PCB 169	<0.014	<0.024	<0.020	<0.020	<0.00037
PCB 189	<0.000013	<0.000022	<0.000018	<0.000018	<0.00000034
Total Dioxins & Furans Only	<1.91	<3.25	<2.69	<2.74	<0.051
Total PCBs Only	<0.12	<0.20	<0.17	<0.17	<0.0032
Total Dioxins & Furans and PCBs	<2.03	<3.45	<2.86	<2.91	<0.054

* At 25°C and 1 atmosphere

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

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

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

TABLE 48
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/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	0.12	0.20	0.16	0.17	0.0031
12378-pentachlorodibenzo-p-dioxin	0.46	0.78	0.64	0.66	0.012
123478-hexachlorodibenzo-p-dioxin	0.053	0.090	0.075	0.076	0.0014
123678-hexachlorodibenzo-p-dioxin	0.15	0.25	0.21	0.21	0.0040
123789-hexachlorodibenzo-p-dioxin	0.078	0.13	0.11	0.11	0.0021
1234678-heptachlorodibenzo-p-dioxin	0.14	0.24	0.20	0.20	0.0037
Octachlorodibenzo-p-dioxin	0.0040	0.0067	0.0056	0.0057	0.00011
2378-tetrachlorodibenzofuran	0.015	0.026	0.021	0.022	0.00040
12378-pentachlorodibenzofuran	0.012	0.020	0.017	0.017	0.00032
23478-pentachlorodibenzofuran	0.19	0.33	0.27	0.28	0.0052
123478-hexachlorodibenzofuran	0.031	0.053	0.044	0.044	0.00083
123678-hexachlorodibenzofuran	0.078	0.13	0.11	0.11	0.0021
234678-hexachlorodibenzofuran	0.17	0.29	0.24	0.25	0.0046
123789-hexachlorodibenzofuran	0.036	0.062	0.051	0.052	0.00098
1234678-heptachlorodibenzofuran	0.036	0.062	0.051	0.052	0.00097
1234789-heptachlorodibenzofuran	0.0069	0.012	0.0097	0.0099	0.00018
Octachlorodibenzofuran	0.00090	0.00152	0.0013	0.0013	0.000024
PCB 81	0.000079	0.00013	0.00011	0.00011	0.0000021
PCB 77	0.0017	0.0029	0.0024	0.0025	0.000046
PCB 123	0.000098	0.00017	0.00014	0.00014	0.0000026
PCB 118	0.0075	0.013	0.011	0.011	0.00020
PCB 114	0.00017	0.00028	0.00023	0.00024	0.0000044
PCB 105	0.0019	0.0033	0.0027	0.0027	0.000051
PCB 126	0.058	0.098	0.081	0.083	0.0015
PCB 167	0.000059	0.00010	0.000083	0.000085	0.0000016
PCB 156/157	0.00013	0.00022	0.00018	0.00019	0.0000035
PCB 169	0.0069	0.012	0.0098	0.0099	0.00019
PCB 189	0.0000063	0.000011	0.0000089	0.0000091	0.00000017
Total Dioxins & Furans Only	1.58	2.68	2.22	2.26	0.042
Total PCBs Only	0.076	0.13	0.11	0.11	0.0020
Total Dioxins & Furans and PCBs	1.65	2.81	2.33	2.37	0.044

* 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 49
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
Monochlorobenzene	811	107	181	151	153	2.88
1,3-Dichlorobenzene	120	15.8	26.8	22.3	22.6	0.43
1,4-Dichlorobenzene	125	16.4	27.9	23.2	23.6	0.44
1,2-Dichlorobenzene	91.9	12.1	20.5	17.1	17.3	0.33
Total Dichlorobenzene	337	44.3	75.2	62.6	63.6	1.19
1,3,5-trichlorobenzene	62.9	8.26	14.0	11.7	11.9	0.22
1,2,4-trichlorobenzene	32.0	4.20	7.14	5.94	6.04	0.11
1,2,3-trichlorobenzene	17.5	2.30	3.90	3.25	3.30	0.062
Total Trichlorobenzene	112	14.8	25.1	20.9	21.2	0.40
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.58	<2.68	<2.23	<2.26	<0.043
1,2,3,4-tetrachlorobenzene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Total Tetrachlorobenzene	<24.0	<3.15	<5.35	<4.46	<4.53	<0.085
Pentachlorobenzene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Hexachlorobenzene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Total Chlorobenzenes	<1308	<172	<292	<243	<247	<4.64

Dry Gas Volume Sampled (Rm ^{3*}) :	4.483
Actual Flowrate (m ³ /s) :	27.0
Dry Reference Flowrate (Rm ³ /s*) :	15.9
Dry Adjusted Flowrate (Rm ³ /s**) :	19.1
Wet Reference Flowrate (Rm ³ /s*) :	18.8

* At 25°C and 1 atmosphere

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

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

TABLE 50
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
Monochlorobenzene	1780	237	402	331	339	6.23
1,3-Dichlorobenzene	110	14.6	24.8	20.5	20.9	0.39
1,4-Dichlorobenzene	101	13.4	22.8	18.8	19.2	0.35
1,2-Dichlorobenzene	84.1	11.2	19.0	15.7	16.0	0.29
Total Dichlorobenzene	295	39.3	66.6	54.9	56.1	1.03
1,3,5-trichlorobenzene	61.4	8.17	13.9	11.4	11.7	0.21
1,2,4-trichlorobenzene	32.9	4.38	7.43	6.13	6.26	0.12
1,2,3-trichlorobenzene	17.4	2.32	3.93	3.24	3.31	0.061
Total Trichlorobenzene	112	14.9	25.2	20.8	21.3	0.39
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.60	<2.71	<2.23	<2.28	<0.042
1,2,3,4-tetrachlorobenzene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Total Tetrachlorobenzene	<24.0	<3.19	<5.42	<4.47	<4.57	<0.084
Pentachlorobenzene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Hexachlorobenzene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Total Chlorobenzenes	<2235	<297	<505	<416	<425	<7.82

Dry Gas Volume Sampled (Rm ^{3*}) :	4.428
Actual Flowrate (m ³ /s) :	26.3
Dry Reference Flowrate (Rm ³ /s*) :	15.5
Dry Adjusted Flowrate (Rm ³ /s**) :	18.8
Wet Reference Flowrate (Rm ³ /s*) :	18.4

* At 25°C and 1 atmosphere

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

TABLE 51
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration			Coefficient of Variation
	Test No. 1	Test No. 2	Average	
	ng/m ³	ng/m ³	ng/m ³	%
Monochlorobenzene	107	237	172	53.7
1,3-Dichlorobenzene	15.8	14.6	15.2	5.2
1,4-Dichlorobenzene	16.4	13.4	14.9	14.1
1,2-Dichlorobenzene	12.1	11.2	11.6	5.3
Total Dichlorobenzene	44.3	39.3	41.8	8.4
1,3,5-trichlorobenzene	8.26	8.17	8.22	0.8
1,2,4-trichlorobenzene	4.20	4.38	4.29	2.9
1,2,3-trichlorobenzene	2.30	2.32	2.31	0.5
Total Trichlorobenzene	14.8	14.9	14.8	0.5
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.58	<1.60	<1.59	0.9
1,2,3,4-tetrachlorobenzene	<1.58	<1.60	<1.59	0.9
Total Tetrachlorobenzene	<3.15	<3.19	<3.17	0.9
Pentachlorobenzene	<1.58	<1.60	<1.59	0.9
Hexachlorobenzene	<1.58	<1.60	<1.59	0.9
Total Chlorobenzenes	<172	<297	<235	37.8

TABLE 52
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration			Coefficient of Variation
	Test No. 1	Test No. 2	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Monochlorobenzene	181	402	291	53.6
1,3-Dichlorobenzene	26.8	24.8	25.8	5.3
1,4-Dichlorobenzene	27.9	22.8	25.3	14.2
1,2-Dichlorobenzene	20.5	19.0	19.7	5.4
Total Dichlorobenzene	75.2	66.6	70.9	8.5
1,3,5-trichlorobenzene	14.0	13.9	13.9	0.8
1,2,4-trichlorobenzene	7.14	7.43	7.28	2.8
1,2,3-trichlorobenzene	3.90	3.93	3.92	0.5
Total Trichlorobenzene	25.1	25.2	25.1	0.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.68	<2.71	<2.69	0.9
1,2,3,4-tetrachlorobenzene	<2.68	<2.71	<2.69	0.9
Total Tetrachlorobenzene	<5.35	<5.42	<5.39	0.9
Pentachlorobenzene	<2.68	<2.71	<2.69	0.9
Hexachlorobenzene	<2.68	<2.71	<2.69	0.9
Total Chlorobenzenes	<292	<505	<398	37.8

* At 25°C and 1 atmosphere

TABLE 53
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration			Coefficient of Variation %
	Test No. 1 ng/Rm ³ *	Test No. 2 ng/Rm ³ *	Average ng/Rm ³ *	
Monochlorobenzene	151	331	241	53.1
1,3-Dichlorobenzene	22.3	20.5	21.4	6.0
1,4-Dichlorobenzene	23.2	18.8	21.0	14.8
1,2-Dichlorobenzene	17.1	15.7	16.4	6.1
Total Dichlorobenzene	62.6	54.9	58.8	9.2
1,3,5-trichlorobenzene	11.7	11.4	11.6	1.5
1,2,4-trichlorobenzene	5.94	6.13	6.03	2.2
1,2,3-trichlorobenzene	3.25	3.24	3.24	0.2
Total Trichlorobenzene	20.9	20.8	20.8	0.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.23	<2.23	<2.23	0.2
1,2,3,4-tetrachlorobenzene	<2.23	<2.23	<2.23	0.2
Total Tetrachlorobenzene	<4.46	<4.47	<4.46	0.2
Pentachlorobenzene	<2.23	<2.23	<2.23	0.2
Hexachlorobenzene	<2.23	<2.23	<2.23	0.2
Total Chlorobenzenes	<243	<416	<330	37.2

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

TABLE 54
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration			Coefficient of Variation
	Test No. 1 ng/Rm ³ *	Test No. 2 ng/Rm ³ *	Average ng/Rm ³ *	
Monochlorobenzene	153	339	246	53.4
1,3-Dichlorobenzene	22.6	20.9	21.8	5.6
1,4-Dichlorobenzene	23.6	19.2	21.4	14.4
1,2-Dichlorobenzene	17.3	16.0	16.7	5.7
Total Dichlorobenzene	63.6	56.1	59.8	8.8
1,3,5-trichlorobenzene	11.9	11.7	11.8	1.1
1,2,4-trichlorobenzene	6.04	6.26	6.15	2.6
1,2,3-trichlorobenzene	3.30	3.31	3.31	0.2
Total Trichlorobenzene	21.2	21.3	21.2	0.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.26	<2.28	<2.27	0.6
1,2,3,4-tetrachlorobenzene	<2.26	<2.28	<2.27	0.6
Total Tetrachlorobenzene	<4.53	<4.57	<4.55	0.6
Pentachlorobenzene	<2.26	<2.28	<2.27	0.6
Hexachlorobenzene	<2.26	<2.28	<2.27	0.6
Total Chlorobenzenes	<247	<425	<336	37.5

* At 25°C and 1 atmosphere

TABLE 55
Reworld Durham York Renewable Energy L.P.
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	Average µg/s	
Monochlorobenzene	2.88	6.23	4.55	52.1
1,3-Dichlorobenzene	0.43	0.39	0.41	7.1
1,4-Dichlorobenzene	0.44	0.35	0.40	15.9
1,2-Dichlorobenzene	0.33	0.29	0.31	7.2
Total Dichlorobenzene	1.19	1.03	1.11	10.3
1,3,5-trichlorobenzene	0.22	0.21	0.22	2.6
1,2,4-trichlorobenzene	0.11	0.12	0.11	1.0
1,2,3-trichlorobenzene	0.062	0.061	0.061	1.3
Total Trichlorobenzene	0.40	0.39	0.39	1.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.043	<0.042	<0.042	0.9
1,2,3,4-tetrachlorobenzene	<0.043	<0.042	<0.042	0.9
Total Tetrachlorobenzene	<0.085	<0.084	<0.085	0.9
Pentachlorobenzene	<0.043	<0.042	<0.042	0.9
Hexachlorobenzene	<0.043	<0.042	<0.042	0.9
Total Chlorobenzenes	<4.64	<7.82	<6.23	36.1

TABLE 56
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
Monochlorobenzene	172	291	241	246	4.55
1,3-Dichlorobenzene	15.2	25.8	21.4	21.8	0.41
1,4-Dichlorobenzene	14.9	25.3	21.0	21.4	0.40
1,2-Dichlorobenzene	11.6	19.7	16.4	16.7	0.31
Total Dichlorobenzene	41.8	70.9	58.8	59.8	1.11
1,3,5-trichlorobenzene	8.22	13.9	11.6	11.8	0.22
1,2,4-trichlorobenzene	4.29	7.28	6.03	6.15	0.11
1,2,3-trichlorobenzene	2.31	3.92	3.24	3.31	0.061
Total Trichlorobenzene	14.8	25.1	20.8	21.2	0.39
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.59	<2.69	<2.23	<2.27	<0.042
1,2,3,4-tetrachlorobenzene	<1.59	<2.69	<2.23	<2.27	<0.042
Total Tetrachlorobenzene	<3.17	<5.39	<4.46	<4.55	<0.085
Pentachlorobenzene	<1.59	<2.69	<2.23	<2.27	<0.042
Hexachlorobenzene	<1.59	<2.69	<2.23	<2.27	<0.042
Total Chlorobenzenes	<235	<398	<330	<336	<6.23

* At 25°C and 1 atmosphere

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

TABLE 57
Reworld Durham York Renewable Energy L.P.
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	22.0	19.6
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<46.0	<43.6
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	<142	<140

"<" 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 58
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
2-monochlorophenol	<60	<7.88	<13.4	<11.1	<11.3	<0.21
3 & 4-monochlorophenol	<300	<39.4	<66.9	<55.7	<56.6	<1.06
Total Monochlorophenols	<360	<47.3	<80.3	<66.8	<67.9	<1.28
2,6-dichlorophenol	<300	<39.4	<66.9	<55.7	<56.6	<1.06
2,4 & 2,5-dichlorophenol	<300	<39.4	<66.9	<55.7	<56.6	<1.06
3,5-dichlorophenol	<300	<39.4	<66.9	<55.7	<56.6	<1.06
2,3-dichlorophenol	<300	<39.4	<66.9	<55.7	<56.6	<1.06
3,4-dichlorophenol	<300	<39.4	<66.9	<55.7	<56.6	<1.06
Total Dichlorophenols	<1500	<197	<335	<279	<283	<5.32
2,4,6-trichlorophenol	<300	<39.4	<66.9	<55.7	<56.6	<1.06
2,3,6-trichlorophenol	<60	<7.88	<13.4	<11.1	<11.3	<0.21
2,3,5-trichlorophenol	<60	<7.88	<13.4	<11.1	<11.3	<0.21
2,4,5-trichlorophenol	<60	<7.88	<13.4	<11.1	<11.3	<0.21
2,3,4-trichlorophenol	<60	<7.88	<13.4	<11.1	<11.3	<0.21
3,4,5-trichlorophenol	<60	<7.88	<13.4	<11.1	<11.3	<0.21
Total Trichlorophenols	<600	<78.8	<134	<111	<113	<2.13
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.88	<13.4	<11.1	<11.3	<0.21
2,3,4,5-tetrachlorophenol	<60	<7.88	<13.4	<11.1	<11.3	<0.21
Total Tetrachlorophenols	<120	<15.8	<26.8	<22.3	<22.6	<0.43
Pentachlorophenol	<60	<7.88	<13.4	<11.1	<11.3	<0.21
Total Chlorophenols	<2640	<347	<589	<490	<498	<9.36

Dry Gas Volume Sampled (Rm ^{3*}) :	4.483
Actual Flowrate (m ³ /s) :	27.0
Dry Reference Flowrate (Rm ³ /s*) :	15.9
Dry Adjusted Flowrate (Rm ³ /s**) :	19.1
Wet Reference Flowrate (Rm ³ /s*) :	18.8

* At 25°C and 1 atmosphere

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

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

TABLE 59
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
2-monochlorophenol	<60	<7.99	<13.6	<11.2	<11.4	<0.21
3 & 4-monochlorophenol	<300	<39.9	<67.8	<55.9	<57.1	<1.05
Total Monochlorophenols	<360	<47.9	<81.3	<67.0	<68.5	<1.26
2,6-dichlorophenol	<300	<39.9	<67.8	<55.9	<57.1	<1.05
2,4 & 2,5-dichlorophenol	<300	<39.9	<67.8	<55.9	<57.1	<1.05
3,5-dichlorophenol	<300	<39.9	<67.8	<55.9	<57.1	<1.05
2,3-dichlorophenol	<300	<39.9	<67.8	<55.9	<57.1	<1.05
3,4-dichlorophenol	<300	<39.9	<67.8	<55.9	<57.1	<1.05
Total Dichlorophenols	<1500	<200	<339	<279	<285	<5.25
2,4,6-trichlorophenol	<300	<39.9	<67.8	<55.9	<57.1	<1.05
2,3,6-trichlorophenol	<60	<7.99	<13.6	<11.2	<11.4	<0.21
2,3,5-trichlorophenol	<60	<7.99	<13.6	<11.2	<11.4	<0.21
2,4,5-trichlorophenol	<60	<7.99	<13.6	<11.2	<11.4	<0.21
2,3,4-trichlorophenol	<60	<7.99	<13.6	<11.2	<11.4	<0.21
3,4,5-trichlorophenol	<60	<7.99	<13.6	<11.2	<11.4	<0.21
Total Trichlorophenols	<600	<79.9	<136	<112	<114	<2.10
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.99	<13.6	<11.2	<11.4	<0.21
2,3,4,5-tetrachlorophenol	<60	<7.99	<13.6	<11.2	<11.4	<0.21
Total Tetrachlorophenols	<120	<16.0	<27.1	<22.3	<22.8	<0.42
Pentachlorophenol	<60	<7.99	<13.6	<11.2	<11.4	<0.21
Total Chlorophenols	<2640	<351	<596	<492	<502	<9.24

Dry Gas Volume Sampled (Rm ^{3*}) :	4.428
Actual Flowrate (m ³ /s) :	26.3
Dry Reference Flowrate (Rm ³ /s*) :	15.5
Dry Adjusted Flowrate (Rm ³ /s**) :	18.8
Wet Reference Flowrate (Rm ³ /s*) :	18.4

* At 25°C and 1 atmosphere

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

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

TABLE 60
Reworld Durham York Renewable Energy L.P.
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	Average	
	ng/m ³	ng/m ³	ng/m ³	%
2-monochlorophenol	<7.88	<7.99	<7.93	0.9
3 & 4-monochlorophenol	<39.4	<39.9	<39.7	0.9
Total Monochlorophenols	<47.3	<47.9	<47.6	0.9
2,6-dichlorophenol	<39.4	<39.9	<39.7	0.9
2,4 & 2,5-dichlorophenol	<39.4	<39.9	<39.7	0.9
3,5-dichlorophenol	<39.4	<39.9	<39.7	0.9
2,3-dichlorophenol	<39.4	<39.9	<39.7	0.9
3,4-dichlorophenol	<39.4	<39.9	<39.7	0.9
Total Dichlorophenols	<197	<200	<198	0.9
2,4,6-trichlorophenol	<39.4	<39.9	<39.7	0.9
2,3,6-trichlorophenol	<7.88	<7.99	<7.93	0.9
2,3,5-trichlorophenol	<7.88	<7.99	<7.93	0.9
2,4,5-trichlorophenol	<7.88	<7.99	<7.93	0.9
2,3,4-trichlorophenol	<7.88	<7.99	<7.93	0.9
3,4,5-trichlorophenol	<7.88	<7.99	<7.93	0.9
Total Trichlorophenols	<78.8	<79.9	<79.3	0.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.88	<7.99	<7.93	0.9
2,3,4,5-tetrachlorophenol	<7.88	<7.99	<7.93	0.9
Total Tetrachlorophenols	<15.8	<16.0	<15.9	0.9
Pentachlorophenol	<7.88	<7.99	<7.93	0.9
Total Chlorophenols	<347	<351	<349	0.9

TABLE 61
Reworld Durham York Renewable Energy L.P.
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	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	
2-monochlorophenol	<13.4	<13.6	<13.5	0.9
3 & 4-monochlorophenol	<66.9	<67.8	<67.3	0.9
Total Monochlorophenols	<80.3	<81.3	<80.8	0.9
2,6-dichlorophenol	<66.9	<67.8	<67.3	0.9
2,4 & 2,5-dichlorophenol	<66.9	<67.8	<67.3	0.9
3,5-dichlorophenol	<66.9	<67.8	<67.3	0.9
2,3-dichlorophenol	<66.9	<67.8	<67.3	0.9
3,4-dichlorophenol	<66.9	<67.8	<67.3	0.9
Total Dichlorophenols	<335	<339	<337	0.9
2,4,6-trichlorophenol	<66.9	<67.8	<67.3	0.9
2,3,6-trichlorophenol	<13.4	<13.6	<13.5	0.9
2,3,5-trichlorophenol	<13.4	<13.6	<13.5	0.9
2,4,5-trichlorophenol	<13.4	<13.6	<13.5	0.9
2,3,4-trichlorophenol	<13.4	<13.6	<13.5	0.9
3,4,5-trichlorophenol	<13.4	<13.6	<13.5	0.9
Total Trichlorophenols	<134	<136	<135	0.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<13.4	<13.6	<13.5	0.9
2,3,4,5-tetrachlorophenol	<13.4	<13.6	<13.5	0.9
Total Tetrachlorophenols	<26.8	<27.1	<26.9	0.9
Pentachlorophenol	<13.4	<13.6	<13.5	0.9
Total Chlorophenols	<589	<596	<593	0.9

* At 25°C and 1 atmosphere

TABLE 62
Reworld Durham York Renewable Energy L.P.
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	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
2-monochlorophenol	<11.1	<11.2	<11.2	0.2
3 & 4-monochlorophenol	<55.7	<55.9	<55.8	0.2
Total Monochlorophenols	<66.8	<67.0	<66.9	0.2
2,6-dichlorophenol	<55.7	<55.9	<55.8	0.2
2,4 & 2,5-dichlorophenol	<55.7	<55.9	<55.8	0.2
3,5-dichlorophenol	<55.7	<55.9	<55.8	0.2
2,3-dichlorophenol	<55.7	<55.9	<55.8	0.2
3,4-dichlorophenol	<55.7	<55.9	<55.8	0.2
Total Dichlorophenols	<279	<279	<279	0.2
2,4,6-trichlorophenol	<55.7	<55.9	<55.8	0.2
2,3,6-trichlorophenol	<11.1	<11.2	<11.2	0.2
2,3,5-trichlorophenol	<11.1	<11.2	<11.2	0.2
2,4,5-trichlorophenol	<11.1	<11.2	<11.2	0.2
2,3,4-trichlorophenol	<11.1	<11.2	<11.2	0.2
3,4,5-trichlorophenol	<11.1	<11.2	<11.2	0.2
Total Trichlorophenols	<111	<112	<112	0.2
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.1	<11.2	<11.2	0.2
2,3,4,5-tetrachlorophenol	<11.1	<11.2	<11.2	0.2
Total Tetrachlorophenols	<22.3	<22.3	<22.3	0.2
Pentachlorophenol	<11.1	<11.2	<11.2	0.2
Total Chlorophenols	<490	<492	<491	0.2

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

TABLE 63
Reworld Durham York Renewable Energy L.P.
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	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	
2-monochlorophenol	<11.3	<11.4	<11.4	0.6
3 & 4-monochlorophenol	<56.6	<57.1	<56.8	0.6
Total Monochlorophenols	<67.9	<68.5	<68.2	0.6
2,6-dichlorophenol	<56.6	<57.1	<56.8	0.6
2,4 & 2,5-dichlorophenol	<56.6	<57.1	<56.8	0.6
3,5-dichlorophenol	<56.6	<57.1	<56.8	0.6
2,3-dichlorophenol	<56.6	<57.1	<56.8	0.6
3,4-dichlorophenol	<56.6	<57.1	<56.8	0.6
Total Dichlorophenols	<283	<285	<284	0.6
2,4,6-trichlorophenol	<56.6	<57.1	<56.8	0.6
2,3,6-trichlorophenol	<11.3	<11.4	<11.4	0.6
2,3,5-trichlorophenol	<11.3	<11.4	<11.4	0.6
2,4,5-trichlorophenol	<11.3	<11.4	<11.4	0.6
2,3,4-trichlorophenol	<11.3	<11.4	<11.4	0.6
3,4,5-trichlorophenol	<11.3	<11.4	<11.4	0.6
Total Trichlorophenols	<113	<114	<114	0.6
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.3	<11.4	<11.4	0.6
2,3,4,5-tetrachlorophenol	<11.3	<11.4	<11.4	0.6
Total Tetrachlorophenols	<22.6	<22.8	<22.7	0.6
Pentachlorophenol	<11.3	<11.4	<11.4	0.6
Total Chlorophenols	<498	<502	<500	0.6

* At 25°C and 1 atmosphere

TABLE 64
Reworld Durham York Renewable Energy L.P.
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	Average µg/s	
2-monochlorophenol	<0.21	<0.21	<0.21	0.9
3 & 4-monochlorophenol	<1.06	<1.05	<1.06	0.9
Total Monochlorophenols	<1.28	<1.26	<1.27	0.9
2,6-dichlorophenol	<1.06	<1.05	<1.06	0.9
2,4 & 2,5-dichlorophenol	<1.06	<1.05	<1.06	0.9
3,5-dichlorophenol	<1.06	<1.05	<1.06	0.9
2,3-dichlorophenol	<1.06	<1.05	<1.06	0.9
3,4-dichlorophenol	<1.06	<1.05	<1.06	0.9
Total Dichlorophenols	<5.32	<5.25	<5.29	0.9
2,4,6-trichlorophenol	<1.06	<1.05	<1.06	0.9
2,3,6-trichlorophenol	<0.21	<0.21	<0.21	0.9
2,3,5-trichlorophenol	<0.21	<0.21	<0.21	0.9
2,4,5-trichlorophenol	<0.21	<0.21	<0.21	0.9
2,3,4-trichlorophenol	<0.21	<0.21	<0.21	0.9
3,4,5-trichlorophenol	<0.21	<0.21	<0.21	0.9
Total Trichlorophenols	<2.13	<2.10	<2.11	0.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.21	<0.21	<0.21	0.9
2,3,4,5-tetrachlorophenol	<0.21	<0.21	<0.21	0.9
Total Tetrachlorophenols	<0.43	<0.42	<0.42	0.9
Pentachlorophenol	<0.21	<0.21	<0.21	0.9
Total Chlorophenols	<9.36	<9.24	<9.30	0.9

TABLE 65
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
2-monochlorophenol	<7.93	<13.5	<11.2	<11.4	<0.21
3 & 4-monochlorophenol	<39.7	<67.3	<55.8	<56.8	<1.06
Total Monochlorophenols	<47.6	<80.8	<66.9	<68.2	<1.27
2,6-dichlorophenol	<39.7	<67.3	<55.8	<56.8	<1.06
2,4 & 2,5-dichlorophenol	<39.7	<67.3	<55.8	<56.8	<1.06
3,5-dichlorophenol	<39.7	<67.3	<55.8	<56.8	<1.06
2,3-dichlorophenol	<39.7	<67.3	<55.8	<56.8	<1.06
3,4-dichlorophenol	<39.7	<67.3	<55.8	<56.8	<1.06
Total Dichlorophenols	<198	<337	<279	<284	<5.29
2,4,6-trichlorophenol	<39.7	<67.3	<55.8	<56.8	<1.06
2,3,6-trichlorophenol	<7.93	<13.5	<11.2	<11.4	<0.21
2,3,5-trichlorophenol	<7.93	<13.5	<11.2	<11.4	<0.21
2,4,5-trichlorophenol	<7.93	<13.5	<11.2	<11.4	<0.21
2,3,4-trichlorophenol	<7.93	<13.5	<11.2	<11.4	<0.21
3,4,5-trichlorophenol	<7.93	<13.5	<11.2	<11.4	<0.21
Total Trichlorophenols	<79.3	<135	<112	<114	<2.11
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.93	<13.5	<11.2	<11.4	<0.21
2,3,4,5-tetrachlorophenol	<7.93	<13.5	<11.2	<11.4	<0.21
Total Tetrachlorophenols	<15.9	<26.9	<22.3	<22.7	<0.42
Pentachlorophenol	<7.93	<13.5	<11.2	<11.4	<0.21
Total Chlorophenols	<349	<593	<491	<500	<9.30

* At 25°C and 1 atmosphere

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

TABLE 66
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Media Blank Total ng	Blank Train Total ng
2-monochlorophenol	<60	<60
3 & 4-monochlorophenol	<300	<300
Total Monochlorophenols	<360	<360
2,6-dichlorophenol	<300	<300
2,4 & 2,5-dichlorophenol	<300	<300
3,5-dichlorophenol	<300	<300
2,3-dichlorophenol	<300	<300
3,4-dichlorophenol	<300	<300
Total Dichlorophenols	<1500	<1500
2,4,6-trichlorophenol	<300	<300
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	<600	<600
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	<2640	<2640

"<" 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 67
Reworld Durham York Renewable Energy L.P.
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/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	µg/s
Acenaphthene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Acenaphthylene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Anthracene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Benzo(a)Anthracene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Benzo(b)Fluoranthene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Benzo(k,l)Fluoranthene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Benzo(a)fluorene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Benzo(b)fluorene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Benzo(g,h,i)Perylene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Benzo(a)Pyrene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Benzo(e)Pyrene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Biphenyl	30.8	4.05	6.87	5.72	5.81	0.11
2-Chloronaphthalene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Chrysene/Triphenylene/Benzo(b)anthracene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Coronene	<60	<7.88	<13.4	<11.1	<11.3	<0.21
Dibenzo(a,c/a,h)Anthracene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Dibenzo(a,e)pyrene	<60	<7.88	<13.4	<11.1	<11.3	<0.21
9,10-dimethylanthracene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
7,12-Dimethylbenzo(a)anthracene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Fluoranthene	14.8	1.94	3.30	2.75	2.79	0.052
Fluorene	17.9	2.35	3.99	3.32	3.38	0.063
Indeno(1,2,3-cd)Pyrene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
2-methylanthracene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
3-Methylcholanthrene	<60	<7.88	<13.4	<11.1	<11.3	<0.21
1-Methylnaphthalene	27.7	3.64	6.18	5.14	5.23	0.098
2-Methylnaphthalene	53.7	7.05	12.0	9.97	10.1	0.19
1-Methylphenanthrene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
9-Methylphenanthrene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Naphthalene	141	18.5	31.5	26.2	26.6	0.50
Perylene	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Phenanthrene	112	14.7	25.0	20.8	21.1	0.40
Picene	<60	<7.88	<13.4	<11.1	<11.3	<0.21
Pyrene	16.0	2.10	3.57	2.97	3.02	0.057
Tetralin	29.3	3.85	6.54	5.44	5.53	0.10
m-terphenyl	<12	<1.58	<2.68	<2.23	<2.26	<0.043
o-Terphenyl	<12	<1.58	<2.68	<2.23	<2.26	<0.043
p-terphenyl	<12	<1.58	<2.68	<2.23	<2.26	<0.043
Total	<971	<128	<217	<180	<183	<3.44

Dry Gas Volume Sampled (Rm ^{3*}) :	4.483
Actual Flowrate (m ³ /s) :	27.0
Dry Reference Flowrate (Rm ³ /s*) :	15.9
Dry Adjusted Flowrate (Rm ³ /s**) :	19.1
Wet Reference Flowrate (Rm ³ /s*) :	18.8

* At 25°C and 1 atmosphere

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

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

TABLE 68
Reworld Durham York Renewable Energy L.P.
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/m ³	ng/Rm ^{3*}	ng/Rm ^{3**}	ng/Rm ^{3*}	µg/s
Acenaphthene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Acenaphthylene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Anthracene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Benzo(a)Anthracene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Benzo(b)Fluoranthene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Benzo(k,l)Fluoranthene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Benzo(a)fluorene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Benzo(b)fluorene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Benzo(g,h,i)Perylene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Benzo(a)Pyrene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Benzo(e)Pyrene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Biphenyl	24.5	3.26	5.53	4.56	4.66	0.086
2-Chloronaphthalene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Chrysene/Triphenylene/Benzo(b)anthracene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Coronene	<60	<7.99	<13.6	<11.2	<11.4	<0.21
Dibenzo(a,c,a,h)Anthracene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Dibenzo(a,e)pyrene	<60	<7.99	<13.6	<11.2	<11.4	<0.21
9,10-dimethylanthracene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
7,12-Dimethylbenzo(a)anthracene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Fluoranthene	18.2	2.42	4.11	3.39	3.46	0.064
Fluorene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Indeno(1,2,3-cd)Pyrene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
2-methylanthracene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
3-Methylcholanthrene	<60	<7.99	<13.6	<11.2	<11.4	<0.21
1-Methylnaphthalene	17.0	2.26	3.84	3.17	3.23	0.060
2-Methylnaphthalene	32.1	4.27	7.25	5.98	6.11	0.11
1-Methylphenanthrene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
9-Methylphenanthrene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Naphthalene	142	18.9	32.1	26.4	27.0	0.50
Perylene	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Phenanthrene	88.6	11.8	20.0	16.5	16.9	0.31
Picene	<60	<7.99	<13.6	<11.2	<11.4	<0.21
Pyrene	13.4	1.78	3.03	2.50	2.55	0.047
Tetralin	19.4	2.58	4.38	3.61	3.69	0.068
m-terphenyl	<12	<1.60	<2.71	<2.23	<2.28	<0.042
o-Terphenyl	<12	<1.60	<2.71	<2.23	<2.28	<0.042
p-terphenyl	<12	<1.60	<2.71	<2.23	<2.28	<0.042
Total	<895	<119	<202	<167	<170	<3.13

Dry Gas Volume Sampled (Rm ^{3*}) :	4.428
Actual Flowrate (m ³ /s) :	26.3
Dry Reference Flowrate (Rm ³ /s*) :	15.5
Dry Adjusted Flowrate (Rm ³ /s**) :	18.8
Wet Reference Flowrate (Rm ³ /s*) :	18.4

* At 25°C and 1 atmosphere

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

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

TABLE 69
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration			Coefficient of Variation
	Test No. 1	Test No. 2	Average	
	ng/m ³	ng/m ³	ng/m ³	%
Acenaphthene	<1.58	<1.60	<1.59	0.9
Acenaphthylene	<1.58	<1.60	<1.59	0.9
Anthracene	<1.58	<1.60	<1.59	0.9
Benzo(a)Anthracene	<1.58	<1.60	<1.59	0.9
Benzo(b)Fluoranthene	<1.58	<1.60	<1.59	0.9
Benzo(k,l)Fluoranthene	<1.58	<1.60	<1.59	0.9
Benzo(a)fluorene	<1.58	<1.60	<1.59	0.9
Benzo(b)fluorene	<1.58	<1.60	<1.59	0.9
Benzo(g,h,i)Perylene	<1.58	<1.60	<1.59	0.9
Benzo(a)Pyrene	<1.58	<1.60	<1.59	0.9
Benzo(e)Pyrene	<1.58	<1.60	<1.59	0.9
Biphenyl	4.05	3.26	3.65	15.2
2-Chloronaphthalene	<1.58	<1.60	<1.59	0.9
Chrysene/Triphenylene/Benzo(b)anthracene	<1.58	<1.60	<1.59	0.9
Coronene	<7.88	<7.99	<7.93	0.9
Dibenzo(a,c/a,h)Anthracene	<1.58	<1.60	<1.59	0.9
Dibenzo(a,e)pyrene	<7.88	<7.99	<7.93	0.9
9,10-dimethylantracene	<1.58	<1.60	<1.59	0.9
7,12-Dimethylbenzo(a)anthracene	<1.58	<1.60	<1.59	0.9
Fluoranthene	1.94	2.42	2.18	15.5
Fluorene	2.35	<1.60	<1.97	27.0
Indeno(1,2,3-cd)Pyrene	<1.58	<1.60	<1.59	0.9
2-methylantracene	<1.58	<1.60	<1.59	0.9
3-Methylcholanthrene	<7.88	<7.99	<7.93	0.9
1-Methylnaphthalene	3.64	2.26	2.95	33.0
2-Methylnaphthalene	7.05	4.27	5.66	34.7
1-Methylphenanthrene	<1.58	<1.60	<1.59	0.9
9-Methylphenanthrene	<1.58	<1.60	<1.59	0.9
Naphthalene	18.5	18.9	18.7	1.4
Perylene	<1.58	<1.60	<1.59	0.9
Phenanthrene	14.7	11.8	13.3	15.6
Picene	<7.88	<7.99	<7.93	0.9
Pyrene	2.10	1.78	1.94	11.6
Tetralin	3.85	2.58	3.22	27.9
m-terphenyl	<1.58	<1.60	<1.59	0.9
o-Terphenyl	<1.58	<1.60	<1.59	0.9
p-terphenyl	<1.58	<1.60	<1.59	0.9
Total	<128	<119	<123	4.8

TABLE 70
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration			Coefficient of Variation
	Test No. 1	Test No. 2	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	
Acenaphthene	<2.68	<2.71	<2.69	0.9
Acenaphthylene	<2.68	<2.71	<2.69	0.9
Anthracene	<2.68	<2.71	<2.69	0.9
Benzo(a)Anthracene	<2.68	<2.71	<2.69	0.9
Benzo(b)Fluoranthene	<2.68	<2.71	<2.69	0.9
Benzo(k,l)Fluoranthene	<2.68	<2.71	<2.69	0.9
Benzo(a)fluorene	<2.68	<2.71	<2.69	0.9
Benzo(b)fluorene	<2.68	<2.71	<2.69	0.9
Benzo(g,h,i)Perylene	<2.68	<2.71	<2.69	0.9
Benzo(a)Pyrene	<2.68	<2.71	<2.69	0.9
Benzo(e)Pyrene	<2.68	<2.71	<2.69	0.9
Biphenyl	6.87	5.53	6.20	15.2
2-Chloronaphthalene	<2.68	<2.71	<2.69	0.9
Chrysene/Triphenylene/Benzo(b)anthracene	<2.68	<2.71	<2.69	0.9
Coronene	<13.4	<13.6	<13.5	0.9
Dibenzo(a,c/a,h)Anthracene	<2.68	<2.71	<2.69	0.9
Dibenzo(a,e)pyrene	<13.4	<13.6	<13.5	0.9
9,10-dimethylantracene	<2.68	<2.71	<2.69	0.9
7,12-Dimethylbenzo(a)anthracene	<2.68	<2.71	<2.69	0.9
Fluoranthene	3.30	4.11	3.71	15.4
Fluorene	3.99	<2.71	<3.35	27.1
Indeno(1,2,3-cd)Pyrene	<2.68	<2.71	<2.69	0.9
2-methylantracene	<2.68	<2.71	<2.69	0.9
3-Methylcholanthrene	<13.4	<13.6	<13.5	0.9
1-Methylnaphthalene	6.18	3.84	5.01	33.0
2-Methylnaphthalene	12.0	7.25	9.61	34.8
1-Methylphenanthrene	<2.68	<2.71	<2.69	0.9
9-Methylphenanthrene	<2.68	<2.71	<2.69	0.9
Naphthalene	31.5	32.1	31.8	1.4
Perylene	<2.68	<2.71	<2.69	0.9
Phenanthrene	25.0	20.0	22.5	15.6
Picene	<13.4	<13.6	<13.5	0.9
Pyrene	3.57	3.03	3.30	11.6
Tetralin	6.54	4.38	5.46	27.9
m-terphenyl	<2.68	<2.71	<2.69	0.9
o-Terphenyl	<2.68	<2.71	<2.69	0.9
p-terphenyl	<2.68	<2.71	<2.69	0.9
Total	<217	<202	<209	4.9

* At 25°C and 1 atmosphere

TABLE 71
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration			Coefficient of Variation
	Test No. 1	Test No. 2	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Acenaphthene	<2.23	<2.23	<2.23	0.2
Acenaphthylene	<2.23	<2.23	<2.23	0.2
Anthracene	<2.23	<2.23	<2.23	0.2
Benzo(a)Anthracene	<2.23	<2.23	<2.23	0.2
Benzo(b)Fluoranthene	<2.23	<2.23	<2.23	0.2
Benzo(k,l)Fluoranthene	<2.23	<2.23	<2.23	0.2
Benzo(a)fluorene	<2.23	<2.23	<2.23	0.2
Benzo(b)fluorene	<2.23	<2.23	<2.23	0.2
Benzo(g,h,i)Perylene	<2.23	<2.23	<2.23	0.2
Benzo(a)Pyrene	<2.23	<2.23	<2.23	0.2
Benzo(e)Pyrene	<2.23	<2.23	<2.23	0.2
Biphenyl	5.72	4.56	5.14	15.9
2-Chloronaphthalene	<2.23	<2.23	<2.23	0.2
Chrysene/Triphenylene/Benzo(b)anthracene	<2.23	<2.23	<2.23	0.2
Coronene	<11.1	<11.2	<11.2	0.2
Dibenzo(a,c/a,h)Anthracene	<2.23	<2.23	<2.23	0.2
Dibenzo(a,e)pyrene	<11.1	<11.2	<11.2	0.2
9,10-dimethylantracene	<2.23	<2.23	<2.23	0.2
7,12-Dimethylbenzo(a)anthracene	<2.23	<2.23	<2.23	0.2
Fluoranthene	2.75	3.39	3.07	14.8
Fluorene	3.32	<2.23	<2.78	27.7
Indeno(1,2,3-cd)Pyrene	<2.23	<2.23	<2.23	0.2
2-methylantracene	<2.23	<2.23	<2.23	0.2
3-Methylcholanthrene	<11.1	<11.2	<11.2	0.2
1-Methylnaphthalene	5.14	3.17	4.15	33.7
2-Methylnaphthalene	9.97	5.98	7.97	35.4
1-Methylphenanthrene	<2.23	<2.23	<2.23	0.2
9-Methylphenanthrene	<2.23	<2.23	<2.23	0.2
Naphthalene	26.2	26.4	26.3	0.7
Perylene	<2.23	<2.23	<2.23	0.2
Phenanthrene	20.8	16.5	18.6	16.3
Picene	<11.1	<11.2	<11.2	0.2
Pyrene	2.97	2.50	2.73	12.3
Tetralin	5.44	3.61	4.53	28.6
m-terphenyl	<2.23	<2.23	<2.23	0.2
o-Terphenyl	<2.23	<2.23	<2.23	0.2
p-terphenyl	<2.23	<2.23	<2.23	0.2
Total	<180	<167	<174	5.6

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

TABLE 72
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration			Coefficient of Variation
	Test No. 1	Test No. 2	Average	
	ng/Rm ³ *	ng/Rm ³ *	ng/Rm ³ *	%
Acenaphthene	<2.26	<2.28	<2.27	0.6
Acenaphthylene	<2.26	<2.28	<2.27	0.6
Anthracene	<2.26	<2.28	<2.27	0.6
Benzo(a)Anthracene	<2.26	<2.28	<2.27	0.6
Benzo(b)Fluoranthene	<2.26	<2.28	<2.27	0.6
Benzo(k/l)Fluoranthene	<2.26	<2.28	<2.27	0.6
Benzo(a)fluorene	<2.26	<2.28	<2.27	0.6
Benzo(b)fluorene	<2.26	<2.28	<2.27	0.6
Benzo(g,h,i)Perylene	<2.26	<2.28	<2.27	0.6
Benzo(a)Pyrene	<2.26	<2.28	<2.27	0.6
Benzo(e)Pyrene	<2.26	<2.28	<2.27	0.6
Biphenyl	5.81	4.66	5.24	15.5
2-Chloronaphthalene	<2.26	<2.28	<2.27	0.6
Chrysene/Triphenylene/Benzo(b)anthracene	<2.26	<2.28	<2.27	0.6
Coronene	<11.3	<11.4	<11.4	0.6
Dibenzo(a,c/a,h)Anthracene	<2.26	<2.28	<2.27	0.6
Dibenzo(a,e)pyrene	<11.3	<11.4	<11.4	0.6
9,10-dimethylantracene	<2.26	<2.28	<2.27	0.6
7,12-Dimethylbenzo(a)anthracene	<2.26	<2.28	<2.27	0.6
Fluoranthene	2.79	3.46	3.13	15.2
Fluorene	3.38	<2.28	<2.83	27.3
Indeno(1,2,3-cd)Pyrene	<2.26	<2.28	<2.27	0.6
2-methylantracene	<2.26	<2.28	<2.27	0.6
3-Methylcholanthrene	<11.3	<11.4	<11.4	0.6
1-Methylnaphthalene	5.23	3.23	4.23	33.3
2-Methylnaphthalene	10.1	6.11	8.12	35.0
1-Methylphenanthrene	<2.26	<2.28	<2.27	0.6
9-Methylphenanthrene	<2.26	<2.28	<2.27	0.6
Naphthalene	26.6	27.0	26.8	1.1
Perylene	<2.26	<2.28	<2.27	0.6
Phenanthrene	21.1	16.9	19.0	15.9
Picene	<11.3	<11.4	<11.4	0.6
Pyrene	3.02	2.55	2.78	11.9
Tetralin	5.53	3.69	4.61	28.2
m-terphenyl	<2.26	<2.28	<2.27	0.6
o-Terphenyl	<2.26	<2.28	<2.27	0.6
p-terphenyl	<2.26	<2.28	<2.27	0.6
Total	<183	<170	<177	5.2

* At 25°C and 1 atmosphere

TABLE 73
Reworld Durham York Renewable Energy L.P.
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	Average µg/s	
Acenaphthene	<0.043	<0.042	<0.042	0.9
Acenaphthylene	<0.043	<0.042	<0.042	0.9
Anthracene	<0.043	<0.042	<0.042	0.9
Benzo(a)Anthracene	<0.043	<0.042	<0.042	0.9
Benzo(b)Fluoranthene	<0.043	<0.042	<0.042	0.9
Benzo(k,l)Fluoranthene	<0.043	<0.042	<0.042	0.9
Benzo(a)fluorene	<0.043	<0.042	<0.042	0.9
Benzo(b)fluorene	<0.043	<0.042	<0.042	0.9
Benzo(g,h,i)Perylene	<0.043	<0.042	<0.042	0.9
Benzo(a)Pyrene	<0.043	<0.042	<0.042	0.9
Benzo(e)Pyrene	<0.043	<0.042	<0.042	0.9
Biphenyl	0.11	0.086	0.098	17.0
2-Chloronaphthalene	<0.043	<0.042	<0.042	0.9
Chrysene/Triphenylene/Benzo(b)anthracene	<0.043	<0.042	<0.042	0.9
Coronene	<0.21	<0.21	<0.21	0.9
Dibenzo(a,c/a,h)Anthracene	<0.043	<0.042	<0.042	0.9
Dibenzo(a,e)pyrene	<0.21	<0.21	<0.21	0.9
9,10-dimethylantracene	<0.043	<0.042	<0.042	0.9
7,12-Dimethylbenzo(a)anthracene	<0.043	<0.042	<0.042	0.9
Fluoranthene	0.052	0.064	0.058	13.7
Fluorene	0.063	<0.042	<0.053	28.8
Indeno(1,2,3-cd)Pyrene	<0.043	<0.042	<0.042	0.9
2-methylantracene	<0.043	<0.042	<0.042	0.9
3-Methylcholanthrene	<0.21	<0.21	<0.21	0.9
1-Methylnaphthalene	0.098	0.060	0.079	34.7
2-Methylnaphthalene	0.19	0.11	0.15	36.5
1-Methylphenanthrene	<0.043	<0.042	<0.042	0.9
9-Methylphenanthrene	<0.043	<0.042	<0.042	0.9
Naphthalene	0.50	0.50	0.50	0.4
Perylene	<0.043	<0.042	<0.042	0.9
Phenanthrene	0.40	0.31	0.35	17.4
Picene	<0.21	<0.21	<0.21	0.9
Pyrene	0.057	0.047	0.052	13.4
Tetralin	0.10	0.068	0.086	29.6
m-terphenyl	<0.043	<0.042	<0.042	0.9
o-Terphenyl	<0.043	<0.042	<0.042	0.9
p-terphenyl	<0.043	<0.042	<0.042	0.9
Total	<3.44	<3.13	<3.29	6.7

TABLE 74
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration ng/m ³	Dry Reference Concentration ng/Rm ^{3*}	Dry Adjusted Concentration ng/Rm ^{3**}	Wet Reference Concentration ng/Rm ^{3*}	Emission Rate µg/s
Acenaphthene	<1.59	<2.69	<2.23	<2.27	<0.042
Acenaphthylene	<1.59	<2.69	<2.23	<2.27	<0.042
Anthracene	<1.59	<2.69	<2.23	<2.27	<0.042
Benzo(a)Anthracene	<1.59	<2.69	<2.23	<2.27	<0.042
Benzo(b)Fluoranthene	<1.59	<2.69	<2.23	<2.27	<0.042
Benzo(k,l)Fluoranthene	<1.59	<2.69	<2.23	<2.27	<0.042
Benzo(a)fluorene	<1.59	<2.69	<2.23	<2.27	<0.042
Benzo(b)fluorene	<1.59	<2.69	<2.23	<2.27	<0.042
Benzo(g,h,i)Perylene	<1.59	<2.69	<2.23	<2.27	<0.042
Benzo(a)Pyrene	<1.59	<2.69	<2.23	<2.27	<0.042
Benzo(e)Pyrene	<1.59	<2.69	<2.23	<2.27	<0.042
Biphenyl	3.65	6.20	5.14	5.24	0.098
2-Chloronaphthalene	<1.59	<2.69	<2.23	<2.27	<0.042
Chrysene/Triphenylene/Benzo(b)anthracene	<1.59	<2.69	<2.23	<2.27	<0.042
Coronene	<7.93	<13.5	<11.2	<11.4	<0.21
Dibenzo(a,c/a,h)Anthracene	<1.59	<2.69	<2.23	<2.27	<0.042
Dibenzo(a,e)pyrene	<7.93	<13.5	<11.2	<11.4	<0.21
9,10-dimethylantracene	<1.59	<2.69	<2.23	<2.27	<0.042
7,12-Dimethylbenzo(a)anthracene	<1.59	<2.69	<2.23	<2.27	<0.042
Fluoranthene	2.18	3.71	3.07	3.13	0.058
Fluorene	<1.97	<3.35	<2.78	<2.83	<0.053
Indeno(1,2,3-cd)Pyrene	<1.59	<2.69	<2.23	<2.27	<0.042
2-methylantracene	<1.59	<2.69	<2.23	<2.27	<0.042
3-Methylcholanthrene	<7.93	<13.5	<11.2	<11.4	<0.21
1-Methylnaphthalene	2.95	5.01	4.15	4.23	0.079
2-Methylnaphthalene	5.66	9.61	7.97	8.12	0.15
1-Methylphenanthrene	<1.59	<2.69	<2.23	<2.27	<0.042
9-Methylphenanthrene	<1.59	<2.69	<2.23	<2.27	<0.042
Naphthalene	18.7	31.8	26.3	26.8	0.50
Perylene	<1.59	<2.69	<2.23	<2.27	<0.042
Phenanthrene	13.3	22.5	18.6	19.0	0.35
Picene	<7.93	<13.5	<11.2	<11.4	<0.21
Pyrene	1.94	3.30	2.73	2.78	0.052
Tetralin	3.22	5.46	4.53	4.61	0.086
m-terphenyl	<1.59	<2.69	<2.23	<2.27	<0.042
o-Terphenyl	<1.59	<2.69	<2.23	<2.27	<0.042
p-terphenyl	<1.59	<2.69	<2.23	<2.27	<0.042
Total	<123	<209	<174	<177	<3.29

* At 25°C and 1 atmosphere

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

TABLE 75
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train	Media Blank
	ng	ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k,l)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	<12	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene/Benzo(b)anthracene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylantracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylantracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	<12	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	43.0	152
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	<12	<12
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<667	<776

"<" 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 76
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Acetaldehyde, Formaldehyde and Acrolein Emission Data

Acetaldehyde

Test No.	Total Collected μg	Dry Volume Sampled Rm^3 *	Actual $\mu\text{g}/\text{m}^3$	Acetaldehyde Concentration			Acetaldehyde Emission Rate mg/s
				Dry Reference $\mu\text{g}/\text{Rm}^3$ *	Dry Adjusted $\mu\text{g}/\text{Rm}^{3**}$	Wet Reference $\mu\text{g}/\text{Rm}^3$ *	
1	16.3	0.0309	311	528	439	445	8.38
2	18.8	0.0299	370	629	517	528	9.72
3	18.0	0.0311	341	580	477	487	8.96
Average			340	579	477	487	9.02
Blank Train	14.0						
Method Blank	<0.1						

Formaldehyde

Test No.	Total Collected μg	Dry Volume Sampled Rm^3 *	Actual $\mu\text{g}/\text{m}^3$	Formaldehyde Concentration			Formaldehyde Emission Rate mg/s
				Dry Reference $\mu\text{g}/\text{Rm}^3$ *	Dry Adjusted $\mu\text{g}/\text{Rm}^{3**}$	Wet Reference $\mu\text{g}/\text{Rm}^3$ *	
1	8.22	0.0309	157	266	221	224	4.23
2	9.01	0.0299	177	301	248	253	4.66
3	8.87	0.0311	168	285	235	240	4.41
Average			167	284	235	239	4.43
Blank Train	5.82						
Method Blank	3.19						

Acrolein

Test No.	Total Collected μg	Dry Volume Sampled Rm^3 *	Actual $\mu\text{g}/\text{m}^3$	Acrolein Concentration			Acrolein Emission Rate mg/s
				Dry Reference $\mu\text{g}/\text{Rm}^3$ *	Dry Adjusted $\mu\text{g}/\text{Rm}^{3**}$	Wet Reference $\mu\text{g}/\text{Rm}^3$ *	
1	<0.1	0.0309	<1.91	<3.24	<2.69	<2.73	<0.051
2	<0.1	0.0299	<1.97	<3.34	<2.75	<2.81	<0.052
3	<0.1	0.0311	<1.89	<3.22	<2.64	<2.70	<0.050
Average			<1.92	<3.27	<2.70	<2.75	<0.051
Blank Train	<0.1						
Method Blank	<0.1						

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

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 77
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3^{**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Emission Rate mg/s
Acetone	<0.15	<4.23	<7.18	<5.97	<6.07	<0.11
Benzene	0.012	0.34	0.57	0.48	0.49	0.0091
Bromodichloromethane	0.013	0.37	0.62	0.52	0.53	0.0099
Bromoform	<0.0055	<0.15	<0.26	<0.22	<0.22	<0.0042
Bromomethane	<0.028	<0.79	<1.34	<1.12	<1.13	<0.021
1,3-Butadiene	<0.029	<0.82	<1.39	<1.16	<1.17	<0.022
2-Butanone	<0.066	<1.86	<3.16	<2.63	<2.67	<0.050
Carbon Tetrachloride	<0.0075	<0.21	<0.36	<0.30	<0.30	<0.0057
Chloroform	0.038	1.07	1.82	1.51	1.54	0.029
Cumene (Isopropylbenzene)	<0.0030	<0.085	<0.14	<0.12	<0.12	<0.0023
Dibromochloromethane	<0.0037	<0.10	<0.18	<0.15	<0.15	<0.0028
Dichlorodifluoromethane	<0.013	<0.37	<0.62	<0.52	<0.53	<0.0099
1,2-Dichloroethane	0.011	0.31	0.53	0.44	0.45	0.0084
trans,1,2-Dichloroethene	<0.0037	<0.10	<0.18	<0.15	<0.15	<0.0028
1,1-Dichloroethene	<0.0043	<0.12	<0.21	<0.17	<0.17	<0.0033
1,2-Dichloropropane	<0.0018	<0.051	<0.086	<0.072	<0.073	<0.0014
Ethylbenzene	<0.0028	<0.079	<0.13	<0.11	<0.11	<0.0021
Ethylene Dibromide	<0.0073	<0.21	<0.35	<0.29	<0.30	<0.0056
Mesitylene (1,3,5-Trimethylbenzene)	<0.0026	<0.073	<0.12	<0.10	<0.11	<0.0020
Methylene Chloride	<0.086	<2.42	<4.11	<3.43	<3.48	<0.065
Styrene	<0.0066	<0.19	<0.32	<0.26	<0.27	<0.0050
Tetrachloroethene	<0.0060	<0.17	<0.29	<0.24	<0.24	<0.0046
Toluene	0.32	9.02	15.3	12.7	12.9	0.24
1,1,1-Trichloroethane	<0.0097	<0.27	<0.46	<0.39	<0.39	<0.0074
Trichloroethene/1,1,2-Trichloroethene	<0.0066	<0.19	<0.32	<0.26	<0.27	<0.0050
Trichlorotrifluoroethane	<0.0095	<0.27	<0.45	<0.38	<0.38	<0.0072
Trichlorofluoromethane	<0.0053	<0.15	<0.25	<0.21	<0.21	<0.0040
M&P-Xylene	<0.0070	<0.20	<0.33	<0.28	<0.28	<0.0053
O-Xylene	<0.0035	<0.099	<0.17	<0.14	<0.14	<0.0027
Vinyl Chloride	<0.0064	<0.18	<0.31	<0.25	<0.26	<0.0049
Total	<0.87	<24.5	<41.6	<34.6	<35.2	<0.66

Dry Gas Volume Sampled (Rm^3^*) :	0.0209
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s^*) :	15.9
Dry Adjusted Flowrate ($\text{Rm}^3/\text{s}^{**}$) :	19.1
Wet Reference Flowrate (Rm^3/s^*) :	18.8

* At 25°C and 1 atmosphere

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

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

TABLE 78
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 2

Compound	Total Collected µg	Actual Concentration µg/m ³	Dry Reference Concentration µg/Rm ^{3*}	Dry Adjusted Concentration µg/Rm ^{3**}	Wet Reference Concentration µg/Rm ^{3*}	Emission Rate mg/s
Acetone	<0.15	<4.25	<7.21	<6.00	<6.10	<0.11
Benzene	0.012	0.34	0.58	0.48	0.49	0.0092
Bromodichloromethane	0.011	0.31	0.53	0.44	0.45	0.0084
Bromoform	<0.0055	<0.16	<0.26	<0.22	<0.22	<0.0042
Bromomethane	<0.028	<0.79	<1.35	<1.12	<1.14	<0.021
1,3-Butadiene	<0.029	<0.82	<1.39	<1.16	<1.18	<0.022
2-Butanone	<0.066	<1.87	<3.17	<2.64	<2.68	<0.050
Carbon Tetrachloride	<0.0075	<0.21	<0.36	<0.30	<0.30	<0.0057
Chloroform	0.038	1.08	1.83	1.52	1.55	0.029
Cumene (Isopropylbenzene)	<0.0030	<0.085	<0.14	<0.12	<0.12	<0.0023
Dibromochloromethane	<0.0037	<0.10	<0.18	<0.15	<0.15	<0.0028
Dichlorodifluoromethane	<0.013	<0.37	<0.63	<0.52	<0.53	<0.0099
1,2-Dichloroethane	0.010	0.28	0.48	0.40	0.41	0.0076
trans,1,2-Dichloroethene	<0.0037	<0.10	<0.18	<0.15	<0.15	<0.0028
1,1-Dichloroethene	<0.0043	<0.12	<0.21	<0.17	<0.17	<0.0033
1,2-Dichloropropane	<0.0018	<0.051	<0.087	<0.072	<0.073	<0.0014
Ethylbenzene	<0.0028	<0.079	<0.13	<0.11	<0.11	<0.0021
Ethylene Dibromide	<0.0073	<0.21	<0.35	<0.29	<0.30	<0.0056
Mesitylene (1,3,5-Trimethylbenzene)	<0.0026	<0.074	<0.13	<0.10	<0.11	<0.0020
Methylene Chloride	<0.086	<2.43	<4.13	<3.44	<3.50	<0.066
Styrene	<0.0066	<0.19	<0.32	<0.26	<0.27	<0.0050
Tetrachloroethene	<0.0060	<0.17	<0.29	<0.24	<0.24	<0.0046
Toluene	0.11	3.11	5.29	4.40	4.47	0.084
1,1,1-Trichloroethane	<0.0097	<0.27	<0.47	<0.39	<0.39	<0.0074
Trichloroethene/1,1,2-Trichloroethene	<0.0066	<0.19	<0.32	<0.26	<0.27	<0.0050
Trichlorotrifluoroethane	<0.0095	<0.27	<0.46	<0.38	<0.39	<0.0073
Trichlorofluoromethane	<0.0053	<0.15	<0.25	<0.21	<0.22	<0.0041
M&P-Xylene	<0.0070	<0.20	<0.34	<0.28	<0.28	<0.0054
O-Xylene	<0.0035	<0.099	<0.17	<0.14	<0.14	<0.0027
Vinyl Chloride	<0.0064	<0.18	<0.31	<0.26	<0.26	<0.0049
Total	<0.66	<18.6	<31.5	<26.2	<26.7	<0.50

Dry Gas Volume Sampled (Rm ^{3*}) :	0.0208
Actual Flowrate (m ³ /s) :	27.0
Dry Reference Flowrate (Rm ³ /s*) :	15.9
Dry Adjusted Flowrate (Rm ³ /s**) :	19.1
Wet Reference Flowrate (Rm ³ /s*) :	18.8

* At 25°C and 1 atmosphere

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

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

TABLE 79
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 3

Compound	Total Collected μg	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3^{**}$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Emission Rate mg/s
Acetone	<0.15	<4.53	<7.69	<6.40	<6.51	<0.12
Benzene	0.015	0.45	0.77	0.64	0.65	0.012
Bromodichloromethane	0.010	0.30	0.51	0.43	0.43	0.0082
Bromoform	<0.0055	<0.17	<0.28	<0.23	<0.24	<0.0045
Bromomethane	<0.028	<0.85	<1.44	<1.20	<1.21	<0.023
1,3-Butadiene	<0.029	<0.88	<1.49	<1.24	<1.26	<0.024
2-Butanone	<0.066	<1.99	<3.38	<2.82	<2.86	<0.054
Carbon Tetrachloride	<0.0075	<0.23	<0.38	<0.32	<0.33	<0.0061
Chloroform	0.038	1.15	1.95	1.62	1.65	0.031
Cumene (Isopropylbenzene)	<0.0030	<0.091	<0.15	<0.13	<0.13	<0.0024
Dibromochloromethane	<0.0037	<0.11	<0.19	<0.16	<0.16	<0.0030
Dichlorodifluoromethane	<0.013	<0.39	<0.67	<0.55	<0.56	<0.011
1,2-Dichloroethane	0.011	0.33	0.56	0.47	0.48	0.0090
trans,1,2-Dichloroethene	<0.0037	<0.11	<0.19	<0.16	<0.16	<0.0030
1,1-Dichloroethene	<0.0043	<0.13	<0.22	<0.18	<0.19	<0.0035
1,2-Dichloropropane	<0.0018	<0.054	<0.092	<0.077	<0.078	<0.0015
Ethylbenzene	<0.0028	<0.085	<0.14	<0.12	<0.12	<0.0023
Ethylene Dibromide	<0.0073	<0.22	<0.37	<0.31	<0.32	<0.0060
Mesitylene (1,3,5-Trimethylbenzene)	<0.0026	<0.079	<0.13	<0.11	<0.11	<0.0021
Methylene Chloride	<0.086	<2.60	<4.41	<3.67	<3.73	<0.070
Styrene	<0.0066	<0.20	<0.34	<0.28	<0.29	<0.0054
Tetrachloroethene	<0.0060	<0.18	<0.31	<0.26	<0.26	<0.0049
Toluene	0.077	2.33	3.95	3.29	3.34	0.063
1,1,1-Trichloroethane	<0.0097	<0.29	<0.50	<0.41	<0.42	<0.0079
Trichloroethene/1,1,2-Trichloroethene	<0.0066	<0.20	<0.34	<0.28	<0.29	<0.0054
Trichlorotrifluoroethane	<0.0095	<0.29	<0.49	<0.41	<0.41	<0.0077
Trichlorofluoromethane	<0.0053	<0.16	<0.27	<0.23	<0.23	<0.0043
M&P-Xylene	<0.0070	<0.21	<0.36	<0.30	<0.30	<0.0057
O-Xylene	<0.0035	<0.11	<0.18	<0.15	<0.15	<0.0029
Vinyl Chloride	<0.0064	<0.19	<0.33	<0.27	<0.28	<0.0052
Total	<0.63	<18.9	<32.1	<26.7	<27.1	<0.51

Dry Gas Volume Sampled (Rm^3^*) :	0.0195
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s^*) :	15.9
Dry Adjusted Flowrate ($\text{Rm}^3/\text{s}^{**}$) :	19.1
Wet Reference Flowrate (Rm^3/s^*) :	18.8

* At 25°C and 1 atmosphere

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

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

TABLE 80
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Volatile Organic Actual Concentrations

Compound	Actual Concentration			Average	Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3		
	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	%
Acetone	<4.23	<4.25	<4.53	<4.33	3.9
Benzene	0.34	0.34	0.45	0.38	17.5
Bromodichloromethane	0.37	0.31	0.30	0.33	10.6
Bromoform	<0.15	<0.16	<0.17	<0.16	3.9
Bromomethane	<0.79	<0.79	<0.85	<0.81	3.9
1,3-Butadiene	<0.82	<0.82	<0.88	<0.84	3.9
2-Butanone	<1.86	<1.87	<1.99	<1.91	3.9
Carbon Tetrachloride	<0.21	<0.21	<0.23	<0.22	3.9
Chloroform	1.07	1.08	1.15	1.10	3.9
Cumene (Isopropylbenzene)	<0.085	<0.085	<0.091	<0.087	3.9
Dibromochloromethane	<0.10	<0.10	<0.11	<0.11	3.9
Dichlorodifluoromethane	<0.37	<0.37	<0.39	<0.38	3.9
1,2-Dichloroethane	0.31	0.28	0.33	0.31	8.0
trans,1,2-Dichloroethene	<0.10	<0.10	<0.11	<0.11	3.9
1,1-Dichloroethene	<0.12	<0.12	<0.13	<0.12	3.9
1,2-Dichloropropane	<0.051	<0.051	<0.054	<0.052	3.9
Ethylbenzene	<0.079	<0.079	<0.085	<0.081	3.9
Ethylene Dibromide	<0.21	<0.21	<0.22	<0.21	3.9
Mesitylene (1,3,5-Trimethylbenzene)	<0.073	<0.074	<0.079	<0.075	3.9
Methylene Chloride	<2.42	<2.43	<2.60	<2.49	3.9
Styrene	<0.19	<0.19	<0.20	<0.19	3.9
Tetrachloroethene	<0.17	<0.17	<0.18	<0.17	3.9
Toluene	9.02	3.11	2.33	4.82	75.9
1,1,1-Trichloroethane	<0.27	<0.27	<0.29	<0.28	3.9
Trichloroethene/1,1,2-Trichloroethene	<0.19	<0.19	<0.20	<0.19	3.9
Trichlorotrifluoroethane	<0.27	<0.27	<0.29	<0.27	3.9
Trichlorofluoromethane	<0.15	<0.15	<0.16	<0.15	3.9
M&P-Xylene	<0.20	<0.20	<0.21	<0.20	3.9
O-Xylene	<0.099	<0.099	<0.11	<0.10	3.9
Vinyl Chloride	<0.18	<0.18	<0.19	<0.18	3.9
Total	<24.5	<18.6	<18.9	<20.6	16.1

TABLE 81
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1 $\mu\text{g}/\text{Rm}^3^*$	Test No. 2 $\mu\text{g}/\text{Rm}^3^*$	Test No. 3 $\mu\text{g}/\text{Rm}^3^*$	Average $\mu\text{g}/\text{Rm}^3^*$	
Acetone	<7.18	<7.21	<7.69	<7.36	3.9
Benzene	0.57	0.58	0.77	0.64	17.5
Bromodichloromethane	0.62	0.53	0.51	0.55	10.6
Bromoform	<0.26	<0.26	<0.28	<0.27	3.9
Bromomethane	<1.34	<1.35	<1.44	<1.37	3.9
1,3-Butadiene	<1.39	<1.39	<1.49	<1.42	3.9
2-Butanone	<3.16	<3.17	<3.38	<3.24	3.9
Carbon Tetrachloride	<0.36	<0.36	<0.38	<0.37	3.9
Chloroform	1.82	1.83	1.95	1.86	3.9
Cumene (Isopropylbenzene)	<0.14	<0.14	<0.15	<0.15	3.9
Dibromochloromethane	<0.18	<0.18	<0.19	<0.18	3.9
Dichlorodifluoromethane	<0.62	<0.63	<0.67	<0.64	3.9
1,2-Dichloroethane	0.53	0.48	0.56	0.52	8.0
trans,1,2-Dichloroethene	<0.18	<0.18	<0.19	<0.18	3.9
1,1-Dichloroethene	<0.21	<0.21	<0.22	<0.21	3.9
1,2-Dichloropropane	<0.086	<0.087	<0.092	<0.088	3.9
Ethylbenzene	<0.13	<0.13	<0.14	<0.14	3.9
Ethylene Dibromide	<0.35	<0.35	<0.37	<0.36	3.9
Mesitylene (1,3,5-Trimethylbenzene)	<0.12	<0.13	<0.13	<0.13	3.9
Methylene Chloride	<4.11	<4.13	<4.41	<4.22	3.9
Styrene	<0.32	<0.32	<0.34	<0.32	3.9
Tetrachloroethene	<0.29	<0.29	<0.31	<0.29	3.9
Toluene	15.3	5.29	3.95	8.18	75.9
1,1,1-Trichloroethane	<0.46	<0.47	<0.50	<0.48	3.9
Trichloroethene/1,1,2-Trichloroethene	<0.32	<0.32	<0.34	<0.32	3.9
Trichlorotrifluoroethane	<0.45	<0.46	<0.49	<0.47	3.9
Trichlorofluoromethane	<0.25	<0.25	<0.27	<0.26	3.9
M&P-Xylene	<0.33	<0.34	<0.36	<0.34	3.9
O-Xylene	<0.17	<0.17	<0.18	<0.17	3.9
Vinyl Chloride	<0.31	<0.31	<0.33	<0.31	3.9
Total	<41.6	<31.5	<32.1	<35.1	16.1

* At 25°C and 1 atmosphere

TABLE 82
Reworld Durham York Renewable Energy L.P.
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	<5.97	<6.00	<6.40	<6.13	3.9
Benzene	0.48	0.48	0.64	0.53	17.5
Bromodichloromethane	0.52	0.44	0.43	0.46	10.6
Bromoform	<0.22	<0.22	<0.23	<0.22	3.9
Bromomethane	<1.12	<1.12	<1.20	<1.14	3.9
1,3-Butadiene	<1.16	<1.16	<1.24	<1.18	3.9
2-Butanone	<2.63	<2.64	<2.82	<2.70	3.9
Carbon Tetrachloride	<0.30	<0.30	<0.32	<0.31	3.9
Chloroform	1.51	1.52	1.62	1.55	3.9
Cumene (Isopropylbenzene)	<0.12	<0.12	<0.13	<0.12	3.9
Dibromochloromethane	<0.15	<0.15	<0.16	<0.15	3.9
Dichlorodifluoromethane	<0.52	<0.52	<0.55	<0.53	3.9
1,2-Dichloroethane	0.44	0.40	0.47	0.44	8.0
trans,1,2-Dichloroethene	<0.15	<0.15	<0.16	<0.15	3.9
1,1-Dichloroethene	<0.17	<0.17	<0.18	<0.18	3.9
1,2-Dichloropropane	<0.072	<0.072	<0.077	<0.074	3.9
Ethylbenzene	<0.11	<0.11	<0.12	<0.11	3.9
Ethylene Dibromide	<0.29	<0.29	<0.31	<0.30	3.9
Mesitylene (1,3,5-Trimethylbenzene)	<0.10	<0.10	<0.11	<0.11	3.9
Methylene Chloride	<3.43	<3.44	<3.67	<3.51	3.9
Styrene	<0.26	<0.26	<0.28	<0.27	3.9
Tetrachloroethene	<0.24	<0.24	<0.26	<0.25	3.9
Toluene	12.7	4.40	3.29	6.81	75.9
1,1,1-Trichloroethane	<0.39	<0.39	<0.41	<0.40	3.9
Trichloroethene/1,1,2-Trichloroethene	<0.26	<0.26	<0.28	<0.27	3.9
Trichlorotrifluoroethane	<0.38	<0.38	<0.41	<0.39	3.9
Trichlorofluoromethane	<0.21	<0.21	<0.23	<0.22	3.9
M&P-Xylene	<0.28	<0.28	<0.30	<0.29	3.9
O-Xylene	<0.14	<0.14	<0.15	<0.14	3.9
Vinyl Chloride	<0.25	<0.26	<0.27	<0.26	3.9
Total	<34.6	<26.2	<26.7	<29.2	16.1

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

TABLE 83
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1 $\mu\text{g}/\text{Rm}^3*$	Test No. 2 $\mu\text{g}/\text{Rm}^3*$	Test No. 3 $\mu\text{g}/\text{Rm}^3*$	Average $\mu\text{g}/\text{Rm}^3*$	
Acetone	<6.07	<6.10	<6.51	<6.22	3.9
Benzene	0.49	0.49	0.65	0.54	17.5
Bromodichloromethane	0.53	0.45	0.43	0.47	10.6
Bromoform	<0.22	<0.22	<0.24	<0.23	3.9
Bromomethane	<1.13	<1.14	<1.21	<1.16	3.9
1,3-Butadiene	<1.17	<1.18	<1.26	<1.20	3.9
2-Butanone	<2.67	<2.68	<2.86	<2.74	3.9
Carbon Tetrachloride	<0.30	<0.30	<0.33	<0.31	3.9
Chloroform	1.54	1.55	1.65	1.58	3.9
Cumene (Isopropylbenzene)	<0.12	<0.12	<0.13	<0.12	3.9
Dibromochloromethane	<0.15	<0.15	<0.16	<0.15	3.9
Dichlorodifluoromethane	<0.53	<0.53	<0.56	<0.54	3.9
1,2-Dichloroethane	0.45	0.41	0.48	0.44	8.0
trans,1,2-Dichloroethene	<0.15	<0.15	<0.16	<0.15	3.9
1,1-Dichloroethene	<0.17	<0.17	<0.19	<0.18	3.9
1,2-Dichloropropane	<0.073	<0.073	<0.078	<0.075	3.9
Ethylbenzene	<0.11	<0.11	<0.12	<0.12	3.9
Ethylene Dibromide	<0.30	<0.30	<0.32	<0.30	3.9
Mesitylene (1,3,5-Trimethylbenzene)	<0.11	<0.11	<0.11	<0.11	3.9
Methylene Chloride	<3.48	<3.50	<3.73	<3.57	3.9
Styrene	<0.27	<0.27	<0.29	<0.27	3.9
Tetrachloroethene	<0.24	<0.24	<0.26	<0.25	3.9
Toluene	12.9	4.47	3.34	6.92	75.9
1,1,1-Trichloroethane	<0.39	<0.39	<0.42	<0.40	3.9
Trichloroethene/1,1,2-Trichloroethene	<0.27	<0.27	<0.29	<0.27	3.9
Trichlorotrifluoroethane	<0.38	<0.39	<0.41	<0.39	3.9
Trichlorofluoromethane	<0.21	<0.22	<0.23	<0.22	3.9
M&P-Xylene	<0.28	<0.28	<0.30	<0.29	3.9
O-Xylene	<0.14	<0.14	<0.15	<0.15	3.9
Vinyl Chloride	<0.26	<0.26	<0.28	<0.27	3.9
Total	<35.2	<26.7	<27.1	<29.7	16.1

* At 25°C and 1 atmosphere

TABLE 84
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate			Average mg/s	Coefficient of Variation %
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s		
Acetone	<0.11	<0.11	<0.12	<0.12	3.9
Benzene	0.0091	0.0092	0.012	0.010	17.5
Bromodichloromethane	0.0099	0.0084	0.0082	0.0088	10.6
Bromoform	<0.0042	<0.0042	<0.0045	<0.0043	3.9
Bromomethane	<0.021	<0.021	<0.023	<0.022	3.9
1,3-Butadiene	<0.022	<0.022	<0.024	<0.023	3.9
2-Butanone	<0.050	<0.050	<0.054	<0.051	3.9
Carbon Tetrachloride	<0.0057	<0.0057	<0.0061	<0.0059	3.9
Chloroform	0.029	0.029	0.031	0.030	3.9
Cumene (Isopropylbenzene)	<0.0023	<0.0023	<0.0024	<0.0023	3.9
Dibromochloromethane	<0.0028	<0.0028	<0.0030	<0.0029	3.9
Dichlorodifluoromethane	<0.0099	<0.0099	<0.011	<0.010	3.9
1,2-Dichloroethane	0.0084	0.0076	0.0090	0.0083	8.0
trans,1,2-Dichloroethene	<0.0028	<0.0028	<0.0030	<0.0029	3.9
1,1-Dichloroethene	<0.0033	<0.0033	<0.0035	<0.0034	3.9
1,2-Dichloropropane	<0.0014	<0.0014	<0.0015	<0.0014	3.9
Ethylbenzene	<0.0021	<0.0021	<0.0023	<0.0022	3.9
Ethylene Dibromide	<0.0056	<0.0056	<0.0060	<0.0057	3.9
Mesitylene (1,3,5-Trimethylbenzene)	<0.0020	<0.0020	<0.0021	<0.0020	3.9
Methylene Chloride	<0.065	<0.066	<0.070	<0.067	3.9
Styrene	<0.0050	<0.0050	<0.0054	<0.0051	3.9
Tetrachloroethene	<0.0046	<0.0046	<0.0049	<0.0047	3.9
Toluene	0.24	0.084	0.063	0.13	75.9
1,1,1-Trichloroethane	<0.0074	<0.0074	<0.0079	<0.0076	3.9
Trichloroethene/1,1,2-Trichloroethene	<0.0050	<0.0050	<0.0054	<0.0051	3.9
Trichlorotrifluoroethane	<0.0072	<0.0073	<0.0077	<0.0074	3.9
Trichlorofluoromethane	<0.0040	<0.0041	<0.0043	<0.0041	3.9
M&P-Xylene	<0.0053	<0.0054	<0.0057	<0.0055	3.9
O-Xylene	<0.0027	<0.0027	<0.0029	<0.0027	3.9
Vinyl Chloride	<0.0049	<0.0049	<0.0052	<0.0050	3.9
Total	<0.66	<0.50	<0.51	<0.56	16.1

TABLE 85
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual Concentration $\mu\text{g}/\text{m}^3$	Dry Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Dry Adjusted Concentration $\mu\text{g}/\text{Rm}^3^*$	Wet Reference Concentration $\mu\text{g}/\text{Rm}^3^*$	Emission Rate mg/s
Acetone	<4.33	<7.36	<6.13	<6.22	<0.12
Benzene	0.38	0.64	0.53	0.54	0.010
Bromodichloromethane	0.33	0.55	0.46	0.47	0.0088
Bromoform	<0.16	<0.27	<0.22	<0.23	<0.0043
Bromomethane	<0.81	<1.37	<1.14	<1.16	<0.022
1,3-Butadiene	<0.84	<1.42	<1.18	<1.20	<0.023
2-Butanone	<1.91	<3.24	<2.70	<2.74	<0.051
Carbon Tetrachloride	<0.22	<0.37	<0.31	<0.31	<0.0059
Chloroform	1.10	1.86	1.55	1.58	0.030
Cumene (Isopropylbenzene)	<0.087	<0.15	<0.12	<0.12	<0.0023
Dibromochloromethane	<0.11	<0.18	<0.15	<0.15	<0.0029
Dichlorodifluoromethane	<0.38	<0.64	<0.53	<0.54	<0.010
1,2-Dichloroethane	0.31	0.52	0.44	0.44	0.0083
trans,1,2-Dichloroethene	<0.11	<0.18	<0.15	<0.15	<0.0029
1,1-Dichloroethene	<0.12	<0.21	<0.18	<0.18	<0.0034
1,2-Dichloropropane	<0.052	<0.088	<0.074	<0.075	<0.0014
Ethylbenzene	<0.081	<0.14	<0.11	<0.12	<0.0022
Ethylene Dibromide	<0.21	<0.36	<0.30	<0.30	<0.0057
Mesitylene (1,3,5-Trimethylbenzene)	<0.075	<0.13	<0.11	<0.11	<0.0020
Methylene Chloride	<2.49	<4.22	<3.51	<3.57	<0.067
Styrene	<0.19	<0.32	<0.27	<0.27	<0.0051
Tetrachloroethene	<0.17	<0.29	<0.25	<0.25	<0.0047
Toluene	4.82	8.18	6.81	6.92	0.13
1,1,1-Trichloroethane	<0.28	<0.48	<0.40	<0.40	<0.0076
Trichloroethene/1,1,2-Trichloroethene	<0.19	<0.32	<0.27	<0.27	<0.0051
Trichlorotrifluoroethane	<0.27	<0.47	<0.39	<0.39	<0.0074
Trichlorofluoromethane	<0.15	<0.26	<0.22	<0.22	<0.0041
M&P-Xylene	<0.20	<0.34	<0.29	<0.29	<0.0055
O-Xylene	<0.10	<0.17	<0.14	<0.15	<0.0027
Vinyl Chloride	<0.18	<0.31	<0.26	<0.27	<0.0050
Total	<20.6	<35.1	<29.2	<29.7	<0.56

* At 25°C and 1 atmosphere

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

TABLE 86
Reworld Durham York Renewable Energy L.P.
Boiler No. 2 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank	Trip Blank	Method
	Tube 14A/14B	Tube 15A/15B	Blank
	µg	µg	µg
Acetone	<0.15	<0.15	<0.15
Benzene	<0.0036	<0.0036	<0.0036
Bromodichloromethane	<0.0017	<0.0017	<0.0017
Bromoform	<0.0055	<0.0055	<0.0055
Bromomethane	<0.028	<0.028	<0.028
1,3-Butadiene	<0.029	<0.029	<0.029
2-Butanone	<0.066	<0.066	<0.066
Carbon Tetrachloride	<0.0075	<0.0075	<0.0075
Chloroform	<0.0081	<0.0081	<0.0081
Cumene (Isopropylbenzene)	<0.0030	<0.0030	<0.0030
Dibromochloromethane	<0.0037	<0.0037	<0.0037
Dichlorodifluoromethane	<0.013	<0.013	<0.013
1,2-Dichloroethane	<0.0060	<0.0060	<0.0060
trans,1,2-Dichloroethene	<0.0037	<0.0037	<0.0037
1,1-Dichloroethene	<0.0043	<0.0043	<0.0043
1,2-Dichloropropane	<0.0018	<0.0018	<0.0018
Ethylbenzene	<0.0028	<0.0028	<0.0028
Ethylene Dibromide	<0.0073	<0.0073	<0.0073
Mesitylene (1,3,5-Trimethylbenzene)	<0.0026	<0.0026	<0.0026
Methylene Chloride	0.23	0.35	<0.086
Styrene	<0.0066	<0.0066	<0.0066
Tetrachloroethene	<0.0060	<0.0060	<0.0060
Toluene	0.023	0.055	<0.012
1,1,1-Trichloroethane	<0.0097	<0.0097	<0.0097
Trichloroethene/1,1,2-Trichloroethene	<0.0066	<0.0066	<0.0066
Trichlorotrifluoroethane	<0.0095	<0.0095	<0.0095
Trichlorofluoromethane	<0.0053	<0.0053	<0.0053
M&P-Xylene	<0.0070	<0.0070	<0.0070
O-Xylene	<0.0035	<0.0035	<0.0035
Vinyl Chloride	<0.0064	<0.0064	<0.0064
Total	<0.66	<0.81	<0.51

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

APPENDIX 3

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

October 3, 2024

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 Fall 2024 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 December 2, 2024. 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 Test America Eurofins in Knoxville, Tennessee, 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,



Andrew Evans, M.A.Sc., P.Eng.
Director, Waste Management Services
The Regional Municipality of Durham
905-668-7711 extension 4102
Andrew.Evans@durham.ca



Lindsay Milne
Director, Waste Management and Forestry
The Regional Municipality of York
905-830-4444 extension 75714
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- 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, Reworld
S. Kaur, Environmental Specialist, Reworld
L. Saha, Manager, Waste Planning and Technical Services, The Regional Municipality of Durham
N. Williams, Project Manager, Waste Planning and Technical Services, The Regional Municipality of Durham
M. Farid, Contract Management Engineer, Waste Management, The Regional Municipality of York



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 than 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 ($^{\circ}\text{C}$) for one second, prior to introduction of the Waste into the combustion chamber of the Boiler during the start-up, and thereafter maintained during the entire thermal treatment cycle and subsequent shutdown until all Waste combustion is completed.
 - (ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000°C (the Target Location) or by correlation of the required temperature of 1000°C for one second to the temperature measured downstream of the Target Location as proven by a method acceptable to the Director.
 - (b) The concentration of residual oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be less than 6 percent by volume on a dry basis.
 - (c)
 - (i) The operational target for the concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler is 40 milligrams per dry cubic metre, as a 4-hour rolling average, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, as measured and recorded by the CEM System, for the period from and including initial commissioning of the facility to twelve months following the completion of the first Source Testing program.

- (ii) The 4-hour average concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be more than 40 milligrams per dry cubic metre, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, after the first twelve months following the completion of the first Source Testing program.
- (d) The emissions from the Boilers after those emissions have been controlled by the associated APC Equipment for discharge into the atmosphere via the Stack shall comply with the emission concentration limits listed in the attached Schedule "C", as measured by a CEM System or by Source Testing as applicable.
- (e) The Boilers shall include combustion air control systems, which are capable of automatically adjusting the distribution and the quantity of combustion air, in such a manner that changes in the Waste Processing Rate and/or Waste composition or irregularities in the loading and/or combustion shall not adversely affect the performance of the Boilers.
- (f) The Boilers shall provide and maintain a high degree of gas turbulence and mixing in the combustion chamber.
- (g) The Boilers shall achieve the temperature, oxygen availability and turbulence requirements over the complete range of operating parameters, including feed rate, feed characteristics, combustion air, flue gas flow rate and heat losses.
- (h) The inlet temperature into each baghouse of the APC Equipment of the Boilers shall not be less than 120°C and not more than 185°C.
- (3) The Owner shall install and maintain visual and audible alarm systems to alert the Facility/Equipment operators of any potential deviation from the above Performance Requirements for parameters that are continuously monitored by applicable CEM Systems and shall forthwith take all reasonable actions to bring the Equipment/Facility into compliance with all Performance Conditions.
- (4) In the event that the CEM Systems indicate that emissions from the Boilers and the Stack exceed any Performance Requirements in the attached Schedule "C" for a continuous three (3) hour period, the Owner shall forthwith cut-off all Waste feed into the affected Boiler and initiate an Emergency Shutdown, while maintaining a temperature of 1000°C, as practicable, in the combustion zone of the Boiler.

Residual Waste Compliance Criteria

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

- (b) The Residual Waste that meets any of the criteria from the definition of "hazardous waste" set out in the *O. Reg. 347* shall be handled and disposed of in accordance with the LDR requirements set out in the *EPA* and the *O. Reg. 347*.
- (6) The Residual Waste, limited to the bottom ash, destined for a non-hazardous waste disposal site shall meet the definition of "incinerator ash" set out in the *O. Reg. 347*.

7. TESTING, MONITORING and AUDITING

Source Testing

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

Continuous Monitoring

- (2) The Owner shall select, test and install appropriate CEM Systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule "F" to conduct and maintain a program to continuously monitor, as a minimum, the following parameters prior to commencement of operation of the Boilers:
 - (a) the temperature at one (1) second downstream of the combustion zone of each Boiler where most of the combustion has been completed and the combustion temperature is fully developed;
 - (b) the inlet temperature of the gases into each baghouse of the APC Equipment of each Boiler;
 - (c) the concentration of carbon monoxide, oxygen and organic matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler;
 - (d) the opacity and moisture content of the flue gas and the concentration of oxygen, nitrogen oxides, sulphur dioxide, hydrogen chloride, hydrogen fluoride and ammonia in the Undiluted Gases leaving the baghouse of the APC Equipment of each Boiler.

Long-Term Sampling for Dioxins and Furans

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

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

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

Ambient Air Monitoring

- (4) (a) The Regions shall develop and implement the Ambient Air Monitoring and Reporting Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable by the Regional Director.
- (b) The Regions shall report the results of the Ambient Air Monitoring program to the Regional Director in accordance with the Ambient Air Monitoring and Reporting Plan and in accordance with the requirements of Condition 14.
- (c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

Noise Monitoring - Acoustic Audit

- (5) The Owner:
 - (a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;
 - (b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.
- (6) The Director:
 - (a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

- (b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

Residual Waste Testing

- (7)
 - (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg. 347* and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.
 - (b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.
 - (c) The Testing Protocol shall include the rationale for the proposed methods and the following:
 - (i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;
 - (ii) sample(s) handling and preserving procedures;
 - (iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and
 - (iv) a testing protocol for the bottom ash during the Site commissioning period.
 - (d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.
- (8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:
 - (a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;
 - (b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the "incinerator ash" definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

- (c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the "incinerator ash" definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re-establish compliance with the "incinerator ash" definition from the *O. Reg. 347* and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and
 - (d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re-establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.
- (9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347*.
- (b) The Owner shall follow the following schedule for compliance testing:
- (i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;
 - (ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and
 - (iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re-establish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

Soil Testing:

- (10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.
- (b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

Disposal of Residual Waste

- (11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.
- (12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347*, may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.
- (13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

Groundwater and Surface Water Monitoring

- (14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.
- (b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.
- (c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

8. NUISANCE IMPACT CONTROL and HOUSEKEEPING

Odour Management

- (1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.
- (b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.
- (ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained

to maintain a negative air pressure atmosphere throughout the Tipping Building.

- (c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.
- (2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.
- (3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.
- (4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.
- (5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.
- (6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.
- (7)
 - (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.
 - (ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.
 - (iii) These tests shall be repeated as directed or agreed by the District Manager.
- (8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.
- (9)
 - (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:
 - (i) identification of all potential sources of odourous emissions;

- (ii) description of the preventative and control measures to minimize odorous 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:

$$X_{10min} = X_{60min} * 1.65$$

where X_{10min} = 10-minute average concentration
 X_{60min} = 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)	2-monochlorophenol (2-MCP)
1,2-Dichlorobenzene (1,2-DCB)	3-monochlorophenol (3-MCP)
1,3-Dichlorobenzene (1,3-DCB)	4-monochlorophenol (4-MCP)
1,4-Dichlorobenzene (1,4-DCB)	2,3-dichlorophenol (2,3-DCP)
1,2,3-Trichlorobenzene (1,2,3-TCB)	2,4-dichlorophenol (2,4-DCP)
1,2,4-Trichlorobenzene (1,2,4-TCB)	2,5-dichlorophenol (2,5-DCP)
1,3,5-Trichlorobenzene (1,3,5-TCB)	2,6-dichlorophenol (2,6-DCP)
1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB)	3,4-dichlorophenol (3,4-DCP)
1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB)	3,5-dichlorophenol (3,5-DCP)
1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB)	2,3,4-trichlorophenol (2,3,4-T3CP)
Pentachlorobenzene (PeCB)	2,3,5-trichlorophenol (2,3,5-T3CP)
Hexachlorobenzene (HxCB)	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) PCB-081 (3,4,4',5-TCB) PCB-105 (2,3,3',4,4'-PeCB) PCB-114 (2,3,4,4',5-PeCB) PCB-118 (2,3',4,4',5-PeCB) PCB-123 (2',3,4,4',5-PeCB) PCB-126 (3,3',4,4',5-PeCB) PCB-156 (2,3,3',4,4',5-HxCB) PCB-157 (2,3,3',4,4',5'-HxCB) PCB-167 (2,3',4,4',5,5'-HxCB) PCB-169 (3,3',4,4',5,5'-HxCB) PCB-189 (2,3,3',4,4',5,5'-HpCB)	Acetaldehyde Acetone Acrolein Benzene Bromodichloromethane Bromoform Bromomethane Butadiene, 1,3 - Butanone, 2 - Carbon Tetrachloride Chloroform 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 Anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)fluorene Benzo(b)fluorene Benzo(ghi)perylene Benzo(a)pyrene Benzo(e)pyrene Biphenyl 2-Chloronaphthalene Chrysene Coronene Dibenzo(a,c)anthracene Dibenzo(a,h)anthracene Dibenzo(a,e)pyrene 9,10-Dimethylanthracene 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	2,3,7,8-Tetrachlorodibenzo-p-dioxin 1,2,3,7,8-Pentachlorodibenzo-p-dioxin 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin 2,3,7,8-Tetrachlorodibenzofuran 2,3,4,7,8-Pentachlorodibenzofuran 1,2,3,7,8-Pentachlorodibenzofuran 1,2,3,4,7,8-Hexachlorodibenzofuran 1,2,3,6,7,8-Hexachlorodibenzofuran 1,2,3,7,8,9-Hexachlorodibenzofuran 2,3,4,6,7,8-Hexachlorodibenzofuran 1,2,3,4,6,7,8-Heptachlorodibenzofuran 1,2,3,4,7,8,9-Heptachlorodibenzofuran 1,2,3,4,6,7,8,9-Octachlorodibenzofuran

SCHEDULE "E"

SOURCE TESTING PROCEDURES

1. The Owner shall submit, to the Manager a test protocol including the Pre-Test Information required by the Source Testing Code, at least two (2) months prior to the scheduled Source Testing date.
2.
 - (1) For the purpose of the Source Testing program, the Owner is temporarily permitted to operate the Boilers at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b) during the period of the Source Testing. The Owner shall ensure that the concentration of residual oxygen in the Undiluted Gases leaving the combustion zone of the Boilers, as measured and recorded by the CEM System, shall not be less than 5 percent by volume on a dry basis, during this Source Testing program.
 - (2) If the Source Testing results demonstrate that compliance with the Performance Requirements can be maintained at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b), the Owner may apply to the Director for approval to alter the required residual oxygen concentration.
3. The Owner shall finalize the test protocol in consultation with the Manager.
4. The Owner shall not commence the Source Testing until the Manager has accepted the test protocol.
5. The Owner shall complete the first Source Testing not later than six (6) months after Commencement of Operation of the Facility/Equipment.
6. The Owner shall conduct subsequent Source Testing at least once (1) every calendar year thereafter.
7. The Owner shall notify the District Manager and the Manager in writing of the location, date and time of any impending Source Testing required by this Certificate, at least fifteen (15) days prior to the Source Testing.
8. The Owner shall submit a report on the Source Testing programs to the District Manager and the Manager not later than three (3) months after completing each Source Testing program. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:
 - (1) an executive summary;
 - (2) records of operating conditions; including process description, records of waste composition and feed rate during the Source Testing;
 - (3) all records produced by the CEM Equipment;
 - (4) procedures followed during the Source Testing and any deviation from the proposed test protocol and the reasons therefore;
 - (5) the results of the analyses of the stack emissions;

- (6) a summary table that compares the Source Testing results, the monitoring data and the records of operating conditions during the Source Testing to the requirements imposed by the *EPA*, the Regulation and/or the Performance Requirements;
 - (7) the results of dispersion calculations in accordance with the *O. Reg. 419/05*, indicating the maximum concentration of the Test Contaminants, at the Point of Impingement.
 - (8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the Test Contaminants.
9. The Owner shall ensure that the Source Testing Report is made available and easily accessible for review by the public at the Facility, immediately after the document is submitted to the Ministry.
10. The Director may not accept the results of the Source Testing if:
- (1) the Source Testing Code or the requirements of the Manager were not followed; or
 - (2) the Owner did not notify the District Manager and the Manager of the Source Testing; or
 - (3) the Owner failed to provide a complete report on the Source Testing.
11. If the Director does not accept the results of the Source Testing, the Director may require re-testing.

SCHEDULE "F"

PARAMETER:

Temperature

LOCATION:

The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000°C for a period of not less than one second. Compliance shall be proven by direct measurement or/and a correlation between the measured temperature and the intended target proven by a method acceptable to the Director.

PERFORMANCE:

The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Type:	"K", "J" or other type or alternative measurement device with equivalent measurement accuracy and suitable to the temperature range being measured
2) Accuracy:	± 1.5 percent of the minimum gas temperature

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 1 minutes or better. Temperature readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

PARAMETER:

Carbon Monoxide

INSTALLATION:

The Continuous Carbon Monoxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥ 100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:

The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2.5 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 180 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:

Oxygen

INSTALLATION:

The Continuous Oxygen Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (percentage):	0 - 20 or 0 - 25
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:

The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (percentage):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data
3) Calibration Error:	0.25 percent O ₂
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 0.5 percent O ₂
7) Span Calibration Drift (24-hour):	≤ 0.5 percent O ₂
8) Response Time (90 percent response to a step change):	≤ 90 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Oxygen concentration readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:

Hydrogen Chloride

INSTALLATION:

The Continuous Hydrogen Chloride Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of hydrogen chloride in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥ 100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:

The Continuous Hydrogen Chloride Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 20 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:

The monitor shall be calibrated daily at the sample point, to ensure that it meets the drift limits specified above, during the periods of the operation of the . The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 5 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:

Nitrogen Oxides

INSTALLATION:

The Continuous Nitrogen Oxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of nitrogen oxides in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Analyzer Operating Range (parts per million, ppm):	0 to ≥ 200 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:

The Continuous Nitrogen Oxides Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:

Sulphur Dioxide

INSTALLATION:

The Continuous Sulphur Dioxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of sulphur dioxide in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS

1. Range (parts per million, ppm):
2. Calibration Gas Ports:

SPECIFICATION

0 to ≥ 100 ppm
close to the sample point

PERFORMANCE:

The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS**SPECIFICATION**

1. Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2. Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3. Calibration Error:	≤ 2 percent of actual concentration
4. System Bias:	≤ 4 percent of the mean value of the reference method test data
5. Procedure for Zero and Span Calibration Check:	all system components checked
6. Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7. Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8. Response Time (90 percent response to a step change):	≤ 200 seconds
9. Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:

Total Hydrocarbons

INSTALLATION:

The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and shall meet the following installation specifications.

PARAMETERS**SPECIFICATION**

1.	Detector Type:	Flame Ionization
2.	Oven Temperature:	160°C minimum
3.	Flame Temperature:	1800 °C minimum at the corona of the hydrogen flame
4.	Range (parts per million, ppm):	0 to ≥200 ppm
5.	Calibration Gas:	propane in air or nitrogen
6.	Calibration Gas Ports:	close to the sample point

PERFORMANCE:

The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS**SPECIFICATION**

1.	Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2.	Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3.	System Bias:	≤ 4 percent of the mean value of the reference method test data
4.	Noise:	≤ 1 percent of span value on most sensitive range
5.	Repeatability:	≤ 1 percent of span value
6.	Linearity (response with propane in air):	≤ 3 percent of span value over all ranges
7.	Calibration Error:	≤ 2 percent of actual concentration
8.	Procedure for Zero and Span Calibration Check:	all system components checked on all ranges
9.	Zero Calibration Drift (24-hours):	≤ 2.5 percent of span value on all ranges
10.	Span Calibration Drift (24-hours):	≤ 2.5 percent of span value
11.	Response Time (90 percent response to a step change):	≤ 60 seconds
12.	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER: Opacity

INSTALLATION: The Continuous Opacity Monitor shall be installed at an accessible location where the measurements are representative of the actual opacity of the Undiluted Gases leaving the APC Equipment associated with each Boiler and shall meet the following design and installation specifications.

PARAMETERS		SPECIFICATION
1)	Wavelength at Peak Spectral Response (nanometres, nm):	500 - 600
2)	Wavelength at Mean Spectral Response (nm):	500 - 600
3)	Detector Angle of View:	≤ 5 degrees
4)	Angle of Projection:	≤ 5 degrees
5)	Range (percent of opacity):	0 -100

PERFORMANCE:

The Continuous Opacity Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS		SPECIFICATION
1)	Span Value (percent opacity):	2 times the average normal opacity of the source
2)	Calibration Error:	≤3 percent opacity
3)	Attenuator Calibration:	≤2 percent opacity
4)	Response Time (95 percent response to a step change):	≤ 10 seconds
5)	Schedule for Zero and Calibration Checks:	daily minimum
6)	Procedure for Zero and Calibration Checks:	all system components checked
7)	Zero Calibration Drift (24-hours):	≤ 2 percent opacity
8)	Span Calibration Drift (24-hours):	≤ 2 percent opacity
9)	Conditioning Test Period:	≥ 168 hours without corrective maintenance
10)	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:

The monitor shall be calibrated, to ensure that it meets the drift limits specified above, during the periods of the operation of the Equipment. The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 30 seconds or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:

Moisture, Hydrogen Fluoride and Ammonia

Selection and Installation

The Owner shall select and install a CEM System, to measure moisture content of the stack gases, the concentration of hydrogen fluoride and ammonia in the Undiluted Gases leaving the APC Equipment associated with each Boiler, as follows:

- a) Design and Performance Specifications shall be in accordance with 40 CFR 60, Appendix B, Specification 4.
- b) The Owner shall select the probe locations in compliance with 40 CFR 60, Appendix B, Specification 2.

Test Procedures

The Owner shall verify compliance with the Design and Performance Specifications in accordance with 40 CFR 60, Appendix B, Specification 4, with the reference method for the relative accuracy test being Method 4. of the Source Testing Code.

In furtherance of, but without limiting the generality of the foregoing, the mean difference between the calibration gas value and the analyzer response value at each of the four test concentrations shall be less than 5 percent of the measurement range.

SCHEDULE "G"

A stormwater management facility to service a 10.0 ha drainage area of the Durham York Energy Centre located on the west side of Osbourne Road and north of the CN Rail, Lot 27, Concession Broken Front, Part, Municipality of Clarington, Regional Municipality of Durham, designed to provide quality and quantity control of stormwater run-off by attenuating runoff from storm events up to 1:100 years return frequency to or below the pre-development levels, consisting of:

East Stormwater Management Pond (East SWM Pond)

A stormwater management facility to service a 5.7 ha drainage area comprising of the eastern part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 128 m long drainage ditch collecting stormwater runoff from the north eastern part of the site, having an average horizontal slope of 1.56%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;
- one (1) approximately 199 m long drainage ditch collecting stormwater runoff from the eastern part of the site, having an average horizontal slope of 2.77%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;
- approximately fourteen (14) catch basins/maintenance holes and a total of 466.8 m long 450 mm diameter and 34.6 m of 600 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the north and north eastern part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;
- one (1) forebay with approximate bottom dimensions of 11.0 m wide and 34.8 m long and depth of 1.0 m, equipped with 600 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;
- one (1) wet extended detention stormwater management pond located at the south east part of the site, with approximate bottom dimensions of 21.0 m wide and 71.4 m long and a maximum depth of 2.7 m at 96.70 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent pool storage capacity of 1,008 m³ at elevation 95.0 m masl, an active storage capacity of 3,099 m³ at 96.70 m masl elevation, and total storage capacity of 4,107 m³, 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 m³ at elevation 95.0 m masl, an active storage capacity of 2,054 m³ at 96.50 m masl elevation, and total storage capacity of 2,677 m³, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 96.80 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

including all associated controls and appurtenances.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

Conditions 1.(1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), (17), (18) and (19) are included to clarify the legal rights and responsibilities of the Owner.

Conditions Nos.1.(3) and (4) are included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

Condition No. 1.(14) is included to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

Condition No.1.(15) is included to restrict potential transfer or encumbrance of the Site without the notification to the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate.

Condition No. 1.(16) is included to ensure that the appropriate Ministry staff has ready access to the operations of the Site which are approved under this Certificate. The Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.

SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

Condition No. 2. is included to specify the approved waste receipt rates, the approved waste types and the service area from which waste may be accepted at the Site based on the Owner's application and supporting documentation. Condition No. 2. is also included to specify the maximum amount of waste that is approved to be stored at the Site.

SIGNS and SITE SECURITY

Condition No. 3. is included to ensure that the Site's users, operators and the public are fully aware of important information and restrictions related to the operation of the Site. Condition No. 3. is also included to ensure that the Site is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site personnel is on duty.

SITE OPERATIONS

Condition No. 4. is included to outline the operational requirements for the Facility to ensure that the said operation does not result in an adverse effect or a hazard to the natural environment or any person.

EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Condition No. 5. is included to require the Site to be maintained and inspected thoroughly on a regular basis to ensure that the operations at the Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

PERFORMANCE REQUIREMENTS

Condition No. 6 is included to set out the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

TESTING, MONITORING and AUDITING

Condition No. 7. is to require the Owner to gather accurate information on the operation of the Facility so that the environmental impact and subsequent compliance with the *EPA*, the *OWRA*, their Regulations and this Certificate can be verified.

NUISANCE IMPACT CONTROL and HOUSEKEEPING

Condition No. 8. is included to ensure that the Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person. Condition No. 8 is also included to specify odour control measures to minimize a potential for odour emissions from the Site.

STAFF TRAINING

Condition No. 9. is included to ensure that staff are properly trained in the operation of the equipment and instrumentation used at the Site, in the emergency response procedures and on the requirements and restrictions related to the Site operations under this Certificate.

COMPLAINTS RECORDING PROCEDURE

Condition No.10. is included to require the Owner to respond to any environmental complaints resulting from the Facility appropriately and in a timely manner and that appropriate actions are taken to prevent any further incidents that may cause complaints in the future.

CONTINGENCY and EMERGENCY RESPONSE PLAN and EMERGENCY SITUATIONS RESPONSE AND REPORTING

Conditions Nos.11. and 12. are included to ensure that the Owner is prepared and properly equipped to take immediate action in the event of an emergency situation.

SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER

Condition No. 13. is included to set out the requirements for the submissions to the District Manager and the Regional Director regarding the operation of the Facility and the activities required by this Certificate.

RECORDS KEEPING

Condition No.14. is included to ensure that detailed records of Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

REPORTING

Condition No.15. is to ensure that regular review of site, operations and monitoring is carried out and findings documented by a third party for determining whether or not the Site is being operated in compliance with this Certificate of Approval, the EPA and its regulations and whether or not any changes should be considered.

PUBLIC ACCESS to DOCUMENTATION

Condition No.16. is included to ensure that the public has access to information on the operation of the Site in order to participate in the activities of the Advisory Committee in a meaningful and effective way.

ADVISORY COMMITTEE

Condition No.17. is included to require the Owner to establish a forum for the exchange of information and public dialogue on activities carried out at the Site and to ensure that the local residents are properly informed of the activities at the Site and that their concerns can be heard and acted upon , as necessary. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Site and protection of the natural environment. Condition 16. is also included to ensure that the requirements of the EA Approval are fulfilled.

CLOSURE of the SITE

Condition No.18. is included to ensure that the final closure of the Site is completed in accordance with Ministry's standards.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, and in accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written Notice served upon me, the Environmental Review Tribunal, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act and Section 101 of the

Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 9 and 39, *Environmental Protection Act*
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted site is approved under Section 9 and Section 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of June, 2011

Signature
Ian Parrott, P .Eng.
Director
Section 9, *EPA*
Section 39, *EPA*
Section 53, *OWRA*

MW,QN,SH/

c: District Manager, MOE York-Durham
Regional Director, MOE Central Region

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Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX

Notice No. 1

Issue Date: August 12, 2014

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

and

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

and

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

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

1. The following definition has been added:

"Contingency and Emergency Response Plan" also means the document entitled "Spill Contingency and Emergency Response Plan";

2. The following Conditions are amended to read as follows:

2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

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

(i) The storage duration is limited to a maximum of seven (7) days.

(ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The notification shall include the duration of the extension and the reasons.

3. The following Conditions are added:

7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.

11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).

4. The following documents have been added to Schedule "A":

4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by 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



Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX

Notice No. 2

Issue Date: October 24, 2014

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

and

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

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta
Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

1. The address of the Site has been changed to read as follows:

Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

2. The following definitions have been added:

" **Operator** " means any person other than the Regions' employees, authorized by the Regions as having the charge, management or control of any aspect of the Site and includes TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change, and includes its successors and assignees, their successors and assignees;

" **Regions** " means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and it includes The Regional Municipality of Durham and The Regional Municipality of York, their successors and assignees;

2. The following definition has been amended to read as follows:

" **Site** " means the property referred to as Durham York Energy Centre where the Owner has located and operates the Facility and the Works and located at 1835 Energy Drive in the Municipality of Clarington, Regional Municipality of Durham;

" **Owner** " within the context of this Approval, means the Regions and the Operator;

3. The following Conditions have been amended to read as follows:

"General: Change of Ownership" Conditions 1.(14) and 1.(15):

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

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

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

"Service Area, Approved Waste Types, Rates And Storage: Storage Restrictions" Condition 2.(5)(e):

2.(5)(e) (i) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(ii) The storage duration of bottom ash in the bunkers is limited to a maximum of seven (7) days.

(iii) Should additional storage location(s) and a longer storage duration be required during testing, a minimum of forty eight (48) hours before the storage parameters are changed from those approved in Condition 2.(5)(e)(i) and (ii), the Owner shall notify the District Manager, in writing, of the proposed changes and provide the reasons for the changes.

"Site Operations: Residual Waste Handling and Disposal" Condition 4.(5)(b)(iii):

4.(5)(b)(iii) The Owner may use the equipment that comes in contact with the hazardous wastes to handle other wastes provided that prior to such use, the equipment has been cleaned, as confirmed by visual inspections, to ensure the removal of any hazardous waste residues and to prevent cross contamination.

"Closure of the Site" Conditions 18.(1) and 18.(2):

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

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

4. "Covanta Durham York Renewable Energy Limited Partnership" is replaced with "TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change and includes its successors and assignees", in the Environmental Compliance Approval dated June 28, 2011 and in the Notice of Amendment dated August 12, 2014.

5. The following documents are added to Schedule "A":

8. Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Matthew R. Mulcahy, Covanta Durham York Renewable Energy Limited Partnership, Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Cliff Curtis, The Regional Municipality of Durham and Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Laura McDowell, The Regional Municipality of York, including the following attached supporting documentation:

(a) revised Section 8.0 "Ash Handling and Associated System" and revised Section 10.0 "Potable Process and Wastewater" dated May 2014, of the document entitled "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.

(b) Drawing No. M-2530, entitled "Piping & Instrumentation Diagram Bottom Ash Lime Slurry System"

(c) Drawing No. 70258-1-ME-GA-SK-001, entitled "Covanta Durham York Hydrated Lime System for Boiler Bottom Ash"

9. E-mail dated September 10, 2014 (2:26 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Margaret Wojcik, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the proposal, including an attachment entitled "M-1500^0360 Highlighted for MOE.pdf".

10. E-mail dated October 13, 2014 (3:23 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Ricki Allum, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the legal name of the applicant,

including an attachment entitled "Partnership Legal Clarification.pdf".

The reasons for this amendment to the Approval are as follows:

to approve the proposed Bottom Ash Lime Conditioning System, to correct the typographical errors in the Notice of Amendment dated August 12, 2014, to clarify the intent of the Residual Waste equipment cleaning condition and to allow different bottom ash storage conditions during testing.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the
purposes of Part II.1 of the
Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor
12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of October, 2014

Tesfaye Gebrezghi, P.Eng.

Director

appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

MW/

c: District Manager, MOE York-Durham

Leon Brasowski, Covanta Energy Corporation

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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.



AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX

Notice No. 4

Issue Date: February 24, 2016

The Regional Municipality of Durham
605 Rossland Road East, Level 5
Whitby, Ontario
L1N 6A3

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

TransRiver Canada Incorporated operating as Covanta Durham York
Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for a Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

The following Conditions are revoked:

7. TESTING , MONITORING and AUDITING

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233*

and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the
purposes of Part II.1 of the
Environmental Protection Act
Ministry of the Environment and
Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of February,
2016

Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

HM/
c: District Manager, MOECC York-Durham
Kathryn Katsiroumpas, Valcoustics Canada Ltd.

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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 °C minimum
3. Flame Temperature: 1800 °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: $\pm$ 10 percent of the mean value of the reference method test data or $\pm$ 5 ppm whichever is greater
3. System Bias: $\pm$ 4 percent of the mean value of the reference method test data
4. Noise: $\pm$ 1 percent of span value on most sensitive range
5. Repeatability: $\pm$ 1 percent of span value
6. Linearity (response with propane in air): $\pm$ 3 percent of span value over all ranges
7. Calibration Error: $\pm$ 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): $\pm$ 2.5 percent of span value on all ranges
10. Span Calibration Drift (24-hours): $\pm$ 2.5 percent of span value
11. Response Time (90 percent response $\pm$ 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

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
Giuseppe 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

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.

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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
Giuseppe 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



Content Copy Of Original

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX

Notice No. 1

Issue Date: April 22, 2020

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

and

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

and

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

Site Location: Durham York Energy Centre

1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

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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.

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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
Giuseppe 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



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
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United States of America
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Site Location: Durham York Energy Centre

1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

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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:

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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.

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2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;

5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1
of the *Environmental Protection Act*
Ministry of the Environment, Conservation and
Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or www.olt.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act*.

DATED AT TORONTO this 23rd day of
December, 2021

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part
II.1 of the *Environmental Protection Act*

MW/

c: District Manager, MECP York-Durham
Giuseppe Anello, M.Eng., P.Eng., PMP, Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York
Andrew Evans, The Regional Municipality of Durham

APPENDIX 4

Particulate and Metals Field Data Sheets (30 pages)

Alliance Technical Group

Plant	Reworld	
Plant Location	Courtice, Ontario	
Test No.:	1	Particulate/Metals
Test Date	December 3 2024	
Test Location	APC Outlet No. 1	
Operator		

Pitot Factor	.839		
DGMCF (V)	1.010		
Barometric Pressure	29.8	"Hg	
Static Pressure	-11.1	"H2O	
Nozzle Size	2508	inches	
Stack Diameter	54	inches	
Length		feet	
Width		feet	
Port length:	11	inches	

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Reading Interval	2.5	min
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

Notes:

Project No.:	AST-2024-4547 / 22330	
Page	1 of 5	
Probe No.:	6 Series	
Meter Box No.:	Team 4	
Impinger Box No.:		

Measuring Device	ID
Probe / Pitot	15A
Trendicator	Team 444
Control Box	Team 444
Incline Manometer	Team 444
Comb. Gas Analyzer	
Micromanometer	
Barometer	ENV. CAN.
Calipers	

Nozzle Measurements	
1	2485
2	2520
3	2520
Average:	

Site Diagram

Field Data Sheet

Date: Dec 3 2024	Plant: Reworld	Test No.: 1	Particle Size of Metals	Page 2 of 5
Plant Location: Courice, Ontario		Test Location: APC Outlet No. 1		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet °F
1	0	70.83	.84	77	280	1.9	6	247	246	74	111
	2.5	72.73	.84	77	284	1.9	6	247	247	59	166
	5	74.64	.86	77	285	1.9	6	247	251	56	181
2	7.5	76.52	.87	78	286	1.95	6	247	254	54	201
	10	78.42	.87	80	286	1.95	6	247	247	52	205
	12.5	80.32	.87	81	286	1.95	6	247	255	52	210
3	15	82.21	.81	82	286	1.8	6	247	249	52	212
	17.5	84.04	.81	83	286	1.8	6	247	254	52	212
	20	85.87	.81	85	285	1.85	6	247	253	52	215
4	22.5	87.73	.75	86	286	1.7	6	247	246	52	215
	25	89.52	.73	86	286	1.65	6	247	257	52	216
	27.5	91.27	.73	87	285	1.7	6	247	251	52	216
5	30	93.03	.64	88	285	1.45	6	247	251	52	215
	32.5	94.68	.63	88	285	1.45	6	247	256	52	216
	35	96.32	.65	89	285	1.5	6	247	248	51	216
6	37.5	97.99	.63	89	285	1.45	6	247	257	51	216
	40	99.63	.63	89	285	1.45	6	247	253	51	217
	42.5	101.27	.61	90	286	1.4	6	247	248	51	216
7	45	102.91	.71	90	286	1.65	6	247	258	51	217
	47.5	104.66	.73	90	286	1.7	6	247	251	51	216
	50	106.44	.71	90	287	1.65	6	247	251	51	216

Traverse: 1	Initial Leak Check: .005 cfm@ 15 "Hg		Initial Leak Check: cfm@		"Hg
Start Time: 13:39	Final Leak Check:		Final Leak Check: cfm@		"Hg

Project No.: AST-2024-4547 / 22330

Operator: BCP

Field Data Sheet

Date: Dec 3, 2024	Plant: Reworld	Test No.: 1429	Page 3 of 5
Plant Location: Courtyce, Ontario	Test Location: APC Outlet No. 1		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
8	52.5	168.20	.75	91	286	1.75	6	247	256	50	217
	55	110.00	.75	91	286	1.75	6	247	248	50	198
	57.5	111.81	.76	91	286	1.75	6	248	256	50	198
	60	113.61	.75	91	286	1.75	6	248	255	50	200
9	62.5	115.41	.73	91	286	1.7	6	247	250	50	197
	65	117.20	.74	91	285	1.7	6	247	257	50	198
	67.5	119.00	.74	91	285	1.7	6	247	253	50	199
	70	120.80	.77	91	280	1.8	6	247	249	50	198
10	72.5	122.64	.77	91	280	1.8	7	247	257	50	200
	75	124.49	.76	92	280	1.75	7	247	251	50	200
	77.5	126.30	.76	92	280	1.8	7	247	252	50	199
	80	128.14	.78	92	280	1.8	7	247	257	50	201
11	82.5	130.00	.65	92	280	1.5	7	247	250	50	201
	85	131.70	.66	92	280	1.55	6	247	253	50	198
	87.5	133.41	.61	92	280	1.4	6	247	256	51	200
	90	135.05	.90	83	285	2.05	7	247	257	66	123
12	92.5	137.38	.92	84	289	2.1	7	247	250	54	186
	95	139.34	.92	85	289	2.1	7	247	251	51	199
	97.5	141.34	.90	86	289	2	7	247	258	50	203
	100	143.30	.90	87	288	2	7	247	252	49	200
1	102.5	145.24	.91	88	287	2.05	7	247	249	48	197

Traverse: 1	Traverse: 2
Start Time: 15:09	Start Time: 15:20
Finish Time: 15:09	Finish Time:
Initial Leak Check: 0.003 cfm@ 15 "Hg	Initial Leak Check: 0.003 cfm@ 15 "Hg
Final Leak Check: 0.003 cfm@ 15 "Hg	Final Leak Check: cfm@

Project No.: AST-2024-4547 / 22330
Operator: BCP

Field Data Sheet

Date: Dec 3, 2024	Plant: Reworld	Test No.: 1	Page 4 of 5
Plant Location: Courtoice, Ontario	Test Location: APC Outlet No. 1		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinging Temp	
										Outlet °F	Inlet/Trap °F
3	105	147.21	.75	88	287	1.7	7	247	258	47	205
	107.5	149.02	.80	89	287	1.85	7	248	252	46	198
	110	150.87	.82	90	287	1.85	7	247	249	46	194
	112.5	152.76	.86	90	287	2	7	247	257	45	203
4	115	154.69	.83	91	287	1.9	7	247	251	45	204
	117.5	156.59	.83	91	287	1.9	7	247	251	45	202
	120	158.49	.78	91	288	1.8	7	246	257	45	204
	122.5	160.34	.78	91	289	1.8	7	247	251	45	202
5	125	162.18	.80	91	289	1.85	7	247	252	44	202
	127.5	164.06	.78	92	289	1.8	7	247	258	44	204
	130	165.90	.78	92	289	1.8	7	247	251	44	204
	132.5	167.76	.76	92	290	1.75	7	247	252	44	203
6	135	169.57	.80	92	290	1.85	7	247	257	44	205
	137.5	171.44	.80	92	290	1.85	7	247	251	44	202
	140	173.32	.78	92	289	1.8	7	247	253	44	202
	142.5	175.17	.78	92	288	1.8	7	247	258	44	201
7	145	177.02	.80	92	288	1.85	7	247	250	45	201
	147.5	178.89	.80	92	287	1.85	7	247	253	44	199
	150	180.76	.77	92	287	1.8	7	247	258	45	203
	152.5	182.62	.73	92	285	1.7	7	246	250	45	202
8	155	184.39	.72	92	281	1.65	7	247	254	45	201

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

Project No.: AST-2024-4547 / 22330
Operator: RCP

Field Data Sheet

Date: Dec 3, 2024	Plant: Reworld	Test No.: 1 M29	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

[illegible][illegible]

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date Dec 4, 2024	
Test Location	APC Outlet No. 1
Operator	APC

Pitot Factor	.839
DGMCF (Y)	1
Barometric Pressure	29.97 29.3 "Hg
Static Pressure	11.1 "H2O
Nozzle Size	.2508 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Reading Interval	2.5 min
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

Notes:

Project No.:	AST-2024-4547 / 22330
Page	1 of 5
Probe No.:	
Meter Box No.:	FAMI
Impinger Box No.:	

Measuring Device	ID
Probe / Pitot	15A
Trendicator	
Control Box	FAMI
Incline Manometer	
Comb.Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

Nozzle Measurements	
1	2485
2	2500
3	2495
Average:	2493

Site Diagram

Field Data Sheet

Date: 12/11/24	Plant: Reworld	Test No.: 2	Page 2 of 5
Plant Location: Courtee, Ontario	Test Location: APC Outlet No. 1		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
1	0	33.72	.87	66	278	2	3	254	255	62	
	2.5	35.55	.87	66	278	2	3	257	253	55	
	5	37.43	.87	66	279	2	3	257	253	52	
	7.5	39.3	.91	65	278	2	3	257	253	51	
	10	41.19	.89	65	279	2	3	258	253	51	
2	12.5	43.09	.91	65	279	2	3	258	253	49	
	15	45.01	.86	65	279	2	3	257	254	48	
	17.5	46.87	.84	65	280	1.9	3	257	254	47	
	20	48.71	.86	65	280	1.9	3	258	253	46	
	22.5	50.56	.76	65	279	1.9	3	258	254	46	
3	25	52.32	.78	65	279	1.7	3	258	253	46	
	27.5	54.08	.77	66	279	1.7	3	257	254	46	
	30	55.85	.70	66	279	1.7	3	257	253	46	
	32.5	57.55	.69	66	279	1.6	3	256	253	45	
	35	59.22	.70	66	280	1.6	3	256	253	45	
4	37.5	60.90	.64	66	279	1.6	3	256	254	44	
	40	62.51	.65	67	279	1.4	3	258	254	44	
	42.5	64.14	.64	67	279	1.5	3	257	254	44	
	45	65.76	.71	67	280	1.5	3	258	254	44	
	47.5	67.43	.72	67	280	1.6	3	258	253	44	
5	50	69.14	.71	67	280	1.6	3	256	253	44	

Traverse: i	Traverse:
Start Time: 09:04	Start Time:
Finish Time:	Finish Time:
Initial Leak Check: 0.003 cfm@ 15 "Hg	Initial Leak Check: cfm@ "Hg
Final Leak Check:	Final Leak Check: cfm@ "Hg

Project No.: AST-2024-4547 / 22330

Operator: Tylor

Field Data Sheet

Date: <u>Dec. 4, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>2</u>	Page 3 of 5
Plant Location: <u>Courtyce, Ontario</u>	Test Location: <u>APC Outlet No. 1</u>		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
8	52.5	70.84	.76	67	279	1.6	3	256	253	44	
	55	72.55	.76	67	279	1.6	3	257	253	44	
	57.5	74.3	.73	67	274	1.7	3	256	253	44	
	60	76.61	.71	68	280	1.6	3	256	253	44	
9	62.5	77.7	.74	68	279	1.6	3	257	253	45	
	65	79.43	.77	68	279	1.7	3	257	253	44	
	67.5	81.19	.73	68	279	1.7	3	257	253	45	
	70	82.9	.74	68	279	1.6	3	257	253	45	
10	72.5	84.64	.74	68	279	1.7	3	255	253	45	
	75	86.38	.71	68	280	1.7	3	257	253	45	
	77.5	88.08	.66	68	280	1.6	3	256	253	45	
	80	89.73	.68	68	277	1.5	3	257	254	45	
11	82.5	91.41	.66	68	277	1.5	3	255	254	45	
	85	93.05	.64	69	277	1.5	3	256	253	45	
	87.5	94.67	.64	69	277	1.5	3	255	253	45	
	90	96.29	.81	68	280	1.8	3	255	253	54	
12	92.5	98.51	.82	68	281	1.8	3	255	254	44	
	95	100.32	.82	68	281	1.8	3	255	253	42	
	97.5	102.14	.85	68	281	1.9	3	257	254	42	
	100	104.02	.85	68	281	1.9	3	256	253	42	
2	102.5	105.88	.86	68	281	1.9	3	255	253	42	

Traverse: <u>1</u>	Traverse: <u>2</u>
Start Time: <u>10:34</u>	Start Time: <u>10:43</u>
Initial Leak Check: <u>.002</u> cfm@ <u>14</u> "Hg	Initial Leak Check: <u>.002</u> cfm@ <u>14</u> "Hg
Final Leak Check: <u>.002</u> cfm@ <u>14</u> "Hg	Final Leak Check: <u>.002</u> cfm@ <u>14</u> "Hg

Project No.: AST-2024-4547 / 22330

Operator: TYC

Field Data Sheet

Date: DEC. 4, 2024	Plant: Reworld	Test No.: 2	Page 4 of 5
Plant Location: Courteice, Ontario		Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
3	105	107.74	.83	68	282	1.9	3	257	254	42	
	107.5	109.58	.82	68	281	1.9	3	256	255	43	
	110	111.42	.86	69	281	1.9	3	257	254	43	
	112.5	113.22	.77	69	281	1.8	3	258	255	43	
4	115	115.1	.76	69	281	1.7	3	257	255	44	
	117.5	116.79	.80	69	282	1.7	3	256	254	43	
	120	115.57	.75	69	282	1.8	3	258	254	43	
	122.5	120.33	.77	69	282	1.7	3	256	254	43	
5	125	122.12	.76	69	282	1.7	3	256	255	43	
	127.5	123.89	.76	69	283	1.7	3	256	254	43	
	130	125.65	.71	69	283	1.7	3	258	254	43	
	132.5	127.36	.72	69	283	1.6	3	258	254	43	
6	135	129.67	.71	69	283	1.6	3	257	254	43	
	137.5	130.78	.81	69	284	1.6	3	258	253	43	
	140	132.58	.81	69	285	1.8	3	258	253	43	
	142.5	134.4	.83	69	285	1.8	3	256	253	43	
7	145	136.25	.82	69	284	1.9	3	257	253	43	
	147.5	138.07	.81	69	285	1.8	3	256	253	43	
	150	139.9	.84	69	285	1.8	3	257	253	43	
	152.5	141.73	.83	69	283	1.8	3	257	255	43	
8	155	143.56	.83	69	282	1.9	3	257	254	43	

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

Project No.: AST-2024-4547 / 22330
Operator: TYC

Field Data Sheet

Date: <i>Dec. 4, 2024</i>	Plant:	Reworld	Test No.: <i>2</i>	Page 5 of 5
	Plant Location:	Courtice, Ontario	Test Location: APC Outlet No. <i>1</i>	

[illegible]

Traverse:	Q			Traverse:	
Start Time:		Initial Leak Check:	cfm@	"Hg	"Hg
Finish Time:	19:13	Final Leak Check:	cfm@	15	"Hg

Project No.: AST-2024-4547 / 22330

Operator: 721

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date Dec 4, 2024	
Test Location	APC Outlet No. 1
Operator BCP	

Project No.:	AST-2024-4547 / 22330
Page	1 of 5
Probe No.:	
Meter Box No.:	TEAM
Impinger Box No.:	

Pitot Factor	.834
DGMCF (V)	1.008
Barometric Pressure	29.1 "Hg
Static Pressure	-11.1 "H2O
Nozzle Size	.2508 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Measuring Device	ID
Probe / Pitot	15A
Trendicator	
Control Box	TEAM
Incline Manometer	11
Comb.Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

Reading Interval	2.5 min
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

Site Diagram

Nozzle Measurements	
1	.2185 .2465
2	.2510 .252
3	.2445 .2510
Average:	.2508

Notes:

Field Data Sheet

Date: Dec 4, 2024	Plant: Reworld	Test No.: 3	Page 2 of 5
Plant Location: Courtyce, Ontario	Test Location: APC Outlet No. 1		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
1	0	62.00	.90	68	281	2	4	251	259	60	
	2.5	68.63.92	.90	68	283	2	4	254	264	54	
	5	65.81	.92	67	284	2	4	256	259	53	
	7.5	67.73	.93	67	283	2.05	4	254	258	50	
	10	69.65	.93	67	283	2.05	4	253	256	49	
3	12.5	71.56	.92	67	284	2	4	256	254	49	
	15	73.46	.88	67	284	1.95	4	256	251	48	
	17.5	75.34	.86	67	285	1.9	4	255	256	48	
	20	77.20	.86	66	284	1.9	4	255	260	48	
	22.5	79.06	.81	67	284	1.8	4	255	260	48	
4	25	80.87	.80	67	284	1.8	4	257	260	48	
	27.5	82.68	.78	67	283	1.7	4	256	260	48	
	30	84.46	.72	67	283	1.6	4	257	261	48	
	32.5	86.17	.71	68	283	1.6	4	258	262	47	
	35	87.87	.71	68	283	1.6	3	256	262	48	
6	37.5	89.56	.63	68	283	1.4	3	257	261	47	
	40	91.16	.63	68	282	1.4	3	259	260	47	
	42.5	92.75	.61	68	282	1.35	3	259	261	47	
	45	94.32	.67	68	282	1.5	3	256	261	47	
	47.5	95.96	.67	68	281	1.5	3	256	261	47	
7	50	97.62	.67	68	281	1.5	3	258	261	46	

Traverse: 1	Start Time: 13:02	Initial Leak Check: .004 cfm@ 15 "Hg	Final Leak Check: .004 cfm@ 15 "Hg
Finish Time:		Initial Leak Check:	Final Leak Check:

Project No.: AST-2024-4547 / 22330
Operator: BCP

Field Data Sheet

Date: <u>Dec 4, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>3</u>	Page 3 of 5
Plant Location: <u>Courtyce, Ontario</u>	Test Location: <u>APC Outlet No. 1</u>		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
8	52.5	99.27	.70	68	280	1.55	3	258	261	46	
	55	100.95	.72	69	281	1.6	3	257	262	47	
	57.5	102.67	.72	69	281	1.6	3	257	262	46	
	60	104.41	.76	69	280	1.7	3	256	261	47	
9	62.5	106.15	.79	69	281	1.75	3	258	261	46	
	65	107.93	.79	69	280	1.8	3	257	260	46	
	67.5	109.72	.81	69	281	1.8	3	258	261	46	
	70	111.54	.81	69	281	1.8	3	258	261	46	
10	72.5	113.37	.81	69	281	1.8	3	258	262	46	
	75	115.18	.73	69	280	1.6	3	257	262	46	
	77.5	116.90	.76	69	280	1.7	3	256	263	46	
	80	118.66	.76	69	280	1.7	3	255	261	47	
12	82.5	120.43	.79	69	280	1.75	3	256	261	47	
	85	122.22	.80	69	280	1.8	34	257	260	47	
	87.5	124.03	.80	69	280	1.8	4	257	261	47	
	90	125.84	.99	69	281	2.2	5	257	261	59	
1	92.5	128.35	.99	69	285	2.2	5	257	262	48	
	95	130.37	.97	69	285	2.1	5	257	261	47	
	97.5	132.36	.97	68	285	2.1	5	258	261	46	
	100	134.32	.96	68	284	2.15	5	256	261	46	
2	102.5	136.28	.96	68	284	2.15	5	257	261	46	

Traverse: <u>1</u>	Traverse: <u>2</u>
Start Time: <u>14:32</u>	Initial Leak Check: <u>14.40</u> cfm@ <u>15</u> "Hg
Finish Time: <u>14:32</u>	Final Leak Check: <u>15</u> cfm@ <u>15</u> "Hg

Project No.: AST-2024-4547 / 22330
Operator: BCP

Field Data Sheet

Date: Dec 4, 2024	Plant: Reworld	Test No.: 3	Page 4 of 5
Plant Location: Courtee, Ontario	Test Location: APC Outlet No. 1		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
3	105	138.25	.96	68	285	2.15	5	258	262	47	
	107.5	140.22	.94	68	285	2.1	5	258	263	47	
	110	142.16	.95	68	285	2.1	4	258	263	47	
	112.5	144.12	.88	68	285	1.95	4	258	261	47	
	115	146.01	.83	68	285	1.85	4	258	262	47	
4	117.5	147.83	.85	68	285	1.9	4	260	264	47	
	120	149.68	.73	68	284	1.6	4	258	266	47	
	122.5	151.43	.73	68	284	1.6	4	256	261	47	
	125	153.14	.72	68	283	1.6	4	257	260	48	
	127.5	154.83	.64	68	283	1.4	4	257	262	48	
5	130	156.44	.61	68	282	1.35	4	258	262	48	
	132.5	158.03	.63	68	282	1.4	4-3	258	262	48	
	135	159.62	.70	68	282	1.55	3	254	261	48	
	137.5	161.30	.69	68	282	1.5	3	257	262	48	
	140	162.96	.69	68	281	1.5	3	257	261	47	
6	142.5	164.62	.68	68	281	1.5	3	258	261	47	
	145	166.28	.69	68	281	1.5	3	256	263	47	
	147.5	167.94	.69	64	281	1.5	3	256	264	47	
	150	169.61	.68	68	281	1.5	3	256	265	47	
	152.5	171.27	.68	68	280	1.5	3	256	264	47	
7	155	172.93	.71	68	280	1.6	3	258	264	47	

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

Project No.: AST-2024-4547 / 22330
Operator: BCP

Field Data Sheet

Date: Dec 4, 2024	Plant: Reworld	Test No.: 3	Page 5 of 5
	Plant Location: Courtoice, Ontario	Test Location: APC Outlet No. _____	

[illegible]

Traverse: 2			
Start Time:		Initial Leak Check:	- cfm@ - "Hg
Finish Time:	6:10	Final Leak Check:	0.002 cfm@ 15.5 "Hg

Project No.: AST-2024-4547 / 22330

Operator: BCP

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	1
Test Date	Dec. 3, 2024
Test Location	APC Outlet No. 2
Operator	TYC

Project No.:	AST-2024-4547 / 22330
Page	1 of 5
Probe No.:	
Meter Box No.:	TEAM 1
Impinger Box No.:	7

Pitot Factor	0.847
DGMCF (Y)	1.008
Barometric Pressure	29.830 inHg
Static Pressure	-10.9 inHg
Nozzle Size	0.506 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g
Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Measuring Device	ID
Probe / Pitot	S4
Trendicator	
Control Box	TEAM 1
Incline Manometer	
Comb. Gas Analyzer	
Micromanometer	
Barometer	ENV. CAN.
Calipers	

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

Site Diagram

Nozzle Measurements	
1	0.2495
2	0.2500
3	0.2555
Average:	0.2520

Probe Liner Glass / Metal / Teflon / Other

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Notes:

Field Data Sheet

Date: <u>Dec. 3, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>1</u>	Page 2 of 5
Plant Location: <u>Courtoice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
1	0	80.19	.94	74	277	1.8	3	252	251	50	
	2.5	82.00	.98	74	281	1.8	3	252	251	49	
	5	83.84	.95	74	281	1.8	3	253	255	47	
	7.5	85.65	.89	74	281	1.8	3	253	255	46	
	10	87.44	.88	75	281	2.0	3	253	255	46	
2	12.5	89.35	.88	75	281	2.0	3	253	255	46	
	15	91.25	.84	75	280	2.9	3	254	256	47	
	17.5	93.11	.83	75	280	1.9	3	255	256	47	
	20	94.94	.85	75	280	1.9	3	254	256	47	
	22.5	96.8	.79	75	280	1.9	3	255	256	48	
3	25	98.61	.76	75	279	1.8	3	255	256	48	
	27.5	100.38	.76	75	279	1.7	3	255	257	48	
	30	102.15	.71	76	278	1.7	3	255	257	48	
	32.5	103.85	.72	76	278	1.6	3	255	257	48	
	35	105.58	.70	76	278	1.6	3	255	257	48	
4	37.5	107.31	.61	76	278	1.6	3	255	257	48	
	40	108.91	.60	76	278	1.4	2	255	257	49	
	42.5	110.51	.60	76	277	1.4	2	255	257	49	
	45	112.11	.62	77	277	1.4	2	255	257	49	
	47.5	113.7	.67	77	277	1.4	2	255	257	49	
5	50	115.38	.69	77	277	1.5	2	255	257	49	

Traverse: <u>1</u>	Start Time: <u>09:20</u>	Initial Leak Check: <u>.001</u>	cfm@ <u>11</u>	"Hg
	Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: AST-2024-4547 / 22330
Operator: TYC

Field Data Sheet

Date: <u>Dec 3, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>7</u>	Page 3 of 5
Plant Location: <u>Courtyce, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
8	52.5	117.07	.609	77	276	1.6	2	255	257	49	
	55	118.73	.73	77	277	1.6	2	255	257	49	
	57.5	120.52	.71	77	278	1.7	3	255	258	49	
	60	122.23	.72	77	278	1.6	2	255	257	49	
9	62.5	123.96	.73	78	278	1.6	2	255	257	50	
	65	125.71	.74	78	278	1.7	3	255	257	50	
	67.5	127.46	.75	78	279	1.7	3	255	257	50	
	70	129.22	.75	78	278	1.7	3	255	258	50	
10	72.5	131.0	.76	78	278	1.7	3	255	258	51	
	75	132.78	.75	78	278	1.7	3	255	257	51	
	77.5	134.55	.62	79	279	1.7	3	255	257	51	
	80	136.17	.62	79	277	1.4	3	255	258	52	
11	82.5	137.79	.61	79	277	1.4	3	255	258	52	
	85	139.38	.60	79	277	1.4	3	254	258	52	
	87.5	140.96	.65	79	277	1.4	3	255	258	53	
	90	142.61	.93	78	275	1.5	3	256	259	54	
12	92.5	144.4	.9	78	282	2.1	3	256	259	50	
	95	146.77	.9	78	282	2.0	3	255	260	47	
	97.5	148.7	.89	79	282	2.0	3	255	259	46	
	100	150.58	.93	79	281	2.0	3	256	259	46	
1	102.5	152.53	.95	79	281	2.1	3	256	260	46	

Traverse: (	Traverse: 2	Initial Leak Check: 11:03	Initial Leak Check: 088 cfm@ 15. "Hg
Start Time: 10:50	Finish Time: 11:03	Final Leak Check: 001 cfm@ 10 "Hg	Final Leak Check: cfm@ "Hg

Project No.: AST-2024-4547 / 22330
Operator: tyc

Field Data Sheet

Date: <u>Dec 3, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>1</u>	Page 4 of 5
Plant Location: <u>Courtyce, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
3	105	154.52	.94	79	281	2.2	3	254	259	46	1
	107.5	156.61	.93	79	281	2.1	3	256	266	46	1
	110	158.49	.91	79	281	2.1	3	256	259	46	1
	112.5	160.44	.86	79	281	2.1	3	256	259	47	1
4	115	162.32	.86	79	282	2.0	3	256	259	47	1
	117.5	164.21	.89	79	282	2.0	3	256	260	47	1
	120	166.1	.81	79	282	2.0	3	257	259	47	1
	122.5	167.95	.78	79	282	1.8	3	257	259	47	1
5	125	169.78	.79	80	282	1.8	3	256	259	47	1
	127.5	171.58	.71	79	281	1.8	3	256	259	46	1
	130	173.35	.70	80	281	1.6	3	256	260	47	1
	132.5	175.06	.71	80	281	1.6	3	256	260	47	1
7	135	176.8	.74	80	280	1.6	3	256	259	47	1
	137.5	178.55	.74	80	280	1.7	3	256	258	47	1
	140	180.32	.72	80	280	1.7	3	257	259	47	1
	142.5	182.08	.72	80	280	1.65	3	256	259	47	1
8	145	183.81	.70	80	280	1.65	3	256	259	48	1
	147.5	185.52	.70	80	279	1.6	3	256	259	48	1
	150	187.19	.73	80	279	1.6	3	256	259	48	1
	152.5	188.96	.75	80	279	1.7	3	255	258	48	1
	155	190.75	.75	80	279	1.7	3	256	259	48	1

Traverse:		Traverse:	
Start Time:	Initial Leak Check:	Start Time:	Initial Leak Check:
Finish Time:	Final Leak Check:	Finish Time:	Final Leak Check:

Field Data Sheet

Date: <u>Dec 3, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>1</u>	Page 5 of 5
	Plant Location: <u>Courtice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>	

[illegible]

Traverse:	2	Initial Leak Check:	cfm@	"Hg
Start Time:		Initial Leak Check:	cfm@	"Hg
Finish Time:	12:33	Final Leak Check:	000 cfm@	1/2 "Hg

Project No.: AST-2024-4547 / 22330

Operator: TYC

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	2
Test Date	Dec. 31, 2024
Test Location	APC Outlet No. 2
Operator	TLC

Project No.:	AST-2024-4547 / 22330
Page	1 of 5
Probe No.:	
Meter Box No.:	TEA441
Impinger Box No.:	8

Pitot Factor	.849
DGMCF (Y)	1.008
Barometric Pressure	29.8 ~~29.86~~ "Hg
Static Pressure	-16.9 "H2O
Nozzle Size	0.2586 ~~0.2448~~ inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g
Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

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

Nozzle Measurements	
1	.2445
2	.2500
3	.2500
Average:	.2498

Probe Liner Glass / Metal / Teflon / Other

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: <u>Dec 3, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>2</u>	Page 2 of 5
Plant Location: <u>Courtyce, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
1	0	9.316	.87	79	280	9.0	2523	252	252	60	
	2.5	11.33	.88	79	280	9.0	3	254	255	60	
	5	13.25	.87	79	281	2	3	254	257	58	
	7.5	15.16	.89	79	281	2	3	254	257	56	
	10	17.06	.88	79	281	2	3	255	260	56	
2	12.5	18.98	.92	79	281	2	3	255	260	56	
	15	20.93	.90	80	281	2.1	3	256	260	57	
	17.5	22.87	.89	80	281	2.0	3	256	260	57	
	20	24.8	.89	80	281	2.0	3	256	259	57	
	22.5	26.71	.87	80	281	2	3	256	258	58	
3	25	28.62	.87	80	282	2	3	256	259	58	
	27.5	30.53	.87	81	283	2	3	256	260	58	
	30	32.43	.81	81	283	2	3	256	260	59	
	32.5	34.27	.83	81	283	1.8	3	256	260	59	
	35	36.13	.84	81	283	1.9	3	256	260	59	
4	37.5	38.0	.78	81	284	1.9	3	257	261	59	
	40	39.81	.79	81	284	1.8	3	257	261	60	
	42.5	41.63	.76	82	284	1.8	3	257	260	60	
	45	43.48	.81	82	284	1.7	3	257	264	60	
	47.5	45.24	.81	82	285	1.8	3	257	261	60	
5	50	47.07	.82	82	285	1.8	3	257	261	60	

Traverse:	
Start Time: <u>13:42</u>	Initial Leak Check: <u>.006</u> cfm@ <u>15</u> "Hg
Finish Time:	Final Leak Check:

Project No.: AST-2024-4547 / 22330
Operator: TYC

Field Data Sheet

Date: <u>Dec 3, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>2</u>
Plant Location: <u>Courtoice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>	

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
8	52.5	48.93	.81	82	284	1.9	3	257	263	61	
	55	50.79	.82	82	284	1.8	3	257	262	60	
	57.5	52.65	.82	82	284	1.9	3	257	261	61	
	60	54.52	.83	82	284	1.9	3	257	263	61	
	62.5	56.38	.82	83	284	1.9	3	256	262	61	
	65	58.23	.81	83	283	1.9	3	257	262	61	
	67.5	60.08	.80	83	283	1.9	3	256	262	61	
	70	61.92	.79	83	282	1.8	3	256	261	60	
11	72.5	63.76	.79	83	281	1.8	3	256	263	59	
	75	65.58	.68	83	277	1.8	3	256	263	59	
	77.5	67.3	.69	83	277	1.6	3	256	262	58	
	80	69.01	.69	83	277	1.6	3	256	261	58	
12	82.5	70.71	.68	83	277	1.6	3	256	262	57	
	85	72.34	.7	84	277	1.6	3	256	260	57	
	87.5	74.14	.69	84	277	1.6	3	256	261	56	
	90	75.96	.73	83	277	1.7	3	256	262	59	
1	92.5	78.22	.71	82	280	1.7	3	256	259	58	
	95	79.96	.71	80	281	1.6	3	257	263	55	
	97.5	81.69	.70	83	280	1.6	3	256	262	54	
	100	83.42	.70	83	281	1.6	3	257	261	53	
	102.5	85.11	.70	83	280	1.6	3	256	261	52	

Traverse: <u>1</u>	Traverse: <u>2</u>
Start Time: <u>15:12</u>	Start Time: <u>15:27</u>
Initial Leak Check: <u>100%</u>	Initial Leak Check: <u>100%</u>
Final Leak Check: <u>14</u>	Final Leak Check: <u>14</u>
Finish Time: <u>15:12</u>	Finish Time: <u>15:27</u>

Project No.: AST-2024-4547 / 22330
Operator: YAC

Field Data Sheet

Date: <u>Dec. 3, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>2</u>	Page 4 of 5
Plant Location: <u>Courice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F		Impinger Temp	
											Outlet °F	Inlet/Trap °F
3	105	86.82	.76	83	280	1.6	3	257	262		52	
	107.5	88.55	.68	83	280	1.6	3	258	263		52	
	110	90.25	.66	83	280	1.6	3	257	262		53	
	112.5	91.94	.66	83	280	1.5	3	257	260		53	
4	115	93.56	.59	83	279	1.4	3	257	260		53	
	117.5	95.14	.60	83	279	1.4	3	257	262		54	
	120	96.72	.56	84	278	1.4	3	257	262		54	
	122.5	98.28	.55	84	279	1.3	3	257	261		53	
5	125	99.82	.54	84	277	1.3	3	257	261		53	
	127.5	101.34	.53	84	277	1.3	3	256	261		53	
	130	102.85	.54	84	277	1.3	3	256	261		54	
	132.5	104.37	.52	84	277	1.3	3	257	261		54	
6	135	105.87	.54	84	277	1.2	2	256	266		54	
	137.5	107.39	.52	84	276	1.3	2	256	263		54	
	140	108.89	.52	84	276	1.2	2	256	262		54	
	142.5	110.37	.53	84	276	1.2	2	256	263		54	
7	145	111.88	.53	84	275	1.2	2	256	262		54	
	147.5	113.39	.52	84	275	1.2	2	256	262		54	
	150	114.89	.55	84	275	1.2	2	256	263		54	
	152.5	116.44	.54	84	275	1.3	2	256	263		54	
8	155	117.96	.55	84	275	1.3	2	256	260		54	

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

Project No.: AST-2024-4547 / 22330
Operator: T4C

Field Data Sheet

Date: <u>Dec. 3, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>2</u>	Page 5 of 5
	Plant Location: <u>Courtice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>	

[illegible]

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

Project No.: AST-2024-4547 / 22330

Operator: TYL

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	3
Test Date	Dec 5, 2024
Test Location	APC Outlet No. 2
Operator	PCP

Project No.:	AST-2024-4547 / 22330
Page	1 of 5
Probe No.:	
Meter Box No.:	TEAM
Impinger Box No.:	

Pitot Factor	.834
DGMCF (V)	1.008
Barometric Pressure	29.0
Static Pressure	-11.2
Nozzle Size	.251
Stack Diameter	54
Length	
Width	
Port length:	11

Moisture Gain	
Total	g
Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Measuring Device	ID
Probe / Pitot	KA
Trendicator	
Control Box	TEAM
Incline Manometer	
Comb.Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

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

Site Diagram

Nozzle Measurements	
1	.2490
2	.252
3	.252
Average:	.251

Probe Liner Glass Metal / Teflon / Other _____

Nozzle Glass Metal / Other _____

Union None / Metal / Teflon / Other _____

Pitot Leak Checked? Yes No

Notes:

Field Data Sheet

Date: Dec 5, 2024	Plant: Reworld	Test No.: 3	Page 2 of 5
Plant Location: Courice, Ontario		Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trip °F
1	0	89.74	.93	75	284	2.1	3	255	260	63	
	2.5	91.70	.95	75	273	2.2	3	256	251	60	
	5	93.71	.95	75	280	2.15	3	257	251	55	
	7.5	95.73	.96	74	280	2.2	3	255	252	52	
2	10	97.72	.96	74	280	2.15	3	256	254	50	
	12.5	99.70	.95	74	280	2.15	3	256	256	50	
	15	101.68	.91	75	280	2.05	3	255	254	51	
	17.5	103.62	.91	74	280	2.05	3	256	253	50	
3	20	105.55	.92	74	281	2.05	3	255	253	50	
	22.5	107.48	.86	74	281	1.95	3	256	250	49	
	25	109.36	.86	75	281	1.95	3	258	254	50	
	27.5	111.25	.87	75	281	1.95	3	257	254	50	
4	30	113.15	.78	75	281	1.75	3	258	255	50	
	32.5	114.95	.78	76	282	1.75	3	253	255	50	
	35	116.75	.79	76	282	1.8	3	258	255	50	
	37.5	118.57	.65	76	281	1.45	3	257	255	50	
5	40	120.25	.63	77	281	1.4	3	257	258	50	
	42.5	121.88	.63	77	282	1.4	3	258	253	50	
	45	123.50	.68	77	281	1.55	3	258	257	50	
	47.5	125.18	.66	77	281	1.5	3	257	258	49	
6	50	126.85	.66	77	281	1.5	3	257	256	43	

Traverse: 1	Initial Leak Check: .007 cfm@	Final Leak Check: .007 cfm@	Initial Leak Check: cfm@	Final Leak Check: cfm@
Start Time: 8:12	Finish Time:	Start Time:	Finish Time:	

Project No.: AST-2024-4547 / 22330
Operator: BCP

Field Data Sheet

Date: <u>Dec 8 5, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>3</u>
Plant Location: <u>Courtyce, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>	

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
8	52.5	128.52	.70	77	280	1.6	3	258	258	49	
	55	130.24	.73	77	280	1.65	3	256	256	49	
	57.5	131.96	.72	78	280	1.65	3	258	257	49	
	60	133.68	.72	78	280	1.65	3	258	256	50	
9	62.5	135.40	.73	78	279	1.65	3	259	255	49	
	65	137.15	.71	78	279	1.6	3	258	256	50	
	67.5	138.88	.69	78	279	1.55	3	258	256	50	
	70	140.57	.69	78	279	1.55	3	258	257	50	
10	72.5	142.28	.68	78	278	1.55	3	259	256	50	
	75	143.98	.58	78	278	1.3	3	255	257	51	
	77.5	145.57	.58	78	278	1.3	3	257	256	51	
	80	147.13	.57	78	278	1.3	3	255	256	52	
12	82.5	148.67	.59	78	278	1.3	3	255	255	52	
	85	150.24	.59	78	278	1.3	3	257	256	52	
	87.5	151.81	.60	79	278	1.35	3	256	257	52	
	90	153.42	.85	78	280	1.95	3	257	252	53	
1	92.5	155.84	.88	78	280	2	3	257	253	53	
	95	157.77	.88	78	280	2	3	256	255	51	
	97.5	159.68	.90	78	280	2.05	3	258	257	51	
	100	161.62	.92	78	280	2.1	3	258	258	51	
2	102.5	163.57	.92	78	280	2.1	3	256	257	52	

Traverse: <u>1</u>	Traverse: <u>2</u>
Start Time: <u>4:42</u>	Start Time: <u>9:49</u>
Initial Leak Check: <u>-</u> cfm@ <u>15</u> "Hg	Initial Leak Check: <u>802</u> cfm@ <u>15</u> "Hg
Final Leak Check: <u>-</u> cfm@ <u>15</u> "Hg	Final Leak Check: <u>-</u> cfm@ <u>-</u> "Hg

Project No.: AST-2024-4547 / 22330

Operator: BCP

Field Data Sheet

Date: Dec 5, 2024	Plant: Reworld	Test No.: 3	Page 4 of 5
Plant Location: Courtyce, Ontario	Test Location: APC Outlet No. 2		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
3	105	165.54	.90	78	280	2	3	252	254	52	1
	107.5	167.47	.90	78	281	2	3	253	255	52	
	110	169.39	.91	79	281	2.05	3	259	255	52	
	112.5	171.35	.85	78	281	1.95	3	258	255	53	
4	115	173.24	.85	79	281	1.95	3	257	255	53	
	117.5	175.14	.85	79	281	1.95	3	260	255	53	
	120	176.99	.81	79	282	1.85	3	259	257	53	
	122.5	178.84	.84	79	282	1.9	3	257	255	54	
5	125	180.74	.84	79	283	1.9	3	259	256	54	
	127.5	182.63	.78	78	283	1.75	3	260	256	54	
	130	184.43	.78	79	284	1.75	3	261	259	54	
	132.5	186.24	.77	78	283	1.75	3	262	258	54	
7	135	188.03	.79	79	283	1.8	3	253	258	54	
	137.5	189.85	.79	78	283	1.8	3	257	256	55	
	140	191.68	.80	78	283	1.8	3	257	256	55	
	142.5	193.51	.81	78	283	1.85	3	258	256	54	
8	145	195.34	.81	78	283	1.85	3	257	256	55	
	147.5	197.18	.74	78	283	1.8	3	263	257	54	
	150	199.02	.80	78	283	1.8	3	257	257	54	
	152.5	200.83	.81	78	283	1.85	3	259	256	54	
9	155	202.66	.78	78	283	1.75	3	257	256	53	

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

Project No.: AST-2024-4547 / 22330
Operator: RCP

Field Data Sheet

Date: Dec 5, 2024	Plant: Reworld	Test No.: 3	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

[illegible]

	Initial Leak Check:	-	cfm@	"Hg
	Final Leak Check:	007	cfm@	"Hg
Start Time:				
Finish Time:	11:18			

Traverse:	2	Traverse:		
Start Time:		Initial Leak Check:	-	cfm@ "Hg
Finish Time:		Final Leak Check:	009	cfm@ "Hg
		Start Time:		
		Finish Time:		

Project No.: AST-2024-4547 / 22330
Operator: BCP

APPENDIX 5

Particle Size Distribution Field Data Sheets (12 pages)

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	PM10 /2.5 - M202
Test Date	Dec 5/24
Test Location	APC Outlet No. 1
Operator	RAM

Pitot Factor	1.845
DGMCF (Y)	0.995
Barometric Pressure	29.0
Static Pressure	-11.0
Nozzle Size	175
Stack Diameter	54
Length	
Width	
Port length:	11

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Reading Interval	Dwell
Number of Ports	2
Number of Points/Port	6

Probe Liner Glass / Metal / Teflon / Other Other

Nozzle Glass / Metal / Other Metal

Union None / Metal / Teflon / Other Metal

Pitot Leak Checked? Yes No

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	PM10/2.5
Meter Box No.:	TEAM 2
Impinger Box No.:	10

Measuring Device	ID
Probe / Pitot	SEE
Trendicator	TEST
Control Box	1
Incline Manometer	11/17/
Comb. Gas Analyzer	
Micromanometer	
Barometer	ENV. CAN.
Calipers	

Nozzle Measurements	
1	
2	
3	
Average:	

Site Diagram

Notes:

Field Data Sheet

Date: <u>Dec 5/24</u>	Plant: <u>Reworld</u>	Test No.: <u>1</u>	PM10 /2.5 - M202	Page 2 of 2
	Plant Location: <u>Courice, Ontario</u>	Test Location: <u>APC Outlet No. 1</u>		

[illegible]

Traverse:		2	
Start Time:	916	Initial Leak Check:	cfm@
Finish Time:	1015	Final Leak Check:	003 cfm@
		"Hg	

Traverse:		12	
Start Time:	812	Initial Leak Check:	003 cfm@
Finish Time:	813	Final Leak Check:	cfm@
		"Hg	

Project No.: AST-2024-4547 / 22330
Operator: *DMT*

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	PM10 /2.5 - M202
Test Date	Dec 5, 2024
Test Location	APC Outlet No. 1
Operator	DWA

Pitot Factor	0.83
DGMCF (V)	0.75
Barometric Pressure	29.1 "Hg
Static Pressure	-11.3 "H2O
Nozzle Size	1.75 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Reading Interval	Dwell
Number of Ports	2
Number of Points/Port	6

Probe Liner Glass / Metal / Teflon / Other Other

Nozzle Glass / Metal / Other Metal

Union None / Metal / Teflon / Other Metal

Pitot Leak Checked? Yes No

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	AN10K-5
Meter Box No.:	TEAM 2
Impinger Box No.:	10

Measuring Device	ID
Probe / Pitot	see
Trendicator	TE57
Control Box	1
Incline Manometer	
Comb. Gas Analyzer	
Micromanometer	
Barometer	ENV. CAN.
Calipers	

Nozzle Measurements	
1	
2	
3	
Average:	

Site Diagram

Notes:

Date: <u>Dec 5/24</u>	Plant: <u>Reworld</u>	Test No.: <u>2</u>	PM10 /2.5 - M202	Page 2 of 2
	Plant Location: <u>Courtice, Ontario</u>	Test Location: <u>APC Outlet No. _____</u>		

[illegible]

Traverse:	2	Initial Leak Check:	003	cfm@	"Hg
Start Time:	10:52	Final Leak Check:		cfm@	"Hg
Finish Time:	11:50				

Project No.: AST-2024-4547 / 22330

Operator:

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	3 PM10 /2.5 - M202
Test Date	DEC 5/24
Test Location	APC Outlet No. 1
Operator	DMA

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	383
DGMCF (Y)	993
Barometric Pressure	29.2
Static Pressure	-11.3
Nozzle Size	175
Stack Diameter	54
Length	
Width	
Port length:	11

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Measuring Device	ID
Probe / Pitot	586
Trendicator	7837
Control Box	1
Incline Manometer	
Comb.Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

Reading Interval	Dwell
Number of Ports	2
Number of Points/Port	6

Site Diagram

Nozzle Measurements	
1	
2	
3	
Average:	

Probe Liner Glass / Metal / Teflon / Other HA

Nozzle Glass / Metal / Other HA

Union None / Metal / Teflon / Other HA

Pitot Leak Checked? Yes No

Notes:

Field Data Sheet

Page 2 of 2

PM10 / 2.5 - M202

Test No.: 2

Reworld

Plant:

Courtice, Ontario

Plant Location:

27

18

✻

✱

✱

✱

[illegible]

Traverse:

6

Start Time:	07:00

Initial Leak Check:

11/11

cfm@

سجل

Initial Leak Check:

Start Time:	07:00

Finish Time	Start Time	Activity
12:00	10:00	Activity 1
1:00	11:00	Activity 2
2:00	12:00	Activity 3
3:00	1:00	Activity 4
4:00	2:00	Activity 5
5:00	3:00	Activity 6
6:00	4:00	Activity 7
7:00	5:00	Activity 8
8:00	6:00	Activity 9
9:00	7:00	Activity 10
10:00	8:00	Activity 11
11:00	9:00	Activity 12
12:00	10:00	Activity 13
1:00	11:00	Activity 14
2:00	12:00	Activity 15
3:00	1:00	Activity 16
4:00	2:00	Activity 17
5:00	3:00	Activity 18
6:00	4:00	Activity 19
7:00	5:00	Activity 20
8:00	6:00	Activity 21
9:00	7:00	Activity 22
10:00	8:00	Activity 23
11:00	9:00	Activity 24
12:00	10:00	Activity 25
1:00	11:00	Activity 26
2:00	12:00	Activity 27
3:00	1:00	Activity 28
4:00	2:00	Activity 29
5:00	3:00	Activity 30
6:00	4:00	Activity 31
7:00	5:00	Activity 32
8:00	6:00	Activity 33
9:00	7:00	Activity 34
10:00	8:00	Activity 35
11:00	9:00	Activity 36
12:00	10:00	Activity 37
1:00	11:00	Activity 38
2:00	12:00	Activity 39
3:00	1:00	Activity 40
4:00	2:00	Activity 41
5:00	3:00	Activity 42
6:00	4:00	Activity 43
7:00	5:00	Activity 44
8:00	6:00	Activity 45
9:00	7:00	Activity 46
10:00	8:00	Activity 47
11:00	9:00	Activity 48
12:00	10:00	Activity 49
1:00	11:00	Activity 50
2:00	12:00	Activity 51
3:00	1:00	Activity 52
4:00	2:00	Activity 53
5:00	3:00	Activity 54
6:00	4:00	Activity 55
7:00	5:00	Activity 56
8:00	6:00	Activity 57
9:00	7:00	Activity 58
10:00	8:00	Activity 59
11:00	9:00	Activity 60
12:00	10:00	Activity 61
1:00	11:00	Activity 62
2:00	12:00	Activity 63
3:00	1:00	Activity 64
4:00	2:00	Activity 65
5:00	3:00	Activity 66
6:00	4:00	Activity 67
7:00	5:00	Activity 68
8:00	6:00	Activity 69
9:00	7:00	Activity 70
10:00	8:00	Activity 71
11:00	9:00	Activity 72
12:00	10:00	Activity 73
1:00	11:00	Activity 74
2:00	12:00	Activity 75
3:00	1:00	Activity 76
4:00	2:00	Activity 77
5:00	3:00	Activity 78
6:00	4:00	Activity 79
7:00	5:00	Activity 80
8:00	6:00	Activity 81
9:00	7:00	Activity 82
10:00	8:00	Activity 83
11:00	9:00	Activity 84
12:00	10:00	Activity 85
1:00	11:00	Activity 86
2:00	12:00	Activity 87
3:00	1:00	Activity 88
4:00	2:00	Activity 89
5:00	3:00	Activity 90
6:00	4:00	Activity 91
7:00	5:00	Activity 92
8:00	6:00	Activity 93
9:00	7:00	Activity 94
10:00	8:00	Activity 95
11:00	9:00	Activity 96
12:00	10:00	Activity 97
1:00	11:00	Activity 98
2:00	12:00	Activity 99
3:00	1:00	Activity 100

10/1/1

ווערן דאס קאמפאניאן און דאס פאמיליע פארמאגט א גוטן פארשטאנד פון דער שטאט און דער געגנט?

911
for

பெயர்

or

ווערן דאס קאמפאניאן?

5/15	Time:
5/15	

Project No.: AST-2024-4547 / 22330

Operator:

200

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	1 PM10 /2.5 - M202
Test Date	Dec 4/24
Test Location	APC Outlet No. 2
Operator	DATA

Pitot Factor	1.483
DGMCF (Y)	993
Barometric Pressure	29.3
Static Pressure	-12.4
Nozzle Size	1775
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Reading Interval	Dwell
Number of Ports	2
Number of Points/Port	6

Probe Liner Glass / Metal / Teflon / Other PFA

Nozzle Glass / Metal / Other _____

Union None / Metal / Teflon / Other _____

Pitot Leak Checked? Yes No

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	PM10/2.5
Meter Box No.:	TEAM 2
Impinger Box No.:	10

Measuring Device	ID
Probe / Pitot	AN10/2.5
Trendicator	
Control Box	TEAM 2
Incline Manometer	
Comb. Gas Analyzer	PARTEC 5
Micromanometer	
Barometer	ENV. CAN.
Calipers	CAL-1

Nozzle Measurements	
1	1770
2	1780
3	1775
Average:	

Site Diagram

Notes:

Page 2 of 2

Page 2 of 2Page 2 of 2Page 2 of 2

Operator:

needed start 8:10

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	2 PM10 /2.5 - M202
Test Date	Dec 4/24
Test Location	APC Outlet No. 2
Operator	QAT

Pitot Factor	0.93
DGMCF (Y)	0.95
Barometric Pressure	29.2
Static Pressure	-12.4
Nozzle Size	1.75
Stack Diameter	54
Length	inches
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Reading Interval	Dwell
Number of Ports	2
Number of Points/Port	6

Probe Liner Glass / Metal / Teflon / Other HA

Nozzle Glass / Metal / Other _____

Union None / Metal / Teflon / Other _____

Pitot Leak Checked? Yes No

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	PM10/2.5
Meter Box No.:	TEAM 2
Impinger Box No.:	9

Measuring Device	ID
Probe / Pitot	SEE
Trendicator	
Control Box	TEG
Incline Manometer	
Comb. Gas Analyzer	1
Micromanometer	U1
Barometer	ENV. CAN.
Calipers	

Site Diagram

Nozzle Measurements	
1	_____
2	_____
3	_____
Average:	_____

Notes:

Date: DEC 4/24	Plant: Reworld	Test No.: 2	PM10 / 2.5 - M202	Page 2 of 2
	Courtice, Ontario	Test Location: APC Outlet No. 2		

[illegible]

Traverse:	7	
Start Time:	12:05	"Hg
Finish Time:	13:04	"Hg

Traverse:	1	
Start Time:	13:06	"Hg
Finish Time:	14:07	"Hg

Project No.: AST-2024-4547 / 22330

Operator: Quik

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	3 PM10 /2.5 - M202
Test Date	Dec 4/23
Test Location	APC Outlet No. 2
Operator	DWA

Pitot Factor	0.95
DGMCF (V)	0.95
Barometric Pressure	29.1 "Hg
Static Pressure	-12.4 "H2O
Nozzle Size	1/8 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Reading Interval	Dwell
Number of Ports	2
Number of Points/Port	6

Probe Liner Glass / Metal / Teflon / Other PA

Nozzle Glass / Metal / Other _____

Union None / Metal / Teflon / Other _____

Pitot Leak Checked? Yes No

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	M10/2.5
Meter Box No.:	TEAM 2
Impinger Box No.:	10

Measuring Device	ID
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb. Gas Analyzer	1
Micromanometer	
Barometer	ENV. CAN.
Calipers	

Nozzle Measurements	
1	
2	
3	
Average:	

Site Diagram

Notes:

Field Data Sheet

Date: <u>DEC 4/24</u>	Plant: <u>Reworld</u>	Test No.: <u>3</u>	PM10 /2.5 - M202	Page 2 of 2
Plant Location: <u>Courtoice, Ontario</u>	Test Location: <u>APC Outlet No. <u>2</u></u>			

[illegible]

Traverse:	2		
Start Time:	1451	Initial Leak Check:	003 cfm@ 12 "Hg
Finish Time:	1538	Final Leak Check:	cfm@ "Hg

Project No.: AST-2024-4547 / 22330

Operator: DM

APPENDIX 6

SVOC Data Sheets (20 pages)

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	Semi-Volatile Organic Compounds
Test Date	December 2 2024
Test Location	APC Outlet No. 1
Operator	T. Limad

Pitot Factor	839
DGMCF (Y)	1.010
Barometric Pressure	29.6 "Hg
Static Pressure	-10.2 "H2O
Nozzle Size	1.2508 inches
Stack Diameter	54 inches
Length	- feet
Width	- feet
Port length:	11 inches

Reading Interval	5 min
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

Notes:

Project No.:	AST-2024-4547 / 22330
Page	1 of 4
Probe No.:	7 Series
Meter Box No.:	Team 4
Impinger Box No.:	

Measuring Device	ID
Probe / Pitot	ISA
Trendicator	Team 4
Control Box	Team 4
Incline Manometer	Team 4
Comb. Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Nozzle Measurements
1 2485
2 2520
3 2520
Average:

Site Diagram

Field Data Sheet

Date: <u>December 02 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>SVO C</u>	Page 2 of 4
Plant Location: <u>Courtyce, Ontario</u>	Test Location: <u>APC Outlet No. 1</u>		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
1	0	73.23	.77	70	284	1.7	5.5	246	247	67	42
	5	76.84	.77	71	284	1.7	6	247	251	58	45
2	10	80.36	.77	73	285	1.7	6	247	250	56	49
	15	83.82	.77	73	285	1.75	6	247	252	56	43
3	20	87.42	.75	78	285	1.7	6	248	245	56	49
	25	90.98	.75	79	286	1.65	6	248	256	56	46
4	30	94.52	.72	81	285	1.6	6	247	255	54	44
	35	97.98	.70	82	286	1.6	6	247	245	54	44
5	40	101.45	.61	83	286	1.35	5.5	247	256	54	44
	45	104.58	.61	84	286	1.35	5.5	247	252	53	41
6	50	107.90	.54	84	285	1.2	5.5	247	247	52	43
	55	110.93	.54	85	286	1.2	5.1	247	254	50	42
7	60	113.96	.54	85	286	1.2	5.5	247	254	50	42
	65	116.96	.54	85	286	1.2	5.5	247	248	48	41
8	70	119.99	.65	86	287	1.45	6	247	254	48	43
	75	123.34	.67	86	286	1.5	6	247	247	47	41
9	80	126.70	.71	86	287	1.55	6	247	256	47	41
	85	130.17	.70	86	287	1.55	6.5	247	256	48	41
10	90	133.66	.70	87	287	1.55	6.5	247	255	48	40
	95	137.12	.68	87	285	1.5	6	247	255	48	41
11	100	140.51	.68	87	286	1.5	6	247	250	49	42

Traverse:	Start Time: 9:10	Initial Leak Check: .004 cfm@	"Hg
Finish Time:		Final Leak Check:	"Hg

Project No.: AST-2024-4547 / 22330

Operator: 77

Field Data Sheet

Date: Dec 2 2024	Plant: Reworld	Test No.: SVOC	Page 3 of 4
Plant Location: Courtyce, Ontario	Test Location: APC Outlet No. 1		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
	105	143.89	.65	87	284	1.45	6	247	248	49	42
12	110	147.23	.57	87	284	1.25	6	247	254	49	42
	115	150.36	.57	87	284	1.25	6	247	246	49	42
1	120	153.47	.75	76	284	1.65	6.5	246	257	68	42
	125	157.29	.82	78	286	1.8	6.5	247	250	50	42
2	130	160.96	.82	80	286	1.8	7	247	257	47	43
	135	164.69	.87	82	286	1.95	7	247	256	47	42
3	140	168.50	.85	84	287	1.95	7	247	251	46	43
	145	172.28	.80	85	288	1.95	7	247	250	46	41
4	150	175.98	.72	86	288	1.85	7	247	257	46	42
	155	179.51	.68	87	288	1.5	6.5	247	252	47	41
5	160	182.94	.64	87	288	1.45	6	247	247	47	42
	165	186.27	.64	88	288	1.45	6	247	248	47	42
6	170	189.61	.60	88	287	1.35	6	247	256	47	42
	175	192.83	.60	88	287	1.35	6	247	253	48	41
7	180	196.04	.59	88	287	1.35	6	247	247	48	41
	185	199.26	.59	88	286	1.3	6	247	258	48	42
8	190	202.44	.64	88	285	1.4	6	247	253	48	42
	195	205.77	.68	88	285	1.5	6	247	250	48	43
9	200	209.08	.70	88	285	1.55	6	247	250	48	43
	205	212.49	.70	88	285	1.6	6.5	247	254	48	44

Traverse: 1	Traverse: 2
Start Time: ~	Start Time: 12:03
Finish Time: 11:10	Finish Time: ~
Initial Leak Check: cfm@ .002 "Hg	Initial Leak Check: 1.002 cfm@ 14.1 "Hg
Final Leak Check: cfm@ .5	Final Leak Check: ~ cfm@ ~

Project No.: AS-2024-4547 / 22330

Operator: [Signature]

Field Data Sheet

Date: Dec. 2 2024	Plant: Reworld	Test No.: 1	SVC
	Plant Location: Courice, Ontario	Test Location: APC Outlet No. 1	

Page 4 of 4

[illegible]

Traverse:	2	Initial Leak Check:	—	cfm@	—	"Hg	—
Start Time:	—	Initial Leak Check:	—	cfm@	—	"Hg	—
Finish Time:	(4:03)	Final Leak Check:	(4:03)	cfm@	—	"Hg	—

Project No.: APT-2024-4547 / 22330

Operator :

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	2 Semi-Volatile Organic Compounds
Test Date	December 2 2024
Test Location	APC Outlet No. 1
Operator	

Project No.:	AST-2024-4547 / 22330
Page	1 of 4
Probe No.:	6 Series
Meter Box No.:	Team 4
Impinger Box No.:	6

Pitot Factor	837
DGMCF (V)	1.010
Barometric Pressure	29.7 "Hg
Static Pressure	- 10.2 "H2O
Nozzle Size	1.2508 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Measuring Device	ID
Probe / Pitot	15A
Trendicator	Team 4
Control Box	Team 4
Incline Manometer	Team 4
Comb.Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

Reading Interval	5 min
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

Site Diagram

Nozzle Measurements	
1	.2485
2	.2520
3	.2520
Average:	.2508

Notes:

Field Data Sheet

Date: Dec. 2, 2024	Plant: Reworld	Test No.: 2	SVOC	Page 2 of 4
Plant Location: Courtyce, Ontario	Test Location: APC Outlet No. 1			

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Impet/Trap °F
1	0	37.07	.76	76	285	1.65	6.5	247	247	74	44
	5	40.54	.81	76	284	1.8	7	247	249	62	47
2	10	44.18	.81	78	284	1.8	7	247	247	57	49
	15	47.84	.81	81	284	1.8	7	247	248	54	44
3	20	51.47	.81	83	285	1.85	7.5	248	252	53	45
	25	55.05	.81	84	285	1.85	8	247	249	52	43
4	30	58.85	.71	85	284	1.65	7.5	247	248	52	45
	35	62.39	.71	86	285	1.55	7.5	247	252	53	44
5	40	65.84	.73	86	285	1.6	7.5	247	252	53	44
	45	69.34	.76	87	286	1.75	8	247	249	53	45
6	50	72.99	.57	88	286	1.3	7	247	253	54	45
	55	76.22	.57	88	285	1.2	6.5	247	248	52	41
7	60	79.33	.64	88	285	1.4	6.5	247	251	52	40
	65	82.62	.66	89	285	1.2	7	247	252	50	41
8	70	85.99	.71	89	285	1.6	7.5	247	248	49	41
	75	89.48	.71	89	286	1.6	7.5	248	252	48	42
9	80	92.07	.71	89	287	1.6	7.5	247	252	48	42
	85	96.52	.70	89	286	1.55	7.5	247	248	48	42
10	90	99.97	.67	89	286	1.5	7	248	253	48	43
	95	103.36	.67	90	286	1.5	7	247	249	48	43
11	100	106.77	.60	90	286	1.35		247	250	48	44

Traverse: 1	Initial Leak Check: 15:03	Final Leak Check: 15:03	Initial Leak Check: cfm@	Final Leak Check: cfm@
Start Time: 15:03	Finish Time:			

Project No.: AS1-2024-4547 / 22330
Operator: [Signature]

Field Data Sheet

Date: Dec. 2 2024	Plant: Reworld	Test No.: 2	Page 3 of 4
Plant Location: Courtyce, Ontario	Test Location: APC Outlet No. 1	SubC	

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F		Impinging Temp °F	
									Outlet °F	Inlet °F	Trap °F	*
	105	109.99	.60	90	286	1.35	7	247	253	49	46	
12	110	113.21	.60	90	286	1.35	7	247	249	49	48	
	115	116.43	.57	90	286	1.25	6.5	247	249	49	51	
1	120	119.57	.77	83	286	1.7	7.5	246	247	65	56	
	125	123.37	.81	85	284	1.8	8	248	252	48	47	
2	130	127.08	.81	87	284	1.8	8	247	248	46	41	
	135	130.79	.84	87	283	1.9	8	248	252	45	41	
3	140	134.58	.77	88	284	1.75	8	248	253	45	41	
	145	138.23	.79	89	285	1.8	8	247	248	45	41	
4	150	141.93	.74	89	286	1.7	8	248	252	45	42	
	155	145.51	.72	89	286	1.6	8	248	253	45	41	
5	160	149.02	.61	89	286	1.4	8	247	248	45	40	
	165	152.27	.56	90	285	1.3	7	247	251	46	40	
6	170	155.36	.56	90	283	1.3	7	247	253	46	39	
	175	158.48	.58	90	283	1.3	7	247	249	46	40	
7	180	161.60	.68	90	283	1.6	7	247	250	47	40	
	185	164.99	.70	90	284	1.6	7	247	253	46	41	
8	190	168.46	.72	90	284	1.65	8	247	250	46	41	
	195	171.97	.72	90	285	1.65	8	247	250	46	41	
9	200	175.48	.73	90	285	1.65	8	247	253	46	42	
	205	179.02	.73	90	282	1.65	8	247	250	47	42	

Traverse: 1	Initial Leak Check: 1	Final Leak Check: 14.1	Initial Leak Check: 1002 cfm@ 14.1	Final Leak Check: 1002 cfm@ 14.1
Start Time: 17:03	Finish Time: 17:03	Start Time: 17:10	Finish Time: 17:10	Start Time: 17:10

Project No.: APT-2024-4547 / 22330
Operator: [Signature]

Field Data Sheet

Date: Dec. 1 2024	Plant: Reworld	Test No.: 2	Page 4 of 4
	Plant Location: Courtoice, Ontario	Test Location: APC Outlet No. 1	

[illegible]

Traverse: 2			
Start Time:	Initial Leak Check:	"Hg	cfm@
Finish Time: 9:10	Final Leak Check: .002	"Hg 15	cfm@

Project No.: APT-2024-4547 / 22330
Operator: *[Signature]*

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	3 Semi-Volatile Organic Compounds
Test Date	December 3 2024
Test Location	APC Outlet No. 1
Operator	

Project No.:	AST-2024-4547 / 22330
Page	1 of 4
Probe No.:	6 Series
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	839
DGMCF (V)	1.010
Barometric Pressure	29.5 "Hg
Static Pressure	-10.5 "H2O
Nozzle Size	.2508 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Measuring Device	ID
Probe / Pitot	15A
Trendicator	Team 4
Control Box	Team 4
Incline Manometer	Team 4
Comb.Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

Reading Interval	5 min
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

Site Diagram

Nozzle Measurements	
1	_____
2	_____
3	_____
Average: _____	

Notes:

Field Data Sheet

Date: Dec 3 2024	Plant: Reworld	Test No.: 3	SvOC	Page 2 of 4
Plant Location: Courtyce, Ontario	Test Location: APC Outlet No. 1			

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
1	0	4.83	.67	71	285	1.5	6	247	254	71	71
	5	8.44	.67	72	284	1.45	6	248	250	66	60
2	10	11.70	.76	75	284	1.65	6	247	249	65	41
	15	15.16	.77	77	284	1.7	6.5	247	248	63	39
3	20	18.61	.78	80	284	1.7	6.5	247	249	62	40
	25	22.32	.75	81	280	1.65	6.5	247	251	60	40
4	30	25.86	.71	82	281	1.6	6	247	249	59	40
	35	29.33	.68	83	280	1.5	6	247	247	58	39
5	40	32.73	.63	84	280	1.4	6	247	247	58	40
	45	36.04	.65	84	279	1.45	6	247	247	58	40
6	50	39.39	.55	85	278	1.25	5.5	247	249	56	40
	55	42.49	.55	85	278	1.25	5.5	247	251	54	40
7	60	45.60	.61	85	278	1.35	6	247	252	53	39
	65	48.79	.64	86	279	1.45	6	247	247	52	39
8	70	52.11	.71	86	279	1.6	6	247	247	51	40
	75	55.61	.70	86	279	1.55	6	247	249	52	41
9	80	59.04	.80	87	279	1.8	6.5	247	247	53	41
	85	62.71	.75	87	279	1.7	6.5	247	252	54	42
10	90	66.27	.75	87	279	1.7	6.5	247	250	55	42
	95	69.95	.75	87	279	1.7	6.5	247	247	55	42
11	100	73.53	.75	87	279	1.7	6.5	247	247	56	43

Traverse: 1	Initial Leak Check: 16	Initial Leak Check: cfm@	Initial Leak Check: "Hg
Start Time: 8:28	Final Leak Check: 16	Final Leak Check: cfm@	Final Leak Check: "Hg

Project No.: 2024-4547 / 22330
Operator: [Signature]

Field Data Sheet

Date: Dec 3 2024	Plant: Reworld	Test No.: 3	500 C	Page 3 of 4
Plant Location: Courtyce, Ontario		Test Location: APC Outlet No. _____		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
12	105	77.10	.73	87	279	1.65	6.5	247	250	57	44
	110	80.65	.74	87	278	1.65	6.5	247	251	57	45
1	115	84.19	.75	87	278	1.75	6.5	248	252	58	46
	120	87.82	.64	79	278	1.4	6	247	252	67	48
	125	91.44	.67	82	278	1.2	6.5	253	252	53	42
2	130	94.79	.63	84	271	1.45	6	247	250	50	41
	135	98.10	.63	85	271	1.45	6	247	247	48	41
3	140	101.41	.67	86	271	1.55	6.5	247	247	48	41
	145	104.84	.67	87	273	1.55	6.5	247	249	48	43
4	150	108.25	.61	87	277	1.35	6	247	249	48	44
	155	111.49	.64	87	279	1.45	6	247	249	48	46
5	160	114.68	.66	87	281	1.5	6	247	252	48	45
	165	118.0	.66	87	282	1.5	6	247	252	48	49
6	170	121.45	.71	87	283	1.6	6.5	247	252	48	41
	175	124.92	.68	87	284	1.6	6.5	247	249	48	42
7	180	128.39	.62	88	284	1.45	6.5	247	248	48	42
	185	131.73	.63	88	285	1.4	6.5	247	248	49	42
8	190	135.01	.67	87	285	1.5	6.5	247	250	50	42
	195	138.38	.67	88	286	1.5	6.5	248	252	50	43
9	200	141.78	.72	88	286	1.65	6.5	247	252	50	44
	205	145.32	.72	88	287	1.65	7	247	250	51	45

Traverse: 1	Traverse: 2
Start Time: 10:28	Start Time: 10:37
Initial Leak Check: ~ cfm@ ~ "Hg	Initial Leak Check: ,006 cfm@ 15 "Hg
Final Leak Check: ~ cfm@ ~ "Hg	Final Leak Check: ~ cfm@ ~ "Hg

Project No.: AS-2024-4547 / 22330

Operator: 

Field Data Sheet

Date: Dec 3 2014	Plant: Reworld	Test No.: 3	Page 4 of 4
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

[illegible]

Traverse:	2	Initial Leak Check:	~	cfm@	~	"Hg
Start Time:	~	Initial Leak Check:	~	cfm@	~	"Hg
Finish Time:	12:37	Final Leak Check:	100%	cfm@	1	"Hg

Project No.: AST-2024-4547 / 22330
Operator: 

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	1 Semi-Volatile Organic Compounds
Test Date	Dec 2, 2024
Test Location	APC Outlet No. 2
Operator	TR

Project No.:	AST-2024-4547 / 22330
Page	1 of 4
Probe No.:	62A
Meter Box No.:	TEAM 1
Impinger Box No.:	4

Pitot Factor	.845.
DGMCF (Y)	1.008
Barometric Pressure	29.6 "Hg
Static Pressure	-16.3 "H2O
Nozzle Size	.2415 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Measuring Device	ID
Probe / Pitot	511
Trendicator	
Control Box	TEAM 1
Incline Manometer	
Comb.Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

Reading Interval	5 min
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

Site Diagram

Nozzle Measurements
1 <u>.2415</u>
2 <u>.2405</u>
3 <u>.2410</u>
Average: <u>.2415</u>

Notes:

Field Data Sheet

Date: <u>Dec 2, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>1</u>
Plant Location: <u>Courice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>	

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinging Temp	
										Outlet °F	Inlet/Trap °F
1	0	68.945	.87	70	267	1.8	2.5	261	252	167	44
	5	66.3	.87	72	278	1.4	2.5	255	261	53	67
2	10	69.34	.86	72	280	1.2	2.5	254	261	49	67
	15	72.33	.78	72	280	1.2	2.5	254	261	48	69
3	20	75.39	.80	72	280	1.3	2.5	254	262	47	69
	25	78.47	.81	73	280	1.4	2.5	255	262	47	69
4	30	81.77	.83	73	279	1.5	2.5	255	262	46	69
	35	85.22	.83	74	279	1.6	3	255	262	46	69
5	40	88.68	.73	74	279	1.6	3	255	263	46	68
	45	92.0	.73	74	279	1.4	3	255	262	46	69
6	50	95.25	.75	75	280	1.5	3	255	263	46	69
	55	98.54	.75	75	280	1.5	3	255	262	46	69
7	60	101.82	.76	76	280	1.5	3	255	262	46	69
	65	105.12	.80	76	281	1.5	3	255	262	46	69
8	70	108.42	.81	76	282	1.5	3	257	267	46	69
	75	111.66	.79	77	283	1.6	3	256	263	46	40
9	80	115.18	.77	77	283	1.6	3	255	263	46	41
	85	118.55	.79	77	282	1.6	3	255	263	46	41
10	90	121.95	.74	78	282	1.6	3	255	263	47	42
	95	125.31	.74	78	280	1.5	3	256	263	47	42
11	100	127.97	.74	78	280	1.5	3	255	263	47	41

Traverse: <u>1</u>	Traverse: <u>2</u>
Start Time: <u>09:45</u>	Start Time:
Finish Time:	Finish Time:
Initial Leak Check: <u>.003</u> cfm@ <u>12</u> "Hg	Initial Leak Check: cfm@ "Hg
Final Leak Check:	Final Leak Check: cfm@ "Hg

Project No.: AST-2024-4547 / 22330
Operator: TJC

Field Data Sheet

Date: <u>Dec. 2, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>1</u>
Plant Location: <u>Courtoice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>	

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
	105	132.0	.74	78	280	1.5	3	255	263	47	41
12	110	135.35	.73	78	280	1.5	3	255	263	47	41
	115	138.68	.75	78	280	1.5	3	255	264	47	42
1	120	140.32	.67	78	280	1.5	3	253	263	52	43
	125	145.67	.91	77	283	1.5	3	255	264	46	43
2	130	149.19	.90	78	283	1.8	3	256	264	45	44
	135	152.79	.85	78	283	1.8	4	256	263	45	45
3	140	156.4	.82	78	282	1.7	4	256	263	44	46
	145	159.89	.82	78	282	1.6	4	256	264	45	41
4	150	163.39	.82	78	281	1.6	4	256	264	45	39
	155	166.88	.76	79	281	1.6	4	256	264	45	39
5	160	169.69	.76	79	281	1.5	4	256	264	45	39
	165	173.65	.67	79	281	1.5	4	256	263	45	39
6	170	176.82	.66	79	280	1.3	4	255	263	45	40
	175	179.94	.68	79	281	1.3	4	255	264	46	41
7	180	182.82	.70	80	281	1.3	4	255	264	46	41
	185	186.39	.71	80	282	1.5	4	255	264	45	41
8	190	189.67	.69	80	282	1.4	4	256	265	46	41
	195	192.99	.74	80	282	1.4	4	256	264	46	40
9	200	196.17	.74	80	281	1.5	4	255	264	46	41
	205	199.5	.71	80	281	1.5	4	255	264	46	42

Traverse: <u>1</u>	Traverse: <u>2</u>
Start Time: <u>11:45</u>	Start Time: <u>11:54</u>
Finish Time: <u>11:45</u>	Finish Time: <u>11:54</u>
Initial Leak Check: <u>.004</u> cfm@ <u>10</u> "Hg	Initial Leak Check: <u>.004</u> cfm@ <u>10</u> "Hg
Final Leak Check: <u>.004</u> cfm@ <u>10</u> "Hg	Final Leak Check: <u>.004</u> cfm@ <u>10</u> "Hg

Project No.: AST-2024-4547 / 22330
Operator: TYC

Field Data Sheet

Date: <u>Dec 2, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>1</u>	Page 4 of 4
	Plant Location: <u>Courtice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>	

[illegible]

Traverse:		2	
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	13:54	10

Project No.: AST-2024-4547 / 22330
Operator: TYC

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	2 Semi-Volatile Organic Compounds
Test Date	Dec. 2, 2024
Test Location	APC Outlet No. 2
Operator	TYC

Pitot Factor	.845
DGMCF (Y)	1.008
Barometric Pressure	29.6 "Hg
Static Pressure	-10.3 "H2O
Nozzle Size	.2415 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Reading Interval	5 min
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

Notes: _____

Project No.:	AST-2024-4547 / 22330
Page	1 of 4
Probe No.:	GA
Meter Box No.:	TEAM 1
Impinger Box No.:	

Measuring Device	ID
Probe / Pitot	SH
Trendicator	
Control Box	TEAM 1
Incline Manometer	"
Comb.Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

Nozzle Measurements	
1	.2415
2	.2405
3	.2430
Average:	.2415

Site Diagram

Field Data Sheet

Date: Dec 2, 2024	Plant: Reworld	Test No.: 2	Page 2 of 4
Plant Location: Courtyce, Ontario	Test Location: APC Outlet No. 2		

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
1	0	21.935	.88	79	280	1.7	4	251	259	72	69
	5	25.38	.90	79	278	1.7	4	255	253	64	38
2	10	28.97	.91	78	281	1.8	4	256	257	60	38
	15	34.57	.91	78	282	1.8	4	256	258	58	39
3	20	36.2	.89	78	282	1.8	4	256	258	55	39
	25	39.81	.88	79	282	1.7	4	256	259	51	39
4	30	43.39	.85	79	282	1.7	4	256	259	50	40
	35	46.92	.83	79	283	1.7	4	256	259	49	39
5	40	50.49	.86	80	284	1.6	4	256	259	49	39
	45	53.93	.74	80	284	1.6	4	256	259	48	39
6	50	57.39	.65	80	284	1.5	4	256	260	49	39
	55	60.44	.65	81	283	1.3	4	256	260	48	38
7	60	63.55	.62	81	283	1.3	4	255	260	49	39
	65	66.63	.65	81	282	1.2	4	256	260	49	39
8	70	69.72	.64	81	281	1.3	4	256	259	49	39
	75	72.81	.66	81	281	1.3	4	256	260	50	39
9	80	75.92	.67	82	280	1.3	4	256	259	49	39
	85	79.06	.65	82	280	1.3	4	255	260	49	39
10	90	82.2	.63	82	280	1.3	4	256	260	49	39
	95	85.32	.63	82	280	1.3	4	255	259	48	40
11	100	88.44	.64	82	280	1.3	4	255	260	49	42

Traverse: 1	Initial Leak Check: 202 cfm@ 10 "Hg	Initial Leak Check: cfm@	"Hg
Start Time: 14:48	Final Leak Check: cfm@	Final Leak Check: cfm@	"Hg

Project No.: AST-2024-4547 / 22330
Operator: TYC

Field Data Sheet

Date: <u>Dec. 2, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>2</u>
Plant Location: <u>Courice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>	

Point	Clock Time	Dry Gas Meter ft ³	Pitot Δ P "H ₂ O	DGM Temp AVG. °F	Stack Temp °F	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge	Probe Temp °F	Oven Temp °F	Impinger Temp	
										Outlet °F	Inlet/Trap °F
	105	91.55	.63	82	280	1.3	4	255	260	49	43
12	110	94.66	.63	82	280	1.3	4	255	260	49	43
	115	97.76	.64	83	280	1.3	4	255	260	49	40
1	120	101.1	.83	82	279	1.3	4	254	259	50	38
	125	104.45	.82	82	277	1.6	4	256	260	46	40
2	130	107.93	.84	82	278	1.6	4	255	259	44	41
	135	111.46	.89	82	278	1.7	4	255	260	44	41
3	140	115.1	.86	82	279	1.7	4	256	260	44	42
	145	118.69	.86	82	279	1.7	4	255	260	45	41
4	150	122.29	.80	82	280	1.7	4	255	260	45	41
	155	125.87	.78	82	280	1.6	4	255	260	45	41
5	160	129.31	.71	82	280	1.6	4	255	260	45	42
	165	132.59	.69	82	280	1.4	4	255	261	46	41
6	170	135.85	.64	82	279	1.4	4	256	260	46	42
	175	138.99	.64	82	279	1.3	4	256	260	46	42
7	180	142.1	.67	82	278	1.3	4	256	260	47	40
	185	145.93	.63	83	278	1.3	4	256	261	46	39
8	190	148.36	.62	82	278	1.3	4	256	260	47	39
	195	151.45	.65	83	278	1.3	4	257	260	47	39
9	200	154.56	.64	83	277	1.3	4	256	260	47	39
	205	157.69	.68	83	277	1.3	4	255	260	47	40

Traverse: <u>1</u>	Traverse: <u>2</u>
Start Time: <u>10:48</u>	Start Time: <u>16:55</u>
Initial Leak Check: <u>0.002</u> cfm@ <u>10</u> "Hg	Initial Leak Check: <u>.001</u> cfm@ <u>10</u> "Hg
Final Leak Check: <u>0.002</u> cfm@ <u>10</u> "Hg	Final Leak Check: <u>0.001</u> cfm@ <u>10</u> "Hg

Project No.: AST-2024-4547 / 22330
Operator: TYC

Field Data Sheet

Date: <u>Dec. 2, 2024</u>	Plant: <u>Reworld</u>	Test No.: <u>2</u>	Page 4 of 4
	Plant Location: <u>Courtice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>	

[illegible]

Traverse:	2		
Start Time:		Initial Leak Check:	"Hg cfm@
Finish Time:	18:55	Final Leak Check:	"Hg cfm@

Project No.: AST-2024-4547 / 223330
Operator: TMC

APPENDIX 7

Acid Gas Field Data Sheets (12 pages)

Alliance Technical Group

Plant	Reworld	
Plant Location	Courtice, Ontario	
Test No.:	1	Hydrogen Fluoride (HF) M26A
Test Date	December 4 2024	
Test Location	APC Outlet No. 1	
Operator	T. Pinaud	

Pitot Factor	.842	
DGMCF (Y)	1.010	
Barometric Pressure	29.4	
Static Pressure	11.1	
Nozzle Size	R2526, 2498	
Stack Diameter	54	inches
Length	-	feet
Width	-	feet
Port length:	11	inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Reading Interval	5 min
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

Project No.:	AST-2024-4547 / 22330	
Page	1 of 2	
Probe No.:	6 Series 4	
Meter Box No.:	Team 4	
Impinger Box No.:	12	

Measuring Device	ID
Probe / Pitot	54
Trendicator	Team 4
Control Box	Team 4
Incline Manometer	Team 4
Comb. Gas Analyzer	
Micromanometer	
Barometer	ENV. CAN.
Calipers	

Site Diagram

Nozzle Measurements	
1	.2498, .2500, .2498
2	.2555, .2500
3	.2555, .2500
Average:	

Notes:

Field Data Sheet

Date: Dec. 4 2024	Plant:	Reworld	Test No.:	Hydrogen Flouride (HF) M26A
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1

[illegible]

Traverse:	2						
Start Time:	9:07	Initial Leak Check:	.008	cfm@	✓	"Hg"	
Finish Time:	10:07	Final Leak Check:	.008	cfm@	✓	"Hg"	

Project No.: AS7-2024-4547 / 22330

Operator :

Alliance Technical Group

Plant	Reworld	
Plant Location	Courtice, Ontario	
Test No.:	2	Hydrogen Fluoride (HF) M26A
Test Date	December 4 2021	
Test Location	APC Outlet No. 1	
Operator	T. Timm	

Pitot Factor	.862
DGMCF (Y)	1,010
Barometric Pressure	29.3 "Hg
Static Pressure	-16,1 "H2O
Nozzle Size	1/4" 54 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Reading Interval	5 min
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

Notes:

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Measuring Device	ID
Probe / Pitot	
Trendicator	
Control Box	
Incline Manometer	
Comb.Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

Site Diagram

Nozzle Measurements	
1	_____
2	_____
3	_____
Average:	_____

Field Data Sheet

Date: Dec. 4 2004	Plant: Reworld	Test No.: 2	Hydrogen Flouride (HF) M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

[illegible]

Traverse: 1		Traverse:	
Start Time: 10:46	Initial Leak Check: .006	Start Time:	Initial Leak Check:
Finish Time: 11:46	Final Leak Check: .008	Finish Time:	Final Leak Check:
	cfm@ 15 "Hg		cfm@ "Hg

Project No.: AST-2024-4547 / 22330

Operator: 

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	3 Hydrogen Fluoride (HF) M26A
Test Date	
Test Location	APC Outlet No. 1
Operator	

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	1.842
DGMCF (Y)	1.010
Barometric Pressure	29.2 "Hg
Static Pressure	28.2 "H2O
Nozzle Size	2498 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Measuring Device	ID
Probe / Pitot	S4
Trendicator	Team 4
Control Box	Team 4
Incline Manometer	Team 4
Comb. Gas Analyzer	
Micromanometer	
Barometer	ENV.CAN.
Calipers	

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

Site Diagram

Nozzle Measurements	
1	
2	
3	
Average:	

Probe Liner Glass / Metal / Teflon / Other

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Notes:

Field Data Sheet

Date: <u>December 4 2014</u>	Plant: <u>Reworld</u>	Test No.: <u>3</u>	Hydrogen Flouride (HF) M26A	Page 2 of 2
	Plant Location: <u>Courtice, Ontario</u>	Test Location: <u>APC Outlet No. 1</u>		

[illegible]

Traverse:					
Start Time:	(1:57)	Initial Leak Check:	.00	"Hg"	
Finish Time:	(1:57)	Final Leak Check:	.00	"Hg"	

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

Project No.: ~~AST-2024-4547~~ / 22330

Operator: ~~W. S.~~

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	Hydrogen Fluoride (HF) M26A
Test Date	DEC 31st
Test Location	APC Outlet No. 7
Operator	QNT

Pitot Factor	0.85
DGMCF (Y)	0.85
Barometric Pressure	29.8
Static Pressure	-10.9
Nozzle Size	2.517
Stack Diameter	54
Length	feet
Width	feet
Port length:	11

Reading Interval	5 min
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

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	6A
Meter Box No.:	TEAM 2
Impinger Box No.:	12

Measuring Device	ID
Probe / Pitot	Sil
Trendicator	
Control Box	TEAM 2
Incline Manometer	
Comb. Gas Analyzer	
Micromanometer	
Barometer	ENV. CAN.
Calipers	CAL-1

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Nozzle Measurements	
1	_____
2	_____
3	_____
Average:	_____

Notes:

Field Data Sheet

Date: DEC 3 1994	Plant: Reworld	Test No.: 1	Hydrogen Fluoride (HF) M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2		

[illegible]

Traverse:		Traverse:	
Start Time: 9:12	Initial Leak Check: 0.1	cfm@ 15	"Hg
Finish Time: 10:12	Final Leak Check: 0.04	cfm@ 10	"Hg
Initial Leak Check:		Initial Leak Check:	
Final Leak Check:		Final Leak Check:	
cfm@		cfm@	
"Hg		"Hg	

Project No.: AST-2024-4547 / 22330
Operator: B.M.

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	2 Hydrogen Fluoride (HF) M26A
Test Date	DEC 3/24
Test Location	APC Outlet No. 2
Operator	RUT

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	6A
Meter Box No.:	TEAM 2
Impinger Box No.:	12

Pitot Factor	0.45
DGMCF (Y)	9.15
Barometric Pressure	29.8
Static Pressure	-10.9
Nozzle Size	247
Stack Diameter	54
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Measuring Device	ID
Probe / Pitot	555
Trendicator	757
Control Box	1
Incline Manometer	
Comb. Gas Analyzer	
Micromanometer	
Barometer	ENV. CAN.
Calipers	

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

Site Diagram

Nozzle Measurements	
1	
2	
3	
Average:	

Probe Liner Glass / Metal / Teflon / Other

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Notes:

Date: Dec 3/24	Plant: Reworld	Test No.: 7	Hydrogen Flouride (HF) M26A	Page 2 of 2
	Courtice, Ontario	Test Location: APC Outlet No. 7		

[illegible]

Traverse: 2		Traverse:	
Start Time: 11:07	Initial Leak Check: 0.5	Start Time:	Initial Leak Check:
Finish Time: 12:07	Final Leak Check: 0.5	Finish Time:	Final Leak Check:
	cfm@		cfm@
"Hg		"Hg	

Project No.: AST-2024-4547 / 22330
Operator: 

Alliance Technical Group

Plant	Reworld
Plant Location	Courtice, Ontario
Test No.:	3 Hydrogen Fluoride (HF) M26A
Test Date	Dec 3/24
Test Location	APC Outlet No. 2
Operator	DAT

Project No.:	AST-2024-4547 / 22330
Page	1 of 2
Probe No.:	6A
Meter Box No.:	TEAM 2
Impinger Box No.:	12

Pitot Factor	.845
DGMCF (Y)	.995
Barometric Pressure	29.8 "Hg
Static Pressure	-10.9 "H2O
Nozzle Size	.2417 inches
Stack Diameter	54 inches
Length	feet
Width	feet
Port length:	11 inches

Moisture Gain	
Total	g

Combustion Gas Concentration	
Oxygen	%
Carbon Dioxide	%
Carbon Monoxide	ppm

Measuring Device	ID
Probe / Pitot	SEE
Trendicator	TS-7
Control Box	1
Incline Manometer	
Comb. Gas Analyzer	
Micromanometer	
Barometer	ENV. CAN.
Calipers	

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

Site Diagram

Nozzle Measurements	
1	
2	
3	
Average:	

Probe Liner Glass / Metal / Teflon / Other _____

Nozzle Glass / Metal / Other _____

Union None / Metal / Teflon / Other _____

Pitot Leak Checked? Yes No

Notes:

Field Data Sheet

Date: <u>Dec 3/24</u>	Plant: <u>Reworld</u>	Test No.: <u>3</u>	Hydrogen Fluoride (HF) M26A	Page 2 of 2
	Plant Location: <u>Courtice, Ontario</u>	Test Location: <u>APC Outlet No. 2</u>		

[illegible]

Traverse: 2		Traverse:	
Start Time: 12:14	Initial Leak Check: 0.5 cfm@ 10 "Hg	Start Time:	Initial Leak Check:
Finish Time: 12:19	Final Leak Check: 0.5 cfm@ 15 "Hg	Finish Time:	Final Leak Check:

Project No.: ~~AST-2024-4547~~ / 22330

Operator:

APPENDIX 8

VOST Field Data Sheets (6 pages)

Low-Flow DGM Data

Reworld - Courtice, ON

APC Outlet No. 1

AST-2024-4547

Meter Correction Factor (Y): 1.006

Meter ID: VOST 3

Trap Set No.	1			2			3			4		
Date	12-2-24			12-2-24			12-2-24			12-2-24		
Start Time	9:40 AM			10:28 AM			11:15 AM			12:02 PM		
End Time	10:20 AM			11:08 AM			11:55 AM			12:42 PM		
Run Time (θ), min	40			40			40			40		
Max Vacuum, in. Hg	3.0			6.0			8.0			6.0		
Pre Leak Check, L (at > 10 in WC)	NDL			NDL			NDL			NDL		
Post Leak Check, L (at max vac.)	NDL			NDL			NDL			NDL		
Meter Volume, L	Flow Rate Setting, LPM			Flow Rate Setting, LPM			Flow Rate Setting, LPM			Flow Rate Setting, LPM		
Time	0.5			0.5			0.5			0.5		
0	20.70			45.10			67.10			87.40		
5	22.10			48.40			69.40			90.50		
10	25.53			51.20			71.80			93.60		
15	28.90			53.10			73.80			96.50		
20	32.50			55.80			76.40			98.20		
25	36.20			58.95			79.30			100.70		
30	39.90			60.50			81.65			103.50		
35	42.30			63.56			84.30			106.90		
40	44.50			66.50			86.80			108.70		
Total Meter Volume (Vm), L	23.80			21.40			19.70			21.30		
Temperatures, °C												
Time	DGM	Probe	Trap	DGM	Probe	Trap	DGM	Probe	Trap	DGM	Probe	Trap
0	23.0	139.0	8.0	22.0	138.0	7.0	23.0	130.0	6.0	24.0	130.0	6.0
5	21.0	142.0	6.0	22.0	131.0	6.0	23.0	130.0	5.0	24.0	141.0	5.0
10	21.0	143.0	5.0	22.0	131.0	6.0	24.0	130.0	5.0	26.0	131.0	5.0
15	21.0	142.0	5.0	23.0	132.0	6.0	24.0	130.0	5.0	24.0	130.0	5.0
20	22.0	132.0	5.0	23.0	131.0	6.0	23.0	130.0	5.0	25.0	130.0	5.0
25	22.0	132.0	6.0	24.0	131.0	6.0	23.0	130.0	5.0	25.0	130.0	5.0
30	22.0	130.0	6.0	23.0	132.0	6.0	25.0	132.0	5.0	24.0	131.0	5.0
35	22.0	130.0	6.0	23.0	131.0	5.0	24.0	130.0	5.0	24.0	131.0	5.0
40	22.0	130.0	6.0	23.0	131.0	5.0	24.0	130.0	5.0	24.0	130.0	5.0
Average Meter Temperature (Tm), °C	22			23			24			24		
Average Meter Temperature (Tm), °K	295			296			297			298		
Barometric Pressure (Pb), in. Hg	29.60			29.60			29.60			29.60		
Meter Orifice Pressure (ΔH), in. WC	0.500			0.500			0.500			0.500		
Meter Pressure (Pm), in. Hg	29.64			29.64			29.64			29.64		
Reference Meter Volume (Vmref), L	23.978			21.487			19.721			21.267		
Reference Meter Volume (Vmref), m³	0.0240			0.0215			0.0197			0.0213		

Low-Flow DGM Data

Covanta - Courtice, ON
APC Outlet No. 2
AST-2024-4547

Meter Correction Factor (Y): 0.985

Meter ID: VOST 1

Trap Set No.	10A/B			11A/B			12A/B			13A/B		
Date	12-2-24			12-2-24			12-2-24			12-2-24		
Start Time	9:45 AM			10:36 AM			11:24 AM			12:09 PM		
End Time	10:25 AM			11:16 AM			12:04 PM			12:49 PM		
Run Time (θ), min	:40			:40			:40			:40		
Max Vacuum, in. Hg	5.0			6.0			6.0			6.0		
Pre Leak Check, L (at > 10 in WC)	NDL			NDL			NDL			NDL		
Post Leak Check, L (at max vac.)	NDL			NDL			NDL			NDL		
Meter Volume, L	Flow Rate Setting, LPM			Flow Rate Setting, LPM			Flow Rate Setting, LPM			Flow Rate Setting, LPM		
Time	0.5			0.5			0.5			0.5		
0	39.40			62.20			83.80			5.25		
5	42.00			65.20			86.30			8.10		
10	45.30			67.70			89.00			10.60		
15	48.00			70.20			91.60			13.10		
20	50.60			73.00			94.00			15.60		
25	53.30			75.50			96.50			18.20		
30	55.80			78.00			98.90			20.70		
35	58.30			80.50			101.40			23.30		
40	60.70			83.50			103.90			25.90		
Total Meter Volume (Vm), L	21.30			21.30			20.10			20.65		
Temperatures, °C												
Time	DGM	Probe	Trap	DGM	Probe	Trap	DGM	Probe	Trap	DGM	Probe	Trap
0	22.0	130.0	10.0	25.0	133.0	12.0	25.0	135.0	12.0	27.0	136.0	13.0
5	24.0	130.0	10.0	25.0	133.0	9.0	26.0	135.0	9.0	27.0	135.0	9.0
10	24.0	131.0	10.0	25.0	134.0	8.0	27.0	135.0	8.0	27.0	135.0	8.0
15	24.0	131.0	10.0	26.0	135.0	8.0	27.0	135.0	8.0	27.0	135.0	8.0
20	24.0	131.0	10.0	26.0	135.0	8.0	27.0	135.0	8.0	28.0	135.0	8.0
25	25.0	132.0	9.0	26.0	135.0	8.0	27.0	135.0	8.0	28.0	135.0	7.0
30	25.0	132.0	9.0	26.0	135.0	8.0	27.0	135.0	7.0	28.0	135.0	7.0
35	25.0	132.0	9.0	26.0	135.0	8.0	27.0	135.0	7.0	28.0	135.0	7.0
40	25.0	132.0	9.0	26.0	135.0	8.0	27.0	135.0	7.0	28.0	135.0	7.0
Average Meter Temperature (Tm), °C	24			26			27			28		
Average Meter Temperature (Tm), °K	297			299			300			301		
Barometric Pressure (Pb), in. Hg	29.60			29.60			29.60			29.60		
Meter Orifice Pressure (ΔH), in. WC	1.000			1.000			1.000			1.000		
Meter Pressure (Pm), in. Hg	29.67			29.67			29.67			29.67		
Reference Meter Volume (Vmref), L	20.858			20.757			19.522			19.997		
Reference Meter Volume (Vmref), m³	0.0209			0.0208			0.0195			0.0200		

Alliance Technical Group

Vost Data Sheet

Plant: Reworld		
Plant Location: Courtice, ON	Test Condition: Compliance	Control Box ID: Vost.3
Test location: APC Outlet No. 1	DGMCF: 1.0061	Operator: IG
Date: DEC 2, 2024	Barometric Pressure: 29.6	"Hg Project No: AST-2024-4547 /22330
~ 0.5 LPM for 40 minutes	NDL - No Detectable Leak	Field Blank Pair ID: 5A 5B

Test 1 Start Time: 0909 0240		Initial Leak Check NDL @ 25 "Hg				Sample ID: 1A, 1B	
Test 1 End Time: 1020		Final Leak Check NDL @ 25 "Hg				Lab ID: A-088190-15228	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H ₂ O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	20.7	139	146	8	23	0.5	3.0
5	22.1	142	143	6	21	0.5	3.0
10	27.25.8	143	143	5	21	0.5	3.0
15	28.9	142	144	5	21	0.5	3.0
20	32.5	132	142	5	22	0.5	3.0
25	36.20	132	142	6	22	0.5	3.0
30	39.9	150	141	6	22	0.5	3.0
35	42.22	130	140	6	22	0.5	3.0
40	44.5	150	140	6	22	0.5	3.0

→ 42.30

Test 2 Start Time: 1028		Initial Leak Check NDL @ 25 "Hg				Sample ID: 2A, 2B	
Test 2 End Time: 1108		Final Leak Check NDL @ 25 "Hg				Lab ID: A-088100-10956	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H ₂ O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	45.1	138	140	7	22	0.5	3.0
5	48.4	131	141	6	22	0.5	3.5
10	51.2	131	141	6	22	0.5	3.0
15	53.1	132	141	6	23	0.5	3.0
20	52.8	131	141	6	23	0.5	4.0
25	58.45	131	141	6	24	0.5	6.0
30	60.50	132	141	6	23	0.5	6.0
35	63.50	131	143	5	23	0.5	6.0
40	66.50	131	143	5	23	0.5	6.0

Alliance Technical Group

Vost Data Sheet

Plant: Reworld		Test Condition: Compliance		Control Box ID: Vost3	
Plant Location: Courtice, ON		DGMCF: 1,0061		Operator: IG	
Test location: APC Outlet No. 1		Barometric Pressure: 29.6		Project No: AST-2024-4547 / 22330	
Date: Dec 2, 2024		~ 0.5 LPM for 40 minutes		NDL - No Detectable Leak	
				Field Blank Pair ID: 5A, 5B	

Test 3 Start Time: 11:15		11:15		Initial Leak Check	NDL @ 25	"Hg	Sample ID:	3A 3B
Test 3 End Time:		11:55		Final Leak Check	NDL @ 25	"Hg	Lab ID:	408820 01662
Clock Time	Dry Gas Meter L	Temperatures				Meter	Pump	
		Probe °C	Stack °C	Condensor °C	Meter Avg °C	Pressure "H ₂ O	Vacuum "Hg	
0	67.1	130	141	5	23	0.5	4.0	
5	69.4	130	141	5	23	0.5	4.0	
10	71.8	130	141	5	24	0.5	6.0	
15	73.8	130	141	5	24	0.5	6.0	
20	76.4	130	141	5	23	0.5	6.0	
25	79.3	130	139	5	23	0.5	6.0	
30	81.65	132	141	5	24	0.5	8.0	
35	84.3	130	139	5	24	0.5	8.0	
40	86.8	130	140	5	24	0.5	8.0	

Test 4 Start Time: 12:02		Initial Leak Check NDL @ 25 "Hg		Sample ID: 4A 4B			
Test 4 End Time: 12:42		Final Leak Check NDL @ 25 "Hg		Lab ID:			
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H ₂ O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	87.40	130	140	6	24	0.5	3.0
5	90.8	141	142	5	24	0.5	3.0
10	93.6	131	140	5	26	0.5	3.0
15	96.5	130	140	5	24	0.5	3.0
20	98.2	130	140	5	25	0.5	3.0
25	100.7	130	140	5	25	0.5	3.0
30	103.5	131	140	5	24	0.5	6.0
35	106.9	131	140	5	24	0.5	6.0
40	108.7	130	140	5	24	0.5	6.0

Alliance Technical Group

Vost Data Sheet

Plant: Reworld		
Plant Location: Courtice, ON	Test Condition: Compliance	Control Box ID: VOST1
Test location: APC Outlet No. 2	DGMCF: 9848	Operator: DM
Date: DEC 2/24	Barometric Pressure: 29.6	"Hg Project No: AST-2024-4547 /22330
~ 0.5 LPM for 40 minutes	NDL - No Detectable Leak	Field Blank Pair ID: 14A, B

PROBE 135°C
TRAP < 20°C

Test 1 Start Time: 945		Initial Leak Check NDL @ 16 "Hg		Sample ID: 10A/10B			
Test 1 End Time: 1025		Final Leak Check NDL @ 10 "Hg		Lab ID:			
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H ₂ O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	39.4	130	139	10	22	1	4
5	41.0	130	139	10	24	1	5
10	45.3	131	139	10	24	1	5
15	48.0	131	139	10	24	1	5
20	50.6	131	139	10	24	1	5
25	53.3	132	139	9	25	1	5
30	55.8	132	139	9	25	1	5
35	58.3	132	139	9	25	1	5
40	60.7	132	139	9	25	1	5

Test 2 Start Time: 1036		Initial Leak Check NDL @ 14 "Hg		Sample ID: 10A/10B			
Test 2 End Time: 1116		Final Leak Check NDL @ 14 "Hg		Lab ID:			
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H ₂ O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	62.2	133	139	12	25	1	5
5	65.2	133	139	9	25	1	6
10	67.7	134	139	8	25	1	6
15	70.2	135	139	8	26	1	6
20	73.0	135	139	8	26	1	6
25	75.5	135	139	8	26	1	6
30	78.0	135	140	8	26	1	6
35	80.5	135	139	8	26	1	6
40	85.5	135	139	8	26	1	6

SUMMA

CT - 10660

12-2-24

9:30 947 -25"

951 -5"

APC-HV-E

Alliance Technical Group

Vost Data Sheet

Plant: Reworld		
Plant Location: Courtice, ON	Test Condition: Compliance	Control Box ID: VOST 1
Test location: APC Outlet No. 2	DGMCF: 9848	Operator: DMT
Date: DEC 2/24	Barometric Pressure: 29.6 "Hg	Project No: AST-2024-4547 /22330
~ 0.5 LPM for 40 minutes	NDL - No Detectable Leak	Field Blank Pair ID: 12A 14AB

Test 3 Start Time: 11 24		Initial Leak Check NDL @ 14 "Hg		Sample ID: 12AB			
Test 3 End Time: 12 04		Final Leak Check NDL @ 12 "Hg		Lab ID: 12AB			
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H ₂ O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	83.8	135	135	12	25	1	5
5	86.3	135	139	9	26	1	6
10	89.0	135	139	8	27	1	6
15	91.6	135	135	8	27	1	6
20	94.6	135	135	8	27	1	6
25	96.5	135	139	8	27	1	6
30	98.9	135	139	7	27	1	6
35	101.4	135	139	7	27	1	6
40	103.9	135	139	7	27	1	6

Test 4 Start Time: 1209		Initial Leak Check NDL @ 12 "Hg		Sample ID: 13AB			
Test 4 End Time: 1249		Final Leak Check NDL @ 12 "Hg		Lab ID: 13AB			
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H ₂ O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	5.25	136	140	13	27	1	5
5	8.1	135	139	9	27	1	6
10	10.6	135	139	8	27	1	6
15	13.1	135	139	8	27	1	6
20	15.6	135	140	8	28	1	6
25	18.2	135	141	7	28	1	6
30	20.7	135	139	7	28	1	6
35	23.3	135	139	7	28	1	6
40	25.9	135	139	7	28	1	6

APPENDIX 9

Aldehydes Field Data Sheets (8 pages)

Location **Reworld - Courtice, ON**
Source **APC Outlet No. 1**
Project No. **AST-2024-4547**
Parameter(s) **Aldehydes**
Console Type **Low Flow**

Run No.	1	2	3
Date	12-2-24	12-2-24	12-2-24
Status	VALID	VALID	VALID
Start Time	13:14	14:17	15:20
End Time	14:14	15:17	16:20
Run Time, min (0)	60	60	60
Meter ID	VOST 3	VOST 3	VOST 3
Meter Correction Factor (Y)	1.0061	1.0061	1.0061
Max Vacuum, in. Hg	1	1	1
Post Leak Check, L/min (at max vac.)	0.010	0.010	0.010
Meter Volume, L			
0	9.500	45.700	79.900
5	14.000	48.900	82.700
10	16.800	51.400	85.700
15	19.600	53.900	88.700
20	22.500	56.400	91.700
25	25.400	59.300	94.600
30	28.300	61.800	97.600
35	32.000	64.500	100.400
40	33.700	67.600	103.300
45	36.000	70.100	106.300
50	39.700	73.100	109.100
55	42.600	75.900	111.900
60	45.400	78.700	114.600
Total Meter Volume, L (Vm)	35.900	33.000	34.700
Temperature, °C	Meter Probe Filter Vacuum Imp. Exit	Meter Probe Filter Vacuum Imp. Exit	Meter Probe Filter Vacuum Imp. Exit
0	24 130 -- 1 17	25 130 -- 1 12	25 129 -- 1 13
5	24 130 -- 1 18	25 131 -- 1 10	25 130 -- 1 10
10	25 131 -- 1 17	25 131 -- 1 10	25 130 -- 1 10
15	25 133 -- 1 17	26 131 -- 1 10	27 130 -- 1 11
20	25 132 -- 1 16	26 131 -- 1 10	27 130 -- 1 11
25	25 134 -- 1 10	26 131 -- 1 10	27 131 -- 1 10
30	25 131 -- 1 11	26 130 -- 1 10	26 131 -- 1 9
35	25 132 -- 1 10	25 131 -- 1 10	26 130 -- 1 9
40	25 132 -- 1 10	25 131 -- 1 10	26 130 -- 1 9
45	25 131 -- 1 10	26 131 -- 1 10	26 130 -- 1 9
50	25 133 -- 1 10	25 130 -- 1 10	26 131 -- 1 9
55	26 131 -- 1 10	25 130 -- 1 10	25 131 -- 1 9
60	26 131 -- 1 10	25 130 -- 1 10	25 130 -- 1 9
Average Temperature, °C (Tm)	25 132 -- --	25 131 -- --	26 130 -- --
Average Temperature, °K (Tm)	298 405 -- --	299 404 -- --	299 403 -- --
Minimum Temperature, °C	24 130 -- --	25 130 -- --	25 129 -- --
Maximum Temperature, °C	26 134 -- --	26 131 -- --	27 131 -- --
Barometric Pressure, in. Hg (Pb)	29.60	29.60	29.60
Meter Orifice Pressure, in. WC (ΔH)	0.500	0.500	0.500
Meter Pressure, in. Hg (Pm)	29.64	29.64	29.64
Reference Meter Volume, L (Vmref)	35.777	32.845	34.484
Reference Meter Volume, Rm³ (Vmref)	0.0358	0.0328	0.0345

Location Reworld - Courtice, ON
Source APC Outlet No. 2
Project No. AST-2024-4547
Parameter(s) Aldehydes
Console Type Low Flow

Run No.	1	2	3
Date	12-2-24	12-2-24	12-2-24
Status	VALID	VALID	VALID
Start Time	13:10	14:16	15:18
End Time	14:10	15:16	16:18
Run Time, min (0)	60	60	60
Meter ID	VOST 1	VOST 1	VOST 1
Meter Correction Factor (Y)	0.9848	0.9848	0.9848
Max Vacuum, in. Hg	3	3	3
Post Leak Check, L/min (at max vac.)	0.010	0.010	0.010
Meter Volume, L			
0	26.400	58.300	90.100
5	28.900	60.800	92.800
10	31.200	63.300	95.500
15	34.300	65.800	98.200
20	36.900	68.600	100.700
25	39.700	71.000	103.600
30	42.200	73.900	106.000
35	44.700	77.500	108.700
40	47.200	79.100	111.500
45	49.700	81.700	114.200
50	53.200	84.100	116.800
55	55.700	86.700	119.600
60	58.200	89.200	122.300
Total Meter Volume, L (Vm)	31.800	30.900	32.200
Temperature, °C	Meter Probe Filter Vacuum Imp. Exit	Meter Probe Filter Vacuum Imp. Exit	Meter Probe Filter Vacuum Imp. Exit
0	25 135 -- 3 18	27 136 -- 3 20	28 136 -- 3 12
5	25 135 -- 3 12	27 136 -- 3 11	28 136 -- 3 7
10	26 135 -- 3 9	27 135 -- 3 8	28 136 -- 3 7
15	26 135 -- 3 8	27 135 -- 3 7	28 136 -- 3 7
20	27 135 -- 3 8	28 136 -- 3 6	28 136 -- 3 7
25	27 135 -- 3 8	28 136 -- 3 6	28 136 -- 3 7
30	27 135 -- 3 8	28 136 -- 3 6	28 136 -- 3 7
35	27 135 -- 3 8	28 136 -- 3 6	28 136 -- 3 7
40	27 135 -- 3 8	28 136 -- 3 6	28 136 -- 3 7
45	27 135 -- 3 8	28 136 -- 3 6	28 136 -- 3 7
50	27 135 -- 3 8	28 136 -- 3 6	28 136 -- 3 7
55	27 135 -- 3 8	28 136 -- 3 6	28 136 -- 3 7
60	27 135 -- 3 8	28 136 -- 3 6	28 136 -- 3 7
Average Temperature, °C (Tm)	27 135 -- --	28 136 -- --	28 136 -- --
Average Temperature, °K (Tm)	300 408 -- --	301 409 -- --	301 409 -- --
Minimum Temperature, °C	25 135 -- --	27 135 -- --	28 136 -- --
Maximum Temperature, °C	27 135 -- --	28 136 -- 20	28 136 -- 12
Barometric Pressure, in. Hg (Pb)	29.60	29.60	29.60
Meter Orifice Pressure, in. WC (ΔH)	1.000	1.000	1.000
Meter Pressure, in. Hg (Pm)	29.67	29.67	29.67
Reference Meter Volume, L (Vmref)	30.900	29.910	31.136
Reference Meter Volume, Rm³ (Vmref)	0.0309	0.0299	0.0311

Alliance Technical Group
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC		
Plant Location:	Courtice, Ontario		
Test No.:	1		
Test location:	APC Outlet No. 1		
Date:	DECEMBER 2, 2024		
Project No.:	AST-2024-4547 / 22330		

Measuring Device	MII Number
Control Module	VOST-3 A12010
Barometer	Env Canada

Barometric Pressure:	29.6	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge
0	9.8	130	140	17	24	0.5	0.5
5	14.0	130	140	17	24	0.5	0.5
10	16.8	131	144	17	25	0.5	0.5
15	19.6	133	144	17	25	0.5	0.5
20	22.5	132	142	16	25	0.5	0.5
25	25.4	134	143	16	35	0.5	0.5
30	28.2	131	141	11	25	0.5	0.5
35	31.0	132	140	10	25	0.5	0.5
40	33.7	132	140	10	25	0.5	0.5
45	36.7	131	139	10	25	0.5	0.5
50	39.7	133	141	10	25	0.5	0.5
55	42.6	131	139	10	26	0.5	0.5
60	45.4	131	140	10	26	0.5	0.5

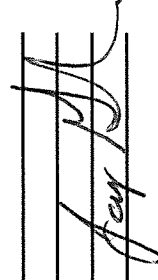
Start Time:	13:14
Finish Time:	14:14
Initial Leak Check:	2.01 Lpm @ 25" Hg
Final Leak Check:	2.01 Lpm @ 20" Hg

DGMCF:	1.0061
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:



Alliance Technical Group
NCASI Method ISS/FP-A105.01

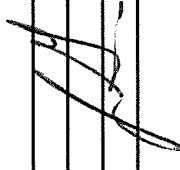
Plant:	Covanta DYEC	
Plant Location:	Courtice, Ontario	
Test No.:	2	
Test location:	APC Outlet No. 1	
Date:	December 2, 2024	
Project No.:	AST-2024-4547 / 22330	

Measuring Device	MI Number
Control Module	10553 1412010
Barometer	Env Canada

Barometric Pressure:	29.6	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge
0	45.7	130	140	12	25	0.5	0.5
5	48.9	131	137	10	25	0.5	0.5
10	51.4	131	137	10	25	0.5	0.5
15	53.9	131	137	10	26	0.5	0.5
20	56.4	131	137	10	26	0.5	0.5
25	59.20	131	137	10	26	0.5	0.5
30	61.85	130	137	10	26	0.5	0.5
35	64.50	131	138	10	26	0.5	0.5
40	67.60	131	138	10	25	0.5	0.5
45	70.10	131	139	10	26	0.5	0.5
50	73.10	130	140	10	25	0.5	0.5
55	75.9	130	139	10	25	0.5	0.5
60	78.7	130	138	10	25	0.5	0.5

Start Time:	14:17	DGMCF:	1.0061
Finish Time:	15:17	Sample Volume:	
Initial Leak Check:	2.01	Average DGM Temp:	
Final Leak Check:	2.01	Average DGM Δ H:	

Comments:	
: sample @ ~0.5 lpm for 60 minutes.	Operator: 

Alliance Technical Group
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	9
Test location:	APC Outlet No. 1
Date:	December 2, 2024
Project No.:	AST-2024-4547 / 22330

Measuring Device	Mill Number
Control Module	Voss - A-22010
Barometer	Env Canada

Barometric Pressure:	29.6
	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge
0	79.90	129	143	13	25	0.5	0.5
5	82.7	130	140	10	25	0.5	0.5
10	85.7	130	139	10	25	0.5	0.5
15	88.7	130	135	11	27	0.5	0.5
20	91.7	130	135	11	27	0.5	0.5
25	94.6	131	139	10	27	0.5	0.5
30	97.6	131	139	9	26	0.5	0.5
35	100.4	130	139	9	26	0.5	0.5
40	103.3	130	139	9	26	0.5	0.5
45	106.3	130	139	9	26	0.5	0.5
50	109.1	131	139	9	26	0.5	0.5
55	111.9	131	139	9	25	0.5	0.5
60	114.6	139	139	9	25	0.5	0.5

Start Time:	1520	DGMCF:	1.0061
Finish Time:	1620	Sample Volume:	
Initial Leak Check:	6.01 Lpm @ 17" Hg	Average DGM Temp:	
Final Leak Check:	6.01 Lpm @ 15" Hg	Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: *[Signature]*

Alliance Technical Group
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	REXDA Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 2
Date:	Dec 2/24
Project No.:	AST-2024-4547 / 22330

Measuring Device	Mill Number
Control Module	VOST 1
Barometer	Env Canada

Barometric Pressure:	29.6	"Hg

Clock Time	Dry Gas Meter	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge
0	36.4	135	140	18	25	1	3
5	38.9	135	140	17	25	1	3
10	31.2	135	140	19	26	1	3
15	34.3	135	140	19	26	1	3
20	36.9	135	140	18	27	1	3
25	39.7	135	140	18	27	1	3
30	42.2	135	140	18	27	1	3
35	44.7	135	140	18	27	1	3
40	47.2	135	140	18	27	1	3
45	49.7	135	140	18	27	1	3
50	53.7	135	140	18	27	1	3
55	55.7	135	141	18	27	1	3
60	56.2	135	140	18	27	1	3

Start Time:	13:10	DGMCf:	9818
Finish Time:	14:10	Sample Volume:	
Initial Leak Check:	<.01	Average DGM Temp:	
Final Leak Check:	<.02	Average DGM Δ H:	

Comments:	
: sample @ ~0.5 lpm for 60 minutes.	
Operator: DM	

Alliance Technical Group
NCASI Method ISS/FP-A105.01

Plant:	R ^{AW} ALD Covanta DYEC		
Plant Location:	Courtice, Ontario		
Test No.:	2		
Test location:	APC Outlet No. 2		
Date:	Dec 2/24		
Project No.:	AST-2024-4547 / 22330		

Measuring Device	MII Number
Control Module	V05T
Barometer	Env Canada

Barometric Pressure:	29.6	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge
0	53.3	136	139	20	27	1	3
5	60.8	136	139	11	27	1	3
10	63.5	135	140	9	27	1	3
15	65.3	135	140		27	1	3
20	68.6	136	140	6	28	1	3
25	71.0	136	140	6	28	1	3
30	73.9	136	140	6	28	1	3
35	77.5	136	140	6	28	1	3
40	79.1	136	141	6	28	1	3
45	81.7	136	140	6	28	1	3
50	84.1	136	137	6	28	1	3
55	86.7	136	135	6	28	1	3
60	88.7	136	137	6	28	1	3

Start Time:	1416
Finish Time:	1516
Initial Leak Check:	2.01 Lpm @ 10 "Hg
Final Leak Check:	2.01 Lpm @ 10 "Hg

DGMCF:	9848
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

[Signature]

Alliance Technical Group
NCASI Method ISS/FP-A105.01

Plant:	<u>2-ELWING</u>	Covanta DYEC
Plant Location:	Courtice, Ontario	
Test No.:	<u>B</u>	
Test location:	APC Outlet No. <u>2</u>	
Date:	<u>Dec 7/24</u>	
Project No.:	AST-2024-4547 / 22330	

Measuring Device	Mil Number
Control Module	<u>10557</u>
Barometer	Env Canada

Barometric Pressure:	<u>29.6</u>
	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H ₂ O	Pump Vacuum "Hg Gauge
0	91.1	136	140	17	28	1	3
5	92.3	136	140	7	28	1	3
10	95.5	136	140	7	28	1	3
15	98.2	136	140	7	28	1	3
20	100.7	136	141	7	28	1	3
25	103.6	136	140	7	28	1	3
30	106.0	136	139	7	28	1	3
35	108.7	136	140	7	28	1	3
40	111.50	136	140	7	28	1	3
45	114.2	136	140	7	28	1	3
50	116.8	136	140	7	28	1	3
55	119.6	136	140	7	28	1	3
60	122.3	136	140	7	28	1	3

Start Time:	<u>15:19</u>
Finish Time:	<u>16:19</u>
Initial Leak Check:	<u>1.01</u> Lpm @ <u>10</u> "Hg
Final Leak Check:	<u>2.01</u> Lpm @ <u>10</u> "Hg

DGMC:	<u>9849</u>
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

[Signature]

APPENDIX 10

Sample Log/Chain of Custody Forms (9 pages)

Alliance Technical Group - Sample Log
Method 201A & Method 202
Reworld

1 of 2

Client: Reworld
Job/Report Number: AST-2024-4547
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO:

Alliance Sample ID 24-4547-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
1	DEC 5/24	1	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
2				PM 2.5 cyclone Rinse	Acetone	Particulate
3				PM 2.5 exit & connectors	Acetone	Particulate
4				Back up filter	filter	Particulate
5				Impinger Soln & rinse	Water	Particulate
6				Secondary Filter	Filter	Particulate*
7				Impinger Rinse	Acetone & Hexane	Particulate
8	DEC 5/24	2	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
9				PM 2.5 cyclone Rinse	Acetone	Particulate
10				PM 2.5 exit & connectors	Acetone	Particulate
11				Back up filter	filter	Particulate
12				Impinger Soln & rinse	Water	Particulate
13				Secondary Filter	Filter	Particulate*
14				Impinger Rinse	Acetone & Hexane	Particulate
15	DEC 5/24	3	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
16				PM 2.5 cyclone Rinse	Acetone	Particulate
17				PM 2.5 exit & connectors	Acetone	Particulate
18				Back up filter	filter	Particulate
19				Impinger Soln & rinse	Water	Particulate
20				Secondary Filter	Filter	Particulate*
21				Impinger Rinse	Acetone & Hexane	Particulate
22	DEC 4/24	1	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
23				PM 2.5 cyclone Rinse	Acetone	Particulate
24				PM 2.5 exit & connectors	Acetone	Particulate
25				Back up filter	filter	Particulate
26				Impinger Soln & rinse	Water	Particulate
27				Secondary Filter	Filter	Particulate*
28				Impinger Rinse	Acetone & Hexane	Particulate
29	DEC 4/24	2	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
30				PM 2.5 cyclone Rinse	Acetone	Particulate
31				PM 2.5 exit & connectors	Acetone	Particulate
32				Back up filter	Filter	Particulate
33				Impinger Soln & rinse	Water	Particulate
34				Secondary Filter	Filter	Particulate*
35				Impinger Rinse	Acetone & Hexane	Particulate

Environmental Division
Burlington

Work Order Reference

BU2401303



Telephone : +1 905 331 3111

Alliance Technical Group - Sample Log
Method 201A & Method 202
Reworld

2 of 2

Client: Reworld
Job/Report Number: AST-2024-4547
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO:

Alliance Sample ID 24-4547-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
36	DEC 4/24	3	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
37				PM 2.5 cyclone Rinse	Acetone	Particulate
38				PM 2.5 exit & connectors	Acetone	Particulate
39				Back up filter	Filter	Particulate
40				Impinger Soln & rinse	Water	Particulate
41				Secondary Filter	Filter	Particulate*
42				Impinger Rinse	Acetone & Hexane	Particulate
43	DEC 5/24	Blank	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
44				PM 2.5 cyclone Rinse	Acetone	Particulate
45				PM 2.5 exit & connectors	Acetone	Particulate
46				Back up filter	filter	Particulate
47				Impinger Soln & rinse	Water	Particulate
48				Secondary Filter	Filter	Particulate*
49				Impinger Rinse	Acetone & Hexane	Particulate
50	DEC 5/24	Blank	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
51				PM 2.5 cyclone Rinse	Acetone	Particulate
52				PM 2.5 exit & connectors	Acetone	Particulate
53				Back up filter	Filter	Particulate
54				Impinger Soln & rinse	Water	Particulate
55				Secondary Filter	Filter	Particulate*
56				Impinger Rinse	Acetone & Hexane	Particulate

Note: *To be included in condensible particulate analysis as per US EPA Method 202.

11.6 °C

Relinquished To:

ARON BUNTON

Date:

6-Dec-2024 11:00

Relinquished By:

[Signature]

Date:

DEC 6/24

Alliance Technical Group - Sample Log
Particulate and Metals Samples
Reworld

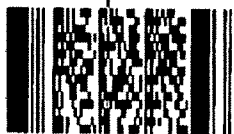
Client: Reworld
Project Number: AST-2024-4547 / 22330
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO:

Alliance Sample ID	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
24-4547-PM-						
1	DEC 3/24	#1 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
2				Probe Rinse Nitric	0.1N Nitric	Metals
3				Filter	Particulate	Particulate & Metals
4				Impinger 1-4 Solution	Nitric/Peroxide	Metals
5				Impinger 5-6 Solution	Acid. KMnO4	Mercury
6				Impinger 5-6 Rinse	8N HCl	Mercury
7	DEC 4/24	#1 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
8				Probe Rinse Nitric	0.1N Nitric	Metals
9				Filter	Particulate	Particulate & Metals
10				Impinger 1-4 Solution	Nitric/Peroxide	Metals
11				Impinger 5-6 Solution	Acid. KMnO4	Mercury
12				Impinger 5-6 Rinse	8N HCl	Mercury
13	DEC 4/24	#1 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
14				Probe Rinse Nitric	0.1N Nitric	Metals
15				Filter	Particulate	Particulate & Metals
16				Impinger 1-4 Solution	Nitric/Peroxide	Metals
17				Impinger 5-6 Solution	Acid. KMnO4	Mercury
18				Impinger 5-6 Rinse	8N HCl	Mercury
19	DEC 5/24	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

Environmental Division
Burlington

Work Order Reference

BU2401302



Telephone : +1 905 331 3117

Alliance Technical Group - Sample Log Particulate and Metals Samples Reworld

Client: Reworld
Project Number: AST-2024-4547 / 22330
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO:

Alliance Sample ID 24-4547-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
25	DEC 3/24	#2 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
26				Probe Rinse Nitric	0.1N Nitric	Metals
27				Filter	Particulate	Particulate & Metals
28				Impinger 1-4 Solution	Nitric/Peroxide	Metals
29				Impinger 5-6 Solution	Acid. KMnO4	Mercury
30				Impinger 5-6 Rinse	8N HCl	Mercury
31	DEC 3/24	#2 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
32				Probe Rinse Nitric	0.1N Nitric	Metals
33				Filter	Particulate	Particulate & Metals
34				Impinger 1-4 Solution	Nitric/Peroxide	Metals
35				Impinger 5-6 Solution	Acid. KMnO4	Mercury
36				Impinger 5-6 Rinse	8N HCl	Mercury
37	DEC 5/24	#2 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
38				Probe Rinse Nitric	0.1N Nitric	Metals
39				Filter	Particulate	Particulate & Metals
40				Impinger 1-4 Solution	Nitric/Peroxide	Metals
41				Impinger 5-6 Solution	Acid. KMnO4	Mercury
42				Impinger 5-6 Rinse	8N HCl	Mercury
43	DEC 5/24	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:

DEC 6/24

Relinquished To:

AARON BANTA

Date:

6-Dec-2024 11:00

11.6°C

Alliance Technical Group - Sample Log
Acid Gases
Reworld

Client: Reworld
Job/Report Number: AST-2024-4547 / 22330
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #:

Alliance Sample ID 24-4547-M26A-	Sample Date	Location	Sample Description	Media	Initial Volume(ml)	Sample Analysis
1	DEC 4/24	APC Outlet # 1	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
2	↓	APC Outlet # 1	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
3	↓	APC Outlet # 1	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
4	DEC 3/24	APC Outlet # 2	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
5	↓	APC Outlet # 2	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
6	↓	APC Outlet # 2	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
Blank 1	DEC 4/24	APC # 1	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
Blank 2	↓	APC # 2	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By: ASCB/24 Date: 6-Dec-2024 11:00
Relinquished To: ARRA Burtan Date: 6-Dec-2024 11:00
Temperature: 8.3°C

Environmental Division
Burlington
Work Order Reference
BU2401300



Telephone : +1 905 331 3111

Alliance Technical Group - Sample Log
Semi-Volatile Organics Samples
Reworld

Client: Reworld
Job/Report Number: AST-2024-4547 / 22330
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO:

ORTECH Sample ID 24-4547-SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
1	DEC 2/24	Test 1	# 1 APC Outlet	Hexane/Acetone	SVOC
2		Probe Rinse		Particulate	SVOC
3		Test 1		N.A.	SVOC
4		Filter			
5		Test 1		Ethylene Glycol	SVOC
6	DEC 2/24	XAD-II Trap	# 1 APC Outlet	Hexane/Acetone	SVOC
7		Test 1		Particulate	SVOC
8		Impinger Solution		N.A.	SVOC
9		Test 1		Ethylene Glycol	SVOC
10		Impinger Rinse		Hexane/Acetone	SVOC
11	DEC 2/24	Test 2	# 1 APC Outlet	Hexane/Acetone	SVOC
12		Probe Rinse		Particulate	SVOC
13		Test 2		N.A.	SVOC
14		Filter		Ethylene Glycol	SVOC
15		Test 2		Hexane/Acetone	SVOC
16	DEC 2/24	XAD-II Trap	# 1 APC Outlet	Hexane/Acetone	SVOC
17		Test 2		Particulate	SVOC
18		Impinger Solution		N.A.	SVOC
19		Test 2		Ethylene Glycol	SVOC
20		Impinger Rinse		Hexane/Acetone	SVOC

Refer to letter dated Nov 5, 2024 for lists of analytes.

Relinquished To:

AKA BROWN

Date:

6-Dec-2024 11:00

Relinquished By:

[Signature]

Date:

DEC 6/24 8:30



L2758327-COFC

Alliance Technical Group - Sample Log
Semi-Volatile Organics Samples
Reworld

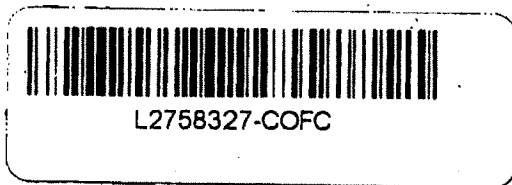
Client: Reworld
 Job/Report Number: AST-2024-4547 / 22330
 Received By: C Belore
 How Received: Train Recovery
 Job Assigned To: ALS
 Quote / PO:

Alliance Sample ID	Date	Sample Description	Location	Sample Media	Sample Analysis
24-4547-SVOC-					
21	DEC 2/24	Test 1	# 2 APC Outlet	Hexane/Acetone	SVOC
		Probe Rinse			
22		Test 1		Particulate	SVOC
		Filter			
23		Test 1		N.A.	SVOC
		XAD-II Trap			
24		Test 1		Ethylene Glycol	SVOC
		Impinger Solution			
25		Test 1		Hexane/Acetone	SVOC
		Impinger Rinse			
26	DEC 2/24	Test 2	# 2 APC Outlet	Hexane/Acetone	SVOC
		Probe Rinse			
27		Test 2		Particulate	SVOC
		Filter			
28		Test 2		N.A.	SVOC
		XAD-II Trap			
29		Test 2		Ethylene Glycol	SVOC
		Impinger Solution			
30		Test 2		Hexane/Acetone	SVOC
		Impinger Rinse			

Refer to letter dated Nov 5, 2024 for lists of analytes.

Relinquished To: AARON BURTA
 Relinquished By: STB

11:00 8.3°C
 Date: 6-Dec-2024
 Date: DEC 6/24



Alliance Technical Group - Recovery & Sample Log
NCASI Method ISS/FP-A105.01

Client: Reworld
 Job/Report Number: AST-2024-4547
 Received By: Chris Before
 How Received: Train Recovery
 Job Assigned To: ALS
 Quote / PO #:



L2758328-COFC

Test Number	Test Location	Alliance Sample ID	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle (g)	Initial Weight Sample Bottle + BHA (g)	Final Weight of BHA Sample Bottle (g)	Weight of Sample Bottle BHA & H2O (g)	Weight of Sample Bottle BHA & H2O & Hexane (g)
1	APC Outlet #1	ALD-1	Dec 2, 2024	ALD-1	111.0	158.6	162.8	169.6	176.3
2	APC Outlet #1	ALD-2	"	ALD-2	111.1	158.4	161.6	176.3	182.7
3	APC Outlet #1	ALD-3	"	ALD-3	111.3	161.3	164.6	177.8	191.8
Blank 1	APC Outlet #1	Blank 1	"	ALD-4	111.2	158.7	158.7	172.5	182.8
1	APC Outlet #2	ALD-5	"	ALD-5	111.7	160.3	163.3	171.4	180.8
2	APC Outlet #2	ALD-6	"	ALD-6	111.0	159.4	160.8	171.0	184.0
3	APC Outlet #2	ALD-7	"	ALD-7	111.3	158.2	161.0	171.6	183.9
Blank 2	APC Outlet #2	Blank 2	"	ALD-8	111.2	158.7	158.7	166.7	178.0
	Field BHA & Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by:

Relinquished to:

Environmental Division
 Burlington
 Work Order Reference
BU2401301



Telephone : +1 905 331 3111

Date:

Date:

Dec 6 / 24

6-Dec-2024 11:00 17.8°C

Alliance Technical Group - Sample Log VOCs

Client: Reworld
 Project Number: 2330
 Received By: C Before
 Job Assigned To: Eurofins
 Quote / PO :

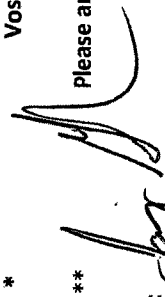


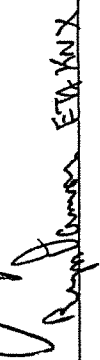
Test Location	Test Number	Alliance Sample ID	Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	1 A,B		Tenax and Tenax/Charcoal	VOCs
	2	2 A,B		Tenax and Tenax/Charcoal	VOCs
	3	3 A,B		Tenax and Tenax/Charcoal	VOCs
	4	4 A,B		Tenax and Tenax/Charcoal	Archive
	Field Blank	5 A,B		Tenax and Tenax/Charcoal	VOCs
24-4547-VOST-					
# 2 APC Outlet	1	10 A,B		Tenax and Tenax/Charcoal	VOCs
	2	11 A,B		Tenax and Tenax/Charcoal	VOCs
	3	12 A,B		Tenax and Tenax/Charcoal	VOCs
	4	13 A,B		Tenax and Tenax/Charcoal	Archive
	Field Blank	14 A,B		Tenax and Tenax/Charcoal	VOCs
**	Trip Blank	15 A,B		Tenax and Tenax/Charcoal	VOCs

Refer to email to Courtney Adkins on Nov 5, 2024 for list of analytes.

* Vost Tubes Run In Tandem (1 analysis per test)

** Please archive TUBE PAIR 4 from each source

Custody Relinquished by:  Date: Dec 5, 2024

Custody Received by:  Date: 12-9-24 12:30

APPENDIX 11

Particulate and Metals Train Recovery Data Sheets (8 pages)

Alliance Technical Group
Particulate and Metals Train Recovery Data Sheet

Client: Reworld

Project No.: AST-2024-4547 / 22330

Date: 08/09/24

Test No.: 1

Test Location: U

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

Filter
Filter ID: QZ12122

Impingers 1, 2, 3, and 4

Impinger 5 & 6

Impinger 5 & 6

Impinger 7

CONTAINER TS1

CONTAINER TS3

CONTAINER TS4

Impinger #5 KMnO ₄ /H ₂ SO ₄

CONTAINER TS5-A & TS5-B

Impinger #7 Silica Gel

Container TS1 Weights
Empty Wt: 287.0
After Act. Rinse: 416.8
Total TS1: 134.8

Initial Wt:
Final Wt:
Gain:
Colour: white

Impinger #1 Empty
Empty Wt: 549.2
Final Wt: 737.6
Gain: 188.4
Colour: clean

Impinger #5 KMnO ₄ /H ₂ SO ₄
Empty Wt: 675.2
Initial Wt: 790.5
Final Wt: 796.2
Gain: 5
Colour: Purple

CONTAINER TS5-A
Empty Wt: 410.0
With Imp. 5&6 Soln: 638.1
After KMnO ₄ Rinse: 752.6
After 100g H ₂ O Rinse: 957.0
Total TS5-A: 447.0

Impinger #7 Silica Gel
Initial Wt: 471.0
Final Wt: 994.7
Gain: 23.7

MARK FLUID LEVEL
SEAL AND LABEL TS1

Seal and label container TS3

Impinger #2 HNO ₃ /H ₂ O ₂
Empty Wt: 626.8
Initial Wt: 727.0
Final Wt: 940.5
Gain: 213.5
Colour: clean

Impinger #6 KMnO ₄ /H ₂ SO ₄
Empty Wt: 638.7
Initial Wt: 750.5
Final Wt: 755.5
Gain: 5.0
Colour: Purple

MARK FLUID LEVEL
SEAL & LABEL TS5-A

Impinger Box ID: 11

CONTAINER TS2

Seal and label container TS2

Impinger #3 HNO ₃ /H ₂ O ₂
Empty Wt: 622.0
Initial Wt: 732.5
Final Wt: 919.9
Gain: 87.2
Colour: clean

Impinger #6 KMnO ₄ /H ₂ SO ₄
Empty Wt: 638.7
Initial Wt: 750.5
Final Wt: 755.5
Gain: 5.0
Colour: Purple

CONTAINER TS5-B
Empty Wt: 283.0
With 150 ml DI H ₂ O: 433.0
After HCl Rinse: 476.3
After DI H ₂ O Rinse: 661.5
Total TS5-B: 378.5

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Container TS2 Weights
Empty Wt: 281.0
After 0.1N HNO ₃ Rinse: 433.0
Total TS2: 154.0

Initial Wt:
Final Wt:
Gain:
Colour:

Impinger #4 Empty
Empty Wt: 612.5
Final Wt: 619.5
Gain: 7.0
Colour: clean

Impinger #4 Empty
Empty Wt: 612.5
Final Wt: 619.5
Gain: 7.0
Colour: clean

CONTAINER TS4 WEIGHTS
Empty Wt: 405.0
w/ Imp. 1-4 Soln: 1109.0
After HNO ₃ Rinse: 1217.5
Total TS4: 814.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

MARK FLUID LEVEL
SEAL AND LABEL TS2

MARK FLUID LEVEL
SEAL AND LABEL TS2

MARK FLUID LEVEL
SEAL AND LABEL TS5-B

MARK FLUID LEVEL
SEAL & LABEL TS5-B

MARK FLUID LEVEL
SEAL & LABEL TS5-B

SAMPLE IDENTIFICATION	24-4547-PM-
S1 (Probe Rinse-Acetone)	1
S2 (Probe Rinse-0.1N HNO ₃)	2
S3 (Filter)	3
S4 (Impinger 1-4 Sol'n-HNO ₃)	4
S5-A (Impinger 5,6 Sol'n-KMnO ₄)	5
S5-B (Impinger 5,6 Rinse-HCl)	6

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

Total Moisture Gain
1+2+3+4+5+6+7: 530.5

Train Loaded By: TCF/ST
Train Recovered By: ST

Alliance Technical Group
Particulate and Metals Train Recovery Data Sheet

Client: Reworld

Project No.: AST-2024-4547 / 22330

Date: 26-4-24

Test No.: 2

Test Location: 41

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

Filter
Filter ID: QZ12133

CONTAINER TS1

Container TS1 Weights
Empty Wt: 280.0
After Act. Rinse: 393.5
Total TS1: 113.5

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights
Empty Wt: 280.0
After 0.1N HNO ₃ Rinse: 461.3
Total TS2: 181.3

MARK FLUID LEVEL
SEAL AND LABEL TS2

SAMPLE IDENTIFICATION	24-4547-PM-
S1 (Probe Rinse-Acetone)	7
S2 (Probe Rinse-0.1N HNO ₃)	8
S3 (Filter)	8
S4 (Impinger 1-4 Sol'n-HNO ₃)	10
SS-A (Impinger 5,6 Sol'n-KMnO ₄)	11
SS-B (Impinger 5,6 Rinse-HCl)	12

Rain Loaded By: DT
Rain Recovered By: BT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty
Empty Wt: 997.0
Final Wt: 718.5
Gain: 121.5
Colour: clean

Impinger #2 HNO ₃ /H ₂ O ₂
Empty Wt: 644.8
Initial Wt: 746.7
Final Wt: 919.5
Gain: 172.8
Colour: clean

Impinger #3 HNO ₃ /H ₂ O ₂
Empty Wt: 651.5
Initial Wt: 763.0
Final Wt: 933.3
Gain: 170.3
Colour: clean

Impinger #4 Empty
Empty Wt: 612.5
Final Wt: 619.5
Gain: 7.0
Colour: clean

CONTAINER TS4 WEIGHTS
Empty Wt: 408.5
w/ Imp. 1-4 Sol'n: 1087.5
After HNO ₃ Rinse: 1218.8
Total TS4: 810.3

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 KMnO ₄ /H ₂ SO ₄
Empty Wt: 665.5
Initial Wt: 785.5
Final Wt: 792.5
Gain: 7.0
Colour: Purple

Impinger #6 KMnO ₄ /H ₂ SO ₄
Empty Wt: 363.0
Initial Wt: 666.0
Final Wt: 669.1
Gain: 2.5
Colour: Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A
Empty Wt: 408.5
With Imp. 5&6 Sol'n: 639.0
After KMnO ₄ Rinse: 751.5
After 100g H ₂ O Rinse: 872.0
Total TS5-A: 443.5

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B
Empty Wt: 283.5
With 150 ml DI H ₂ O: 433.5
After HCl Rinse: 492.0
After DI H ₂ O Rinse: 655.5
Total TS5-B: 372.0

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

Total Moisture Gain
1+2+3+4+5+6+7: 502.1

Impinger 7

Impinger #7 Silica Gel
Initial Wt: 464.3
Final Wt: 985.3
Gain: 21.0

Impinger Box ID: 7

Alliance Technical Group
 Particulate and Metals Train Recovery Data Sheet

Client: Reworld

Project No.: AST-2024-4547 / 22330

Date: 2024/12/14

Test No.: 1

Test Location: W1

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

Filter
Filter ID: 0212123

CONTAINER TS1

Container TS1 Weights
Empty Wt: 280.0
After Act. Rinse: 407.0
Total TS1: 127.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights
Empty Wt: 281.0
After 0.1N HNO ₃ Rinse: 470.0
Total TS2: 189.0

MARK FLUID LEVEL
SEAL AND LABEL TS2

SAMPLE IDENTIFICATION	24-4547-PM-
S1 (Probe Rinse-Acetone)	13
S2 (Probe Rinse-0.1N HNO ₃)	14
S3 (Filter)	15
S4 (Impinger 1-4 Sol'n-HNO ₃)	16
S5-A (Impinger 5,6 Sol'n-KMnO ₄)	17
S5-B (Impinger 5,6 Rinse-HCl)	18

Rain Loaded By:
Rain Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty
Empty Wt: 595.7
Final Wt: 734.7
Gain: 139.0
Colour: clean

Impinger #2 HNO ₃ /H ₂ O ₂
Empty Wt: 623.5
Initial Wt: 724.0
Final Wt: 935.0
Gain: 211.0
Colour: clean

Impinger #3 HNO ₃ /H ₂ O ₂
Empty Wt: 624.0
Initial Wt: 734.7
Final Wt: 853.0
Gain: 118.3
Colour: clean

Impinger #4 Empty
Empty Wt: 614.5
Final Wt: 627.6
Gain: 13.1
Colour: clean

CONTAINER TS4 WEIGHTS
Empty Wt: 408.5
w/ Imp. 1-4 Sol'n: 1038.5
After HNO ₃ Rinse: 1186.5
Total TS4: 780.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 KMnO ₄ /H ₂ SO ₄
Empty Wt: 677.5
Initial Wt: 790.5
Final Wt: 810.3
Gain: 20.8
Colour: Purple

Impinger #6 KMnO ₄ /H ₂ SO ₄
Empty Wt: 671.3
Initial Wt: 755.0
Final Wt: 763.0
Gain: 8.0
Colour: Purple

Impinger 5 & 6

CONTAINER TSS-A & TSS-B

CONTAINER TSS-A
Empty Wt: 408.5
With Imp. 5&6 Sol'n: 800.3
After KMnO ₄ Rinse: 770.3
After 100g H ₂ O Rinse: 877.8
Total TSS-A: 467.0

MARK FLUID LEVEL
SEAL & LABEL TSS-A

CONTAINER TSS-B
Empty Wt: 285.0
With 150 mL DI H ₂ O: 433.0
After HCl Rinse: 403.0
After DI H ₂ O Rinse: 613.2
Total TSS-B: 330.2

MARK FLUID LEVEL
SEAL & LABEL TSS-B

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

Total Moisture Gain
1+2+3+4+5+6+7: 535.2

Impinger 7

Impinger #7 Silica Gel
Initial Wt: 774.5
Final Wt: 799.5
Gain: 25.0

Impinger Box ID: 11

Alliance Technical Group
Particulate and Metals Train Recovery Data Sheet

Client: Reworld

Project No.: AST-2024-4547 / 22330

Date: 05/03/24

Test No.: 1

Test Location: 40

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

Filter

Filter ID: 0212130

CONTAINER TS1

Container TS1 Weights
Empty Wt: 280.3
After Act. Rinse: 278.3
Total TS1: 90.3

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights
Empty Wt: 281.0
After 0.1N HNO ₃ Rinse: 420.0
Total TS2: 139.0

MARK FLUID LEVEL

SEAL AND LABEL TS2

SAMPLE IDENTIFICATION	24-4547-PM-
S1 (Probe Rinse-Acetone)	25
S2 (Probe Rinse-0.1N HNO ₃)	26
S3 (Filter)	27
S4 (Impinger 1-4 Sol'n-HNO ₃)	28
S5-A (Impinger 5.6 Sol'n-KMnO ₄)	29
S5-B (Impinger 5.6 Rinse-HCl)	30

Train Loaded By: TAC/AT
Train Recovered By: DT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty
Empty Wt: 642.6
Final Wt: 724.8
Gain: 174.8
Colour: CLEAR

Impinger #2 HNO ₃ /H ₂ O ₂
Empty Wt: 642.6
Initial Wt: 746.3
Final Wt: 899.3
Gain: 153.0
Colour: Clean

Impinger #3 HNO ₃ /H ₂ O ₂
Empty Wt: 649.0
Initial Wt: 758.5
Final Wt: 921.5
Gain: 163.0
Colour: Clean

Impinger #4 Empty
Empty Wt: 610.7
Final Wt: 619.7
Gain: 9.0
Colour: Clean

CONTAINER TS4 WEIGHTS
Empty Wt: 402.5
w/ Imp. 1-4 Sol'n: 1055.5
After HNO ₃ Rinse: 1226.0
Total TS4: 823.5

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 KMnO ₄ /H ₂ SO ₄
Empty Wt: 559.5
Initial Wt: 771.0
Final Wt: 783.5
Gain: 12.5
Colour: Purple

Impinger #6 KMnO ₄ /H ₂ SO ₄
Empty Wt: 663.8
Initial Wt: 876.8
Final Wt: 883.3
Gain: 6.5
Colour: Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A
Empty Wt: 410.5
With Imp. 5&6 Sol'n: 644.2
After KMnO ₄ Rinse: 761.5
After 100g H ₂ O Rinse: 862.5
Total TS5-A: 452.0

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS5-B
Empty Wt: 284.5
With 150 mL DI H ₂ O: 434.5
After HCl Rinse: 492.5
After DI H ₂ O Rinse: 647.0
Total TS5-B: 362.5

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

Total Moisture Gain
1+2+3+4+5+6+7: 500.9

Impinger 7

Impinger #7 Silica Gel
Initial Wt: 977.0
Final Wt: 1000.5
Gain: 23.5

Impinger Box ID: 7

Alliance Technical Group
Particulate and Metals Train Recovery Data Sheet

Client: Reworld

Project No.: AST-2024-4547 / 22330

Date: 08/07/24

Test No.: 2

Test Location: U2

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

Filter
Filter ID: Q210131

Impingers 1, 2, 3, and 4

Impinger 5 & 6

Impinger 5 & 6

Impinger 7

CONTAINER TS1

CONTAINER TS3

CONTAINER TS4

CONTAINER TSS-A & TSS-B

Container TS1 Weights
Empty Wt: 280.0
After Act. Rinse: 430.0
Total TS1: 150.0

Initial Wt:
Final Wt:
Gain:
Colour: WHITE

Impinger #1 Empty
Empty Wt: 582.2
Final Wt: 704.5
Gain: 115.3
Colour: clean

Impinger #5 KMnO ₄ /H ₂ SO ₄
Empty Wt: 648.0
Initial Wt: 764.0
Final Wt: 773.5
Gain: 9.5
Colour: Purple

CONTAINER TSS-A
Empty Wt: 708.5
With Imp. 586 Soln: 639.0
After KMnO ₄ Rinse: 746.0
After 100g H ₂ O Rinse: 854.5
Total TSS-A: 746.0

Impinger #7 Silica Gel
Initial Wt: 941.6
Final Wt: 965.6
Gain: 24.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

Seal and label container TS3

Impinger #2 HNO ₃ /H ₂ O ₂
Empty Wt: 657.6
Initial Wt: 756.2
Final Wt: 932.7
Gain: 176.5
Colour: clean

Impinger #6 KMnO ₄ /H ₂ SO ₄
Empty Wt: 625.9
Initial Wt: 738.5
Final Wt: 738.3
Gain: 4.8
Colour: Purple

MARK FLUID LEVEL
SEAL & LABEL TSS-A

MARK FLUID LEVEL
SEAL & LABEL TSS-B

CONTAINER TS2

CONTAINER TS2 Weights

Impinger #3 HNO ₃ /H ₂ O ₂
Empty Wt: 656.3
Initial Wt: 772.0
Final Wt: 929.5
Gain: 157.5
Colour: clean

CONTAINER TSS-B
Empty Wt: 283.5
With 150 mL DI H ₂ O: 435.5
After HCl Rinse: 493.8
After DI H ₂ O Rinse: 716.0
Total TSS-B: 432.5

MARK FLUID LEVEL
SEAL & LABEL TSS-B

MARK FLUID LEVEL
SEAL & LABEL TSS-B

Container TS2 Weights
Empty Wt: 281.0
After 0.1N HNO ₃ Rinse: 508.5
Total TS2: 227.5

Initial Wt:
Final Wt:
Gain:
Colour:

Impinger #4 Empty
Empty Wt: 618.2
Final Wt: 657.0
Gain: 38.8
Colour: clean

CONTAINER TS4 WEIGHTS
Empty Wt: 410.0
w/ Imp. 1-4 Soln: 1101.5
After HNO ₃ Rinse: 1247.0
Total TS4: 837.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

MARK FLUID LEVEL
SEAL AND LABEL TS4

MARK FLUID LEVEL
SEAL AND LABEL TS2

MARK FLUID LEVEL
SEAL AND LABEL TS2

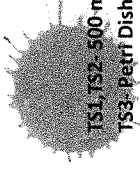
MARK FLUID LEVEL
SEAL & LABEL TSS-B

MARK FLUID LEVEL
SEAL & LABEL TSS-B

MARK FLUID LEVEL
SEAL & LABEL TSS-B

MARK FLUID LEVEL
SEAL & LABEL TSS-B

SAMPLE IDENTIFICATION	24-4547-PM-
S1 (Probe Rinse-Acetone)	31
S2 (Probe Rinse-0.1N HNO ₃)	32
S3 (Filter)	33
S4 (Impinger 1-4 Sol'n-HNO ₃)	34
S5-A (Impinger 5.6 Sol'n-KMnO ₄)	35
S5-B (Impinger 5.6 Rinse-HCl)	36



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

Total Moisture Gain
1+2+3+4+5+6+7: 326.4

Rain Loaded By: TYC / DT
Rain Recovered By: DT

Impinger Box ID: 8

Alliance Technical Group
Particulate and Metals Train Recovery Data Sheet

Client: Reworld
Project No.: AST-2024-4547 / 22330
Date: 08/05/24
Test No.: 3
Test Location: U2

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

Filter
Filter ID: 0212123

Impingers 1, 2, 3, and 4

Impinger 5 & 6

Impinger 5 & 6

Impinger 7

CONTAINER TS1

CONTAINER TS3

CONTAINER TS4

CONTAINER TS5-A & TS5-B

Container TS1 Weights
Empty Wt: 280.0
After Act. Rinse: 342.3
Total TS1:

Initial Wt:
Final Wt:
Gain:
Colour: white

Impinger #1 Empty
Empty Wt: 591.0
Final Wt: 724.8
Gain: 133.8
Colour: clear

Impinger #5 KMnO₄/H₂SO₄
Empty Wt: 650.0
Initial Wt: 761.0
Final Wt: 777.7
Gain: 16.7
Colour: Purple

CONTAINER TS5-A
Empty Wt: 404.0
With Imp. 586 Soln: 693.0
After KMnO₄ Rinse: 766.0
After 100g H₂O Rinse: 867.5
Total TS5-A:

Impinger #7 Silica Gel
Initial Wt: 924.5
Final Wt: 949.8
Gain: 25.3

MARK FLUID LEVEL
SEAL AND LABEL TS1

Seal and label container TS3

Impinger #2 HNO₃/H₂O₂
Empty Wt: 659.0
Initial Wt: 751.0
Final Wt: 956.0
Gain: 205.0
Colour: clear

Impinger #6 KMnO₄/H₂SO₄
Empty Wt: 628.5
Initial Wt: 739.5
Final Wt: 752.7
Gain: 13.2
Colour: Purple

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS2

Seal and label container TS2

Impinger #3 HNO₃/H₂O₂
Empty Wt: 659.0
Initial Wt: 779.5
Final Wt: 861.3
Gain: 81.8
Colour: clear

CONTAINER TS5-B
Empty Wt: 281.5
With 150 mL DI H₂O: 431.3
After HCl Rinse: 500.5
After DI H₂O Rinse: 688.0
Total TS5-B:

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Container TS2 Weights
Empty Wt: 287.0
After 0.1N HNO₃ Rinse: 422.2
Total TS2:

Seal and label container TS2

Impinger #4 Empty
Empty Wt: 620.0
Final Wt: 628.5
Gain: 8.5
Colour: clear

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Impinger Box ID: 8

SAMPLE IDENTIFICATION	24-4547-PM-
S1 (Probe Rinse-Acetone)	37
S2 (Probe Rinse-0.1N HNO ₃)	38
S3 (Filter)	39
S4 (Impinger 1-4 Sol'n-HNO ₃)	40
S5-A (Impinger 5,6 Sol'n-KMnO ₄)	41
S5-B (Impinger 5,6 Rinse-HCl)	42

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

Total Moisture Gain
1+2+3+4+5+6+7: 484.3

rain Loaded By: 
rain Recovered By:

Alliance Technical Group
Particulate and Metals Train Recovery Data Sheet

Client: Reworld
Project No.: AST-2024-4547 / 22330
Date: 12/25/24
Test No.:
Test Location: BLANK

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

Filter
Filter ID: 8212126

Impingers 1, 2, 3, and 4

Impinger 5 & 6

Impinger 5 & 6

Impinger 7

CONTAINER TS1

CONTAINER TS3

CONTAINER TS4

CONTAINER TS5-A & TS5-B

Container TS1 Weights
Empty Wt: 282.0
After Act. Rinse: 495.0
Total TS1: 212.0

Initial Wt:
Final Wt:
Gain:
Colour: WHITE

Impinger #1 Empty
Empty Wt:
Final Wt:
Gain:
Colour:

Impinger #5, KMnO₄/H₂SO₄
Empty Wt:
Initial Wt:
Final Wt:
Gain:
Colour:

CONTAINER TS5-A
Empty Wt: 409.0
With Imp. 5&6 Sol'n: 890.0
After KMnO₄ Rinse: 872.0
After 100g H₂O Rinse: 952.0
Total TS5-A: 443.0

Impinger #7 Silica Gel
Initial Wt:
Final Wt:
Gain:

MARK FLUID LEVEL
SEAL AND LABEL TS1

Seal and label container TS3

Impinger #2 HNO₃/H₂O₂
Empty Wt:
Initial Wt:
Final Wt:
Gain:
Colour:

Impinger #6 KMnO₄/H₂SO₄
Empty Wt:
Initial Wt:
Final Wt:
Gain:
Colour:

MARK FLUID LEVEL
SEAL & LABEL TS5-A

CONTAINER TS2

CONTAINER TS2

Impinger #3 HNO₃/H₂O₂
Empty Wt:
Initial Wt:
Final Wt:
Gain:
Colour:

CONTAINER TS5-B
Empty Wt: 283.0
With 150 mL DI H₂O: 433.0
After HCl Rinse: 434.5
After DI H₂O Rinse: 622.0
Total TS5-B: 339.0

MARK FLUID LEVEL
SEAL & LABEL TS5-B

Container TS2 Weights
Empty Wt: 287.0
After 0.1N HNO₃ Rinse: 514.5
Total TS2: 227.5

Initial Wt:
Final Wt:
Gain:
Colour:

Impinger #4 Empty
Empty Wt:
Final Wt:
Gain:
Colour:

CONTAINER TS4 WEIGHTS
Empty Wt: 408.5
w/ Imp. 1-4 Sol'n: 621.3
After HNO₃ Rinse: 758.5
Total TS4: 350.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

MARK FLUID LEVEL
SEAL AND LABEL TS2

MARK FLUID LEVEL
SEAL AND LABEL TS2

MARK FLUID LEVEL
SEAL AND LABEL TS2

MARK FLUID LEVEL
SEAL AND LABEL TS2

MARK FLUID LEVEL
SEAL AND LABEL TS2

Impinger Box ID:

SAMPLE IDENTIFICATION
S1 (Probe Rinse-Acetone) 24-4547-PM-19
S2 (Probe Rinse-0.1N HNO₃) 20
S3 (Filter) 21
S4 (Impinger 1-4 Sol'n-HNO₃) 22
S5-A (Impinger 5,6 Sol'n-KMnO₄) 23
S5-B (Impinger 5,6 Rinse-HCl) 24

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

Total Moisture Gain
1+2+3+4+5+6+7:

Rain Loaded By: 151
Rain Recovered By:

Alliance Technical Group
 Particulate and Metals Train Recovery Data Sheet

Client: Reworld

Project No.: AST-2024-4547 / 22330

Date: 05/25/24

Test No.: 012

Test Location: BLANK

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

Filter

Filter ID: 0212127

CONTAINER TS1

Container TS1 Weights
Empty Wt: 283.5
After Act. Rinse: 485.5
Total TS1: 192.0

MARK FLUID LEVEL
SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights
Empty Wt: 284.0
After 0.1N HNO ₃ Rinse: 505.5
Total TS2: 221.5

MARK FLUID LEVEL
SEAL AND LABEL TS2

SAMPLE IDENTIFICATION	24-4547-PM-
S1 (Probe Rinse-Acetone)	43
S2 (Probe Rinse-0.1N HNO ₃)	44
S3 (Filter)	45
S4 (Impinger 1-4 Sol'n-HNO ₃)	46
S5-A (Impinger 5.6 Sol'n-KMnO ₄)	47
S5-B (Impinger 5.6 Rinse-HCl)	48

Rain Loaded By:
Rain Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty
Empty Wt: 283.5
Final Wt: 485.5
Gain: 192.0
Colour: WHITE

Impinger #2 HNO ₃ /H ₂ O ₂
Empty Wt: 284.0
Initial Wt: 505.5
Final Wt: 727.5
Gain: 221.5
Colour: 6

Impinger #3 HNO ₃ /H ₂ O ₂
Empty Wt: 284.0
Initial Wt: 505.5
Final Wt: 727.5
Gain: 221.5
Colour: 6

Impinger #4 Empty
Empty Wt: 284.0
Final Wt: 505.5
Gain: 221.5
Colour: 6

CONTAINER TS4 WEIGHTS
Empty Wt: 408.5
w/ Imp. 1-4 Sol'n: 623.5
After HNO ₃ Rinse: 727.5
Total TS4: 316.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 KMnO ₄ /H ₂ SO ₄
Empty Wt: 284.0
Initial Wt: 505.5
Final Wt: 727.5
Gain: 221.5
Colour: 5

Impinger #6 KMnO ₄ /H ₂ SO ₄
Empty Wt: 284.0
Initial Wt: 505.5
Final Wt: 727.5
Gain: 221.5
Colour: 6

Impinger 5 & 6

CONTAINER TSS-A & TSS-B

CONTAINER TSS-A
Empty Wt: 404.0
With Imp. 5.6 Sol'n: 627.5
After KMnO ₄ Rinse: 741.0
After 100g H ₂ O Rinse: 853.0
Total TSS-A: 449.0

MARK FLUID LEVEL
SEAL & LABEL TSS-A

CONTAINER TSS-B
Empty Wt: 282.0
With 150 mL DI H ₂ O: 492.0
After HCl Rinse: 478.0
After DI H ₂ O Rinse: 607.5
Total TSS-B: 325.5

MARK FLUID LEVEL
SEAL & LABEL TSS-B

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

Total Moisture Gain
1+2+3+4+5+6+7:

Impinger 7

Impinger #7 Silica Gel
Initial Wt:
Final Wt:
Gain:

Impinger Box ID:

APPENDIX 12

Inorganics Analytical Reports (80 pages)

CERTIFICATE OF ANALYSIS

Work Order	: BU2401303	
Client	: ORTECH Environmental Inc.	
Contact	: Chris Belore	Laboratory
Address	: 804 Southdown Road	Account Manager
	: Mississauga Ontario Canada L5J 2Y4	Address
Telephone	: 905 822 4120	Telephone
Project	: AST-2024-4547 / 22330 Reworld	Date Samples Received
PO	: 22330-J3019	Date Analysis Commenced
C-O-C number	: ----	Issue Date
Sampler	: ----	
Site	: ----	
Quote number	: ALSEQ24-265 Reworld	
No. of samples received	: 40	
No. of samples analysed	: 40	

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Milithza Silva	Manager - Inorganics	Inorganics, Burlington, Ontario



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	Description
g	grams
mg	milligrams

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)		Client sample ID		Client sampling date / time		Method/Lab	CAS Number	LOR	Unit	Result				
[#1 APC Outlet] 24-4547-M201A-1 Test#1	[#1 APC Outlet] 24-4547-M201A-2 Test#1	[#1 APC Outlet] 24-4547-M201A-3 Test#1	[#1 APC Outlet] 24-4547-M201A-4 Test#1	[#1 APC Outlet] 24-4547-M201A-5 Test#1	BU2401303-001					BU2401303-002	BU2401303-003	BU2401303-004	BU2401303-005	
Particulates														
Condensable particulates, extractable [organic] Condensable particulates, non-extractable [aqueous] mass, acetone [FRONT] Mass, deionized water [aqueous] Mass, solvent [organic] particulate matter, acetone impinger [FRONT] Particulate matter, filter	n/a	E902S/BU	0.4	mg									1.3	
	n/a	E902W/BU	0.4	mg									6.8	
		E898A/BU	0.40	g	22.3	18.4	7.90							
	n/a	E901W/BU	0.40	g									209	
	n/a	E901S/BU	0.40	g									104	
		E897A/BU	0.4	mg	0.4	<0.4								
		E890/BU	0.6	mg									<0.6	

Please refer to the General Comments section for an explanation of any result qualifiers detected.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Client sample ID		Client sampling date / time		Client sample ID		Client sample ID		Client sample ID		Client sample ID	
Analyte	CAS Number	Method/Lab	LOR	Unit	[#1 APC Outlet] 24-4547-M201A-8 Test#2	[#1 APC Outlet] 24-4547-M201A-9 Test#2	[#1 APC Outlet] 24-4547-M201A-10 Test#2	[#1 APC Outlet] 24-4547-M201A-11 Test#2	[#1 APC Outlet] 24-4547-M201A-12-14) Test#2		
Particulates											
Condensable particulates, extractable [organic]	n/a	E902S/BU	0.4	mg							
Condensable particulates, non-extractable [aqueous]	n/a	E902W/BU	0.4	mg							
mass, acetone [FRONT]	----	E898A/BU	0.40	g	33.1	20.3	8.78				
Mass, deionized water [aqueous]	n/a	E901W/BU	0.40	g							
Mass, solvent [organic]	n/a	E901S/BU	0.40	g							
particulate matter, acetone impinger [FRONT]	----	E897A/BU	0.4	mg	<0.4	<0.4	<0.4				
Particulate matter, filter	----	E890/BU	0.6	mg				<0.6			

Please refer to the General Comments section for an explanation of any result qualifiers detected.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Client sample ID		Client sampling date / time		Client sample ID		Client sample ID		Client sample ID		Client sample ID	
Analyte	CAS Number	Method/Lab	LOR	Unit	[#1 APC Outlet] 24-4547-M201A-15 Test#3	[#1 APC Outlet] 24-4547-M201A-16 Test#3	[#1 APC Outlet] 24-4547-M201A-17 Test#3	[#1 APC Outlet] 24-4547-M201A-18 Test#3	[#1 APC Outlet] 24-4547-M201A-19-21) Test#3		
Particulates											
Condensable particulates, extractable [organic]	n/a	E902S/BU	0.4	mg							
Condensable particulates, non-extractable [aqueous]	n/a	E902W/BU	0.4	mg							
mass, acetone [FRONT]	----	E898A/BU	0.40	g	16.5	14.3	13.2				
Mass, deionized water [aqueous]	n/a	E901W/BU	0.40	g							
Mass, solvent [organic]	n/a	E901S/BU	0.40	g							
particulate matter, acetone impinger [FRONT]	----	E897A/BU	0.4	mg	<0.4	<0.4	<0.4				
Particulate matter, filter	----	E890/BU	0.6	mg				<0.6			

Please refer to the General Comments section for an explanation of any result qualifiers detected.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)		Client sample ID	Client sampling date / time		Client sample ID		Client sample ID		Client sample ID		Client sample ID	
Analyte	CAS Number	Method/Lab	LOR	Unit	[#2 APC Outlet] 24-4547-M201A-23 Test#1	[#2 APC Outlet] 24-4547-M201A-24 Test#1	[#2 APC Outlet] 24-4547-M201A-25 Test#1	[#2 APC Outlet] 24-4547-M201A-26-28) Test#1	[#2 APC Outlet] 24-4547-M201A-27 Test#1	[#2 APC Outlet] 24-4547-M201A-28 Test#1		
Particulates												
Condensable particulates, extractable [organic]	n/a	E902S/BU	0.4	mg	-----	-----	-----	-----	-----	1.8		
Condensable particulates, non-extractable [aqueous]	n/a	E902W/BU	0.4	mg	-----	-----	-----	-----	-----	3.9		
mass, acetone [FRONT]	-----	E898A/BU	0.40	g	21.9	11.8	-----	-----	-----	-----		
Mass, deionized water [aqueous]	n/a	E901W/BU	0.40	g	-----	-----	-----	-----	-----	209		
Mass, solvent [organic]	n/a	E901S/BU	0.40	g	-----	-----	-----	-----	-----	114		
particulate matter, acetone impinger [FRONT]	-----	E897A/BU	0.4	mg	<0.4	<0.4	-----	-----	-----	-----		
Particulate matter, filter	-----	E890/BU	0.6	mg	-----	-----	-----	<0.6	-----	-----		

Please refer to the General Comments section for an explanation of any result qualifiers detected.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)		Client sample ID		Client sampling date / time		Client sample ID				
Analyte	CAS Number	Method/Lab	LOR	Unit	[#2 APC Outlet] 24-4547-M201A-29 Test#2	[#2 APC Outlet] 24-4547-M201A-30 Test#2	[#2 APC Outlet] 24-4547-M201A-31 Test#2	[#2 APC Outlet] 24-4547-M201A-32 Test#2	[#2 APC Outlet] 24-4547-M201A-(33-35) Test#2	
Particulates										
Condensable particulates, extractable [organic]	n/a	E902S/BU	0.4	mg	-----	-----	-----	-----	1.8	
Condensable particulates, non-extractable [aqueous]	n/a	E902W/BU	0.4	mg	-----	-----	-----	-----	3.0	
mass, acetone [FRONT]	-----	E898A/BU	0.40	g	23.0	19.0	6.70	-----	-----	
Mass, deionized water [aqueous]	n/a	E901W/BU	0.40	g	-----	-----	-----	-----	197	
Mass, solvent [organic]	n/a	E901S/BU	0.40	g	-----	-----	-----	-----	70.8	
particulate matter, acetone impinger [FRONT]	-----	E897A/BU	0.4	mg	<0.4	<0.4	<0.4	-----	-----	
Particulate matter, filter	-----	E890/BU	0.6	mg	-----	-----	-----	<0.6	-----	

Please refer to the General Comments section for an explanation of any result qualifiers detected.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)		Client sample ID		Client sampling date / time		Client sample ID		Client sample ID		Client sample ID		Client sample ID	
Analyte	CAS Number	Method/Lab	LOR	Unit	[#2 APC Outlet] 24-4547-M201A-36 Test#3	[#2 APC Outlet] 24-4547-M201A-37 Test#3	[#2 APC Outlet] 24-4547-M201A-38 Test#3	[#2 APC Outlet] 24-4547-M201A-39 Test#3	[#2 APC Outlet] 24-4547-M201A-40-42) Test#3	[#2 APC Outlet] 24-4547-M201A-40-42) Test#3	[#2 APC Outlet] 24-4547-M201A-40-42) Test#3	[#2 APC Outlet] 24-4547-M201A-40-42) Test#3	
Particulates													
Condensable particulates, extractable [organic]	n/a	E902S/BU	0.4	mg								1.1	
Condensable particulates, non-extractable [aqueous]	n/a	E902W/BU	0.4	mg								2.8	
mass, acetone [FRONT]		E898A/BU	0.40	g	21.4	19.1	11.3						
Mass, deionized water [aqueous]	n/a	E901W/BU	0.40	g								260	
Mass, solvent [organic]	n/a	E901S/BU	0.40	g								93.8	
particulate matter, acetone impinger [FRONT]		E897A/BU	0.4	mg	<0.4	<0.4	<0.4						
Particulate matter, filter		E890/BU	0.6	mg							<0.6		

Please refer to the General Comments section for an explanation of any result qualifiers detected.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)		Client sample ID		Client sampling date / time					
Analyte	CAS Number	Method/Lab	LOR	Unit	Result				
					[#1 APC Outlet] 24-4547-M201A-43 Blank	[#1 APC Outlet] 24-4547-M201A-44 Blank	[#1 APC Outlet] 24-4547-M201A-45 Blank	[#1 APC Outlet] 24-4547-M201A-46 Blank	[#1 APC Outlet] 24-4547-M201A-47-49) Blank
					05-Dec-2024 00:00	05-Dec-2024 00:00	05-Dec-2024 00:00	05-Dec-2024 00:00	05-Dec-2024 00:00
					BU2401303-031	BU2401303-032	BU2401303-033	BU2401303-034	BU2401303-035
Particulates									
Condensable particulates, extractable [organic]	n/a	E902S/BU	0.4	mg	-----	-----	-----	-----	0.9
Condensable particulates, non-extractable [aqueous]	n/a	E902W/BU	0.4	mg	-----	-----	-----	-----	0.8
mass, acetone [FRONT]	-----	E898A/BU	0.40	g	24.2	21.6	28.6	-----	-----
Mass, deionized water [aqueous]	n/a	E901W/BU	0.40	g	-----	-----	-----	-----	176
Mass, solvent [organic]	n/a	E901S/BU	0.40	g	-----	-----	-----	-----	126
particulate matter, acetone impinger [FRONT]	-----	E897A/BU	0.4	mg	<0.4	<0.4	<0.4	-----	-----
Particulate matter, filter	-----	E890/BU	0.6	mg	-----	-----	-----	<0.6	-----

Please refer to the General Comments section for an explanation of any result qualifiers detected.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)		Client sample ID		Client sampling date / time		Client sample ID		Client sampling date / time		Client sample ID		Client sampling date / time	
Analyte	CAS Number	Method/Lab	LOR	Unit	[#2 APC Outlet] 24-4547-M201A-50 Blank	[#2 APC Outlet] 24-4547-M201A-51 Blank	[#2 APC Outlet] 24-4547-M201A-52 Blank	[#2 APC Outlet] 24-4547-M201A-53 Blank	[#2 APC Outlet] 24-4547-M201A-54-56) Blank	[#2 APC Outlet] 24-4547-M201A-55) Blank	[#2 APC Outlet] 24-4547-M201A-56) Blank		
Particulates													
Condensable particulates, extractable [organic]	n/a	E902S/BU	0.4	mg	---	---	---	---	---	---	0.7		
Condensable particulates, non-extractable [aqueous]	n/a	E902W/BU	0.4	mg	---	---	---	---	---	---	0.5		
mass, acetone [FRONT]	---	E898A/BU	0.40	g	---	42.8	48.4	---	---	---	---		
Mass, deionized water [aqueous]	n/a	E901W/BU	0.40	g	---	---	---	---	---	---	162		
Mass, solvent [organic]	n/a	E901S/BU	0.40	g	---	---	---	---	---	---	169		
particulate matter, acetone impinger [FRONT]	---	E897A/BU	0.4	mg	<0.4	<0.4	<0.4	---	---	---	---		
Particulate matter, filter	---	E890/BU	0.6	mg	---	---	---	<0.6	---	---	---		

Please refer to the General Comments section for an explanation of any result qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: BU2401303	Page	: 1 of 15
Client	: ORTECH Environmental Inc.	Laboratory	: ALS Environmental - Burlington
Contact	: Chris Belore	Account Manager	: Lynne Wrona
Address	: 804 Southdown Road Mississauga ON Canada L5J 2Y4	Address	: 1435 Norjohn Court, Unit 1 Burlington, Ontario Canada L7L 0E6
Telephone	: 905 822 4120	Telephone	: +1 905 331 3111
Project	: AST-2024-4547 / 22330 Reworld	Date Samples Received	: 06-Dec-2024 11:00
PO	: 22330-J3019	Issue Date	: 27-Dec-2024 14:05
C-O-C number	: -----		
Sampler	: -----		
Site	: -----		
Quote number	: ALSEQ24-265 Reworld		
No. of samples received	: 40		
No. of samples analysed	: 40		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers
Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Page : 3 of 15
Work Order : BU2401303
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Air

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method		Method	Sampling Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)				Preparation Date	Holding Times		Eval	Analysis Date	Holding Times	
					Rec	Actual		Rec	Actual	Eval
Particulates : Extractable, Condensable Particulates in Stack Emission (organic part. wt.)										
M202: CPM Solvent Fraction [#1 APC Outlet] 24-4547-M201A-(12-14) Test#2		E902S	05-Dec-2024							19 days
Particulates : Extractable, Condensable Particulates in Stack Emission (organic part. wt.)										
M202: CPM Solvent Fraction [#1 APC Outlet] 24-4547-M201A-(19-21) Test#3		E902S	05-Dec-2024							19 days
Particulates : Extractable, Condensable Particulates in Stack Emission (organic part. wt.)										
M202: CPM Solvent Fraction [#1 APC Outlet] 24-4547-M201A-(47-49) Blank		E902S	05-Dec-2024							19 days
Particulates : Extractable, Condensable Particulates in Stack Emission (organic part. wt.)										
M202: CPM Solvent Fraction [#1 APC Outlet] 24-4547-M201A-(5-7) Test#1		E902S	05-Dec-2024							19 days
Particulates : Extractable, Condensable Particulates in Stack Emission (organic part. wt.)										
M202: CPM Solvent Fraction [#2 APC Outlet] 24-4547-M201A-(54-56) Blank		E902S	05-Dec-2024							19 days
Particulates : Extractable, Condensable Particulates in Stack Emission (organic part. wt.)										
M202: CPM Solvent Fraction [#2 APC Outlet] 24-4547-M201A-(26-28) Test#1		E902S	04-Dec-2024							20 days
Particulates : Extractable, Condensable Particulates in Stack Emission (organic part. wt.)										
M202: CPM Solvent Fraction [#2 APC Outlet] 24-4547-M201A-(33-35) Test#2		E902S	04-Dec-2024							20 days



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Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Matrix: Air													
Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time													
Analyte Group : Analytical Method				Method	Sampling Date	Extraction / Preparation			Analysis				
Container / Client Sample ID(s)						Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
							Rec	Actual			Rec	Actual	
Particulates : Extractable, Condensable Particulates in Stack Emission (organic part. wt.)													
M202: CPM Solvent Fraction				E902S	04-Dec-2024	-----	-----	-----	23-Dec-2024	-----	20 days		
#2 APC Outlet] 24-4547-M201A-(40-42) Test#3													
Particulates : Extractable, Condensable Particulates in Stack Emission (Solvent wt.)													
M202: CPM Solvent Fraction				E901S	05-Dec-2024	-----	-----	-----	23-Dec-2024	-----	19 days		
#1 APC Outlet] 24-4547-M201A-(12-14) Test#2													
Particulates : Extractable, Condensable Particulates in Stack Emission (Solvent wt.)													
M202: CPM Solvent Fraction				E901S	05-Dec-2024	-----	-----	-----	23-Dec-2024	-----	19 days		
#1 APC Outlet] 24-4547-M201A-(19-21) Test#3													
Particulates : Extractable, Condensable Particulates in Stack Emission (Solvent wt.)													
M202: CPM Solvent Fraction				E901S	05-Dec-2024	-----	-----	-----	23-Dec-2024	-----	19 days		
#1 APC Outlet] 24-4547-M201A-(47-49) Blank													
Particulates : Extractable, Condensable Particulates in Stack Emission (Solvent wt.)													
M202: CPM Solvent Fraction				E901S	05-Dec-2024	-----	-----	-----	23-Dec-2024	-----	19 days		
#1 APC Outlet] 24-4547-M201A-(5-7) Test#1													
Particulates : Extractable, Condensable Particulates in Stack Emission (Solvent wt.)													
M202: CPM Solvent Fraction				E901S	05-Dec-2024	-----	-----	-----	23-Dec-2024	-----	19 days		
#2 APC Outlet] 24-4547-M201A-(54-56) Blank													
Particulates : Extractable, Condensable Particulates in Stack Emission (Solvent wt.)													
M202: CPM Solvent Fraction				E901S	04-Dec-2024	-----	-----	-----	23-Dec-2024	-----	20 days		
#2 APC Outlet] 24-4547-M201A-(26-28) Test#1													
Particulates : Extractable, Condensable Particulates in Stack Emission (Solvent wt.)													
M202: CPM Solvent Fraction				E901S	04-Dec-2024	-----	-----	-----	23-Dec-2024	-----	20 days		
#2 APC Outlet] 24-4547-M201A-(33-35) Test#2													
Particulates : Extractable, Condensable Particulates in Stack Emission (Solvent wt.)													
M202: CPM Solvent Fraction				E901S	04-Dec-2024	-----	-----	-----	23-Dec-2024	-----	20 days		
#2 APC Outlet] 24-4547-M201A-(40-42) Test#3													



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Work Order : BU2401303
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Matrix: Air									
Analyte Group : Analytical Method				Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time					
Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation			Analysis			
			Preparation Date	Holding Times Rec	Actual	Eval	Analysis Date	Holding Times Rec	Actual
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water part. wt.)									
M202: CPM Water Fraction [#1 APC Outlet] 24-4547-M201A-(12-14) Test#2	E902W	05-Dec-2024	----	-----	-----		23-Dec-2024	-----	19 days
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water part. wt.)									
M202: CPM Water Fraction [#1 APC Outlet] 24-4547-M201A-(19-21) Test#3	E902W	05-Dec-2024	----	-----	-----		23-Dec-2024	-----	19 days
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water part. wt.)									
M202: CPM Water Fraction [#1 APC Outlet] 24-4547-M201A-(47-49) Blank	E902W	05-Dec-2024	----	-----	-----		23-Dec-2024	-----	19 days
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water part. wt.)									
M202: CPM Water Fraction [#1 APC Outlet] 24-4547-M201A-(5-7) Test#1	E902W	05-Dec-2024	----	-----	-----		23-Dec-2024	-----	19 days
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water part. wt.)									
M202: CPM Water Fraction [#2 APC Outlet] 24-4547-M201A-(54-56) Blank	E902W	05-Dec-2024	----	-----	-----		23-Dec-2024	-----	19 days
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water part. wt.)									
M202: CPM Water Fraction [#2 APC Outlet] 24-4547-M201A-(26-28) Test#1	E902W	04-Dec-2024	----	-----	-----		23-Dec-2024	-----	20 days
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water part. wt.)									
M202: CPM Water Fraction [#2 APC Outlet] 24-4547-M201A-(33-35) Test#2	E902W	04-Dec-2024	----	-----	-----		23-Dec-2024	-----	20 days
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water part. wt.)									
M202: CPM Water Fraction [#2 APC Outlet] 24-4547-M201A-(40-42) Test#3	E902W	04-Dec-2024	----	-----	-----		23-Dec-2024	-----	20 days
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)									
M202: CPM Water Fraction [#1 APC Outlet] 24-4547-M201A-(12-14) Test#2	E901W	05-Dec-2024	----	-----	-----		23-Dec-2024	-----	19 days



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Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time												
Analyte Group : Analytical Method Container / Client Sample ID(s)		Method	Sampling Date	Extraction / Preparation			Analysis					
				Preparation Date	Holding Times Rec	Actual	Eval	Analysis Date	Holding Times Rec	Actual	Eval	
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)												
M202: CPM Water Fraction [#1 APC Outlet] 24-4547-M201A-(19-21) Test#3		E901W	05-Dec-2024	-----	-----	-----	-----	23-Dec-2024	-----	-----	19 days	
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)												
M202: CPM Water Fraction [#1 APC Outlet] 24-4547-M201A-(47-49) Blank		E901W	05-Dec-2024	-----	-----	-----	-----	23-Dec-2024	-----	-----	19 days	
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)												
M202: CPM Water Fraction [#1 APC Outlet] 24-4547-M201A-(5-7) Test#1		E901W	05-Dec-2024	-----	-----	-----	-----	23-Dec-2024	-----	-----	19 days	
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)												
M202: CPM Water Fraction [#2 APC Outlet] 24-4547-M201A-(54-56) Blank		E901W	05-Dec-2024	-----	-----	-----	-----	23-Dec-2024	-----	-----	19 days	
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)												
M202: CPM Water Fraction [#2 APC Outlet] 24-4547-M201A-(26-28) Test#1		E901W	04-Dec-2024	-----	-----	-----	-----	23-Dec-2024	-----	-----	20 days	
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)												
M202: CPM Water Fraction [#2 APC Outlet] 24-4547-M201A-(33-35) Test#2		E901W	04-Dec-2024	-----	-----	-----	-----	23-Dec-2024	-----	-----	20 days	
Particulates : Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)												
M202: CPM Water Fraction [#2 APC Outlet] 24-4547-M201A-(40-42) Test#3		E901W	04-Dec-2024	-----	-----	-----	-----	23-Dec-2024	-----	-----	20 days	
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry												
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-1 Test#1		E897A	05-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	-----	14 days	
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry												
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-10 Test#2		E897A	05-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	-----	14 days	



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Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time														
Analyte Group : Analytical Method Container / Client Sample ID(s)		Method	Sampling Date	Extraction / Preparation			Analysis			Eval				
				Preparation Date	Holding Times Rec	Actual	Eval	Analysis Date	Holding Times Rec		Actual			
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse)	[#1 APC Outlet] 24-4547-M201A-15 Test#3	E897A	05-Dec-2024	-----	-----	-----	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse)	[#1 APC Outlet] 24-4547-M201A-16 Test#3	E897A	05-Dec-2024	-----	-----	-----	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse)	[#1 APC Outlet] 24-4547-M201A-17 Test#3	E897A	05-Dec-2024	-----	-----	-----	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse)	[#1 APC Outlet] 24-4547-M201A-2 Test#1	E897A	05-Dec-2024	-----	-----	-----	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse)	[#1 APC Outlet] 24-4547-M201A-3 Test#1	E897A	05-Dec-2024	-----	-----	-----	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse)	[#1 APC Outlet] 24-4547-M201A-43 Blank	E897A	05-Dec-2024	-----	-----	-----	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse)	[#1 APC Outlet] 24-4547-M201A-44 Blank	E897A	05-Dec-2024	-----	-----	-----	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse)	[#1 APC Outlet] 24-4547-M201A-45 Blank	E897A	05-Dec-2024	-----	-----	-----	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse)	[#1 APC Outlet] 24-4547-M201A-8 Test#2	E897A	05-Dec-2024	-----	-----	-----	-----	-----	-----	18-Dec-2024	-----	14 days		



Matrix: Air														
Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time														
Analyte Group : Analytical Method		Method	Sampling Date	Extraction / Preparation			Analysis			Eval				
Container / Client Sample ID(s)				Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec		Holding Times Actual			
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-9 Test#2		E897A	05-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	14 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-50 Blank		E897A	05-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	14 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-51 Blank		E897A	05-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	14 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-52 Blank		E897A	05-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	14 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-22 Test#1		E897A	04-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	15 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-23 Test#1		E897A	04-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	15 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-24 Test#1		E897A	04-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	15 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-29 Test#2		E897A	04-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	15 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-30 Test#2		E897A	04-Dec-2024	-----	-----	-----	-----	18-Dec-2024	-----	15 days				



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Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Matrix: Air														
Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time														
Analyte Group : Analytical Method					Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)							Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
								Rec	Actual			Rec	Actual	
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-31 Test#2					E897A	04-Dec-2024	-----	-----	-----	18-Dec-2024	-----	15 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-36 Test#3					E897A	04-Dec-2024	-----	-----	-----	18-Dec-2024	-----	15 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-37 Test#3					E897A	04-Dec-2024	-----	-----	-----	18-Dec-2024	-----	15 days		
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-38 Test#3					E897A	04-Dec-2024	-----	-----	-----	18-Dec-2024	-----	15 days		
Particulates : Particulates in Stack Emission Filter by Gravimetry														
M5/M29 : Quartz Filter [#1 APC Outlet] 24-4547-M201A-11 Test#2					E890	05-Dec-2024	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Filter by Gravimetry														
M5/M29 : Quartz Filter [#1 APC Outlet] 24-4547-M201A-18 Test#3					E890	05-Dec-2024	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Filter by Gravimetry														
M5/M29 : Quartz Filter [#1 APC Outlet] 24-4547-M201A-4 Test#1					E890	05-Dec-2024	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Filter by Gravimetry														
M5/M29 : Quartz Filter [#1 APC Outlet] 24-4547-M201A-46 Blank					E890	05-Dec-2024	-----	-----	-----	18-Dec-2024	-----	14 days		
Particulates : Particulates in Stack Emission Filter by Gravimetry														
M5/M29 : Quartz Filter [#2 APC Outlet] 24-4547-M201A-53 Blank					E890	05-Dec-2024	-----	-----	-----	18-Dec-2024	-----	14 days		



Matrix: Air												
Analyte Group : Analytical Method				Method	Sampling Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)						Preparation Date	Holding Times		Eval	Analysis Date	Holding Times	
							Rec	Actual			Rec	Actual
Particulates : Particulates in Stack Emission Filter by Gravimetry												
M5/M29 : Quartz Filter [#2 APC Outlet] 24-4547-M201A-25 Test#1				E890	04-Dec-2024	----	-----		18-Dec-2024	----	15 days	
Particulates : Particulates in Stack Emission Filter by Gravimetry												
M5/M29 : Quartz Filter [#2 APC Outlet] 24-4547-M201A-32 Test#2				E890	04-Dec-2024	----	-----		18-Dec-2024	----	15 days	
Particulates : Particulates in Stack Emission Filter by Gravimetry												
M5/M29 : Quartz Filter [#2 APC Outlet] 24-4547-M201A-39 Test#3				E890	04-Dec-2024	----	-----		18-Dec-2024	----	15 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry												
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-1 Test#1				E898A	05-Dec-2024	----	-----		17-Dec-2024	----	13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry												
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-10 Test#2				E898A	05-Dec-2024	----	-----		17-Dec-2024	----	13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry												
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-15 Test#3				E898A	05-Dec-2024	----	-----		17-Dec-2024	----	13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry												
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-16 Test#3				E898A	05-Dec-2024	----	-----		17-Dec-2024	----	13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry												
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-17 Test#3				E898A	05-Dec-2024	----	-----		17-Dec-2024	----	13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry												
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-2 Test#1				E898A	05-Dec-2024	----	-----		17-Dec-2024	----	13 days	



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Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Matrix: Air

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method		Sampling Date	Method	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)				Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
					Rec	Actual			Rec	Actual	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-3 Test#1	E898A	05-Dec-2024						17-Dec-2024		13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-43 Blank	E898A	05-Dec-2024						17-Dec-2024		13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-44 Blank	E898A	05-Dec-2024						17-Dec-2024		13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-45 Blank	E898A	05-Dec-2024						17-Dec-2024		13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-8 Test#2	E898A	05-Dec-2024						17-Dec-2024		13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-M201A-9 Test#2	E898A	05-Dec-2024						17-Dec-2024		13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-50 Blank	E898A	05-Dec-2024						17-Dec-2024		13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-51 Blank	E898A	05-Dec-2024						17-Dec-2024		13 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-M201A-52 Blank	E898A	05-Dec-2024						17-Dec-2024		13 days	



Matrix: Air

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method		Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)				Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		
					Rec	Actual			Rec	Actual	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)		E898A	04-Dec-2024					17-Dec-2024		14 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)		E898A	04-Dec-2024					17-Dec-2024		14 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)		E898A	04-Dec-2024					17-Dec-2024		14 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)		E898A	04-Dec-2024					17-Dec-2024		14 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)		E898A	04-Dec-2024					17-Dec-2024		14 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)		E898A	04-Dec-2024					17-Dec-2024		14 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)		E898A	04-Dec-2024					17-Dec-2024		14 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)		E898A	04-Dec-2024					17-Dec-2024		14 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)		E898A	04-Dec-2024					17-Dec-2024		14 days	
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)		E898A	04-Dec-2024					17-Dec-2024		14 days	

Legend & Qualifier Definitions

Page : 13 of 15
Work Order : BU2401303
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Rec. HT: ALS recommended hold time (see units).





Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Air

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type		QC Lot #	Count		Frequency (%)	
Analytical Methods			QC	Regular	Actual	Expected
Laboratory Duplicates (DUP)						
Extractable, Condensable Particulates in Stack Emission (organic part. wt.)	E902S	1806119	1	8	12.5	5.0
	E901S	1806115	1	8	12.5	5.0
	E902W	1806123	1	8	12.5	5.0
Non-Extractable, Condensable Particulates in Stack Emission (Water part. wt.)						
Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)	E901W	1806117	1	8	12.5	5.0
	E897A	1806113	2	36	5.5	5.0
	E890	1808144	1	8	12.5	5.0
	E898A	1806102	2	36	5.5	5.0
Method Blanks (MB)						
Extractable, Condensable Particulates in Stack Emission (organic part. wt.)	E902S	1806119	1	8	12.5	5.0
	E901S	1806115	1	8	12.5	5.0
	E902W	1806123	1	8	12.5	5.0
Non-Extractable, Condensable Particulates in Stack Emission (Water part. wt.)						
Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)	E901W	1806117	1	8	12.5	5.0
	E897A	1806113	2	36	5.5	5.0
	E890	1808144	1	8	12.5	5.0
	E898A	1806102	2	36	5.5	5.0



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods		Method / Lab	Matrix	Method Reference	Method Descriptions
Particulates in Stack Emission Filter by Gravimetry	ALS Environmental - Burlington	E890	Air	EPA Method 5 (mod.)	Gravimetric analysis of particulate air samples collected on filters.
		E897A		EPA Method 5 (mod.)	Gravimetric analysis of particulate air samples collected in acetone rinses.
Particulates in Stack Emission Acetone Rinse by Gravimetry	ALS Environmental - Burlington	E898A	Air	EPA Method 5 (mod.)	Gravimetric analysis of acetone mass from rinses.
		E901S		EPA Method 202 (alt. Method EPS 1/RM/55)	Filter samples are extracted using water and hexanes (or dichloromethane, RM/55). Liquids are then separated using liquid-liquid extraction. Each fraction is evaporated to dryness and titration of the water fraction may be required to neutralize residual acids. Particulate weights are determined using gravimetry.
Non-Extractable, Condensable Particulates in Stack Emission (Water wt.)	ALS Environmental - Burlington	E901W	Air	EPA Method 202 (alt. Method EPS 1/RM/55)	Filter samples are extracted using water and hexanes (or dichloromethane, RM/55). Liquids are then separated using liquid-liquid extraction. Each fraction is evaporated to dryness and titration of the water fraction may be required to neutralize residual acids. Particulate weights are determined using gravimetry.
		E902S		EPA Method 202 (alt. Method EPS 1/RM/55)	Filter samples are extracted using water and hexanes (or dichloromethane, RM/55). Liquids are then separated using liquid-liquid extraction. Each fraction is evaporated to dryness and titration of the water fraction may be required to neutralize residual acids. Particulate weights are determined using gravimetry.
Non-Extractable, Condensable Particulates in Stack Emission (organic part. wt.)	ALS Environmental - Burlington	E902W	Air	EPA Method 202 (alt. Method EPS 1/RM/55)	Filter samples are extracted using water and hexanes (or dichloromethane, RM/55). Liquids are then separated using liquid-liquid extraction. Each fraction is evaporated to dryness and titration of the water fraction may be required to neutralize residual acids. Particulate weights are determined using gravimetry.
		E902W		EPA Method 202 (alt. Method EPS 1/RM/55)	Filter samples are extracted using water and hexanes (or dichloromethane, RM/55). Liquids are then separated using liquid-liquid extraction. Each fraction is evaporated to dryness and titration of the water fraction may be required to neutralize residual acids. Particulate weights are determined using gravimetry.

QUALITY CONTROL REPORT

Work Order	: BU2401303	Page	: 1 of 4
Client	: ORTECH Environmental Inc.	Laboratory	: ALS Environmental - Burlington
Contact	: Chris Belore	Account Manager	: Lynne Wrona
Address	: 804 Southdown Road Mississauga ON Canada L5J 2Y4	Address	: 1435 Norjohn Court, Unit 1 Burlington, Ontario Canada L7L 0E6
Telephone	: 905 822 4120	Telephone	: +1 905 331 3111
Project	: AST-2024-4547 / 22330 Reworld	Date Samples Received	: 06-Dec-2024 11:00
PO	: 22330-J3019	Date Analysis Commenced	: 17-Dec-2024
C-O-C number	: ----	Issue Date	: 27-Dec-2024 14:05
Sampler	: ----		
Site	: ----		
Quote number	: ALSEQ24-265 Reworld		
No. of samples received	: 40		
No. of samples analysed	: 40		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Milithza Silva	Manager - Inorganics	Burlington Inorganics, Burlington, Ontario



Page : 2 of 4
Work Order : BU2401303
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "...." if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Air					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Particulates (QC Lot: 1806102)											
BU2401303-001	[#1 APC Outlet] 24-4547-M201A-1 Test#1	mass, acetone [FRONT]	----	E898A	0.40	g	22.3	22.3	0.00%	10%	----
Particulates (QC Lot: 1806105)											
BU2401303-001	[#1 APC Outlet] 24-4547-M201A-1 Test#1	particulate matter, acetone impinger [FRONT]	----	E897A	0.4	mg	0.4	0.4	0	Diff <2x LOR	----
Particulates (QC Lot: 1806111)											
BU2401302-001	Anonymous	mass, acetone [FRONT]	----	E898A	0.40	g	134	134	0.00%	10%	----
Particulates (QC Lot: 1806113)											
BU2401302-001	Anonymous	particulate matter, acetone impinger [FRONT]	----	E897A	0.4	mg	0.9	0.9	0	Diff <2x LOR	----
Particulates (QC Lot: 1806115)											
BU2401303-005	[#1 APC Outlet] 24-4547-M201A-(5-7) Test#1	Mass, solvent [organic]	n/a	E901S	0.40	g	104	104	0.00%	10%	----
Particulates (QC Lot: 1806117)											
BU2401303-005	[#1 APC Outlet] 24-4547-M201A-(5-7) Test#1	Mass, deionized water [aqueous]	n/a	E901W	0.40	g	209	209	0.00%	10%	----
Particulates (QC Lot: 1806119)											
BU2401303-005	[#1 APC Outlet] 24-4547-M201A-(5-7) Test#1	Condensable particulates, extractable [organic]	n/a	E902S	0.4	mg	1.3	1.3	0	Diff <2x LOR	----
Particulates (QC Lot: 1806123)											
BU2401303-005	[#1 APC Outlet] 24-4547-M201A-(5-7) Test#1	Condensable particulates, non-extractable [aqueous]	n/a	E902W	0.4	mg	6.8	6.8	0	Diff <2x LOR	----
Particulates (QC Lot: 1808144)											
BU2401303-004	[#1 APC Outlet] 24-4547-M201A-4 Test#1	Particulate matter, filter	----	E890	0.6	mg	<0.6	<0.6	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Air

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Particulates (QCLot: 1806102)						
mass, acetone [FRONT]	---	E898A	0.4	g	25.9	---
Particulates (QCLot: 1806105)						
particulate matter, acetone impinger [FRONT]	---	E897A	0.4	mg	<0.4	---
Particulates (QCLot: 1806111)						
mass, acetone [FRONT]	---	E898A	0.4	g	25.1	---
Particulates (QCLot: 1806113)						
particulate matter, acetone impinger [FRONT]	---	E897A	0.4	mg	<0.4	---
Particulates (QCLot: 1806115)						
Mass, solvent [organic]	n/a	E901S	0.4	g	88.8	---
Particulates (QCLot: 1806117)						
Mass, deionized water [aqueous]	n/a	E901W	0.4	g	86.6	---
Particulates (QCLot: 1806119)						
Condensable particulates, extractable [organic]	n/a	E902S	0.4	mg	<0.4	---
Particulates (QCLot: 1806123)						
Condensable particulates, non-extractable [aqueous]	n/a	E902W	0.4	mg	<0.4	---
Particulates (QCLot: 1808144)						
Particulate matter, filter	---	E890	0.6	mg	<0.6	---

Client: Reworld
Job/Report Number: AST-2024-4547
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO:

Alliance Sample ID 24-4547-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
1	DEC 5/24	1	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
2				PM 2.5 cyclone Rinse	Acetone	Particulate
3				PM 2.5 exit & connectors	Acetone	Particulate
4				Back up filter	filter	Particulate
5				Impinger Soln & rinse	Water	Particulate
6				Secondary Filter	Filter	Particulate*
7				Impinger Rinse	Acetone & Hexane	Particulate
8	DEC 5/24	2	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
9				PM 2.5 cyclone Rinse	Acetone	Particulate
10				PM 2.5 exit & connectors	Acetone	Particulate
11				Back up filter	filter	Particulate
12				Impinger Soln & rinse	Water	Particulate
13				Secondary Filter	Filter	Particulate*
14				Impinger Rinse	Acetone & Hexane	Particulate
15	DEC 5/24	3	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
16				PM 2.5 cyclone Rinse	Acetone	Particulate
17				PM 2.5 exit & connectors	Acetone	Particulate
18				Back up filter	filter	Particulate
19				Impinger Soln & rinse	Water	Particulate
20				Secondary Filter	Filter	Particulate*
21				Impinger Rinse	Acetone & Hexane	Particulate
22	DEC 4/24	1	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
23				PM 2.5 cyclone Rinse	Acetone	Particulate
24				PM 2.5 exit & connectors	Acetone	Particulate
25				Back up filter	filter	Particulate
26				Impinger Soln & rinse	Water	Particulate
27				Secondary Filter	Filter	Particulate*
28				Impinger Rinse	Acetone & Hexane	Particulate
29	DEC 4/24	2	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
30				PM 2.5 cyclone Rinse	Acetone	Particulate
31				PM 2.5 exit & connectors	Acetone	Particulate
32				Back up filter	Filter	Particulate
33				Impinger Soln & rinse	Water	Particulate
34				Secondary Filter	Filter	Particulate*
35				Impinger Rinse	Acetone & Hexane	Particulate

Environmental Division
Burlington

Work Order Reference

BU2401303



Telephone : +1 905 331 3111

Alliance Technical Group - Sample Log
Method 201A & Method 202
Reworld

2 of 2

Client: Reworld
Job/Report Number: AST-2024-4547
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO:

Alliance Sample ID 24-4547-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
36	DEC 4/24	3	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
37				PM 2.5 cyclone Rinse	Acetone	Particulate
38				PM 2.5 exit & connectors	Acetone	Particulate
39				Back up filter	Filter	Particulate
40				Impinger Soln & rinse	Water	Particulate
41				Secondary Filter	Filter	Particulate*
42				Impinger Rinse	Acetone & Hexane	Particulate
43	DEC 5/24	Blank	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
44				PM 2.5 cyclone Rinse	Acetone	Particulate
45				PM 2.5 exit & connectors	Acetone	Particulate
46				Back up filter	filter	Particulate
47				Impinger Soln & rinse	Water	Particulate
48				Secondary Filter	Filter	Particulate*
49				Impinger Rinse	Acetone & Hexane	Particulate
50	DEC 5/24	Blank	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
51				PM 2.5 cyclone Rinse	Acetone	Particulate
52				PM 2.5 exit & connectors	Acetone	Particulate
53				Back up filter	Filter	Particulate
54				Impinger Soln & rinse	Water	Particulate
55				Secondary Filter	Filter	Particulate*
56				Impinger Rinse	Acetone & Hexane	Particulate

Note: *To be included in condensible particulate analysis as per US EPA Method 202.

11.6 °C

Relinquished To:

ARAR BURTON

Date: 6-Dec-2024 11:00

Relinquished By:

DLB

Date: DEC 6/24



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	Description
g	grams
mg	milligrams
µg/sample	micrograms per sample

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)		CAS Number	Method/Lab	Client sampling date / time		Client sample ID				
Analyte				LOR	Unit	Result	BU2401302-001	BU2401302-002	BU2401302-003	BU2401302-004
Particulates										
mass, acetone [FRONT]		----	E898A/BU	0.40	g	134	111	123	211	142
particulate matter, acetone impinger [FRONT]		----	E897A/BU	0.4	mg	0.9	1.4	0.8	<0.4	1.1
Particulate matter, filter		----	E890/BU	0.6	mg	<0.6	<0.6	<0.6	<0.6	<0.6
Method 29 Metals: Fraction 1A (HF)										
Antimony		7440-36-0	E457A/BU	0.20	µg/sample	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic		7440-38-2	E457A/BU	1.0	µg/sample	<1.0	<1.0	<1.0	<1.0	<1.0
Barium		7440-39-3	E457A/BU	5.0	µg/sample	49.2	50.1	49.9	46.6	47.6
Beryllium		7440-41-7	E457A/BU	0.20	µg/sample	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium		7440-43-9	E457A/BU	0.10	µg/sample	0.11	14.0	<0.10	<0.10	6.48
Chromium		7440-47-3	E457A/BU	1.0	µg/sample	2.8	3.4	2.6	2.6	2.8
Cobalt		7440-48-4	E457A/BU	0.20	µg/sample	<0.20	<0.20	<0.20	<0.20	<0.20
Copper		7440-50-8	E457A/BU	1.0	µg/sample	3.4	3.6	3.7	4.4	3.8
Lead		7439-92-1	E457A/BU	0.50	µg/sample	<0.50	<0.50	<0.50	<0.50	0.72
Manganese		7439-96-5	E457A/BU	0.50	µg/sample	1.69	1.96	1.54	1.02	1.76
Molybdenum		7439-98-7	E457A/BU	0.20	µg/sample	18.4	18.0	18.1	18.3	17.5
Nickel		7440-02-0	E457A/BU	0.20	µg/sample	1.45	5.37	1.33	0.98	1.37
Selenium		7782-49-2	E457A/BU	2.0	µg/sample	<2.0	<2.0	<2.0	<2.0	<2.0
Silver		7440-22-4	E457A/BU	0.20	µg/sample	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium		7440-28-0	E457A/BU	0.20	µg/sample	<0.20	<0.20	<0.20	<0.20	<0.20



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)		Client sample ID		Client sampling date / time		CAS Number	Method/Lab	LOR	Unit	Result					Result				
										Result		Result		Result		Result			
Method 29 Metals: Fraction 1A (HF)																			
Vanadium		7440-62-2	E457A/BU	1.0	µg/sample	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			
Zinc		7440-66-6	E457A/BU	6.0	µg/sample	46.6	48.1	42.3	33.1	40.3									
Method 29 Metals: Fraction 2A (HNO3/H2O2)																			
Antimony		7440-36-0	E457B/BU	0.10	µg/sample	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10			
Arsenic		7440-38-2	E457B/BU	0.50	µg/sample	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50			
Barium		7440-39-3	E457B/BU	2.5	µg/sample	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5			
Beryllium		7440-41-7	E457B/BU	0.10	µg/sample	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10			
Cadmium		7440-43-9	E457B/BU	0.050	µg/sample	0.120	0.090	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.118	0.118			
Chromium		7440-47-3	E457B/BU	0.50	µg/sample	0.67	0.70	0.52	0.52	0.52	0.52	<0.50	<0.50	<0.50	0.72	0.72			
Cobalt		7440-48-4	E457B/BU	0.10	µg/sample	0.18	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.20	0.20			
Copper		7440-50-8	E457B/BU	0.50	µg/sample	3.07	1.48	0.80	0.80	0.80	0.80	1.05	1.05	2.77	2.77	2.77			
Lead		7439-92-1	E457B/BU	0.25	µg/sample	1.16	2.18	0.50	0.50	0.50	0.50	0.60	0.60	0.92	0.92	0.92			
Manganese		7439-96-5	E457B/BU	0.25	µg/sample	0.77	1.42	2.42	2.42	2.42	2.42	0.49	0.49	1.10	1.10	1.10			
Molybdenum		7439-98-7	E457B/BU	0.10	µg/sample	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10			
Nickel		7440-02-0	E457B/BU	0.10	µg/sample	0.65	0.87	0.41	0.41	0.41	0.41	0.29	0.29	0.92	0.92	0.92			
Selenium		7782-49-2	E457B/BU	1.0	µg/sample	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			
Silver		7440-22-4	E457B/BU	0.10	µg/sample	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10			
Thallium		7440-28-0	E457B/BU	0.10	µg/sample	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10			
Vanadium		7440-62-2	E457B/BU	0.50	µg/sample	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50			



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)															
Analyte	CAS Number	Method/Lab	LOR	Client sample ID		Client sampling date / time									
				Unit	Result	Result	[#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	[#1 APC Outlet] 24-4547-PM-(7 thru 12) Test#2	[#1 APC Outlet] 24-4547-PM-(13 thru 18) Test#3	[#1 APC Outlet] 24-4547-PM-(19 thru 24) Blank1	[#2 APC Outlet] 24-4547-PM-(25 thru 30) Test#1				
Method 29 Metals: Fraction 2A (HNO3/H2O2)															
Zinc	7440-66-6	E457B/BU	3.0		µg/sample	6.2	5.0	4.7	<3.0						7.0
Method 29 Mercury: Fraction 1B (HF)															
Mercury	7439-97-6	E521A/BU	0.022		µg/sample	<0.022	<0.022	<0.022	<0.022						<0.022
Method 29 Mercury: Fraction 2B (KMnO4/H2SO4)															
Mercury	7439-97-6	EC521B/BU	0.0750		µg/sample	<0.600	<0.600	<0.578	<0.255						<0.608
Method 29 Mercury: Fraction 3B (KMnO4/H2SO4)															
Mercury	7439-97-6	EC521D/BU	0.0075		µg/sample	<0.0338	<0.0338	<0.0338	<0.0338						<0.0338
Method 29 Mercury: Fraction 3C (KMnO4/H2SO4)															
Mercury	7439-97-6	EC521E/BU	0.075		µg/sample	<0.375	<0.375	<0.375	<0.375						<0.375

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)		Client sample ID	Client sampling date / time				CAS Number	Method/Lab	LOR	Unit	[#2 APC Outlet] 24-4547-PM-(31 thru 36) Test#2	[#2 APC Outlet] 24-4547-PM-(37 thru 42) Test#3	[#2 APC Outlet] 24-4547-PM-(43 thru 48) Blank2	[#2 APC Outlet] 24-4547-PM-(49 thru 54) Blank3
Particulates														
mass, acetone [FRONT]														
particulate matter, acetone impinger [FRONT]														
Particulate matter, filter														



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Client sample ID		Client sampling date / time		Result			
Analyte	CAS Number	Method/Lab	LOR	Unit	[#2 APC Outlet] 24-4547-PM-(31 thru 36) Test#2	[#2 APC Outlet] 24-4547-PM-(37 thru 42) Test#3	[#2 APC Outlet] 24-4547-PM-(43 thru 48) Blank2
Method 29 Metals: Fraction 1A (HF)							
Antimony	7440-36-0	E457A/BU	0.20	µg/sample	<0.20	<0.20	<0.20
Arsenic	7440-38-2	E457A/BU	1.0	µg/sample	<1.0	<1.0	<1.0
Barium	7440-39-3	E457A/BU	5.0	µg/sample	49.3	47.1	49.7
Beryllium	7440-41-7	E457A/BU	0.20	µg/sample	<0.20	<0.20	<0.20
Cadmium	7440-43-9	E457A/BU	0.10	µg/sample	0.23	<0.10	<0.10
Chromium	7440-47-3	E457A/BU	1.0	µg/sample	3.3	2.8	3.4
Cobalt	7440-48-4	E457A/BU	0.20	µg/sample	<0.20	<0.20	<0.20
Copper	7440-50-8	E457A/BU	1.0	µg/sample	3.5	3.8	4.6
Lead	7439-92-1	E457A/BU	0.50	µg/sample	0.56	0.56	<0.50
Manganese	7439-96-5	E457A/BU	0.50	µg/sample	1.82	1.68	1.08
Molybdenum	7439-98-7	E457A/BU	0.20	µg/sample	18.1	16.9	18.0
Nickel	7440-02-0	E457A/BU	0.20	µg/sample	1.64	1.37	1.00
Selenium	7782-49-2	E457A/BU	2.0	µg/sample	<2.0	<2.0	<2.0
Silver	7440-22-4	E457A/BU	0.20	µg/sample	<0.20	<0.20	<0.20
Thallium	7440-28-0	E457A/BU	0.20	µg/sample	<0.20	<0.20	<0.20
Vanadium	7440-62-2	E457A/BU	1.0	µg/sample	<1.0	<1.0	<1.0
Zinc	7440-66-6	E457A/BU	6.0	µg/sample	59.8	46.5	32.7
Method 29 Metals: Fraction 2A (HNO3/H2O2)							
Antimony	7440-36-0	E457B/BU	0.10	µg/sample	<0.10	<0.10	<0.10



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Analyte		Client sample ID			Client sampling date / time			Result		
		CAS Number	Method/Lab	LOR	Unit	[#2 APC Outlet] 24-4547-PM-(31 thru 36) Test#2	[#2 APC Outlet] 24-4547-PM-(37 thru 42) Test#3	[#2 APC Outlet] 24-4547-PM-(43 thru 48) Blank2		
Method 29 Metals: Fraction 2A (HNO3/H2O2)										
Arsenic		7440-38-2	E457B/BU	0.50	µg/sample	<0.50	<0.50	<0.50		
Barium		7440-39-3	E457B/BU	2.5	µg/sample	<2.5	<2.5	<2.5		
Beryllium		7440-41-7	E457B/BU	0.10	µg/sample	<0.10	<0.10	<0.10		
Cadmium		7440-43-9	E457B/BU	0.050	µg/sample	0.218	0.140	<0.050		
Chromium		7440-47-3	E457B/BU	0.50	µg/sample	0.75	0.64	<0.50		
Cobalt		7440-48-4	E457B/BU	0.10	µg/sample	0.27	<0.10	<0.10		
Copper		7440-50-8	E457B/BU	0.50	µg/sample	2.65	5.23	1.72		
Lead		7439-92-1	E457B/BU	0.25	µg/sample	1.30	1.07	1.30		
Manganese		7439-96-5	E457B/BU	0.25	µg/sample	2.03	0.83	0.37		
Molybdenum		7439-98-7	E457B/BU	0.10	µg/sample	<0.10	<0.10	<0.10		
Nickel		7440-02-0	E457B/BU	0.10	µg/sample	2.73	0.61	0.17		
Selenium		7782-49-2	E457B/BU	1.0	µg/sample	<1.0	<1.0	<1.0		
Silver		7440-22-4	E457B/BU	0.10	µg/sample	<0.10	<0.10	<0.10		
Thallium		7440-28-0	E457B/BU	0.10	µg/sample	<0.10	<0.10	<0.10		
Vanadium		7440-62-2	E457B/BU	0.50	µg/sample	<0.50	<0.50	<0.50		
Zinc		7440-66-6	E457B/BU	3.0	µg/sample	7.0	7.2	<3.0		
Method 29 Mercury: Fraction 1B (HF)										
Mercury		7439-97-6	E521A/BU	0.022	µg/sample	0.121	<0.022	<0.022		



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Client sample ID		Client sampling date / time		Unit		Result		Result		Result	
Analyte	CAS Number	Method/Lab	LOR	µg/sample	µg/sample	µg/sample	µg/sample	µg/sample	µg/sample	µg/sample	µg/sample
Method 29 Mercury: Fraction 2B (KMnO4/H2SO4)											
Mercury	7439-97-6	EC521B/BU	0.0750	<0.619	<0.562	<0.225	<0.0338	<0.0338	<0.375	<0.375	<0.375
Method 29 Mercury: Fraction 3B (KMnO4/H2SO4)											
Mercury	7439-97-6	EC521D/BU	0.0075	<0.0338	<0.0338	<0.375	<0.375	<0.375	<0.375	<0.375	<0.375
Method 29 Mercury: Fraction 3C (KMnO4/H2SO4)											
Mercury	7439-97-6	EC521E/BU	0.075	<0.375	<0.375	<0.375	<0.375	<0.375	<0.375	<0.375	<0.375

Please refer to the General Comments section for an explanation of any result qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: BU2401302	Page	: 1 of 12
Client	: ORTECH Environmental Inc.	Laboratory	: ALS Environmental - Burlington
Contact	: Chris Belore	Account Manager	: Lynne Wrona
Address	: 804 Southdown Road Mississauga ON Canada L5J 2Y4	Address	: 1435 Norjohn Court, Unit 1 Burlington, Ontario Canada L7L 0E6
Telephone	: 905 822 4120	Telephone	: +1 905 331 3111
Project	: AST-2024-4547 / 22330 Reworld	Date Samples Received	: 06-Dec-2024 11:00
PO	: 22330-J3019	Issue Date	: 31-Dec-2024 10:50
C-O-C number	: -----		
Sampler	: -----		
Site	: -----		
Quote number	: ALSEQ24-265 Reworld		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers
Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- No Matrix Spike Duplicate (MSD) outliers occur - please see following pages for full details.
- Method Blank value outliers occur - please see following pages for full details.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



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Work Order : BU2401302
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: Air

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Method 29 Metals: Fraction 1A (HF)	QC-MRG2-1815884 001	----	Copper	7440-50-8	E457A	4.2 ^B µg/sample _e	3 µg/sample	Blank result exceeds permitted value
Method 29 Metals: Fraction 1A (HF)	QC-MRG2-1815884 001	----	Nickel	7440-02-0	E457A	1.76 ^B µg/sample _e	0.6 µg/sample	Blank result exceeds permitted value

Result Qualifiers

Qualifier Description

B Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

Laboratory Control Sample (LCS) Recoveries								
Method 29 Metals: Fraction 1A (HF)	QC-MRG2-1815884 002	----	Barium	7440-39-3	E457A	73.8 % LCS-L	80.0-120%	Recovery less than lower control limit

Result Qualifiers

Qualifier Description

LCS-L Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.



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Work Order : BU2401302
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Air

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method		Method	Sampling Date	Extraction / Preparation				Analysis		
Container / Client Sample ID(s)	Preparation Date			Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Metals : Method 29 Metals: Fraction 2A by ICPMS										
M29 : 5% HNO3 + 10% H2O2 (Impingers) [#1 APC Outlet] 24-4547-PM-(19 thru 24) Blank1	E457B	05-Dec-2024	19-Dec-2024	28 days	14 days	✓	20-Dec-2024	28 days	15 days	✓
Metals : Method 29 Metals: Fraction 2A by ICPMS										
M29 : 5% HNO3 + 10% H2O2 (Impingers) [#2 APC Outlet] 24-4547-PM-(37 thru 42) Test#3	E457B	05-Dec-2024	19-Dec-2024	28 days	14 days	✓	20-Dec-2024	28 days	15 days	✓
Metals : Method 29 Metals: Fraction 2A by ICPMS										
M29 : 5% HNO3 + 10% H2O2 (Impingers) [#2 APC Outlet] 24-4547-PM-(43 thru 48) Blank2	E457B	05-Dec-2024	19-Dec-2024	28 days	14 days	✓	20-Dec-2024	28 days	15 days	✓
Metals : Method 29 Metals: Fraction 2A by ICPMS										
M29 : 5% HNO3 + 10% H2O2 (Impingers) [#1 APC Outlet] 24-4547-PM-(13 thru 18) Test#3	E457B	04-Dec-2024	19-Dec-2024	28 days	15 days	✓	20-Dec-2024	28 days	16 days	✓
Metals : Method 29 Metals: Fraction 2A by ICPMS										
M29 : 5% HNO3 + 10% H2O2 (Impingers) [#1 APC Outlet] 24-4547-PM-(7 thru 12) Test#2	E457B	04-Dec-2024	19-Dec-2024	28 days	15 days	✓	20-Dec-2024	28 days	16 days	✓
Metals : Method 29 Metals: Fraction 2A by ICPMS										
M29 : 5% HNO3 + 10% H2O2 (Impingers) [#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	E457B	03-Dec-2024	19-Dec-2024	28 days	16 days	✓	20-Dec-2024	28 days	17 days	✓
Metals : Method 29 Metals: Fraction 2A by ICPMS										
M29 : 5% HNO3 + 10% H2O2 (Impingers) [#2 APC Outlet] 24-4547-PM-(25 thru 30) Test#1	E457B	03-Dec-2024	19-Dec-2024	28 days	16 days	✓	20-Dec-2024	28 days	17 days	✓



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Work Order : BU2401302
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Matrix: Air													
Analyte Group : Analytical Method				Extraction / Preparation			Analysis						
Container / Client Sample ID(s)				Preparation Date	Holding Times Rec	Actual	Eval	Analysis Date	Holding Times Rec	Actual	Eval		
Metals : Method 29 Metals: Fraction 2A by ICPMS													
M29 : 5% HNO3 + 10% H2O2 (Impingers) [#2 APC Outlet] 24-4547-PM-(31 thru 36) Test#2				E457B	03-Dec-2024	19-Dec-2024	28 days	16 days	✓	20-Dec-2024	28 days	17 days	✓
Method 29 Mercury: Fraction 1B (HF) : Method 29 Mercury: Fraction 1B (HF) by CVAAS													
M29 : 0.1N HNO3 (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(19 thru 24) Blank1				E521A	05-Dec-2024	19-Dec-2024	28 days	14 days	✓	19-Dec-2024	28 days	15 days	✓
Method 29 Mercury: Fraction 1B (HF) : Method 29 Mercury: Fraction 1B (HF) by CVAAS													
M29 : 0.1N HNO3 (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(37 thru 42) Test#3				E521A	05-Dec-2024	19-Dec-2024	28 days	14 days	✓	19-Dec-2024	28 days	15 days	✓
Method 29 Mercury: Fraction 1B (HF) : Method 29 Mercury: Fraction 1B (HF) by CVAAS													
M29 : 0.1N HNO3 (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(43 thru 48) Blank2				E521A	05-Dec-2024	19-Dec-2024	28 days	14 days	✓	19-Dec-2024	28 days	15 days	✓
Method 29 Mercury: Fraction 1B (HF) : Method 29 Mercury: Fraction 1B (HF) by CVAAS													
M29 : 0.1N HNO3 (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(13 thru 18) Test#3				E521A	04-Dec-2024	19-Dec-2024	28 days	15 days	✓	19-Dec-2024	28 days	16 days	✓
Method 29 Mercury: Fraction 1B (HF) : Method 29 Mercury: Fraction 1B (HF) by CVAAS													
M29 : 0.1N HNO3 (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(7 thru 12) Test#2				E521A	04-Dec-2024	19-Dec-2024	28 days	15 days	✓	19-Dec-2024	28 days	16 days	✓
Method 29 Mercury: Fraction 1B (HF) : Method 29 Mercury: Fraction 1B (HF) by CVAAS													
M29 : 0.1N HNO3 (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1				E521A	03-Dec-2024	19-Dec-2024	28 days	16 days	✓	19-Dec-2024	28 days	17 days	✓
Method 29 Mercury: Fraction 1B (HF) : Method 29 Mercury: Fraction 1B (HF) by CVAAS													
M29 : 0.1N HNO3 (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(25 thru 30) Test#1				E521A	03-Dec-2024	19-Dec-2024	28 days	16 days	✓	19-Dec-2024	28 days	17 days	✓
Method 29 Mercury: Fraction 1B (HF) : Method 29 Mercury: Fraction 1B (HF) by CVAAS													
M29 : 0.1N HNO3 (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(31 thru 36) Test#2				E521A	03-Dec-2024	19-Dec-2024	28 days	16 days	✓	19-Dec-2024	28 days	17 days	✓



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Work Order : BU2401302
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time									
Matrix: Air		Extraction / Preparation			Analysis				
Analyte Group : Analytical Method	Method	Sampling Date	Preparation Date	Holding Times Rec Actual	Eval	Analysis Date	Holding Times Rec Actual	Eval	
Container / Client Sample ID(s)									
Method 29 Metals: Fraction 1A (HF) : Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS									
M29 : 0.1N HNO3 (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(19 thru 24) Blank1	E457A	05-Dec-2024	19-Dec-2024	28 days 14 days	✓	20-Dec-2024	28 days 15 days		✓
Method 29 Metals: Fraction 1A (HF) : Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS									
M29 : 0.1N HNO3 (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(37 thru 42) Test#3	E457A	05-Dec-2024	19-Dec-2024	28 days 14 days	✓	20-Dec-2024	28 days 15 days		✓
Method 29 Metals: Fraction 1A (HF) : Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS									
M29 : 0.1N HNO3 (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(43 thru 48) Blank2	E457A	05-Dec-2024	19-Dec-2024	28 days 14 days	✓	20-Dec-2024	28 days 15 days		✓
Method 29 Metals: Fraction 1A (HF) : Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS									
M29 : 0.1N HNO3 (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(13 thru 18) Test#3	E457A	04-Dec-2024	19-Dec-2024	28 days 15 days	✓	20-Dec-2024	28 days 16 days		✓
Method 29 Metals: Fraction 1A (HF) : Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS									
M29 : 0.1N HNO3 (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(7 thru 12) Test#2	E457A	04-Dec-2024	19-Dec-2024	28 days 15 days	✓	20-Dec-2024	28 days 16 days		✓
Method 29 Metals: Fraction 1A (HF) : Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS									
M29 : 0.1N HNO3 (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	E457A	03-Dec-2024	19-Dec-2024	28 days 16 days	✓	20-Dec-2024	28 days 17 days		✓
Method 29 Metals: Fraction 1A (HF) : Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS									
M29 : 0.1N HNO3 (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(25 thru 30) Test#1	E457A	03-Dec-2024	19-Dec-2024	28 days 16 days	✓	20-Dec-2024	28 days 17 days		✓
Method 29 Metals: Fraction 1A (HF) : Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS									
M29 : 0.1N HNO3 (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(31 thru 36) Test#2	E457A	03-Dec-2024	19-Dec-2024	28 days 16 days	✓	20-Dec-2024	28 days 17 days		✓
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry									
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(19 thru 24) Blank1	E897A	05-Dec-2024	----	----		18-Dec-2024	----		14 days



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Work Order : BU2401302
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time														
Analyte Group : Analytical Method Container / Client Sample ID(s)		Method	Sampling Date	Extraction / Preparation				Analysis						
				Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval			
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(37 thru 42) Test#3		E897A	05-Dec-2024	-----	-----	-----		18-Dec-2024	-----	14 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(43 thru 48) Blank2		E897A	05-Dec-2024	-----	-----	-----		18-Dec-2024	-----	14 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(13 thru 18) Test#3		E897A	04-Dec-2024	-----	-----	-----		18-Dec-2024	-----	15 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(7 thru 12) Test#2		E897A	04-Dec-2024	-----	-----	-----		18-Dec-2024	-----	15 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1		E897A	03-Dec-2024	-----	-----	-----		18-Dec-2024	-----	16 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(25 thru 30) Test#1		E897A	03-Dec-2024	-----	-----	-----		18-Dec-2024	-----	16 days				
Particulates : Particulates in Stack Emission Acetone Rinse by Gravimetry														
M5/M29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(31 thru 36) Test#2		E897A	03-Dec-2024	-----	-----	-----		18-Dec-2024	-----	16 days				
Particulates : Particulates in Stack Emission Filter by Gravimetry														
M5/M29 : Quartz Filter [#1 APC Outlet] 24-4547-PM-(13 thru 18) Test#3		E890	04-Dec-2024	-----	-----	-----		13-Dec-2024	-----	10 days				
Particulates : Particulates in Stack Emission Filter by Gravimetry														
M5/M29 : Quartz Filter [#1 APC Outlet] 24-4547-PM-(7 thru 12) Test#2		E890	04-Dec-2024	-----	-----	-----		13-Dec-2024	-----	10 days				



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Work Order : BU2401302
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Matrix: Air											
Analyte Group : Analytical Method				Method	Sampling Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Preparation Date			Holding Times Rec	Actual	Eval	Analysis Date	Holding Times Rec	Actual
Particulates : Particulates in Stack Emission Filter by Gravimetry											
M5/M29 : Quartz Filter				E890	03-Dec-2024						
#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1											11 days
Particulates : Particulates in Stack Emission Filter by Gravimetry											
M5/M29 : Quartz Filter				E890	03-Dec-2024						
#2 APC Outlet] 24-4547-PM-(25 thru 30) Test#1											11 days
Particulates : Particulates in Stack Emission Filter by Gravimetry											
M5/M29 : Quartz Filter				E890	03-Dec-2024						
#2 APC Outlet] 24-4547-PM-(31 thru 36) Test#2											11 days
Particulates : Particulates in Stack Emission Filter by Gravimetry											
M5/M29 : Quartz Filter				E890	05-Dec-2024						
#1 APC Outlet] 24-4547-PM-(19 thru 24) Blank1											9 days
Particulates : Particulates in Stack Emission Filter by Gravimetry											
M5/M29 : Quartz Filter				E890	05-Dec-2024						
#2 APC Outlet] 24-4547-PM-(37 thru 42) Test#3											9 days
Particulates : Particulates in Stack Emission Filter by Gravimetry											
M5/M29 : Quartz Filter				E890	05-Dec-2024						
#2 APC Outlet] 24-4547-PM-(43 thru 48) Blank2											9 days
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)				E898A	05-Dec-2024						
#1 APC Outlet] 24-4547-PM-(19 thru 24) Blank1											13 days
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)				E898A	05-Dec-2024						
#2 APC Outlet] 24-4547-PM-(37 thru 42) Test#3											13 days
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry											
M5/M29 : Acetone (Probe Rinse)				E898A	05-Dec-2024						
#2 APC Outlet] 24-4547-PM-(43 thru 48) Blank2											13 days



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Work Order : BU2401302
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Matrix: Air

Matrix: Air											Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time				
Analyte Group : Analytical Method			Method	Sampling Date	Extraction / Preparation				Analysis						
Container / Client Sample ID(s)					Preparation Date	Holding Times		Eval	Analysis Date	Holding Times					
						Rec	Actual			Rec	Actual				
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry															
M5/IM29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(13 thru 18) Test#3			E898A	04-Dec-2024	-----	-----	-----	17-Dec-2024	-----	14 days					
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry															
M5/IM29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(7 thru 12) Test#2			E898A	04-Dec-2024	-----	-----	-----	17-Dec-2024	-----	14 days					
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry															
M5/IM29 : Acetone (Probe Rinse) [#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1			E898A	03-Dec-2024	-----	-----	-----	17-Dec-2024	-----	15 days					
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry															
M5/IM29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(25 thru 30) Test#1			E898A	03-Dec-2024	-----	-----	-----	17-Dec-2024	-----	15 days					
Particulates : Stack Emission Acetone Rinse Mass by Gravimetry															
M5/IM29 : Acetone (Probe Rinse) [#2 APC Outlet] 24-4547-PM-(31 thru 36) Test#2			E898A	03-Dec-2024	-----	-----	-----	17-Dec-2024	-----	15 days					

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Air

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type		QC Lot #	Count		Frequency (%)		
Analytical Methods			QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Method 29 Mercury: Fraction 1B (HF) by CVAAS Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS Method 29 Metals: Fraction 2A by ICPMS Particulates in Stack Emission Acetone Rinse by Gravimetry Particulates in Stack Emission Filter by Gravimetry Stack Emission Acetone Rinse Mass by Gravimetry	E521A	1815885	1	8	12.5	5.0	✓
	E457A	1815884	1	8	12.5	5.0	✓
	E457B	1815889	1	19	5.2	5.0	✓
	E897A	1806113	1	16	6.2	5.0	✓
	E890	1801139	1	8	12.5	5.0	✓
	E898A	1806111	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Method 29 Mercury: Fraction 1B (HF) by CVAAS Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS Method 29 Metals: Fraction 2A by ICPMS	E521A	1815885	1	8	12.5	5.0	✓
	E457A	1815884	1	8	12.5	5.0	✓
	E457B	1815889	1	19	5.2	5.0	✓
Method Blanks (MB)							
Method 29 Mercury: Fraction 1B (HF) by CVAAS Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS Method 29 Metals: Fraction 2A by ICPMS Particulates in Stack Emission Acetone Rinse by Gravimetry Particulates in Stack Emission Filter by Gravimetry Stack Emission Acetone Rinse Mass by Gravimetry	E521A	1815885	1	8	12.5	5.0	✓
	E457A	1815884	1	8	12.5	5.0	✓
	E457B	1815889	1	19	5.2	5.0	✓
	E897A	1806113	1	16	6.2	5.0	✓
	E890	1801139	1	8	12.5	5.0	✓
	E898A	1806111	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Method 29 Mercury: Fraction 1B (HF) by CVAAS Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS Method 29 Metals: Fraction 2A by ICPMS	E521A	1815885	1	8	12.5	5.0	✓
	E457A	1815884	1	8	12.5	5.0	✓
	E457B	1815889	1	19	5.2	5.0	✓
Matrix Spike Duplicates (MSD)							
Method 29 Mercury: Fraction 1B (HF) by CVAAS Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS Method 29 Metals: Fraction 2A by ICPMS	E521A	1815885	1	8	12.5	5.0	✓
	E457A	1815884	1	8	12.5	5.0	✓
	E457B	1815889	1	19	5.2	5.0	✓



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Method 29 Metals: Fraction 1A (hydrofluoric) by ICPMS	E457A ALS Environmental - Burlington	Air	EPA Method 29 (preparation), EPA Method 6020B (analytical)	Front-half (FH) sample fractions are combined for closed-vessel microwave digestion in hydrofluoric acid. After digestion, samples are submitted to instruments for analysis by ICP-MS.
Method 29 Metals: Fraction 2A by ICPMS	E457B ALS Environmental - Burlington	Air	EPA Method 29 (preparation), EPA Method 6020B (analytical)	Back-half (BH) samples are digested using an open vessel procedure. After digestion, samples are submitted to instruments for analysis by ICP-MS.
Method 29 Mercury: Fraction 1B (HF) by CVAAS	E521A ALS Environmental - Burlington	Air	EPA Method 29 (preparation), EPA Method 7470A (analysis)	After microwave digestion, a sub-sample is re-digested in oxidizing reagents, using an open-vessel hotblock method. Samples are treated with a reductant to facilitate analysis by CVAAS.
Particulates in Stack Emission Filter by Gravimetry	E890 ALS Environmental - Burlington	Air	EPA Method 5 (mod.)	Gravimetric analysis of particulate air samples collected on filters.
Particulates in Stack Emission Acetone Rinse by Gravimetry	E897A ALS Environmental - Burlington	Air	EPA Method 5 (mod.)	Gravimetric analysis of particulate air samples collected in acetone rinses.
Stack Emission Acetone Rinse Mass by Gravimetry	E898A ALS Environmental - Burlington	Air	EPA Method 5 (mod.)	Gravimetric analysis of acetone mass from rinses.
Hg Fraction 2B (Method 29) - CALC	EC521B ALS Environmental - Burlington	Air	unit conversion	Convert ug/L to ug/sample
Hg Fraction 3B (Method 29) - CALC	EC521D ALS Environmental - Burlington	Air	unit conversion	Convert ug/L to ug/sample
Hg Fraction 3C (Method 29) - CALC	EC521E ALS Environmental - Burlington	Air	unit conversion	Convert ug/L to ug/sample

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions



Preparation Methods		Method / Lab	Matrix	Method Reference	Method Descriptions
Sample preparation (HF) for Fraction 1A/1B Stack Metals		EP457A ALS Environmental - Burlington	Air	EPA Method 29 (preparation)	Samples are digested using hydrofluoric acid in a closed vessel procedure. Analysis by ICP-MS (1A) or CVAA (1B) follows.
		EP457B ALS Environmental - Burlington	Air	EPA Method 29 (preparation)	Samples are digested using an open vessel procedure. Analysis by ICP-MS (2A) or CVAA (2B) follows.



QUALITY CONTROL REPORT

Work Order	: BU2401302	Page	: 1 of 11
Client	: ORTECH Environmental Inc.	Laboratory	: ALS Environmental - Burlington
Contact	: Chris Belore	Account Manager	: Lynne Wrona
Address	: 804 Southdown Road Mississauga ON Canada L5J 2Y4	Address	: 1435 Norjohn Court, Unit 1 Burlington, Ontario Canada L7L 0E6
Telephone	: 905 822 4120	Telephone	: +1 905 331 3111
Project	: AST-2024-4547 / 22330 Reworld	Date Samples Received	: 06-Dec-2024 11:00
PO	: 22330-J3019	Date Analysis Commenced	: 10-Dec-2024
C-O-C number	: ----	Issue Date	: 31-Dec-2024 10:50
Sampler	: ----		
Site	: ----		
Quote number	: ALSEQ24-265 Reworld		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Matrix Spike Duplicate (MSD) Report; Relative Percent Difference (RPD)
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Milithza Silva	Manager - Inorganics	Burlington Inorganics, Burlington, Ontario
Milithza Silva	Manager - Inorganics	Burlington Metals, Burlington, Ontario
Wayne Smith	Client Services Specialist	Burlington Metals, Burlington, Ontario



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Work Order : BU2401302
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "...." if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Air			Laboratory Duplicate (DUP) Report										
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Particulates (QC Lot: 1801139)													
BU2401302-001	[#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	Particulate matter, filter	----	E890	0.6	mg	<0.6	<0.6	0	Diff <2x LOR	----		
Particulates (QC Lot: 1806111)													
BU2401302-001	[#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	mass, acetone [FRONT]	----	E898A	0.40	g	134	134	0.00%	10%	----		
Particulates (QC Lot: 1806113)													
BU2401302-001	[#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	particulate matter, acetone impinger [FRONT]	----	E897A	0.4	mg	0.9	0.9	0	Diff <2x LOR	----		
Metals (QC Lot: 1815889)													
BU2401282-001	Anonymous	Antimony	7440-36-0	E457B	0.10	µg/sample	<0.10	<0.10	0	Diff <2x LOR	J		
		Arsenic	7440-38-2	E457B	0.50	µg/sample	<0.50	<0.50	0	Diff <2x LOR	J		
		Barium	7440-39-3	E457B	2.5	µg/sample	2.7	2.6	0.1	Diff <2x LOR	J		
		Beryllium	7440-41-7	E457B	0.10	µg/sample	<0.10	<0.10	0	Diff <2x LOR	J		
		Cadmium	7440-43-9	E457B	0.050	µg/sample	<0.050	<0.050	0	Diff <2x LOR	J		
		Chromium	7440-47-3	E457B	0.50	µg/sample	2.19	2.09	0.10	Diff <2x LOR	J		
		Cobalt	7440-48-4	E457B	0.10	µg/sample	0.28	0.28	0.004	Diff <2x LOR	J		
		Copper	7440-50-8	E457B	0.50	µg/sample	4.72	4.50	0.22	Diff <2x LOR	J		
		Lead	7439-92-1	E457B	0.25	µg/sample	1.27	1.24	0.03	Diff <2x LOR	J		
		Manganese	7439-96-5	E457B	0.25	µg/sample	1.51	1.49	0.02	Diff <2x LOR	J		
		Nickel	7440-02-0	E457B	0.10	µg/sample	1.25	1.19	5.41%	20%	----		
		Selenium	7782-49-2	E457B	1.0	µg/sample	146	138	5.21%	20%	----		
		Silver	7440-22-4	E457B	0.10	µg/sample	<0.10	<0.10	0	Diff <2x LOR	J		
		Thallium	7440-28-0	E457B	0.10	µg/sample	<0.10	<0.10	0	Diff <2x LOR	J		
		Zinc	7440-66-6	E457B	3.0	µg/sample	23.1	21.3	1.8	Diff <2x LOR	J		
Method 29 Metals: Fraction 1A (HF) (QC Lot: 1815884)													
BU2401302-001	[#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	Antimony	7440-36-0	E457A	0.20	µg/sample	<0.20	<0.20	0	Diff <2x LOR	J		
		Arsenic	7440-38-2	E457A	1.0	µg/sample	<1.0	<1.0	0	Diff <2x LOR	J		
		Barium	7440-39-3	E457A	5.0	µg/sample	49.2	50.2	1.0	Diff <2x LOR	J		
		Beryllium	7440-41-7	E457A	0.20	µg/sample	<0.20	<0.20	0	Diff <2x LOR	J		



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Work Order : BU2401302
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Sub-Matrix: Air			Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Method 29 Metals: Fraction 1A (HF) (QC Lot: 1815884) - continued											
BU2401302-001	[#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	Cadmium	7440-43-9	E457A	0.10	µg/sample	0.11	<0.10	0.01	Diff <2x LOR	J
		Chromium	7440-47-3	E457A	1.0	µg/sample	2.8	2.7	0.1	Diff <2x LOR	J
		Cobalt	7440-48-4	E457A	0.20	µg/sample	<0.20	<0.20	0	Diff <2x LOR	J
		Copper	7440-50-8	E457A	1.0	µg/sample	3.4	3.2	0.1	Diff <2x LOR	J
		Lead	7439-92-1	E457A	0.50	µg/sample	<0.50	<0.50	0	Diff <2x LOR	J
		Manganese	7439-96-5	E457A	0.50	µg/sample	1.69	1.56	0.13	Diff <2x LOR	J
		Nickel	7440-02-0	E457A	0.20	µg/sample	1.45	1.46	0.01	Diff <2x LOR	J
		Selenium	7782-49-2	E457A	2.0	µg/sample	<2.0	<2.0	0	Diff <2x LOR	J
		Silver	7440-22-4	E457A	0.20	µg/sample	<0.20	<0.20	0	Diff <2x LOR	J
		Thallium	7440-28-0	E457A	0.20	µg/sample	<0.20	<0.20	0	Diff <2x LOR	J
		Zinc	7440-66-6	E457A	6.0	µg/sample	46.6	44.1	2.6	Diff <2x LOR	J
Method 29 Mercury: Fraction 1B (HF) (QC Lot: 1815885)											
BU2401302-001	[#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	Mercury	7439-97-6	E521A	0.022	µg/sample	<0.022	<0.022	0	Diff <2x LOR	J

Qualifiers

Qualifier

J

Description

Duplicate results and limits are expressed in terms of absolute difference.



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Air

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Particulates (QCLot: 1801139)						
Particulate matter, filter	---	E890	0.6	mg	<0.6	---
Particulates (QCLot: 1806111)						
mass, acetone [FRONT]	---	E898A	0.4	g	25.1	---
Particulates (QCLot: 1806113)						
particulate matter, acetone impinger [FRONT]	---	E897A	0.4	mg	<0.4	---
Metals (QCLot: 1815889)						
Antimony	7440-36-0	E457B	0.1	µg/sample	<0.10	---
Arsenic	7440-38-2	E457B	0.5	µg/sample	<0.50	---
Barium	7440-39-3	E457B	2.5	µg/sample	<2.5	---
Beryllium	7440-41-7	E457B	0.1	µg/sample	<0.10	---
Cadmium	7440-43-9	E457B	0.05	µg/sample	<0.050	---
Chromium	7440-47-3	E457B	0.5	µg/sample	<0.50	---
Cobalt	7440-48-4	E457B	0.1	µg/sample	<0.10	---
Copper	7440-50-8	E457B	0.5	µg/sample	<0.50	---
Lead	7439-92-1	E457B	0.25	µg/sample	<0.25	---
Manganese	7439-96-5	E457B	0.25	µg/sample	<0.25	---
Nickel	7440-02-0	E457B	0.1	µg/sample	0.12	---
Selenium	7782-49-2	E457B	1	µg/sample	<1.0	---
Silver	7440-22-4	E457B	0.1	µg/sample	<0.10	---
Thallium	7440-28-0	E457B	0.1	µg/sample	<0.10	---
Zinc	7440-66-6	E457B	3	µg/sample	<3.0	---
Method 29 Metals: Fraction 1A (HF) (QCLot: 1815884)						
Antimony	7440-36-0	E457A	0.2	µg/sample	<0.20	---
Arsenic	7440-38-2	E457A	1	µg/sample	<1.0	---
Barium	7440-39-3	E457A	5	µg/sample	<5.0	---
Beryllium	7440-41-7	E457A	0.2	µg/sample	<0.20	---
Cadmium	7440-43-9	E457A	0.1	µg/sample	<0.10	---
Chromium	7440-47-3	E457A	1	µg/sample	2.6	---
Cobalt	7440-48-4	E457A	0.2	µg/sample	<0.20	---
Copper	7440-50-8	E457A	1	µg/sample	# 4.2	B
Lead	7439-92-1	E457A	0.5	µg/sample	<0.50	---
Manganese	7439-96-5	E457A	0.5	µg/sample	1.16	---



Sub-Matrix: Air

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Method 29 Metals: Fraction 1A (HF) (QCLot: 1815884) - continued						
Nickel	7440-02-0	E457A	0.2	µg/sample	# 1.76	B
Selenium	7782-49-2	E457A	2	µg/sample	<2.0	---
Silver	7440-22-4	E457A	0.2	µg/sample	<0.20	---
Thallium	7440-28-0	E457A	0.2	µg/sample	<0.20	---
Zinc	7440-66-6	E457A	6	µg/sample	<6.0	---
Method 29 Mercury: Fraction 1B (HF) (QCLot: 1815885)						
Mercury	7439-97-6	E521A	0.022	µg/sample	<0.022	---

Qualifiers

Qualifier

Description

B Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Air

Laboratory Control Sample (LCS) Report									
				Spike		Recovery (%)		Recovery Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1815889)									
Antimony	7440-36-0	E457B	0.1	µg/sample	100 µg/sample	97.3	80.0	120	-----
Arsenic	7440-38-2	E457B	0.5	µg/sample	100 µg/sample	104	80.0	120	-----
Barium	7440-39-3	E457B	2.5	µg/sample	25 µg/sample	102	80.0	120	-----
Beryllium	7440-41-7	E457B	0.1	µg/sample	10 µg/sample	94.4	80.0	120	-----
Cadmium	7440-43-9	E457B	0.05	µg/sample	10 µg/sample	98.6	80.0	120	-----
Chromium	7440-47-3	E457B	0.5	µg/sample	25 µg/sample	100	80.0	120	-----
Cobalt	7440-48-4	E457B	0.1	µg/sample	25 µg/sample	99.5	80.0	120	-----
Copper	7440-50-8	E457B	0.5	µg/sample	25 µg/sample	99.9	80.0	120	-----
Lead	7439-92-1	E457B	0.25	µg/sample	50 µg/sample	94.5	80.0	120	-----
Manganese	7439-96-5	E457B	0.25	µg/sample	25 µg/sample	96.9	80.0	120	-----
Nickel	7440-02-0	E457B	0.1	µg/sample	50 µg/sample	97.2	80.0	120	-----
Selenium	7782-49-2	E457B	1	µg/sample	100 µg/sample	94.1	80.0	120	-----
Silver	7440-22-4	E457B	0.1	µg/sample	10 µg/sample	87.7	80.0	120	-----
Thallium	7440-28-0	E457B	0.1	µg/sample	100 µg/sample	95.1	80.0	120	-----
Zinc	7440-66-6	E457B	3	µg/sample	50 µg/sample	97.9	80.0	120	-----
Method 29 Metals: Fraction 1A (HF) (QCLot: 1815884)									
Antimony	7440-36-0	E457A	0.2	µg/sample	50 µg/sample	95.5	80.0	120	-----
Arsenic	7440-38-2	E457A	1	µg/sample	50 µg/sample	101	80.0	120	LCS-L
Barium	7440-39-3	E457A	5	µg/sample	12.5 µg/sample	# 73.8	80.0	120	
Beryllium	7440-41-7	E457A	0.2	µg/sample	5 µg/sample	87.8	80.0	120	
Cadmium	7440-43-9	E457A	0.1	µg/sample	5 µg/sample	95.8	80.0	120	
Chromium	7440-47-3	E457A	1	µg/sample	12.5 µg/sample	85.0	80.0	120	
Cobalt	7440-48-4	E457A	0.2	µg/sample	12.5 µg/sample	98.3	80.0	120	
Copper	7440-50-8	E457A	1	µg/sample	12.5 µg/sample	99.6	80.0	120	
Lead	7439-92-1	E457A	0.5	µg/sample	25 µg/sample	94.8	80.0	120	
Manganese	7439-96-5	E457A	0.5	µg/sample	12.5 µg/sample	84.6	80.0	120	
Nickel	7440-02-0	E457A	0.2	µg/sample	25 µg/sample	98.3	80.0	120	
Selenium	7782-49-2	E457A	2	µg/sample	50 µg/sample	95.5	80.0	120	
Silver	7440-22-4	E457A	0.2	µg/sample	5 µg/sample	84.2	80.0	120	
Thallium	7440-28-0	E457A	0.2	µg/sample	50 µg/sample	93.9	80.0	120	-----
Zinc	7440-66-6	E457A	6	µg/sample	25 µg/sample	93.7	80.0	120	-----



Sub-Matrix: Air

					Laboratory Control Sample (LCS) Report			
					Spike	Recovery (%)	Recovery Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High
Method 29 Mercury: Fraction 1B (HF) (QCLot: 1815885)								
Mercury	7439-97-6	E521A	0.022	µg/sample	0.3 µg/sample	95.1	90.0	110

Qualifiers

Qualifier	Description
LCS-L	Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Air

Matrix Spike (MS) Report										
				Spike		Recovery (%)		Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Metals (QCLot: 1815889)										
BU2401282-001	Anonymous	Antimony	7440-36-0	E457B	101 µg/sample	100 µg/sample	101	80.0	120	----
		Arsenic	7440-38-2	E457B	99.0 µg/sample	100 µg/sample	99.0	80.0	120	----
		Barium	7440-39-3	E457B	24.5 µg/sample	25 µg/sample	97.9	80.0	120	----
		Beryllium	7440-41-7	E457B	9.46 µg/sample	10 µg/sample	94.6	80.0	120	----
		Cadmium	7440-43-9	E457B	9.79 µg/sample	10 µg/sample	97.9	80.0	120	----
		Chromium	7440-47-3	E457B	24.3 µg/sample	25 µg/sample	97.1	80.0	120	----
		Cobalt	7440-48-4	E457B	24.4 µg/sample	25 µg/sample	97.8	80.0	120	----
		Copper	7440-50-8	E457B	24.1 µg/sample	25 µg/sample	96.3	80.0	120	----
		Lead	7439-92-1	E457B	47.0 µg/sample	50 µg/sample	94.0	80.0	120	----
		Manganese	7439-96-5	E457B	23.9 µg/sample	25 µg/sample	95.6	80.0	120	----
		Nickel	7440-02-0	E457B	48.2 µg/sample	50 µg/sample	96.4	80.0	120	----
		Selenium	7782-49-2	E457B	ND µg/sample	-----	ND	80.0	120	----
		Silver	7440-22-4	E457B	8.67 µg/sample	10 µg/sample	86.7	80.0	120	----
		Thallium	7440-28-0	E457B	94.6 µg/sample	100 µg/sample	94.6	80.0	120	----
		Zinc	7440-66-6	E457B	44.7 µg/sample	50 µg/sample	89.4	80.0	120	----
Method 29 Metals: Fraction 1A (HF) (QCLOT: 1815884)										
BU2401302-001	[#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	Antimony	7440-36-0	E457A	49.0 µg/sample	50 µg/sample	98.0	80.0	120	----
		Arsenic	7440-38-2	E457A	50.4 µg/sample	50 µg/sample	101	80.0	120	----
		Barium	7440-39-3	E457A	ND µg/sample	-----	ND	80.0	120	----
		Beryllium	7440-41-7	E457A	4.67 µg/sample	5 µg/sample	93.4	80.0	120	----
		Cadmium	7440-43-9	E457A	4.90 µg/sample	5 µg/sample	98.0	80.0	120	----
		Chromium	7440-47-3	E457A	12.5 µg/sample	12.5 µg/sample	99.7	80.0	120	----
		Cobalt	7440-48-4	E457A	12.3 µg/sample	12.5 µg/sample	98.5	80.0	120	----
		Copper	7440-50-8	E457A	12.4 µg/sample	12.5 µg/sample	99.2	80.0	120	----
		Lead	7439-92-1	E457A	24.4 µg/sample	25 µg/sample	97.8	80.0	120	----
		Manganese	7439-96-5	E457A	12.4 µg/sample	12.5 µg/sample	98.8	80.0	120	----
		Nickel	7440-02-0	E457A	24.4 µg/sample	25 µg/sample	97.4	80.0	120	----
		Selenium	7782-49-2	E457A	49.0 µg/sample	50 µg/sample	97.9	80.0	120	----
		Silver	7440-22-4	E457A	4.39 µg/sample	5 µg/sample	87.7	80.0	120	----
		Thallium	7440-28-0	E457A	47.0 µg/sample	50 µg/sample	94.1	80.0	120	----
		Zinc	7440-66-6	E457A	ND µg/sample	-----	ND	80.0	120	----
Method 29 Mercury: Fraction 1B (HF) (QCLOT: 1815885)										
BU2401302-001	[#1 APC Outlet] 24-4547-PM-(1 thru 6) Test#1	Mercury	7439-97-6	E521A	0.287 µg/sample	0.3 µg/sample	95.8	75.0	125	----



Matrix Spike Duplicate (MSD) Report

A Matrix Spike Duplicate (MSD) is a duplicate of a Matrix Spike (MS), which has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spike Duplicates provide information regarding method precision. ALS DQOs for Matrix Spike Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD).

Sub-Matrix: Air												
Laboratory sample ID		Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	MSD Result	RPD(%) or Difference	MSD Limits	Qualifier
Metals (QC Lot: 1815889)												
QC-181588-005	Anonymous		Antimony	7440-36-0	E457B	0.10	µg/sample	101	105	3.88%	20%	----
			Arsenic	7440-38-2	E457B	0.50	µg/sample	99.0	104	4.93%	20%	----
			Barium	7440-39-3	E457B	2.5	µg/sample	27.2	28.8	6.04%	20%	----
			Beryllium	7440-41-7	E457B	0.10	µg/sample	9.48	9.78	3.22%	20%	----
			Cadmium	7440-43-9	E457B	0.050	µg/sample	9.82	10.3	4.10%	20%	----
			Chromium	7440-47-3	E457B	0.50	µg/sample	26.5	27.3	3.94%	20%	----
			Cobalt	7440-48-4	E457B	0.10	µg/sample	24.7	26.1	5.18%	20%	----
			Copper	7440-50-8	E457B	0.50	µg/sample	28.8	29.6	3.17%	20%	----
			Lead	7439-92-1	E457B	0.25	µg/sample	48.2	51.6	6.18%	20%	----
			Manganese	7439-96-5	E457B	0.25	µg/sample	25.4	26.7	5.49%	20%	----
			Nickel	7440-02-0	E457B	0.10	µg/sample	49.5	51.2	3.66%	20%	----
			Selenium	7782-49-2	E457B	1.0	µg/sample	230	234	----%	Diff <2x LOR	----
			Silver	7440-22-4	E457B	0.10	µg/sample	8.68	9.12	4.95%	20%	----
			Thallium	7440-28-0	E457B	0.10	µg/sample	94.6	98.1	3.73%	20%	----
			Zinc	7440-66-6	E457B	3.0	µg/sample	67.8	71.3	7.53%	20%	----
Method 29 Metals: Fraction 1A (HF) (QC Lot: 1815884)												
QC-MRG2-1-005			Antimony	7440-36-0	E457A	0.20	µg/sample	48.9	49.5	1.32%	20%	----
			Arsenic	7440-38-2	E457A	1.0	µg/sample	50.5	51.3	0.985%	20%	----
			Barium	7440-39-3	E457A	5.0	µg/sample	61.4	61.8	----%	Diff <2x LOR	----
			Beryllium	7440-41-7	E457A	0.20	µg/sample	4.70	4.88	3.88%	20%	----
			Cadmium	7440-43-9	E457A	0.10	µg/sample	5.01	5.04	0.509%	20%	----
			Chromium	7440-47-3	E457A	1.0	µg/sample	15.3	15.1	1.31%	20%	----
			Cobalt	7440-48-4	E457A	0.20	µg/sample	12.4	12.6	1.51%	20%	----
			Copper	7440-50-8	E457A	1.0	µg/sample	15.8	15.6	1.22%	20%	----
			Lead	7439-92-1	E457A	0.50	µg/sample	24.7	24.7	0.204%	20%	----
			Manganese	7439-96-5	E457A	0.50	µg/sample	14.0	14.4	2.20%	20%	----
			Nickel	7440-02-0	E457A	0.20	µg/sample	25.8	26.0	0.920%	20%	----
			Selenium	7782-49-2	E457A	2.0	µg/sample	49.0	47.8	2.38%	20%	----
			Silver	7440-22-4	E457A	0.20	µg/sample	4.42	4.52	2.37%	20%	----
			Thallium	7440-28-0	E457A	0.20	µg/sample	46.9	47.1	0.530%	20%	----
			Zinc	7440-66-6	E457A	6.0	µg/sample	68.9	68.4	----%	Diff <2x LOR	----



Sub-Matrix: Air				Matrix Spike Duplicate (MSD) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	MSD Result	RPD(%) or Difference	MSD Limits	Qualifier
Method 29 Mercury: Fraction 1B (HF) (QC Lot: 1815885)											
QC-MRG2-1-005		Mercury	7439-97-6	E521A	0.022	µg/sample	0.288	0.285	1.15%	20%	Pass

Alliance Technical Group - Sample Log
Particulate and Metals Samples
Reworld

Client: Reworld
 Project Number: AST-2024-4547 / 22330
 Received By: C Belore
 How Received: Train Recovery
 Job Assigned To: ALS
 QUOTE/PO:

Alliance Sample ID 24-4547-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
1	DEC 3 / 24	#1 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
2				Probe Rinse Nitric	0.1N Nitric	Metals
3				Filter	Particulate	Particulate & Metals
4				Impinger 1-4 Solution	Nitric/Peroxide	Metals
5				Impinger 5-6 Solution	Acid. KMnO4	Mercury
6				Impinger 5-6 Rinse	8N HCl	Mercury
7	DEC 4 / 24	#1 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
8				Probe Rinse Nitric	0.1N Nitric	Metals
9				Filter	Particulate	Particulate & Metals
10				Impinger 1-4 Solution	Nitric/Peroxide	Metals
11				Impinger 5-6 Solution	Acid. KMnO4	Mercury
12				Impinger 5-6 Rinse	8N HCl	Mercury
13	DEC 4 / 24	#1 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
14				Probe Rinse Nitric	0.1N Nitric	Metals
15				Filter	Particulate	Particulate & Metals
16				Impinger 1-4 Solution	Nitric/Peroxide	Metals
17				Impinger 5-6 Solution	Acid. KMnO4	Mercury
18				Impinger 5-6 Rinse	8N HCl	Mercury
19	DEC 5 / 24	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

Environmental Division
 Burlington

Work Order Reference

BU2401302



Telephone : +1 905 331 3111

Alliance Technical Group - Sample Log
Particulate and Metals Samples
Reworld

Client: Reworld
 Project Number: AST-2024-4547 / 22330
 Received By: C Belore
 How Received: Train Recovery
 Job Assigned To: ALS
 QUOTE/PO:

Alliance Sample ID	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
24-4547-PM-						
25	DEC 3/24	#2 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
26				Probe Rinse Nitric	0.1N Nitric	Metals
27				Filter	Particulate	Particulate & Metals
28				Impinger 1-4 Solution	Nitric/Peroxide	Metals
29				Impinger 5-6 Solution	Acid. KMnO4	Mercury
30				Impinger 5-6 Rinse	8N HCl	Mercury
31	DEC 3/24	#2 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
32				Probe Rinse Nitric	0.1N Nitric	Metals
33				Filter	Particulate	Particulate & Metals
34				Impinger 1-4 Solution	Nitric/Peroxide	Metals
35				Impinger 5-6 Solution	Acid. KMnO4	Mercury
36				Impinger 5-6 Rinse	8N HCl	Mercury
37	DEC 5/24	#2 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
38				Probe Rinse Nitric	0.1N Nitric	Metals
39				Filter	Particulate	Particulate & Metals
40				Impinger 1-4 Solution	Nitric/Peroxide	Metals
41				Impinger 5-6 Solution	Acid. KMnO4	Mercury
42				Impinger 5-6 Rinse	8N HCl	Mercury
43	DEC 5/24	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:

DEC 6/24

Relinquished To:

Aaron Burtan

Date:

6-Dec-2024 11:00

11.6°C

CERTIFICATE OF ANALYSIS

Work Order : BU2401300

Client	: ORTECH Environmental Inc.
Contact	: Chris Belore
Address	: 804 Southdown Road Mississauga Ontario Canada L5J 2Y4
Telephone	: 905 822 4120
Project	: AST-2024-4547 / 22330 Reworld
PO	: 22330-J3019
C-O-C number	: ~~XXXXXXXX~~
Sampler	: ~~XXXXXXXX~~
Site	: ~~XXXXXXXX~~
Quote number	: ALSEQ24-265 Reworld
No. of samples received	: 8
No. of samples analysed	: 8

Laboratory	: ALS Environmental - Burlington
Account Manager	: Lynne Wrona
Address	: 1435 Norjohm Court, Unit 1 Burlington ON Canada L7L 0E6
Telephone	: +1 905 331 3111
Date Samples Received	: 06-Dec-2024 11:00
Date Analysis Commenced	: 10-Dec-2024
Issue Date	: 20-Dec-2024 17:45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Gamini Nadu	Analyst	Inorganics, Burlington, Ontario
Milithza Silva	Manager - Inorganics	Inorganics, Burlington, Ontario



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	Description
L	litres
mg/L	milligrams per litre
mg/sample	milligrams per sample

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)		CAS Number	Method/Lab	Client sample ID		Client sampling date / time		[#1 APC Outlet] 24-4547-M26A-1	[#1 APC Outlet] 24-4547-M26A-2	[#1 APC Outlet] 24-4547-M26A-3	[#2 APC Outlet] 24-4547-M26A-4	[#2 APC Outlet] 24-4547-M26A-5
Analyte	LOR			Unit	04-Dec-2024 00:00	04-Dec-2024 00:00	04-Dec-2024 00:00	04-Dec-2024 00:00	03-Dec-2024 00:00			
Physical Tests												
Volume, impinger		n/a	EF003.I/BU	0.0010	L	0.480	0.470	0.435	0.450	0.455		
Inorganics												
Ammonia (as NH3)		8013-59-0	E253/BU	0.470	mg/L	1.92	1.86	1.91	1.63	1.60		
Ammonia, total (as NH3)		7664-41-7	EC253/BU	0.020	mg/sample	0.922	0.874	0.831	0.734	0.728		
Chloride, average		16887-00-6	E252/BU	0.47	mg/L	8.29	10.4	10.3	9.20	8.36		
Chloride, replicate 1		16887-00-6	E252/BU	0.47	mg/L	8.29	10.4	10.3	9.21	8.35		
Chloride, replicate 2		16887-00-6	E252/BU	0.47	mg/L	8.29	10.4	10.3	9.19	8.37		
Fluoride, average		----	E252/BU	0.31	mg/L	<0.31	<0.31	<0.31	<0.31	<0.31		
Fluoride, replicate 1		----	E252/BU	0.31	mg/L	<0.31	<0.31	<0.31	<0.31	<0.31		
Fluoride, replicate 2		----	E252/BU	0.31	mg/L	<0.31	<0.31	<0.31	<0.31	<0.31		
Hydrogen chloride, average		7647-01-0	EC252/BU	0.015	mg/sample	4.09	5.03	4.61	4.26	3.90		
Hydrogen chloride, replicate 1		7647-01-0	EC252/BU	0.015	mg/sample	4.09	5.03	4.61	4.26	3.90		
Hydrogen chloride, replicate 2		7647-01-0	EC252/BU	0.015	mg/sample	4.09	5.03	4.61	4.25	3.91		
Hydrogen fluoride, average		7664-39-3	EC252/BU	0.0098	mg/sample	<0.158	<0.155	<0.144	<0.148	<0.150		
Hydrogen fluoride, replicate 1		7664-39-3	EC252/BU	0.0098	mg/sample	<0.158	<0.155	<0.144	<0.148	<0.150		
Hydrogen fluoride, replicate 2		7664-39-3	EC252/BU	0.0098	mg/sample	<0.158	<0.155	<0.144	<0.148	<0.150		

Please refer to the General Comments section for an explanation of any result qualifiers detected.



Analytical Results

Sub-Matrix: Impinger
(Matrix: Air)

Sub-Matrix: Impinger (Matrix: Air)													
Analyte	CAS Number	Method/Lab	Client sample ID		Client sampling date / time		LOR	Unit	Result	Result	Result	Result	Result
Physical Tests													
Volume, impinger		n/a	EF003.I/BU		0.0010	L		0.460	0.320	0.315			
Inorganics													
Ammonia (as NH3)	8013-59-0	E253/BU	0.470	mg/L	1.53	<0.472	<0.472	<0.472	<0.472	<0.472			
Ammonia, total (as NH3)	7664-41-7	EC253/BU	0.020	mg/sample	0.704	<0.020	<0.020	<0.020	<0.020	<0.020			
Chloride, average	16887-00-6	E252/BU	0.47	mg/L	8.72	<0.47	<0.47	<0.47	<0.47	<0.47			
Chloride, replicate 1	16887-00-6	E252/BU	0.47	mg/L	8.71	<0.47	<0.47	<0.47	<0.47	<0.47			
Chloride, replicate 2	16887-00-6	E252/BU	0.47	mg/L	8.72	<0.47	<0.47	<0.47	<0.47	<0.47			
Fluoride, average	----	E252/BU	0.31	mg/L	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31			
Fluoride, replicate 1	----	E252/BU	0.31	mg/L	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31			
Fluoride, replicate 2	----	E252/BU	0.31	mg/L	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31			
Hydrogen chloride, average	7647-01-0	EC252/BU	0.015	mg/sample	4.12	<0.154	<0.154	<0.154	<0.154	<0.151			
Hydrogen chloride, replicate 1	7647-01-0	EC252/BU	0.015	mg/sample	4.12	<0.154	<0.154	<0.154	<0.154	<0.151			
Hydrogen chloride, replicate 2	7647-01-0	EC252/BU	0.015	mg/sample	4.12	<0.154	<0.154	<0.154	<0.154	<0.151			
Hydrogen fluoride, average	7664-39-3	EC252/BU	0.0098	mg/sample	<0.152	<0.106	<0.106	<0.106	<0.104	<0.104			
Hydrogen fluoride, replicate 1	7664-39-3	EC252/BU	0.0098	mg/sample	<0.152	<0.106	<0.106	<0.106	<0.104	<0.104			
Hydrogen fluoride, replicate 2	7664-39-3	EC252/BU	0.0098	mg/sample	<0.152	<0.106	<0.106	<0.106	<0.104	<0.104			

Please refer to the General Comments section for an explanation of any result qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: BU2401300	Page	: 1 of 7
Client	: ORTECH Environmental Inc.	Laboratory	: ALS Environmental - Burlington
Contact	: Chris Belore	Account Manager	: Lynne Wrona
Address	: 804 Southdown Road Mississauga ON Canada L5J 2Y4	Address	: 1435 Norjohn Court, Unit 1 Burlington, Ontario Canada L7L 0E6
Telephone	: 905 822 4120	Telephone	: +1 905 331 3111
Project	: AST-2024-4547 / 22330 Reworld	Date Samples Received	: 06-Dec-2024 11:00
PO	: 22330-J3019	Issue Date	: 20-Dec-2024 17:45
C-O-C number			
Sampler			
Site			
Quote number	: ALSEQ24-265 Reworld		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as " --- " if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers
Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Page : 3 of 7
Work Order : BU2401300
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Air

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)		Method	Sampling Date	Extraction / Preparation			Eval	Analysis		
				Preparation Date	Holding Times Rec	Actual		Analysis Date	Holding Times Rec	Actual
Inorganics : Ammonia by IC (CTM-027)										
M27 : 0.1N H2SO4 (Impinger)										
[#1 APC Outlet] 24-4547-M26A-1		E253	04-Dec-2024	10-Dec-2024	14 days	6 days	✔	10-Dec-2024	14 days	6 days
Inorganics : Ammonia by IC (CTM-027)										
M27 : 0.1N H2SO4 (Impinger)										
[#1 APC Outlet] 24-4547-M26A-2		E253	04-Dec-2024	10-Dec-2024	14 days	6 days	✔	10-Dec-2024	14 days	6 days
Inorganics : Ammonia by IC (CTM-027)										
M27 : 0.1N H2SO4 (Impinger)										
[#1 APC Outlet] 24-4547-M26A-3		E253	04-Dec-2024	10-Dec-2024	14 days	6 days	✔	10-Dec-2024	14 days	6 days
Inorganics : Ammonia by IC (CTM-027)										
M27 : 0.1N H2SO4 (Impinger)										
[#1 APC Outlet] 24-4547-M26A-Blank 1		E253	04-Dec-2024	10-Dec-2024	14 days	6 days	✔	10-Dec-2024	14 days	6 days
Inorganics : Ammonia by IC (CTM-027)										
M27 : 0.1N H2SO4 (Impinger)										
[#2 APC Outlet] 24-4547-M26A-Blank 2		E253	04-Dec-2024	10-Dec-2024	14 days	6 days	✔	10-Dec-2024	14 days	6 days
Inorganics : Ammonia by IC (CTM-027)										
M27 : 0.1N H2SO4 (Impinger)										
[#2 APC Outlet] 24-4547-M26A-4		E253	03-Dec-2024	10-Dec-2024	14 days	7 days	✔	10-Dec-2024	14 days	7 days
Inorganics : Ammonia by IC (CTM-027)										
M27 : 0.1N H2SO4 (Impinger)										
[#2 APC Outlet] 24-4547-M26A-5		E253	03-Dec-2024	10-Dec-2024	14 days	7 days	✔	10-Dec-2024	14 days	7 days



Page : 4 of 7
Work Order : BU2401300
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Matrix: Air													
Analyte Group - Analytical Method				Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)						Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
							Rec	Actual			Rec	Actual	
Inorganics : Ammonia by IC (CTM-027)													
M27 : 0.1N H2SO4 (Impinger) [#2 APC Outlet] 24-4547-M26A-6				E253	03-Dec-2024	10-Dec-2024	14 days	7 days	✓	10-Dec-2024	14 days	7 days	✓
Inorganics : Ion Chromatography Analysis (M26/26A Anions)													
M27 : 0.1N H2SO4 (Impinger) [#1 APC Outlet] 24-4547-M26A-1				E252	04-Dec-2024	10-Dec-2024	28 days	7 days	✓	10-Dec-2024	28 days	7 days	✓
Inorganics : Ion Chromatography Analysis (M26/26A Anions)													
M27 : 0.1N H2SO4 (Impinger) [#1 APC Outlet] 24-4547-M26A-2				E252	04-Dec-2024	10-Dec-2024	28 days	7 days	✓	10-Dec-2024	28 days	7 days	✓
Inorganics : Ion Chromatography Analysis (M26/26A Anions)													
M27 : 0.1N H2SO4 (Impinger) [#1 APC Outlet] 24-4547-M26A-3				E252	04-Dec-2024	10-Dec-2024	28 days	7 days	✓	10-Dec-2024	28 days	7 days	✓
Inorganics : Ion Chromatography Analysis (M26/26A Anions)													
M27 : 0.1N H2SO4 (Impinger) [#1 APC Outlet] 24-4547-M26A-Blank 1				E252	04-Dec-2024	10-Dec-2024	28 days	7 days	✓	10-Dec-2024	28 days	7 days	✓
Inorganics : Ion Chromatography Analysis (M26/26A Anions)													
M27 : 0.1N H2SO4 (Impinger) [#2 APC Outlet] 24-4547-M26A-Blank 2				E252	04-Dec-2024	10-Dec-2024	28 days	7 days	✓	10-Dec-2024	28 days	7 days	✓
Inorganics : Ion Chromatography Analysis (M26/26A Anions)													
M27 : 0.1N H2SO4 (Impinger) [#2 APC Outlet] 24-4547-M26A-4				E252	03-Dec-2024	10-Dec-2024	28 days	8 days	✓	10-Dec-2024	28 days	8 days	✓
Inorganics : Ion Chromatography Analysis (M26/26A Anions)													
M27 : 0.1N H2SO4 (Impinger) [#2 APC Outlet] 24-4547-M26A-5				E252	03-Dec-2024	10-Dec-2024	28 days	8 days	✓	10-Dec-2024	28 days	8 days	✓
Inorganics : Ion Chromatography Analysis (M26/26A Anions)													
M27 : 0.1N H2SO4 (Impinger) [#2 APC Outlet] 24-4547-M26A-6				E252	03-Dec-2024	10-Dec-2024	28 days	8 days	✓	10-Dec-2024	28 days	8 days	✓



Page : 5 of 7
Work Order : BU2401300
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Matrix: Air

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time										
Analyte Group : Analytical Method Container / Client Sample ID(s)		Method	Sampling Date	Extraction / Preparation			Analysis Date	Analysis		Eval
				Preparation Date	Holding Times Rec	Actual		Holding Times Rec	Actual	
Physical Tests : Stack Emission Impinger volume (L)										
M27 : 0.1N H2SO4 (Impinger) [#1 APC Outlet] 24-4547-M26A-1		EF003.I	04-Dec-2024				10-Dec-2024		7 days	
Physical Tests : Stack Emission Impinger volume (L)										
M27 : 0.1N H2SO4 (Impinger) [#1 APC Outlet] 24-4547-M26A-2		EF003.I	04-Dec-2024				10-Dec-2024		7 days	
Physical Tests : Stack Emission Impinger volume (L)										
M27 : 0.1N H2SO4 (Impinger) [#1 APC Outlet] 24-4547-M26A-3		EF003.I	04-Dec-2024				10-Dec-2024		7 days	
Physical Tests : Stack Emission Impinger volume (L)										
M27 : 0.1N H2SO4 (Impinger) [#1 APC Outlet] 24-4547-M26A-Blank 1		EF003.I	04-Dec-2024				10-Dec-2024		7 days	
Physical Tests : Stack Emission Impinger volume (L)										
M27 : 0.1N H2SO4 (Impinger) [#2 APC Outlet] 24-4547-M26A-Blank 2		EF003.I	04-Dec-2024				10-Dec-2024		7 days	
Physical Tests : Stack Emission Impinger volume (L)										
M27 : 0.1N H2SO4 (Impinger) [#2 APC Outlet] 24-4547-M26A-4		EF003.I	03-Dec-2024				10-Dec-2024		8 days	
Physical Tests : Stack Emission Impinger volume (L)										
M27 : 0.1N H2SO4 (Impinger) [#2 APC Outlet] 24-4547-M26A-5		EF003.I	03-Dec-2024				10-Dec-2024		8 days	
Physical Tests : Stack Emission Impinger volume (L)										
M27 : 0.1N H2SO4 (Impinger) [#2 APC Outlet] 24-4547-M26A-6		EF003.I	03-Dec-2024				10-Dec-2024		8 days	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Air

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type		QC Lot #	Count		Frequency (%)		
Analytical Methods			QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Ammonia by IC (CTM-027)	E253	1802738	1	8	12.5	5.0	✓
	E252	1803178	1	8	12.5	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by IC (CTM-027)	E253	1802738	1	8	12.5	5.0	✓
	E252	1803178	1	8	12.5	5.0	✓
Method Blanks (MB)							
Ammonia by IC (CTM-027)	E253	1802738	1	8	12.5	5.0	✓
	E252	1803178	1	8	12.5	5.0	✓
Matrix Spikes (MS)							
Ammonia by IC (CTM-027)	E253	1802738	1	8	12.5	5.0	✓
	E252	1803178	1	8	12.5	5.0	✓



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Work Order : BU2401300
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods		Method / Lab	Matrix	Method Reference	Method Descriptions
Ion Chromatography Analysis (M26/26A Anions)		E252 ALS Environmental - Burlington	Air	USEPA Methods 26 and 26A	Client supplied liquid samples are split and buffered (acidic media) then sub-sampled (or sub-sampled directly for basic media) for IC analysis. Results are reported as hydrogen halides (acidic media) or halogens (basic media).
	Ammonia by IC (CTM-027)	E253 ALS Environmental - Burlington	Air	EPA Method CTM-027 (mod)	Client-supplied acidic samples are sub-sampled for analysis, after a total volume is determined. Analytical results are reported as Total Ammonia, from the quantified Ammonium (NH ₄ ⁺) ion.
Ion Chromatography Analysis (M26/26A Anions)		EC252 ALS Environmental - Burlington	Air	unit conversion	Convert mg/L to mg/sample
	Ammonia by IC (Method CTM-027)	EC253 ALS Environmental - Burlington	Air	unit conversion	Conversion from mg/L to mg/sample
Stack Emission Impinger volume (L)		EF003.I ALS Environmental - Burlington	Air		Volume of impinger contents is measured in the laboratory for use in later calculations.
		ALS Environmental - Burlington			

QUALITY CONTROL REPORT

Work Order	: BU2401300	Page	: 1 of 4
Client	: ORTECH Environmental Inc.	Laboratory	: ALS Environmental - Burlington
Contact	: Chris Belore	Account Manager	: Lynne Wrona
Address	: 804 Southdown Road Mississauga ON Canada L5J 2Y4	Address	: 1435 Norjohn Court, Unit 1 Burlington, Ontario Canada L7L 0E6
Telephone	: 905 822 4120	Telephone	: +1 905 331 3111
Project	: AST-2024-4547 / 22330 Reworld	Date Samples Received	: 06-Dec-2024 11:00
PO	: 22330-J3019	Date Analysis Commenced	: 10-Dec-2024
C-O-C number	: ----	Issue Date	: 20-Dec-2024 17:45
Sampler	: ----		
Site	: ----		
Quote number	: ALSEQ24-265 Reworld		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Gamini Nadu	Analyst	Burlington Inorganics, Burlington, Ontario
Milithza Silva	Manager - Inorganics	Burlington Inorganics, Burlington, Ontario



Page : 2 of 4
Work Order : BU2401300
Client : ORTECH Environmental Inc.
Project : AST-2024-4547 / 22330 Reworld

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO = Data Quality Objective.
- LOR = Limit of Reporting (detection limit).
- RPD = Relative Percent Difference
- # = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Air

Sub-Matrix: Air				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Inorganics (QC Lot: 1802738)											
BU2401300-001	[#1 APC Outlet] 24-4547-M26A-1	Ammonia (as NH3)	8013-59-0	E253	0.472	mg/L	1.92	1.82	0.104	Diff <2x LOR	----
Inorganics (QC Lot: 1803178)											
BU2401300-001	[#1 APC Outlet] 24-4547-M26A-1	Chloride, average	16887-00-6	E252	0.47	mg/L	8.29	8.30	0.0603%	20%	----
		Chloride, replicate 1	16887-00-6	E252	0.47	mg/L	8.29	8.31	0.278%	20%	----
		Chloride, replicate 2	16887-00-6	E252	0.47	mg/L	8.29	8.28	0.214%	20%	----
		Fluoride, average	----	E252	0.31	mg/L	<0.31	<0.31	0	Diff <2x LOR	J
		Fluoride, replicate 1	----	E252	0.31	mg/L	<0.31	<0.31	0	Diff <2x LOR	J
		Fluoride, replicate 2	----	E252	0.31	mg/L	<0.31	<0.31	0	Diff <2x LOR	J



Qualifiers

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Air

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Inorganics (QCLot: 1802738)						
Ammonia (as NH3)	8013-59-0	E253	0.47	mg/L	<0.472	----
Inorganics (QCLot: 1803178)						
Chloride, average	16887-00-6	E252	0.47	mg/L	<0.47	----
Chloride, replicate 1	16887-00-6	E252	0.47	mg/L	<0.47	----
Chloride, replicate 2	16887-00-6	E252	0.47	mg/L	<0.47	----
Fluoride, average	---	E252	0.31	mg/L	<0.31	----
Fluoride, replicate 1	---	E252	0.31	mg/L	<0.31	----
Fluoride, replicate 2	---	E252	0.31	mg/L	<0.31	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Air

Sub-Matrix: Air					Laboratory Control Sample (LCS) Report					
					Spike		Recovery (%)		Recovery Limits (%)	
							Target Concentration	LCS	Low	High
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier	
Inorganics (QCLot: 1802738)										
Ammonia (as NH3)	8013-59-0	E253	0.47	mg/L	9.44 mg/L	103	90.0	110	OK - OK	
Inorganics (QCLot: 1803178)										
Chloride, average	16887-00-6	E252	0.47	mg/L	15 mg/L	101	90.0	110	OK - OK	
Chloride, replicate 1	16887-00-6	E252	0.47	mg/L	15 mg/L	101	90.0	110	OK - OK	
Chloride, replicate 2	16887-00-6	E252	0.47	mg/L	15 mg/L	101	90.0	110	OK - OK	
Fluoride, average	---	E252	0.31	mg/L	10 mg/L	102	90.0	110	OK - OK	
Fluoride, replicate 1	---	E252	0.31	mg/L	10 mg/L	101	90.0	110	OK - OK	
Fluoride, replicate 2	---	E252	0.31	mg/L	10 mg/L	102	90.0	110	OK - OK	



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Air

Sub-Matrix: Air					Matrix Spike (MS) Report					
					Spike		Recovery (%)		Recovery Limits (%)	
					Concentration	Target	MS	Low	High	Qualifier
Inorganics (QCLot: 1802738)										
BU2401300-001	[#1 APC Outlet] 24-4547-M26A-1	Ammonia (as NH3)	8013-59-0	E253	9.14 mg/L	9.44 mg/L	96.8	85.0	115	----
Inorganics (QCLot: 1803178)										
BU2401300-001	[#1 APC Outlet] 24-4547-M26A-1	Chloride, average	16887-00-6	E252	16.1 mg/L	15 mg/L	107	90.0	110	----
		Chloride, replicate 1	16887-00-6	E252	16.1 mg/L	15 mg/L	107	90.0	110	----
		Chloride, replicate 2	16887-00-6	E252	16.1 mg/L	15 mg/L	107	90.0	110	----
		Fluoride, average	-----	E252	10.0 mg/L	10 mg/L	100	90.0	110	----
		Fluoride, replicate 1	-----	E252	10.0 mg/L	10 mg/L	100	90.0	110	----
		Fluoride, replicate 2	-----	E252	10.0 mg/L	10 mg/L	100	90.0	110	----

Alliance Technical Group - Sample Log Acid Gases Reworld

Client: Reworld

Job/Report Number: AST-2024-4547 / 22330

Received By: C Belore

How Received: Train Recovery

Job Assigned To: ALS

Quote / PO #:

Alliance Sample ID	Sample Date	Location	Sample Description	Media	Initial Volume(ml)	Sample Analysis
24-4547-M26A-						
1	DEC 4/24	APC Outlet # 1	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
2		APC Outlet # 1	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
3		APC Outlet # 1	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
4	DEC 3/24	APC Outlet # 2	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
5		APC Outlet # 2	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
6		APC Outlet # 2	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
Blank 1	DEC 4/24	APC # 1	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia
Blank 2		APC # 2	Impinger Soln & rinse	0.1N H ₂ SO ₄ + DH ₂ O	200	HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By:

Date:

ASCB/24

Relinquished To:

Date:

Aaron Burton 6-Dec-2024 11:00 +8.3°C

Environmental Division
Burlington
Work Order Reference
BU2401300



Telephone : +1 905 331 3111

APPENDIX 13

Particle Size Distribution Train Recovery Data Sheets (8 pages)

PM₁₀, PM_{2.5} & Condensate Recovery Data Sheet

Alliance Technical Group

ent: Reworld

ject No.: AST-2024-4547 / 22330

ite: 22-4/24

Test No.: 1

Test Location: 42

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

Nozzle, PM 10 Cyclone walls, collection cup, 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

CONTAINER TS4

Impinger #1 Knock Out
Empty Wt: 357.8
Final Wt: 515.2
Gain: 157.4
Colour: clear

Perform nitrogen purge of imp 1 transferred 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 w 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

Filter ID: 22-12142
Colour: WHITE
Seal and label container TS4

Impinger #2 Empty
Empty Wt: 664.0
Final Wt: 665.0
Gain: 1.0
Colour: clear

Purge On: 1:30
Purge Off: 2:30
Rinse all glassware from filter to front half 2nd filter with dl H2O into TS5

Acetone/Hexane Rinse

SAMPLE IDENTIFICATION	24-4547-M201A-
1 (Part. > 10)	22
2 (Part. > 2.5)	23
3 (Part. < 2.5)	24
4 (Back Up Filter, <2.5)	25
5 (Imp 2 H ₂ O and rinse)	26
6 (Secondary Filter)	27
7 (Acetone / Hexane rinse)	28

Secondary Filter

CONTAINER TS5

CONTAINER TS6

Impinger #3 H₂O
Empty Wt: 652.4
Initial Wt: 752.8
Final Wt: 752.4
Gain: -0.4
Colour: clear

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Impinger #4 Silica Gel
Initial Wt: 946.6
Final Wt: 956.6
Gain: 10.0
% Spent:

Seal and label container TS6

Total Moisture Gain
1+2+3+4: 168.0

ain Loaded By: 24

ain Recovered By: 24/25

Alliance Technical Group

PM₁₀ , PM_{2.5} & Condensate Recovery Data Sheet

Client: Reworld

Project No.: AST-2024-4547 / 22330

Date: Dec 4/24

Test No.: 2

Test Location: 42

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

Nozzle, PM 10 Cyclone walls, collection cup, 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 TSS7

CONTAINER TS1

CONTAINER TS2

CONTAINER TS3

CONTAINER TS4

Impinger #1 Knock Out
Empty Wt: 356.6
Final Wt: 472.8
Gain: 136.2
Colour: CLEAR

Perform nitrogen purge of imp 1 transferred 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 w 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

Filter ID: QZ12143
Colour: WHITE

Seal and label container TS4

Impinger #2 Empty
Empty Wt: 636.9
Final Wt: 637.3
Gain: 0.6
Colour: CLEAR

Purge On: 14:15
Purge Off: 15:15

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

Secondary Filter

SAMPLE IDENTIFICATION	24-4547-M201A-
1 (Part. > 10)	29
2 (Part. > 2.5)	30
3 (Part. < 2.5)	31
4 (Back Up Filter, <2.5)	32
5 (Imp 2 H ₂ O and rinse)	33
6 (Secondary Filter)	34
7 (Acetone / Hexane rinse)	35

Main Loaded By: DUT

Main Recovered By: DU/ST

Impinger #4 Silica Gel
Initial Wt: 952.8
Final Wt: 973.9
Gain: 20.2
% Spent:

Seal and label container TS6

CONTAINER TS6
Secondary Filter

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

Total Moisture Gain
1+2+3+4: 155.3

Alliance Technical Group

PM₁₀ , PM_{2.5} & Condensate Recovery Data Sheet

ent: Reworld

Subject No.: AST-2024-4547 / 22330

Date: 8/24/24

Test No.: 3

Test Location: 412

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

Nozzle, PM 10 Cyclone walls, collection cup, 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

CONTAINER TS4

Mark Fluid Level and Seal and label container TS1

Mark Fluid Level and Seal and label container TS2

Mark Fluid Level and Seal and label container TS3

Filter ID: 8212144
Colour: WHIT
Seal and label container TS4

Impinger #2 Empty
Empty Wt: 665.0
Final Wt: 671.5
Gain: 6.5
Colour: clean

Purge On:
Purge Off:
Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

Acetone/Hexane Rinse
Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	24-4547-M201A-
1 (Part. > 10)	36
2 (Part. > 2.5)	37
3 (Part. < 2.5)	38
4 (Back Up Filter, <2.5)	39
5 (Imp 2 H ₂ O and rinse)	40
6 (Secondary Filter)	41
7 (Acetone / Hexane rinse)	42

Secondary Filter

Impinger #3 H₂O
Empty Wt: 652.4
Initial Wt: 752.4
Final Wt: 752.9
Gain: 0.5
Colour: clean

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Impinger #4 Silica Gel
Initial Wt: 756.6
Final Wt: 966.0
Gain: 9.4
% Spent:

Seal and label container TS6

Total Moisture Gain
1+2+3+4: 163.9

sin Loaded By: DUBST

sin Recovered By: DUBST

10

PM₁₀, PM_{2.5} & Condensate Recovery Data Sheet

PM₁₀, PM_{2.5} & Condensate Recovery Data Sheet

ent: Reworld

ject No.: AST-2024-4547 / 22330

ite: PEC-5/24

Test No.: 1

Test Location: 41

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

Nozzle, PM 10 Cyclone walls,
collection cup,
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

CONTAINER TS4

Impinger #1 Knock Out
Empty Wt: 357.0
Final Wt: 489.0
Gain: 132.0
Colour: clear

Perform nitrogen purge of
imp 1 transferred 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 w/
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

Filter ID: QZ12145
Colour: WHITE
Seal and label container TS4

Impinger #2 Empty
Empty Wt: 637.0
Final Wt: 637.8
Gain: 0.8
Colour: clear

Purge On:
Purge Off:

Rinse all
glassware from filter
to front half 2nd filter with
di H2O into TS5

SAMPLE IDENTIFICATION	24-4547-M201A-
1 (Part. > 10)	<u>1</u>
2 (Part. > 2.5)	<u>2</u>
3 (Part. < 2.5)	<u>3</u>
4 (Back Up Filter, <2.5)	<u>4</u>
5 (Imp 2 H ₂ O and rinse)	<u>5</u>
6 (Secondary Filter)	<u>6</u>
7 (Acetone / Hexane rinse)	<u>7</u>

Impinger #3 H₂O
Empty Wt: 664.7
Initial Wt: 764.2
Final Wt: 763.0
Gain: -1.2
Colour: clear

CONTAINER TS5
Mark Fluid Level and
Seal and Label Container

CONTAINER TS6
Secondary Filter

Impinger #4 Silica Gel
Initial Wt: 973.0
Final Wt: 983.4
Gain: 10.4
% Spent:

Seal and label container TS6

Total Moisture Gain
1+2+3+4: 152.0

ain Loaded By: DU

ain Recovered By: ST

Alliance Technical Group

PM₁₀ , PM_{2.5} & Condensate Recovery Data Sheet

ent: Reworld

Subject No.: AST-2024-4547 / 22330

Date: Dec 5/24

Test No.: 2

Test Location: U1

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

Nozzle, PM 10 Cyclone walls, collection cup, 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

CONTAINER TS4

Mark Fluid Level and Seal and label container TS1

Mark Fluid Level and Seal and label container TS2

Mark Fluid Level and Seal and label container TS3

Filter ID: Q212148
Colour: white
Seal and label container TS4

Impinger #2 Empty
Empty Wt: 665.0
Final Wt: 666.0
Gain: 1.0
Colour: clean

Purge On:
Purge Off:
Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

Acetone/Hexane Rinse
Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	24-4547-M201A-
1 (Part. > 10)	8
2 (Part. > 2.5)	9
3 (Part. < 2.5)	10
4 (Back Up Filter, <2.5)	11
5 (Imp 2 H ₂ O and rinse)	12
6 (Secondary Filter)	13
7 (Acetone / Hexane rinse)	14

Impinger #3 H₂O
Empty Wt: 692.4
Initial Wt: 732.9
Final Wt: 732.3
Gain: -0.6
Colour: clean

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Impinger #4 Silica Gel
Initial Wt: 966.0
Final Wt: 975.4
Gain: 9.4
% Spent:

Seal and label container TS6

Total Moisture Gain
1+2+3+4: 136.1

Main Loaded By: DUC
Main Recovered By: DT

Alliance Technical Group

PM₁₀ , PM_{2.5} & Condensate Recovery Data Sheet

ent: Reworld

ject No.: AST-2024-4547 / 22330

te: DEC 5 / 24

Test No.: 3

Test Location: 211

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

Nozzle, PM 10 Cyclone walls,
collection cup,
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

CONTAINER TS4

Impinger #1 Knock Out
Empty Wt: 357.0
Final Wt: 50.3
Gain: 143.3
Colour: clean

Perform nitrogen purge of
imp 1 transferred 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 w/
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

Filter ID: QZ.12149
Colour: W4 H C
Seal and label container TS4

Impinger #2 Empty
Empty Wt: 637.0
Final Wt: 636.8
Gain: -0.2
Colour: clean

Purge On:
Purge Off:
Rinse all
glassware from filter
to front half 2nd filter with
di H2O into TS5

Acetone/Hexane Rinse
Mark Fluid Level and
Seal and Label Container

SAMPLE IDENTIFICATION	24-4547-M201A-
1 (Part. > 10)	15
2 (Part. > 2.5)	16
3 (Part. < 2.5)	17
4 (Back Up Filter, <2.5)	18
5 (Imp 2 H ₂ O and rinse)	19
6 (Secondary Filter)	20
7 (Acetone / Hexane rinse)	21

Secondary Filter

CONTAINER TS5
Mark Fluid Level and
Seal and Label Container

CONTAINER TS6
Secondary Filter

ain Loaded By: bu
ain Recovered By: BT

Impinger #4 Silica Gel
Initial Wt: 931.2
Final Wt: 946.2
Gain: 15.0
% Spent:

Seal and label container TS6

Total Moisture Gain
1+2+3+4: 150.5

Alliance Technical Group

PM_{1.0} , PM_{2.5} & Condensate Recovery Data Sheet

ent: Reworld

ject No.: AST-2024-4547 / 22330

te: Dec 5/24

Test No.:

Test Location:

Back 1

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

Nozzle, PM 10 Cyclone walls, collection cup, 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

CONTAINER TS4

Impinger #1 Knock Out
Empty Wt:
Final Wt:
Gain:
Colour:

Perform nitrogen purge of imp 1 transferred 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

Filter ID: 0212146
Colour: WHITE

Impinger #2 Empty
Empty Wt:
Final Wt:
Gain:
Colour:

Purge On:
Purge Off:

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	24-4547-M201A-
1 (Part. > 10)	43
2 (Part. > 2.5)	44
3 (Part. < 2.5)	45
4 (Back Up Filter, <2.5)	46
5 (Imp 2 H ₂ O and rinse)	47
6 (Secondary Filter)	48
7 (Acetone / Hexane rinse)	49

Secondary Filter

Impinger #3 H₂O
Empty Wt:
Initial Wt:
Final Wt:
Gain:
Colour:

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Impinger #4 Silica Gel
Initial Wt:
Final Wt:
Gain:
% Spent:

Seal and label container TS6

Total Moisture Gain
1+2+3+4:

ain Loaded By:

ain Recovered By:

Alliance Technical Group

PM₁₀ , PM_{2.5} & Condensate Recovery Data Sheet

ent: Reworld

ject No.: AST-2024-4547 / 22330

te: DEC 5/24

Test No.:

Test Location:

Blank 2

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

Nozzle, PM 10 Cyclone walls,
collection cup,
outside of exit stem

CONTAINER TS1

Mark Fluid Level and
Seal and label container TS1

Mark Fluid Level and
Seal and label container TS2

Exit Stem, and Connecting
Tubing to Filter,
and Filter Top

CONTAINER TS3

Mark Fluid Level and
Seal and label container TS3

Back-Up Filter

CONTAINER TS4

Filter ID: QZL2147
Colour: WHTG

Seal and label container TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out
Empty Wt:
Final Wt:
Gain:
Colour:

Impinger #2 Empty
Empty Wt:
Final Wt:
Gain:
Colour:

Secondary Filter

Impinger #3 H₂O
Empty Wt:
Initial Wt:
Final Wt:
Gain:
Colour:

Impinger #4 Silica Gel
Initial Wt:
Final Wt:
Gain:
% Spent:

CONTAINER TSS & TS6

Perform nitrogen purge of
imp 1 transferred to Impaction
stem impinger (14 lpm for 1 hr)
* if there is no gain
purge is not required.

Purge On:
Purge Off:

Rinse all
glassware from filter
to front half 2nd filter with
di H₂O into TS5

CONTAINER TS5
Mark Fluid Level and
Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from
filter to front half 2nd filter w
Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and
Seal and Label Container

Total Moisture Gain
1+2+3+4:

APPENDIX 14

SVOC Train Recovery Data Sheets (7 pages)

ORTECH Consulting Alliance Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: AST-2024-4547 / 22330
Sample Batch No.: 24-4547-SVOC-

Test No.: 1
Test Date: Dec 2 / 24
Test Location: UNIT

Sample ID	1
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	

Sample ID	2
Filter	

Sample ID	3
XAD-II Trap	
Trap ID:	D

Sample ID	4
Impingers 1, 2 & 3	

Sample ID	5
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	

CONTAINER TS1	

CONTAINER TS2	

CONTAINER TS3	

CONTAINER TS4	

CONTAINER TS5	

CONTAINER TS6 (Impinger)	

Empty Wt:	780.0
After Acetone/	
Hexane Rinse:	462.7
Total TS1:	182.7

Colour:	WHITE
FOLD IN FOIL	
SEAL AND LABEL CONTAINER TS2	

Initial Wt:	374.0
Final Wt:	330.0
Gain:	6.0
Colour:	WHITE

Impinger #1 Empty	
Empty Wt:	592.3
Final Wt:	1152.0
Gain:	561.7
Colour:	clean

Empty Wt:	404.5
After Acetone/	
Hexane Rinse:	624.5
Total TS5:	220.0

Initial Wt:	954.5
Final Wt:	964.8
Gain:	10.3
% Spent:	

MARK FLUID LEVEL	
SEAL AND LABEL CONTAINER TS1	

SEAL TRAP	

WRAP IN FOIL	

Impinger #2 Ethylene Glycol	
Empty Wt:	655.5
Initial Wt:	784.0
Final Wt:	852.0
Gain:	63.0
Colour:	clean

Impinger Box ID:	2

Impinger #3 Empty	
Empty Wt:	657.0
Final Wt:	657.5
Gain:	0.5
Colour:	clean

LABEL AS CONTAINER TS3	

Container TS4 Weights	
Empty Wt:	410.0
With Imp Soln:	1156.0
After ~100g H ₂ O Rinse:	1302.0
Total TS4:	892.0

Total Moisture Gain:	
1 + 2 + 3 + 4 + 5:	646.5

Train Loaded By:

Train Recovered By:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Alliance Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: AST-2024-4547 / 22330
Sample Batch No.: 24-4547-SVOC-

Test No.: 2
Test Date: DEC 2 / 24
Test Location: 411

Sample ID 6

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

Sample ID 7

Filter

Sample ID 8

XAD-II Trap

Trap ID: 82

Sample ID 9

Impingers 1, 2 & 3

Sample ID 10

Back-Half Rinses
Trap Bottom U-Tube,
Imp. Inlet Stem, U-Tubes
and Impingers

CONTAINER TS1

CONTAINER TS2

CONTAINER TS3

CONTAINER TS4

CONTAINER TS5

CONTAINER TS6 (Impinger)

Empty Wt: 282.0
After Acetone/
Hexane Rinse: 493.5
Total TS1: 211.5

Colour: WHITE
FOLD IN FOIL
SEAL AND LABEL
CONTAINER TS2

Initial Wt: 409.8
Final Wt: 416.3
Gain: 6.5
Colour: WHITE

Impinger #1 Empty
Empty Wt: 474.0
Final Wt: 1051.5
Gain: 577.5
Colour: clear

Empty Wt: 403.0
After Acetone/
Hexane Rinse: 620.2
Total TS5: 217.0

Initial Wt: 957.0
Final Wt: 967.0
Gain: 10.0
% Spent: 5

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

SEAL TRAP
WRAP IN FOIL
LABEL AS
CONTAINER TS3

Impinger #2 Ethylene Glycol
Empty Wt: 663.2
Initial Wt: 786.0
Final Wt: 818.3
Gain: 32.3
Colour: clear

Impinger Box ID: 6

Impinger #3 Empty
Empty Wt: 663.5
Final Wt: 663.5
Gain: 0
Colour: clear

Total Moisture Gain:
1 + 2 + 3 + 4 + 5: 626.5

Container TS4 Weights
Empty Wt: 406.5
With Imp Soln: 1125.0
After ~100g H₂O Rinse: 1252.5
Total TS4: 846.0

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: 
Train Recovered By:

ORTECH Consulting Alliance Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: AST-2024-4547 / 22330
Sample Batch No.: 24-4547-SVOC-

Test No.: 3
Test Date: DEC 3 / 24
Test Location: 41

Sample ID 11

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

Sample ID 12

Filter

Sample ID 13

XAD-II Trap

Sample ID 14

Impingers 1, 2 & 3

Sample ID 15

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: 280.0
After Acetone/ 575.0
Hexane Rinse: 575.0
Total TS1: 285.0

Colour:
FOLD IN FOIL

Initial Wt: 384.3
Final Wt: 393.3
Gain: 8.5
Colour: WHIT

Impinger #1 Empty
Empty Wt: 618.0
Final Wt: 1156.5
Gain: 538.5
Colour: clear

Empty Wt: 408.5
After Acetone/ 626.5
Hexane Rinse: 626.5
Total TS5: 218.0

Initial Wt: 963.4
Final Wt: 983.8
Gain: 14.4
% Spent: 5

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

SEAL AND LABEL CONTAINER TS2

SEAL TRAP

Impinger #2 Ethylene Glycol
Empty Wt: 659.5
Initial Wt: 775.0
Final Wt: 853.5
Gain: 78.5
Colour: clear

Impinger Box ID: 15

Impinger #3 Empty
Empty Wt: 547.0
Final Wt: 547.0
Gain: 0
Colour: —

LABEL AS
CONTAINER TS3

Container TS4 Weights
Empty Wt: 410.0
With Imp Soln: 1132.0
After ~100g H₂O Rinse: 1229.5
Total TS4: 819.5

Total Moisture Gain:
1 + 2 + 3 + 4 + 5: 639.9

Train Loaded By: [Signature]
Train Recovered By: [Signature]

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Alliance Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC

Project No.: AST-2024-4547 / 22330

Sample Batch No.: 24-4547-SVOC-

Test No.: 1

Test Date: DEC 2 / 24

Test Location: HUNT 2

Sample ID	21
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	

Sample ID	22
Filter	

Sample ID	23
XAD-II Trap	

Sample ID	24
Impingers 1, 2 & 3	

Sample ID	25
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	

CONTAINER TS1	
Empty Wt:	299.0
After Acetone/	399.0
Hexane Rinse:	119.0
Total TS1:	

CONTAINER TS2	
Colour:	WHITE
FOLD IN FOIL	
SEAL AND LABEL CONTAINER TS2	

CONTAINER TS3	
Initial Wt:	376.2
Final Wt:	384.7
Gain:	8.0
Colour:	WHITE

CONTAINER TS4	
Impinger #1 Empty	
Empty Wt:	608.5
Final Wt:	1132.5
Gain:	524.0
Colour:	clear

CONTAINER TS5	
Empty Wt:	102.5
After Acetone/	576.0
Hexane Rinse:	
Total TS5:	173.5

CONTAINER TS6 (Impinger)	
Initial Wt:	931.5
Final Wt:	943.5
Gain:	12.0
% Spent:	

Impinger #2 Ethylene Glycol	
Empty Wt:	529.3
Initial Wt:	614.0
Final Wt:	631.7
Gain:	67.7
Colour:	clear

Impinger #3 Empty	
Empty Wt:	653.0
Final Wt:	659.5
Gain:	6.5
Colour:	clear

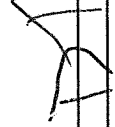
Container TS4 Weights	
Empty Wt:	401.0
With Imp Soln:	1069.5
After ~100g H ₂ O Rinse:	1179.0
Total TS4:	778.0

MARK FLUID LEVEL	
SEAL AND LABEL CONTAINER TS1	

SEAL TRAP	
WRAP IN FOIL	
LABEL AS CONTAINER TS3	

Impinger Box ID:	4

Total Moisture Gain:	
1 + 2 + 3 + 4 + 5:	612.2

Train Loaded By: 

Train Recovered By:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Alliance Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: AST-2024-4547 / 22330
Sample Batch No.: 24-4547-SVOC-

Test No.: 2
Test Date: 28/2/24
Test Location: 012

Sample ID 26

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

Sample ID 27

Filter

Sample ID 28

XAD-II Trap

Sample ID 29

Impingers 1, 2 & 3

Sample ID 30

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: 280.0
After Acetone/ Hexane Rinse: 532.5
Total TS1: 402.5

Colour: WHITE
FOLD IN FOIL

Initial Wt: 374.5
Final Wt: 381.5
Gain: 7.0
Colour: WHITE

Impinger #1 Empty
Empty Wt: 582.0
Final Wt: 1124.5
Gain: 542.5
Colour: clean

Empty Wt: 404.0
After Acetone/ Hexane Rinse: 620.4
Total TS5: 316.4

Initial Wt: 911.7
Final Wt: 922.7
Gain: 11.0
% Spent: 5

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

SEAL AND LABEL
CONTAINER TS2

SEAL TRAP

Impinger #2 Ethylene Glycol
Empty Wt: 542.0
Initial Wt: 647.5
Final Wt: 700.5
Gain: 59.0
Colour: clean

Impinger #3 Empty
Empty Wt: 528.3
Final Wt: 528.3
Gain: 0
Colour: clean

Impinger #4 Empty
Empty Wt: 528.3
Final Wt: 528.3
Gain: 0
Colour: clean

Impinger Box ID: 14

Total Moisture Gain:
1 + 2 + 3 + 4 + 5: 619.5

Container TS4 Weights
Empty Wt: 407.5
With Imp Soln: 1102.0
After ~100g H₂O Rinse: 1236.5
Total TS4: 829.0

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: 
Train Recovered By:

ORTECH Consulting Alliance Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client: Covanta DYEC

Project No.: AST-2024-4547 / 22330

Sample Batch No.: 24-4547-SVOC-

Test No.: BLANK 1

Test Date: DEC 11/24

Test Location:

Sample ID 16

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt: 231.5
After Acetone/ Hexane Rinse: 449.5
Total TS1: 168.0

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 17

Filter

CONTAINER TS2

Colour: WHITE
FOLD IN FOIL
SEAL AND LABEL CONTAINER TS2

Sample ID 18

XAD-II Trap

CONTAINER TS3

Initial Wt:
Final Wt:
Gain:
Colour: WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 19

Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty
Empty Wt:
Final Wt:
Gain:
Colour:
2

Impinger #2 Ethylene Glycol
Empty Wt:
Initial Wt:
Final Wt:
Gain:
Colour:
3

Impinger #3 Empty
Empty Wt:
Final Wt:
Gain:
Colour:
4

Container TS4 Weights
Empty Wt: 402.0
With Imp Soln: 510.7
After ~100g H₂O Rinse: 614.5
Total TS4: 212.5

Sample ID 20

Back-Half Rinses
Trap Bottom U-Tube,
Imp. Inlet Stem, U-Tubes
and Impingers

CONTAINER TS5

Empty Wt: 283.0
After Acetone/ Hexane Rinse: 444.2
Total TS5: 161.2
5

Impinger Box ID:

Total Moisture Gain:
1 + 2 + 3 + 4 + 5:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By:

Train Recovered By:

ORTECH Consulting Alliance Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: AST-2024-4547 / 22330
Sample Batch No.: 24-4547-SVOC-

Test No.: 02ANIK2
Test Date: DEC 11/24
Test Location:

Sample ID 36

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

Sample ID 37

Filter

Sample ID 38

XAD-II Trap

Sample ID 39

Impingers 1, 2 & 3

Sample ID 40

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
After Acetone/
Hexane Rinse: 488.5
Total TS1: 207.0

Colour: WHITE
FOLD IN FOIL
SEAL AND LABEL
CONTAINER TS2

Initial Wt: ✓
Final Wt: ✓
Gain: ✓
Colour: WHITE

Impinger #1 Empty
Empty Wt: ✓
Final Wt: ✓
Gain: ✓
Colour: ✓

Empty Wt: 282.0
After Acetone/
Hexane Rinse: 473.5
Total TS5: 191.5

Initial Wt: ✓
Final Wt: ✓
Gain: ✓
% Spent: ✓

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

SEAL TRAP
WRAP IN FOIL
LABEL AS
CONTAINER TS3

Impinger #2 Ethylene Glycol
Empty Wt: ✓
Initial Wt: ✓
Final Wt: ✓
Gain: ✓
Colour: ✓

Impinger Box ID: _____

Impinger #3 Empty
Empty Wt: ✓
Final Wt: ✓
Gain: ✓
Colour: ✓

Total Moisture Gain:
1 + 2 + 3 + 4 + 5:

Container TS4 Weights
Empty Wt: 411.0
With Imp Soln: 515.0
After ~100g H₂O Rinse: 615.5
Total TS4: 7.04.5

Train Loaded By: DK
Train Recovered By: _____

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

APPENDIX 15

SVOC Analytical Report (76 pages)



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
ALS Project ID: ORT100
ALS WO#: L2758327
Date of Report Revision 20-Feb-25
Date of Sample Receipt 6-Dec-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 / 22330 Reworld

COMMENTS: PCDD/F by EPA M23

*** REVISED REPORT ***

This report supersedes all prior reports for the above-noted workorder and test. The report has been revised as follows:
On further review it was suspected that the extracts for this analysis had been mis-labeled during column cleanup stage. A portion of the archived extracts were prepared for PCDD/F analysis and re-analyzed. This report contains the re-analysis results.

Certified by:


Bradley Reimer
GC/MS Laboratory Senior Technical Specialist

Results in this certificate relate only to the samples as submitted to the laboratory.

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Sample Analysis summary Report

Sample Name	[#1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1	[#1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST#2	[#1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST#3	[#2 APC OUTLET] 24-4547-SVOC-(21 THRU 25) TEST#1	[#2 APC OUTLET] 24-4547-SVOC-(26 THRU 30) TEST#2	[#1 APC OUTLET] 24-4547-SVOC-(16 THRU 20) BLANK1
ALS Sample ID	L2758327-1	L2758327-2	L2758327-3	L2758327-4	L2758327-5	L2758327-6
Sample Size	1	1	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	2-Dec-24	2-Dec-24	3-Dec-24	2-Dec-24	2-Dec-24	11-Dec-24
Extraction Date	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24
Target Analytes	pg	pg	pg	pg	pg	pg
2,3,7,8-TCDD	<1.9	2.50	<1.8	<1.9	<1.6	<1.0
1,2,3,7,8-PeCDD	<3.3	3.75	2.53	3.57	3.36	<1.4
1,2,3,4,7,8-HxCDD	<5.4	5.95	4.29	<5.7	5.19	<1.1
1,2,3,6,7,8-HxCDD	15.8	12.4	8.59	<16	14.5	<1.1
1,2,3,7,8,9-HxCDD	9.43	6.59	4.18	<8.8	7.45	<1.1
1,2,3,4,6,7,8-HpCDD	118	105	80.3	121	89.6	<2.4
OCDD	123	124	81.2	111	89.3	7.23
2,3,7,8-TCDF	<3.3	<3.7	<2.8	<1.7	<2.9	<1.3
1,2,3,7,8-PeCDF	5.86	<4.3	4.76	3.86	<4.4	2.10
2,3,4,7,8-PeCDF	8.89	4.24	5.27	7.27	<4.9	<0.86
1,2,3,4,7,8-HxCDF	3.58	3.64	<2.5	<5.4	<4.0	<0.51
1,2,3,6,7,8-HxCDF	<5.7	4.24	<3.3	8.89	<5.9	<0.47
2,3,4,6,7,8-HxCDF	<6.8	9.37	5.42	13.8	12.2	<0.50
1,2,3,7,8,9-HxCDF	<2.8	2.82	2.50	3.64	1.89	<0.58
1,2,3,4,6,7,8-HpCDF	24.5	<18	<14	32.7	22.2	<1.3
1,2,3,4,7,8,9-HpCDF	<3.6	<5.6	4.51	4.45	5.97	<1.4
OCDF	<13	15.9	7.36	27.5	17.8	<2.1
Field Spike Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
37Cl4-2,3,7,8-TCDD	91	92	91	83	91	94
13C12-1,2,3,4,7,8-HxCDD	93	93	99	90	99	97
13C12-2,3,4,7,8-PeCDF	94	102	100	83	102	104
13C12-1,2,3,4,7,8-HxCDF	91	100	94	89	101	101
13C12-1,2,3,4,7,8,9-HpCDF	102	102	103	97	106	102
Extraction Standards						
13C12-2,3,7,8-TCDD	75	120	110	104	110	90
13C12-1,2,3,7,8-PeCDD	90	134	121	117	128	102
13C12-1,2,3,6,7,8-HxCDD	84	127	120	114	125	98
13C12-1,2,3,4,6,7,8-HpCDD	87	124	123	117	129	100
13C12-OCDD	81	114	120	109	127	94
13C12-2,3,7,8-TCDF	74	116	92	99	104	84
13C12-1,2,3,7,8-PeCDF	89	134	123	118	127	100
13C12-1,2,3,6,7,8-HxCDF	83	121	121	110	118	92
13C12-1,2,3,4,6,7,8-HpCDF	81	119	116	106	119	93
Cleanup Standard						
13C12-1,2,3,7,8,9-HxCDF	104	131	117	112	127	108
Homologue Group Totals	pg	pg	pg	pg	pg	pg
Total-TCDD	66.7	40.1	36.3	79.4	80.4	<1.0
Total-PeCDD	63.3	55.0	69.6	108	38.1	<1.4
Total-HxCDD	228	217	176	252	222	<1.1
Total-HpCDD	239	215	154	235	174	<2.4
Total-TCDF	18.2	<3.7	6.32	20.4	10.1	<1.3
Total-PeCDF	18.8	5.24	22.5	57.3	17.9	2.10
Total-HxCDF	42.3	44.9	19.3	51.4	47.9	<0.58
Total-HpCDF	24.5	6.31	10.4	51.2	36.5	<1.4
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)	7.19	13.1	7.63	10.1	8.69	0.0652
Mid Point PCDD/F TEQ (WHO 2005)	13.6	13.7	9.39	14.7	12.2	1.75
Upper Bound PCDD/F TEQ (WHO 2005)	14.8	13.8	10.4	15.8	13.2	3.44

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Sample Analysis summary Report

Sample Name

[#2 APC OUTLET]
24-4547-SVOC-(36
THRU 40) BLANK2

ALS Sample ID

L2758327-7

Sample Size

1

Sample size units

Sample

Percent Moisture

n/a

Sample Matrix

Stack

Sampling Date

11-Dec-24

Extraction Date

16-Dec-24

Target Analytes

pg

2,3,7,8-TCDD	<1.4
1,2,3,7,8-PeCDD	<1.3
1,2,3,4,7,8-HxCDD	<0.81
1,2,3,6,7,8-HxCDD	2.88
1,2,3,7,8,9-HxCDD	<0.79
1,2,3,4,6,7,8-HpCDD	<6.3
OCDD	13.6
2,3,7,8-TCDF	<1.7
1,2,3,7,8-PeCDF	<1.6
2,3,4,7,8-PeCDF	<0.71
1,2,3,4,7,8-HxCDF	<1.1
1,2,3,6,7,8-HxCDF	<1.1
2,3,4,6,7,8-HxCDF	<1.1
1,2,3,7,8,9-HxCDF	<1.3
1,2,3,4,6,7,8-HpCDF	<1.1
1,2,3,4,7,8,9-HpCDF	<1.2
OCDF	<2.9

Field Spike Standards

% Rec

37Cl4-2,3,7,8-TCDD	95
13C12-1,2,3,4,7,8-HxCDD	93
13C12-2,3,4,7,8-PeCDF	100
13C12-1,2,3,4,7,8-HxCDF	98
13C12-1,2,3,4,7,8,9-HpCDF	105

Extraction Standards

13C12-2,3,7,8-TCDD	94
13C12-1,2,3,7,8-PeCDD	111
13C12-1,2,3,6,7,8-HxCDD	114
13C12-1,2,3,4,6,7,8-HpCDD	114
13C12-OCDD	110
13C12-2,3,7,8-TCDF	92
13C12-1,2,3,7,8-PeCDF	113
13C12-1,2,3,6,7,8-HxCDF	109
13C12-1,2,3,4,6,7,8-HpCDF	108

Cleanup Standard

13C12-1,2,3,7,8,9-HxCDF	123

Homologue Group Totals

pg

Total-TCDD	<1.4
Total-PeCDD	<1.3
Total-HxCDD	4.92
Total-HpCDD	3.59
Total-TCDF	<1.7
Total-PeCDF	<0.77
Total-HxCDF	<1.3
Total-HpCDF	<1.2

Toxic Equivalency - (WHO 2005)

Lower Bound PCDD/F TEQ (WHO 2005)	0.292
Mid Point PCDD/F TEQ (WHO 2005)	2.27
Upper Bound PCDD/F TEQ (WHO 2005)	4.13

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG3791199-1	WG3791199-2
Sample Size	1	1
Sample size units	Sample	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	16-Dec-24	16-Dec-24
Target Analytes	pg	% Rec
2,3,7,8-TCDD	<2.0	93
1,2,3,7,8-PeCDD	<2.1	107
1,2,3,4,7,8-HxCDD	<1.5	97
1,2,3,6,7,8-HxCDD	<1.5	92
1,2,3,7,8,9-HxCDD	<1.5	96
1,2,3,4,6,7,8-HpCDD	3.43	98
OCDD	6.52	92
2,3,7,8-TCDF	<2.0	102
1,2,3,7,8-PeCDF	<2.8	113
2,3,4,7,8-PeCDF	<1.0	101
1,2,3,4,7,8-HxCDF	<1.0	103
1,2,3,6,7,8-HxCDF	<0.94	107
2,3,4,6,7,8-HxCDF	<1.0	100
1,2,3,7,8,9-HxCDF	<1.2	112
1,2,3,4,6,7,8-HpCDF	<1.6	106
1,2,3,4,7,8,9-HpCDF	<1.8	105
OCDF	<2.2	98
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	79	103
13C12-1,2,3,7,8-PeCDD	93	119
13C12-1,2,3,6,7,8-HxCDD	97	116
13C12-1,2,3,4,6,7,8-HpCDD	101	128
13C12-OCDD	96	126
13C12-2,3,7,8-TCDF	71	99
13C12-1,2,3,7,8-PeCDF	89	119
13C12-1,2,3,6,7,8-HxCDF	95	114
13C12-1,2,3,4,6,7,8-HpCDF	92	120
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	111	131
Homologue Group Totals	pg	
Total-TCDD	<2.0	
Total-PeCDD	<2.1	
Total-HxCDD	<1.5	
Total-HpCDD	3.43	
Total-TCDF	<2.0	
Total-PeCDF	<1.1	
Total-HxCDF	<1.2	
Total-HpCDF	<1.8	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.0363	
Mid Point PCDD/F TEQ (WHO 2005)	2.87	
Upper Bound PCDD/F TEQ (WHO 2005)	5.62	

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Sample Analysis Report

Sample Name [#1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1
ALS Sample ID L2758327-1
Analysis Method EPA M23
Analysis Type Sample
Sample Matrix Stack

Sampling Date 2-Dec-24
Extraction Date 16-Dec-24
Sample Size 1 Sample
Percent Moisture n/a
Split Ratio 6

Approved:
M.Elchawiche
 --e-signature--
 20-Feb-2025

Run Information

Run 1

Filename 12-250213A09
Run Date 13-Feb-25 14:29
Final Volume 20 uL
Dilution Factor 1
Analysis Units pg
Instrument - Column HRMS-12 ZB-DX1187134

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	28.51	<1.9	1.9	M,U		60
1,2,3,7,8-PeCDD	1	31.56	<3.3	1.7	M,J,R	3.3	60
1,2,3,4,7,8-HxCDD	0.1	33.81	<5.4	1.8	M,J,R	5.4	60
1,2,3,6,7,8-HxCDD	0.1	33.88	15.8	1.7	J		60
1,2,3,7,8,9-HxCDD	0.1	34.08	9.43	1.7	J		60
1,2,3,4,6,7,8-HpCDD	0.01	36.43	118	2.7			60
OCDD	0.0003	39.49	123	7.5	M		120
2,3,7,8-TCDF	0.1	27.97	<3.3	3.3	U	1.3	60
1,2,3,7,8-PeCDF	0.03	30.84	5.86	2.7	J		60
2,3,4,7,8-PeCDF	0.3	31.46	8.89	2.5	J		60
1,2,3,4,7,8-HxCDF	0.1	33.24	3.58	2.5	M,J		60
1,2,3,6,7,8-HxCDF	0.1	33.31	<5.7	2.3	M,J,R	5.7	60
2,3,4,6,7,8-HxCDF	0.1	33.76	<6.8	2.4	M,J,R	6.8	60
1,2,3,7,8,9-HxCDF	0.1	34.48	<2.8	2.8	M,U	2.4	60
1,2,3,4,6,7,8-HpCDF	0.01	35.46	24.5	3.2	M,J		60
1,2,3,4,7,8,9-HpCDF	0.01	37.07	<3.6	3.6	M,U	3.5	60
OCDF	0.0003	39.81	<13	5.0	M,J,R	13	120
Field Spike Standards	pg		% Rec	Limits			
37Cl4-2,3,7,8-TCDD	1200	28.50	91	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.79	93	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.44	94	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	33.21	91	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	37.07	102	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.49	75	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.56	90	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.87	84	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.42	87	25-130			
13C12-OCDD	24000	39.45	81	25-130			
13C12-2,3,7,8-TCDF	12000	27.93	74	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.83	89	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.30	83	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.45	81	25-130			
Cleanup Standard	pg						
13C12-1,2,3,7,8,9-HxCDF	18000	34.44	104	40-130			
Homologue Group Totals	# peaks		Conc. pg	EDL pg			
Total-TCDD	3	66.7	1.9			60	
Total-PeCDD	2	63.3	1.7			60	
Total-HxCDD	4	228	1.8			60	
Total-HpCDD	2	239	2.7			60	
Total-TCDF	5	18.2	3.3			60	
Total-PeCDF	3	18.8	2.7			60	
Total-HxCDF	6	42.3	2.8			60	
Total-HpCDF	1	24.5	3.6			60	

Toxic Equivalency - (WHO 2005)

pg

Lower Bound PCDD/F TEQ (WHO 2005)

7.19

Mid Point PCDD/F TEQ (WHO 2005)

13.6

Upper Bound PCDD/F TEQ (WHO 2005)

14.8

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 [#1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST#2
ALS Sample ID L2758327-2
Analysis Method EPA M23
Analysis Type Sample
Sample Matrix Stack

Sampling Date 2-Dec-24
Extraction Date 16-Dec-24
Sample Size 1
Percent Moisture n/a
Split Ratio 6

Sample

Approved:
M.Elchawiche
 --e-signature--
 20-Feb-2025

Run Information

Run 1

Filename 12-250213A10
Run Date 13-Feb-25 15:14
Final Volume 20 uL
Dilution Factor 1
Analysis Units pg
Instrument - Column HRMS-12 ZB-DX1187134

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	28.53	2.50	1.7	M,J		60
1,2,3,7,8-PeCDD	1	31.57	3.75	1.6	M,J		60
1,2,3,4,7,8-HxCDD	0.1	33.81	5.95	0.77	M,J		60
1,2,3,6,7,8-HxCDD	0.1	33.89	12.4	0.74	M,J		60
1,2,3,7,8,9-HxCDD	0.1	34.09	6.59	0.75	J		60
1,2,3,4,6,7,8-HpCDD	0.01	36.45	105	1.7			60
OCDD	0.0003	39.49	124	2.7	M		120
2,3,7,8-TCDF	0.1	27.93	<3.7	3.7	M,U	1.4	60
1,2,3,7,8-PeCDF	0.03	30.83	<4.3	2.2	M,J,R	4.3	60
2,3,4,7,8-PeCDF	0.3	31.46	4.24	2.0	M,J		60
1,2,3,4,7,8-HxCDF	0.1	33.23	3.64	1.9	J		60
1,2,3,6,7,8-HxCDF	0.1	33.33	4.24	1.7	M,J		60
2,3,4,6,7,8-HxCDF	0.1	33.76	9.37	1.8	J		60
1,2,3,7,8,9-HxCDF	0.1	34.47	2.82	2.1	M,J		60
1,2,3,4,6,7,8-HpCDF	0.01	35.47	<18	2.1	M,J,R	18	60
1,2,3,4,7,8,9-HpCDF	0.01	37.11	<5.6	2.4	M,J,R	5.6	60
OCDF	0.0003	39.86	15.9	2.1	M,J		120
Field Spike Standards	pg		% Rec	Limits			
37C14-2,3,7,8-TCDD	1200	28.50	92	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.79	93	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.45	102	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	33.21	100	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	37.08	102	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.49	120	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.56	134	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.88	127	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.43	124	25-130			
13C12-OCDD	24000	39.48	114	25-130			
13C12-2,3,7,8-TCDF	12000	27.93	116	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.83	134	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.30	121	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.46	119	25-130			
Cleanup Standard	pg						
13C12-1,2,3,7,8,9-HxCDF	18000	34.45	131	40-130			
Homologue Group Totals	# peaks		Conc. pg	EDL pg			
Total-TCDD	3	40.1	1.7				60
Total-PeCDD	4	55.0	1.6				60
Total-HxCDD	5	217	0.77				60
Total-HpCDD	2	215	1.7				60
Total-TCDF	0	<3.7	3.7		U		60
Total-PeCDF	4	5.24	2.2				60
Total-HxCDF	7	44.9	2.1				60
Total-HpCDF	1	6.31	2.4				60

Toxic Equivalency - (WHO 2005)

pg

Lower Bound PCDD/F TEQ (WHO 2005) 13.1

Mid Point PCDD/F TEQ (WHO 2005) 13.7

Upper Bound PCDD/F TEQ (WHO 2005) 13.8

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 [#1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST#3
ALS Sample ID L2758327-3
Analysis Method EPA M23
Analysis Type Sample
Sample Matrix Stack

Sampling Date 3-Dec-24
Extraction Date 16-Dec-24
Sample Size 1
Percent Moisture n/a
Split Ratio 6

Sample

Approved:
M.Elchawiche
 --e-signature--
 20-Feb-2025

Run Information

Run 1

Filename 12-250213A11
Run Date 13-Feb-25 15:59
Final Volume 20 uL
Dilution Factor 1
Analysis Units pg
Instrument - Column HRMS-12 ZB-DX1187134

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<1.8	1.8	U		60
1,2,3,7,8-PeCDD	1	31.56	2.53	1.3	M,J		60
1,2,3,4,7,8-HxCDD	0.1	33.81	4.29	1.6	J		60
1,2,3,6,7,8-HxCDD	0.1	33.88	8.59	1.5	J		60
1,2,3,7,8,9-HxCDD	0.1	34.06	4.18	1.6	M,J		60
1,2,3,4,6,7,8-HpCDD	0.01	36.41	80.3	1.1			60
OCDD	0.0003	39.45	81.2	1.9	M,J		120
2,3,7,8-TCDF	0.1	NotFnd	<2.8	2.8	U		60
1,2,3,7,8-PeCDF	0.03	30.83	4.76	1.3	M,J		60
2,3,4,7,8-PeCDF	0.3	31.45	5.27	1.2	M,J		60
1,2,3,4,7,8-HxCDF	0.1	33.21	<2.5	1.0	M,J,R	2.5	60
1,2,3,6,7,8-HxCDF	0.1	33.30	<3.3	0.93	M,J,R	3.3	60
2,3,4,6,7,8-HxCDF	0.1	33.73	5.42	0.99	M,J		60
1,2,3,7,8,9-HxCDF	0.1	34.45	2.50	1.1	M,J		60
1,2,3,4,6,7,8-HpCDF	0.01	35.43	<14	2.0	J,R	14	60
1,2,3,4,7,8,9-HpCDF	0.01	37.08	4.51	2.3	M,J		60
OCDF	0.0003	39.77	7.36	1.8	M,J		120
Field Spike Standards	pg		% Rec	Limits			
37C14-2,3,7,8-TCDD	1200	28.49	91	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.78	99	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.43	100	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	33.20	94	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	37.05	103	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.47	110	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.54	121	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.85	120	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.41	123	25-130			
13C12-OCDD	24000	39.42	120	25-130			
13C12-2,3,7,8-TCDF	12000	27.92	92	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.82	123	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.29	121	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.42	116	25-130			
Cleanup Standard	pg						
13C12-1,2,3,7,8,9-HxCDF	18000	34.42	117	40-130			
Homologue Group Totals	# peaks		Conc. pg	EDL pg			
Total-TCDD	2	36.3	1.8			60	
Total-PeCDD	4	69.6	1.3			60	
Total-HxCDD	6	176	1.6			60	
Total-HpCDD	2	154	1.1			60	
Total-TCDF	2	6.32	2.8			60	
Total-PeCDF	5	22.5	1.3			60	
Total-HxCDF	4	19.3	1.1			60	
Total-HpCDF	2	10.4	2.3			60	

Toxic Equivalency - (WHO 2005)

pg

Lower Bound PCDD/F TEQ (WHO 2005)

7.63

Mid Point PCDD/F TEQ (WHO 2005)

9.39

Upper Bound PCDD/F TEQ (WHO 2005)

10.4

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
 TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
 M Indicates that a peak has been manually integrated.
 U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
 R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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 [#2 APC OUTLET] 24-4547-SVOC-(21 THRU 25) TEST#1
ALS Sample ID L2758327-4
Analysis Method EPA M23
Analysis Type Sample
Sample Matrix Stack

Sampling Date 2-Dec-24
Extraction Date 16-Dec-24
Sample Size 1
Percent Moisture n/a
Split Ratio 6

Sample

Approved:
M.Elchawiche
 --e-signature--
 20-Feb-2025

Run Information

Run 1

Filename 12-250213A12
Run Date 13-Feb-25 16:44
Final Volume 20 uL
Dilution Factor 1
Analysis Units pg
Instrument - Column HRMS-12 ZB-DX1187134

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<1.9	1.9	U		60
1,2,3,7,8-PeCDD	1	31.56	3.57	1.5	M,J		60
1,2,3,4,7,8-HxCDD	0.1	33.78	<5.7	2.8	J,R	5.7	60
1,2,3,6,7,8-HxCDD	0.1	33.87	<16	2.6	J,R	16	60
1,2,3,7,8,9-HxCDD	0.1	34.05	<8.8	2.7	J,R	8.8	60
1,2,3,4,6,7,8-HpCDD	0.01	36.42	121	2.7			60
OCDD	0.0003	39.45	111	4.0	M,J		120
2,3,7,8-TCDF	0.1	27.94	<1.7	1.7	M,U		60
1,2,3,7,8-PeCDF	0.03	30.83	3.86	2.0	J		60
2,3,4,7,8-PeCDF	0.3	31.45	7.27	1.8	M,J		60
1,2,3,4,7,8-HxCDF	0.1	33.21	<5.4	1.2	J,R	5.4	60
1,2,3,6,7,8-HxCDF	0.1	33.30	8.89	1.1	J		60
2,3,4,6,7,8-HxCDF	0.1	33.74	13.8	1.1	M,J		60
1,2,3,7,8,9-HxCDF	0.1	34.45	3.64	1.3	M,J		60
1,2,3,4,6,7,8-HpCDF	0.01	35.45	32.7	1.6	J		60
1,2,3,4,7,8,9-HpCDF	0.01	37.06	4.45	1.8	M,J		60
OCDF	0.0003	39.79	27.5	9.0	M,J		120
Field Spike Standards	pg		% Rec	Limits			
37C14-2,3,7,8-TCDD	1200	28.50	83	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.78	90	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.45	83	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	33.20	89	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	37.06	97	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.49	104	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.56	117	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.85	114	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.41	117	25-130			
13C12-OCDD	24000	39.43	109	25-130			
13C12-2,3,7,8-TCDF	12000	27.92	99	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.83	118	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.29	110	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.43	106	25-130			
Cleanup Standard	pg						
13C12-1,2,3,7,8,9-HxCDF	18000	34.43	112	40-130			
Homologue Group Totals	# peaks		Conc. pg	EDL pg			
Total-TCDD	3	79.4	1.9			60	
Total-PeCDD	5	108	1.5			60	
Total-HxCDD	3	252	2.8			60	
Total-HpCDD	2	235	2.7			60	
Total-TCDF	6	20.4	1.7			60	
Total-PeCDF	7	57.3	2.0			60	
Total-HxCDF	6	51.4	1.3			60	
Total-HpCDF	3	51.2	1.8			60	

Toxic Equivalency - (WHO 2005)

pg

Lower Bound PCDD/F TEQ (WHO 2005) 10.1

Mid Point PCDD/F TEQ (WHO 2005) 14.7

Upper Bound PCDD/F TEQ (WHO 2005) 15.8

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 [#2 APC OUTLET] 24-4547-SVOC-(26 THRU 30) TEST#2
ALS Sample ID L2758327-5
Analysis Method EPA M23
Analysis Type Sample
Sample Matrix Stack

Sampling Date 2-Dec-24
Extraction Date 16-Dec-24
Sample Size 1
Percent Moisture n/a
Split Ratio 6

Sample

Approved:
M.Elchawiche
 --e-signature--
 20-Feb-2025

Run Information

Run 1

Filename 12-250213A13
Run Date 13-Feb-25 17:29
Final Volume 20 uL
Dilution Factor 1
Analysis Units pg
Instrument - Column HRMS-12 ZB-DX1187134

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	28.47	<1.6	1.6	M,U	1.1	60
1,2,3,7,8-PeCDD	1	31.58	3.36	1.1	M,J		60
1,2,3,4,7,8-HxCDD	0.1	33.78	5.19	1.9	M,J		60
1,2,3,6,7,8-HxCDD	0.1	33.87	14.5	1.8	M,J		60
1,2,3,7,8,9-HxCDD	0.1	34.06	7.45	1.9	M,J		60
1,2,3,4,6,7,8-HpCDD	0.01	36.42	89.6	2.5			60
OCDD	0.0003	39.46	89.3	2.6	M,J		120
2,3,7,8-TCDF	0.1	27.92	<2.9	2.9	M,U		60
1,2,3,7,8-PeCDF	0.03	30.83	<4.4	3.0	M,J,R	4.4	60
2,3,4,7,8-PeCDF	0.3	31.46	<4.9	2.8	J,R	4.9	60
1,2,3,4,7,8-HxCDF	0.1	33.21	<4.0	1.1	J,R	4.0	60
1,2,3,6,7,8-HxCDF	0.1	33.30	<5.9	1.0	M,J,R	5.9	60
2,3,4,6,7,8-HxCDF	0.1	33.74	12.2	1.1	M,J		60
1,2,3,7,8,9-HxCDF	0.1	34.46	1.89	1.3	M,J		60
1,2,3,4,6,7,8-HpCDF	0.01	35.45	22.2	1.2	J		60
1,2,3,4,7,8,9-HpCDF	0.01	37.06	5.97	1.4	M,J		60
OCDF	0.0003	39.81	17.8	2.4	M,J		120
Field Spike Standards	pg		% Rec	Limits			
37C14-2,3,7,8-TCDD	1200	28.49	91	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.78	99	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.44	102	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	33.20	101	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	37.06	106	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.47	110	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.54	128	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.85	125	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.41	129	25-130			
13C12-OCDD	24000	39.43	127	25-130			
13C12-2,3,7,8-TCDF	12000	27.92	104	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.82	127	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.29	118	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.43	119	25-130			
Cleanup Standard	pg						
13C12-1,2,3,7,8,9-HxCDF	18000	34.43	127	40-130			
Homologue Group Totals	# peaks		Conc. pg	EDL pg			
Total-TCDD	5	80.4	1.6			60	
Total-PeCDD	4	38.1	1.1			60	
Total-HxCDD	6	222	1.9			60	
Total-HpCDD	2	174	2.5			60	
Total-TCDF	3	10.1	2.9			60	
Total-PeCDF	2	17.9	3.0			60	
Total-HxCDF	6	47.9	1.3			60	
Total-HpCDF	3	36.5	1.4			60	

Toxic Equivalency - (WHO 2005)

pg

Lower Bound PCDD/F TEQ (WHO 2005)

8.69

Mid Point PCDD/F TEQ (WHO 2005)

12.2

Upper Bound PCDD/F TEQ (WHO 2005)

13.2

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
 TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
 M Indicates that a peak has been manually integrated.
 U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
 R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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 [#1 APC OUTLET] 24-4547-SVOC-(16 THRU 20) BLANK1
ALS Sample ID L2758327-6
Analysis Method EPA M23
Analysis Type Sample
Sample Matrix Stack

Sampling Date 11-Dec-24
Extraction Date 16-Dec-24
Sample Size 1
Percent Moisture n/a
Split Ratio 6

Approved:
M.Elchawiche
 --e-signature--
 20-Feb-2025

Run Information

Run 1

Filename 12-250213A14
Run Date 13-Feb-25 18:13
Final Volume 20 uL
Dilution Factor 1
Analysis Units pg
Instrument - Column HRMS-12 ZB-DX1187134

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<1.0	1.0	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<1.4	1.4	U		60
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.1	1.1	U		60
1,2,3,6,7,8-HxCDD	0.1	33.90	<1.1	1.1	M,U	0.74	60
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<1.1	1.1	U		60
1,2,3,4,6,7,8-HpCDD	0.01	36.42	<2.4	2.4	M,U		60
OCDD	0.0003	39.48	7.23	1.8	M,J,B		120
2,3,7,8-TCDF	0.1	NotFnd	<1.3	1.3	U		60
1,2,3,7,8-PeCDF	0.03	30.84	2.10	0.94	M,J		60
2,3,4,7,8-PeCDF	0.3	NotFnd	<0.86	0.86	U		60
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<0.51	0.51	U		60
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<0.47	0.47	U		60
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.50	0.50	U		60
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<0.58	0.58	U		60
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<1.3	1.3	U		60
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<1.4	1.4	U		60
OCDF	0.0003	NotFnd	<2.1	2.1	U		120
Field Spike Standards	pg		% Rec	Limits			
37Cl4-2,3,7,8-TCDD	1200	28.50	94	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.79	97	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.45	104	70-130			
13C12-1,2,3,4,7,8-HxCDF	12000	33.21	101	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	12000	37.08	102	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.49	90	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.56	102	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.87	98	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.43	100	25-130			
13C12-OCDD	24000	39.46	94	25-130			
13C12-2,3,7,8-TCDF	12000	27.93	84	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.83	100	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.30	92	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.46	93	25-130			
Cleanup Standard	pg						
13C12-1,2,3,7,8,9-HxCDF	18000	34.45	108	40-130			
Homologue Group Totals		# peaks	Conc. pg	EDL pg			
Total-TCDD		0	<1.0	1.0	U		60
Total-PeCDD		0	<1.4	1.4	U		60
Total-HxCDD		0	<1.1	1.1	U		60
Total-HpCDD		0	<2.4	2.4	U		60
Total-TCDF		0	<1.3	1.3	U		60
Total-PeCDF		1	2.10	0.94			60
Total-HxCDF		0	<0.58	0.58	U		60
Total-HpCDF		0	<1.4	1.4	U		60

Toxic Equivalency - (WHO 2005)

pg

Lower Bound PCDD/F TEQ (WHO 2005) 0.0652

Mid Point PCDD/F TEQ (WHO 2005) 1.75

Upper Bound PCDD/F TEQ (WHO 2005) 3.44

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name [#2 APC OUTLET] 24-4547-SVOC-(36 THRU 40) BLANK2
ALS Sample ID L2758327-7
Analysis Method EPA M23
Analysis Type Sample
Sample Matrix Stack

Sampling Date 11-Dec-24
Extraction Date 16-Dec-24
Sample Size 1
Percent Moisture n/a
Split Ratio 6

Approved:
M.Elchawiche
 --e-signature--
 20-Feb-2025

Run Information

Run 1

Filename 12-250213A15
Run Date 13-Feb-25 18:58
Final Volume 20 uL
Dilution Factor 1
Analysis Units pg
Instrument - Column HRMS-12 ZB-DX1187134

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<1.4	1.4	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<1.3	1.3	U		60
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<0.81	0.81	U		60
1,2,3,6,7,8-HxCDD	0.1	33.87	2.88	0.78	J		60
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<0.79	0.79	U		60
1,2,3,4,6,7,8-HpCDD	0.01	36.44	<6.3	1.2	J,R	6.3	60
OCDD	0.0003	39.51	13.6	3.1	M,J,B		120
2,3,7,8-TCDF	0.1	27.97	<1.7	1.7	M,U	0.58	60
1,2,3,7,8-PeCDF	0.03	30.83	<1.6	0.77	M,J,R	1.6	60
2,3,4,7,8-PeCDF	0.3	NotFnd	<0.71	0.71	U		60
1,2,3,4,7,8-HxCDF	0.1	33.23	<1.1	1.1	M,U	0.87	60
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<1.1	1.1	U		60
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<1.1	1.1	U		60
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<1.3	1.3	U		60
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<1.1	1.1	U		60
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<1.2	1.2	U		60
OCDF	0.0003	39.84	<2.9	2.9	M,U		120
Field Spike Standards	pg		% Rec	Limits			
37Cl4-2,3,7,8-TCDD	1200	28.50	95	70-130			
13C12-1,2,3,4,7,8-HxCDD	12000	33.78	93	70-130			
13C12-2,3,4,7,8-PeCDF	12000	31.44	100	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	37.08	105	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.49	94	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.54	111	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.87	114	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.43	114	25-130			
13C12-OCDD	24000	39.47	110	25-130			
13C12-2,3,7,8-TCDF	12000	27.92	92	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.82	113	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.29	109	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.45	108	25-130			
Cleanup Standard	pg						
13C12-1,2,3,7,8,9-HxCDF	18000	34.43	123	40-130			
Homologue Group Totals	# peaks		Conc. pg	EDL pg			
Total-TCDD	0	<1.4	1.4	U		60	
Total-PeCDD	0	<1.3	1.3	U		60	
Total-HxCDD	2	4.92	0.81			60	
Total-HpCDD	1	3.59	1.2			60	
Total-TCDF	0	<1.7	1.7	U		60	
Total-PeCDF	0	<0.77	0.77	U		60	
Total-HxCDF	0	<1.3	1.3	U		60	
Total-HpCDF	0	<1.2	1.2	U		60	

Toxic Equivalency - (WHO 2005)

pg

Lower Bound PCDD/F TEQ (WHO 2005) 0.292

Mid Point PCDD/F TEQ (WHO 2005) 2.27

Upper Bound PCDD/F TEQ (WHO 2005) 4.13

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Sample	Approved: M.Elchawiche --e-signature-- 20-Feb-2025
ALS Sample ID	WG3791199-1	Extraction Date	16-Dec-24		
Analysis Method	EPA M23	Sample Size	1		
Analysis Type	Blank	Percent Moisture	n/a		
Sample Matrix	QC	Split Ratio	6		

Run Information	Run 1
Filename	12-250213A07
Run Date	13-Feb-25 13:00
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-12 ZB-DX1187134

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<2.0	2.0	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<2.1	2.1	U		60
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.5	1.5	U		60
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<1.5	1.5	U		60
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<1.5	1.5	U		60
1,2,3,4,6,7,8-HpCDD	0.01	36.45	3.43	2.0	M,J		60
OCDD	0.0003	39.51	6.52	4.3	M,J		120
2,3,7,8-TCDF	0.1	NotFnd	<2.0	2.0	U		60
1,2,3,7,8-PeCDF	0.03	30.83	<2.8	1.1	M,J,R	2.8	60
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.0	1.0	U		60
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<1.0	1.0	U		60
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<0.94	0.94	U		60
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<1.0	1.0	U		60
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<1.2	1.2	U		60
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<1.6	1.6	U		60
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<1.8	1.8	U		60
OCDF	0.0003	NotFnd	<2.2	2.2	U		120
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	79	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.56	93	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	33.87	97	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.43	101	25-130			
13C12-OCDD	24000	39.47	96	25-130			
13C12-2,3,7,8-TCDF	12000	27.92	71	40-130			
13C12-1,2,3,7,8-PeCDF	12000	30.83	89	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	35.46	92	25-130			
Cleanup Standard	pg						
13C12-1,2,3,7,8,9-HxCDF	18000	34.45	111	40-130			
Homologue Group Totals	# peaks		Conc. pg	EDL pg			
Total-TCDD	0	<2.0	2.0	U		60	
Total-PeCDD	0	<2.1	2.1	U		60	
Total-HxCDD	0	<1.5	1.5	U		60	
Total-HpCDD	1	3.43	2.0			60	
Total-TCDF	0	<2.0	2.0	U		60	
Total-PeCDF	0	<1.1	1.1	U		60	
Total-HxCDF	0	<1.2	1.2	U		60	
Total-HpCDF	0	<1.8	1.8	U		60	

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	0.0363
Mid Point PCDD/F TEQ (WHO 2005)	2.87
Upper Bound PCDD/F TEQ (WHO 2005)	5.62

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure
NS	Indicates that this compound was not spiked

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	Approved: M.Elchawiche --e-signature-- 20-Feb-2025
ALS Sample ID	WG3791199-2	Extraction Date	16-Dec-24	
Analysis Method	EPA M23	Sample Size	1 n/a	
Analysis Type	LCS	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	6	

Run Information	Run 1
Filename	12-250213A02
Run Date	13-Feb-25 10:41
Final Volume	20 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-12 ZB-DX1187134

Target Analytes	pg	Ret. Time	% Rec	Limits	Flags
2,3,7,8-TCDD	1200	28.50	93	70-130	
1,2,3,7,8-PeCDD	6000	31.57	107	70-130	
1,2,3,4,7,8-HxCDD	6000	33.81	97	70-130	
1,2,3,6,7,8-HxCDD	6000	33.88	92	70-130	
1,2,3,7,8,9-HxCDD	6000	34.08	96	70-130	
1,2,3,4,6,7,8-HpCDD	6000	36.44	98	70-130	
OCDD	12000	39.47	92	70-130	
2,3,7,8-TCDF	1200	27.94	102	70-130	
1,2,3,7,8-PeCDF	6000	30.83	113	70-130	
2,3,4,7,8-PeCDF	6000	31.46	101	70-130	
1,2,3,4,7,8-HxCDF	6000	33.23	103	70-130	
1,2,3,6,7,8-HxCDF	6000	33.31	107	70-130	
2,3,4,6,7,8-HxCDF	6000	33.74	100	70-130	
1,2,3,7,8,9-HxCDF	6000	34.46	112	70-130	
1,2,3,4,6,7,8-HpCDF	6000	35.46	106	70-130	
1,2,3,4,7,8,9-HpCDF	6000	37.08	105	70-130	
OCDF	12000	39.83	98	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	28.49	103	40-130	
13C12-1,2,3,7,8-PeCDD	12000	31.56	119	40-130	
13C12-1,2,3,6,7,8-HxCDD	12000	33.87	116	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	12000	36.43	128	25-130	
13C12-OCDD	24000	39.46	126	25-130	
13C12-2,3,7,8-TCDF	12000	27.92	99	40-130	
13C12-1,2,3,7,8-PeCDF	12000	30.83	119	40-130	
13C12-1,2,3,6,7,8-HxCDF	12000	33.30	114	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.45	120	25-130	
Cleanup Standard	pg				
13C12-1,2,3,7,8,9-HxCDF	18000	34.44	131	40-130	

NS Indicates that this compound was not spiked



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact: Lynne Wrona
ALS Project ID: ORT100
ALS WO#: L2758327
Date of Report: 10-Jan-25
Date of Sample Receipt: 6-Dec-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 / 22330 Reworld

COMMENTS: PCB Congeners by EPA 1668C

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

Certified by:

A handwritten signature in black ink, appearing to read "R. McLeod".

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.

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Sample Analysis Summary Report

Sample Name	[#1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1	[#1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST#2	[#1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST#3	[#2 APC OUTLET] 24-4547-SVOC-(21 THRU 25) TEST#1	[#2 APC OUTLET] 24-4547-SVOC-(26 THRU 30) TEST#2	[#1 APC OUTLET] 24-4547-SVOC-(16 THRU 20) BLANK1
ALS Sample ID	L2758327-1	L2758327-2	L2758327-3	L2758327-4	L2758327-5	L2758327-6
Sample Size	1	1	1	1	1	1
Sample size units	sample	sample	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	2-Dec-24	2-Dec-24	3-Dec-24	2-Dec-24	2-Dec-24	11-Dec-24
Extraction Date	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24
Target Analytes	pg	pg	pg	pg	pg	pg
PCB-081	<5.3	50.4	<3.1	<4.7	<3.3	<2.8
PCB-077	94.0	1100	86.8	181	81.2	<2.6
PCB-123	32.8	210	29.4	33.6	15.8	<3.0
PCB-118	2060	11100	1570	2530	1270	10.5
PCB-114	50.5	282	<32	56.0	27.6	<2.9
PCB-105	488	2930	413	642	326	<4.5
PCB-126	<4.8	17.5	5.24	<11	3.23	<2.9
PCB-167	14.3	53.0	11.1	18.0	11.9	<1.4
PCB-156/157	30.8	130	31.0	41.5	24.0	3.54
PCB-169	<3.2	<2.6	<3.1	<3.9	<3.1	<1.4
PCB-189	<1.6	<1.6	<2.5	<3.7	<2.7	<1.0
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
13C12-PCB-081	49	65	61	49	67	55
13C12-PCB-077	52	67	66	53	71	60
13C12-PCB-123	52	68	66	52	74	60
13C12-PCB-118	50	66	64	50	72	58
13C12-PCB-114	50	64	64	50	71	59
13C12-PCB-105	50	65	64	50	71	60
13C12-PCB-126	53	69	69	53	80	65
13C12-PCB-167	58	75	72	57	82	69
13C12-PCB-156/157	58	75	71	57	82	69
13C12-PCB-169	64	83	81	64	93	79
13C12-PCB-189	57	74	72	58	84	76
Cleanup Standards						
13C12-PCB-028	50	61	50	47	57	53
13C12-PCB-111	64	74	66	53	75	65
13C12-PCB-178	79	87	79	63	90	82

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Sample Analysis Summary Report

Sample Name	[#1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1	[#1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST#2	[#1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST#3	[#2 APC OUTLET] 24-4547-SVOC-(21 THRU 25) TEST#1	[#2 APC OUTLET] 24-4547-SVOC-(26 THRU 30) TEST#2	[#1 APC OUTLET] 24-4547-SVOC-(16 THRU 20) BLANK1
ALS Sample ID	L2758327-1	L2758327-2	L2758327-3	L2758327-4	L2758327-5	L2758327-6
Sample Size	1	1	1	1	1	1
Sample size units	sample	sample	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	2-Dec-24	2-Dec-24	3-Dec-24	2-Dec-24	2-Dec-24	11-Dec-24
Extraction Date	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24
Target Analytes	pg	pg	pg	pg	pg	pg
Homologue Group Totals						
Total MonoCB	185	912	250	307	675	27.9
Total DiCB	1250	19400	4780	1830	1890	146
Total TriCB	4600	215000	3390	11900	2080	24.8
Total TetraCB	18000	404000	17200	26200	12900	72.2
Total PentaCB	23700	197000	18500	24700	12300	63.5
Total HexaCB	4910	31800	3770	5570	2400	103
Total HeptaCB	370	1480	317	475	187	81.5
Total OctaCB	46.0	141	60.0	65.7	31.4	23.9
Total NonaCB	<2.5	6.30	<2.4	<2.1	<2.3	<1.9
DecaCB	7.90	6.53	6.90	7.24	6.10	<1.1
Total PCB	53100	869000	48200	71000	32400	543
Toxic Equivalency - (WHO 2005)						
Lower Bound PCB TEQ	0.0897	2.32	0.594	0.118	0.381	0.000421
Mid Point PCB TEQ	0.667	2.39	0.689	1.34	0.428	0.167
Upper Bound PCB TEQ	0.667	2.39	0.689	1.34	0.475	0.334

ALS Life Sciences

Sample Analysis Summary Report

Sample Name

[# 2 APC OUTLET]
24-4547-SVOC-(36
THRU 40) BLANK2

ALS Sample ID

L2758327-7

Sample Size

1

Sample size units

sample

Percent Moisture

n/a

Sample Matrix

Stack

Sampling Date

11-Dec-24

Extraction Date

16-Dec-24

Target Analytes

pg

PCB-081	<3.1
PCB-077	<3.1
PCB-123	<2.7
PCB-118	9.24
PCB-114	<2.7
PCB-105	<2.7
PCB-126	<2.8
PCB-167	<2.1
PCB-156/157	<2.8
PCB-169	<2.2
PCB-189	<1.8

Extraction Standards

% Rec

13C12-PCB-081	40
13C12-PCB-077	42
13C12-PCB-123	42
13C12-PCB-118	41
13C12-PCB-114	41
13C12-PCB-105	41
13C12-PCB-126	43
13C12-PCB-167	48
13C12-PCB-156/157	48
13C12-PCB-169	53
13C12-PCB-189	49

Cleanup Standards

13C12-PCB-028	43
13C12-PCB-111	47
13C12-PCB-178	57

ALS Life Sciences

Sample Analysis Summary Report

Sample Name

[# 2 APC OUTLET]
24-4547-SVOC-(36
THRU 40) BLANK2

ALS Sample ID

L2758327-7

Sample Size

1

Sample size units

sample

Percent Moisture

n/a

Sample Matrix

Stack

Sampling Date

11-Dec-24

Extraction Date

16-Dec-24

Target Analytes**pg****Homologue Group Totals**

Total MonoCB	19.6
Total DiCB	56.6
Total TriCB	15.1
Total TetraCB	61.0
Total PentaCB	58.4
Total HexaCB	26.6
Total HeptaCB	70.2
Total OctaCB	40.5
Total NonaCB	<3.5
DecaCB	6.20
Total PCB	354

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.000277
Mid Point PCB TEQ	0.174
Upper Bound PCB TEQ	0.348

ALS Life Sciences

Quality Control Summary Report

Sample Name

Method Blank

ALS Sample ID	WG3791199-1
Sample Size	1
Sample size units	sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	16-Dec-24

Target Analytes	pg
PCB-081	<4.7
PCB-077	<4.7
PCB-123	<3.6
PCB-118	<5.7
PCB-114	<3.7
PCB-105	<3.5
PCB-126	<3.6
PCB-167	<2.4
PCB-156/157	<3.2
PCB-169	<2.4
PCB-189	<2.3
Extraction Standards	% Rec
13C12-PCB-081	31
13C12-PCB-077	33
13C12-PCB-123	33
13C12-PCB-118	33
13C12-PCB-114	32
13C12-PCB-105	34
13C12-PCB-126	35
13C12-PCB-167	39
13C12-PCB-156/157	39
13C12-PCB-169	44
13C12-PCB-189	41
Cleanup Standards	
13C12-PCB-028	34
13C12-PCB-111	39
13C12-PCB-178	48

ALS Life Sciences

Quality Control Summary Report

Sample Name

Method Blank

ALS Sample ID	WG3791199-1
Sample Size	1
Sample size units	sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	16-Dec-24

Target Analytes

pg

Homologue Group Totals

Total MonoCB	9.70
Total DiCB	29.0
Total TriCB	<5.0
Total TetraCB	13.0
Total PentaCB	5.70
Total HexaCB	12.7
Total HeptaCB	<2.1
Total OctaCB	6.80
Total NonaCB	<4.8
DecaCB	<5.0
Total PCB	76.9

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.217
Upper Bound PCB TEQ	0.435

ALS Life Sciences

Sample Analysis Summary Report

Sample Name

Laboratory Control
Sample

ALS Sample ID

WG3791199-2

Sample Size

1

Sample size units

n/a

Percent Moisture

n/a

Sample Matrix

QC

Sampling Date

n/a

Extraction Date

16-Dec-24

Target Analytes

% Rec

PCB-081	95
PCB-077	90
PCB-123	91
PCB-118	94
PCB-114	94
PCB-105	92
PCB-126	90
PCB-167	91
PCB-156/157	90
PCB-169	88
PCB-189	95

Extraction Standards

% Rec

13C12-PCB-081	55
13C12-PCB-077	60
13C12-PCB-123	62
13C12-PCB-118	60
13C12-PCB-114	60
13C12-PCB-105	62
13C12-PCB-126	69
13C12-PCB-167	73
13C12-PCB-156/157	73
13C12-PCB-169	85
13C12-PCB-189	76

Cleanup Standards

13C12-PCB-028	50
13C12-PCB-111	62
13C12-PCB-178	81

ALS Life Sciences									
Sample Analysis Report									
Sample Name		#1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1			Sampling Date		2-Dec-24		sample
ALS Sample ID		L2758327-1			Extraction Date		16-Dec-24		
Analysis Method		EPA 1668C			Sample Size		1		
Analysis Type		Sample			Percent Moisture		n/a		
Sample Matrix		Stack			Split Ratio		6		
Approved: B.SINGH --e-signature-- 24-Dec-2024									
Run Information		Run 1							
Filename		6-241221A06							
Run Date		21-Dec-24 13:51							
Final Volume		25 ul							
Dilution Factor		1							
Analysis Units		pg							
Instrument - Column		HRMS-6 SPBOCTYL-286729-01							
Target Analytes		TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL	
PCB-081		0.0003	NotFnd	<5.3	5.3		U	150	
PCB-077		0.0001	22.72	94.0	5.3		J	150	
PCB-123		0.00003	23.69	32.8	3.4		M,J	150	
PCB-118		0.00003	23.88	2060	3.3			150	
PCB-114		0.00003	24.19	50.5	3.5		J	150	
PCB-105		0.00003	24.54	488	3.5			150	
PCB-126		0.1	26.14	<4.8	3.5		M,J,R	4.8	150
PCB-167		0.00003	27.03	14.3	2.2		J	150	
PCB-156/157		0.00003	27.66	30.8	2.7		J	300	
PCB-169		0.03	29.34	<3.2	2.2		J,R	3.2	150
PCB-189		0.00003	NotFnd	<1.6	1.6		U	150	
Extraction Standards		pg	Time	% Rec	Limits				
13C12-PCB-081		12000	22.41	49	10-145				
13C12-PCB-077		12000	22.70	52	10-145				
13C12-PCB-123		12000	23.70	52	10-145				
13C12-PCB-118		12000	23.87	50	10-145				
13C12-PCB-114		12000	24.17	50	10-145				
13C12-PCB-105		12000	24.53	50	10-145				
13C12-PCB-126		12000	26.13	53	10-145				
13C12-PCB-167		12000	27.02	58	10-145				
13C12-PCB-156/157		24000	27.66	58	10-145				
13C12-PCB-169		12000	29.33	64	10-145				
13C12-PCB-189		12000	30.62	57	10-145				
Cleanup Standards									
13C12-PCB-028		18000	16.55	50	5-145				
13C12-PCB-111		18000	22.62	64	10-145				
13C12-PCB-178		18000	25.68	79	10-145				

ALS Life Sciences							
Sample Analysis Report							
Sample Name		#1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1		Sampling Date		2-Dec-24	
ALS Sample ID		L2758327-1		Extraction Date		16-Dec-24	
Analysis Method		EPA 1668C		Sample Size		1 sample	
Analysis Type		Sample		Percent Moisture		n/a	
Sample Matrix		Stack		Split Ratio		6	
Run Information		Run 1					
Filename		6-241221A06					
Run Date		21-Dec-24 13:51					
Final Volume		25 ul					
Dilution Factor		1					
Analysis Units		pg					
Instrument - Column		HRMS-6 SPBOCTYL-286729-01					
Target Analytes		TEF	Ret.	Conc.	EDL	EMPC	
		(WHO 2005)	Time	pg	pg Flags	pg	LQL
Homologue Group Totals							
Total MonoCB				185	2.6	J	600
Total DiCB				1250	2.9	J	1200
Total TriCB				4600	3.3	J	1200
Total TetraCB				18000	1.5	J	2400
Total PentaCB				23700	2.0	J	2400
Total HexaCB				4910	1.4	J	2400
Total HeptaCB				370	1.2	J	1200
Total OctaCB				46.0	0.95	J	1200
Total NonaCB				<2.5	2.5	U	600
DecaCB				7.90	1.4	J	600
Total PCB				53100		J	4800
Toxic Equivalency - (WHO 2005)							
Lower Bound PCB TEQ		0.0897					
Mid Point PCB TEQ		0.667					
Upper Bound PCB TEQ		0.667					
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 identified. The associated numerical result is an estimate.					
R		Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.					
EMPC		Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure					

ALS Life Sciences									
Sample Analysis Report									
Sample Name		#1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST#2			Sampling Date		2-Dec-24		sample
ALS Sample ID		L2758327-2			Extraction Date		16-Dec-24		
Analysis Method		EPA 1668C			Sample Size		1		
Analysis Type		Sample			Percent Moisture		n/a		
Sample Matrix		Stack			Split Ratio		6		
Approved: B.SINGH --e-signature-- 24-Dec-2024									
Run Information		Run 1							
Filename		6-241221A07							
Run Date		21-Dec-24 14:37							
Final Volume		25 ul							
Dilution Factor		1							
Analysis Units		pg							
Instrument - Column		HRMS-6 SPBOCTYL-286729-01							
Target Analytes		TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL	
PCB-081		0.0003	22.40	50.4	6.4	M,J		150	
PCB-077		0.0001	22.72	1100	6.5			150	
PCB-123		0.00003	23.69	210	3.1	M		150	
PCB-118		0.00003	23.88	11100	3.0			150	
PCB-114		0.00003	24.19	282	3.3			150	
PCB-105		0.00003	24.54	2930	3.2			150	
PCB-126		0.1	26.14	17.5	3.2	M,J		150	
PCB-167		0.00003	27.03	53.0	1.6	J		150	
PCB-156/157		0.00003	27.66	130	2.0	J		300	
PCB-169		0.03	29.33	<2.6	1.6	M,J,R	2.6	150	
PCB-189		0.00003	30.61	<1.6	1.2	J,R	1.6	150	
Extraction Standards		pg	Time	% Rec	Limits				
13C12-PCB-081		12000	22.41	65	10-145				
13C12-PCB-077		12000	22.71	67	10-145				
13C12-PCB-123		12000	23.70	68	10-145				
13C12-PCB-118		12000	23.87	66	10-145				
13C12-PCB-114		12000	24.17	64	10-145				
13C12-PCB-105		12000	24.52	65	10-145				
13C12-PCB-126		12000	26.13	69	10-145				
13C12-PCB-167		12000	27.02	75	10-145				
13C12-PCB-156/157		24000	27.66	75	10-145				
13C12-PCB-169		12000	29.33	83	10-145				
13C12-PCB-189		12000	30.61	74	10-145				
Cleanup Standards									
13C12-PCB-028		18000	16.55	61	5-145				
13C12-PCB-111		18000	22.63	74	10-145				
13C12-PCB-178		18000	25.68	87	10-145				

ALS Life Sciences						
Sample Analysis Report						
Sample Name	#1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST#2			Sampling Date	2-Dec-24	
ALS Sample ID	L2758327-2			Extraction Date	16-Dec-24	
Analysis Method	EPA 1668C			Sample Size	1	sample
Analysis Type	Sample			Percent Moisture	n/a	
Sample Matrix	Stack			Split Ratio	6	
Run Information	Run 1					
Filename	6-241221A07					
Run Date	21-Dec-24 14:37					
Final Volume	25 ul					
Dilution Factor	1					
Analysis Units	pg					
Instrument - Column	HRMS-6 SPBOCTYL-286729-01					
Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg LQL
Homologue Group Totals						
Total MonoCB			912	2.1	J	600
Total DiCB			19400	2.3	J	1200
Total TriCB			215000	2.2	J	1200
Total TetraCB			404000	1.9	J	2400
Total PentaCB			197000	1.5	J	2400
Total HexaCB			31800	0.69	J	2400
Total HeptaCB			1480	1.2	J	1200
Total OctaCB			141	0.75	J	1200
Total NonaCB			6.30	1.8	J	600
DecaCB			6.53	1.6	J	600
Total PCB			869000		J	4800
Toxic Equivalency - (WHO 2005)						
Lower Bound PCB TEQ			2.32			
Mid Point PCB TEQ			2.39			
Upper Bound PCB TEQ			2.39			
EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.					
TEF	Indicates the Toxic Equivalency Factor			TEQ	Indicates the Toxic Equivalency	
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.					
M	Indicates that a peak has been manually integrated.					
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.					
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.					
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure					

ALS Life Sciences									
Sample Analysis Report									
Sample Name		#1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST #3			Sampling Date		3-Dec-24		sample
ALS Sample ID		L2758327-3			Extraction Date		16-Dec-24		
Analysis Method		EPA 1668C			Sample Size		1		
Analysis Type		Sample			Percent Moisture		n/a		
Sample Matrix		Stack			Split Ratio		6		
Approved: B.SINGH --e-signature-- 24-Dec-2024									
Run Information		Run 1							
Filename		6-241221A08							
Run Date		21-Dec-24 15:24							
Final Volume		25 ul							
Dilution Factor		1							
Analysis Units		pg							
Instrument - Column		HRMS-6 SPBOCTYL-286729-01							
Target Analytes		TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL	
PCB-081		0.0003	NotFnd	<3.1	3.1		U	150	
PCB-077		0.0001	22.71	86.8	3.1		J	150	
PCB-123		0.00003	23.67	29.4	2.7		M,J	150	
PCB-118		0.00003	23.87	1570	2.7			150	
PCB-114		0.00003	24.18	<32	2.7	M,J,R	32	150	
PCB-105		0.00003	24.53	413	2.7			150	
PCB-126		0.1	26.12	5.24	2.6		M,J	150	
PCB-167		0.00003	27.02	11.1	1.8		J	150	
PCB-156/157		0.00003	27.65	31.0	2.3		J	300	
PCB-169		0.03	29.31	<3.1	1.7	M,J,R	3.1	150	
PCB-189		0.00003	30.61	<2.5	1.3	M,J,R	2.5	150	
Extraction Standards		pg	Time	% Rec	Limits				
13C12-PCB-081		12000	22.40	61	10-145				
13C12-PCB-077		12000	22.70	66	10-145				
13C12-PCB-123		12000	23.69	66	10-145				
13C12-PCB-118		12000	23.86	64	10-145				
13C12-PCB-114		12000	24.17	64	10-145				
13C12-PCB-105		12000	24.52	64	10-145				
13C12-PCB-126		12000	26.12	69	10-145				
13C12-PCB-167		12000	27.01	72	10-145				
13C12-PCB-156/157		24000	27.65	71	10-145				
13C12-PCB-169		12000	29.32	81	10-145				
13C12-PCB-189		12000	30.61	72	10-145				
Cleanup Standards									
13C12-PCB-028		18000	16.54	50	5-145				
13C12-PCB-111		18000	22.62	66	10-145				
13C12-PCB-178		18000	25.68	79	10-145				

ALS Life Sciences									
Sample Analysis Report									
Sample Name		#1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST #3			Sampling Date		3-Dec-24		Approved: B.SINGH --e-signature-- 24-Dec-2024
ALS Sample ID		L2758327-3			Extraction Date		16-Dec-24		
Analysis Method		EPA 1668C			Sample Size		1 sample		
Analysis Type		Sample			Percent Moisture		n/a		
Sample Matrix		Stack			Split Ratio		6		
Run Information		Run 1							
Filename		6-241221A08							
Run Date		21-Dec-24 15:24							
Final Volume		25 ul							
Dilution Factor		1							
Analysis Units		pg							
Instrument - Column		HRMS-6 SPBOCTYL-286729-01							
Target Analytes		TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg Flags	EMPC pg	LQL		
Homologue Group Totals									
Total MonoCB				250	2.6 J		600		
Total DiCB				4780	2.8 J		1200		
Total TriCB				3390	3.1 J		1200		
Total TetraCB				17200	1.7 J		2400		
Total PentaCB				18500	1.8 J		2400		
Total HexaCB				3770	1.5 J		2400		
Total HeptaCB				317	1.1 J		1200		
Total OctaCB				60.0	0.93 J		1200		
Total NonaCB				<2.4	2.4 U		600		
DecaCB				6.90	2.3 J		600		
Total PCB				48200	J		4800		
Toxic Equivalency - (WHO 2005)									
Lower Bound PCB TEQ				0.594					
Mid Point PCB TEQ				0.689					
Upper Bound PCB TEQ				0.689					
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 identified. The associated numerical result is an estimate.							
R		Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.							
EMPC		Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure							

ALS Life Sciences									
Sample Analysis Report									
Sample Name		# 2 APC OUTLET] 24-4547-SVOC-(21 THRU 25) TEST #1				Sampling Date		2-Dec-24	
ALS Sample ID		L2758327-4				Extraction Date		16-Dec-24	
Analysis Method		EPA 1668C				Sample Size		1	
Analysis Type		Sample				Percent Moisture		n/a	
Sample Matrix		Stack				Split Ratio		6	
Run Information		Run 1							
Filename		6-241221A09							
Run Date		21-Dec-24 16:10							
Final Volume		25 ul							
Dilution Factor		1							
Analysis Units		pg							
Instrument - Column		HRMS-6 SPBOCTYL-286729-01							
Target Analytes		TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL	
PCB-081		0.0003	NotFnd	<4.7	4.7		U	150	
PCB-077		0.0001	22.72	181	4.4			150	
PCB-123		0.00003	23.70	33.6	3.6	M,J		150	
PCB-118		0.00003	23.88	2530	3.5			150	
PCB-114		0.00003	24.19	56.0	3.6		J	150	
PCB-105		0.00003	24.54	642	3.6			150	
PCB-126		0.1	26.13	<11	3.8	M,J,R	11	150	
PCB-167		0.00003	27.03	18.0	1.7		J	150	
PCB-156/157		0.00003	27.67	41.5	2.2		J	300	
PCB-169		0.03	29.33	<3.9	1.7	M,J,R	3.9	150	
PCB-189		0.00003	30.61	<3.7	1.4	J,R	3.7	150	
Extraction Standards		pg	Time	% Rec	Limits				
13C12-PCB-081		12000	22.41	49	10-145				
13C12-PCB-077		12000	22.71	53	10-145				
13C12-PCB-123		12000	23.70	52	10-145				
13C12-PCB-118		12000	23.87	50	10-145				
13C12-PCB-114		12000	24.18	50	10-145				
13C12-PCB-105		12000	24.53	50	10-145				
13C12-PCB-126		12000	26.13	53	10-145				
13C12-PCB-167		12000	27.02	57	10-145				
13C12-PCB-156/157		24000	27.66	57	10-145				
13C12-PCB-169		12000	29.33	64	10-145				
13C12-PCB-189		12000	30.61	58	10-145				
Cleanup Standards									
13C12-PCB-028		18000	16.55	47	5-145				
13C12-PCB-111		18000	22.63	53	10-145				
13C12-PCB-178		18000	25.69	63	10-145				

ALS Life Sciences						
Sample Analysis Report						
Sample Name		#2 APC OUTLET] 24-4547-SVOC-(21 THRU 25) TEST #1			Sampling Date	
ALS Sample ID		L2758327-4			Extraction Date	
Analysis Method		EPA 1668C			Sample Size	
Analysis Type		Sample			Percent Moisture	
Sample Matrix		Stack			Split Ratio	
					6	
					sample	
					Approved: B.SINGH --e-signature-- 24-Dec-2024	
Run Information		Run 1				
Filename		6-241221A09				
Run Date		21-Dec-24 16:10				
Final Volume		25 ul				
Dilution Factor		1				
Analysis Units		pg				
Instrument - Column		HRMS-6 SPBOCTYL-286729-01				
Target Analytes		TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg Flags	EMPC pg LQL
Homologue Group Totals						
Total MonoCB				307	2.1	J 600
Total DiCB				1830	2.4	J 1200
Total TriCB				11900	2.4	J 1200
Total TetraCB				26200	1.9	J 2400
Total PentaCB				24700	1.5	J 2400
Total HexaCB				5570	1.0	J 2400
Total HeptaCB				475	1.1	J 1200
Total OctaCB				65.7	0.94	J 1200
Total NonaCB				<2.1	2.1	U 600
DecaCB				7.24	1.4	J 600
Total PCB				71000		J 4800
Toxic Equivalency - (WHO 2005)						
Lower Bound PCB TEQ		0.118				
Mid Point PCB TEQ		1.34				
Upper Bound PCB TEQ		1.34				
EDL		Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.				
TEF		Indicates the Toxic Equivalency Factor				
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 identified. The associated numerical result is an estimate.				
R		Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.				
EMPC		Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure				

ALS Life Sciences									
Sample Analysis Report									
Sample Name		# 2 APC OUTLET] 24-4547-SVOC-(26 THRU 30) TEST #2			Sampling Date		2-Dec-24		sample
ALS Sample ID		L2758327-5			Extraction Date		16-Dec-24		
Analysis Method		EPA 1668C			Sample Size		1		
Analysis Type		Sample			Percent Moisture		n/a		
Sample Matrix		Stack			Split Ratio		6		
Approved: B.SINGH --e-signature-- 24-Dec-2024									
Run Information									
Run 1									
Filename		6-241221A10							
Run Date		21-Dec-24 16:56							
Final Volume		25 ul							
Dilution Factor		1							
Analysis Units		pg							
Instrument - Column		HRMS-6 SPBOCTYL-286729-01							
Target Analytes									
	TEF	Ret.	Conc.	EDL	EMPC				
	(WHO 2005)	Time	pg	pg	Flags	pg	LQL		
	PCB-081	0.0003	NotFnd	<3.3	3.3	U	150		
	PCB-077	0.0001	22.71	81.2	3.3	J	150		
	PCB-123	0.00003	23.69	15.8	2.4	M,J	150		
	PCB-118	0.00003	23.87	1270	2.3		150		
	PCB-114	0.00003	24.18	27.6	2.4	M,J	150		
	PCB-105	0.00003	24.53	326	2.5		150		
	PCB-126	0.1	26.12	3.23	2.3	M,J	150		
	PCB-167	0.00003	27.02	11.9	3.1	J	150		
	PCB-156/157	0.00003	27.64	24.0	4.1	J	300		
	PCB-169	0.03	29.33	<3.1	3.1	U	2.9	150	
	PCB-189	0.00003	30.61	<2.7	0.95	J,R	2.7	150	
Extraction Standards									
	pg	Time	% Rec	Limits					
	13C12-PCB-081	12000	22.40	67	10-145				
	13C12-PCB-077	12000	22.70	71	10-145				
	13C12-PCB-123	12000	23.69	74	10-145				
	13C12-PCB-118	12000	23.86	72	10-145				
	13C12-PCB-114	12000	24.17	71	10-145				
	13C12-PCB-105	12000	24.52	71	10-145				
	13C12-PCB-126	12000	26.12	80	10-145				
	13C12-PCB-167	12000	27.01	82	10-145				
	13C12-PCB-156/157	24000	27.65	82	10-145				
	13C12-PCB-169	12000	29.32	93	10-145				
	13C12-PCB-189	12000	30.61	84	10-145				
Cleanup Standards									
	13C12-PCB-028	18000	16.54	57	5-145				
	13C12-PCB-111	18000	22.61	75	10-145				
	13C12-PCB-178	18000	25.68	90	10-145				

ALS Life Sciences						
Sample Analysis Report						
Sample Name	# 2 APC OUTLET] 24-4547-SVOC-(26 THRU 30) TEST #2			Sampling Date	2-Dec-24	
ALS Sample ID	L2758327-5			Extraction Date	16-Dec-24	
Analysis Method	EPA 1668C			Sample Size	1	sample
Analysis Type	Sample			Percent Moisture	n/a	
Sample Matrix	Stack			Split Ratio	6	
Approved: B.SINGH --e-signature-- 24-Dec-2024						
Run Information		Run 1				
Filename		6-241221A10				
Run Date		21-Dec-24 16:56				
Final Volume		25 ul				
Dilution Factor		1				
Analysis Units		pg				
Instrument - Column		HRMS-6 SPBOCTYL-286729-01				
Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg Flags	EMPC pg	LQL
Homologue Group Totals						
Total MonoCB			675	2.2 J	600	
Total DiCB			1890	2.6 J	1200	
Total TriCB			2080	2.9 J	1200	
Total TetraCB			12900	1.8 J	2400	
Total PentaCB			12300	1.5 J	2400	
Total HexaCB			2400	1.3 J	2400	
Total HeptaCB			187	0.95 J	1200	
Total OctaCB			31.4	0.74 J	1200	
Total NonaCB			<2.3	2.3 U	600	
DecaCB			6.10	1.8 J	600	
Total PCB			32400	J	4800	
Toxic Equivalency - (WHO 2005)						
Lower Bound PCB TEQ			0.381			
Mid Point PCB TEQ			0.428			
Upper Bound PCB TEQ			0.475			
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 identified. The associated numerical result is an estimate.					
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.					
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure					

ALS Life Sciences									
Sample Analysis Report									
Sample Name		#1 APC OUTLET] 24-4547-SVOC-(16 THRU 20) BLANK1			Sampling Date		11-Dec-24		Approved: B.SINGH --e-signature-- 24-Dec-2024
ALS Sample ID		L2758327-6			Extraction Date		16-Dec-24		
Analysis Method		EPA 1668C			Sample Size		1		
Analysis Type		Sample			Percent Moisture		n/a		
Sample Matrix		Stack			Split Ratio		6		
Run Information									
Run Information		Run 1							
Filename		6-241221A11							
Run Date		21-Dec-24 17:42							
Final Volume		25 ul							
Dilution Factor		1							
Analysis Units		pg							
Instrument - Column		HRMS-6 SPBOCTYL-286729-01							
Target Analytes									
		TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL	
	PCB-081	0.0003	NotFnd	<2.8	2.8	U		150	
	PCB-077	0.0001	NotFnd	<2.6	2.6	U		150	
	PCB-123	0.00003	NotFnd	<3.0	3.0	U		150	
	PCB-118	0.00003	23.88	10.5	2.9	J		150	
	PCB-114	0.00003	NotFnd	<2.9	2.9	U		150	
	PCB-105	0.00003	24.54	<4.5	2.9	J,R	4.5	150	
	PCB-126	0.1	NotFnd	<2.9	2.9	U		150	
	PCB-167	0.00003	NotFnd	<1.4	1.4	U		150	
	PCB-156/157	0.00003	27.64	3.54	1.9	J		300	
	PCB-169	0.03	NotFnd	<1.4	1.4	U		150	
	PCB-189	0.00003	NotFnd	<1.0	1.0	U		150	
Extraction Standards									
		pg	Time	% Rec	Limits				
	13C12-PCB-081	12000	22.40	55	10-145				
	13C12-PCB-077	12000	22.70	60	10-145				
	13C12-PCB-123	12000	23.69	60	10-145				
	13C12-PCB-118	12000	23.87	58	10-145				
	13C12-PCB-114	12000	24.17	59	10-145				
	13C12-PCB-105	12000	24.52	60	10-145				
	13C12-PCB-126	12000	26.12	65	10-145				
	13C12-PCB-167	12000	27.01	69	10-145				
	13C12-PCB-156/157	24000	27.65	69	10-145				
	13C12-PCB-169	12000	29.32	79	10-145				
	13C12-PCB-189	12000	30.61	76	10-145				
Cleanup Standards									
	13C12-PCB-028	18000	16.55	53	5-145				
	13C12-PCB-111	18000	22.62	65	10-145				
	13C12-PCB-178	18000	25.68	82	10-145				

ALS Life Sciences						
Sample Analysis Report						
Sample Name	#1 APC OUTLET] 24-4547-SVOC-(16 THRU 20) BLANK1			Sampling Date	11-Dec-24	
ALS Sample ID	L2758327-6			Extraction Date	16-Dec-24	
Analysis Method	EPA 1668C			Sample Size	1	sample
Analysis Type	Sample			Percent Moisture	n/a	
Sample Matrix	Stack			Split Ratio	6	
Approved: B.SINGH --e-signature-- 24-Dec-2024						
Run Information		Run 1				
Filename		6-241221A11				
Run Date		21-Dec-24 17:42				
Final Volume		25 ul				
Dilution Factor		1				
Analysis Units		pg				
Instrument - Column		HRMS-6 SPBOCTYL-286729-01				
Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg Flags	EMPC pg	LQL
Homologue Group Totals						
Total MonoCB			27.9	2.0 J	600	
Total DiCB			146	3.4 J	1200	
Total TriCB			24.8	2.7 J	1200	
Total TetraCB			72.2	1.7 J	2400	
Total PentaCB			63.5	1.6 J	2400	
Total HexaCB			103	1.1 J	2400	
Total HeptaCB			81.5	1.0 J	1200	
Total OctaCB			23.9	0.94 J	1200	
Total NonaCB			<1.9	1.9 U	600	
DecaCB			<1.1	1.1 U	600	
Total PCB			543	J	4800	
Toxic Equivalency - (WHO 2005)						
Lower Bound PCB TEQ		0.000421				
Mid Point PCB TEQ		0.167				
Upper Bound PCB TEQ		0.334				
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 identified. The associated numerical result is an estimate.					
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.					
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure					

ALS Life Sciences									
Sample Analysis Report									
Sample Name		# 2 APC OUTLET] 24-4547-SVOC-(36 THRU 40) BLANK2				Sampling Date		11-Dec-24	
ALS Sample ID		L2758327-7				Extraction Date		16-Dec-24	
Analysis Method		EPA 1668C				Sample Size		1 sample	
Analysis Type		Sample				Percent Moisture		n/a	
Sample Matrix		Stack				Split Ratio		6	
Approved: B.SINGH --e-signature-- 24-Dec-2024									
Run Information		Run 1							
Filename		6-241221A12							
Run Date		21-Dec-24 18:29							
Final Volume		25 ul							
Dilution Factor		1							
Analysis Units		pg							
Instrument - Column		HRMS-6 SPBOCTYL-286729-01							
Target Analytes		TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL	
PCB-081		0.0003	NotFnd	<3.1	3.1	U		150	
PCB-077		0.0001	NotFnd	<3.1	3.1	U		150	
PCB-123		0.00003	NotFnd	<2.7	2.7	U		150	
PCB-118		0.00003	23.88	9.24	2.6	J		150	
PCB-114		0.00003	NotFnd	<2.7	2.7	U		150	
PCB-105		0.00003	24.56	<2.7	2.7	U	2.6	150	
PCB-126		0.1	NotFnd	<2.8	2.8	U		150	
PCB-167		0.00003	NotFnd	<2.1	2.1	U		150	
PCB-156/157		0.00003	NotFnd	<2.8	2.8	U		300	
PCB-169		0.03	NotFnd	<2.2	2.2	U		150	
PCB-189		0.00003	NotFnd	<1.8	1.8	U		150	
Extraction Standards		pg	Time	% Rec	Limits				
13C12-PCB-081		12000	22.40	40	10-145				
13C12-PCB-077		12000	22.70	42	10-145				
13C12-PCB-123		12000	23.70	42	10-145				
13C12-PCB-118		12000	23.87	41	10-145				
13C12-PCB-114		12000	24.17	41	10-145				
13C12-PCB-105		12000	24.52	41	10-145				
13C12-PCB-126		12000	26.12	43	10-145				
13C12-PCB-167		12000	27.01	48	10-145				
13C12-PCB-156/157		24000	27.65	48	10-145				
13C12-PCB-169		12000	29.32	53	10-145				
13C12-PCB-189		12000	30.61	49	10-145				
Cleanup Standards									
13C12-PCB-028		18000	16.55	43	5-145				
13C12-PCB-111		18000	22.62	47	10-145				
13C12-PCB-178		18000	25.68	57	10-145				

ALS Life Sciences						
Sample Analysis Report						
Sample Name	#2 APC OUTLET] 24-4547-SVOC-(36 THRU 40) BLANK2			Sampling Date	11-Dec-24	
ALS Sample ID	L2758327-7			Extraction Date	16-Dec-24	
Analysis Method	EPA 1668C			Sample Size	1	sample
Analysis Type	Sample			Percent Moisture	n/a	
Sample Matrix	Stack			Split Ratio	6	
Approved: B.SINGH --e-signature-- 24-Dec-2024						
Run Information		Run 1				
Filename		6-241221A12				
Run Date		21-Dec-24 18:29				
Final Volume		25 ul				
Dilution Factor		1				
Analysis Units		pg				
Instrument - Column		HRMS-6 SPBOCTYL-286729-01				
Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg LQL
Homologue Group Totals						
Total MonoCB			19.6	1.4	J	600
Total DiCB			56.6	2.1	J	1200
Total TriCB			15.1	2.7	J	1200
Total TetraCB			61.0	2.0	J	2400
Total PentaCB			58.4	1.4	J	2400
Total HexaCB			26.6	1.3	J	2400
Total HeptaCB			70.2	1.2	J	1200
Total OctaCB			40.5	1.0	J	1200
Total NonaCB			<3.5	3.5	U	600
DecaCB			6.20	2.2	J	600
Total PCB			354		J	4800
Toxic Equivalency - (WHO 2005)						
Lower Bound PCB TEQ			0.000277			
Mid Point PCB TEQ			0.174			
Upper Bound PCB TEQ			0.348			
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 identified. The associated numerical result is an estimate.					
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure					

ALS Life Sciences									
Laboratory Method Blank Analysis Report									
Sample Name		Method Blank			Sampling Date		n/a		sample
ALS Sample ID		WG3791199-1			Extraction Date		16-Dec-24		
Analysis Method		EPA 1668C			Sample Size		1		
Analysis Type		Blank			Percent Moisture		n/a		
Sample Matrix		QC			Split Ratio		6		
Approved: B.SINGH --e-signature-- 24-Dec-2024									
Run Information		Run 1							
Filename		6-241221A04							
Run Date		21-Dec-24 12:18							
Final Volume		25 ul							
Dilution Factor		1							
Analysis Units		pg							
Instrument - Column		HRMS-6 SPBOCTYL-286729-01							
Target Analytes		TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg Flags	EMPC pg	LQL		
PCB-081		0.0003	NotFnd	<4.7	4.7 U		150		
PCB-077		0.0001	NotFnd	<4.7	4.7 U		150		
PCB-123		0.00003	NotFnd	<3.6	3.6 U		150		
PCB-118		0.00003	23.88	<5.7	3.4 M,J,R	5.7	150		
PCB-114		0.00003	NotFnd	<3.7	3.7 U		150		
PCB-105		0.00003	NotFnd	<3.5	3.5 U		150		
PCB-126		0.1	NotFnd	<3.6	3.6 U		150		
PCB-167		0.00003	NotFnd	<2.4	2.4 U		150		
PCB-156/157		0.00003	NotFnd	<3.2	3.2 U		300		
PCB-169		0.03	NotFnd	<2.4	2.4 U		150		
PCB-189		0.00003	NotFnd	<2.3	2.3 U		150		
Extraction Standards		pg	Time	% Rec	Limits				
13C12-PCB-081		12000	22.41	31	10-145				
13C12-PCB-077		12000	22.71	33	10-145				
13C12-PCB-123		12000	23.70	33	10-145				
13C12-PCB-118		12000	23.87	33	10-145				
13C12-PCB-114		12000	24.18	32	10-145				
13C12-PCB-105		12000	24.53	34	10-145				
13C12-PCB-126		12000	26.13	35	10-145				
13C12-PCB-167		12000	27.02	39	10-145				
13C12-PCB-156/157		24000	27.66	39	10-145				
13C12-PCB-169		12000	29.33	44	10-145				
13C12-PCB-189		12000	30.61	41	10-145				
Cleanup Standards									
13C12-PCB-028		18000	16.55	34	5-145				
13C12-PCB-111		18000	22.63	39	10-145				
13C12-PCB-178		18000	25.68	48	10-145				

ALS Life Sciences									
Laboratory Method Blank Analysis Report									
Sample Name		Method Blank			Sampling Date		n/a		Approved: B.SINGH --e-signature-- 24-Dec-2024
ALS Sample ID		WG3791199-1			Extraction Date		16-Dec-24		
Analysis Method		EPA 1668C			Sample Size		1 sample		
Analysis Type		Blank			Percent Moisture		n/a		
Sample Matrix		QC			Split Ratio		6		
Run Information		Run 1							
Filename		6-241221A04							
Run Date		21-Dec-24 12:18							
Final Volume		25 ul							
Dilution Factor		1							
Analysis Units		pg							
Instrument - Column		HRMS-6 SPBOCTYL-286729-01							
Target Analytes		TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg Flags	EMPC pg	LQL		
Homologue Group Totals									
Total MonoCB				9.70	2.3 J		600		
Total DiCB				29.0	4.5 J		1200		
Total TriCB				<5.0	5.0 U		1200		
Total TetraCB				13.0	3.0 J		2400		
Total PentaCB				5.70	2.2 J		2400		
Total HexaCB				12.7	2.1 J		2400		
Total HeptaCB				<2.1	2.1 U		1200		
Total OctaCB				6.80	1.7 J		1200		
Total NonaCB				<4.8	4.8 U		600		
DecaCB				<5.0	5.0 U		600		
Total PCB				76.9	J		4800		
Toxic Equivalency - (WHO 2005)									
Lower Bound PCB TEQ				0.00					
Mid Point PCB TEQ				0.217					
Upper Bound PCB TEQ				0.435					
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 identified. The associated numerical result is an estimate.							
R		Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.							
EMPC		Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure							

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	Approved: B. SINGH --e-signature-- 24-Dec-2024
ALS Sample ID	WG3791199-2	Extraction Date	16-Dec-24	
Analysis Method	EPA 1668C	Sample Size	1 n/a	
Analysis Type	LCS	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	6-241221A02
Run Date	21-Dec-24 10:46
Final Volume	25 ul
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-6 SPBOCTYL-286729-01

Target Analytes	pg	Ret.		Limits	
		Time	% Rec	Flags	
PCB-081	6000	22.43	95	60-135	
PCB-077	6000	22.72	90	60-135	
PCB-123	6000	23.71	91	60-135	
PCB-118	6000	23.88	94	60-135	
PCB-114	6000	24.19	94	60-135	
PCB-105	6000	24.54	92	60-135	
PCB-126	6000	26.14	90	60-135	
PCB-167	6000	27.03	91	60-135	
PCB-156/157	12000	27.67	90	60-135	
PCB-169	6000	29.34	88	60-135	
PCB-189	6000	30.62	95	60-135	
Extraction Standards		Time	% Rec	Limits	
13C12-PCB-081	12000	22.41	55	40-145	
13C12-PCB-077	12000	22.71	60	40-145	
13C12-PCB-123	12000	23.70	62	40-145	
13C12-PCB-118	12000	23.87	60	40-145	
13C12-PCB-114	12000	24.18	60	40-145	
13C12-PCB-105	12000	24.53	62	40-145	
13C12-PCB-126	12000	26.13	69	40-145	
13C12-PCB-167	12000	27.02	73	40-145	
13C12-PCB-156/157	24000	27.66	73	40-145	
13C12-PCB-169	12000	29.33	85	40-145	
13C12-PCB-189	12000	30.62	76	40-145	
Cleanup Standards					
13C12-PCB-028	18000	16.55	50	15-145	
13C12-PCB-111	18000	22.63	62	40-145	
13C12-PCB-178	18000	25.69	81	40-145	



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
ALS Project ID: ORT100
ALS WO#: L2758327
Date of Report: 30-Jan-25
Date of Sample Receipt: 6-Dec-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 / 22330 REWORLD

COMMENTS: CB by LRGC/MS - Isotope dilution

Certified by:

A handwritten signature in cursive script, appearing to read "Jin", written in black ink.

Sabrina Jin
Technical Specialist

Results in this certificate relate only to the samples as submitted to the laboratory.

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ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank	[#1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1	[#1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST#2	[#1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST#3	[#2 APC OUTLET] 24-4547-SVOC-(21 THRU 25) TEST#1	[#2 APC OUTLET] 24-4547-SVOC-(26 THRU 30) TEST#2
ALS Sample ID	WG3791199-1	L2758327-1	L2758327-2	L2758327-3	L2758327-4	L2758327-5
Sample Size	1	1	1	1	1	1
Sample units	sample	sample	sample	sample	sample	sample
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	Media	Stack	Stack	Stack	Stack	Stack
Sampling Date	n/a	2-Dec-24	2-Dec-24	3-Dec-24	2-Dec-24	2-Dec-24
Extraction Date	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24
Target Analytes	ng / sample	ng / sample	ng / sample	ng / sample	ng / sample	ng / sample
Chlorobenzene	<12 U	2180	1830	1390	811	1780
1,3-Dichlorobenzene	<12 U	155	165	123	120	110
1,4-Dichlorobenzene	19.6	140 B	147 B	112 B	125 B	101 B
1,2-Dichlorobenzene	<12 U	123	133	98	91.9	84.1
1,3,5-Trichlorobenzene	<12 U	72.3	74.8	68.8	62.9	61.4
1,2,4-Trichlorobenzene	<12 U	39.6	42	37.8	32	32.9
1,2,3-Trichlorobenzene	<12 U	20.3	22.8	21.9	17.5	17.4
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12 U	<12 U	12.6	<12 U	<12 U	<12 U
1,2,3,4-Tetrachlorobenzene	<12 U	<12 U	<12 U	<12 U	<12 U	<12 U
Pentachlorobenzene	<12 U	<12 U	<12 U	<12 U	<12 U	<12 U
Hexachlorobenzene	<12 U	<12 U	<12 U	<12 U	<12 U	<12 U
Extraction Standards	%Rec	%Rec	%Rec	%Rec	%Rec	%Rec
13C6-Chlorobenzene	28	12	10	11	16	15
13C6-1,4-Dichlorobenzene	29	27	27	27	52	48
13C6-1,2,3-Trichlorobenzene	41	32	28	30	57 0	55
13C6-1,2,3,4-Tetrachlorobenzene	46	35	25	32	57 0	57
13C6-Pentachlorobenzene	51	39	33	36	74 0	63
13C6-Hexachlorobenzene	52	41	42	37	76 0	53

- U Indicates that this compound was not detected above the LOD.
- B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	[#1 APC OUTLET] 24-4547-SVOC-(16 THRU 20) BLANK1	[#2 APC OUTLET] 24-4547-SVOC-(36 THRU 40) BLANK2	Laboratory Control Sample (300ng)	Laboratory Control Sample (30ng)
ALS Sample ID	L2758327-6	L2758327-7	WG3791199-2	WG3791199-5
Sample Size	1	1	1	1
Sample units	sample	sample	sample	sample
Moisture Content	n/a	n/a	n/a	n/a
Matrix	Stack	Stack	Meida	Reagent
Sampling Date	11-Dec-24	11-Dec-24	n/a	n/a
Extraction Date	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24

Target Analytes	ng / sample	ng / sample	% Recovery	% Recovery
Chlorobenzene	<12 U	<12 U	NS	NS
1,3-Dichlorobenzene	<12 U	<12 U	114	80
1,4-Dichlorobenzene	22.5 B	22 B	90	99
1,2-Dichlorobenzene	<12 U	<12 U	119	84
1,3,5-Trichlorobenzene	<12 U	<12 U	107	111
1,2,4-Trichlorobenzene	<12 U	<12 U	82	53
1,2,3-Trichlorobenzene	<12 U	<12 U	106	84
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12 U	<12 U	132	83
1,2,3,4-Tetrachlorobenzene	<12 U	<12 U	125	85
Pentachlorobenzene	<12 U	<12 U	122	73
Hexachlorobenzene	<12 U	<12 U	116	61
Extraction Standards	%Rec	%Rec	%Rec	%Rec
13C6-Chlorobenzene	13	15	43	23
13C6-1,4-Dichlorobenzene	42	45	50	24
13C6-1,2,3-Trichlorobenzene	48	48	77	39
13C6-1,2,3,4-Tetrachlorobenzene	52	51	65	40
13C6-Pentachlorobenzene	68	59	75	52
13C6-Hexachlorobenzene	74	69	86	66

U	Indicates that this compound was not detected above the LOD.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
NS	Indicates that this compound was not spiked in.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name
 ALS Sample ID
 Analysis Method
 Analysis Type
 Sample Matrix
 Sample Size
 Percent Moisture
 Split Ratio

Method Blank
 WG3791199-1
 SIM GC/MS
 blank
 Media
 1 sample
 n/a
 6

Sampling Date
 Extraction Date

n/a
 16-Dec-24

Approved:
Andrew Reid
 --e-signature--
 16-Jan-2025

Run Information

Run 1

Filename
 Run Date
 Final Volume
 Dilution Factor
 Analysis Units
 Instrument
 Column

25011507.D
 1/15/2025 13:57
 1 mL
 1
 ng/sample
 MSD-5
 HP5MS US4544614H

Target Analytes	Ret. Time	Concentration ng / sample	Flags
Chlorobenzene	4.51	<12	U
1,3-Dichlorobenzene	6.72	<12	U
1,4-Dichlorobenzene	6.72	19.6	
1,2-Dichlorobenzene	6.72	<12	U
1,3,5-Trichlorobenzene	8.19	<12	U
1,2,4-Trichlorobenzene	8.73	<12	U
1,2,3-Trichlorobenzene	9.11	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.04	<12	U
1,2,3,4-Tetrachlorobenzene		<12	U
Pentachlorobenzene	12.59	<12	U
Hexachlorobenzene	13.80	<12	U

Extraction Standards

% Rec

13C6-Chlorobenzene	300	4.41	28
13C6-1,4-Dichlorobenzene	300	6.72	29
13C6-1,2,3-Trichlorobenzene	300	9.10	41
13C6-1,2,3,4-Tetrachlorobenzene	300	10.83	46
13C6-Pentachlorobenzene	300	12.16	51
13C6-Hexachlorobenzene	300	13.80	52

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name [# 1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1
ALS Sample ID L2758327-1
Analysis Method SIM GC/MS
Analysis Type sample
Sample Matrix Stack
Sample Size 1 sample
Percent Moisture n/a
Split Ratio 6

Sampling Date 2-Dec-24
Extraction Date 16-Dec-24

Approved:
Andrew Reid
 --e-signature--
 16-Jan-2025

Run Information

Run 1

Filename 25011510.D
Run Date 1/15/2025 14:58
Final Volume 1 mL
Dilution Factor 1
Analysis Units ng/sample
Instrument MSD-5
Column HP5MS US4544614H

Target Analytes	Ret. Time	Concentration ng / sample	Flags
Chlorobenzene	4.40	2180	
1,3-Dichlorobenzene	6.65	155	
1,4-Dichlorobenzene	6.73	140	B
1,2-Dichlorobenzene	7.02	123	
1,3,5-Trichlorobenzene	8.19	72.3	
1,2,4-Trichlorobenzene	8.71	39.6	
1,2,3-Trichlorobenzene	9.11	20.3	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.32	<12	U
1,2,3,4-Tetrachlorobenzene	10.83	<12	U
Pentachlorobenzene	12.16	<12	U
Hexachlorobenzene	13.79	<12	U

Extraction Standards			% Rec
13C6-Chlorobenzene	300	4.40	12
13C6-1,4-Dichlorobenzene	300	6.73	27
13C6-1,2,3-Trichlorobenzene	300	9.10	32
13C6-1,2,3,4-Tetrachlorobenzene	300	10.83	35
13C6-Pentachlorobenzene	300	12.16	39
13C6-Hexachlorobenzene	300	13.79	41

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 [# 1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST# 2
ALS Sample ID L2758327-2
Analysis Method SIM GC/MS
Analysis Type sample
Sample Matrix Stack
Sample Size 1 sample
Percent Moisture n/a
Split Ratio 6

Sampling Date 2-Dec-24
Extraction Date 16-Dec-24

Approved:
Andrew Reid
 --e-signature--
 16-Jan-2025

Run Information

Run 1

Filename 25011511.D
Run Date 1/15/2025 15:19
Final Volume 1 mL
Dilution Factor 1
Analysis Units ng/sample
Instrument MSD-5
Column HP5MS US4544614H

Target Analytes	Ret. Time	Concentration ng / sample	Flags
Chlorobenzene	4.39	1830	
1,3-Dichlorobenzene	6.65	165	
1,4-Dichlorobenzene	6.73	147	B
1,2-Dichlorobenzene	7.02	133	
1,3,5-Trichlorobenzene	8.19	74.8	
1,2,4-Trichlorobenzene	8.70	42	
1,2,3-Trichlorobenzene	9.11	22.8	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.33	12.6	
1,2,3,4-Tetrachlorobenzene	10.83	<12	U
Pentachlorobenzene	12.16	<12	U
Hexachlorobenzene	13.80	<12	U

Extraction Standards % Rec

13C6-Chlorobenzene	300	4.39	10
13C6-1,4-Dichlorobenzene	300	6.73	27
13C6-1,2,3-Trichlorobenzene	300	9.10	28
13C6-1,2,3,4-Tetrachlorobenzene	300	10.83	25
13C6-Pentachlorobenzene	300	12.16	33
13C6-Hexachlorobenzene	300	13.79	42

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 [# 1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST#3
ALS Sample ID L2758327-3
Analysis Method SIM GC/MS
Analysis Type sample
Sample Matrix Stack
Sample Size 1 sample
Percent Moisture n/a
Split Ratio 6

Sampling Date 3-Dec-24
Extraction Date 16-Dec-24

Approved:
Andrew Reid
 --e-signature--
 16-Jan-2025

Run Information

Run 1

Filename 25011512.D
Run Date 1/15/2025 15:39
Final Volume 1 mL
Dilution Factor 1
Analysis Units ng/sample
Instrument MSD-5
Column HP5MS US4544614H

Target Analytes	Ret. Time	Concentration ng / sample	Flags
Chlorobenzene	4.40	1390	
1,3-Dichlorobenzene	6.65	123	
1,4-Dichlorobenzene	6.73	112	B
1,2-Dichlorobenzene	7.02	98	
1,3,5-Trichlorobenzene	8.19	68.8	
1,2,4-Trichlorobenzene	8.70	37.8	
1,2,3-Trichlorobenzene	9.11	21.9	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.32	<12	U
1,2,3,4-Tetrachlorobenzene	10.83	<12	U
Pentachlorobenzene	12.16	<12	U
Hexachlorobenzene	13.79	<12	U

Extraction Standards % Rec

13C6-Chlorobenzene	300	4.40	11
13C6-1,4-Dichlorobenzene	300	6.73	27
13C6-1,2,3-Trichlorobenzene	300	9.10	30
13C6-1,2,3,4-Tetrachlorobenzene	300	10.82	32
13C6-Pentachlorobenzene	300	12.16	36
13C6-Hexachlorobenzene	300	13.79	37

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 [# 2 APC OUTLET] 24-4547-SVOC-(21 THRU 25) TEST#1
ALS Sample ID L2758327-4
Analysis Method SIM GC/MS
Analysis Type sample
Sample Matrix Stack
Sample Size 1 sample
Percent Moisture n/a
Split Ratio 6

Sampling Date 2-Dec-24
Extraction Date 16-Dec-24

Approved:
Andrew Reid
 --e-signature--
 16-Jan-2025

Run Information

Run 1

Filename 25011513.D
Run Date 1/15/2025 16:00
Final Volume 1 mL
Dilution Factor 1
Analysis Units ng/sample
Instrument MSD-5
Column HP5MS US4544614H

Target Analytes	Ret. Time	Concentration ng / sample	Flags
Chlorobenzene	4.40	811	
1,3-Dichlorobenzene	6.66	120	
1,4-Dichlorobenzene	6.74	125	B
1,2-Dichlorobenzene	7.02	91.9	
1,3,5-Trichlorobenzene	8.20	62.9	
1,2,4-Trichlorobenzene	8.71	32	
1,2,3-Trichlorobenzene	9.11	17.5	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.32	<12	U
1,2,3,4-Tetrachlorobenzene	10.83	<12	U
Pentachlorobenzene	12.16	<12	U
Hexachlorobenzene	13.79	<12	U

Extraction Standards % Rec

13C6-Chlorobenzene	200	4.40	16
13C6-1,4-Dichlorobenzene	200	6.73	52
13C6-1,2,3-Trichlorobenzene	200	9.10	57
13C6-1,2,3,4-Tetrachlorobenzene	200	10.83	57
13C6-Pentachlorobenzene	200	12.16	74
13C6-Hexachlorobenzene	200	13.79	76

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 [# 2 APC OUTLET] 24-4547-SVOC-(26 THRU 30) TEST#2
ALS Sample ID L2758327-5
Analysis Method SIM GC/MS
Analysis Type sample
Sample Matrix Stack
Sample Size 1 sample
Percent Moisture n/a
Split Ratio 6

Sampling Date 2-Dec-24
Extraction Date 16-Dec-24

Approved:
Andrew Reid
 --e-signature--
 16-Jan-2025

Run Information

Run 1

Filename 25011514.D
Run Date 1/15/2025 16:21
Final Volume 1 mL
Dilution Factor 1
Analysis Units ng/sample
Instrument MSD-5
Column HP5MS US4544614H

Target Analytes	Ret. Time	Concentration ng / sample	Flags
Chlorobenzene	4.39	1780	
1,3-Dichlorobenzene	6.66	110	
1,4-Dichlorobenzene	6.73	101	B
1,2-Dichlorobenzene	7.02	84.1	
1,3,5-Trichlorobenzene	8.20	61.4	
1,2,4-Trichlorobenzene	8.70	32.9	
1,2,3-Trichlorobenzene	9.11	17.4	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.32	<12	U
1,2,3,4-Tetrachlorobenzene	10.83	<12	U
Pentachlorobenzene	12.16	<12	U
Hexachlorobenzene	13.78	<12	U

Extraction Standards % Rec

13C6-Chlorobenzene	200	4.39	15
13C6-1,4-Dichlorobenzene	200	6.73	48
13C6-1,2,3-Trichlorobenzene	200	9.10	55
13C6-1,2,3,4-Tetrachlorobenzene	200	10.83	57
13C6-Pentachlorobenzene	200	12.16	63
13C6-Hexachlorobenzene	200	13.79	53

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 [# 1 APC OUTLET] 24-4547-SVOC-(16 THRU 20) BLANK1
ALS Sample ID L2758327-6
Analysis Method SIM GC/MS
Analysis Type sample
Sample Matrix Stack
Sample Size 1 sample
Percent Moisture n/a
Split Ratio 6

Sampling Date 11-Dec-24
Extraction Date 16-Dec-24

Approved:
Andrew Reid
 --e-signature--
 16-Jan-2025

Run Information

Run 1

Filename 25011515.D
Run Date 1/15/2025 16:41
Final Volume 1 mL
Dilution Factor 1
Analysis Units ng/sample
Instrument MSD-5
Column HP5MS US4544614H

Target Analytes	Ret. Time	Concentration ng / sample	Flags
Chlorobenzene	4.14	<12	U
1,3-Dichlorobenzene	6.69	<12	U
1,4-Dichlorobenzene	6.76	22.5	B
1,2-Dichlorobenzene	6.76	<12	U
1,3,5-Trichlorobenzene	8.20	<12	U
1,2,4-Trichlorobenzene	8.69	<12	U
1,2,3-Trichlorobenzene	9.11	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.05	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	12.21	<12	U
Hexachlorobenzene	NotFnd	<12	U

Extraction Standards % Rec

13C6-Chlorobenzene	200	4.38	13
13C6-1,4-Dichlorobenzene	200	6.76	42
13C6-1,2,3-Trichlorobenzene	200	9.11	48
13C6-1,2,3,4-Tetrachlorobenzene	200	10.83	52
13C6-Pentachlorobenzene	200	12.16	68
13C6-Hexachlorobenzene	200	13.79	74

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 [# 2 APC OUTLET] 24-4547-SVOC-(36 THRU 40) BLANK2
ALS Sample ID L2758327-7
Analysis Method SIM GC/MS
Analysis Type sample
Sample Matrix Stack
Sample Size 1 sample
Percent Moisture n/a
Split Ratio 6

Sampling Date 11-Dec-24
Extraction Date 16-Dec-24

Approved:
Andrew Reid
 --e-signature--
 16-Jan-2025

Run Information

Run 1

Filename 25011509.D
Run Date 1/15/2025 14:38
Final Volume 1 mL
Dilution Factor 1
Analysis Units ng/sample
Instrument MSD-5
Column HP5MS US4544614H

Target Analytes	Ret. Time	Concentration ng / sample	Flags
Chlorobenzene	4.28	<12	U
1,3-Dichlorobenzene	6.68	<12	U
1,4-Dichlorobenzene	6.76	22	B
1,2-Dichlorobenzene	6.93	<12	U
1,3,5-Trichlorobenzene	8.20	<12	U
1,2,4-Trichlorobenzene	8.73	<12	U
1,2,3-Trichlorobenzene	9.11	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.04	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	11.70	<12	U
Hexachlorobenzene	NotFnd	<12	U

Extraction Standards % Rec

13C6-Chlorobenzene	200	4.40	15
13C6-1,4-Dichlorobenzene	200	6.75	45
13C6-1,2,3-Trichlorobenzene	200	9.11	48
13C6-1,2,3,4-Tetrachlorobenzene	200	10.83	51
13C6-Pentachlorobenzene	200	12.16	59
13C6-Hexachlorobenzene	200	13.79	69

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 (300ng)**
 ALS Sample ID WG3791199-2
 Analysis Method SIM GC/MS
 Analysis Type LCS
 Sample Matrix Meida
 Sample Size 1 sample
 Percent Moisture n/a
 Split Ratio 6

Sampling Date n/a
 Extraction Date 16-Dec-24

Approved:
Andrew Reid
 --e-signature--
 16-Jan-2025

Run Information

Run 1

Filename 25011505.D
 Run Date 1/15/2025 13:15
 Final Volume 1 mL
 Dilution Factor 1
 Analysis Units ng/sample
 Instrument MSD-5
 Column HP5MS US4544614H

Target Analytes	ug spiked	Ret. Time	% Recovery	Flags
Chlorobenzene	0			NS
1,3-Dichlorobenzene	300	6.69	114	
1,4-Dichlorobenzene	300	6.77	90	
1,2-Dichlorobenzene	300	7.05	119	
1,3,5-Trichlorobenzene	300	8.19	107	
1,2,4-Trichlorobenzene	300	8.71	82	
1,2,3-Trichlorobenzene	300	9.11	106	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	600	10.33	132	
1,2,3,4-Tetrachlorobenzene	300	10.83	125	
Pentachlorobenzene	300	12.16	122	
Hexachlorobenzene	300	13.79	116	
Extraction Standards			% Rec	
13C6-Chlorobenzene	200	4.42	43	
13C6-1,4-Dichlorobenzene	200	6.76	50	
13C6-1,2,3-Trichlorobenzene	200	9.11	77	
13C6-1,2,3,4-Tetrachlorobenzene	200	10.83	65	
13C6-Pentachlorobenzene	200	12.16	75	
13C6-Hexachlorobenzene	200	13.79	86	

NS Indicates that this compound was not spiked in.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name **Laboratory Control Sample (30ng)**
ALS Sample ID WG3791199-5
Analysis Method SIM GC/MS
Analysis Type LCS
Sample Matrix Reagent
Sample Size 1 sample
Percent Moisture n/a
Split Ratio 6

Sampling Date n/a
Extraction Date 16-Dec-24

Approved:
Andrew Reid
 --e-signature--
 16-Jan-2025

Run Information

Run 1

Filename 25011504.D
Run Date 1/15/2025 12:55
Final Volume 1 mL
Dilution Factor 1
Analysis Units ng/sample
Instrument MSD-5
Column HP5MS US4544614H

Target Analytes	ug spiked	Ret. Time	% Recovery	Flags
Chlorobenzene	0			NS
1,3-Dichlorobenzene	30	6.66	80	
1,4-Dichlorobenzene	30	6.73	99	
1,2-Dichlorobenzene	30	7.02	84	
1,3,5-Trichlorobenzene	30	8.19	111	
1,2,4-Trichlorobenzene	30	8.72	53	
1,2,3-Trichlorobenzene	30	9.11	84	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	60	10.34	83	
1,2,3,4-Tetrachlorobenzene	30	10.83	85	
Pentachlorobenzene	30	12.16	73	
Hexachlorobenzene	30	13.79	61	
Extraction Standards			% Rec	
13C6-Chlorobenzene	200	4.46	23	
13C6-1,4-Dichlorobenzene	200	6.73	24	
13C6-1,2,3-Trichlorobenzene	200	9.10	39	
13C6-1,2,3,4-Tetrachlorobenzene	200	10.83	40	
13C6-Pentachlorobenzene	200	12.16	52	
13C6-Hexachlorobenzene	200	13.79	66	

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
ALS Project ID: ORT100
ALS WO#: L2758327
Date of Report: 26-Feb-25
Date of Sample Receipt: 6-Dec-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 / 22330 REWORLD

COMMENTS: Chlorophenols by modified EPA 8270E

The recoveries of 2,6-dichlorophenol and 2,4,6-trichlorophenol were below the method control limit for the laboratory control sample (LCS), but within limits for the low level LCS. As a result, the detection limit for 2,4,6-trichlorophenol has been elevated.

For the samples, the recoveries of 13C6-2,4-dichlorophenol were very low and below the method control limit. As a result, the detection limits were elevated for the associated target analytes. Similarly, the detection limit was elevated for pentachlorophenol for sample [#1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST#3.

Certified by:

A handwritten signature in black ink, appearing to read "Jin", written over a horizontal line.

Sabrina Jin
Technical Specialist

Results in this certificate relate only to the samples as submitted to the laboratory.

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Sample Analysis Summary Report

Sample Name	Method Blank (Media)	[#1 APC OUTLET] 24- 4547-SVOC-(1 THRU 5) TEST #1	[#1 APC OUTLET] 24- 4547-SVOC-(6 THRU 10) TEST #2	[#1 APC OUTLET] 24- 4547-SVOC- (11 THRU 15) TEST #3	[#2 APC OUTLET] 24- 4547-SVOC- (21 THRU 25) TEST #1	[#2 APC OUTLET] 24- 4547-SVOC-(26 THRU 30) TEST #2
ALS Sample ID	WG3791199-1	L2758327-1	L2758327-2	L2758327-3	L2758327-4	L2758327-5
Sample Size	1	1	1	1	1	1
Sample units	sample	sample	sample	sample	sample	sample
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	Media	Stack	Stack	Stack	Stack	Stack
Sampling Date	n/a	2-Dec-24	2-Dec-24	3-Dec-24	2-Dec-24	2-Dec-24
Extraction Date	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24	16-Dec-24
Target Analytes	ng / sample	ng / sample	ng / sample	ng / sample	ng / sample	ng / sample
2-Chlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	<60 U
3/4-Chlorophenol	<300 U	<300 U	<300 U	<300 U	<300 U	<300 U
2,4/2,5-Dichlorophenol	<300 U	<300 U	<300 U	<300 U	<300 U	<300 U
2,3-Dichlorophenol	<300 U	<300 U	<300 U	<300 U	<300 U	<300 U
2,6-Dichlorophenol	<300 U	<300 U	<300 U	<300 U	<300 U	<300 U
3,5-Dichlorophenol	<300 U	<300 U	<300 U	<300 U	<300 U	<300 U
3,4-Dichlorophenol	<300 U	<300 U	<300 U	<300 U	<300 U	<300 U
2,3,5-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	<60 U
2,4,6-Trichlorophenol	<300 U	<300 U	<300 U	<300 U	<300 U	<300 U
2,4,5-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	<60 U
2,3,4-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	<60 U
2,3,6-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	<60 U
3,4,5-Trichlorophenol	<60 U	<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	<60 U
2,3,4,5/2,3,4,6-Tetrachlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	<60 U
Pentachlorophenol	<60 U	<60 U	<60 U	<120 U	<60 U	<60 U
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
13C6-4-Chlorophenol (ES)	13.4	9.4	14.3 M	14.7 M	14.4	15.0 M
13C6-2,4-Dichlorophenol (ES)	0.9	6.0 M	4.1	7.3	3.5	1.8
13C6-2,4,5-Trichlorophenol (ES)	13.7	43.3	30.6	10.8	36.9	35.0
13C6-2,3,4,5-Tetrachlorophenol (ES)	29.3	67.6	58.9	40.9	65.7	68.9
13C6-Pentachlorophenol (ES)	14.8	36.6 M	20.5	5.6	12.7	9.7
U	Indicates that this compound was not detected above the LOD.					
M	Indicates that a peak has been manually integrated.					

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	[#1 APC OUTLET] 24-4547-SVOC- (16 THRU 20) BLANK1		[#2 APC OUTLET] 24- 4547-SVOC- (36 THRU 40) BLANK2		Laboratory Control Sample (1200ng)	Laboratory Control Sample (120ng)
ALS Sample ID	L2758327-6		L2758327-7		WG3791199-2	WG3791199-5
Sample Size	1		1		1	1
Sample units	sample		sample		n/a	n/a
Moisture Content	n/a		n/a		n/a	n/a
Matrix	Stack		Stack		Media	Reagent
Sampling Date	11-Dec-24		11-Dec-24		n/a	n/a
Extraction Date	16-Dec-24		16-Dec-24		16-Dec-24	16-Dec-24
Target Analytes	ng /sample		ng /sample		% Recovery	% Recovery
2-Chlorophenol	<60	U	<60	U	88	73 M
3/4-Chlorophenol	<300	U	<300	U	NS	NS
2,4/2,5-Dichlorophenol	<300	U	<300	U	106	129 M
2,3-Dichlorophenol	<300	U	<300	U	NS	NS
2,6-Dichlorophenol	<300	U	<300	U	42	131 M
3,5-Dichlorophenol	<300	U	<300	U	NS	NS
3,4-Dichlorophenol	<300	U	<300	U	NS	NS
2,3,5-Trichlorophenol	<60	U	<60	U	NS	NS
2,4,6-Trichlorophenol	<300	U	<300	U	17	62
2,4,5-Trichlorophenol	<60	U	<60	U	117	137 M
2,3,4-Trichlorophenol	<60	U	<60	U	NS	NS
2,3,6-Trichlorophenol	<60	U	<60	U	NS	NS
3,4,5-Trichlorophenol	<60	U	<60	U	NS	NS
2,3,5,6-Tetrachlorophenol	<60	U	<60	U	134	78
2,3,4,5/2,3,4,6-Tetrachlorophenol	<60	U	<60	U	59 M	94 M
Pentachlorophenol	<60	U	<60	U	111	114 M
Extraction Standards	% Rec		% Rec		% Rec	% Rec
13C6-4-Chlorophenol (ES)	12.4		15.3	M	11.9	4.4
13C6-2,4-Dichlorophenol (ES)	2.7		2.0	M	46.3	12.2
13C6-2,4,5-Trichlorophenol (ES)	31.7		20.8		64.3	38.6
13C6-2,3,4,5-Tetrachlorophenol (ES)	59.4		60.1		65.4	49.7
13C6-Pentachlorophenol (ES)	11.7		54.1		53.4	31.5
U	Indicates that this compound was not detected above the LOD.					
M	Indicates that a peak has been manually integrated.					
NS	Indicates that this compound was not spiked in.					

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank (Media)	Sampling Date	n/a
ALS Sample ID	WG3791199-1	Extraction Date	16-Dec-24
Analysis Method	Chlorophenols by 8270E		
Analysis Type	Blank		
Sample Matrix	Media		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3791199
			Approved: Andrew Reid --e-signature-- 27-Jan-2025

Run Information	Run 1
Filename	25012406.D
Run Date	1/24/2025 16:00
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4167543H

Target Analytes	Ret. Time	Concentration ng / sample	Flags
2-Chlorophenol	5.97	<60	U
3/4-Chlorophenol	8.29	<300	U
2,4/2,5-Dichlorophenol	8.06	<300	U
2,3-Dichlorophenol	8.15	<300	U
2,6-Dichlorophenol	8.42	<300	U
3,5-Dichlorophenol	10.21	<300	U
3,4-Dichlorophenol	10.48	<300	U
2,3,5-Trichlorophenol	9.78	<60	U
2,4,6-Trichlorophenol	9.97	<60	U
2,4,5-Trichlorophenol	10.02	<60	U
2,3,4-Trichlorophenol	10.14	<60	U
2,3,6-Trichlorophenol	10.28	<60	U
3,4,5-Trichlorophenol	12.34	<60	U
2,3,5,6-Tetrachlorophenol	11.77	<60	U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.85	<60	U
Pentachlorophenol	13.52	<60	U
Extraction Standards		% Rec	Limits
13C6-4-Chlorophenol (ES)	1200 8.23	13.4	50-150
13C6-2,4-Dichlorophenol (ES)	1200 8.03	0.9	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200 10.02	13.7	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 11.81	29.3	50-150
13C6-Pentachlorophenol (ES)	1200 13.52	14.8	50-150

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	[#1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1		Sampling Date	2-Dec-24
ALS Sample ID	L2758327-1		Extraction Date	16-Dec-24
Analysis Method	Chlorophenols by 8270E			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3791199

Approved:
Andrew Reid
--e-signature--
27-Jan-2025

Run Information

Run 1

Filename	25012408.D
Run Date	1/24/2025 16:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4167543H

Target Analytes

Ret. Time	Concentration ng / sample	Flags
2-Chlorophenol	6.04	<60 U
3/4-Chlorophenol	8.31	<300 U
2,4/2,5-Dichlorophenol	8.12	<300 U
2,3-Dichlorophenol	8.12	<300 U
2,6-Dichlorophenol	8.59	<300 U
3,5-Dichlorophenol	10.21	<300 U
3,4-Dichlorophenol	10.50	<300 U
2,3,5-Trichlorophenol	9.87	<60 U
2,4,6-Trichlorophenol	10.01	<60 U
2,4,5-Trichlorophenol	10.10	<60 U
2,3,4-Trichlorophenol	10.22	<60 U
2,3,6-Trichlorophenol	10.25	<60 U
3,4,5-Trichlorophenol	12.38	<60 U
2,3,5,6-Tetrachlorophenol	11.79	<60 U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.87	<60 U
Pentachlorophenol	13.55	<60 U

Extraction Standards

	% Rec	Limits
13C6-4-Chlorophenol (ES)	1200 8.25 9.4	50-150
13C6-2,4-Dichlorophenol (ES)	1200 8.07 6.0 M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200 10.10 43.3	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 11.86 67.6	50-150
13C6-Pentachlorophenol (ES)	1200 13.54 36.6 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	[# 1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST# 2	Sampling Date	2-Dec-24
ALS Sample ID	L2758327-2	Extraction Date	16-Dec-24
Analysis Method	Chlorophenols by 8270E		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3791199

Approved:
Andrew Reid
--e-signature--
27-Jan-2025

Run Information

Run 1

Filename	25012409.D
Run Date	1/24/2025 17:10
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4167543H

Target Analytes

Ret. Time	Concentration ng / sample	Flags
2-Chlorophenol	6.00	<60 U
3/4-Chlorophenol	8.31	<300 U
2,4/2,5-Dichlorophenol	8.58	<300 U
2,3-Dichlorophenol	8.58	<300 U
2,6-Dichlorophenol	8.58	<300 U
3,5-Dichlorophenol	10.26	<300 U
3,4-Dichlorophenol	10.52	<300 U
2,3,5-Trichlorophenol	9.81	<60 U
2,4,6-Trichlorophenol	9.98	<60 U
2,4,5-Trichlorophenol	10.05	<60 U
2,3,4-Trichlorophenol	10.17	<60 U
2,3,6-Trichlorophenol	10.29	<60 U
3,4,5-Trichlorophenol	12.33	<60 U
2,3,5,6-Tetrachlorophenol	11.78	<60 U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.86	<60 U
Pentachlorophenol	13.53	<60 U

Extraction Standards

	% Rec	Limits
13C6-4-Chlorophenol (ES)	1200 8.24 14.3 M	50-150
13C6-2,4-Dichlorophenol (ES)	1200 8.06 4.1	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200 10.05 30.6	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 11.82 58.9	50-150
13C6-Pentachlorophenol (ES)	1200 13.53 20.5	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	[# 1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST# 3		Sampling Date	3-Dec-24
ALS Sample ID	L2758327-3		Extraction Date	16-Dec-24
Analysis Method	Chlorophenols by 8270E			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3791199

Approved:
Andrew Reid
--e-signature--
27-Jan-2025

Run Information

Run 1

Filename	25012410.D
Run Date	1/24/2025 17:34
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4167543H

Target Analytes

Ret. Time	Concentration ng / sample	Flags
2-Chlorophenol	6.02	<60 U
3/4-Chlorophenol	8.31	<300 U
2,4/2,5-Dichlorophenol	8.59	<300 U
2,3-Dichlorophenol	8.59	<300 U
2,6-Dichlorophenol	8.59	<300 U
3,5-Dichlorophenol	10.16	<300 U
3,4-Dichlorophenol	10.55	<300 U
2,3,5-Trichlorophenol	10.22	<60 U
2,4,6-Trichlorophenol	10.22	<60 U
2,4,5-Trichlorophenol	10.22	<60 U
2,3,4-Trichlorophenol	10.22	<60 U
2,3,6-Trichlorophenol	10.22	<60 U
3,4,5-Trichlorophenol	12.30	<60 U
2,3,5,6-Tetrachlorophenol	11.75	<60 U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.87	<60 U
Pentachlorophenol	13.62	<120 U

Extraction Standards

	% Rec	Limits
13C6-4-Chlorophenol (ES)	1200 8.25	14.7 M 50-150
13C6-2,4-Dichlorophenol (ES)	1200 8.25	7.3 50-150
13C6-2,4,5-Trichlorophenol (ES)	1200 10.08	10.8 50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 11.84	40.9 50-150
13C6-Pentachlorophenol (ES)	1200 13.54	5.6 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	[# 2 APC OUTLET] 24-4547-SVOC-(21 THRU 25) TEST#1		Sampling Date	2-Dec-24
ALS Sample ID	L2758327-4		Extraction Date	16-Dec-24
Analysis Method	Chlorophenols by 8270E			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3791199

Approved:
Andrew Reid
--e-signature--
27-Jan-2025

Run Information

Run 1

Filename	25012411.D
Run Date	1/24/2025 17:57
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4167543H

Target Analytes

Ret. Time	Concentration ng / sample	Flags
2-Chlorophenol	6.01	<60 U
3/4-Chlorophenol	8.31	<300 U
2,4/2,5-Dichlorophenol	8.12	<300 U
2,3-Dichlorophenol	8.12	<300 U
2,6-Dichlorophenol	8.58	<300 U
3,5-Dichlorophenol	10.91	<300 U
3,4-Dichlorophenol	10.74	<300 U
2,3,5-Trichlorophenol	9.57	<60 U
2,4,6-Trichlorophenol	9.98	<60 U
2,4,5-Trichlorophenol	9.98	<60 U
2,3,4-Trichlorophenol	10.26	<60 U
2,3,6-Trichlorophenol	10.26	<60 U
3,4,5-Trichlorophenol	12.36	<60 U
2,3,5,6-Tetrachlorophenol	11.86	<60 U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.86	<60 U
Pentachlorophenol	13.53	<60 U

Extraction Standards

	% Rec	Limits
13C6-4-Chlorophenol (ES)	1200 8.25	14.4 50-150
13C6-2,4-Dichlorophenol (ES)	1200 8.06	3.5 50-150
13C6-2,4,5-Trichlorophenol (ES)	1200 10.06	36.9 50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 11.83	65.7 50-150
13C6-Pentachlorophenol (ES)	1200 13.53	12.7 50-150

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	[# 2 APC OUTLET] 24-4547-SVOC-(26 THRU 30) TEST# 2		Sampling Date	2-Dec-24
ALS Sample ID	L2758327-5		Extraction Date	16-Dec-24
Analysis Method	Chlorophenols by 8270E			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3791199

Approved:
Andrew Reid
--e-signature--
27-Jan-2025

Run Information

Run 1

Filename	25012412.D
Run Date	1/24/2025 18:21
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4167543H

Target Analytes

Ret. Time	Concentration ng / sample	Flags
2-Chlorophenol	6.02	<60 U
3/4-Chlorophenol	8.31	<300 U
2,4/2,5-Dichlorophenol	8.59	<300 U
2,3-Dichlorophenol	8.59	<300 U
2,6-Dichlorophenol	8.59	<300 U
3,5-Dichlorophenol	10.29	<300 U
3,4-Dichlorophenol	10.40	<300 U
2,3,5-Trichlorophenol	9.84	<60 U
2,4,6-Trichlorophenol	10.02	<60 U
2,4,5-Trichlorophenol	10.09	<60 U
2,3,4-Trichlorophenol	10.22	<60 U
2,3,6-Trichlorophenol	10.29	<60 U
3,4,5-Trichlorophenol	12.49	<60 U
2,3,5,6-Tetrachlorophenol	11.78	<60 U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.87	<60 U
Pentachlorophenol	13.54	<60 U

Extraction Standards

	% Rec	Limits
13C6-4-Chlorophenol (ES)	1200 8.25 15.0 M	50-150
13C6-2,4-Dichlorophenol (ES)	1200 8.08 1.8	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200 10.09 35.0	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 11.84 68.9	50-150
13C6-Pentachlorophenol (ES)	1200 13.53 9.7	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	[# 1 APC OUTLET] 24-4547-SVOC-(16 THRU 20) BLANK1		Sampling Date	11-Dec-24
ALS Sample ID	L2758327-6		Extraction Date	16-Dec-24
Analysis Method	Chlorophenols by 8270E			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3791199

Approved:
Andrew Reid
--e-signature--
27-Jan-2025

Run Information

Run 1

Filename	25012413.D
Run Date	1/24/2025 18:44
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4167543H

Target Analytes

Ret. Time	Concentration ng / sample	Flags
2-Chlorophenol	6.06	<60 U
3/4-Chlorophenol	8.31	<300 U
2,4/2,5-Dichlorophenol	8.58	<300 U
2,3-Dichlorophenol	8.58	<300 U
2,6-Dichlorophenol	8.58	<300 U
3,5-Dichlorophenol	10.08	<300 U
3,4-Dichlorophenol	10.53	<300 U
2,3,5-Trichlorophenol	9.98	<60 U
2,4,6-Trichlorophenol	9.98	<60 U
2,4,5-Trichlorophenol	9.98	<60 U
2,3,4-Trichlorophenol	10.25	<60 U
2,3,6-Trichlorophenol	10.25	<60 U
3,4,5-Trichlorophenol	12.33	<60 U
2,3,5,6-Tetrachlorophenol	11.78	<60 U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.87	<60 U
Pentachlorophenol	13.62	<60 U

Extraction Standards

	% Rec	Limits
13C6-4-Chlorophenol (ES)	1200 8.24	12.4 50-150
13C6-2,4-Dichlorophenol (ES)	1200 8.06	2.7 50-150
13C6-2,4,5-Trichlorophenol (ES)	1200 10.05	31.7 50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 11.82	59.4 50-150
13C6-Pentachlorophenol (ES)	1200 13.53	11.7 50-150

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	[# 2 APC OUTLET] 24-4547-SVOC-(36 THRU 40) BLANK2		Sampling Date	11-Dec-24
ALS Sample ID	L2758327-7		Extraction Date	16-Dec-24
Analysis Method	Chlorophenols by 8270E			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3791199

Approved:
Andrew Reid
--e-signature--
27-Jan-2025

Run Information

Run 1

Filename	25012414.D
Run Date	1/24/2025 19:08
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4167543H

Target Analytes

Ret. Time	Concentration ng / sample	Flags
2-Chlorophenol	6.00	<60 U
3/4-Chlorophenol	8.32	<300 U
2,4/2,5-Dichlorophenol	8.59	<300 U
2,3-Dichlorophenol	8.37	<300 U
2,6-Dichlorophenol	8.59	<300 U
3,5-Dichlorophenol	10.21	<300 U
3,4-Dichlorophenol	10.53	<300 U
2,3,5-Trichlorophenol	9.81	<60 U
2,4,6-Trichlorophenol	10.06	<60 U
2,4,5-Trichlorophenol	10.06	<60 U
2,3,4-Trichlorophenol	10.06	<60 U
2,3,6-Trichlorophenol	10.25	<60 U
3,4,5-Trichlorophenol	12.10	<60 U
2,3,5,6-Tetrachlorophenol	11.78	<60 U
2,3,4,5/2,3,4,6-Tetrachlorophenol	11.87	<60 U
Pentachlorophenol	13.62	<60 U

Extraction Standards

	% Rec	Limits
13C6-4-Chlorophenol (ES)	1200 8.27 15.3 M	50-150
13C6-2,4-Dichlorophenol (ES)	1200 8.08 2.0 M	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200 10.06 20.8	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 11.83 60.1	50-150
13C6-Pentachlorophenol (ES)	1200 13.53 54.1	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 (1200ng)	Sampling Date	n/a
ALS Sample ID	WG3791199-2	Extraction Date	16-Dec-24
Analysis Method	Chlorophenols by 8270E		
Analysis Type	LCS		
Sample Matrix	Media		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3791199
Approved: Andrew Reid --e-signature-- 27-Jan-2025			

Run Information	Run 1
Filename	25012404.D
Run Date	1/24/2025 15:13
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP-5MS US4167543H

Target Analytes	ug spiked	Ret. Time	% Recovery	Flags	Limits
2-Chlorophenol	1200	6.15	88		50-150
3/4-Chlorophenol			NS		50-150
2,4/2,5-Dichlorophenol	1200	8.06	106		50-150
2,3-Dichlorophenol			NS		50-150
2,6-Dichlorophenol	1200	8.44	42		50-150
3,5-Dichlorophenol			NS		50-150
3,4-Dichlorophenol			NS		50-150
2,3,5-Trichlorophenol			NS		50-150
2,4,6-Trichlorophenol	1200	9.96	17		50-150
2,4,5-Trichlorophenol	1200	10.02	117		50-150
2,3,4-Trichlorophenol			NS		50-150
2,3,6-Trichlorophenol			NS		50-150
3,4,5-Trichlorophenol			NS		50-150
2,3,5,6-Tetrachlorophenol	1200	11.77	134		50-150
2,3,4,5/2,3,4,6-Tetrachlorophenol	2400	11.81	59 M		50-150
Pentachlorophenol	1200	13.52	111		50-150
Extraction Standards			% Rec		Limits
13C6-4-Chlorophenol (ES)	1200	8.26	11.9		30-150
13C6-2,4-Dichlorophenol (ES)	1200	8.06	46.3		30-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.02	64.3		30-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.81	65.4		30-150
13C6-Pentachlorophenol (ES)	1200	13.52	53.4		30-150

M Indicates that a peak has been manually integrated.
NS Indicates that this compound was not spiked in.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample (120ng)	Sampling Date	n/a
ALS Sample ID	WG3791199-5	Extraction Date	16-Dec-24
Analysis Method	Chlorophenols by 8270E		
Analysis Type	LCS		
Sample Matrix	Reagent		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3791199
			Approved: Andrew Reid --e-signature-- 27-Jan-2025

Run Information	Run 1
Filename	25012403.D
Run Date	1/24/2025 14:49
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP-5MS USR123112H

Target Analytes	ug spiked	Ret. Time	% Recovery	Flags	Limits
2-Chlorophenol	120	5.98	73	M	50-150
3/4-Chlorophenol			NS		50-150
2,4/2,5-Dichlorophenol	120	8.05	129	M	50-150
2,3-Dichlorophenol			NS		50-150
2,6-Dichlorophenol	120	8.42	131	M	50-150
3,5-Dichlorophenol			NS		50-150
3,4-Dichlorophenol			NS		50-150
2,3,5-Trichlorophenol			NS		50-150
2,4,6-Trichlorophenol	120	9.97	62		50-150
2,4,5-Trichlorophenol	120	10.02	137	M	50-150
2,3,4-Trichlorophenol			NS		50-150
2,3,6-Trichlorophenol			NS		50-150
3,4,5-Trichlorophenol			NS		50-150
2,3,5,6-Tetrachlorophenol	120	11.77	78		50-150
2,3,4,5/2,3,4,6-Tetrachlorophenol	240	11.81	94	M	50-150
Pentachlorophenol	120	13.53	114	M	50-150
Extraction Standards			% Rec		Limits
13C6-4-Chlorophenol (ES)	1200	8.28	4.4		30-150
13C6-2,4-Dichlorophenol (ES)	1200	8.03	12.2		30-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.02	38.6		30-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	11.81	49.7		30-150
13C6-Pentachlorophenol (ES)	1200	13.52	31.5		30-150

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
ALS Project ID: ORT100
ALS WO#: L2758327
Date of Report: 26-Feb-25
Date of Sample Receipt: 6-Dec-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 / 22330 Reworld

COMMENTS: PAH by CARB method 429 (LR option)- Isotope dilution

The recoveries of some of the labelled extraction standards were below the method control limits. No impact to data quality is expected.

Certified by:

A handwritten signature in black ink, appearing to read "Jin" or "Sabrina Jin".

Sabrina Jin
Technical Specialist

Results in this certificate relate only to the samples as submitted to the laboratory.

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Sample Analysis Summary Report

Sample Name	Method Blank	[# 1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1		[# 1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST#2		[# 1 APC OUTLET] 24-4547-SVOC- (11 THRU 15) TEST#3		[# 2 APC OUTLET] 24-4547-SVOC- (21 THRU 25) TEST#1	
ALS Sample ID	WG3791199-1	L2758327-1		L2758327-2		L2758327-3		L2758327-4	
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	2-Dec-24		2-Dec-24		3-Dec-24		2-Dec-24	
Extraction Date	16-Dec-24	16-Dec-24		16-Dec-24		16-Dec-24		16-Dec-24	

Target Analytes	ng/sample		ng/sample		ng/sample		ng/sample		ng/sample	
Naphthalene	152	M,R	113	B	126	B	138	B	141	B
2-Methylnaphthalene	<12	U	29.6		57.6		52.5		53.7	
1-Methylnaphthalene	<12	U	16.7		32.2		28.2		27.7	
Acenaphthylene	<12	U	<12	U	<12	U	<12	U	<12	U
Acenaphthene	<12	U	<12	U	<12	U	<12	U	<12	U
Fluorene	<12	U	14.6		73.4		26.5		17.9	
Phenanthrene	<12	U	107		1800		204		112	
Anthracene	<12	U	<12	U	62.9	M	<12	U	<12	U
Fluoranthene	<12	U	20.6		346		31.7		14.8	
Pyrene	<12	U	15.5		266		28.4	R	16.0	
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Chrysene/Triphenylene/Benzo(b)anthracene	<12	U	<12	U	28.5		<12	U	<12	U
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(k/j)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(e)Pyrene	<12	U	<12	U	12.7	M	<12	U	<12	U
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Perylene	<12	U	<12	U	<12	U	<12	U	<12	U
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<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	14.8	M,R	<12	U
Additional Analytes										
Tetralin	<12	U	21.2		23.3		21.8		29.3	
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U
Biphenyl	<12	U	24.8		77.9		53.9		30.8	
o-Terphenyl	<12	U	<12	U	21.5	R	<12	U	<12	U
1-Methylphenanthrene	<12	U	<12	U	<12	U	<12	U	<12	U
9-Methylphenanthrene	<12	U	<12	U	80.0		15.0		<12	U
2-methylanthracene	<12	U	<12	U	25.4		<12	U	<12	U
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U	<12	U
m-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U
p-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<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		87.9		88.7		87.9		84.6	
Fluorene D10	NS		96.3		75.9		69.8		75.4	
Terphenyl D14(Surr.)	NS		64.5		65.9		62.7		64.2	
Extraction Standards										
	% Rec		% Rec		% Rec		% Rec		% Rec	
Naphthalene D8	92.9		62.4		100.7		88.4		86.2	
2-Methylnaphthalene-D10	89.8		61.7		100.1		86.7		98.3	
Acenaphthylene D8	88.1		70.3		90.8		86.3		94.7	
Phenanthrene D10	111.1		71.5		106.9		113.9		108.7	
Anthracene-D10	97.4		58.1		89.1		103.3		93.0	
Fluoranthene D10	97.6		86.2		104.2		97.3		103.5	
Benz(a)Anthracene-D12	44.1		35.8		46.0		39.2		46.0	
Chrysene D12	54.5		47.5		58.2		50.0		58.8	
Benzo(b)Fluoranthene-D12	77.0		87.9		51.8		39.0		60.8	
Benzo(k)Fluoranthene-D12	90.2		121.0		69.4		45.7		92.5	
Benzo(a)Pyrene D12	74.2		68.8		69.4		68.7		65.5	
Perylene D12	67.1		48.7		58.7		66.3		55.8	
Indeno(1,2,3,cd)Pyrene-D12	53.6		48.4		32.0		28.2		32.8	
Dibenz(a,h)Anthracene-D14	49.8		42.5		30.9		29.4		28.5	
Benzo(g,h,i)Perylene D12	66.3		56.8		42.8		43.1		50.5	

U Indicates that this compound was not detected above the LOD.
M Indicates that a peak has been manually integrated.
B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Summary Report

Sample Name	[#2 APC OUTLET] 24-4547-SVOC- (26 THRU 30) TEST #2	[#1 APC OUTLET] 24-4547-SVOC- (16 THRU 20) BLANK1	[#2 APC OUTLET] 24-4547-SVOC- (36 THRU 40) BLANK2	Laboratory Control Sample
ALS Sample ID	L2758327-5	L2758327-6	L2758327-7	WG3791199-2
Sample Size	1	1	1	1
Sample units	sample	sample	sample	n/a
Moisture Content	n/a	n/a	n/a	n/a
Matrix	Stack	Stack	Stack	QC
Sampling Date	2-Dec-24	11-Dec-24	11-Dec-24	n/a
Extraction Date	16-Dec-24	16-Dec-24	16-Dec-24	n/a

Target Analytes	ng / sample		ng / sample		%		%
Naphthalene	142	B	45.1	B	43.0	B	105.5
2-Methylnaphthalene	32.1		<12	U	<12	U	99.5
1-Methylnaphthalene	17.0		<12	U	<12	U	92.6
Acenaphthylene	<12	U	<12	U	<12	U	112.6
Acenaphthene	<12	U	<12	U	<12	U	100.1
Fluorene	<12	U	<12	U	<12	U	89.7
Phenanthrene	88.6		<12	U	<12	U	98.6
Anthracene	<12	U	<12	U	<12	U	111.3
Fluoranthene	18.2	R	<12	U	<12	U	104.5
Pyrene	13.4		<12	U	<12	U	99.4
Benzo(a)Anthracene	<12	U	<12	U	<12	U	114.1
Chrysene/Triphenylene/Benzo(b)anthracene	<12	U	<12	U	<12	U	110.7
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	114.0
Benzo(k)Fluoranthene	<12	U	<12	U	<12	U	105.0
Benzo(e)Pyrene	<12	U	<12	U	<12	U	93.0
Benzo(a)Pyrene	<12	U	<12	U	<12	U	103.7
Perylene	<12	U	<12	U	<12	U	107.9
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	102.0
Dibenzo(a,h/a,c)Anthracene	<12	U	<12	U	<12	U	114.0
Benzo(g,h,i)Perylene	<12	U	<12	U	<12	U	107.4

Additional Analytes							
Tetralin	19.4		12.4		<12	U	NS
2-Chloronaphthalene	<12	U	<12	U	<12	U	NS
Biphenyl	24.5		<12	U	<12	U	NS
o-Terphenyl	<12	U	<12	U	<12	U	NS
1-Methylphenanthrene	<12	U	<12	U	<12	U	NS
9-Methylphenanthrene	<12	U	<12	U	<12	U	NS
2-methylanthracene	<12	U	<12	U	<12	U	NS
9,10-dimethylanthracene	<12	U	<12	U	<12	U	NS
m-terphenyl	<12	U	<12	U	<12	U	NS
p-terphenyl	<12	U	<12	U	<12	U	NS
Benzo(a)fluorene	<12	U	<12	U	<12	U	NS
Benzo(b)fluorene	<12	U	<12	U	<12	U	NS
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	NS
3-Methylcholanthrene	<60	U	<60	U	<60	U	NS
Picene	<60	U	<60	U	<60	U	NS
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	NS
Coronene	<60	U	<60	U	<60	U	NS

Field Sampling Standards	% Rec		% Rec		% Rec		% Rec
1-Methylnaphthalene-D10	91.3		86.4		86.4		NS
Fluorene D10	80.1		79.5		77.1		NS
Terphenyl D14(Surr.)	70.1		65.5		61.3		NS

Extraction Standards	% Rec		% Rec		% Rec		% Rec
Naphthalene D8	87.7		93.7		99.9		92.7
2-Methylnaphthalene-D10	86.7		93.8		95.9		91.1
Acenaphthylene D8	82.9		87.4		89.8		84.4
Phenanthrene D10	99.0		104.1		109.1		106.1
Anthracene-D10	87.5		80.3		94.4		93.6
Fluoranthene D10	96.6		98.5		100.1		96.2
Benz(a)Anthracene-D12	45.1		44.5		40.4		49.6
Chrysene D12	57.8		61.7		55.8		61.1
Benzo(b)Fluoranthene-D12	51.1		64.2		68.1		81.4
Benzo(k)Fluoranthene-D12	79.9		99.3		105.1		104.7
Benzo(a)Pyrene D12	63.5		60.1		61.5		77.3
Perylene D12	52.8		34.7		39.3		68.3
Indeno(1,2,3,cd)Pyrene-D12	23.2	M	38.5		40.6		55.6
Dibenz(a,h)Anthracene-D14	22.2		40.2		42.7		54.3
Benzo(g,h,i)Perylene D12	41.4		58		61.1		72.7

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.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a
ALS Sample ID	WG3791199-1	Extraction Date	16-Dec-24
Analysis Method	PAH by CARB 429		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3791199
Approved: Bikramjeet Singh --e-signature-- 26-Feb-2025			

Run Information	Run 1
Filename	25011712.D
Run Date	1/17/2025 17:03
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4544614H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Naphthalene	2.71	152 M	R
2-Methylnaphthalene	3.37	<12 U	
1-Methylnaphthalene	3.48	<12 U	
Acenaphthylene	4.43	<12 U	
Acenaphthene	4.70	<12 U	
Fluorene	5.57	<12 U	
Phenanthrene	7.66	<12 U	
Anthracene	7.67	<12 U	
Fluoranthene	10.98	<12 U	
Pyrene	11.61	<12 U	
Benzo(a)Anthracene	15.41	<12 U	
Chrysene/Triphenylene/Benzo(b)anthracene	15.53	<12 U	
Benzo(b)Fluoranthene	18.82	<12 U	
Benzo(k/j)Fluoranthene	18.85	<12 U	
Benzo(e)Pyrene	19.55	<12 U	
Benzo(a)Pyrene	19.72	<12 U	
Perylene	19.91	<12 U	
Indeno(1,2,3-cd)Pyrene	22.97	<12 U	
Dibenzo(a,h/a,c)Anthracene	23.18	<12 U	
Benzo(g,h,i)Perylene	23.84	<12 U	

Additional Analytes			
Tetralin	2.73	<12 U	
2-Chloronaphthalene	3.76	<12 U	
Biphenyl	3.88	<12 U	
o-Terphenyl	8.54	<12 U	
1-Methylphenanthrene	9.15	<12 U	
9-Methylphenanthrene	9.29	<12 U	
2-methylantracene	9.35	<12 U	
9,10-dimethylantracene	11.56	<12 U	
m-terphenyl	12.03	<12 U	
p-terphenyl	12.51	<12 U	
Benzo(a)fluorene	12.77	<12 U	
Benzo(b)fluorene	12.97	<12 U	
7,12-Dimethylbenzo(a)anthracene	18.83	<12 U	
3-Methylcholanthrene	20.87	<60 U	
Picene	23.17	<60 U	
Dibenzo(a,e)pyrene	27.88	<60 U	
Coronene	28.72	<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 2.83	92.9	50-150
2-Methylnaphthalene-D10	600 3.35	89.8	50-150
Acenaphthylene D8	600 4.41	88.1	50-150
Phenanthrene D10	600 7.61	111.1	50-150
Anthracene-D10	600 7.73	97.4	50-150
Fluoranthene D10	600 10.93	97.6	50-150
Benz(a)Anthracene-D12	600 15.42	44.1	50-150
Chrysene D12	600 15.53	54.5	50-150
Benzo(b)Fluoranthene-D12	600 18.74	77.0	50-150
Benzo(k)Fluoranthene-D12	600 18.83	90.2	50-150
Benzo(a)Pyrene D12	600 19.62	74.2	50-150
Perylene D12	600 19.85	67.1	50-150
Indeno(1,2,3-cd)Pyrene-D12	600 22.91	53.6	50-150
Dibenz(a,h)Anthracene-D14	600 23.08	49.8	50-150
Benzo(g,h,i)Perylene D12	600 23.76	66.3	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this compound was not spiked

ALS Life Sciences

Sample Analysis Report

Sample Name	[#1 APC OUTLET] 24-4547-SVOC-(1 THRU 5) TEST#1		Sampling Date	2-Dec-24
ALS Sample ID	L2758327-1		Extraction Date	16-Dec-24
Analysis Method	PAH by CARB 429			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3791199

Approved:
Bikramjeet Singh
--e-signature--
26-Feb-2025

Run Information	Run 1
Filename	25011714.D
Run Date	1/17/2025 18:18
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4544614H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Naphthalene	2.84	113	B
2-Methylnaphthalene	3.38	29.6	
1-Methylnaphthalene	3.48	16.7	
Acenaphthylene	4.43	<12	U
Acenaphthene	4.70	<12	U
Fluorene	5.57	14.6	
Phenanthrene	7.66	107	
Anthracene	7.77	<12	U
Fluoranthene	10.98	20.6	
Pyrene	11.61	15.5	
Benzo(a)Anthracene	15.48	<12	U
Chrysene/Triphenylene/Benzo(b)anthracene	15.60	<12	U
Benzo(b)Fluoranthene	18.73	<12	U
Benzo(k/j)Fluoranthene	18.82	<12	U
Benzo(e)Pyrene	19.60	<12	U
Benzo(a)Pyrene	19.68	<12	U
Perylene	19.92	<12	U
Indeno(1,2,3-cd)Pyrene	23.00	<12	U
Dibenzo(a,h/a,c)Anthracene	23.16	<12	U
Benzo(g,h,i)Perylene	23.84	<12	U

Additional Analytes	Ret. Time	Concentration ng/sample	Flags
Tetralin	2.73	21.2	
2-Chloronaphthalene	3.76	<12	U
Biphenyl	3.87	24.8	
o-Terphenyl	8.93	<12	U
1-Methylphenanthrene	9.05	<12	U
9-Methylphenanthrene	9.29	<12	U
2-methylantracene	9.36	<12	U
9,10-dimethylantracene	11.57	<12	U
m-terphenyl	12.03	<12	U
p-terphenyl	12.51	<12	U
Benzo(a)fluorene	12.76	<12	U
Benzo(b)fluorene	12.97	<12	U
7,12-Dimethylbenzo(a)anthracene	18.84	<12	U
3-Methylcholanthrene	20.92	<60	U
Picene	23.16	<60	U
Dibenzo(a,e)pyrene	27.89	<60	U
Coronene	28.68	<60	U

Field Sampling Standards	ng spiked	% Rec
1-Methylnaphthalene-D10	600 3.45	87.9
Fluorene D10	600 5.51	96.3
Terphenyl D14(Surr.)	600 12.44	64.5

Extraction Standards	% Rec	Limits
Naphthalene D8	600 2.83 62.4	50-150
2-Methylnaphthalene-D10	600 3.35 61.7	50-150
Acenaphthylene D8	600 4.41 70.3	50-150
Phenanthrene D10	600 7.61 71.5	50-150
Anthracene-D10	600 7.73 58.1	50-150
Fluoranthene D10	600 10.93 86.2	50-150
Benz(a)Anthracene-D12	600 15.42 35.8	50-150
Chrysene D12	600 15.54 47.5	50-150
Benzo(b)Fluoranthene-D12	600 18.74 87.9	50-150
Benzo(k)Fluoranthene-D12	600 18.84 121.0	50-150
Benzo(a)Pyrene D12	600 19.62 68.8	50-150
Perylene D12	600 19.85 48.7	50-150
Indeno(1,2,3-cd)Pyrene-D12	600 22.91 48.4	50-150
Dibenz(a,h)Anthracene-D14	600 23.07 42.5	50-150
Benzo(g,h,i)Perylene D12	600 23.76 56.8	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

Sample Analysis Report

Sample Name [#1 APC OUTLET] 24-4547-SVOC-(6 THRU 10) TEST#2
ALS Sample ID L2758327-2
Analysis Method PAH by CARB 429
Analysis Type sample
Sample Matrix Stack
Sample Size 1 sample
Percent Moisture n/a
Split Ratio 6
Sampling Date 2-Dec-24
Extraction Date 16-Dec-24
Workgroup WG3791199

Approved:
 Bikramjeet Singh
 --e-signature--
 26-Feb-2025

Run Information **Run 1**
Filename 25011715.D
Run Date 1/17/2025 18:55
Final Volume 1 mL
Dilution Factor 1
Analysis Units ng/sample
Instrument MSD-5
Column HP-5MS US4544614H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Naphthalene	2.84	126	B
2-Methylnaphthalene	3.38	57.6	
1-Methylnaphthalene	3.48	32.2	
Acenaphthylene	4.43	<12	U
Acenaphthene	4.70	<12	U
Fluorene	5.57	73.4	
Phenanthrene	7.66	1800	
Anthracene	7.77	62.9	M
Fluoranthene	10.98	346	
Pyrene	11.61	266	
Benzo(a)Anthracene	15.48	<12	U
Chrysene/Triphenylene/Benzo(b)anthracene	15.59	28.5	
Benzo(b)Fluoranthene	18.74	<12	U
Benzo(k/j)Fluoranthene	18.83	<12	U
Benzo(e)Pyrene	19.55	12.7	M
Benzo(a)Pyrene	19.74	<12	U
Perylene	19.99	<12	U
Indeno(1,2,3-cd)Pyrene	22.98	<12	U
Dibenzo(a,h/a,c)Anthracene	23.20	<12	U
Benzo(g,h,i)Perylene	23.83	<12	U

Additional Analytes

Tetralin	2.73	23.3	
2-Chloronaphthalene	3.76	<12	U
Biphenyl	3.87	77.9	
o-Terphenyl	8.93	21.5	R
1-Methylphenanthrene	9.06	<12	U
9-Methylphenanthrene	9.29	80.0	
2-methylantracene	9.35	25.4	
9,10-dimethylantracene	11.85	<12	U
m-terphenyl	12.03	<12	U
p-terphenyl	12.51	<12	U
Benzo(a)fluorene	12.73	<12	U
Benzo(b)fluorene	12.98	<12	U
7,12-Dimethylbenzo(a)anthracene	18.83	<12	U
3-Methylcholanthrene	20.92	<60	U
Picene	23.20	<60	U
Dibenzo(a,e)pyrene	27.90	<60	U
Coronene	28.76	<60	U

Field Sampling Standards	ng spiked	% Rec
1-Methylnaphthalene-D10	600 3.45	88.7
Fluorene D10	600 5.51	75.9
Terphenyl D14(Surr.)	600 12.44	65.9

Extraction Standards	% Rec	Limits
Naphthalene D8	600 2.83	100.7 50-150
2-Methylnaphthalene-D10	600 3.35	100.1 50-150
Acenaphthylene D8	600 4.41	90.8 50-150
Phenanthrene D10	600 7.61	106.9 50-150
Anthracene-D10	600 7.73	89.1 50-150
Fluoranthene D10	600 10.93	104.2 50-150
Benz(a)Anthracene-D12	600 15.42	46.0 50-150
Chrysene D12	600 15.54	58.2 50-150
Benzo(b)Fluoranthene-D12	600 18.74	51.8 50-150
Benzo(k)Fluoranthene-D12	600 18.84	69.4 50-150
Benzo(a)Pyrene D12	600 19.63	69.4 50-150
Perylene D12	600 19.86	58.7 50-150
Indeno(1,2,3-cd)Pyrene-D12	600 22.91	32.0 50-150
Dibenz(a,h)Anthracene-D14	600 23.09	30.9 50-150
Benzo(g,h,i)Perylene D12	600 23.77	42.8 50-150

M Indicates that a peak has been manually integrated.
 U Indicates that this compound was not detected above the MDL.
 B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
 R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	[#1 APC OUTLET] 24-4547-SVOC-(11 THRU 15) TEST#3		Sampling Date	3-Dec-24
ALS Sample ID	L2758327-3		Extraction Date	16-Dec-24
Analysis Method	PAH by CARB 429			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6		Workgroup	WG3791199

Approved:
Bikramjeet Singh
--e-signature--
26-Feb-2025

Run Information	Run 1
Filename	25011716.D
Run Date	1/17/2025 19:32
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4544614H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Naphthalene	2.84	138	B
2-Methylnaphthalene	3.38	52.5	
1-Methylnaphthalene	3.48	28.2	
Acenaphthylene	4.43	<12	U
Acenaphthene	4.70	<12	U
Fluorene	5.56	26.5	
Phenanthrene	7.66	204	
Anthracene	7.77	<12	U
Fluoranthene	10.98	31.7	
Pyrene	11.61	28.4	R
Benzo(a)Anthracene	15.48	<12	U
Chrysene/Triphenylene/Benzo(b)anthracene	15.59	<12	U
Benzo(b)Fluoranthene	18.73	<12	U
Benzo(k/j)Fluoranthene	18.80	<12	U
Benzo(e)Pyrene	19.57	<12	U
Benzo(a)Pyrene	19.78	<12	U
Perylene	19.98	<12	U
Indeno(1,2,3-cd)Pyrene	22.96	<12	U
Dibenzo(a,h/a,c)Anthracene	23.20	<12	U
Benzo(g,h,i)Perylene	23.84	14.8 M	R

Additional Analytes			
Tetralin	2.73	21.8	
2-Chloronaphthalene	3.76	<12	U
Biphenyl	3.87	53.9	
o-Terphenyl	8.93	<12	U
1-Methylphenanthrene	9.06	<12	U
9-Methylphenanthrene	9.29	15.0	
2-methylantracene	9.36	<12	U
9,10-dimethylantracene	11.85	<12	U
m-terphenyl	12.03	<12	U
p-terphenyl	12.51	<12	U
Benzo(a)fluorene	12.75	<12	U
Benzo(b)fluorene	13.06	<12	U
7,12-Dimethylbenzo(a)anthracene	18.84	<12	U
3-Methylcholanthrene	20.89	<60	U
Picene	22.81	<60	U
Dibenzo(a,e)pyrene	27.92	<60	U
Coronene	28.85	<60	U

Field Sampling Standards	ng spiked	% Rec
1-Methylnaphthalene-D10	600 3.45	87.9
Fluorene D10	600 5.51	69.8
Terphenyl D14(Surr.)	600 12.44	62.7

Extraction Standards	% Rec	Limits
Naphthalene D8	600 2.83	88.4 50-150
2-Methylnaphthalene-D10	600 3.35	86.7 50-150
Acenaphthylene D8	600 4.41	86.3 50-150
Phenanthrene D10	600 7.61	113.9 50-150
Anthracene-D10	600 7.73	103.3 50-150
Fluoranthene D10	600 10.93	97.3 50-150
Benz(a)Anthracene-D12	600 15.42	39.2 50-150
Chrysene D12	600 15.54	50.0 50-150
Benzo(b)Fluoranthene-D12	600 18.74	39.0 50-150
Benzo(k)Fluoranthene-D12	600 18.83	45.7 50-150
Benzo(a)Pyrene D12	600 19.63	68.7 50-150
Perylene D12	600 19.87	66.3 50-150
Indeno(1,2,3-cd)Pyrene-D12	600 22.92	28.2 50-150
Dibenz(a,h)Anthracene-D14	600 23.10	29.4 50-150
Benzo(g,h,i)Perylene D12	600 23.79	43.1 50-150

M Indicates that a peak has been manually integrated.
 U Indicates that this compound was not detected above the MDL.

 B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
 R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	[# 2 APC OUTLET] 24-4547-SVOC-(21 THRU 25) TEST#1		
ALS Sample ID	L2758327-4	Sampling Date	2-Dec-24
Analysis Method	PAH by CARB 429	Extraction Date	16-Dec-24
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3791199

Approved:
Bikramjeet Singh
--e-signature--
26-Feb-2025

Run Information	Run 1
Filename	25011717.D
Run Date	1/17/2025 20:09
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4544614H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Naphthalene	2.84	141	B
2-Methylnaphthalene	3.38	53.7	
1-Methylnaphthalene	3.48	27.7	
Acenaphthylene	4.43	<12	U
Acenaphthene	4.70	<12	U
Fluorene	5.57	17.9	
Phenanthrene	7.66	112	
Anthracene	7.77	<12	U
Fluoranthene	10.97	14.8	
Pyrene	11.61	16.0	
Benzo(a)Anthracene	15.49	<12	U
Chrysene/Triphenylene/Benzo(b)anthracene	15.60	<12	U
Benzo(b)Fluoranthene	18.76	<12	U
Benzo(k/j)Fluoranthene	18.82	<12	U
Benzo(e)Pyrene	19.54	<12	U
Benzo(a)Pyrene	19.71	<12	U
Perylene	19.99	<12	U
Indeno(1,2,3-cd)Pyrene	22.96	<12	U
Dibenzo(a,h/a,c)Anthracene	23.22	<12	U
Benzo(g,h,i)Perylene	23.82	<12	U

Additional Analytes	Ret. Time	Concentration ng/sample	Flags
Tetralin	2.73	29.3	
2-Chloronaphthalene	3.76	<12	U
Biphenyl	3.87	30.8	
o-Terphenyl	8.93	<12	U
1-Methylphenanthrene	9.06	<12	U
9-Methylphenanthrene	9.29	<12	U
2-methylantracene	9.35	<12	U
9,10-dimethylantracene	12.10	<12	U
m-terphenyl	12.03	<12	U
p-terphenyl	12.51	<12	U
Benzo(a)fluorene	12.77	<12	U
Benzo(b)fluorene	13.06	<12	U
7,12-Dimethylbenzo(a)anthracene	18.85	<12	U
3-Methylcholanthrene	20.92	<60	U
Picene	23.37	<60	U
Dibenzo(a,e)pyrene	28.02	<60	U
Coronene	28.95	<60	U

Field Sampling Standards	ng spiked	% Rec
1-Methylnaphthalene-D10	600 3.45	84.6
Fluorene D10	600 5.51	75.4
Terphenyl D14(Surr.)	600 12.44	64.2

Extraction Standards	% Rec	Limits
Naphthalene D8	600 2.83 86.2	50-150
2-Methylnaphthalene-D10	600 3.35 98.3	50-150
Acenaphthylene D8	600 4.41 94.7	50-150
Phenanthrene D10	600 7.61 108.7	50-150
Anthracene-D10	600 7.73 93.0	50-150
Fluoranthene D10	600 10.93 103.5	50-150
Benz(a)Anthracene-D12	600 15.42 46.0	50-150
Chrysene D12	600 15.54 58.8	50-150
Benzo(b)Fluoranthene-D12	600 18.75 60.8	50-150
Benzo(k)Fluoranthene-D12	600 18.84 92.5	50-150
Benzo(a)Pyrene D12	600 19.63 65.5	50-150
Perylene D12	600 19.87 55.8	50-150
Indeno(1,2,3-cd)Pyrene-D12	600 22.92 32.8	50-150
Dibenz(a,h)Anthracene-D14	600 23.08 28.5	50-150
Benzo(g,h,i)Perylene D12	600 23.79 50.5	50-150

U Indicates that this compound was not detected above the MDL.

B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name [#2 APC OUTLET] 24-4547-SVOC-(26 THRU 30) TEST#2
ALS Sample ID L2758327-5
Analysis Method PAH by CARB 429
Analysis Type sample
Sample Matrix Stack
Sample Size 1 sample
Percent Moisture n/a
Split Ratio 6
Sampling Date 2-Dec-24
Extraction Date 16-Dec-24
Workgroup WG3791199

Approved:
 Bikramjeet Singh
 --e-signature--
 26-Feb-2025

Run Information **Run 1**
Filename 25011718.D
Run Date 1/17/2025 20:47
Final Volume 1 mL
Dilution Factor 1
Analysis Units ng/sample
Instrument MSD-5
Column HP-5MS US4544614H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Naphthalene	2.84	142	B
2-Methylnaphthalene	3.38	32.1	
1-Methylnaphthalene	3.48	17.0	
Acenaphthylene	4.43	<12	U
Acenaphthene	4.70	<12	U
Fluorene	5.57	<12	U
Phenanthrene	7.66	88.6	
Anthracene	7.77	<12	U
Fluoranthene	10.98	18.2	R
Pyrene	11.61	13.4	
Benzo(a)Anthracene	15.48	<12	U
Chrysene/Triphenylene/Benzo(b)anthracene	15.59	<12	U
Benzo(b)Fluoranthene	18.75	<12	U
Benzo(k/j)Fluoranthene	18.82	<12	U
Benzo(e)Pyrene	19.55	<12	U
Benzo(a)Pyrene	19.61	<12	U
Perylene	19.86	<12	U
Indeno(1,2,3-cd)Pyrene	22.96	<12	U
Dibenzo(a,h/a,c)Anthracene	23.18	<12	U
Benzo(g,h,i)Perylene	23.83	<12	U

Additional Analytes			
Tetralin	2.73	19.4	
2-Chloronaphthalene	3.76	<12	U
Biphenyl	3.87	24.5	
o-Terphenyl	8.93	<12	U
1-Methylphenanthrene	9.05	<12	U
9-Methylphenanthrene	9.29	<12	U
2-methylantracene	9.35	<12	U
9,10-dimethylantracene	11.85	<12	U
m-terphenyl	12.03	<12	U
p-terphenyl	12.51	<12	U
Benzo(a)fluorene	12.77	<12	U
Benzo(b)fluorene	13.05	<12	U
7,12-Dimethylbenzo(a)anthracene	18.84	<12	U
3-Methylcholanthrene	20.90	<60	U
Picene	23.40	<60	U
Dibenzo(a,e)pyrene	28.01	<60	U
Coronene	28.93	<60	U

Field Sampling Standards	ng spiked		% Rec
1-Methylnaphthalene-D10	600	3.45	91.3
Fluorene D10	600	5.51	80.1
Terphenyl D14(Surr.)	600	12.44	70.1

Extraction Standards			% Rec	Limits
Naphthalene D8	600	2.83	87.7	50-150
2-Methylnaphthalene-D10	600	3.35	86.7	50-150
Acenaphthylene D8	600	4.41	82.9	50-150
Phenanthrene D10	600	7.61	99.0	50-150
Anthracene-D10	600	7.73	87.5	50-150
Fluoranthene D10	600	10.93	96.6	50-150
Benz(a)Anthracene-D12	600	15.43	45.1	50-150
Chrysene D12	600	15.54	57.8	50-150
Benzo(b)Fluoranthene-D12	600	18.75	51.1	50-150
Benzo(k)Fluoranthene-D12	600	18.84	79.9	50-150
Benzo(a)Pyrene D12	600	19.63	63.5	50-150
Perylene D12	600	19.87	52.8	50-150
Indeno(1,2,3-cd)Pyrene-D12	600	22.91	23.2 M	50-150
Dibenz(a,h)Anthracene-D14	600	23.08	22.2	50-150
Benzo(g,h,i)Perylene D12	600	23.79	41.4	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.
 R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	[#1 APC OUTLET] 24-4547-SVOC-(16 THRU 20) BLANK1		
ALS Sample ID	L2758327-6	Sampling Date	11-Dec-24
Analysis Method	PAH by CARB 429	Extraction Date	16-Dec-24
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3791199

Approved:
Bikramjeet Singh
--e-signature--
26-Feb-2025

Run Information	Run 1
Filename	25011719.D
Run Date	1/17/2025 21:24
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4544614H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Naphthalene	2.84	45.1	B
2-Methylnaphthalene	3.37	<12	U
1-Methylnaphthalene	3.48	<12	U
Acenaphthylene	4.43	<12	U
Acenaphthene	4.71	<12	U
Fluorene	5.57	<12	U
Phenanthrene	7.66	<12	U
Anthracene	7.78	<12	U
Fluoranthene	10.97	<12	U
Pyrene	11.60	<12	U
Benzo(a)Anthracene	15.42	<12	U
Chrysene/Triphenylene/Benzo(b)anthracene	15.54	<12	U
Benzo(b)Fluoranthene	18.74	<12	U
Benzo(k/j)Fluoranthene	18.96	<12	U
Benzo(e)Pyrene	19.61	<12	U
Benzo(a)Pyrene	19.61	<12	U
Perylene	19.95	<12	U
Indeno(1,2,3-cd)Pyrene	22.99	<12	U
Dibenzo(a,h/a,c)Anthracene	23.19	<12	U
Benzo(g,h,i)Perylene	23.91	<12	U

Additional Analytes	Ret. Time	Concentration ng/sample	Flags
Tetralin	2.73	12.4	
2-Chloronaphthalene	3.76	<12	U
Biphenyl	3.87	<12	U
o-Terphenyl	8.52	<12	U
1-Methylphenanthrene	9.17	<12	U
9-Methylphenanthrene	9.29	<12	U
2-methylantracene	9.35	<12	U
9,10-dimethylantracene	11.56	<12	U
m-terphenyl	12.02	<12	U
p-terphenyl	12.45	<12	U
Benzo(a)fluorene	12.78	<12	U
Benzo(b)fluorene	12.99	<12	U
7,12-Dimethylbenzo(a)anthracene	18.85	<12	U
3-Methylcholanthrene	20.93	<60	U
Picene	23.19	<60	U
Dibenzo(a,e)pyrene	27.94	<60	U
Coronene	28.79	<60	U

Field Sampling Standards	ng spiked	% Rec
1-Methylnaphthalene-D10	600 3.45	86.4
Fluorene D10	600 5.51	79.5
Terphenyl D14(Surr.)	600 12.44	65.5

Extraction Standards	% Rec	Limits
Naphthalene D8	600 2.83 93.7	50-150
2-Methylnaphthalene-D10	600 3.35 93.8	50-150
Acenaphthylene D8	600 4.41 87.4	50-150
Phenanthrene D10	600 7.61 104.1	50-150
Anthracene-D10	600 7.73 80.3	50-150
Fluoranthene D10	600 10.93 98.5	50-150
Benz(a)Anthracene-D12	600 15.43 44.5	50-150
Chrysene D12	600 15.54 61.7	50-150
Benzo(b)Fluoranthene-D12	600 18.75 64.2	50-150
Benzo(k)Fluoranthene-D12	600 18.84 99.3	50-150
Benzo(a)Pyrene D12	600 19.63 60.1	50-150
Perylene D12	600 19.86 34.7	50-150
Indeno(1,2,3-cd)Pyrene-D12	600 22.92 38.5	50-150
Dibenz(a,h)Anthracene-D14	600 23.10 40.2	50-150
Benzo(g,h,i)Perylene D12	600 23.79 58.0	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	[# 2 APC OUTLET] 24-4547-SVOC-(36 THRU 40) BLANK2		
ALS Sample ID	L2758327-7	Sampling Date	11-Dec-24
Analysis Method	PAH by CARB 429	Extraction Date	16-Dec-24
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3791199

Approved:
Bikramjeet Singh
--e-signature--
26-Feb-2025

Run Information	Run 1
Filename	25011720.D
Run Date	1/17/2025 22:01
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US4544614H

Target Analytes	Ret. Time	Concentration %	Flags
Naphthalene	2.84	43.0	B
2-Methylnaphthalene	3.38	<12	U
1-Methylnaphthalene	3.48	<12	U
Acenaphthylene	4.43	<12	U
Acenaphthene	4.71	<12	U
Fluorene	5.57	<12	U
Phenanthrene	7.66	<12	U
Anthracene	7.78	<12	U
Fluoranthene	10.97	<12	U
Pyrene	11.60	<12	U
Benzo(a)Anthracene	15.53	<12	U
Chrysene/Triphenylene/Benzo(b)anthracene	15.61	<12	U
Benzo(b)Fluoranthene	18.74	<12	U
Benzo(k/j)Fluoranthene	18.95	<12	U
Benzo(e)Pyrene	19.57	<12	U
Benzo(a)Pyrene	19.68	<12	U
Perylene	19.96	<12	U
Indeno(1,2,3-cd)Pyrene	23.06	<12	U
Dibenzo(a,h/a,c)Anthracene	23.18	<12	U
Benzo(g,h,i)Perylene	23.83	<12	U

Additional Analytes			
Tetralin	2.73	<12	U
2-Chloronaphthalene	3.75	<12	U
Biphenyl	3.88	<12	U
o-Terphenyl	8.52	<12	U
1-Methylphenanthrene	9.22	<12	U
9-Methylphenanthrene	9.29	<12	U
2-methylantracene	9.35	<12	U
9,10-dimethylantracene	11.56	<12	U
m-terphenyl	12.02	<12	U
p-terphenyl	12.50	<12	U
Benzo(a)fluorene	12.80	<12	U
Benzo(b)fluorene	12.96	<12	U
7,12-Dimethylbenzo(a)anthracene	18.85	<12	U
3-Methylcholanthrene	20.92	<60	U
Picene	23.21	<60	U
Dibenzo(a,e)pyrene	27.91	<60	U
Coronene	28.75	<60	U

Field Sampling Standards	ng spiked	% Rec
1-Methylnaphthalene-D10	600 3.45	86.4
Fluorene D10	600 5.51	77.1
Terphenyl D14(Surr.)	600 12.44	61.3

Extraction Standards		% Rec	Limits
Naphthalene D8	600 2.83	99.9	50-150
2-Methylnaphthalene-D10	600 3.35	95.9	50-150
Acenaphthylene D8	600 4.41	89.8	50-150
Phenanthrene D10	600 7.61	109.1	50-150
Anthracene-D10	600 7.73	94.4	50-150
Fluoranthene D10	600 10.93	100.1	50-150
Benz(a)Anthracene-D12	600 15.43	40.4	50-150
Chrysene D12	600 15.54	55.8	50-150
Benzo(b)Fluoranthene-D12	600 18.75	68.1	50-150
Benzo(k)Fluoranthene-D12	600 18.84	105.1	50-150
Benzo(a)Pyrene D12	600 19.62	61.5	50-150
Perylene D12	600 19.86	39.3	50-150
Indeno(1,2,3-cd)Pyrene-D12	600 22.92	40.6	50-150
Dibenz(a,h)Anthracene-D14	600 23.10	42.7	50-150
Benzo(g,h,i)Perylene D12	600 23.79	61.1	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

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a
ALS Sample ID	WG3791199-2	Extraction Date	n/a
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	WG3791199
Approved: Bikramjeet Singh --e-signature-- 26-Feb-2025			

Run Information	Run 1
Filename	25011710.D
Run Date	1/17/2025 15:49
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP-5MS US4544614H

Target Analytes	ug spiked	Ret. Time	%	Flags	Limits
Naphthalene	600	2.84	105.5		50-150
2-Methylnaphthalene	600	3.38	99.5		50-150
1-Methylnaphthalene	600	3.48	92.6		50-150
Acenaphthylene	600	4.43	112.6		50-150
Acenaphthene	600	4.70	100.1		50-150
Fluorene	600	5.57	89.7		50-150
Phenanthrene	600	7.66	98.6		50-150
Anthracene	600	7.77	111.3		50-150
Fluoranthene	600	10.98	104.5		50-150
Pyrene	600	11.61	99.4		50-150
Benzo(a)Anthracene	600	15.49	114.1		50-150
Chrysene/Triphenylene/Benzo(b)anthracene	600	15.61	110.7		50-150
Benzo(b)Fluoranthene	600	18.81	114.0		50-150
Benzo(k/l)Fluoranthene	600	18.88	105.0		50-150
Benzo(e)Pyrene	600	19.55	93.0		50-150
Benzo(a)Pyrene	600	19.68	103.7		50-150
Perylene	600	19.92	107.9		50-150
Indeno(1,2,3-cd)Pyrene	600	22.98	102.0		50-150
Dibenzo(a,h/a,c)Anthracene	600	23.17	114.0		50-150
Benzo(g,h,i)Perylene	600	23.85	107.4		50-150

Additional Analytes

Tetralin	0	NS
2-Chloronaphthalene	0	NS
Biphenyl	0	NS
o-Terphenyl	0	NS
1-Methylphenanthrene	0	NS
9-Methylphenanthrene	0	NS
2-methylantracene	0	NS
9,10-dimethylantracene	0	NS
m-terphenyl	0	NS
p-terphenyl	0	NS
Benzo(a)fluorene	0	NS
Benzo(b)fluorene	0	NS
7,12-Dimethylbenzo(a)anthracene	0	NS
3-Methylcholanthrene	0	NS
Picene	0	NS
Dibenzo(a,e)pyrene	0	NS
Coronene	0	NS

Field Sampling Standards	ng spiked	% Rec
1-Methylnaphthalene-D10	0	NS
Fluorene D10	0	NS
Terphenyl D14(Surr.)	0	NS

Extraction Standards		% Rec	Limits
Naphthalene D8	600	2.83	92.7
2-Methylnaphthalene-D10	600	3.35	91.1
Acenaphthylene D8	600	4.41	84.4
Phenanthrene D10	600	7.61	106.1
Anthracene-D10	600	7.73	93.6
Fluoranthene D10	600	10.93	96.2
Benz(a)Anthracene-D12	600	15.42	49.6
Chrysene D12	600	15.53	61.1
Benzo(b)Fluoranthene-D12	600	18.74	81.4
Benzo(k)Fluoranthene-D12	600	18.83	104.7
Benzo(a)Pyrene D12	600	19.62	77.3
Perylene D12	600	19.85	68.3
Indeno(1,2,3,cd)Pyrene-D12	600	22.91	55.6
Dibenz(a,h)Anthracene-D14	600	23.08	54.3
Benzo(g,h,i)Perylene D12	600	23.77	72.7

NS Indicates that this compound was not spiked

APPENDIX 16

Acid Gas Recovery Data Sheets (8 pages)

Alliance Technical Group
Method 26A Recovery Sheet

Client : Reworld

Project No.: AST-2024-4547 / 22330

Date: DEC 4 / 24

Test No.: 1

Test Location: 111

Filter is used but not
recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H₂SO₄

Empty Wt: 644.5

Initial Wt: 792.5

Final Wt: 874.0

1 Gain: 121.5

Colour: clear

Impinger #2 0.1 N H₂SO₄

Empty Wt: 673.0

Initial Wt: 771.0

Final Wt: 792.0

2 Gain: 21.0

Colour: clear

Impinger #3 EMPTY

Empty Wt: 572.0

Final Wt: 577.0

3 Gain: 5.0

Colour: clear

CONTAINER TS3 WEIGHTS

Empty Wt: 284.0

With Imp. 1,2,3 Soln: 633.6

After Rinse: 746.7

Total TS3: 462.7

Impinger 4

Impinger #4 Silica Gel

Initial Wt: 973.0

Final Wt: 984.7

4 Gain: 11.7

Box ID:

Total Moisture Gain

1+2+3+4: 159.2

SAMPLE ID: 24-4547-M26A- /

Train Loaded By:

Train Recovered By:

Alliance Technical Group
Method 26A Recovery Sheet

Client : Reworld

Project No.: AST-2024-4547 / 22330

Date: 05/24/24

Test No.: 2

Test Location: U1

Filter is used but not
recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H₂SO₄

Empty Wt: 659.5
Initial Wt: 754.5
Final Wt: 884.0
1 Gain: 129.5
Colour: clear

Impinger #2 0.1 N H₂SO₄

Empty Wt: 656.5
Initial Wt: 765.8
Final Wt: 789.5
2 Gain: 23.7
Colour: clear

Impinger #3 EMPTY

Empty Wt: 596.5
Final Wt: 600.0
3 Gain: 3.5
Colour: clear

CONTAINER TS3 WEIGHTS

Empty Wt: 282.5
With Imp. 1,2,3 Soln: 641.5
After Rinse: 739.0
Total TS3: 456.5

Impinger 4

Impinger #4 Silica Gel

Initial Wt: 922.3
Final Wt: 933.3
4 Gain: 11.0

Box ID:

Total Moisture Gain

1+2+3+4: 167.7

SAMPLE ID: 24-4547-M26A- 2

Train Loaded By: DT

Train Recovered By:

Alliance Technical Group
Method 26A Recovery Sheet

Client : Reworld

Project No.: AST-2024-4547 / 22330

Date: DEC 4/24

Test No.: 3

Test Location: 41

Filter is used but not
recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H₂SO₄

Empty Wt: 643.7
Initial Wt: 743.5
Final Wt: 862.0
1 Gain: 118.5
Colour: clear

Impinger #2 0.1 N H₂SO₄

Empty Wt: 672.5
Initial Wt: 778.5
Final Wt: 800.0
2 Gain: 21.5
Colour: clear

Impinger #3 EMPTY

Empty Wt: 572.0
Final Wt: 575.0
3 Gain: 3.0
Colour: clear

CONTAINER TS3 WEIGHTS

Empty Wt: 284.5
With Imp. 1,2,3 Soln: 629.5
After Rinse: 700.0
Total TS3: 415.5

Impinger 4

Impinger #4 Silica Gel

Initial Wt: 926.5
Final Wt: 938.5
4 Gain: 12.0

Box ID:

Total Moisture Gain

1+2+3+4: 155.0

SAMPLE ID: 24-4547-M26A- 3

Train Loaded By:

Train Recovered By:

Alliance Technical Group
Method 26A Recovery Sheet

Client : Reworld

Project No.: AST-2024-4547 / 22330

Date: DEC 3/24

Test No.: 1

Test Location: U 2

Filter is used but not
recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H₂SO₄

1 Empty Wt: 659.0
Initial Wt: 760.5
Final Wt: 865.0
Gain: 104.5
Colour: clean

Impinger #2 0.1 N H₂SO₄

2 Empty Wt: 697.0
Initial Wt: 756.5
Final Wt: 786.0
Gain: 29.5
Colour: clean

Impinger #3 EMPTY

3 Empty Wt: 596.3
Final Wt: 599.7
Gain: 3.4
Colour: clean

CONTAINER TS3 WEIGHTS

Empty Wt: 283.0
With Imp. 1,2,3 Soln: 619.3
After Rinse: 716.7
Total TS3: 433.7

Impinger 4

Impinger #4 Silica Gel

4 Initial Wt: 958.6
Final Wt: 969.6
Gain: 11.0

Box ID: 12

Total Moisture Gain

1+2+3+4: 148.4

SAMPLE ID: 24-4547-M26A- 4

Train Loaded By: BT

Train Recovered By: BT

Alliance Technical Group
Method 26A Recovery Sheet

Client : Reworld

Project No.: AST-2024-4547 / 22330

Date: 5 Dec 3/24

Test No.: 2

Test Location: U2

Filter is used but not
recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H₂SO₄

Empty Wt: 644.5

Initial Wt: 748.5

Final Wt: 872.0

1 Gain: 123.5

Colour: clear

Impinger #2 0.1 N H₂SO₄

Empty Wt: 673.0

Initial Wt: 769.5

Final Wt: 789.5

2 Gain: 20.0

Colour: clear

Impinger #3 EMPTY

Empty Wt: 572.0

Final Wt: 576.0

3 Gain: 4.0

Colour: clear

CONTAINER TS3 WEIGHTS

Empty Wt: 283.0

With Imp. 1,2,3 Soln: 627.8

After Rinse: 720.8

Total TS3: 437.8

Impinger 4

Impinger #4 Silica Gel

Initial Wt: 963.5

Final Wt: 973.0

4 Gain: 9.5

Box ID:

Total Moisture Gain

1+2+3+4: 157.0

SAMPLE ID: 24-4547-M26A- 5

Train Loaded By:

Train Recovered By:

BT

Alliance Technical Group
Method 26A Recovery Sheet

Client : Reworld

Project No.: AST-2024-4547 / 22330

Date: DEC 3/24

Test No.: 3

Test Location: UNIT 2

Filter is used but not
recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H₂SO₄

Empty Wt: 659.0

Initial Wt: 762.8

Final Wt: 893.8

1 Gain: 131.0

Colour: clear

Impinger #2 0.1 N H₂SO₄

Empty Wt: 657.0

Initial Wt: 755.5

Final Wt: 776.5

2 Gain: 21.0

Colour: clear

Impinger #3 EMPTY

Empty Wt: 596.7

Final Wt: 599.7

3 Gain: 3.0

Colour: clear

CONTAINER TS3 WEIGHTS

Empty Wt: 284.0

With Imp. 1,2,3 Soln: 639.5

After Rinse: 728.7

Total TS3: 444.7

Impinger 4

Impinger #4 Silica Gel

Initial Wt: 969.6

Final Wt: 979.3

4 Gain: 9.7

Box ID:

Total Moisture Gain

1+2+3+4: 164.7

SAMPLE ID: 24-4547-M26A- 6

Train Loaded By:

Train Recovered By:

Alliance Technical Group
Method 26A Recovery Sheet

Client : Reworld

Project No.: AST-2024-4547 / 22330

Date: DEC 4/24

Test No.:

Test Location: BLANK 1

Filter is used but not
recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H₂SO₄

Empty Wt:

Initial Wt:

Final Wt:

1 Gain:

Colour:

Impinger #2 0.1 N H₂SO₄

Empty Wt:

Initial Wt:

Final Wt:

2 Gain:

Colour:

Impinger #3 EMPTY

Empty Wt:

Final Wt:

3 Gain:

Colour:

CONTAINER TS3 WEIGHTS

Empty Wt: 281.0

With Imp. 1,2,3 Soln: 488.0

After Rinse: 390.0

Total TS3: 306.0

Impinger 4

Impinger #4 Silica Gel

Initial Wt:

Final Wt:

4 Gain:

Box ID:

Total Moisture Gain

1+2+3+4:

SAMPLE ID: 24-4547-M26A-BLANK 1

Train Loaded By:

Train Recovered By: ST

Alliance Technical Group
Method 26A Recovery Sheet

Client : Reworld

Project No.: AST-2024-4547 / 22330

Date: DEC 3 / 24

Test No.:

Test Location: BLANK 2

Filter is used but not
recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H₂SO₄

Empty Wt:

Initial Wt:

Final Wt:

1 Gain:

Colour:

Impinger #2 0.1 N H₂SO₄

Empty Wt:

Initial Wt:

Final Wt:

2 Gain:

Colour:

Impinger #3 EMPTY

Empty Wt:

Final Wt:

3 Gain:

Colour:

CONTAINER TS3 WEIGHTS

Empty Wt: 284.0

With Imp. 1,2,3 Soln: 484.0

After Rinse: 584.0

Total TS3: 300.0

Impinger 4

Impinger #4 Silica Gel

Initial Wt:

Final Wt:

4 Gain:

Box ID:

Total Moisture Gain

1+2+3+4:

SAMPLE ID: 24-4547-M26A-BLANK 2

Train Loaded By:

Train Recovered By:

APPENDIX 17

VOST Analytical Report (34 pages)



ANALYTICAL REPORT

PREPARED FOR

Attn: Chris Belore
Alliance Source Testing LLC
804 Southdown Road
Mississauga, Ontario L5J2Y4
Generated 2/17/2025 1:40:59 PM Revision 1

JOB DESCRIPTION

ORTECH Reworld

JOB NUMBER

140-39808-1

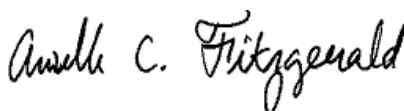
Eurofins Knoxville

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

Authorization



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Revision 1

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Definitions/Glossary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*1	LCS/LCSD RPD exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Alliance Source Testing LLC
Project: ORTECH Reworld

Job ID: 140-39808-1

Job ID: 140-39808-1

Eurofins Knoxville

Job Narrative 140-39808-1

Revision

The report being provided is a revision of the original report sent on 12/31/2024. The report (revision 1) is being revised due to: technical error, the analytes from the analysis group of the previously built project did not transfer over to the login.

Receipt

The samples were received on 12/9/2024 12:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 13.7° C.

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: #1 APC OUTLET 1 1 A,B (140-39808-1), #1 APC OUTLET 2 2 A,B (140-39808-2), #1 APC OUTLET 3 3 A,B (140-39808-3), #1 APC OUTLET 4 4 A,B (140-39808-4), #1 APC OUTLET FIELD BLANK 5 A,B (140-39808-5), #2 APC OUTLET 1 10 A,B (140-39808-6), #2 APC OUTLET 2 11 A,B (140-39808-7), #2 APC OUTLET 3 12 A,B (140-39808-8), #2 APC OUTLET 4 13 A,B (140-39808-9), #2 APC OUTLET FIELD BLANK 14 A,B (140-39808-10), #2 APC OUTLET TRIP BLANK 15 A,B (140-39808-11) and MEDIA CHECK A-2525 TENAX,A-2526 TENAX/CHARCOAL (140-39808-12). This does not meet regulatory requirements. The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.

The following samples were received at the laboratory without a sample collection time documented on the chain of custody: #2 APC OUTLET TRIP BLANK 15 A,B (140-39808-11). Date on container used 12-4-24.

The following samples were received at the laboratory without a sample collection time documented on the chain of custody: #1 APC OUTLET 1 1 A,B (140-39808-1), #1 APC OUTLET 2 2 A,B (140-39808-2), #1 APC OUTLET 3 3 A,B (140-39808-3), #1 APC OUTLET 4 4 A,B (140-39808-4), #1 APC OUTLET FIELD BLANK 5 A,B (140-39808-5), #2 APC OUTLET 1 10 A,B (140-39808-6), #2 APC OUTLET 2 11 A,B (140-39808-7), #2 APC OUTLET 3 12 A,B (140-39808-8), #2 APC OUTLET 4 13 A,B (140-39808-9) and #2 APC OUTLET FIELD BLANK 14 A,B (140-39808-10). Date on container used 12-2-24.

GC/MS VOA

Volatile Organic Sampling Train (VOST) Preparation and Analysis: VOST tubes and condensate samples were analyzed for the volatile organic target analytes by purge and trap GCMS using Eurofins Knoxville standard operating procedures KNOX-MS-0011 and KNOX-MS-0015, based on the following methods:

- SW-846 5041A, "Analysis for Desorption of Sorbent Cartridges from Volatile Organic Sampling Train (VOST)"
- SW-846 8260B, "Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)"

Each tube or tube pair is prepared by spiking a known amount of surrogate onto the media using a flash vaporization device. Volatile compounds are introduced into the gas chromatograph by thermal desorption of the analytes from the VOST tube using a clamshell oven and a purge and trap device. VOST condensates are spiked with surrogates and purged directly. The components are separated using the chromatograph and detected using a mass spectrometer, which provides both qualitative and quantitative information.

Sample results were calculated using the following equations:

VOST result, µg = (On column concentration, µg/L) × (purge volume, L)

Condensate result, µg/sample = (On column concentration, µg/L) × (Condensate volume received, L) × Dilution Factor

Method 8260B: The following analyte(s) recovered outside control limits for the LCSD associated with analytical batch 140-94001: Tetrachloroethene. This is not indicative of a systematic control problem because these were random marginal exceedances. Qualified results have been reported.

Method 8260B: The following analyte(s) recovered outside control limits for the LCSD associated with batch 94035: Mesitylene. This is not indicative of a systematic control problem because these were random marginal exceedances. Qualified results have been reported.

Method 8260B: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for 140-94035 recovered outside control limits for the following analytes: Mesitylene and Cumene.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Eurofins Knoxville

Detection Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #1 APC OUTLET 1 1 A,B

Lab Sample ID: 140-39808-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	0.45		0.25	0.15	ug/Sample	1		8260B	Total/NA
Benzene	0.018		0.010	0.0036	ug/Sample	1		8260B	Total/NA
Bromodichloromethane	0.0084	J	0.010	0.0017	ug/Sample	1		8260B	Total/NA
Chloroform	0.028		0.010	0.0081	ug/Sample	1		8260B	Total/NA
1,2-Dichloroethane	0.011		0.010	0.0060	ug/Sample	1		8260B	Total/NA
Methylene Chloride	0.13		0.10	0.086	ug/Sample	1		8260B	Total/NA
m,p-Xylene	0.0080	J	0.020	0.0070	ug/Sample	1		8260B	Total/NA
Toluene	0.48		0.025	0.012	ug/Sample	1		8260B	Total/NA
Trichlorofluoromethane	0.0066	J	0.050	0.0053	ug/Sample	1		8260B	Total/NA

Client Sample ID: #1 APC OUTLET 2 2 A,B

Lab Sample ID: 140-39808-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.019		0.010	0.0036	ug/Sample	1		8260B	Total/NA
Bromodichloromethane	0.0072	J	0.010	0.0017	ug/Sample	1		8260B	Total/NA
Chloroform	0.023		0.010	0.0081	ug/Sample	1		8260B	Total/NA
1,2-Dichloroethane	0.0089	J	0.010	0.0060	ug/Sample	1		8260B	Total/NA
Methylene Chloride	0.13		0.10	0.086	ug/Sample	1		8260B	Total/NA
Toluene	0.059		0.025	0.012	ug/Sample	1		8260B	Total/NA
Trichlorofluoromethane	0.0055	J	0.050	0.0053	ug/Sample	1		8260B	Total/NA

Client Sample ID: #1 APC OUTLET 3 3 A,B

Lab Sample ID: 140-39808-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	0.25		0.25	0.15	ug/Sample	1		8260B	Total/NA
Benzene	0.018		0.010	0.0036	ug/Sample	1		8260B	Total/NA
Bromodichloromethane	0.0063	J	0.010	0.0017	ug/Sample	1		8260B	Total/NA
Chloroform	0.021		0.010	0.0081	ug/Sample	1		8260B	Total/NA
1,2-Dichloroethane	0.0080	J	0.010	0.0060	ug/Sample	1		8260B	Total/NA
Methylene Chloride	0.093	J	0.10	0.086	ug/Sample	1		8260B	Total/NA
Toluene	0.055		0.025	0.012	ug/Sample	1		8260B	Total/NA

Client Sample ID: #1 APC OUTLET FIELD BLANK 5 A,B

Lab Sample ID: 140-39808-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	0.12		0.10	0.086	ug/Sample	1		8260B	Total/NA
Toluene	0.013	J	0.025	0.012	ug/Sample	1		8260B	Total/NA

Client Sample ID: #2 APC OUTLET 1 10 A,B

Lab Sample ID: 140-39808-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.012		0.010	0.0036	ug/Sample	1		8260B	Total/NA
Bromodichloromethane	0.013		0.010	0.0017	ug/Sample	1		8260B	Total/NA
Chloroform	0.038		0.010	0.0081	ug/Sample	1		8260B	Total/NA
1,2-Dichloroethane	0.011		0.010	0.0060	ug/Sample	1		8260B	Total/NA
Toluene	0.32		0.025	0.012	ug/Sample	1		8260B	Total/NA

Client Sample ID: #2 APC OUTLET 2 11 A,B

Lab Sample ID: 140-39808-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.012		0.010	0.0036	ug/Sample	1		8260B	Total/NA
Bromodichloromethane	0.011		0.010	0.0017	ug/Sample	1		8260B	Total/NA
Chloroform	0.038		0.010	0.0081	ug/Sample	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Knoxville

Detection Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #2 APC OUTLET 2 11 A,B (Continued)

Lab Sample ID: 140-39808-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichloroethane	0.010		0.010	0.0060	ug/Sample	1		8260B	Total/NA
Toluene	0.11		0.025	0.012	ug/Sample	1		8260B	Total/NA

Client Sample ID: #2 APC OUTLET 3 12 A,B

Lab Sample ID: 140-39808-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.015		0.010	0.0036	ug/Sample	1		8260B	Total/NA
Bromodichloromethane	0.010		0.010	0.0017	ug/Sample	1		8260B	Total/NA
Chloroform	0.038		0.010	0.0081	ug/Sample	1		8260B	Total/NA
1,2-Dichloroethane	0.011		0.010	0.0060	ug/Sample	1		8260B	Total/NA
Toluene	0.077		0.025	0.012	ug/Sample	1		8260B	Total/NA

Client Sample ID: #2 APC OUTLET FIELD BLANK 14 A,B

Lab Sample ID: 140-39808-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	0.23		0.10	0.086	ug/Sample	1		8260B	Total/NA
Toluene	0.023	J	0.025	0.012	ug/Sample	1		8260B	Total/NA

Client Sample ID: #2 APC OUTLET TRIP BLANK 15 A,B

Lab Sample ID: 140-39808-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	0.35		0.10	0.086	ug/Sample	1		8260B	Total/NA
Toluene	0.055		0.025	0.012	ug/Sample	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Knoxville

Client Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #1 APC OUTLET 1 1 A,B

Lab Sample ID: 140-39808-1

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	0.45		0.25	0.15	ug/Sample			12/10/24 12:15	1
Benzene	0.018		0.010	0.0036	ug/Sample			12/10/24 12:15	1
Bromodichloromethane	0.0084	J	0.010	0.0017	ug/Sample			12/10/24 12:15	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/10/24 12:15	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/10/24 12:15	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/10/24 12:15	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/10/24 12:15	1
Chloroform	0.028		0.010	0.0081	ug/Sample			12/10/24 12:15	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/10/24 12:15	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/10/24 12:15	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/10/24 12:15	1
1,2-Dichloroethane	0.011		0.010	0.0060	ug/Sample			12/10/24 12:15	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/10/24 12:15	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/10/24 12:15	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/10/24 12:15	1
Mesitylene	ND		0.010	0.0026	ug/Sample			12/10/24 12:15	1
Methylene Chloride	0.13		0.10	0.086	ug/Sample			12/10/24 12:15	1
m,p-Xylene	0.0080	J	0.020	0.0070	ug/Sample			12/10/24 12:15	1
o-Xylene	ND		0.010	0.0035	ug/Sample			12/10/24 12:15	1
Styrene	ND		0.010	0.0066	ug/Sample			12/10/24 12:15	1
Tetrachloroethene	ND	*	0.010	0.0060	ug/Sample			12/10/24 12:15	1
Toluene	0.48		0.025	0.012	ug/Sample			12/10/24 12:15	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/10/24 12:15	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/10/24 12:15	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/10/24 12:15	1
Trichlorofluoromethane	0.0066	J	0.050	0.0053	ug/Sample			12/10/24 12:15	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/10/24 12:15	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/10/24 12:15	1
Cumene	ND		0.010	0.0030	ug/Sample			12/10/24 12:15	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/10/24 12:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	70		50 - 122		12/10/24 12:15	1
Dibromofluoromethane (Surr)	95		50 - 134		12/10/24 12:15	1
1,2-Dichloroethane-d4 (Surr)	80		50 - 127		12/10/24 12:15	1
Toluene-d8 (Surr)	80		57 - 134		12/10/24 12:15	1

Client Sample ID: #1 APC OUTLET 2 2 A,B

Lab Sample ID: 140-39808-2

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			12/10/24 12:40	1
Benzene	0.019		0.010	0.0036	ug/Sample			12/10/24 12:40	1
Bromodichloromethane	0.0072	J	0.010	0.0017	ug/Sample			12/10/24 12:40	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/10/24 12:40	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/10/24 12:40	1

Eurofins Knoxville

Client Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #1 APC OUTLET 2 2 A,B

Lab Sample ID: 140-39808-2

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/10/24 12:40	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/10/24 12:40	1
Chloroform	0.023		0.010	0.0081	ug/Sample			12/10/24 12:40	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/10/24 12:40	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/10/24 12:40	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/10/24 12:40	1
1,2-Dichloroethane	0.0089	J	0.010	0.0060	ug/Sample			12/10/24 12:40	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/10/24 12:40	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/10/24 12:40	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/10/24 12:40	1
Mesitylene	ND		0.010	0.0026	ug/Sample			12/10/24 12:40	1
Methylene Chloride	0.13		0.10	0.086	ug/Sample			12/10/24 12:40	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			12/10/24 12:40	1
o-Xylene	ND		0.010	0.0035	ug/Sample			12/10/24 12:40	1
Styrene	ND		0.010	0.0066	ug/Sample			12/10/24 12:40	1
Tetrachloroethene	ND	*	0.010	0.0060	ug/Sample			12/10/24 12:40	1
Toluene	0.059		0.025	0.012	ug/Sample			12/10/24 12:40	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/10/24 12:40	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/10/24 12:40	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/10/24 12:40	1
Trichlorofluoromethane	0.0055	J	0.050	0.0053	ug/Sample			12/10/24 12:40	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/10/24 12:40	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/10/24 12:40	1
Cumene	ND		0.010	0.0030	ug/Sample			12/10/24 12:40	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/10/24 12:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		50 - 122		12/10/24 12:40	1
Dibromofluoromethane (Surr)	93		50 - 134		12/10/24 12:40	1
1,2-Dichloroethane-d4 (Surr)	79		50 - 127		12/10/24 12:40	1
Toluene-d8 (Surr)	86		57 - 134		12/10/24 12:40	1

Client Sample ID: #1 APC OUTLET 3 3 A,B

Lab Sample ID: 140-39808-3

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	0.25		0.25	0.15	ug/Sample			12/10/24 13:04	1
Benzene	0.018		0.010	0.0036	ug/Sample			12/10/24 13:04	1
Bromodichloromethane	0.0063	J	0.010	0.0017	ug/Sample			12/10/24 13:04	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/10/24 13:04	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/10/24 13:04	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/10/24 13:04	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/10/24 13:04	1
Chloroform	0.021		0.010	0.0081	ug/Sample			12/10/24 13:04	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/10/24 13:04	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/10/24 13:04	1

Eurofins Knoxville

Client Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #1 APC OUTLET 3 3 A,B

Lab Sample ID: 140-39808-3

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/10/24 13:04	1
1,2-Dichloroethane	0.0080	J	0.010	0.0060	ug/Sample			12/10/24 13:04	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/10/24 13:04	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/10/24 13:04	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/10/24 13:04	1
Mesitylene	ND		0.010	0.0026	ug/Sample			12/10/24 13:04	1
Methylene Chloride	0.093	J	0.10	0.086	ug/Sample			12/10/24 13:04	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			12/10/24 13:04	1
o-Xylene	ND		0.010	0.0035	ug/Sample			12/10/24 13:04	1
Styrene	ND		0.010	0.0066	ug/Sample			12/10/24 13:04	1
Tetrachloroethene	ND	*	0.010	0.0060	ug/Sample			12/10/24 13:04	1
Toluene	0.055		0.025	0.012	ug/Sample			12/10/24 13:04	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/10/24 13:04	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/10/24 13:04	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/10/24 13:04	1
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			12/10/24 13:04	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/10/24 13:04	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/10/24 13:04	1
Cumene	ND		0.010	0.0030	ug/Sample			12/10/24 13:04	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/10/24 13:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		50 - 122		12/10/24 13:04	1
Dibromofluoromethane (Surr)	93		50 - 134		12/10/24 13:04	1
1,2-Dichloroethane-d4 (Surr)	80		50 - 127		12/10/24 13:04	1
Toluene-d8 (Surr)	86		57 - 134		12/10/24 13:04	1

Client Sample ID: #1 APC OUTLET FIELD BLANK 5 A,B

Lab Sample ID: 140-39808-5

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			12/11/24 11:44	1
Benzene	ND		0.010	0.0036	ug/Sample			12/11/24 11:44	1
Bromodichloromethane	ND		0.010	0.0017	ug/Sample			12/11/24 11:44	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/11/24 11:44	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/11/24 11:44	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/11/24 11:44	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/11/24 11:44	1
Chloroform	ND		0.010	0.0081	ug/Sample			12/11/24 11:44	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/11/24 11:44	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/11/24 11:44	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/11/24 11:44	1
1,2-Dichloroethane	ND		0.010	0.0060	ug/Sample			12/11/24 11:44	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/11/24 11:44	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/11/24 11:44	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/11/24 11:44	1

Eurofins Knoxville

Client Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #1 APC OUTLET FIELD BLANK 5 A,B

Lab Sample ID: 140-39808-5

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mesitylene	ND	*- *1	0.010	0.0026	ug/Sample			12/11/24 11:44	1
Methylene Chloride	0.12		0.10	0.086	ug/Sample			12/11/24 11:44	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			12/11/24 11:44	1
o-Xylene	ND		0.010	0.0035	ug/Sample			12/11/24 11:44	1
Styrene	ND		0.010	0.0066	ug/Sample			12/11/24 11:44	1
Tetrachloroethene	ND		0.010	0.0060	ug/Sample			12/11/24 11:44	1
Toluene	0.013	J	0.025	0.012	ug/Sample			12/11/24 11:44	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/11/24 11:44	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/11/24 11:44	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/11/24 11:44	1
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			12/11/24 11:44	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/11/24 11:44	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/11/24 11:44	1
Cumene	ND	*1	0.010	0.0030	ug/Sample			12/11/24 11:44	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/11/24 11:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		50 - 122					12/11/24 11:44	1
Dibromofluoromethane (Surr)	91		50 - 134					12/11/24 11:44	1
1,2-Dichloroethane-d4 (Surr)	83		50 - 127					12/11/24 11:44	1
Toluene-d8 (Surr)	84		57 - 134					12/11/24 11:44	1

Client Sample ID: #2 APC OUTLET 1 10 A,B

Lab Sample ID: 140-39808-6

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			12/10/24 14:14	1
Benzene	0.012		0.010	0.0036	ug/Sample			12/10/24 14:14	1
Bromodichloromethane	0.013		0.010	0.0017	ug/Sample			12/10/24 14:14	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/10/24 14:14	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/10/24 14:14	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/10/24 14:14	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/10/24 14:14	1
Chloroform	0.038		0.010	0.0081	ug/Sample			12/10/24 14:14	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/10/24 14:14	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/10/24 14:14	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/10/24 14:14	1
1,2-Dichloroethane	0.011		0.010	0.0060	ug/Sample			12/10/24 14:14	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/10/24 14:14	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/10/24 14:14	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/10/24 14:14	1
Mesitylene	ND		0.010	0.0026	ug/Sample			12/10/24 14:14	1
Methylene Chloride	ND		0.10	0.086	ug/Sample			12/10/24 14:14	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			12/10/24 14:14	1
o-Xylene	ND		0.010	0.0035	ug/Sample			12/10/24 14:14	1
Styrene	ND		0.010	0.0066	ug/Sample			12/10/24 14:14	1

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Client Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #2 APC OUTLET 1 10 A,B

Lab Sample ID: 140-39808-6

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND	*-	0.010	0.0060	ug/Sample			12/10/24 14:14	1
Toluene	0.32		0.025	0.012	ug/Sample			12/10/24 14:14	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/10/24 14:14	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/10/24 14:14	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/10/24 14:14	1
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			12/10/24 14:14	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/10/24 14:14	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/10/24 14:14	1
Cumene	ND		0.010	0.0030	ug/Sample			12/10/24 14:14	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/10/24 14:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		50 - 122					12/10/24 14:14	1
Dibromofluoromethane (Surr)	93		50 - 134					12/10/24 14:14	1
1,2-Dichloroethane-d4 (Surr)	77		50 - 127					12/10/24 14:14	1
Toluene-d8 (Surr)	87		57 - 134					12/10/24 14:14	1

Client Sample ID: #2 APC OUTLET 2 11 A,B

Lab Sample ID: 140-39808-7

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			12/10/24 14:39	1
Benzene	0.012		0.010	0.0036	ug/Sample			12/10/24 14:39	1
Bromodichloromethane	0.011		0.010	0.0017	ug/Sample			12/10/24 14:39	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/10/24 14:39	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/10/24 14:39	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/10/24 14:39	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/10/24 14:39	1
Chloroform	0.038		0.010	0.0081	ug/Sample			12/10/24 14:39	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/10/24 14:39	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/10/24 14:39	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/10/24 14:39	1
1,2-Dichloroethane	0.010		0.010	0.0060	ug/Sample			12/10/24 14:39	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/10/24 14:39	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/10/24 14:39	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/10/24 14:39	1
Mesitylene	ND		0.010	0.0026	ug/Sample			12/10/24 14:39	1
Methylene Chloride	ND		0.10	0.086	ug/Sample			12/10/24 14:39	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			12/10/24 14:39	1
o-Xylene	ND		0.010	0.0035	ug/Sample			12/10/24 14:39	1
Styrene	ND		0.010	0.0066	ug/Sample			12/10/24 14:39	1
Tetrachloroethene	ND	*-	0.010	0.0060	ug/Sample			12/10/24 14:39	1
Toluene	0.11		0.025	0.012	ug/Sample			12/10/24 14:39	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/10/24 14:39	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/10/24 14:39	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/10/24 14:39	1

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Client Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #2 APC OUTLET 2 11 A,B

Lab Sample ID: 140-39808-7

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			12/10/24 14:39	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/10/24 14:39	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/10/24 14:39	1
Cumene	ND		0.010	0.0030	ug/Sample			12/10/24 14:39	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/10/24 14:39	1

Surrogate	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		50 - 122			12/10/24 14:39	1
Dibromofluoromethane (Surr)	93		50 - 134			12/10/24 14:39	1
1,2-Dichloroethane-d4 (Surr)	79		50 - 127			12/10/24 14:39	1
Toluene-d8 (Surr)	91		57 - 134			12/10/24 14:39	1

Client Sample ID: #2 APC OUTLET 3 12 A,B

Lab Sample ID: 140-39808-8

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			12/10/24 15:03	1
Benzene	0.015		0.010	0.0036	ug/Sample			12/10/24 15:03	1
Bromodichloromethane	0.010		0.010	0.0017	ug/Sample			12/10/24 15:03	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/10/24 15:03	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/10/24 15:03	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/10/24 15:03	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/10/24 15:03	1
Chloroform	0.038		0.010	0.0081	ug/Sample			12/10/24 15:03	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/10/24 15:03	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/10/24 15:03	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/10/24 15:03	1
1,2-Dichloroethane	0.011		0.010	0.0060	ug/Sample			12/10/24 15:03	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/10/24 15:03	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/10/24 15:03	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/10/24 15:03	1
Mesitylene	ND		0.010	0.0026	ug/Sample			12/10/24 15:03	1
Methylene Chloride	ND		0.10	0.086	ug/Sample			12/10/24 15:03	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			12/10/24 15:03	1
o-Xylene	ND		0.010	0.0035	ug/Sample			12/10/24 15:03	1
Styrene	ND		0.010	0.0066	ug/Sample			12/10/24 15:03	1
Tetrachloroethene	ND	*	0.010	0.0060	ug/Sample			12/10/24 15:03	1
Toluene	0.077		0.025	0.012	ug/Sample			12/10/24 15:03	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/10/24 15:03	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/10/24 15:03	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/10/24 15:03	1
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			12/10/24 15:03	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/10/24 15:03	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/10/24 15:03	1
Cumene	ND		0.010	0.0030	ug/Sample			12/10/24 15:03	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/10/24 15:03	1

Eurofins Knoxville

Client Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #2 APC OUTLET 3 12 A,B

Lab Sample ID: 140-39808-8

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	84		50 - 122		12/10/24 15:03	1
Dibromofluoromethane (Surr)	97		50 - 134		12/10/24 15:03	1
1,2-Dichloroethane-d4 (Surr)	84		50 - 127		12/10/24 15:03	1
Toluene-d8 (Surr)	97		57 - 134		12/10/24 15:03	1

Client Sample ID: #2 APC OUTLET FIELD BLANK 14 A,B

Lab Sample ID: 140-39808-10

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			12/10/24 11:50	1
Benzene	ND		0.010	0.0036	ug/Sample			12/10/24 11:50	1
Bromodichloromethane	ND		0.010	0.0017	ug/Sample			12/10/24 11:50	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/10/24 11:50	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/10/24 11:50	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/10/24 11:50	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/10/24 11:50	1
Chloroform	ND		0.010	0.0081	ug/Sample			12/10/24 11:50	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/10/24 11:50	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/10/24 11:50	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/10/24 11:50	1
1,2-Dichloroethane	ND		0.010	0.0060	ug/Sample			12/10/24 11:50	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/10/24 11:50	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/10/24 11:50	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/10/24 11:50	1
Mesitylene	ND		0.010	0.0026	ug/Sample			12/10/24 11:50	1
Methylene Chloride	0.23		0.10	0.086	ug/Sample			12/10/24 11:50	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			12/10/24 11:50	1
o-Xylene	ND		0.010	0.0035	ug/Sample			12/10/24 11:50	1
Styrene	ND		0.010	0.0066	ug/Sample			12/10/24 11:50	1
Tetrachloroethene	ND *		0.010	0.0060	ug/Sample			12/10/24 11:50	1
Toluene	0.023 J		0.025	0.012	ug/Sample			12/10/24 11:50	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/10/24 11:50	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/10/24 11:50	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/10/24 11:50	1
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			12/10/24 11:50	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/10/24 11:50	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/10/24 11:50	1
Cumene	ND		0.010	0.0030	ug/Sample			12/10/24 11:50	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/10/24 11:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		50 - 122		12/10/24 11:50	1
Dibromofluoromethane (Surr)	93		50 - 134		12/10/24 11:50	1
1,2-Dichloroethane-d4 (Surr)	82		50 - 127		12/10/24 11:50	1
Toluene-d8 (Surr)	87		57 - 134		12/10/24 11:50	1

Eurofins Knoxville

Client Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #2 APC OUTLET TRIP BLANK 15 A,B

Lab Sample ID: 140-39808-11

Date Collected: 12/04/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			12/10/24 11:26	1
Benzene	ND		0.010	0.0036	ug/Sample			12/10/24 11:26	1
Bromodichloromethane	ND		0.010	0.0017	ug/Sample			12/10/24 11:26	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/10/24 11:26	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/10/24 11:26	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/10/24 11:26	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/10/24 11:26	1
Chloroform	ND		0.010	0.0081	ug/Sample			12/10/24 11:26	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/10/24 11:26	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/10/24 11:26	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/10/24 11:26	1
1,2-Dichloroethane	ND		0.010	0.0060	ug/Sample			12/10/24 11:26	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/10/24 11:26	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/10/24 11:26	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/10/24 11:26	1
Mesitylene	ND		0.010	0.0026	ug/Sample			12/10/24 11:26	1
Methylene Chloride	0.35		0.10	0.086	ug/Sample			12/10/24 11:26	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			12/10/24 11:26	1
o-Xylene	ND		0.010	0.0035	ug/Sample			12/10/24 11:26	1
Styrene	ND		0.010	0.0066	ug/Sample			12/10/24 11:26	1
Tetrachloroethene	ND	*	0.010	0.0060	ug/Sample			12/10/24 11:26	1
Toluene	0.055		0.025	0.012	ug/Sample			12/10/24 11:26	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/10/24 11:26	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/10/24 11:26	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/10/24 11:26	1
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			12/10/24 11:26	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/10/24 11:26	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/10/24 11:26	1
Cumene	ND		0.010	0.0030	ug/Sample			12/10/24 11:26	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/10/24 11:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		50 - 122		12/10/24 11:26	1
Dibromofluoromethane (Surr)	94		50 - 134		12/10/24 11:26	1
1,2-Dichloroethane-d4 (Surr)	86		50 - 127		12/10/24 11:26	1
Toluene-d8 (Surr)	86		57 - 134		12/10/24 11:26	1

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Default Detection Limits

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	RL	MDL
1,1,1-Trichloroethane	0.025 ug/Sample	0.0097 ug/Sample
1,1-Dichloroethene	0.010 ug/Sample	0.0043 ug/Sample
1,2-Dibromoethane (EDB)	0.025 ug/Sample	0.0073 ug/Sample
1,2-Dichloroethane	0.010 ug/Sample	0.0060 ug/Sample
1,2-Dichloropropane	0.010 ug/Sample	0.0018 ug/Sample
1,3-Butadiene	0.050 ug/Sample	0.029 ug/Sample
2-Butanone (MEK)	0.10 ug/Sample	0.066 ug/Sample
Acetone	0.25 ug/Sample	0.15 ug/Sample
Benzene	0.010 ug/Sample	0.0036 ug/Sample
Bromodichloromethane	0.010 ug/Sample	0.0017 ug/Sample
Bromoform	0.025 ug/Sample	0.0055 ug/Sample
Bromomethane	0.050 ug/Sample	0.028 ug/Sample
Carbon tetrachloride	0.010 ug/Sample	0.0075 ug/Sample
Chloroform	0.010 ug/Sample	0.0081 ug/Sample
Cumene	0.010 ug/Sample	0.0030 ug/Sample
Dibromochloromethane	0.025 ug/Sample	0.0037 ug/Sample
Dichlorodifluoromethane	0.025 ug/Sample	0.013 ug/Sample
Ethylbenzene	0.010 ug/Sample	0.0028 ug/Sample
m,p-Xylene	0.020 ug/Sample	0.0070 ug/Sample
Mesitylene	0.010 ug/Sample	0.0026 ug/Sample
Methylene Chloride	0.10 ug/Sample	0.086 ug/Sample
o-Xylene	0.010 ug/Sample	0.0035 ug/Sample
Styrene	0.010 ug/Sample	0.0066 ug/Sample
Tetrachloroethene	0.010 ug/Sample	0.0060 ug/Sample
Toluene	0.025 ug/Sample	0.012 ug/Sample
trans-1,2-Dichloroethene	0.010 ug/Sample	0.0037 ug/Sample
Trichloroethene	0.010 ug/Sample	0.0066 ug/Sample
Trichlorofluoromethane	0.050 ug/Sample	0.0053 ug/Sample
Trichlorotrifluoroethane	0.050 ug/Sample	0.0095 ug/Sample
Vinyl chloride	0.025 ug/Sample	0.0064 ug/Sample

Surrogate Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		BFB (50-122)	DBFM (50-134)	DCA (50-127)	TOL (57-134)
140-39808-1	#1 APC OUTLET 1 1 A,B	70	95	80	80
140-39808-2	#1 APC OUTLET 2 2 A,B	92	93	79	86
140-39808-3	#1 APC OUTLET 3 3 A,B	86	93	80	86
140-39808-5	#1 APC OUTLET FIELD BLANK 5 A,B	91	91	83	84
140-39808-6	#2 APC OUTLET 1 10 A,B	95	93	77	87
140-39808-7	#2 APC OUTLET 2 11 A,B	99	93	79	91
140-39808-8	#2 APC OUTLET 3 12 A,B	84	97	84	97
140-39808-10	#2 APC OUTLET FIELD BLANK 14 A,B	91	93	82	87
140-39808-11	#2 APC OUTLET TRIP BLANK 15 A,B	95	94	86	86
LCS 140-94001/3	Lab Control Sample	87	93	81	87
LCS 140-94035/3	Lab Control Sample	94	100	88	98
LCSD 140-94001/4	Lab Control Sample Dup	87	90	78	83
LCSD 140-94035/4	Lab Control Sample Dup	67	96	80	91
MB 140-94001/6	Method Blank	97	97	90	91
MB 140-94035/6	Method Blank	79	101	89	101

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 140-94001/6

Matrix: Air

Analysis Batch: 94001

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			12/10/24 10:44	1
Benzene	ND		0.010	0.0036	ug/Sample			12/10/24 10:44	1
Bromodichloromethane	ND		0.010	0.0017	ug/Sample			12/10/24 10:44	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/10/24 10:44	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/10/24 10:44	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/10/24 10:44	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/10/24 10:44	1
Chloroform	ND		0.010	0.0081	ug/Sample			12/10/24 10:44	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/10/24 10:44	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/10/24 10:44	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/10/24 10:44	1
1,2-Dichloroethane	ND		0.010	0.0060	ug/Sample			12/10/24 10:44	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/10/24 10:44	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/10/24 10:44	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/10/24 10:44	1
Mesitylene	ND		0.010	0.0026	ug/Sample			12/10/24 10:44	1
Methylene Chloride	ND		0.10	0.086	ug/Sample			12/10/24 10:44	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			12/10/24 10:44	1
o-Xylene	ND		0.010	0.0035	ug/Sample			12/10/24 10:44	1
Styrene	ND		0.010	0.0066	ug/Sample			12/10/24 10:44	1
Tetrachloroethene	ND		0.010	0.0060	ug/Sample			12/10/24 10:44	1
Toluene	ND		0.025	0.012	ug/Sample			12/10/24 10:44	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/10/24 10:44	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/10/24 10:44	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/10/24 10:44	1
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			12/10/24 10:44	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/10/24 10:44	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/10/24 10:44	1
Cumene	ND		0.010	0.0030	ug/Sample			12/10/24 10:44	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/10/24 10:44	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		50 - 122		12/10/24 10:44	1
Dibromofluoromethane (Surr)	97		50 - 134		12/10/24 10:44	1
1,2-Dichloroethane-d4 (Surr)	90		50 - 127		12/10/24 10:44	1
Toluene-d8 (Surr)	91		57 - 134		12/10/24 10:44	1

Lab Sample ID: LCS 140-94001/3

Matrix: Air

Analysis Batch: 94001

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	1.20	0.917		ug/Sample		76	20 - 191
Benzene	0.300	0.269		ug/Sample		90	68 - 128
Bromodichloromethane	0.300	0.254		ug/Sample		85	52 - 122
Bromoform	0.300	0.178		ug/Sample		59	40 - 120
Bromomethane	0.600	0.570		ug/Sample		95	40 - 187
2-Butanone (MEK)	1.20	0.893		ug/Sample		74	20 - 150

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QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 140-94001/3

Matrix: Air

Analysis Batch: 94001

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Carbon tetrachloride	0.300	0.263		ug/Sample		88	67 - 135
Chloroform	0.300	0.268		ug/Sample		89	63 - 123
Dibromochloromethane	0.300	0.215		ug/Sample		72	50 - 120
1,2-Dibromoethane (EDB)	0.300	0.210		ug/Sample		70	20 - 120
Dichlorodifluoromethane	0.600	0.452		ug/Sample		75	25 - 146
1,2-Dichloroethane	0.300	0.257		ug/Sample		86	36 - 124
1,1-Dichloroethene	0.300	0.288		ug/Sample		96	77 - 131
1,2-Dichloropropane	0.300	0.268		ug/Sample		89	55 - 124
Ethylbenzene	0.300	0.247		ug/Sample		82	72 - 127
Mesitylene	0.300	0.238		ug/Sample		79	62 - 121
Methylene Chloride	0.300	0.277		ug/Sample		92	60 - 134
m,p-Xylene	0.300	0.245		ug/Sample		82	74 - 126
o-Xylene	0.300	0.236		ug/Sample		79	64 - 120
Styrene	0.300	0.232		ug/Sample		77	57 - 120
Tetrachloroethene	0.300	0.246		ug/Sample		82	80 - 133
Toluene	0.300	0.255		ug/Sample		85	70 - 120
trans-1,2-Dichloroethene	0.300	0.295		ug/Sample		98	78 - 128
1,1,1-Trichloroethane	0.300	0.263		ug/Sample		88	65 - 131
Trichloroethene	0.300	0.275		ug/Sample		92	80 - 141
Trichlorofluoromethane	0.600	0.598		ug/Sample		100	58 - 147
Trichlorotrifluoroethane	0.300	0.293		ug/Sample		98	40 - 140
Vinyl chloride	0.600	0.593		ug/Sample		99	64 - 142
Cumene	0.300	0.238		ug/Sample		79	40 - 152
1,3-Butadiene	0.600	0.617		ug/Sample		103	40 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	87		50 - 122
Dibromofluoromethane (Surr)	93		50 - 134
1,2-Dichloroethane-d4 (Surr)	81		50 - 127
Toluene-d8 (Surr)	87		57 - 134

Lab Sample ID: LCSD 140-94001/4

Matrix: Air

Analysis Batch: 94001

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acetone	1.20	0.740		ug/Sample		62	20 - 191	21	50
Benzene	0.300	0.257		ug/Sample		86	68 - 128	5	22
Bromodichloromethane	0.300	0.242		ug/Sample		81	52 - 122	5	35
Bromoform	0.300	0.169		ug/Sample		56	40 - 120	5	50
Bromomethane	0.600	0.544		ug/Sample		91	40 - 187	5	35
2-Butanone (MEK)	1.20	0.749		ug/Sample		62	20 - 150	18	50
Carbon tetrachloride	0.300	0.255		ug/Sample		85	67 - 135	3	23
Chloroform	0.300	0.256		ug/Sample		85	63 - 123	4	27
Dibromochloromethane	0.300	0.199		ug/Sample		66	50 - 120	8	43
1,2-Dibromoethane (EDB)	0.300	0.189		ug/Sample		63	20 - 120	10	43
Dichlorodifluoromethane	0.600	0.429		ug/Sample		72	25 - 146	5	42
1,2-Dichloroethane	0.300	0.236		ug/Sample		79	36 - 124	9	37

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QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 140-94001/4

Matrix: Air

Analysis Batch: 94001

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	0.300	0.265		ug/Sample		88	77 - 131	8	22
1,2-Dichloropropane	0.300	0.259		ug/Sample		86	55 - 124	3	31
Ethylbenzene	0.300	0.240		ug/Sample		80	72 - 127	3	23
Mesitylene	0.300	0.239		ug/Sample		80	62 - 121	0	30
Methylene Chloride	0.300	0.261		ug/Sample		87	60 - 134	6	41
m,p-Xylene	0.300	0.239		ug/Sample		80	74 - 126	2	38
o-Xylene	0.300	0.232		ug/Sample		77	64 - 120	2	37
Styrene	0.300	0.227		ug/Sample		76	57 - 120	2	39
Tetrachloroethene	0.300	0.231	*	ug/Sample		77	80 - 133	6	24
Toluene	0.300	0.241		ug/Sample		80	70 - 120	6	22
trans-1,2-Dichloroethene	0.300	0.277		ug/Sample		92	78 - 128	6	23
1,1,1-Trichloroethane	0.300	0.253		ug/Sample		84	65 - 131	4	23
Trichloroethene	0.300	0.255		ug/Sample		85	80 - 141	8	32
Trichlorofluoromethane	0.600	0.536		ug/Sample		89	58 - 147	11	26
Trichlorotrifluoroethane	0.300	0.280		ug/Sample		93	40 - 140	5	50
Vinyl chloride	0.600	0.557		ug/Sample		93	64 - 142	6	33
Cumene	0.300	0.238		ug/Sample		79	40 - 152	0	28
1,3-Butadiene	0.600	0.575		ug/Sample		96	40 - 140	7	50

Surrogate	%Recovery	LCSD Qualifier	LCSD Limits
4-Bromofluorobenzene (Surr)	87		50 - 122
Dibromofluoromethane (Surr)	90		50 - 134
1,2-Dichloroethane-d4 (Surr)	78		50 - 127
Toluene-d8 (Surr)	83		57 - 134

Lab Sample ID: MB 140-94035/6

Matrix: Air

Analysis Batch: 94035

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			12/11/24 09:57	1
Benzene	ND		0.010	0.0036	ug/Sample			12/11/24 09:57	1
Bromodichloromethane	ND		0.010	0.0017	ug/Sample			12/11/24 09:57	1
Bromoform	ND		0.025	0.0055	ug/Sample			12/11/24 09:57	1
Bromomethane	ND		0.050	0.028	ug/Sample			12/11/24 09:57	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			12/11/24 09:57	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			12/11/24 09:57	1
Chloroform	ND		0.010	0.0081	ug/Sample			12/11/24 09:57	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			12/11/24 09:57	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			12/11/24 09:57	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			12/11/24 09:57	1
1,2-Dichloroethane	ND		0.010	0.0060	ug/Sample			12/11/24 09:57	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			12/11/24 09:57	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			12/11/24 09:57	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			12/11/24 09:57	1
Mesitylene	ND		0.010	0.0026	ug/Sample			12/11/24 09:57	1
Methylene Chloride	ND		0.10	0.086	ug/Sample			12/11/24 09:57	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			12/11/24 09:57	1

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QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 140-94035/6

Matrix: Air

Analysis Batch: 94035

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.010	0.0035	ug/Sample			12/11/24 09:57	1
Styrene	ND		0.010	0.0066	ug/Sample			12/11/24 09:57	1
Tetrachloroethene	ND		0.010	0.0060	ug/Sample			12/11/24 09:57	1
Toluene	ND		0.025	0.012	ug/Sample			12/11/24 09:57	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			12/11/24 09:57	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			12/11/24 09:57	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			12/11/24 09:57	1
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			12/11/24 09:57	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			12/11/24 09:57	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			12/11/24 09:57	1
Cumene	ND		0.010	0.0030	ug/Sample			12/11/24 09:57	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			12/11/24 09:57	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	79		50 - 122		12/11/24 09:57	1
Dibromofluoromethane (Surr)	101		50 - 134		12/11/24 09:57	1
1,2-Dichloroethane-d4 (Surr)	89		50 - 127		12/11/24 09:57	1
Toluene-d8 (Surr)	101		57 - 134		12/11/24 09:57	1

Lab Sample ID: LCS 140-94035/3

Matrix: Air

Analysis Batch: 94035

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	1.20	0.809		ug/Sample		67	20 - 191
Benzene	0.300	0.295		ug/Sample		98	68 - 128
Bromodichloromethane	0.300	0.276		ug/Sample		92	52 - 122
Bromoform	0.300	0.193		ug/Sample		64	40 - 120
Bromomethane	0.600	0.626		ug/Sample		104	40 - 187
2-Butanone (MEK)	1.20	0.788		ug/Sample		66	20 - 150
Carbon tetrachloride	0.300	0.302		ug/Sample		101	67 - 135
Chloroform	0.300	0.299		ug/Sample		100	63 - 123
Dibromochloromethane	0.300	0.231		ug/Sample		77	50 - 120
1,2-Dibromoethane (EDB)	0.300	0.213		ug/Sample		71	20 - 120
Dichlorodifluoromethane	0.600	0.581		ug/Sample		97	25 - 146
1,2-Dichloroethane	0.300	0.270		ug/Sample		90	36 - 124
1,1-Dichloroethene	0.300	0.319		ug/Sample		106	77 - 131
1,2-Dichloropropane	0.300	0.293		ug/Sample		98	55 - 124
Ethylbenzene	0.300	0.275		ug/Sample		92	72 - 127
Mesitylene	0.300	0.273		ug/Sample		91	62 - 121
Methylene Chloride	0.300	0.301		ug/Sample		100	60 - 134
m,p-Xylene	0.300	0.276		ug/Sample		92	74 - 126
o-Xylene	0.300	0.264		ug/Sample		88	64 - 120
Styrene	0.300	0.260		ug/Sample		87	57 - 120
Tetrachloroethene	0.300	0.284		ug/Sample		95	80 - 133
Toluene	0.300	0.282		ug/Sample		94	70 - 120
trans-1,2-Dichloroethene	0.300	0.324		ug/Sample		108	78 - 128
1,1,1-Trichloroethane	0.300	0.298		ug/Sample		99	65 - 131

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QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 140-94035/3

Matrix: Air

Analysis Batch: 94035

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Trichloroethene	0.300	0.308		ug/Sample		103	80 - 141
Trichlorofluoromethane	0.600	0.657		ug/Sample		109	58 - 147
Trichlorotrifluoroethane	0.300	0.327		ug/Sample		109	40 - 140
Vinyl chloride	0.600	0.680		ug/Sample		113	64 - 142
Cumene	0.300	0.269		ug/Sample		90	40 - 152
1,3-Butadiene	0.600	0.674		ug/Sample		112	40 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	94		50 - 122
Dibromofluoromethane (Surr)	100		50 - 134
1,2-Dichloroethane-d4 (Surr)	88		50 - 127
Toluene-d8 (Surr)	98		57 - 134

Lab Sample ID: LCSD 140-94035/4

Matrix: Air

Analysis Batch: 94035

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acetone	1.20	0.717		ug/Sample		60	20 - 191	12	50
Benzene	0.300	0.266		ug/Sample		89	68 - 128	10	22
Bromodichloromethane	0.300	0.242		ug/Sample		81	52 - 122	13	35
Bromoform	0.300	0.135		ug/Sample		45	40 - 120	36	50
Bromomethane	0.600	0.560		ug/Sample		93	40 - 187	11	35
2-Butanone (MEK)	1.20	0.678		ug/Sample		57	20 - 150	15	50
Carbon tetrachloride	0.300	0.273		ug/Sample		91	67 - 135	10	23
Chloroform	0.300	0.269		ug/Sample		90	63 - 123	11	27
Dibromochloromethane	0.300	0.183		ug/Sample		61	50 - 120	23	43
1,2-Dibromoethane (EDB)	0.300	0.166		ug/Sample		55	20 - 120	25	43
Dichlorodifluoromethane	0.600	0.537		ug/Sample		89	25 - 146	8	42
1,2-Dichloroethane	0.300	0.238		ug/Sample		79	36 - 124	12	37
1,1-Dichloroethene	0.300	0.286		ug/Sample		95	77 - 131	11	22
1,2-Dichloropropane	0.300	0.258		ug/Sample		86	55 - 124	13	31
Ethylbenzene	0.300	0.224		ug/Sample		75	72 - 127	20	23
Mesitylene	0.300	0.175	*- *1	ug/Sample		58	62 - 121	44	30
Methylene Chloride	0.300	0.286		ug/Sample		95	60 - 134	5	41
m,p-Xylene	0.300	0.224		ug/Sample		75	74 - 126	21	38
o-Xylene	0.300	0.199		ug/Sample		66	64 - 120	28	37
Styrene	0.300	0.189		ug/Sample		63	57 - 120	31	39
Tetrachloroethene	0.300	0.250		ug/Sample		83	80 - 133	12	24
Toluene	0.300	0.249		ug/Sample		83	70 - 120	12	22
trans-1,2-Dichloroethene	0.300	0.296		ug/Sample		99	78 - 128	9	23
1,1,1-Trichloroethane	0.300	0.271		ug/Sample		90	65 - 131	9	23
Trichloroethene	0.300	0.273		ug/Sample		91	80 - 141	12	32
Trichlorofluoromethane	0.600	0.600		ug/Sample		100	58 - 147	9	26
Trichlorotrifluoroethane	0.300	0.299		ug/Sample		100	40 - 140	9	50
Vinyl chloride	0.600	0.614		ug/Sample		102	64 - 142	10	33
Cumene	0.300	0.192	*1	ug/Sample		64	40 - 152	33	28
1,3-Butadiene	0.600	0.615		ug/Sample		102	40 - 140	9	50

Eurofins Knoxville

QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 140-94035/4

Matrix: Air

Analysis Batch: 94035

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

<u>Surrogate</u>	<u>LCSD LCSD</u>		<u>Limits</u>
	<u>%Recovery</u>	<u>Qualifier</u>	
4-Bromofluorobenzene (Surr)	67		50 - 122
Dibromofluoromethane (Surr)	96		50 - 134
1,2-Dichloroethane-d4 (Surr)	80		50 - 127
Toluene-d8 (Surr)	91		57 - 134

QC Association Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

GC/MS VOA

Analysis Batch: 94001

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-39808-1	#1 APC OUTLET 1 1 A,B	Total/NA	Air	8260B	
140-39808-2	#1 APC OUTLET 2 2 A,B	Total/NA	Air	8260B	
140-39808-3	#1 APC OUTLET 3 3 A,B	Total/NA	Air	8260B	
140-39808-6	#2 APC OUTLET 1 10 A,B	Total/NA	Air	8260B	
140-39808-7	#2 APC OUTLET 2 11 A,B	Total/NA	Air	8260B	
140-39808-8	#2 APC OUTLET 3 12 A,B	Total/NA	Air	8260B	
140-39808-10	#2 APC OUTLET FIELD BLANK 14 A,B	Total/NA	Air	8260B	
140-39808-11	#2 APC OUTLET TRIP BLANK 15 A,B	Total/NA	Air	8260B	
MB 140-94001/6	Method Blank	Total/NA	Air	8260B	
LCS 140-94001/3	Lab Control Sample	Total/NA	Air	8260B	
LCSD 140-94001/4	Lab Control Sample Dup	Total/NA	Air	8260B	

Analysis Batch: 94035

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-39808-5	#1 APC OUTLET FIELD BLANK 5 A,B	Total/NA	Air	8260B	
MB 140-94035/6	Method Blank	Total/NA	Air	8260B	
LCS 140-94035/3	Lab Control Sample	Total/NA	Air	8260B	
LCSD 140-94035/4	Lab Control Sample Dup	Total/NA	Air	8260B	

Lab Chronicle

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #1 APC OUTLET 1 1 A,B

Lab Sample ID: 140-39808-1

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 12:15	JPD	EET KNX
Instrument ID: MX										

Client Sample ID: #1 APC OUTLET 2 2 A,B

Lab Sample ID: 140-39808-2

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 12:40	JPD	EET KNX
Instrument ID: MX										

Client Sample ID: #1 APC OUTLET 3 3 A,B

Lab Sample ID: 140-39808-3

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 13:04	JPD	EET KNX
Instrument ID: MX										

Client Sample ID: #1 APC OUTLET FIELD BLANK 5 A,B

Lab Sample ID: 140-39808-5

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94035	12/11/24 11:44	BTB	EET KNX
Instrument ID: MX										

Client Sample ID: #2 APC OUTLET 1 10 A,B

Lab Sample ID: 140-39808-6

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 14:14	JPD	EET KNX
Instrument ID: MX										

Client Sample ID: #2 APC OUTLET 2 11 A,B

Lab Sample ID: 140-39808-7

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 14:39	JPD	EET KNX
Instrument ID: MX										

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Lab Chronicle

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: #2 APC OUTLET 3 12 A,B

Lab Sample ID: 140-39808-8

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 15:03	JPD	EET KNX
Instrument ID: MX										

Client Sample ID: #2 APC OUTLET FIELD BLANK 14 A,B

Lab Sample ID: 140-39808-10

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 11:50	JPD	EET KNX
Instrument ID: MX										

Client Sample ID: #2 APC OUTLET TRIP BLANK 15 A,B

Lab Sample ID: 140-39808-11

Date Collected: 12/04/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 11:26	JPD	EET KNX
Instrument ID: MX										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-94001/6

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 10:44	JPD	EET KNX
Instrument ID: MX										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-94035/6

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94035	12/11/24 09:57	BTB	EET KNX
Instrument ID: MX										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-94001/3

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 09:22	JPD	EET KNX
Instrument ID: MX										

Eurofins Knoxville

Lab Chronicle

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-94035/3

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94035	12/11/24 08:41	BTB	EET KNX
Instrument ID: MX										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-94001/4

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94001	12/10/24 09:46	JPD	EET KNX
Instrument ID: MX										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-94035/4

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	94035	12/11/24 09:05	BTB	EET KNX
Instrument ID: MX										

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Laboratory: Eurofins Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-11-25
ANAB	Dept. of Energy	L2311.01	02-11-25
ANAB	ISO/IEC 17025	L2311	02-13-25
Arkansas DEQ	State	88-0688	06-17-25
Colorado	State	TN00009	02-28-25
Connecticut	State	PH-0223	10-01-26
Florida	NELAP	E87177	06-30-25
Georgia (DW)	State	906	07-27-25
Hawaii	State	NA	07-27-25
Kansas	NELAP	E-10349	10-31-25
Kentucky (DW)	State	90101	12-31-24
Louisiana (All)	NELAP	03079	06-30-25
Louisiana (DW)	State	LA019	12-31-24
Maryland	State	277	02-09-25
Michigan	State	9933	07-27-25
Nevada	State	TN00009	01-29-25
New Hampshire	NELAP	2999	12-18-24
New Jersey	NELAP	TN001	06-30-25
New York	NELAP	10781	01-12-25
North Carolina (DW)	State	21705	07-31-25
North Carolina (WW/SW)	State	64	12-31-24
Oklahoma	State	9415	12-31-24
Oregon	NELAP	TNI0189	01-01-25
Pennsylvania	NELAP	68-00576	12-31-25
Tennessee	State	02014	01-27-25
Texas	NELAP	T104704380	01-29-25
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	525-22-279-18762	10-06-25
Utah	NELAP	TN00009	07-31-25
Virginia	NELAP	460176	09-14-25
Washington	State	C593	01-19-25
West Virginia (DW)	State	9955C	12-31-24
West Virginia DEP	State	345	04-30-25
Wisconsin	State	998044300	02-11-25

Method Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	EET KNX

Protocol References:
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:
EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

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Sample Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-39808-1	#1 APC OUTLET 1 1 A,B	Air	12/02/24 00:00	12/09/24 12:30
140-39808-2	#1 APC OUTLET 2 2 A,B	Air	12/02/24 00:00	12/09/24 12:30
140-39808-3	#1 APC OUTLET 3 3 A,B	Air	12/02/24 00:00	12/09/24 12:30
140-39808-5	#1 APC OUTLET FIELD BLANK 5 A,B	Air	12/02/24 00:00	12/09/24 12:30
140-39808-6	#2 APC OUTLET 1 10 A,B	Air	12/02/24 00:00	12/09/24 12:30
140-39808-7	#2 APC OUTLET 2 11 A,B	Air	12/02/24 00:00	12/09/24 12:30
140-39808-8	#2 APC OUTLET 3 12 A,B	Air	12/02/24 00:00	12/09/24 12:30
140-39808-10	#2 APC OUTLET FIELD BLANK 14 A,B	Air	12/02/24 00:00	12/09/24 12:30
140-39808-11	#2 APC OUTLET TRIP BLANK 15 A,B	Air	12/04/24 00:00	12/09/24 12:30

Alliance Technical Group - Sample Log VOCs

Client: Reworld
Project Number: 2330
Received By: C Before
Job Assigned To: Eurofins
Quote / PO :



140-39808 Chain of Custody

Test Location	Test Number	Alliance Sample ID	Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	1 A,B		Tenax and Tenax/Charcoal	VOCs
	2	2 A,B		Tenax and Tenax/Charcoal	VOCs
	3	3 A,B		Tenax and Tenax/Charcoal	VOCs
	4	4 A,B		Tenax and Tenax/Charcoal	Archive
	Field Blank	5 A,B		Tenax and Tenax/Charcoal	VOCs
24-4547-VOST-					
# 2 APC Outlet	1	10 A,B		Tenax and Tenax/Charcoal	VOCs
	2	11 A,B		Tenax and Tenax/Charcoal	VOCs
	3	12 A,B		Tenax and Tenax/Charcoal	VOCs
	4	13 A,B		Tenax and Tenax/Charcoal	Archive
	Field Blank	14 A,B		Tenax and Tenax/Charcoal	VOCs
**	Trip Blank	15 A,B		Tenax and Tenax/Charcoal	VOCs

Refer to email to Courtney Adkins on Nov 5, 2024 for list of analytes.

* Vost Tubes Run In Tandem (1 analysis per test)

** Please archive TUBE PAIR 4 from each source

Custody Relinquished by: *[Signature]* Date: Dec 5 2024

Custody Received by: *[Signature]* Date: 12-9-24 12:30

EUROFINS KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	☒			☐ Containers, Broken	NO CUSTODY SEALS
2. Were ambient air containers received intact?	☒			☐ Checked in lab	RECEIVED AT RT 13.6/CT13.5°C
3. The coolers/containers custody seal if present, is it intact?	☒			☐ Yes ☐ NA	WFO 12-9-24 COOLER VPS# 12A4206 Y68409880449
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : <u>SC7L</u> Correction factor: <u>+0.1°C</u>	☒			☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt	ISO STANDARD
5. Were all of the sample containers received intact?	☒			☐ Containers, Broken	
6. Were samples received in appropriate containers?	☒			☐ Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	☒			☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received	9. COLLECTION DATES LISTED ON CONTAINER LABELS ALL VIALS + FIELD BLANKS COLLECTED 12-9-24 TRIP BLANKS COLLECTED 12-9-24
8. Were all of the samples listed on the COC received?	☒			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received ☒ COC; No Date/Time; Client Contacted	
9. Is the date/time of sample collection noted?	☒			☐ Sampler Not Listed on COC ☐ COC Incorrect/Incomplete ☐ COC No tests on COC ☐ COC Incorrect/Incomplete ☐ COC Incorrect/Incomplete	
10. Was the sampler identified on the COC?	☒			☐ Sample Not Listed on COC	Labeling Verified by: _____ Date: _____
11. Is the client and project name/# identified?	☒			☐ COC Incorrect/Incomplete	pH test strip lot number: _____
12. Are tests/parameters listed for each sample?	☒			☐ COC No tests on COC	
13. Is the matrix of the samples noted?	☒			☐ COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	☒			☐ COC Incorrect/Incomplete	Box 16A: pH Preservation Box 18A: Residual Chlorine
15. Were samples received within holding time?	☒			☐ Holding Time - Receipt	Preservative: _____
16. Were samples received with correct chemical preservative (excluding Encore)?	☒			☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative ☐ Headspace (VOA only) ☐ Residual Chlorine	Lot Number: _____ Exp Date: _____ Analyst: _____ Date: _____ Time: _____
17. Were VOA samples received without headspace?	☒				
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____	☒				
19. For 1613B water samples is pH<9?	☒			☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?	☒			☐ Project missing info	
Project #: <u>14061538</u> PM Instructions: _____					
Sample Receiving Associate: <u>Randy Jones</u> Date: <u>12-9-24</u>					

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Alliance Technical Group - Sample Log VOCs

Client: Reworld
Project Number: 2330
Received By: C Belore
Job Assigned To: Eurofins
Quote / PO :



Test Location	Test Number	Alliance Sample ID	Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	1 A,B		Tenax and Tenax/Charcoal	VOCs
	2	2 A,B		Tenax and Tenax/Charcoal	VOCs
	3	3 A,B		Tenax and Tenax/Charcoal	VOCs
	4	4 A,B		Tenax and Tenax/Charcoal	Archive
	Field Blank	5 A,B		Tenax and Tenax/Charcoal	VOCs
24-4547-VOST-					
# 2 APC Outlet	1	10 A,B		Tenax and Tenax/Charcoal	VOCs
	2	11 A,B		Tenax and Tenax/Charcoal	VOCs
	3	12 A,B		Tenax and Tenax/Charcoal	VOCs
	4	13 A,B		Tenax and Tenax/Charcoal	Archive
	Field Blank	14 A,B		Tenax and Tenax/Charcoal	VOCs
**	Trip Blank	15 A,B		Tenax and Tenax/Charcoal	VOCs

Refer to email to Courtney Adkins on Nov 5, 2024 for list of analytes.

* Vost Tubes Run In Tandem (1 analysis per test)

** Please archive TUBE PAIR 4 from each source

Custody Relinquished by: Date: Dec 5, 2024

Custody Received by: Date: 12-9-24 12:30

EUROFINS KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	☒			☐ Containers, Broken	NO CUSTOMER SEALS
2. Were ambient air containers received intact?	☒			☐ Checked in lab	RECEIVED AT RT 13.6/CT13.2C
3. The coolers/containers custody seal if present, is it intact?	☒			☐ Yes ☐ NA	BYO 12-9-24 CUSTOMER VES# 12AH206Y1684198 8049
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : <u>5276</u> Correction factor: <u>+0.1 °C</u>	☒			☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt	INT STANDARD
5. Were all of the sample containers received intact?	☒			☐ Containers, Broken	
6. Were samples received in appropriate containers?	☒			☐ Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	☒			☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received	9. COLLECTION DATES LISTED ON CONTAINER LABELS ALL RUNS + FIELD BLANKS COLLECTED 12-2-24 TRIP BLANK COLLECTED 12-4-24
8. Were all of the samples listed on the COC received?	☒			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received ☒ COC; No Date/Time; Client Contacted	
9. Is the date/time of sample collection noted?	☒			☐ Sampler Not Listed on COC ☐ COC Incorrect/Incomplete ☐ COC No tests on COC	
10. Was the sampler identified on the COC?	☒			☐ COC Incorrect/Incomplete	
11. Is the client and project name/# identified?	☒			☐ COC No tests on COC	
12. Are tests/parameters listed for each sample?	☒			☐ COC Incorrect/Incomplete	
13. Is the matrix of the samples noted?	☒			☐ COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	☒			☐ COC Incorrect/Incomplete	
15. Were samples received within holding time?	☒			☐ Holding Time - Receipt	Box 16A: pH Preservation Box 18A: Residual Chlorine
16. Were samples received with correct chemical preservative (excluding Encore)?	☒			☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative ☐ Headspace (VOA only) ☐ Residual Chlorine	Preservative: Lot Number: Exp Date: Analyst: Date: Time:
17. Were VOA samples received without headspace?	☒				
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:	☒				
19. For 1613B water samples is pH<9?	☒				
20. For rad samples was sample activity info. Provided?	☒			☐ If no, notify lab to adjust ☐ Project missing info	
Project #: <u>14061538</u> PM Instructions:					
Sample Receiving Associate: <u>Ralph Jones</u> Date: <u>12-9-24</u>					

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APPENDIX 18

Aldehydes Recovery Data Sheet (1 page)

Alliance Technical Group - Recovery & Sample Log NCASI Method ISS/FP-A105.01

Client: Reworld
Job/Report Number: AST-2024-4547
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #:

Test Number	Test Location	Alliance Sample ID	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle (g)	Initial Weight Sample Bottle + BHA (g)	Final Weight of BHA Sample Bottle (g)	Weight of Sample Bottle BHA & H2O (g)	Weight of Sample Bottle BHA & H2O & Hexane (g)
1	APC Outlet #1	ALD-1	Dec 2, 2024	ALD-1	111.0	158.6	162.8	169.6	176.7
2	APC Outlet #1	ALD-2	11	ALD-2	111.1	158.4	161.6	176.3	185.7
3	APC Outlet #1	ALD-3	11	ALD-3	111.3	161.3	164.6	177.8	190.8
Blank 1	APC Outlet #1	Blank 1	11	ALD-4	111.2	158.7	158.7	172.5	182.8
1	APC Outlet #2	ALD-5	11	ALD-5	111.7	160.3	163.3	171.4	180.8
2	APC Outlet #2	ALD-6	11	ALD-6	111.0	159.4	160.8	171.0	184.0
3	APC Outlet #2	ALD-7	11	ALD-7	111.3	159.2	161.0	171.6	183.9
Blank 2	APC Outlet #2	Blank 2	11	ALD-8	111.2	159.7	158.7	166.7	178.0
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by:

Date:

Relinquished to:

Date:

APPENDIX 19

Aldehydes Analytical Report (17 pages)



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact: Lynne Wrona
ALS Project ID: ORT100
ALS WO#: L2758328
Date of Report: 9-Jan-25
Date of Sample Receipt: 6-Dec-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 REWORLD

COMMENTS: Aldehydes as benzyloxime derivatives by SIM GC/MS

Certified by:


Bradley Reimer
GC/MS Laboratory Senior Technical Specialist

Results in this certificate relate only to the samples as submitted to the laboratory.

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ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank	[# 1 APC OUTLET] 24-4547-ALD-1 TEST#1	[# 1 APC OUTLET] 24-4547-ALD-2 TEST#2	[# 1 APC OUTLET] 24-4547-ALD-3 TEST#3	[# 1 APC OUTLET] 24-4547-ALD- BLANK1	[# 2 APC OUTLET] 24-4547-ALD-5 TEST#1
ALS Sample ID	WG3791198-1	L2758328-1	L2758328-2	L2758328-3	L2758328-4	L2758328-5
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	2-Dec-24	2-Dec-24	2-Dec-24	2-Dec-24	2-Dec-24
Extraction Date	23-Dec-24	23-Dec-24	23-Dec-24	23-Dec-24	23-Dec-24	23-Dec-24
Target Analytes	ug / sample	ug / sample	ug / sample	ug / sample	ug / sample	ug / sample
Formaldehyde	3.19	7.75 B	8.41 B	10.4 B	6.07 B	8.22 B
Acetaldehyde	<0.1 U	9.7	12.6	14.8	14.0	16.3
Acrolein	<0.1 U	<0.1 U	<0.1 U	<0.1 U	<0.1 U	<0.1 U
U Indicates that this compound was not detected above the LOD. B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.						

ALS Environmental

Sample Analysis Summary Report

Sample Name	[# 2 APC OUTLET] 24-4547-ALD-6 TEST #2	[# 2 APC OUTLET] 24-4547-ALD-7 TEST #3	[# 2 APC OUTLET] 24-4547-ALD- BLANK2	FIELD BHA & SPIKE	FIELD BHA BLANK	Laboratory Control Sample (12.5ug)
ALS Sample ID	L2758328-6	L2758328-7	L2758328-8	L2758328-9	L2758328-10	WG3791198-2
Sample Size	1	1	1	1	1	1
Sample units	Train	Train	Train	Train	Train	na
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	Stack	Stack	Stack	Stack	Stack	QC
Sampling Date	2-Dec-24	2-Dec-24	2-Dec-24	2-Dec-24	2-Dec-24	n/a
Extraction Date	23-Dec-24	23-Dec-24	23-Dec-24	23-Dec-24	23-Dec-24	23-Dec-24
Target Analytes	ug / sample	ug / sample	ug / sample	% Rec	ug / sample	% Rec
Formaldehyde	9.01 B	8.87 B	5.82 B	184 B	17.6 B	92
Acetaldehyde	18.8	18.03	14.0	75.6	27.9	86
Acrolein	<0.1 U	<0.1 U	<0.1 U	94	<0.1 U	66
U Indicates that this compound was not detected above the LOD. B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.						

ALS Environmental	
Sample Analysis Summary Report	
Sample Name	Laboratory Control Sample (2.5ug)
ALS Sample ID	WG3791198-4
Sample Size	1
Sample units	Train
Moisture Content	n/a
Matrix	QC
Sampling Date	n/a
Extraction Date	23-Dec-24
Target Analytes	% Rec
Formaldehyde	78.4
Acetaldehyde	100.1
Acrolein	58.7

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a
ALS Sample ID	WG3791198-1	Extraction Date	23-Dec-24
Analysis Method	SIM GC/MS		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
 --e-signature--
 09-Jan-2025

Run Information	Run 1
Filename	24121306.D
Run Date	1/8/2025 16:33
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rtx-200 1610862

Target Analytes	Ret. Time	Concentration ug/sample	Flags	Limits
Formaldehyde	8.84	3.19		
Acetaldehyde (B)	13.92	<0.1	U	
Acetaldehyde (A)	14.25	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug / sample		
Formaldehyde		3.19		
Acetaldehyde		<0.1		
Acrolein		<0.1		

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name [#1 APC OUTLET] 24-4547-ALD-1 TEST #1
 ALS Sample ID L2758328-1
 Analysis Method SIM GC/MS
 Analysis Type sample
 Sample Matrix Stack Train
 Sample Size 1
 Percent Moisture n/a
 Split Ratio 5

Sampling Date 2-Dec-24
 Extraction Date 23-Dec-24

Approved:
Andrew Reid
 --e-signature--
 09-Jan-2025

Run Information

Run 1

Filename 24121311.D
 Run Date 1/8/2025 19:55
 Final Volume 1 mL
 Dilution Factor 1
 Analysis Units ug/sample
 Instrument MSD-3
 Column RTX-200 1610862

Target Analytes

Ret. Time **Concentration**
ug / sample **Flags** **Limits**

Formaldehyde	8.84	7.75	B
Acetaldehyde (B)	13.89	4.31	
Acetaldehyde (A)	14.22	5.4	
Acrolein (A)	NotFnd	<0.1	U
Acrolein (B)	NotFnd	<0.1	U

Total Aldehydes

ug / sample

Formaldehyde	7.75	B
Acetaldehyde	9.71	
Acrolein	<0.1	

U Indicates that this compound was not detected above the MDL.
 B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	[#1 APC OUTLET] 24-4547-ALD-2 TEST #2		Sampling Date	2-Dec-24
ALS Sample ID	L2758328-2		Extraction Date	23-Dec-24
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-- 09-Jan-2025

Run Information	Run 1
Filename	24121312.D
Run Date	1/8/2025 20:35
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rtx-200 1610862

Target Analytes	Ret.	Concentration		Limits
	Time	ug/sample	Flags	
Formaldehyde	8.84	8.41		B
Acetaldehyde (B)	13.89	5.41		
Acetaldehyde (A)	14.22	7.14		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug / sample		
Formaldehyde		8.41		B
Acetaldehyde		12.55		
Acrolein		<0.1		

U Indicates that this compound was not detected above the MDL.
B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	[#1 APC OUTLET] 24-4547-ALD-3 TEST#3			Sampling Date	2-Dec-24
ALS Sample ID	L2758328-3			Extraction Date	23-Dec-24
Analysis Method	SIM GC/MS				
Analysis Type	sample				
Sample Matrix	Stack				
Sample Size	1	Train	Approved: Andrew Reid --e-signature-- 09-Jan-2025		
Percent Moisture	n/a				
Split Ratio	5				

Run Information	Run 1
Filename	24121313.D
Run Date	1/8/2025 21:16
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rtx-200 1610862

Target Analytes	Ret.	Concentration		Limits
	Time	ug/sample	Flags	
Formaldehyde	8.84	10.4		B
Acetaldehyde (B)	13.90	6.53		
Acetaldehyde (A)	14.23	8.27		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug / sample		
Formaldehyde		10.4		B
Acetaldehyde		14.8		
Acrolein		<0.1		

U Indicates that this compound was not detected above the MDL.
B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	[#1 APC OUTLET] 24-4547-ALD-BLANK1			Sampling Date	2-Dec-24
ALS Sample ID	L2758328-4			Extraction Date	23-Dec-24
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-- 09-Jan-2025

Run Information	Run 1
Filename	24121309.D
Run Date	1/8/2025 18:34
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rtx-200 1610862

Target Analytes	Ret. Time	Concentration ug/sample	Flags	Limits
Formaldehyde	8.85	6.07		B
Acetaldehyde (B)	13.90	6.09		
Acetaldehyde (A)	14.23	7.86		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug / sample		
Formaldehyde		6.07		B
Acetaldehyde		13.95		
Acrolein		<0.1		

U Indicates that this compound was not detected above the MDL.
B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name [#2 APC OUTLET] 24-4547-ALD-5 TEST #1
 ALS Sample ID L2758328-5
 Analysis Method SIM GC/MS
 Analysis Type sample
 Sample Matrix Stack Train
 Sample Size 1
 Percent Moisture n/a
 Split Ratio 5

Sampling Date 2-Dec-24
 Extraction Date 23-Dec-24

Approved:
Andrew Reid
 --e-signature--
 09-Jan-2025

Run Information

Run 1

Filename 24121314.D
 Run Date 1/8/2025 21:56
 Final Volume 1 mL
 Dilution Factor 1
 Analysis Units ug/sample
 Instrument MSD-3
 Column RTX-200 1610862

Target Analytes

Ret. Time **Concentration**
ug/sample **Flags** **Limits**

Formaldehyde	8.84	8.22	B
Acetaldehyde (B)	13.89	7.13	
Acetaldehyde (A)	14.23	9.2	
Acrolein (A)	NotFnd	<0.1	U
Acrolein (B)	NotFnd	<0.1	U

Total Aldehydes

ug / sample

Formaldehyde	8.22	#	B
Acetaldehyde	16.33	#	
Acrolein	<0.1		

U Indicates that this compound was not detected above the MDL.
 B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	[#2 APC OUTLET] 24-4547-ALD-6 TEST #2		Sampling Date	2-Dec-24
ALS Sample ID	L2758328-6		Extraction Date	23-Dec-24
Analysis Method	SIM GC/MS			
Analysis Type	sample			
Sample Matrix	Stack	Train		
Sample Size	1			
Percent Moisture	n/a			
Split Ratio	5			
				Approved: Andrew Reid --e-signature-- 09-Jan-2025

Run Information	Run 1
Filename	24121315.D
Run Date	1/8/2025 22:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rtx-200 1610862

Target Analytes	Ret.	Concentration		Limits
	Time	ug/sample	Flags	
Formaldehyde	8.84	9.01		B
Acetaldehyde (B)	13.91	8.28		
Acetaldehyde (A)	14.25	10.5		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug / sample		
Formaldehyde		9.01		B
Acetaldehyde		18.78		
Acrolein		<0.1		

U Indicates that this compound was not detected above the MDL.
B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	# 2 APC OUTLET] 24-4547-ALD-7 TEST# 3			Sampling Date	2-Dec-24
ALS Sample ID	L2758328-7			Extraction Date	23-Dec-24
Analysis Method	SIM GC/MS				
Analysis Type	sample				
Sample Matrix	Stack				
Sample Size	1	Train	Approved: Andrew Reid --e-signature-- 09-Jan-2025		
Percent Moisture	n/a				
Split Ratio	5				

Run Information	Run 1
Filename	24121316.D
Run Date	1/8/2025 23:16
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rtx-200 1610862

Target Analytes	Ret. Time	Concentration ug/sample	Flags	Limits
Formaldehyde	8.84	8.87		B
Acetaldehyde (B)	13.90	7.93		
Acetaldehyde (A)	14.24	10.1		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug / sample		
Formaldehyde		8.87		B
Acetaldehyde		18.03		
Acrolein		<0.1		

U Indicates that this compound was not detected above the MDL.
B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Sample Analysis Report

Sample Name	[#2 APC OUTLET] 24-4547-ALD-BLANK2		Sampling Date	2-Dec-24
ALS Sample ID	L2758328-8		Extraction Date	23-Dec-24
Analysis Method	SIM GC/MS			
Analysis Type	sample			
Sample Matrix	Stack	Train		
Sample Size	1			
Percent Moisture	n/a			
Split Ratio	5			
				Approved: Andrew Reid --e-signature-- 09-Jan-2025

Run Information	Run 1
Filename	24121310.D
Run Date	1/8/2025 19:15
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rtx-200 1610862

Target Analytes	Ret.	Concentration		Limits
	Time	ug/sample	Flags	
Formaldehyde	8.85	5.82	B	
Acetaldehyde (B)	13.91	6.17		
Acetaldehyde (A)	14.24	7.85		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug / sample		
Formaldehyde		5.82	B	
Acetaldehyde		14.02		
Acrolein		<0.1		

U Indicates that this compound was not detected above the MDL.
B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	FIELD BHA & SPIKE	Sampling Date	2-Dec-24
ALS Sample ID	L2758328-9	Extraction Date	23-Dec-24
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1		
Percent Moisture	n/a		
Split Ratio	5		
	Train		
			Approved: Andrew Reid --e-signature-- 09-Jan-2025

Run Information	Run 1
Filename	24121307.D
Run Date	1/8/2025 17:14
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-3
Column	Rtx-200 1610862

Target Analytes	Ret.		% Rec	Flags	Limits
	ug spiked	Time			
Formaldehyde	12.5	8.82	184.4	B	
Acetaldehyde (B)	12.5	13.86	36.4		
Acetaldehyde (A)	12.5	14.20	39.2		
Acrolein (A)	12.5	18.35	52.3		
Acrolein (B)	12.5	19.45	41.9		
Total Aldehydes					
Formaldehyde			184.4	B	50-150
Acetaldehyde			75.6		50-150
Acrolein			94.2		50-150

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	FIELD BHA BLANK	Sampling Date	2-Dec-24
ALS Sample ID	L2758328-10	Extraction Date	23-Dec-24
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1		
Percent Moisture	n/a		
Split Ratio	5		
	Train		
			Approved: Andrew Reid --e-signature-- 09-Jan-2025

Run Information	Run 1
Filename	24121308.D
Run Date	1/8/2025 17:54
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	Ret. Time	Concentration ug/sample	Flags	Limits
Formaldehyde	8.84	17.6		B
Acetaldehyde (B)	13.87	13.3		
Acetaldehyde (A)	14.21	14.6		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug / sample		
Formaldehyde		17.6		B
Acetaldehyde		27.9		
Acrolein		<0.1		

U Indicates that this compound was not detected above the MDL.
B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample (12.5ug)		Sampling Date	n/a
ALS Sample ID	WG3791198-2		Extraction Date	23-Dec-24
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-- 09-Jan-2025

Run Information	Run 1
Filename	24121304.D
Run Date	1/8/2025 15:13
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	Ret.		% Rec	Flags	Limits
	ug spiked	Time			
Formaldehyde	12.5	8.84	91.7		
Acetaldehyde (B)	12.5	13.94	43.3		
Acetaldehyde (A)	12.5	14.27	43.0		
Acrolein (A)	12.5	18.38	33.0		
Acrolein (B)	12.5	19.46	32.6		
Total Aldehydes					
Formaldehyde			91.7		50-150
Acetaldehyde			86.3		50-150
Acrolein			65.6		50-150

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample (2.5ug)	Sampling Date	n/a
ALS Sample ID	WG3791198-4	Extraction Date	23-Dec-24
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1		
Percent Moisture	n/a		
Split Ratio	5		
			Approved: Andrew Reid --e-signature-- 09-Jan-2025

Run Information	Run 1
Filename	24121303.D
Run Date	1/8/2025 14:33
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	Ret.		% Rec	Flags	Limits
	ug spiked	Time			
Formaldehyde	2.5	8.85	78.4		
Acetaldehyde (B)	2.5	13.95	55.8		
Acetaldehyde (A)	2.5	14.27	44.3 M		
Acrolein (A)	2.5	18.39	25.3		
Acrolein (B)	2.5	19.49	33.4		
Total Aldehydes					
Formaldehyde			78.4		50-150
Acetaldehyde			100.1		50-150
Acrolein			58.7		50-150

M Indicates that a peak has been manually integrated.

APPENDIX 20

SVOC and VOST Proof Data (44 pages)



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
ALS Project ID: ORT100
ALS WO#: L2758067
Date of Report: 25-Nov-24
Date of Sample Receipt: 11-Nov-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 (22330 Covanta/Reworld)

COMMENTS: PCDD/F by EPA M23

Certified by:

A handwritten signature in black ink, appearing to read "R. A. McLeod".

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.

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ALS Life Sciences

Sample Analysis summary Report

Sample Name	GLASSWARE PROOF [J-JOINTS & IMPINGERS]	GLASSWARE PROOF [U-BENDS, BYPASS, S-TUBES]	GLASSWARE PROOF [HOUSING, TRAPS, HOLDERS]
ALS Sample ID	L2758067-40	L2758067-41	L2758067-42
Sample Size	1	1	1
Sample size units	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a
Sample Matrix	Media prep	Media prep	Media prep
Sampling Date	n/a	n/a	n/a
Extraction Date	18-Nov-24	18-Nov-24	18-Nov-24
Target Analytes	pg	pg	pg
2,3,7,8-TCDD	<1.4	<1.2	<1.5
1,2,3,7,8-PeCDD	<1.3	<1.6	<1.4
1,2,3,4,7,8-HxCDD	<1.4	<1.5	<2.3
1,2,3,6,7,8-HxCDD	<1.4	<1.5	<2.3
1,2,3,7,8,9-HxCDD	<1.4	<1.4	<2.2
1,2,3,4,6,7,8-HpCDD	<1.4	<1.8	<2.1
OCDD	<7.0	<6.8	<7.9
2,3,7,8-TCDF	<1.3	<1.2	<1.6
1,2,3,7,8-PeCDF	<1.1	<1.1	<1.5
2,3,4,7,8-PeCDF	<0.96	<1.0	<1.0
1,2,3,4,7,8-HxCDF	<1.1	<1.1	<1.5
1,2,3,6,7,8-HxCDF	<1.0	<1.1	<1.4
2,3,4,6,7,8-HxCDF	<1.0	<1.1	<1.4
1,2,3,7,8,9-HxCDF	<1.2	<1.3	<1.7
1,2,3,4,6,7,8-HpCDF	<1.3	<1.5	<2.0
1,2,3,4,7,8,9-HpCDF	<1.5	<1.7	<2.3
Extraction Standards	% Rec	% Rec	% Rec
13C12-2,3,7,8-TCDD	87	92	80
13C12-1,2,3,7,8-PeCDD	94	92	86
13C12-1,2,3,6,7,8-HxCDD	97	101	86
13C12-1,2,3,4,6,7,8-HpCDD	129	110	89
13C12-OCDD	87	79	58
13C12-2,3,7,8-TCDF	94	99	86
13C12-1,2,3,7,8-PeCDF	104	102	95
13C12-1,2,3,6,7,8-HxCDF	106	113	97
13C12-1,2,3,4,6,7,8-HpCDF	104	99	86
Homologue Group Totals	pg	pg	pg
Total-TCDD	<1.4	7.94	<1.5
Total-PeCDD	9.96	<1.6	8.66
Total-HxCDD	<1.4	<1.5	6.40
Total-HpCDD	<1.4	<1.8	<2.1
Total-TCDF	<1.3	<1.2	<1.6
Total-PeCDF	<1.1	<1.1	<1.1
Total-HxCDF	<1.2	<1.3	<1.7
Total-HpCDF	<1.5	<1.7	<2.3
Toxic Equivalency - (WHO 2005)			
Lower Bound PCDD/F TEQ (WHO 2005)	0.00	0.00	0.00
Mid Point PCDD/F TEQ (WHO 2005)	2.02	2.10	2.40
Upper Bound PCDD/F TEQ (WHO 2005)	4.05	4.21	4.75

ALS Life Sciences

Quality Control Summary Report

Sample Name

Method Blank

ALS Sample ID

WG3791028-1

Sample Size

1

Sample size units

Sample

Percent Moisture

n/a

Sample Matrix

QC

Sampling Date

n/a

Extraction Date

18-Nov-24

Target Analytes

pg

2,3,7,8-TCDD

<1.3

1,2,3,7,8-PeCDD

<1.5

1,2,3,4,7,8-HxCDD

<1.4

1,2,3,6,7,8-HxCDD

<1.3

1,2,3,7,8,9-HxCDD

<1.3

1,2,3,4,6,7,8-HpCDD

<2.3

OCDD

<7.6

2,3,7,8-TCDF

<1.2

1,2,3,7,8-PeCDF

<1.1

2,3,4,7,8-PeCDF

<1.0

1,2,3,4,7,8-HxCDF

<1.0

1,2,3,6,7,8-HxCDF

<0.98

2,3,4,6,7,8-HxCDF

<0.98

1,2,3,7,8,9-HxCDF

<1.2

1,2,3,4,6,7,8-HpCDF

<1.4

1,2,3,4,7,8,9-HpCDF

<1.6

OCDF

<4.6

Extraction Standards

% Rec

13C12-2,3,7,8-TCDD

90

13C12-1,2,3,7,8-PeCDD

93

13C12-1,2,3,6,7,8-HxCDD

102

13C12-1,2,3,4,6,7,8-HpCDD

119

13C12-OCDD

79

13C12-2,3,7,8-TCDF

99

13C12-1,2,3,7,8-PeCDF

114

13C12-1,2,3,6,7,8-HxCDF

113

13C12-1,2,3,4,6,7,8-HpCDF

104

Homologue Group Totals

pg

Total-TCDD

<1.3

Total-PeCDD

<1.5

Total-HxCDD

<1.4

Total-HpCDD

<2.3

Total-TCDF

<1.2

Total-PeCDF

<1.1

Total-HxCDF

<1.2

Total-HpCDF

<1.6

Toxic Equivalency - (WHO 2005)

Lower Bound PCDD/F TEQ (WHO 2005)

0.00

Mid Point PCDD/F TEQ (WHO 2005)

2.06

Upper Bound PCDD/F TEQ (WHO 2005)

4.13



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
ALS Project ID: ORT100
ALS WO#: L2758067
Date of Report: 29-Nov-24
Date of Sample Receipt: 11-Nov-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 (22330 Covanta/Reworld)

COMMENTS: PCB Congeners by EPA 1668C

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

Certified by:

A handwritten signature in black ink, appearing to read "R. McLeod", is written over a horizontal line.

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

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Sample Analysis Summary Report

Sample Name

GLASSWARE PROOF [J-JOINTS
& IMPINGERS] GLASSWARE PROOF [U-BENDS,
BYPASS, S-TUBES] GLASSWARE PROOF [HOUSING,
TRAPS, HOLDERS]

ALS Sample ID	L2758067-40	L2758067-41	L2758067-42
Sample Size	1	1	1
Sample size units	sample	sample	sample
Percent Moisture	n/a	n/a	n/a
Sample Matrix	Media prep	Media prep	Media prep
Sampling Date	n/a	n/a	n/a
Extraction Date	18-Nov-24	18-Nov-24	18-Nov-24

Target Analytes	pg	pg	pg
PCB-081	<2.9	<2.9	<3.1
PCB-077	3.35	<2.9	<3.3
PCB-123	<2.6	<2.4	<2.3
PCB-118	<6.6	4.41	<7.4
PCB-114	<2.4	<3.1	<2.4
PCB-105	<2.8	<2.4	<4.4
PCB-126	<2.5	<2.5	<2.4
PCB-167	<2.1	<1.9	<2.3
PCB-156/157	<3.1	<2.7	<2.8
PCB-169	<2.4	<2.1	<2.6
PCB-189	<2.6	<2.6	<3.0

Extraction Standards	% Rec	% Rec	% Rec
13C12-PCB-081	103	104	98
13C12-PCB-077	101	102	96
13C12-PCB-123	99	105	97
13C12-PCB-118	98	101	92
13C12-PCB-114	102	105	96
13C12-PCB-105	97	100	94
13C12-PCB-126	103	103	97
13C12-PCB-167	103	101	97
13C12-PCB-156/157	99	96	94
13C12-PCB-169	105	105	100
13C12-PCB-189	97	99	92

Toxic Equivalency - (WHO 2005)

	pg	pg	pg
Lower Bound PCB TEQ	0.000335	0.000132	0.00
Mid Point PCB TEQ	0.162	0.158	0.160
Upper Bound PCB TEQ	0.324	0.315	0.320

ALS Life Sciences

Quality Control Summary Report

Sample Name

Method Blank

ALS Sample ID	WG3791028-1
Sample Size	1
Sample size units	sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	18-Nov-24

Target Analytes

pg

PCB-081	<2.0
PCB-077	<2.0
PCB-123	<1.6
PCB-118	<1.8
PCB-114	<1.6
PCB-105	<1.5
PCB-126	<1.5
PCB-167	<1.1
PCB-156/157	<1.7
PCB-169	<1.3
PCB-189	<1.8

Extraction Standards

% Rec

13C12-PCB-081	101
13C12-PCB-077	102
13C12-PCB-123	102
13C12-PCB-118	100
13C12-PCB-114	102
13C12-PCB-105	99
13C12-PCB-126	105
13C12-PCB-167	106
13C12-PCB-156/157	100
13C12-PCB-169	110
13C12-PCB-189	102

Toxic Equivalency - (WHO 2005)

Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.115
Upper Bound PCB TEQ	0.190



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Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact: Lynne Wrona
ALS Project ID: ORT100
ALS WO#: L2758067
Date of Report: 26-Nov-24
Date of Sample Receipt: 11-Nov-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 (22330 Covanta/Reworld)

COMMENTS: CB by LRGC/MS - Isotope dilution

Certified by:

A handwritten signature in black ink, appearing to read "Sabrina Jin".

Sabrina Jin
Technical Specialist

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Sample Analysis Summary Report

Sample Name	Method Blank	GLASSWARE PROOF [J-JOINTS & IMPINGERS]	GLASSWARE PROOF [U-BENDS, BYPASS, S-TUBES]	GLASSWARE PROOF [HOUSING, TRAPS, HOLDERS]
ALS Sample ID	WG3791028-1	L2758067-40	L2758067-41	L2758067-42
Sample Size	1	1	1	1
Sample units	sample	sample	sample	sample
Moisture Content	n/a	n/a	n/a	n/a
Matrix	QC	Media Prep	Media Prep	Media Prep
Sampling Date	n/a	n/a	n/a	n/a
Extraction Date	18-Nov-24	18-Nov-24	18-Nov-24	18-Nov-24
Target Analytes	ng / sample	ng / sample	ng / sample	ng / sample
Chlorobenzene	<12 U	<12 U	<12 U	<12 U
1,3-Dichlorobenzene	<12 U	<12 U	<12 U	<12 U
1,4-Dichlorobenzene	<12 U	<12 U	<12 U	<12 U
1,2-Dichlorobenzene	<12 U	<12 U	<12 U	<12 U
1,3,5-Trichlorobenzene	<12 U	<12 U	<12 U	<12 U
1,2,4-Trichlorobenzene	<12 U	<12 U	<12 U	<12 U
1,2,3-Trichlorobenzene	<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
1,2,3,4-Tetrachlorobenzene	<12 U	<12 U	<12 U	<12 U
Pentachlorobenzene	<12 U	<12 U	<12 U	<12 U
Hexachlorobenzene	<12 U	<12 U	<12 U	<12 U
Extraction Standards	% Rec	% Rec	% Rec	% Rec
13C6-Chlorobenzene	62	55	52	54
13C6-1,4-Dichlorobenzene	68	69	65	67
13C6-1,2,3-Trichlorobenzene	66	68	63	66
13C6-1,2,3,4-Tetrachlorobenzene	59	61	57	59
13C6-Pentachlorobenzene	70	73	66	69
13C6-Hexachlorobenzene	77	80	76	80
U	Indicates that this compound was not detected above the LOD.			



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
ALS Project ID: ORT100
ALS WO#: L2758067
Date of Report: 27-Nov-24
Date of Sample Receipt: 11-Nov-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 (22330 Covanta/Reworld)

COMMENTS: Chlorophenols by modified EPA 8270E SIM

A handwritten signature in black ink, appearing to read "R. A. McLeod", is written over a horizontal line.

Certified by: _____
Ron McLeod Ph.D.
Technical Director

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Sample Analysis Summary Report

Sample Name	Method Blank	GLASSWARE PROOF [J- JOINTS & IMPINGERS]	GLASSWARE PROOF [U- BENDS, BYPASS, S-TUBES]	GLASSWARE PROOF [HOUSING, TRAPS, HOLDERS]
ALS Sample ID	WG3791028-1	L2758067-40	L2758067-41	L2758067-42
Sample Size	1	1	1	1
Sample units	sample	sample	sample	sample
Moisture Content	n/a	n/a	n/a	n/a
Matrix	QC	Media Prep	Media Prep	Media Prep
Sampling Date	n/a	n/a	n/a	n/a
Extraction Date	18-Nov-24	18-Nov-24	18-Nov-24	18-Nov-24

Target Analytes	ng /sample	ng /sample	ng /sample	ng /sample
2-Chlorophenol	<60 U	<60 U	<60 U	<60 U
3/4-Chlorophenol	<60 U	<60 U	<60 U	<60 U
2,4/2,5-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
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
2,4,5-Trichlorophenol	<60 U	<60 U	<60 U	<60 U
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
2,3,4,5/2,3,4,6-Tetrachlorophenol	<60 U	<60 U	<60 U	<60 U
Pentachlorophenol	<60 U	<60 U	<60 U	<60 U
Hexachlorophene			<60 U	
Extraction Standards	% Rec	% Rec	% Rec	% Rec
13C6-4-Chlorophenol (ES)	13.0 M	13.4	13.1 M	11.9
13C6-2,4-Dichlorophenol (ES)	68.8 M	58.3	58.3	62.5 M
13C6-2,4,5-Trichlorophenol (ES)	52.0	47.0	55.9	44.3
13C6-2,3,4,5-Tetrachlorophenol (ES)	38.6 M	41.6 M	54.0 M	47.7 M
13C6-Pentachlorophenol (ES)	62.6	49.1	77.0	60.0

U Indicates that this compound was not detected above the LOD.



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
ALS Project ID: ORT100
ALS WO#: L2758067
Date of Report: 26-Nov-24
Date of Sample Receipt: 11-Nov-24

Client Name: ORTECH Consulting /Alliance
Client Address: 804 Southdown Road
Mississauga, ON
L5J 2Y4
Client Contact: Chris Belore
Client Project ID: AST-2024-4547 (22330 Covanta/Reworld)

COMMENTS: PAH by CARB method 429 (LR option)- Isotope dilution

Proof consists of the pooled solvent rinses of ten 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:

A handwritten signature in black ink, appearing to read "Jin", is written over a horizontal line.

Sabrina Jin
Technical Specialist

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Sample Analysis Summary Report

Sample Name	Method Blank	GLASSWARE PROOF [J-JOINTS & IMPINGERS]	GLASSWARE PROOF [U- BENDS, BYPASS, S-TUBES]	GLASSWARE PROOF [HOUSING, TRAPS, HOLDERS]
ALS Sample ID	WG3791028-1	L2758067-40	L2758067-41	L2758067-42
Sample Size	1	1	1	1
Sample units	sample	sample	sample	sample
Moisture Content	n/a	n/a	n/a	n/a
Matrix	QC	Media Prep	Media Prep	Media Prep
Sampling Date	n/a	n/a	n/a	n/a
Extraction Date	18-Nov-24	18-Nov-24	18-Nov-24	18-Nov-24

Target Analytes	ng / sample	ng / sample	ng / sample	ng / sample
Naphthalene	19.7	21.0 B	22.7 B	20.0 B
2-Methylnaphthalene	<12 U	<12 U	<12 U	<12 U
1-Methylnaphthalene	<12 U	<12 U	<12 U	<12 U
Acenaphthylene	<12 U	<12 U	<12 U	<12 U
Acenaphthene	<12 U	<12 U	<12 U	<12 U
Fluorene	<12 U	<12 U	<12 U	<12 U
Phenanthrene	<12 U	<12 U	12.1	<12 U
Anthracene	<12 U	<12 U	<12 U	<12 U
Fluoranthene	<12 U	<12 U	<12 U	<12 U
Pyrene	<12 U	<12 U	<12 U	<12 U
Benzo(a)Anthracene	<12 U	<12 U	<12 U	<12 U
Chrysene/Triphenylene/Benzo(b)anthr	<12 U	<12 U	<12 U	<12 U
Benzo(b)Fluoranthene	<12 U	<12 U	<12 U	<12 U
Benzo(k/j)Fluoranthene	<12 U	<12 U	<12 U	<12 U
Benzo(e)Pyrene	<12 U	<12 U	<12 U	<12 U
Benzo(a)Pyrene	<12 U	<12 U	<12 U	<12 U
Perylene	<12 U	<12 U	<12 U	<12 U
Indeno(1,2,3-cd)Pyrene	<12 U	<12 U	<12 U	<12 U
Dibenzo(a,h,a,c)Anthracene	<12 U	<12 U	<12 U	<12 U
Benzo(g,h,i)Perylene	<12 U	<12 U	<12 U	<12 U
Additional Analytes				
Tetralin	20.5	24.8 B	23.2 B	24.4 B
2-Chloronaphthalene	<12 U	<12 U	<12 U	<12 U
Biphenyl	<12 U	<12 U	<12 U	<12 U
o-Terphenyl	<12 U	<12 U	<12 U	<12 U
1-Methylphenanthrene	<12 U	<12 U	<12 U	<12 U
9-Methylphenanthrene	<12 U	<12 U	<12 U	<12 U
2-methylanthracene	<12 U	<12 U	<12 U	<12 U
9,10-dimethylanthracene	<12 U	<12 U	<12 U	<12 U
m-terphenyl	<12 U	<12 U	<12 U	<12 U
p-terphenyl	<12 U	<12 U	<12 U	<12 U
Benzo(a)fluorene	<12 U	<12 U	<12 U	<12 U
Benzo(b)fluorene	<12 U	<12 U	<12 U	<12 U
7,12-Dimethylbenzo(a)anthracene	<12 U	<12 U	<12 U	<12 U
3-Methylcholanthrene	<60 U	<60 U	<60 U	<60 U
Picene	<60 U	<60 U	<60 U	<60 U
Dibenzo(a,e)pyrene	<60 U	<60 U	<60 U	<60 U
Coronene	<60 U	<60 U	<60 U	<60 U
Extraction Standards				
Naphthalene D8	102.8	101	104.1	98.3
2-Methylnaphthalene-D10	89.3	95.5	90.3	92.6
Acenaphthylene D8	87.5	93.4	88	92.1
Phenanthrene D10	98.9	77.4	93.4	104.7
Anthracene-D10	110.4 M	87 M	107.8 M	101.2 M
Fluoranthene D10	88.9	94.4 M	86.5	117.8 M
Benzo(a)Anthracene-D12	72.3	61.3	64.1	73.8 M
Chrysene D12	79.9	61.7	69.1	63.7
Benzo(b)Fluoranthene-D12	71.4	73	75.5	76.6
Benzo(k)Fluoranthene-D12	94.7	100.9	90.1	75.5
Benzo(a)Pyrene D12	62.5	69.6	63.2	75.3 M
Perylene D12	77.2	81.6	78.8	70.3
Indeno(1,2,3,cd)Pyrene-D12	80.9 M	81.7 M	65.8	68.9 M
Dibenzo(a,h)Anthracene-D14	71.5	79.4	71.2	53.2
Benzo(g,h,i)Perylene D12	74.8	83	74.9	55.1

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.



ANALYTICAL REPORT

PREPARED FOR

Attn: Chris Belore
Alliance Source Testing LLC
804 Southdown Road
Mississauga, Ontario L5J2Y4

Generated 2/19/2025 11:39:41 AM

JOB DESCRIPTION

ORTECH Reworld

JOB NUMBER

140-39808-2

Eurofins Knoxville

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Authorization



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2/19/2025 11:39:41 AM

Authorized for release by
Courtney Adkins, Project Manager II
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(865)291-3019

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Definitions/Glossary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Alliance Source Testing LLC
Project: ORTECH Reworld

Job ID: 140-39808-2

Job ID: 140-39808-2

Eurofins Knoxville

Job Narrative 140-39808-2

Receipt

The samples were received on 12/9/2024 12:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 13.7° C.

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: #1 APC OUTLET 1 1 A,B (140-39808-1), #1 APC OUTLET 2 2 A,B (140-39808-2), #1 APC OUTLET 3 3 A,B (140-39808-3), #1 APC OUTLET 4 4 A,B (140-39808-4), #1 APC OUTLET FIELD BLANK 5 A,B (140-39808-5), #2 APC OUTLET 1 10 A,B (140-39808-6), #2 APC OUTLET 2 11 A,B (140-39808-7), #2 APC OUTLET 3 12 A,B (140-39808-8), #2 APC OUTLET 4 13 A,B (140-39808-9), #2 APC OUTLET FIELD BLANK 14 A,B (140-39808-10), #2 APC OUTLET TRIP BLANK 15 A,B (140-39808-11) and MEDIA CHECK A-2525 TENAX,A-2526 TENAX/CHARCOAL (140-39808-12). This does not meet regulatory requirements. The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.

The following samples were received at the laboratory without a sample collection time documented on the chain of custody: #2 APC OUTLET TRIP BLANK 15 A,B (140-39808-11). Date on container used 12-4-24.

The following samples were received at the laboratory without a sample collection time documented on the chain of custody: #1 APC OUTLET 1 1 A,B (140-39808-1), #1 APC OUTLET 2 2 A,B (140-39808-2), #1 APC OUTLET 3 3 A,B (140-39808-3), #1 APC OUTLET 4 4 A,B (140-39808-4), #1 APC OUTLET FIELD BLANK 5 A,B (140-39808-5), #2 APC OUTLET 1 10 A,B (140-39808-6), #2 APC OUTLET 2 11 A,B (140-39808-7), #2 APC OUTLET 3 12 A,B (140-39808-8), #2 APC OUTLET 4 13 A,B (140-39808-9) and #2 APC OUTLET FIELD BLANK 14 A,B (140-39808-10). Date on container used 12-2-24.

GC/MS VOA

Volatile Organic Sampling Train (VOST) Preparation and Analysis: VOST tubes and condensate samples were analyzed for the volatile organic target analytes by purge and trap GCMS using Eurofins Knoxville standard operating procedures KNOX-MS-0011 and KNOX-MS-0015, based on the following methods:

- SW-846 5041A, "Analysis for Desorption of Sorbent Cartridges from Volatile Organic Sampling Train (VOST)"
- SW-846 8260B, "Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)"

Each tube or tube pair is prepared by spiking a known amount of surrogate onto the media using a flash vaporization device. Volatile compounds are introduced into the gas chromatograph by thermal desorption of the analytes from the VOST tube using a clamshell oven and a purge and trap device. VOST condensates are spiked with surrogates and purged directly. The components are separated using the chromatograph and detected using a mass spectrometer, which provides both qualitative and quantitative information.

Sample results were calculated using the following equations:

VOST result, µg = (On column concentration, µg/L) × (purge volume, L)

Condensate result, µg/sample = (On column concentration, µg/L) × (Condensate volume received, L) × Dilution Factor

Method 8260B: The following samples were analyzed outside of analytical holding time due to the lab error: MEDIA CHECK A-2525 TENAX,A-2526 TENAX/CHARCOAL (140-39808-12).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Eurofins Knoxville

Client Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Client Sample ID: MEDIA CHECK A-2525 TENAX,A-2526

Lab Sample ID: 140-39808-12

TENAX/CHARCOAL

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND	H	0.25	0.15	ug/Sample			02/17/25 18:22	1
Benzene	ND	H	0.010	0.0036	ug/Sample			02/17/25 18:22	1
Bromodichloromethane	ND	H	0.010	0.0017	ug/Sample			02/17/25 18:22	1
Bromoform	ND	H	0.025	0.0055	ug/Sample			02/17/25 18:22	1
Bromomethane	ND	H	0.050	0.028	ug/Sample			02/17/25 18:22	1
1,3-Butadiene	ND	H	0.050	0.029	ug/Sample			02/17/25 18:22	1
2-Butanone (MEK)	ND	H	0.10	0.066	ug/Sample			02/17/25 18:22	1
Carbon tetrachloride	ND	H	0.010	0.0075	ug/Sample			02/17/25 18:22	1
Chloroform	ND	H	0.010	0.0081	ug/Sample			02/17/25 18:22	1
Dibromochloromethane	ND	H	0.025	0.0037	ug/Sample			02/17/25 18:22	1
1,2-Dibromoethane (EDB)	ND	H	0.025	0.0073	ug/Sample			02/17/25 18:22	1
Dichlorodifluoromethane	ND	H	0.025	0.013	ug/Sample			02/17/25 18:22	1
1,2-Dichloroethane	ND	H	0.010	0.0060	ug/Sample			02/17/25 18:22	1
1,1-Dichloroethene	ND	H	0.010	0.0043	ug/Sample			02/17/25 18:22	1
1,2-Dichloropropane	ND	H	0.010	0.0018	ug/Sample			02/17/25 18:22	1
Ethylbenzene	ND	H	0.010	0.0028	ug/Sample			02/17/25 18:22	1
Cumene	ND	H	0.010	0.0030	ug/Sample			02/17/25 18:22	1
Mesitylene	ND	H	0.010	0.0026	ug/Sample			02/17/25 18:22	1
Methylene Chloride	0.12	H	0.10	0.086	ug/Sample			02/17/25 18:22	1
m,p-Xylene	ND	H	0.020	0.0070	ug/Sample			02/17/25 18:22	1
o-Xylene	ND	H	0.010	0.0035	ug/Sample			02/17/25 18:22	1
Styrene	ND	H	0.010	0.0066	ug/Sample			02/17/25 18:22	1
Tetrachloroethene	ND	H	0.010	0.0060	ug/Sample			02/17/25 18:22	1
Toluene	ND	H	0.025	0.012	ug/Sample			02/17/25 18:22	1
trans-1,2-Dichloroethene	ND	H	0.010	0.0037	ug/Sample			02/17/25 18:22	1
1,1,1-Trichloroethane	ND	H	0.025	0.0097	ug/Sample			02/17/25 18:22	1
Trichloroethene	ND	H	0.010	0.0066	ug/Sample			02/17/25 18:22	1
Trichlorofluoromethane	ND	H	0.050	0.0053	ug/Sample			02/17/25 18:22	1
Trichlorotrifluoroethane	ND	H	0.050	0.0095	ug/Sample			02/17/25 18:22	1
Vinyl chloride	ND	H	0.025	0.0064	ug/Sample			02/17/25 18:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	75		50 - 122		02/17/25 18:22	1
Dibromofluoromethane (Surr)	103		50 - 134		02/17/25 18:22	1
1,2-Dichloroethane-d4 (Surr)	81		50 - 127		02/17/25 18:22	1
Toluene-d8 (Surr)	96		57 - 134		02/17/25 18:22	1

Eurofins Knoxville

Default Detection Limits

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	RL	MDL
1,1,1-Trichloroethane	0.025 ug/Sample	0.0097 ug/Sample
1,1-Dichloroethene	0.010 ug/Sample	0.0043 ug/Sample
1,2-Dibromoethane (EDB)	0.025 ug/Sample	0.0073 ug/Sample
1,2-Dichloroethane	0.010 ug/Sample	0.0060 ug/Sample
1,2-Dichloropropane	0.010 ug/Sample	0.0018 ug/Sample
1,3-Butadiene	0.050 ug/Sample	0.029 ug/Sample
2-Butanone (MEK)	0.10 ug/Sample	0.066 ug/Sample
Acetone	0.25 ug/Sample	0.15 ug/Sample
Benzene	0.010 ug/Sample	0.0036 ug/Sample
Bromodichloromethane	0.010 ug/Sample	0.0017 ug/Sample
Bromoform	0.025 ug/Sample	0.0055 ug/Sample
Bromomethane	0.050 ug/Sample	0.028 ug/Sample
Carbon tetrachloride	0.010 ug/Sample	0.0075 ug/Sample
Chloroform	0.010 ug/Sample	0.0081 ug/Sample
Cumene	0.010 ug/Sample	0.0030 ug/Sample
Dibromochloromethane	0.025 ug/Sample	0.0037 ug/Sample
Dichlorodifluoromethane	0.025 ug/Sample	0.013 ug/Sample
Ethylbenzene	0.010 ug/Sample	0.0028 ug/Sample
m,p-Xylene	0.020 ug/Sample	0.0070 ug/Sample
Mesitylene	0.010 ug/Sample	0.0026 ug/Sample
Methylene Chloride	0.10 ug/Sample	0.086 ug/Sample
o-Xylene	0.010 ug/Sample	0.0035 ug/Sample
Styrene	0.010 ug/Sample	0.0066 ug/Sample
Tetrachloroethene	0.010 ug/Sample	0.0060 ug/Sample
Toluene	0.025 ug/Sample	0.012 ug/Sample
trans-1,2-Dichloroethene	0.010 ug/Sample	0.0037 ug/Sample
Trichloroethene	0.010 ug/Sample	0.0066 ug/Sample
Trichlorofluoromethane	0.050 ug/Sample	0.0053 ug/Sample
Trichlorotrifluoroethane	0.050 ug/Sample	0.0095 ug/Sample
Vinyl chloride	0.025 ug/Sample	0.0064 ug/Sample

Surrogate Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method: 8260B - Volatile Organic Compounds (GC/MS)
Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	BFB	DBFM	DCA	TOL
		(50-122)	(50-134)	(50-127)	(57-134)
140-39808-12	MEDIA CHECK A-2525 TENAX,	75	103	81	96
LCS 140-96224/3	Lab Control Sample	66	101	77	96
LCSD 140-96224/34	Lab Control Sample Dup	79	106	81	100
MB 140-96224/6	Method Blank	56	104	84	88
Surrogate Legend					
BFB = 4-Bromofluorobenzene (Surr)					
DBFM = Dibromofluoromethane (Surr)					
DCA = 1,2-Dichloroethane-d4 (Surr)					
TOL = Toluene-d8 (Surr)					

QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 140-96224/6

Matrix: Air

Analysis Batch: 96224

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			02/17/25 16:00	1
Benzene	ND		0.010	0.0036	ug/Sample			02/17/25 16:00	1
Bromodichloromethane	ND		0.010	0.0017	ug/Sample			02/17/25 16:00	1
Bromoform	ND		0.025	0.0055	ug/Sample			02/17/25 16:00	1
Bromomethane	ND		0.050	0.028	ug/Sample			02/17/25 16:00	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			02/17/25 16:00	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			02/17/25 16:00	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			02/17/25 16:00	1
Chloroform	ND		0.010	0.0081	ug/Sample			02/17/25 16:00	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			02/17/25 16:00	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			02/17/25 16:00	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			02/17/25 16:00	1
1,2-Dichloroethane	ND		0.010	0.0060	ug/Sample			02/17/25 16:00	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			02/17/25 16:00	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			02/17/25 16:00	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			02/17/25 16:00	1
Cumene	ND		0.010	0.0030	ug/Sample			02/17/25 16:00	1
Mesitylene	ND		0.010	0.0026	ug/Sample			02/17/25 16:00	1
Methylene Chloride	ND		0.10	0.086	ug/Sample			02/17/25 16:00	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			02/17/25 16:00	1
o-Xylene	ND		0.010	0.0035	ug/Sample			02/17/25 16:00	1
Styrene	ND		0.010	0.0066	ug/Sample			02/17/25 16:00	1
Tetrachloroethene	ND		0.010	0.0060	ug/Sample			02/17/25 16:00	1
Toluene	ND		0.025	0.012	ug/Sample			02/17/25 16:00	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			02/17/25 16:00	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			02/17/25 16:00	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			02/17/25 16:00	1
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			02/17/25 16:00	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			02/17/25 16:00	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			02/17/25 16:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	56		50 - 122		02/17/25 16:00	1
Dibromofluoromethane (Surr)	104		50 - 134		02/17/25 16:00	1
1,2-Dichloroethane-d4 (Surr)	84		50 - 127		02/17/25 16:00	1
Toluene-d8 (Surr)	88		57 - 134		02/17/25 16:00	1

Lab Sample ID: LCS 140-96224/3

Matrix: Air

Analysis Batch: 96224

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	1.20	0.683		ug/Sample		57	20 - 191
Benzene	0.300	0.296		ug/Sample		99	68 - 128
Bromodichloromethane	0.300	0.261		ug/Sample		87	52 - 122
Bromoform	0.300	0.153		ug/Sample		51	40 - 120
Bromomethane	0.600	0.502		ug/Sample		84	40 - 187
1,3-Butadiene	0.600	0.602		ug/Sample		100	40 - 140

Eurofins Knoxville

QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 140-96224/3

Matrix: Air

Analysis Batch: 96224

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2-Butanone (MEK)	1.20	0.655		ug/Sample		55	20 - 150
Carbon tetrachloride	0.300	0.307		ug/Sample		102	67 - 135
Chloroform	0.300	0.288		ug/Sample		96	63 - 123
Dibromochloromethane	0.300	0.212		ug/Sample		71	50 - 120
1,2-Dibromoethane (EDB)	0.300	0.158		ug/Sample		53	20 - 120
Dichlorodifluoromethane	0.600	0.498		ug/Sample		83	25 - 146
1,2-Dichloroethane	0.300	0.235		ug/Sample		78	36 - 124
1,1-Dichloroethene	0.300	0.311		ug/Sample		104	77 - 131
1,2-Dichloropropane	0.300	0.271		ug/Sample		90	55 - 124
Ethylbenzene	0.300	0.266		ug/Sample		89	72 - 127
Cumene	0.300	0.258		ug/Sample		86	40 - 152
Mesitylene	0.300	0.215		ug/Sample		72	62 - 121
Methylene Chloride	0.300	0.288		ug/Sample		96	60 - 134
m,p-Xylene	0.300	0.269		ug/Sample		90	74 - 126
o-Xylene	0.300	0.243		ug/Sample		81	64 - 120
Styrene	0.300	0.233		ug/Sample		78	57 - 120
Tetrachloroethene	0.300	0.303		ug/Sample		101	80 - 133
Toluene	0.300	0.285		ug/Sample		95	70 - 120
trans-1,2-Dichloroethene	0.300	0.319		ug/Sample		106	78 - 128
1,1,1-Trichloroethane	0.300	0.294		ug/Sample		98	65 - 131
Trichloroethene	0.300	0.318		ug/Sample		106	80 - 141
Trichlorofluoromethane	0.600	0.545		ug/Sample		91	58 - 147
Trichlorotrifluoroethane	0.300	0.320		ug/Sample		107	40 - 140
Vinyl chloride	0.600	0.584		ug/Sample		97	64 - 142

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	66		50 - 122
Dibromofluoromethane (Surr)	101		50 - 134
1,2-Dichloroethane-d4 (Surr)	77		50 - 127
Toluene-d8 (Surr)	96		57 - 134

Lab Sample ID: LCSD 140-96224/34

Matrix: Air

Analysis Batch: 96224

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acetone	1.20	0.645		ug/Sample		54	20 - 191	6	50
Benzene	0.300	0.272		ug/Sample		91	68 - 128	8	22
Bromodichloromethane	0.300	0.248		ug/Sample		83	52 - 122	5	35
Bromoform	0.300	0.164		ug/Sample		55	40 - 120	7	50
Bromomethane	0.600	0.444		ug/Sample		74	40 - 187	12	35
1,3-Butadiene	0.600	0.552		ug/Sample		92	40 - 140	9	50
2-Butanone (MEK)	1.20	0.662		ug/Sample		55	20 - 150	1	50
Carbon tetrachloride	0.300	0.281		ug/Sample		94	67 - 135	9	23
Chloroform	0.300	0.270		ug/Sample		90	63 - 123	7	27
Dibromochloromethane	0.300	0.213		ug/Sample		71	50 - 120	0	43
1,2-Dibromoethane (EDB)	0.300	0.162		ug/Sample		54	20 - 120	2	43
Dichlorodifluoromethane	0.600	0.454		ug/Sample		76	25 - 146	9	42

Eurofins Knoxville

QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 140-96224/34

Matrix: Air

Analysis Batch: 96224

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2-Dichloroethane	0.300	0.222		ug/Sample		74	36 - 124	5	37
1,1-Dichloroethene	0.300	0.281		ug/Sample		94	77 - 131	10	22
1,2-Dichloropropane	0.300	0.255		ug/Sample		85	55 - 124	6	31
Ethylbenzene	0.300	0.253		ug/Sample		84	72 - 127	5	23
Cumene	0.300	0.263		ug/Sample		88	40 - 152	2	28
Mesitylene	0.300	0.239		ug/Sample		80	62 - 121	10	30
Methylene Chloride	0.300	0.253		ug/Sample		84	60 - 134	13	41
m,p-Xylene	0.300	0.258		ug/Sample		86	74 - 126	4	38
o-Xylene	0.300	0.244		ug/Sample		81	64 - 120	0	37
Styrene	0.300	0.241		ug/Sample		80	57 - 120	4	39
Tetrachloroethene	0.300	0.279		ug/Sample		93	80 - 133	8	24
Toluene	0.300	0.264		ug/Sample		88	70 - 120	8	22
trans-1,2-Dichloroethene	0.300	0.291		ug/Sample		97	78 - 128	9	23
1,1,1-Trichloroethane	0.300	0.272		ug/Sample		91	65 - 131	8	23
Trichloroethene	0.300	0.290		ug/Sample		97	80 - 141	9	32
Trichlorofluoromethane	0.600	0.499		ug/Sample		83	58 - 147	9	26
Trichlorotrifluoroethane	0.300	0.293		ug/Sample		98	40 - 140	9	50
Vinyl chloride	0.600	0.527		ug/Sample		88	64 - 142	10	33

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	79		50 - 122
Dibromofluoromethane (Surr)	106		50 - 134
1,2-Dichloroethane-d4 (Surr)	81		50 - 127
Toluene-d8 (Surr)	100		57 - 134

QC Association Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

GC/MS VOA

Analysis Batch: 96224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-39808-12	MEDIA CHECK A-2525 TENAX,A-2526 TENAX/C	Total/NA	Air	8260B	
MB 140-96224/6	Method Blank	Total/NA	Air	8260B	
LCS 140-96224/3	Lab Control Sample	Total/NA	Air	8260B	
LCSD 140-96224/34	Lab Control Sample Dup	Total/NA	Air	8260B	

Lab Chronicle

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

**Client Sample ID: MEDIA CHECK A-2525 TENAX,A-2526
TENAX/CHARCOAL**

Lab Sample ID: 140-39808-12

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	96224	02/17/25 18:22	BTB	EET KNX
Instrument ID: MX										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-96224/6

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	96224	02/17/25 16:00	BTB	EET KNX
Instrument ID: MX										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-96224/3

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	96224	02/17/25 13:17	BTB	EET KNX
Instrument ID: MX										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-96224/34

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	96224	02/17/25 14:43	BTB	EET KNX
Instrument ID: MX										

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Laboratory: Eurofins Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-27
ANAB	Dept. of Energy	L2311.01	02-13-27
ANAB	ISO/IEC 17025	L2311	02-13-25 *
Arkansas DEQ	State	88-0688	06-17-25
Colorado	State	TN00009	02-28-25
Connecticut	State	PH-0223	10-01-26
Florida	NELAP	E87177	06-30-25
Georgia (DW)	State	906	07-27-25
Hawaii	State	NA	07-27-25
Kansas	NELAP	E-10349	10-31-25
Kentucky (DW)	State	90101	12-31-25
Louisiana (All)	NELAP	03079	06-30-25
Louisiana (DW)	State	LA019	12-31-25
Maryland	State	277	03-31-26
Michigan	State	9933	07-27-25
Nevada	State	TN00009	07-31-25
New Hampshire	NELAP	2999	01-18-26
New Jersey	NELAP	TN001	06-30-25
New York	NELAP	10781	03-31-25
North Carolina (DW)	State	21705	07-31-25
North Carolina (WW/SW)	State	64	12-31-25
Oklahoma	State	9415	08-31-25
Oregon	NELAP	TNI0189	01-01-26
Pennsylvania	NELAP	68-00576	12-31-25
Tennessee	State	02014	07-28-25
Texas	NELAP	T104704380	08-31-25
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	525-22-279-18762	10-06-25
Utah	NELAP	TN00009	07-31-25
Virginia	NELAP	460176	09-14-25
Washington	State	C593	01-19-26
West Virginia (DW)	State	9955C	01-31-26
West Virginia DEP	State	345	04-30-25
Wisconsin	State	998044300	08-31-25

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Method Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	EET KNX

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-39808-12	MEDIA CHECK A-2525 TENAX,A-2526 TENAX/CHARCOAL	Air	12/02/24 00:00	12/09/24 12:30

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ANALYTICAL REPORT

PREPARED FOR

Attn: Chris Belore
Alliance Source Testing LLC
804 Southdown Road
Mississauga, Ontario L5J2Y4

Generated 2/19/2025 11:39:41 AM

JOB DESCRIPTION

ORTECH Reworld

JOB NUMBER

140-39808-2

Eurofins Knoxville

Job Notes

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Authorization



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Definitions/Glossary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Alliance Source Testing LLC
Project: ORTECH Reworld

Job ID: 140-39808-2

Job ID: 140-39808-2

Eurofins Knoxville

Job Narrative 140-39808-2

Receipt

The samples were received on 12/9/2024 12:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 13.7° C.

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: #1 APC OUTLET 1 1 A,B (140-39808-1), #1 APC OUTLET 2 2 A,B (140-39808-2), #1 APC OUTLET 3 3 A,B (140-39808-3), #1 APC OUTLET 4 4 A,B (140-39808-4), #1 APC OUTLET FIELD BLANK 5 A,B (140-39808-5), #2 APC OUTLET 1 10 A,B (140-39808-6), #2 APC OUTLET 2 11 A,B (140-39808-7), #2 APC OUTLET 3 12 A,B (140-39808-8), #2 APC OUTLET 4 13 A,B (140-39808-9), #2 APC OUTLET FIELD BLANK 14 A,B (140-39808-10), #2 APC OUTLET TRIP BLANK 15 A,B (140-39808-11) and MEDIA CHECK A-2525 TENAX,A-2526 TENAX/CHARCOAL (140-39808-12). This does not meet regulatory requirements. The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.

The following samples were received at the laboratory without a sample collection time documented on the chain of custody: #2 APC OUTLET TRIP BLANK 15 A,B (140-39808-11). Date on container used 12-4-24.

The following samples were received at the laboratory without a sample collection time documented on the chain of custody: #1 APC OUTLET 1 1 A,B (140-39808-1), #1 APC OUTLET 2 2 A,B (140-39808-2), #1 APC OUTLET 3 3 A,B (140-39808-3), #1 APC OUTLET 4 4 A,B (140-39808-4), #1 APC OUTLET FIELD BLANK 5 A,B (140-39808-5), #2 APC OUTLET 1 10 A,B (140-39808-6), #2 APC OUTLET 2 11 A,B (140-39808-7), #2 APC OUTLET 3 12 A,B (140-39808-8), #2 APC OUTLET 4 13 A,B (140-39808-9) and #2 APC OUTLET FIELD BLANK 14 A,B (140-39808-10). Date on container used 12-2-24.

GC/MS VOA

Volatile Organic Sampling Train (VOST) Preparation and Analysis: VOST tubes and condensate samples were analyzed for the volatile organic target analytes by purge and trap GCMS using Eurofins Knoxville standard operating procedures KNOX-MS-0011 and KNOX-MS-0015, based on the following methods:

- SW-846 5041A, "Analysis for Desorption of Sorbent Cartridges from Volatile Organic Sampling Train (VOST)"
- SW-846 8260B, "Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)"

Each tube or tube pair is prepared by spiking a known amount of surrogate onto the media using a flash vaporization device. Volatile compounds are introduced into the gas chromatograph by thermal desorption of the analytes from the VOST tube using a clamshell oven and a purge and trap device. VOST condensates are spiked with surrogates and purged directly. The components are separated using the chromatograph and detected using a mass spectrometer, which provides both qualitative and quantitative information.

Sample results were calculated using the following equations:

VOST result, µg = (On column concentration, µg/L) × (purge volume, L)

Condensate result, µg/sample = (On column concentration, µg/L) × (Condensate volume received, L) × Dilution Factor

Method 8260B: The following samples were analyzed outside of analytical holding time due to the lab error: MEDIA CHECK A-2525 TENAX,A-2526 TENAX/CHARCOAL (140-39808-12).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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Client Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Client Sample ID: MEDIA CHECK A-2525 TENAX,A-2526

Lab Sample ID: 140-39808-12

TENAX/CHARCOAL

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Sample Container: Tube

Method: SW846 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND	H	0.25	0.15	ug/Sample			02/17/25 18:22	1
Benzene	ND	H	0.010	0.0036	ug/Sample			02/17/25 18:22	1
Bromodichloromethane	ND	H	0.010	0.0017	ug/Sample			02/17/25 18:22	1
Bromoform	ND	H	0.025	0.0055	ug/Sample			02/17/25 18:22	1
Bromomethane	ND	H	0.050	0.028	ug/Sample			02/17/25 18:22	1
1,3-Butadiene	ND	H	0.050	0.029	ug/Sample			02/17/25 18:22	1
2-Butanone (MEK)	ND	H	0.10	0.066	ug/Sample			02/17/25 18:22	1
Carbon tetrachloride	ND	H	0.010	0.0075	ug/Sample			02/17/25 18:22	1
Chloroform	ND	H	0.010	0.0081	ug/Sample			02/17/25 18:22	1
Dibromochloromethane	ND	H	0.025	0.0037	ug/Sample			02/17/25 18:22	1
1,2-Dibromoethane (EDB)	ND	H	0.025	0.0073	ug/Sample			02/17/25 18:22	1
Dichlorodifluoromethane	ND	H	0.025	0.013	ug/Sample			02/17/25 18:22	1
1,2-Dichloroethane	ND	H	0.010	0.0060	ug/Sample			02/17/25 18:22	1
1,1-Dichloroethene	ND	H	0.010	0.0043	ug/Sample			02/17/25 18:22	1
1,2-Dichloropropane	ND	H	0.010	0.0018	ug/Sample			02/17/25 18:22	1
Ethylbenzene	ND	H	0.010	0.0028	ug/Sample			02/17/25 18:22	1
Cumene	ND	H	0.010	0.0030	ug/Sample			02/17/25 18:22	1
Mesitylene	ND	H	0.010	0.0026	ug/Sample			02/17/25 18:22	1
Methylene Chloride	0.12	H	0.10	0.086	ug/Sample			02/17/25 18:22	1
m,p-Xylene	ND	H	0.020	0.0070	ug/Sample			02/17/25 18:22	1
o-Xylene	ND	H	0.010	0.0035	ug/Sample			02/17/25 18:22	1
Styrene	ND	H	0.010	0.0066	ug/Sample			02/17/25 18:22	1
Tetrachloroethene	ND	H	0.010	0.0060	ug/Sample			02/17/25 18:22	1
Toluene	ND	H	0.025	0.012	ug/Sample			02/17/25 18:22	1
trans-1,2-Dichloroethene	ND	H	0.010	0.0037	ug/Sample			02/17/25 18:22	1
1,1,1-Trichloroethane	ND	H	0.025	0.0097	ug/Sample			02/17/25 18:22	1
Trichloroethene	ND	H	0.010	0.0066	ug/Sample			02/17/25 18:22	1
Trichlorofluoromethane	ND	H	0.050	0.0053	ug/Sample			02/17/25 18:22	1
Trichlorotrifluoroethane	ND	H	0.050	0.0095	ug/Sample			02/17/25 18:22	1
Vinyl chloride	ND	H	0.025	0.0064	ug/Sample			02/17/25 18:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	75		50 - 122		02/17/25 18:22	1
Dibromofluoromethane (Surr)	103		50 - 134		02/17/25 18:22	1
1,2-Dichloroethane-d4 (Surr)	81		50 - 127		02/17/25 18:22	1
Toluene-d8 (Surr)	96		57 - 134		02/17/25 18:22	1

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Default Detection Limits

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	RL	MDL
1,1,1-Trichloroethane	0.025 ug/Sample	0.0097 ug/Sample
1,1-Dichloroethene	0.010 ug/Sample	0.0043 ug/Sample
1,2-Dibromoethane (EDB)	0.025 ug/Sample	0.0073 ug/Sample
1,2-Dichloroethane	0.010 ug/Sample	0.0060 ug/Sample
1,2-Dichloropropane	0.010 ug/Sample	0.0018 ug/Sample
1,3-Butadiene	0.050 ug/Sample	0.029 ug/Sample
2-Butanone (MEK)	0.10 ug/Sample	0.066 ug/Sample
Acetone	0.25 ug/Sample	0.15 ug/Sample
Benzene	0.010 ug/Sample	0.0036 ug/Sample
Bromodichloromethane	0.010 ug/Sample	0.0017 ug/Sample
Bromoform	0.025 ug/Sample	0.0055 ug/Sample
Bromomethane	0.050 ug/Sample	0.028 ug/Sample
Carbon tetrachloride	0.010 ug/Sample	0.0075 ug/Sample
Chloroform	0.010 ug/Sample	0.0081 ug/Sample
Cumene	0.010 ug/Sample	0.0030 ug/Sample
Dibromochloromethane	0.025 ug/Sample	0.0037 ug/Sample
Dichlorodifluoromethane	0.025 ug/Sample	0.013 ug/Sample
Ethylbenzene	0.010 ug/Sample	0.0028 ug/Sample
m,p-Xylene	0.020 ug/Sample	0.0070 ug/Sample
Mesitylene	0.010 ug/Sample	0.0026 ug/Sample
Methylene Chloride	0.10 ug/Sample	0.086 ug/Sample
o-Xylene	0.010 ug/Sample	0.0035 ug/Sample
Styrene	0.010 ug/Sample	0.0066 ug/Sample
Tetrachloroethene	0.010 ug/Sample	0.0060 ug/Sample
Toluene	0.025 ug/Sample	0.012 ug/Sample
trans-1,2-Dichloroethene	0.010 ug/Sample	0.0037 ug/Sample
Trichloroethene	0.010 ug/Sample	0.0066 ug/Sample
Trichlorofluoromethane	0.050 ug/Sample	0.0053 ug/Sample
Trichlorotrifluoroethane	0.050 ug/Sample	0.0095 ug/Sample
Vinyl chloride	0.025 ug/Sample	0.0064 ug/Sample

Surrogate Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method: 8260B - Volatile Organic Compounds (GC/MS)
Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	BFB	DBFM	DCA	TOL
		(50-122)	(50-134)	(50-127)	(57-134)
140-39808-12	MEDIA CHECK A-2525 TENAX,	75	103	81	96
LCS 140-96224/3	Lab Control Sample	66	101	77	96
LCSD 140-96224/34	Lab Control Sample Dup	79	106	81	100
MB 140-96224/6	Method Blank	56	104	84	88
Surrogate Legend					
BFB = 4-Bromofluorobenzene (Surr)					
DBFM = Dibromofluoromethane (Surr)					
DCA = 1,2-Dichloroethane-d4 (Surr)					
TOL = Toluene-d8 (Surr)					

QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 140-96224/6

Matrix: Air

Analysis Batch: 96224

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		0.25	0.15	ug/Sample			02/17/25 16:00	1
Benzene	ND		0.010	0.0036	ug/Sample			02/17/25 16:00	1
Bromodichloromethane	ND		0.010	0.0017	ug/Sample			02/17/25 16:00	1
Bromoform	ND		0.025	0.0055	ug/Sample			02/17/25 16:00	1
Bromomethane	ND		0.050	0.028	ug/Sample			02/17/25 16:00	1
1,3-Butadiene	ND		0.050	0.029	ug/Sample			02/17/25 16:00	1
2-Butanone (MEK)	ND		0.10	0.066	ug/Sample			02/17/25 16:00	1
Carbon tetrachloride	ND		0.010	0.0075	ug/Sample			02/17/25 16:00	1
Chloroform	ND		0.010	0.0081	ug/Sample			02/17/25 16:00	1
Dibromochloromethane	ND		0.025	0.0037	ug/Sample			02/17/25 16:00	1
1,2-Dibromoethane (EDB)	ND		0.025	0.0073	ug/Sample			02/17/25 16:00	1
Dichlorodifluoromethane	ND		0.025	0.013	ug/Sample			02/17/25 16:00	1
1,2-Dichloroethane	ND		0.010	0.0060	ug/Sample			02/17/25 16:00	1
1,1-Dichloroethene	ND		0.010	0.0043	ug/Sample			02/17/25 16:00	1
1,2-Dichloropropane	ND		0.010	0.0018	ug/Sample			02/17/25 16:00	1
Ethylbenzene	ND		0.010	0.0028	ug/Sample			02/17/25 16:00	1
Cumene	ND		0.010	0.0030	ug/Sample			02/17/25 16:00	1
Mesitylene	ND		0.010	0.0026	ug/Sample			02/17/25 16:00	1
Methylene Chloride	ND		0.10	0.086	ug/Sample			02/17/25 16:00	1
m,p-Xylene	ND		0.020	0.0070	ug/Sample			02/17/25 16:00	1
o-Xylene	ND		0.010	0.0035	ug/Sample			02/17/25 16:00	1
Styrene	ND		0.010	0.0066	ug/Sample			02/17/25 16:00	1
Tetrachloroethene	ND		0.010	0.0060	ug/Sample			02/17/25 16:00	1
Toluene	ND		0.025	0.012	ug/Sample			02/17/25 16:00	1
trans-1,2-Dichloroethene	ND		0.010	0.0037	ug/Sample			02/17/25 16:00	1
1,1,1-Trichloroethane	ND		0.025	0.0097	ug/Sample			02/17/25 16:00	1
Trichloroethene	ND		0.010	0.0066	ug/Sample			02/17/25 16:00	1
Trichlorofluoromethane	ND		0.050	0.0053	ug/Sample			02/17/25 16:00	1
Trichlorotrifluoroethane	ND		0.050	0.0095	ug/Sample			02/17/25 16:00	1
Vinyl chloride	ND		0.025	0.0064	ug/Sample			02/17/25 16:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	56		50 - 122		02/17/25 16:00	1
Dibromofluoromethane (Surr)	104		50 - 134		02/17/25 16:00	1
1,2-Dichloroethane-d4 (Surr)	84		50 - 127		02/17/25 16:00	1
Toluene-d8 (Surr)	88		57 - 134		02/17/25 16:00	1

Lab Sample ID: LCS 140-96224/3

Matrix: Air

Analysis Batch: 96224

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	1.20	0.683		ug/Sample		57	20 - 191
Benzene	0.300	0.296		ug/Sample		99	68 - 128
Bromodichloromethane	0.300	0.261		ug/Sample		87	52 - 122
Bromoform	0.300	0.153		ug/Sample		51	40 - 120
Bromomethane	0.600	0.502		ug/Sample		84	40 - 187
1,3-Butadiene	0.600	0.602		ug/Sample		100	40 - 140

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QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 140-96224/3

Matrix: Air

Analysis Batch: 96224

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2-Butanone (MEK)	1.20	0.655		ug/Sample		55	20 - 150
Carbon tetrachloride	0.300	0.307		ug/Sample		102	67 - 135
Chloroform	0.300	0.288		ug/Sample		96	63 - 123
Dibromochloromethane	0.300	0.212		ug/Sample		71	50 - 120
1,2-Dibromoethane (EDB)	0.300	0.158		ug/Sample		53	20 - 120
Dichlorodifluoromethane	0.600	0.498		ug/Sample		83	25 - 146
1,2-Dichloroethane	0.300	0.235		ug/Sample		78	36 - 124
1,1-Dichloroethene	0.300	0.311		ug/Sample		104	77 - 131
1,2-Dichloropropane	0.300	0.271		ug/Sample		90	55 - 124
Ethylbenzene	0.300	0.266		ug/Sample		89	72 - 127
Cumene	0.300	0.258		ug/Sample		86	40 - 152
Mesitylene	0.300	0.215		ug/Sample		72	62 - 121
Methylene Chloride	0.300	0.288		ug/Sample		96	60 - 134
m,p-Xylene	0.300	0.269		ug/Sample		90	74 - 126
o-Xylene	0.300	0.243		ug/Sample		81	64 - 120
Styrene	0.300	0.233		ug/Sample		78	57 - 120
Tetrachloroethene	0.300	0.303		ug/Sample		101	80 - 133
Toluene	0.300	0.285		ug/Sample		95	70 - 120
trans-1,2-Dichloroethene	0.300	0.319		ug/Sample		106	78 - 128
1,1,1-Trichloroethane	0.300	0.294		ug/Sample		98	65 - 131
Trichloroethene	0.300	0.318		ug/Sample		106	80 - 141
Trichlorofluoromethane	0.600	0.545		ug/Sample		91	58 - 147
Trichlorotrifluoroethane	0.300	0.320		ug/Sample		107	40 - 140
Vinyl chloride	0.600	0.584		ug/Sample		97	64 - 142

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	66		50 - 122
Dibromofluoromethane (Surr)	101		50 - 134
1,2-Dichloroethane-d4 (Surr)	77		50 - 127
Toluene-d8 (Surr)	96		57 - 134

Lab Sample ID: LCSD 140-96224/34

Matrix: Air

Analysis Batch: 96224

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acetone	1.20	0.645		ug/Sample		54	20 - 191	6	50
Benzene	0.300	0.272		ug/Sample		91	68 - 128	8	22
Bromodichloromethane	0.300	0.248		ug/Sample		83	52 - 122	5	35
Bromoform	0.300	0.164		ug/Sample		55	40 - 120	7	50
Bromomethane	0.600	0.444		ug/Sample		74	40 - 187	12	35
1,3-Butadiene	0.600	0.552		ug/Sample		92	40 - 140	9	50
2-Butanone (MEK)	1.20	0.662		ug/Sample		55	20 - 150	1	50
Carbon tetrachloride	0.300	0.281		ug/Sample		94	67 - 135	9	23
Chloroform	0.300	0.270		ug/Sample		90	63 - 123	7	27
Dibromochloromethane	0.300	0.213		ug/Sample		71	50 - 120	0	43
1,2-Dibromoethane (EDB)	0.300	0.162		ug/Sample		54	20 - 120	2	43
Dichlorodifluoromethane	0.600	0.454		ug/Sample		76	25 - 146	9	42

Eurofins Knoxville

QC Sample Results

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 140-96224/34

Matrix: Air

Analysis Batch: 96224

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2-Dichloroethane	0.300	0.222		ug/Sample		74	36 - 124	5	37
1,1-Dichloroethene	0.300	0.281		ug/Sample		94	77 - 131	10	22
1,2-Dichloropropane	0.300	0.255		ug/Sample		85	55 - 124	6	31
Ethylbenzene	0.300	0.253		ug/Sample		84	72 - 127	5	23
Cumene	0.300	0.263		ug/Sample		88	40 - 152	2	28
Mesitylene	0.300	0.239		ug/Sample		80	62 - 121	10	30
Methylene Chloride	0.300	0.253		ug/Sample		84	60 - 134	13	41
m,p-Xylene	0.300	0.258		ug/Sample		86	74 - 126	4	38
o-Xylene	0.300	0.244		ug/Sample		81	64 - 120	0	37
Styrene	0.300	0.241		ug/Sample		80	57 - 120	4	39
Tetrachloroethene	0.300	0.279		ug/Sample		93	80 - 133	8	24
Toluene	0.300	0.264		ug/Sample		88	70 - 120	8	22
trans-1,2-Dichloroethene	0.300	0.291		ug/Sample		97	78 - 128	9	23
1,1,1-Trichloroethane	0.300	0.272		ug/Sample		91	65 - 131	8	23
Trichloroethene	0.300	0.290		ug/Sample		97	80 - 141	9	32
Trichlorofluoromethane	0.600	0.499		ug/Sample		83	58 - 147	9	26
Trichlorotrifluoroethane	0.300	0.293		ug/Sample		98	40 - 140	9	50
Vinyl chloride	0.600	0.527		ug/Sample		88	64 - 142	10	33

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
4-Bromofluorobenzene (Surr)	79		50 - 122
Dibromofluoromethane (Surr)	106		50 - 134
1,2-Dichloroethane-d4 (Surr)	81		50 - 127
Toluene-d8 (Surr)	100		57 - 134

QC Association Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

GC/MS VOA

Analysis Batch: 96224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-39808-12	MEDIA CHECK A-2525 TENAX,A-2526 TENAX/C	Total/NA	Air	8260B	
MB 140-96224/6	Method Blank	Total/NA	Air	8260B	
LCS 140-96224/3	Lab Control Sample	Total/NA	Air	8260B	
LCSD 140-96224/34	Lab Control Sample Dup	Total/NA	Air	8260B	

Lab Chronicle

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

**Client Sample ID: MEDIA CHECK A-2525 TENAX,A-2526
TENAX/CHARCOAL**

Lab Sample ID: 140-39808-12

Date Collected: 12/02/24 00:00

Matrix: Air

Date Received: 12/09/24 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	96224	02/17/25 18:22	BTB	EET KNX
Instrument ID: MX										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-96224/6

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	96224	02/17/25 16:00	BTB	EET KNX
Instrument ID: MX										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-96224/3

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	96224	02/17/25 13:17	BTB	EET KNX
Instrument ID: MX										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-96224/34

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	1 Sample	25 mL	96224	02/17/25 14:43	BTB	EET KNX
Instrument ID: MX										

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Laboratory: Eurofins Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-27
ANAB	Dept. of Energy	L2311.01	02-13-27
ANAB	ISO/IEC 17025	L2311	02-13-25 *
Arkansas DEQ	State	88-0688	06-17-25
Colorado	State	TN00009	02-28-25
Connecticut	State	PH-0223	10-01-26
Florida	NELAP	E87177	06-30-25
Georgia (DW)	State	906	07-27-25
Hawaii	State	NA	07-27-25
Kansas	NELAP	E-10349	10-31-25
Kentucky (DW)	State	90101	12-31-25
Louisiana (All)	NELAP	03079	06-30-25
Louisiana (DW)	State	LA019	12-31-25
Maryland	State	277	03-31-26
Michigan	State	9933	07-27-25
Nevada	State	TN00009	07-31-25
New Hampshire	NELAP	2999	01-18-26
New Jersey	NELAP	TN001	06-30-25
New York	NELAP	10781	03-31-25
North Carolina (DW)	State	21705	07-31-25
North Carolina (WW/SW)	State	64	12-31-25
Oklahoma	State	9415	08-31-25
Oregon	NELAP	TNI0189	01-01-26
Pennsylvania	NELAP	68-00576	12-31-25
Tennessee	State	02014	07-28-25
Texas	NELAP	T104704380	08-31-25
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	525-22-279-18762	10-06-25
Utah	NELAP	TN00009	07-31-25
Virginia	NELAP	460176	09-14-25
Washington	State	C593	01-19-26
West Virginia (DW)	State	9955C	01-31-26
West Virginia DEP	State	345	04-30-25
Wisconsin	State	998044300	08-31-25

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins Knoxville

Method Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	EET KNX

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: Alliance Source Testing LLC
Project/Site: ORTECH Reworld

Job ID: 140-39808-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-39808-12	MEDIA CHECK A-2525 TENAX,A-2526 TENAX/CHARCOAL	Air	12/02/24 00:00	12/09/24 12:30

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APPENDIX 21

Equipment Calibration Data (13 pages)

ORTECH Consulting Inc. Pitot Tube Calibration

Date	January 25, 2024
Probe/Pitot ID	15A
MII Number	B03775
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	Stacey Cunningham

$$C_p = C_{pstd} \cdot \sqrt{\frac{P_{std}}{P_s}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H ₂ O P _{std}	Velocity Head S-Type Pitot in. H ₂ O P _s	S-Type Pitot Coefficient C _{p_s}	Deviation From The Mean
With Nozzle	7.74	0.145	0.205	0.841	0.0012
(0.25")	9.54	0.220	0.310	0.842	0.0026
	11.68	0.330	0.470	0.837	0.0019
	13.64	0.450	0.630	0.845	0.0053
	15.88	0.610	0.880	0.832	0.0072
			Mean	0.839	0.0037

Without Nozzle	8.13	0.160	0.230	0.834	0.0042
	9.96	0.240	0.340	0.840	0.0019
	11.68	0.330	0.460	0.847	0.0087
	13.64	0.450	0.640	0.838	0.0003
	16.39	0.650	0.940	0.831	0.0067
			Mean	0.838	0.0044

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	January 26, 2024
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	Stacey Cunningham

$C_p = C_{pstd} \cdot \sqrt{\frac{P_{std}}{P_s}}$

Nozzle Size inches	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H ₂ O Pstd	Velocity Head S-Type Pitot in. H ₂ O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
NA	7.88	0.150	0.210	0.845	0.0015
	9.54	0.220	0.310	0.842	0.0013
	11.14	0.300	0.420	0.845	0.0015
	13.49	0.440	0.620	0.842	0.0013
	16.27	0.640	0.900	0.843	0.0004
			Mean	0.843	0.0012

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 Consulting Inc.
Pitot Tube Calibration

Date	January 25, 2024
Probe/Pitot ID	S4
MII Number	B03765
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	Stacey Cunningham

$$C_p = C_{pstd} \cdot \sqrt{\frac{P_{std}}{P_s}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H ₂ O Pstd	Velocity Head S-Type Pitot in. H ₂ O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	8.01	0.155	0.220	0.839	0.0035
(0.25")	9.86	0.235	0.330	0.843	0.0010
	12.03	0.350	0.490	0.845	0.0023
	13.94	0.470	0.670	0.837	0.0053
	17.25	0.720	1.000	0.848	0.0056
			Mean	0.842	0.0035

Without Nozzle	7.88	0.150	0.210	0.845	0.0069
	9.96	0.240	0.340	0.840	0.0020
	11.94	0.345	0.490	0.839	0.0009
	13.87	0.465	0.670	0.833	0.0051
	16.52	0.660	0.950	0.833	0.0047
			Mean	0.838	0.0039

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:

The Cp of Standard Pitots must be in the range of 0.99 ±0.01.

For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated.

(Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	January 25, 2024
Probe/Pitot ID	S11
MII Number	B03772
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	03-SOP-007

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	Stacey Cunningham

$$C_p = C_{pstd} \cdot \sqrt{\frac{P_{std}}{P_s}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H ₂ O Pstd	Velocity Head S-Type Pitot in. H ₂ O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0001
(0.25")	9.75	0.230	0.320	0.847	0.0027
	11.59	0.325	0.460	0.840	0.0045
	13.49	0.440	0.620	0.842	0.0027
	16.20	0.635	0.880	0.849	0.0044
			Mean	0.845	0.0029

Without Nozzle	7.88	0.150	0.210	0.845	0.0012
	9.75	0.230	0.320	0.847	0.0038
	11.32	0.310	0.440	0.839	0.0046
	13.64	0.450	0.640	0.838	0.0055
	16.01	0.620	0.860	0.849	0.0051
			Mean	0.844	0.0040

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).

	DGM Calibration-Orifices	Document ID	620.004
		Revision	24.0
		Effective Date	1/31/24
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Equipment Detail - Dry Gas Meter

Console ID: TEAM 1
 Meter S/N: COE 20094
 Critical Orifice S/N: 2035s

Calibration Detail

Initial Barometric Pressure, in. Hg	(P _b)	29.74					
Final Barometric Pressure, in. Hg	(P _{bF})	29.74					
Average Barometric Pressure, in. Hg	(P _b)	29.74					
Critical Orifice ID	(Y)	2035-30	2035-30	2035-26	2035-26	2035-17	2035-17
K' Factor, ft ³ -R ^{1/2} / in. WC-min	(K')	0.8244	0.8244	0.7036	0.704	0.4672	0.467
Vacuum Pressure, in. Hg	(V _p)	15.5	15.5	16.5	16.5	19.5	19.5
Initial DGM Volume, ft ³	(V _m)	447.920	458.480	469.060	478.090	487.140	493.150
Final DGM Volume, ft ³	(V _{mF})	458.480	469.060	478.090	487.140	493.150	499.160
Total DGM Volume, ft ³	(V _m)	10.560	10.580	9.030	9.050	6.010	6.010
Ambient Temperature, °F	(T _a)	71	71	71	71	71	71
Initial DGM Temperature, °F	(T _m)	64	67	69	71	72	72
Final DGM Temperature, °F	(T _{mF})	67	69	71	72	72	72
Average DGM Temperature, °F	(T _m)	66	68	70	72	72	72
Elapsed Time	(Θ)	10.00	10.00	10.00	10.00	10.00	10.00
Meter Orifice Pressure, in. WC	(ΔH)	3.70	3.70	2.70	2.70	1.20	1.20
Standard Meter volume, ft ³	(V _{mstd})	10.6449	10.6145	9.0032	8.9976	5.9476	5.9476
Standard Critical Orifice Volume, ft ³	(V _{cr})	10.6459	10.6459	9.0859	9.0859	6.0332	6.0332
Meter Correction Factor	(Y)	1.000	1.003	1.009	1.010	1.014	1.014
Tolerance	--	0.008	0.006	0.001	0.001	0.006	0.006
Orifice Calibration Value	(ΔH @)	1.851	1.842	1.834	1.829	1.835	1.835
Tolerance	--	0.013	0.005	0.004	0.009	0.003	0.003
Orifice Cal Check	--	1.27		0.80		1.28	
Meter Correction Factor	(Y)	1.008					
Orifice Calibration Value	(ΔH @)	1.838					
Positive Pressure Leak Check		Yes					

Equipment Detail - Thermocouple Sensor

Reference Calibrator Make: Fluke
 Reference Calibrator Model: 714
 Reference Calibrator S/N: 2923036 - COE 20024

Calibration Detail

Reference Temp.		Display Temp.		Accuracy	Absolute Difference
°F	°R	°F	°R	%	°F
32	492	32	492	0.0	0
68	528	67	527	0.2	1
100	560	100	560	0.0	0
200	660	201	661	-0.2	1
250	710	252	712	-0.3	2
300	760	302	762	-0.3	2
400	860	400	860	0.0	0
500	960	500	960	0.0	0
600	1,060	602	1,062	-0.2	2
700	1,160	701	1,161	-0.1	1
800	1,260	801	1,261	-0.1	1
900	1,360	900	1,360	0.0	0
1,000	1,460	1,001	1,461	-0.1	1
1,100	1,560	1,102	1,562	-0.1	2
1,200	1,660	1,201	1,661	-0.1	1

Personnel

Calibration By: Brayden Pacheco
 Calibration Date: 8/22/2024
 Reviewed By: Stacey Cunningham

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Equipment Detail - Dry Gas Meter

Console ID: Team 2
 Meter S/N: COE20092
 Critical Orifice S/N: 2035s

Calibration Detail

Initial Barometric Pressure, in. Hg (P _b)		29.18					
Final Barometric Pressure, in. Hg (P _b _F)		29.21					
Average Barometric Pressure, in. Hg (P _b)		29.20					
Critical Orifice ID (Y)	2035-26	2035-26	2035-20	2035-20	2035-17	2035-17	
K' Factor, ft ³ -R ^{1/2} / in. WC-min (K')	0.7036	0.7036	0.5459	0.546	0.4672	0.467	
Vacuum Pressure, in. Hg (V _P)	18.0	18.0	19.5	19.5	22.5	22.5	
Initial DGM Volume, ft ³ (V _m)	678.70	688.30	698.70	706.10	714.00	720.40	
Final DGM Volume, ft ³ (V _m _F)	687.96	697.54	705.87	713.30	720.20	726.50	
Total DGM Volume, ft ³ (V _m)	9.260	9.240	7.170	7.200	6.200	6.100	
Ambient Temperature, °F (T _a)	73	73	72	72	72	72	
Initial DGM Temperature, °F (T _m)	76	76	75	75	75	75	
Final DGM Temperature, °F (T _m _F)	77	76	77	75	75	75	
Average DGM Temperature, °F (T _m)	77	76	76	75	75	75	
Elapsed Time (Θ)	10.0	10.0	10.0	10.0	10.0	10.0	
Meter Orifice Pressure, in. WC (ΔH)	2.60	2.60	1.60	1.60	1.20	1.20	
Standard Meter volume, ft ³ (V _{mstd})	8.9523	8.9455	6.9208	6.9661	5.9897	5.8959	
Standard Critical Orifice Volume, ft ³ (V _{cr})	8.9043	8.9043	6.9118	6.9118	5.9154	5.9154	
Meter Correction Factor (Y)	0.995	0.995	0.999	0.992	0.988	1.003	
Tolerance --	0.001	0.000	0.003	0.003	0.008	0.008	
Orifice Calibration Value (ΔH @)	1.783	1.786	1.818	1.823	1.864	1.864	
Tolerance --	0.040	0.037	0.005	0.000	0.041	0.041	
Orifice Cal Check --	0.04		0.04		0.04		
Meter Correction Factor (Y)	0.995						
Orifice Calibration Value (ΔH @)	1.823						
Positive Pressure Leak Check	Yes						

Equipment Detail - Thermocouple Sensor

Reference Calibrator Make: Fluke
 Reference Calibrator Model: 714
 Reference Calibrator S/N: 2923036 - COE 20024

Calibration Detail

Reference Temp.		Display Temp.		Accuracy	Absolute Difference
°F	°R	°F	°R	%	°F
32	492	32	492	0.0	0
68	528	68	528	0.0	0
100	560	100	560	0.0	0
200	660	201	661	-0.2	1
250	710	251	711	-0.1	1
300	760	302	762	-0.3	2
400	860	400	860	0.0	0
500	960	499	959	0.1	1
600	1,060	600	1,060	0.0	0
700	1,160	701	1,161	-0.1	1
800	1,260	801	1,261	-0.1	1
900	1,360	901	1,361	-0.1	1
1,000	1,460	1,001	1,461	-0.1	1
1,100	1,560	1,102	1,562	-0.1	2
1,200	1,660	1,202	1,662	-0.1	2

Personnel

Calibration By: David Utley
 Calibration Date: 7/10/2024
 Reviewed By: Stacey Cunningham

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Equipment Detail - Dry Gas Meter

Console ID: TEAM 4
 Meter S/N: COE 20090
 Critical Orifice S/N: 2035s

Calibration Detail

Initial Barometric Pressure, in. Hg	(P _b)	29.88					
Final Barometric Pressure, in. Hg	(P _{bF})	29.88					
Average Barometric Pressure, in. Hg	(P _b)	29.88					
Critical Orifice ID	(Y)	2035-30	2035-30	2035-26	2035-26	2035-17	2035-17
K' Factor, ft ³ ·R ^{1/2} / in. WC·min	(K')	0.8244	0.8244	0.7036	0.704	0.4672	0.467
Vacuum Pressure, in. Hg	(V _p)	19.0	19.0	21.0	21.0	23.0	23.0
Initial DGM Volume, ft ³	(V _m)	91.540	2.160	13.400	34.100	79.450	85.460
Final DGM Volume, ft ³	(V _{mF})	102.160	12.810	33.490	43.230	85.460	91.500
Total DGM Volume, ft ³	(V _m)	10.620	10.650	20.090	9.130	6.010	6.040
Ambient Temperature, °F	(T _a)	73	73	73	73	73	73
Initial DGM Temperature, °F	(T _m)	73	75	76	77	73	74
Final DGM Temperature, °F	(T _{mF})	75	76	77	76	74	74
Average DGM Temperature, °F	(T _m)	74	75	76	77	74	74
Elapsed Time	(Θ)	10.00	10.00	22.00	10.00	10.00	10.00
Meter Orifice Pressure, in. WC	(ΔH)	3.70	3.70	2.70	2.70	1.20	1.20
Standard Meter volume, ft ³	(V _{mstd})	10.5840	10.5891	19.8893	9.0346	5.9587	5.9828
Standard Critical Orifice Volume, ft ³	(V _{cr})	10.6729	10.6729	20.0397	9.1090	6.0513	6.0485
Meter Correction Factor	(Y)	1.008	1.008	1.008	1.008	1.016	1.011
Tolerance	--	0.001	0.002	0.002	0.002	0.006	0.001
Orifice Calibration Value	(ΔH @)	1.821	1.817	1.812	1.811	1.828	1.828
Tolerance	--	0.002	0.003	0.007	0.008	0.008	0.008
Orifice Cal Check	--	0.50		0.53		0.53	
Meter Correction Factor	(Y)	1.010					
Orifice Calibration Value	(ΔH @)	1.819					
Positive Pressure Leak Check		Yes					

Equipment Detail - Thermocouple Sensor

Reference Calibrator Make: Fluke
 Reference Calibrator Model: 714
 Reference Calibrator S/N: 2923036 - COE 20024

Calibration Detail

Reference Temp.		Display Temp.		Accuracy	Absolute Difference
°F	°R	°F	°R	%	°F
32	492	32	492	0.0	0
68	528	67	527	0.2	1
100	560	99	559	0.2	1
200	660	200	660	0.0	0
250	710	251	711	-0.1	1
300	760	301	761	-0.1	1
400	860	399	859	0.1	1
500	960	498	958	0.2	2
600	1,060	599	1,059	0.1	1
700	1,160	700	1,160	0.0	0
800	1,260	800	1,260	0.0	0
900	1,360	900	1,360	0.0	0
1,000	1,460	1,000	1,460	0.0	0
1,100	1,560	1,100	1,560	0.0	0
1,200	1,660	1,200	1,660	0.0	0

Personnel

Calibration By: Brayden Pacheco
 Calibration Date: 9/3/2024
 Reviewed By: Stacey Cunningham

	Low Volume DGM Calibration-Orifices	Document ID	620.005
		Revision	24.0
		Effective Date	1-31-24
Issuing Department	Tech Services	Page	1 of 1
Low Volume Dry Gas Meter Calibration			
Console ID	--	Vost 1	
Meter S/N	--	M05498	
Critical Orifice S/N	--	CO-2807	
Initial Barometric Pressure, in. Hg	(P _{bi})	29.80	
Final Barometric Pressure, in. Hg	(P _{bf})	29.77	
Average Barometric Pressure, in. Hg	(P _b)	29.785	
Orifice Nominal Flow, lpm	(Q)	0.54	1.04
Run No.	--	1	2
K' Factor, L·R ^{1/2} / in. WC·min	(K')	0.4256	0.4256
Vacuum Pressure, in. Hg	(V _p)	21.0	21.0
Initial DGM Volume, L	(V _{mi})	15.400	21.100
Final DGM Volume, L	(V _{mf})	21.100	26.800
Total DGM Volume, L	(V _m)	5.700	5.700
Ambient Temperature, °F	(T _a)	74	74
Initial Inlet DGM Temperature, °F	(T _{mi})	81	81
Final Inlet DGM Temperature, °F	(T _{fi})	81	81
Initial Outlet DGM Temperature, °F	(T _{mo})	81	81
Final Outlet DGM Temperature, °F	(T _{fo})	81	81
Average Outlet DGM Temperature, °F	(T _m)	81	81
Elapsed Time	(Θ)	10.00	10.00
Meter Orifice Pressure, in. WC	(ΔH)	1.20	1.20
Standard Meter volume, L	(V _{mstd})	5.5594	5.5594
Standard Critical Orifice Volume, L	(V _{cr})	5.4857	5.4857
Meter Correction Factor	(Y)	0.9867	0.9867
Tolerance	--	0.00%	0.00%
Orifice Cal Check	--	0.31	0.31
Average Meter Correction Factor	(Y)	0.9867	0.9837
Meter Correction Factor	(Y)	0.9848	

Reference Calibrator Make		Fluke			
Reference Calibrator Model		714			
Reference Calibrator S/N		COE 20024			
Reference Temp.		Display Temp.		Accuracy	Absolute Difference
°F	°R	°F	°R	%	°F
0	460	0	460	0.0	0
68	528	68	528	0.0	0
100	560	100	560	0.0	0
223	683	225	685	-0.2	1.6
248	708	252	712	-0.5	3.6
273	733	275	735	-0.3	2
300	760	302	762	-0.3	2
400	860	401	861	-0.1	1
500	960	500	960	0.0	0
600	1,060	603	1,063	-0.2	2.6
700	1,160	702	1,162	-0.1	1.6
800	1,260	802	1,262	-0.2	2
900	1,360	901	1,361	-0.1	1.4
1,000	1,460	1,002	1,462	-0.2	2.2
1,100	1,560	1,101	1,561	-0.1	1.2
1,200	1,660	1,202	1,662	-0.1	2

Calibration Performed By: Daniel Turton

Date Conducted: 6-20-24

Reviewed By: _____

	Low Volume DGM Calibration-Orifices	Document ID	620.005							
		Revision	24.1							
		Effective Date	8-22-24							
Issuing Department	Tech Services	Page	1 of 1							
Low Volume Dry Gas Meter Calibration										
Console ID	--	VOST 3								
Meter S/N	--	A12010								
Critical Orifice S/N	--	CO-2807								
Initial Barometric Pressure, in. Hg	(P _b _i)	29.23								
Final Barometric Pressure, in. Hg	(P _b _f)	29.21								
Average Barometric Pressure, in. Hg	(P _b)	29.22								
Orifice Nominal Flow, lpm	(Q)	0.54		1.04		1.54				
Run No.	--	1	2	3	1	2	3	1	2	3
K' Factor, L-R ^{1/2} / in. WC·min	(K')	0.4256	0.4256	0.4256	0.8112	0.8112	0.8112	1.2075	1.2075	1.2075
Vacuum Pressure, in. Hg	(V _p)	21.0	21.0	21.0	18.0	18.0	18.0	16.0	16.0	16.0
Initial DGM Volume, L	(V _m _i)	59.500	64.970	70.430	76.800	82.120	87.440	93.700	1.550	9.420
Final DGM Volume, L	(V _m _f)	64.970	70.430	75.910	82.120	87.440	92.750	101.550	9.420	17.380
Total DGM Volume, L	(V _m)	5.470	5.460	5.480	5.320	5.320	5.310	7.850	7.870	7.960
Ambient Temperature, °C	(T _a)	21	21	21	21	21	21	21	21	21
Initial Inlet DGM Temperature, °C	(T _m _{ii})	21	22	22	23	23	23	23	23	23
Final Inlet DGM Temperature, °C	(T _m _{fi})	22	22	22	23	23	23	23	23	23
Initial Outlet DGM Temperature, °C	(T _m _{io})	21	22	22	23	23	23	23	23	23
Final Outlet DGM Temperature, °C	(T _m _{fo})	22	22	22	23	23	23	23	23	23
Average Outlet DGM Temperature, °C	(T _m)	22	22	22.0	23	23	23	23	23	23
Elapsed Time	(Θ)	10.00	10.00	10.00	5.00	5.00	5.00	5.00	5.00	5.00
Meter Orifice Pressure, in. WC	(ΔH)	0.50	0.50	0.50	0.80	0.80	0.80	1.10	1.10	1.10
Standard Meter volume, L	(V _m std)	5.3225	5.3038	5.3232	5.1542	5.1542	5.1445	7.6111	7.6305	7.7178
Standard Critical Orifice Volume, L	(V _{cr})	5.4045	5.4045	5.4045	5.1505	5.1505	5.1505	7.6667	7.6667	7.6667
Meter Correction Factor	(Y)	1.0154	1.0190	1.0153	0.9993	0.9993	1.0012	1.0073	1.0047	0.9934
Tolerance	--	-0.11%	0.24%	-0.13%	-0.06%	-0.06%	0.13%	0.55%	0.29%	-0.84%
Orifice Cal Check	--	1.66			1.64			1.45		
Average Meter Correction Factor	(Y)	1.0165			0.9999			1.0018		
Meter Correction Factor	(Y)	1.0061								

Reference Calibrator Make		Fluke			
Reference Calibrator Model		714			
Reference Calibrator S/N		COE 20024			
Reference Temp.		Display Temp.		Accuracy	Absolute Difference
°C	°K	°C	°K	%	°C
0	273	0	273	0.0	0
20	293	19	292	0.3	1
50	323	50	323	0.0	0
100	373	100	373	0.0	0
150	423	150	423	0.0	0
200	473	200	473	0.0	0
300	573	300	573	0.0	0
400	673	400	673	0.0	0
500	773	500	773	0.0	0
600	873	600	873	0.0	0

Calibration Performed By: Dan Turton

Date Conducted: 11-20-24

Reviewed By: _____

Bias/Drift Determinations

Location: Covanta - Courtice, ON
Source: Quench Inlet - APC No.2
Project No.: AST-2024-4547

Parameter		THC - Inlet
Run 1	Date 12-4-24	
Span Value		100.00
Initial Instrument Zero Cal Response		0.04
Initial Instrument Upscale Cal Response		22.56
Pretest System Zero Response		0.04
Posttest System Zero Response		0.50
Pretest System Upscale Response		22.56
Posttest System Upscale Response		21.98
Bias (%)		
Pretest Zero		NA
Posttest Zero		NA
Pretest Span		NA
Posttest Span		NA
Drift (%)		
Zero		0.46
Mid		-0.58
Run 2	Date 12-4-24	
Span Value		100.00
Instrument Zero Cal Response		0.04
Instrument Upscale Cal Response		22.56
Pretest System Zero Response		0.50
Posttest System Zero Response		0.00
Pretest System Upscale Response		21.98
Posttest System Upscale Response		22.21
Bias (%)		
Pretest Zero		NA
Posttest Zero		NA
Pretest Span		NA
Posttest Span		NA
Drift (%)		
Zero		-0.50
Mid		0.23
Run 3	Date 12-4-24	
Span Value		100.00
Instrument Zero Cal Response		0.04
Instrument Upscale Cal Response		22.56
Pretest System Zero Response		0.00
Posttest System Zero Response		0.00
Pretest System Upscale Response		22.21
Posttest System Upscale Response		21.13
Bias (%)		
Pretest Zero		NA
Posttest Zero		NA
Pretest Span		NA
Posttest Span		NA
Drift (%)		
Zero		0.00
Mid		-1.08

Bias/Drift Determinations

Location: Covanta - Courtice, ON
Source: APC Outlet No. 2
Project No.: AST-2024-4547

Parameter		THC - Outlet
Run 1	Date 12-4-24	
Span Value		100.00
Initial Instrument Zero Cal Response		0.06
Initial Instrument Upscale Cal Response		44.97
Pretest System Zero Response		0.06
Posttest System Zero Response		0.00
Pretest System Upscale Response		22.39
Posttest System Upscale Response		21.86
Bias (%)		
Pretest Zero		NA
Posttest Zero		NA
Pretest Span		NA
Posttest Span		NA
Drift (%)		
Zero		-0.06
Mid		-0.53
Run 2	Date 12-4-24	
Span Value		100.00
Instrument Zero Cal Response		0.06
Instrument Upscale Cal Response		44.97
Pretest System Zero Response		0.00
Posttest System Zero Response		0.00
Pretest System Upscale Response		21.86
Posttest System Upscale Response		21.97
Bias (%)		
Pretest Zero		NA
Posttest Zero		NA
Pretest Span		NA
Posttest Span		NA
Drift (%)		
Zero		0.00
Mid		0.11
Run 3	Date 12-4-24	
Span Value		100.00
Instrument Zero Cal Response		0.06
Instrument Upscale Cal Response		44.97
Pretest System Zero Response		0.00
Posttest System Zero Response		0.50
Pretest System Upscale Response		21.97
Posttest System Upscale Response		21.64
Bias (%)		
Pretest Zero		NA
Posttest Zero		NA
Pretest Span		NA
Posttest Span		NA
Drift (%)		
Zero		0.50
Mid		-0.33

Bias/Drift Determinations

Location: Covanta - Courtice, ON
Source: Quench Inlet - APC No.1
Project No.: AST-2024-4547

Parameter			THC - Inlet
Run 1	Date	12-3-24	
Span Value			89.40
Initial Instrument Zero Cal Response			0.10
Initial Instrument Upscale Cal Response			22.80
Pretest System Zero Response			0.10
Posttest System Zero Response			0.00
Pretest System Upscale Response			22.80
Posttest System Upscale Response			22.48
Bias (%)			
Pretest Zero			NA
Posttest Zero			NA
Pretest Span			NA
Posttest Span			NA
Drift (%)			
Zero			-0.11
Mid			-0.36
Run 2	Date	12-3-24	
Span Value			89.40
Instrument Zero Cal Response			0.10
Instrument Upscale Cal Response			22.80
Pretest System Zero Response			0.00
Posttest System Zero Response			0.00
Pretest System Upscale Response			22.48
Posttest System Upscale Response			22.50
Bias (%)			
Pretest Zero			NA
Posttest Zero			NA
Pretest Span			NA
Posttest Span			NA
Drift (%)			
Zero			0.00
Mid			0.02
Run 3	Date	12-3-24	
Span Value			89.40
Instrument Zero Cal Response			0.10
Instrument Upscale Cal Response			22.80
Pretest System Zero Response			0.00
Posttest System Zero Response			0.00
Pretest System Upscale Response			22.50
Posttest System Upscale Response			21.50
Bias (%)			
Pretest Zero			NA
Posttest Zero			NA
Pretest Span			NA
Posttest Span			NA
Drift (%)			
Zero			0.00
Mid			-1.12

Bias/Drift Determinations

Location: Covanta - Courtice, ON
Source: APC Outlet No. 1
Project No.: AST-2024-4547

Parameter			THC - Outlet
Run 1	Date	12/3/24	
Range Value			22.35
Initial Instrument Zero Cal Response			0.55
Initial Instrument Upscale Cal Response			22.95
Pretest System Zero Response			0.55
Posttest System Zero Response			0.00
Pretest System Upscale Response			22.95
Posttest System Upscale Response			22.52
Bias (%)			
Pretest Zero			NA
Posttest Zero			NA
Pretest Span			NA
Posttest Span			NA
Drift (%)			
Zero			-0.55
Mid			-0.43
Run 2	Date	12/3/24	
Range Value			22.35
Instrument Zero Cal Response			0.55
Instrument Upscale Cal Response			22.95
Pretest System Zero Response			0.00
Posttest System Zero Response			0.50
Pretest System Upscale Response			22.52
Posttest System Upscale Response			23.20
Bias (%)			
Pretest Zero			NA
Posttest Zero			NA
Pretest Span			NA
Posttest Span			NA
Drift (%)			
Zero			0.50
Mid			0.68
Run 3	Date	12/3/24	
Range Value			22.35
Instrument Zero Cal Response			0.55
Instrument Upscale Cal Response			22.95
Pretest System Zero Response			0.50
Posttest System Zero Response			0.00
Pretest System Upscale Response			23.20
Posttest System Upscale Response			22.96
Bias (%)			
Pretest Zero			NA
Posttest Zero			NA
Pretest Span			NA
Posttest Span			NA
Drift (%)			
Zero			-0.50
Mid			-0.24

APPENDIX 22

Particulate and Metals Test Emission Calculations (10 pages)

Emission Calculations

Location **Reworld - Courtice, ON**

Source **APC Outlet No. 1**

Project No. **AST-2024-4547**

Parameter **TSP, Metals**

Run Number		Run 1	Run 2	Run 3	Average
Date		12-3-24	12-4-24	12-4-24	--
Start Time		13:39	9:04	13:02	--
Stop Time		16:50	12:13	16:10	--
Run Time, min	(θ)	180.0	180.0	180.0	180.0
INPUT DATA					
Barometric Pressure, kPa	(Pb)	100.915	99.221	98.544	99.56
Meter Correction Factor	(Y)	1.01	1.008	1.008	1.008666667
Orifice Calibration Value	($\Delta H @$)	1.819	1.838	1.838	1.831666667
Meter Volume, m ³	(Vm)	3.700	3.607	3.590	3.632
Meter Temperature, °C	(Tm)	31.7	19.9	20.1	23.9
Meter Temperature, °K	(Tm)	304.9	293.0	293.3	297.1
Meter Orifice Pressure, kPa	(ΔH)	0.436	0.434	0.425	0.432
Volume H ₂ O Collected, mL	(Vlc)	530.5	502.1	535.2	522.6
Nozzle Diameter, cm	(Dn)	0.637	0.637	0.637	0.637
Area of Nozzle, cm ²	(An)	0.3187	0.3187	0.3187	0.3187
ISOKINETIC DATA					
Reference Meter Volume, m ³	(Vmref)	3.653	3.635	3.590	3.626
Reference Water Volume, m ³	(Vwref)	0.721	0.683	0.728	0.711
Moisture Fraction Measured	(BWSmsd)	0.165	0.158	0.169	0.164
Moisture Fraction @ Saturation	(BWSsat)	3.594	3.374	3.515	3.494
Moisture Fraction	(BWS)	0.165	0.158	0.169	0.164
Meter Pressure, kPa	(Pm)	101.35	99.66	98.97	99.99
Volume at Nozzle, m ³	(Vn)	6.267	6.252	6.314	6.28
Isokinetic Sampling Rate, (%)	(I)	100.0	99.0	99.4	99.5

Emission Calculations

Location Reworld - Courtice, ON
Source APC Outlet No. 1
Project No. AST-2024-4547
Parameter TSP, Metals

Run Number		Run 1	Run 2	Run 3	Average
Date		12-3-24	12-4-24	12-4-24	--
Start Time		13:39	9:04	13:02	--
Stop Time		16:50	12:13	16:10	--
Run Time, min		180.0	180.0	180.0	180.0
CALCULATED DATA					
Square Root of ΔP , (in. WC) ^{1/2}	(ΔP)	0.873	0.876	0.875	0.875
Pitot Tube Coefficient	(Cp)	0.839	0.839	0.839	0.839
Barometric Pressure, kPa	(Pb)	100.91	99.22	98.54	99.56
Static Pressure, kPa	(Pg)	-2.763	-2.763	-2.763	-2.763
Stack Pressure, kPa	(Ps)	98.15	96.46	95.78	96.80
Stack Cross-sectional Area, m ²	(As)	1.48	1.48	1.48	1.48
Temperature, °C	(Ts)	140.6	137.7	138.9	139.1
Temperature, °K	(Ts)	413.8	410.9	412.1	412.2
Moisture Fraction Measured	(BWSmsd)	0.165	0.158	0.169	0.164
Moisture Fraction @ Saturation	(BWSsat)	3.594	3.374	3.515	3.494
Moisture Fraction	(BWS)	0.165	0.158	0.169	0.164
O ₂ Concentration, %	(O ₂)	8.8	8.77	8.54	8.70
CO ₂ Concentration, %	(CO ₂)	10.45	10.54	10.43	10.47
CO Concentration, ppmvd	(CO)	16.8	16	13.4	15.40
Ar Concentration, %	(Ar)	0.95	0.95	0.95	0.95
Molecular Weight, lb/lb-mole (dry)	(Md)	30.14	30.15	30.12	30.14
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.14	28.23	28.08	28.15
Velocity, m/s	(Vs)	18.2	18.4	18.5	18.4
VOLUMETRIC FLOW RATE					
At Stack Conditions, m ³ /s	(Qa)	26.94	27.13	27.30	27.12
At Reference Conditions, wet Rm ³ /s	(Qsw)	18.81	18.74	18.67	18.74
At Reference Conditions, dry Rm ³ /s	(Qs)	15.71	15.78	15.52	15.67
At Reference Conditions (corrected), dry Rm ³ /s @ 11% O ₂	(Qsc)	19.20	19.33	19.38	19.30

Reference conditions: 25°C, 1 atm (77°F, 29.92 in. Hg)

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 13:39		Source: APC Outlet No. 1								
Date: 12-3-24		Run 1		VALID		End Time: 16:50		Project No.: AST-2024-4547		Parameter: TSP, Metals				
STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.		STACK DATA (FINAL)		MOIST. DATA	
Moisture: 16.0 % est.			Meter Box ID: Team 4			Est. Tm: 85 °F					Pb: 29.80 in. Hg		Vlc (ml)	
Barometric: 30.26 in. Hg			Y: 1.01			Est. Ts: -- °F					Pg: -11.10 in. WC		530.5	
Static Press: -10.50 in. WC			AH @ (in.WC): 1.819			Est. AP: -- in. WC					O ₂ : 8.8 %		K-FACTOR	
Stack Press: 29.49 in. Hg			Probe ID: 6 Series			Est. Dn: -- in.					CO ₂ : 10.45 %		--	
CO ₂ : 11.2 %			Liner Material: glass			Target Rate: 0.67 scfm					CO: 16.8 ppm			
O ₂ : 8.1 %			Pitot ID: 15A								Check Pt.		Initial Final Corr.	
N ₂ : 79.8 %			Pitot Cp/Type: 0.839 --			LEAK CHECK Pre Mid 1 Mid 2 Mid 3 Post					Mid 1 (cf) 135.050 #####		0.390	
CO: 15.00 ppm			Nozzle ID: 007 glass			Leak Rate (cfm): 0.005 0.003 0.003 -- 0.002					Mid 2 (cf)		--	
Md: 30.22 lb/lb-mole			Nozzle Dn (in.): 0.2508			Vacuum (in Hg): 15 15 15 15					Mid 3 (cf)		--	
Ms: 28.26 lb/lb-mole						Pitot Tube: Pass -- --					Mid-Point Leak Check Vol (cf):		0.390	

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft³)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	NA		
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.		
1	0.00	2.50	70.830	0.84	77	280	1.91	1.90	6	247	246	74	-	101.6	19.07
	2.50	5.00	72.730	0.89	77	284	2.02	1.90	6	247	247	59	-	99.5	19.68
2	5.00	7.50	74.640	0.86	77	285	1.95	1.90	6	247	251	56	-	99.7	19.36
	7.50	10.00	76.520	0.87	78	286	1.97	1.95	6	247	254	54	-	100.1	19.49
	10.00	12.50	78.420	0.87	80	286	1.98	1.95	6	247	247	52	-	99.7	19.49
	12.50	15.00	80.320	0.87	81	286	1.98	1.95	6	247	255	52	-	99.0	19.49
3	15.00	17.50	82.210	0.81	82	286	1.85	1.80	6	247	249	52	-	99.1	18.80
	17.50	20.00	84.040	0.81	83	286	1.85	1.80	6	247	254	52	-	99.0	18.80
	20.00	22.50	85.870	0.81	85	285	1.86	1.85	6	247	253	52	-	100.1	18.79
4	22.50	25.00	87.730	0.75	86	286	1.72	1.70	6	247	246	52	-	100.0	18.09
	25.00	27.50	89.520	0.73	86	286	1.68	1.65	6	247	257	52	-	99.1	17.85
	27.50	30.00	91.270	0.73	87	285	1.68	1.70	6	247	251	52	-	99.4	17.84
5	30.00	32.50	93.030	0.64	88	285	1.48	1.45	6	247	251	52	-	99.3	16.70
	32.50	35.00	94.680	0.63	88	285	1.46	1.45	6	247	256	52	-	99.5	16.57
	35.00	37.50	96.320	0.65	89	285	1.50	1.50	6	247	248	51	-	99.6	16.83
6	37.50	40.00	97.990	0.63	89	285	1.46	1.45	6	247	257	51	-	99.3	16.57
	40.00	42.50	99.630	0.63	89	285	1.46	1.45	6	247	253	51	-	99.3	16.57
	42.50	45.00	101.270	0.61	90	286	1.41	1.40	6	247	248	51	-	100.8	16.32
7	45.00	47.50	102.910	0.71	90	286	1.64	1.65	6	247	258	51	-	99.7	17.60
	47.50	50.00	104.660	0.73	90	286	1.69	1.70	6	247	251	51	-	100.1	17.85
	50.00	52.50	106.440	0.71	90	287	1.64	1.65	6	247	251	51	-	100.4	17.62
8	52.50	55.00	108.200	0.75	91	286	1.74	1.75	6	247	256	50	-	99.7	18.09
	55.00	57.50	110.000	0.75	91	286	1.74	1.75	6	247	248	50	-	100.2	18.09
	57.50	60.00	111.810	0.76	91	286	1.76	1.75	6	248	256	50	-	99.0	18.21
9	60.00	62.50	113.610	0.75	91	286	1.74	1.75	6	248	255	50	-	99.7	18.09
	62.50	65.00	115.410	0.73	91	286	1.69	1.70	6	247	250	50	-	100.4	17.85
	65.00	67.50	117.200	0.74	91	285	1.72	1.70	6	247	257	50	-	100.3	17.96
10	67.50	70.00	119.000	0.74	91	285	1.72	1.70	6	247	253	50	-	100.3	17.96
	70.00	72.50	120.800	0.77	91	280	1.80	1.80	6	247	249	50	-	100.2	18.26
	72.50	75.00	122.640	0.77	91	280	1.80	1.80	7	247	257	50	-	100.7	18.26
11	75.00	77.50	124.490	0.76	92	280	1.78	1.75	7	247	251	50	-	99.0	18.14
	77.50	80.00	126.300	0.76	92	280	1.78	1.80	7	247	252	50	-	100.6	18.14
	80.00	82.50	128.140	0.78	92	280	1.83	1.80	7	247	257	50	-	100.4	18.38
12	82.50	85.00	130.000	0.65	92	280	1.52	1.50	7	247	250	50	-	100.5	16.78
	85.00	87.50	131.700	0.66	92	280	1.55	1.55	6	247	253	50	-	100.3	16.90
	87.50	90.00	133.410	0.61	92	280	1.43	1.40	6	247	256	51	-	100.0	16.25
	90.00	92.50	135.050	0.90	83	285	2.06	2.05	7	247	257	66	-	99.5	19.81
	92.50	95.00	137.380	0.92	84	289	2.10	2.10	7	247	250	54	-	99.5	20.08
	95.00	97.50	139.340	0.92	85	289	2.10	2.10	7	247	251	51	-	101.4	20.08
	97.50	100.00	141.340	0.91	86	289	2.08	2.00	7	247	258	50	-	99.7	19.97
	100.00	102.50	143.300	0.90	87	289	2.06	2.00	7	247	252	49	-	99.0	19.86
	102.50	105.00	145.240	0.91	88	287	2.09	2.05	7	247	248	48	-	99.7	19.94
	105.00	107.50	147.210	0.75	88	287	1.73	1.70	7	247	258	47	-	100.8	18.11
	107.50	110.00	149.020	0.80	89	287	1.85	1.85	7	248	252	46	-	99.6	18.70
	110.00	112.50	150.870	0.82	90	287	1.90	1.85	7	247	249	46	-	100.4	18.93
	112.50	115.00	152.760	0.86	90	287	1.99	2.00	7	247	257	45	-	100.1	19.39
	115.00	117.50	154.690	0.83	91	287	1.92	1.90	7	247	251	45	-	100.1	19.05
	117.50	120.00	156.590	0.83	91	287	1.92	1.90	7	247	251	45	-	100.1	19.05
	120.00	122.50	158.490	0.78	91	288	1.80	1.80	7	246	257	45	-	100.6	18.48
	122.50	125.00	160.340	0.78	91	289	1.80	1.80	7	247	251	45	-	100.1	18.49
	125.00	127.50	162.180	0.80	91	289	1.85	1.85	7	247	252	44	-	101.0	18.72
	127.50	130.00	164.060	0.78	92	289	1.80	1.80	7	247	258	44	-	99.9	18.49
	130.00	132.50	165.900	0.78	92	289	1.80	1.80	7	247	251	44	-	101.0	18.49
	132.50	135.00	167.760	0.76	92	290	1.76	1.75	7	247	252	44	-	99.6	18.26
	135.00	137.50	169.570	0.80	92	290	1.85	1.85	7	247	257	44	-	100.4	18.74
	137.50	140.00	171.440	0.80	92	290	1.85	1.85	7	247	251	44	-	100.9	18.74
	140.00	142.50	173.320	0.78	92	289	1.80	1.80	7	247	253	44	-	100.5	18.49
	142.50	145.00	175.170	0.78	92	288	1.81	1.80	7	247	258	44	-	100.4	18.48
	145.00	147.50	177.020	0.80	92	288	1.85	1.85	7	247	250	45	-	100.2	18.71
	147.50	150.00	178.890	0.80	92	287	1.86	1.85	7	247	253	44	-	100.2	18.70
	150.00	152.50	180.760	0.77	92	287	1.79	1.80	7	247	258	45	-	101.5	18.35
	152.50	155.00	182.620	0.73	92	285	1.70	1.70	7	246	250	45	-	99.1	17.84
	155.00	157.50	184.390	0.72	92	284	1.68	1.65	7	247	254	45	-	99.1	17.70
	157.50	160.00	186.150	0.70	92	283	1.63	1.60	7	247	258	45	-	99.3	17.44
	160.00	162.50	187.890	0.69	92	280	1.62	1.60	7	247	250	45	-	99.8	17.28
	162.50	165.00	189.630	0.73	92	280	1.71	1.70	6	247	253	45	-	99.3	17.78
	165.00	167.50	191.410	0.67	93	280	1.57	1.55	6	247	257	45	-	100.5	17.03
	167.50	170.00	193.140	0.67	93	280	1.57	1.55	6	247	250	46	-	98.8	17.03
	170.00	172.50	194.840	0.73	93	280	1.71	1.70	6	247	254	46	-	99.7	17.78
	172.50	175.00	196.630	0.70	93	280	1.64	1.60	6	247	257	46	-	98.9	17.41
	175.00	177.50	198.370	0.70	92	280	1.64	1.60	6	247	249	46	-	100.2	17.41
	177.50	180.00	200.130	0.70	93	280	1.64	1.60	6	247	255	46	-	100.1	17.41
Final DGM:			201.890												

RESULTS	Run Time		Vm		AP		Tm		Ts		Max Vac		ΔH		%ISO		BWS		Y _{qs}	
	180.0	min	130.670	ft³	0.76	in. WC	89.1	°F	285.1	°F	7	1.753	in. WC	100.0	0.165	-1.1				

Isokinetic Field Data

Location: Reworld – Courtice, ON				Start Time: 9:04				Source: APC Outlet No. 1									
Date: 12-4-24		Run 2		VALID		End Time: 12:13		Project No.: AST-2024-4547		Parameter: TSP, Metals							
STACK DATA (EST)				EQUIPMENT				STACK DATA (EST)		STACK DATA (FINAL)		MOIST. DATA					
Moisture: 16.0 % est.				Meter Box ID: Team 1				Est. Tm: 89 °F		Pb: 29.30 in. Hg		Vlc (ml)					
Barometric: 30.26 in. Hg				Y: 1.008				Est. Ts: 285 °F		Pg: -11.10 in. WC		502.1					
Static Press: -10.50 in. WC				AH @ (in.WC): 1.838				Est. AP: 0.76 in. WC		O ₂ : 8.77 %		K-FACTOR					
Stack Press: 29.49 in. Hg				Probe ID: 6 Series				Est. Dn: 0.239 in.		CO ₂ : 10.54 %		2.34					
CO ₂ : 11.2 %				Liner Material: glass				Target Rate: 0.67 scfm		CO: 16 ppm							
O ₂ : 8.1 %				Pitot ID: 15A						Check Pt.		Initial	Final	Corr.			
N ₂ : 79.8 %				Pitot Cp/Type: 0.839		--	LEAK CHECK		Pre	Mid 1	Mid 2	Mid 3	Post	Mid 1 (cf)	96.295	96.685	0.390
CO: 15.00 ppm				Nozzle ID: 007		glass	Leak Rate (cfm): 0.003 0.002 0.002 0.002							Mid 2 (cf)	--	--	--
Md: 30.22 lb/lb-mole				Nozzle Dn (in.): 0.2508				Vacuum (in Hg): 15 14 14 15						Mid 3 (cf)	--	--	--
Ms: 28.26 lb/lb-mole								Pitot Tube: Pass -- -- -- Pass						Mid-Point Leak Check Vol (cf): 0.390			

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube AP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)	
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	NA			
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.			
1	0.00	2.50	33.720	0.87	66	278	1.97	2.00	3	254	255	62	-	96.5	19.52	
--	2.50	5.00	35.550	0.87	66	278	1.97	2.00	3	257	253	55	-	99.1	19.52	
2	5.00	7.50	37.430	0.87	66	279	1.96	2.00	3	257	253	52	-	98.6	19.53	
--	7.50	10.00	39.300	0.91	65	278	2.05	2.00	3	257	253	51	-	97.6	19.96	
--	10.00	12.50	41.190	0.89	65	279	2.00	2.00	3	258	253	51	-	99.3	19.76	
--	12.50	15.00	43.090	0.91	65	279	2.05	2.00	3	258	253	49	-	99.2	19.98	
3	15.00	17.50	45.010	0.86	65	279	1.94	2.00	3	257	254	48	-	98.9	19.42	
--	17.50	20.00	46.870	0.84	65	280	1.89	1.90	3	257	254	47	-	99.0	19.21	
--	20.00	22.50	48.710	0.86	65	280	1.93	1.90	3	258	253	46	-	98.4	19.43	
4	22.50	25.00	50.560	0.76	65	279	1.71	1.90	3	258	254	46	-	99.5	18.26	
--	25.00	27.50	52.320	0.78	65	279	1.76	1.70	3	258	253	46	-	98.2	18.50	
--	27.50	30.00	54.080	0.77	66	279	1.74	1.70	3	257	254	46	-	99.2	18.38	
5	30.00	32.50	55.850	0.70	66	279	1.58	1.70	3	257	253	46	-	99.9	17.52	
--	32.50	35.00	57.550	0.69	66	279	1.56	1.60	3	256	253	45	-	98.8	17.40	
--	35.00	37.50	59.220	0.70	66	280	1.58	1.60	3	256	253	45	-	98.8	17.53	
6	37.50	40.00	60.900	0.64	66	279	1.45	1.60	3	256	254	44	-	98.9	16.75	
--	40.00	42.50	62.510	0.65	67	279	1.47	1.40	3	258	254	44	-	99.1	16.88	
--	42.50	45.00	64.140	0.64	67	279	1.45	1.50	3	257	254	44	-	99.3	16.75	
7	45.00	47.50	65.760	0.71	67	280	1.61	1.50	3	258	254	44	-	97.3	17.66	
--	47.50	50.00	67.430	0.72	67	280	1.63	1.60	3	258	253	44	-	98.9	17.78	
--	50.00	52.50	69.140	0.71	67	280	1.60	1.60	3	256	253	44	-	99.0	17.66	
8	52.50	55.00	70.840	0.70	67	279	1.58	1.60	3	256	253	44	-	100.3	17.52	
--	55.00	57.50	72.550	0.76	67	279	1.72	1.60	3	257	252	44	-	98.5	18.26	
--	57.50	60.00	74.300	0.72	67	279	1.63	1.70	3	256	253	44	-	98.9	17.77	
9	60.00	62.50	76.010	0.71	67	280	1.60	1.60	3	256	253	44	-	98.5	17.66	
--	62.50	65.00	77.700	0.74	68	279	1.68	1.60	3	257	253	45	-	98.5	18.01	
--	65.00	67.50	79.430	0.77	68	279	1.75	1.70	3	257	253	44	-	98.2	18.38	
10	67.50	70.00	81.190	0.72	68	279	1.63	1.70	3	257	253	45	-	98.7	17.77	
--	70.00	72.50	82.900	0.74	68	279	1.68	1.60	3	257	253	45	-	99.0	18.01	
--	72.50	75.00	84.640	0.74	68	279	1.68	1.70	3	255	252	45	-	99.1	18.01	
11	75.00	77.50	86.380	0.71	68	280	1.61	1.70	3	257	253	45	-	98.9	17.66	
--	77.50	80.00	88.080	0.66	68	280	1.49	1.60	3	256	253	45	-	99.5	17.02	
--	80.00	82.50	89.730	0.68	68	277	1.55	1.50	3	257	254	45	-	99.6	17.25	
12	82.50	85.00	91.410	0.66	68	277	1.50	1.50	3	255	254	45	-	98.7	16.99	
--	85.00	87.50	93.050	0.64	69	277	1.46	1.50	3	256	253	45	-	98.8	16.73	
--	87.50	90.00	94.670	0.64	69	277	1.46	1.50	3	255	253	45	-	99.1	16.73	
--	90.00	92.50	96.295	0.81	68	280	1.83	1.80	3	255	253	54	-	99.4	18.86	
--	92.50	95.00	98.510	0.82	68	281	1.85	1.80	3	255	254	44	-	98.1	18.99	
--	95.00	97.50	100.320	0.82	68	281	1.85	1.80	3	255	253	42	-	98.6	18.99	
--	97.50	100.00	102.140	0.85	68	281	1.92	1.90	3	257	254	42	-	99.0	19.33	
--	100.00	102.50	104.000	0.85	68	281	1.92	1.90	3	256	253	42	-	100.1	19.33	
--	102.50	105.00	105.880	0.86	68	281	1.94	1.90	3	255	253	42	-	98.4	19.45	
--	105.00	107.50	107.740	0.83	68	282	1.87	1.90	3	257	254	42	-	99.2	19.12	
--	107.50	110.00	109.580	0.82	68	281	1.85	1.90	3	256	255	43	-	99.7	18.99	
--	110.00	112.50	111.420	0.80	69	281	1.81	1.90	3	257	254	43	-	98.6	18.76	
--	112.50	115.00	113.220	0.77	69	281	1.74	1.80	3	258	255	43	-	104.9	18.40	
--	115.00	117.50	115.100	0.76	69	281	1.72	1.70	3	257	255	44	-	94.9	18.28	
--	117.50	120.00	116.790	0.80	69	282	1.81	1.70	3	256	254	43	-	97.5	18.77	
--	120.00	122.50	118.570	0.75	69	282	1.70	1.80	3	258	254	43	-	99.6	18.17	
--	122.50	125.00	120.330	0.77	69	282	1.74	1.70	3	256	254	43	-	99.9	18.41	
--	125.00	127.50	122.120	0.76	69	282	1.72	1.70	3	256	255	43	-	99.5	18.29	
--	127.50	130.00	123.890	0.76	69	283	1.72	1.70	3	256	254	53	-	99.0	18.31	
--	130.00	132.50	125.650	0.71	69	283	1.60	1.70	3	258	254	43	-	99.5	17.69	
--	132.50	135.00	127.360	0.72	69	283	1.63	1.60	3	258	254	43	-	98.8	17.82	
--	135.00	137.50	129.070	0.71	69	283	1.60	1.60	3	257	254	43	-	99.5	17.69	
--	137.50	140.00	130.780	0.81	69	284	1.83	1.60	3	258	253	43	-	98.1	18.91	
--	140.00	142.50	132.580	0.81	69	285	1.82	1.80	3	257	253	43	-	99.3	18.92	
--	142.50	145.00	134.400	0.83	69	285	1.87	1.80	3	256	253	43	-	99.7	19.16	
--	145.00	147.50	136.250	0.82	69	284	1.85	1.90	3	257	253	43	-	98.6	19.03	
--	147.50	150.00	138.070	0.81	69	285	1.82	1.80	3	256	253	43	-	99.8	18.92	
--	150.00	152.50	139.900	0.82	69	285	1.85	1.80	3	257	253	43	-	99.2	19.04	
--	152.50	155.00	141.730	0.83	69	283	1.87	1.80	3	257	255	43	-	98.5	19.13	
--	155.00	157.50	143.560	0.83	69	282	1.88	1.90	3	257	254	43	-	99.5	19.12	
--	157.50	160.00	145.410	0.83	69	278	1.89	1.90	3	257	252	43	-	95.5	19.07	
--	160.00	162.50	147.190	0.86	69	276	1.96	1.90	3	257	252	43	-	100.5	19.38	
--	162.50	165.00	149.100	0.82	69	276	1.87	2.00	3	256	252	43	-	101.4	18.93	
--	165.00	167.50	150.980	0.75	70	276	1.71	1.90	3	255	253	43	-	100.1	18.10	
--	167.50	170.00	152.760	0.76	69	276	1.73	1.70	3	257	254	43	-	99.1	18.22	
--	170.00	172.50	154.530	0.74	69	276	1.69	1.70	3	257	254	44	-	99.3	17.98	
--	172.50	175.00	156.280	0.74	70	276	1.69	1.70	3	255	254	43	-	99.6	17.98	
--	175.00	177.50	158.040	0.71	69	276	1.62	1.70	3	254	253	43	-	99.0	17.61	
--	177.50	180.00	159.750	0.70	69	276	1.60	1.60	3	255	254	43	-	100.3	17.49	
Final DGM:			161.470													

RESULTS	Run Time		Vm	AP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y _{qs}	
	180.0	min	127.360	ft ³	0.77	in. WC	67.8	°F	279.9	°F	3	1.744

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 13:02		Source: APC Outlet No. 1								
Date: 12-4-24		Run 3		VALID		End Time: 16:10		Project No.: AST-2024-4547		Parameter: TSP, Metals				
STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.		STACK DATA (FINAL)		MOIST. DATA	
Moisture: 16.0 % est.			Meter Box ID: Team 1			Est. Tm: 68 °F					Pb: 29.10 in. Hg		Vlc (ml)	
Barometric: 30.26 in. Hg			Y: 1.008			Est. Ts: 280 °F					Pg: -11.10 in. WC		535.2	
Static Press: -10.50 in. WC			AH @ (in.WC): 1.838			Est. AP: 0.77 in. WC					O ₂ : 8.54 %		K-FACTOR	
Stack Press: 29.49 in. Hg			Probe ID: 6 Series			Est. Dn: 0.243 in.					CO ₂ : 10.43 %		2.262	
CO ₂ : 11.2 %			Liner Material: glass			Target Rate: 0.67 scfm					CO: 13.4 ppm			
O ₂ : 8.1 %			Pitot ID: 15A								Check Pt.		Initial Final Corr.	
N ₂ : 79.8 %			Pitot Cp/Type: 0.839 --			LEAK CHECK Pre Mid 1 Mid 2 Mid 3 Post					Mid 1 (cf) 125.840 #####		0.510	
CO: 15.00 ppm			Nozzle ID: 007 glass			Leak Rate (cfm): 0.004 0.003 0.003 -- 0.002					Mid 2 (cf)		--	
Md: 30.22 lb/lb-mole			Nozzle Dn (in.): 0.2508			Vacuum (in Hg): 15 15 15 -- 15.5					Mid 3 (cf)		--	
Ms: 28.26 lb/lb-mole						Pitot Tube: Pass -- --					Mid-Point Leak Check Vol (cf):		0.510	

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube AP (in WC)	Gas Temperatures (°F)		Orifice Press. AH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	NA		
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.		
1	0.00	2.50	62.000	0.90	68	281	2.03	2.00	4	251	259	60	-	100.0	20.02
--	2.50	5.00	63.920	0.90	68	283	2.03	2.00	4	254	264	54	-	98.6	20.04
2	5.00	7.50	65.810	0.92	67	284	2.07	2.00	4	256	259	53	-	99.3	20.28
--	7.50	10.00	67.730	0.93	67	283	2.09	2.05	4	254	258	50	-	98.7	20.37
--	10.00	12.50	69.650	0.93	67	283	2.09	2.05	4	254	256	49	-	98.2	20.37
--	12.50	15.00	71.560	0.92	67	284	2.07	2.00	4	256	254	49	-	98.3	20.28
3	15.00	17.50	73.460	0.88	67	284	1.98	1.95	4	256	251	48	-	99.4	19.83
--	17.50	20.00	75.340	0.86	67	285	1.93	1.90	4	255	256	48	-	99.5	19.62
--	20.00	22.50	77.200	0.86	66	284	1.93	1.90	4	255	260	48	-	99.6	19.61
4	22.50	25.00	79.060	0.81	67	284	1.82	1.80	4	255	260	48	-	99.7	19.03
--	25.00	27.50	80.870	0.80	67	284	1.80	1.80	4	257	260	48	-	100.3	18.91
--	27.50	30.00	82.680	0.78	67	283	1.76	1.70	4	256	260	48	-	99.8	18.66
5	30.00	32.50	84.460	0.72	67	283	1.62	1.60	4	257	261	48	-	99.8	17.93
--	32.50	35.00	86.170	0.71	68	283	1.60	1.60	4	258	262	47	-	99.7	17.80
--	35.00	37.50	87.870	0.71	68	283	1.60	1.60	3	256	262	48	-	99.1	17.80
6	37.50	40.00	89.560	0.63	68	283	1.42	1.40	3	257	261	47	-	99.6	16.77
--	40.00	42.50	91.160	0.63	68	282	1.42	1.40	3	259	260	47	-	98.9	16.76
--	42.50	45.00	92.750	0.61	68	282	1.38	1.35	3	259	261	47	-	99.2	16.49
7	45.00	47.50	94.320	0.67	68	282	1.51	1.50	3	256	261	47	-	98.9	17.28
--	47.50	50.00	95.960	0.67	68	281	1.52	1.50	3	256	261	47	-	100.1	17.27
--	50.00	52.50	97.620	0.67	68	281	1.52	1.50	3	258	261	46	-	99.5	17.27
8	52.50	55.00	99.270	0.70	69	280	1.59	1.55	3	258	261	46	-	98.8	17.64
--	55.00	57.50	100.950	0.72	69	281	1.63	1.60	3	257	262	47	-	99.9	17.90
--	57.50	60.00	102.670	0.72	69	281	1.63	1.60	3	257	262	46	-	101.0	17.90
9	60.00	62.50	104.410	0.76	69	280	1.72	1.70	3	256	261	47	-	98.3	18.38
--	62.50	65.00	106.150	0.79	69	281	1.79	1.75	3	258	261	46	-	98.7	18.75
--	65.00	67.50	107.930	0.79	69	280	1.79	1.80	3	257	260	46	-	99.2	18.74
10	67.50	70.00	109.720	0.81	69	281	1.83	1.80	3	258	261	46	-	99.7	18.99
--	70.00	72.50	111.540	0.81	69	281	1.83	1.80	3	258	261	46	-	100.2	18.99
--	72.50	75.00	113.370	0.81	69	281	1.83	1.80	3	258	262	46	-	99.1	18.99
11	75.00	77.50	115.180	0.73	69	280	1.66	1.60	3	257	262	46	-	99.1	18.01
--	77.50	80.00	116.900	0.76	69	280	1.72	1.70	3	256	263	46	-	99.4	18.38
--	80.00	82.50	118.660	0.76	69	280	1.72	1.70	3	255	261	47	-	100.0	18.38
12	82.50	85.00	120.430	0.79	69	280	1.79	1.75	3	256	261	47	-	99.2	18.74
--	85.00	87.50	122.220	0.80	69	280	1.81	1.80	4	257	260	47	-	99.7	18.86
--	87.50	90.00	124.030	0.80	69	280	1.81	1.80	4	257	261	47	-	99.7	18.86
--	90.00	92.50	125.840	0.99	69	281	2.24	2.20	5	257	261	54	-	99.2	20.99
--	92.50	95.00	128.350	0.99	69	285	2.23	2.20	5	257	262	49	-	100.4	21.05
--	95.00	97.50	130.370	0.97	69	285	2.18	2.10	5	257	261	47	-	99.9	20.84
--	97.50	100.00	132.360	0.97	69	285	2.18	2.10	5	258	261	46	-	98.4	20.84
--	100.00	102.50	134.320	0.96	68	284	2.16	2.15	5	256	261	46	-	99.1	20.71
--	102.50	105.00	136.280	0.96	68	284	2.16	2.15	5	257	261	46	-	99.6	20.71
--	105.00	107.50	138.250	0.96	68	285	2.16	2.15	5	258	262	47	-	99.6	20.73
--	107.50	110.00	140.220	0.94	68	285	2.11	2.10	5	258	263	47	-	99.2	20.51
--	110.00	112.50	142.160	0.95	68	285	2.13	2.10	4	258	263	47	-	99.6	20.62
--	112.50	115.00	144.120	0.88	68	285	1.98	1.95	4	258	261	47	-	99.8	19.85
--	115.00	117.50	146.010	0.83	68	285	1.87	1.85	4	258	262	47	-	98.9	19.27
--	117.50	120.00	147.830	0.85	68	285	1.91	1.90	4	260	264	47	-	99.9	19.50
--	120.00	122.50	149.690	0.73	68	284	1.64	1.60	4	258	266	47	-	100.7	18.06
--	122.50	125.00	151.430	0.73	68	284	1.64	1.60	4	256	261	47	-	99.0	18.06
--	125.00	127.50	153.140	0.72	68	283	1.62	1.60	4	257	260	48	-	98.4	17.93
--	127.50	130.00	154.830	0.64	68	283	1.44	1.40	4	257	262	48	-	99.4	16.90
--	130.00	132.50	156.440	0.61	68	282	1.38	1.35	4	258	262	48	-	100.5	16.49
--	132.50	135.00	158.030	0.63	68	282	1.42	1.40	3	258	262	48	-	98.9	16.76
--	135.00	137.50	159.620	0.70	68	282	1.58	1.55	3	259	261	48	-	99.2	17.66
--	137.50	140.00	161.300	0.69	68	282	1.56	1.50	3	257	262	48	-	98.7	17.54
--	140.00	142.50	162.960	0.69	68	281	1.56	1.50	3	257	261	47	-	98.6	17.53
--	142.50	145.00	164.620	0.68	68	281	1.54	1.50	3	258	261	47	-	99.3	17.40
--	145.00	147.50	166.280	0.69	68	281	1.56	1.50	3	256	263	47	-	98.6	17.53
--	147.50	150.00	167.940	0.69	69	281	1.56	1.50	3	256	264	47	-	99.0	17.53
--	150.00	152.50	169.610	0.68	68	281	1.54	1.50	3	256	265	47	-	99.3	17.40
--	152.50	155.00	171.270	0.68	69	280	1.54	1.50	3	256	264	47	-	99.1	17.39
--	155.00	157.50	172.930	0.71	68	280	1.61	1.60	3	258	264	47	-	100.1	17.77
--	157.50	160.00	174.640	0.67	69	280	1.52	1.50	3	257	261	47	-	99.2	17.26
--	160.00	162.50	176.290	0.67	69	280	1.52	1.50	3	257	262	47	-	99.8	17.26
--	162.50	165.00	177.950	0.67	69	280	1.52	1.50	3	258	263	47	-	100.4	17.26
--	165.00	167.50	179.620	0.62	69	280	1.41	1.40	3	258	262	47	-	100.0	16.60
--	167.50	170.00	181.220	0.64	69	280	1.45	1.40	3	257	261	47	-	99.6	16.87
--	170.00	172.50	182.840	0.64	69	280	1.45	1.40	3	258	261	47	-	99.0	16.87
--	172.50	175.00	184.450	0.65	69	280	1.48	1.45	3	258	263	47	-	98.9	17.00
--	175.00	177.50	186.070	0.65	69	280	1.48	1.45	3	260	263	47	-	98.9	17.00
--	177.50	180.00	187.690	0.63	69	280	1.43	1.40	3	257	264	47	-	99.2	16.74
Final DGM:			189.290												

RESULTS	Run Time		Vm		AP		Tm		Ts		Max Vac		AH		%ISO		BWS		Y _{qs}	
	180.0	min	126.780	ft ³	0.77	in. WC	68.3	°F	282.1	°F	5		1.707	in. WC	99.4	0.169	-1.6			

Emission Calculations

Location **Reworld - Courtice, ON**

Source **APC Outlet No. 2**

Project No. **AST-2024-4547**

Parameter **TSP, Metals**

Run Number		Run 1	Run 2	Run 3	Average
Date		12-3-24	12-3-24	12-5-24	--
Start Time		9:20	1:42	8:12	--
Stop Time		12:33	4:57	11:19	--
Run Time, min	(θ)	180.0	180.0	180.0	180.0
INPUT DATA					
Barometric Pressure, kPa	(Pb)	100.915	100.915	98.205	100.01
Meter Correction Factor	(Y)	1.008	1.008	1.008	1.008
Orifice Calibration Value	($\Delta H @$)	1.838	1.838	1.838	1.838
Meter Volume, m ³	(Vm)	3.631	3.497	3.682	3.603
Meter Temperature, °C	(Tm)	25.6	28.1	25.2	26.3
Meter Temperature, °K	(Tm)	298.7	301.2	298.3	299.4
Meter Orifice Pressure, kPa	(ΔH)	0.434	0.403	0.442	0.426
Volume H ₂ O Collected, mL	(Vlc)	500.3	526.4	484.3	503.7
Nozzle Diameter, cm	(Dn)	0.634	0.634	0.638	0.636
Area of Nozzle, cm ²	(An)	0.3162	0.3162	0.3192	0.3172
ISOKINETIC DATA					
Reference Meter Volume, m ³	(Vmref)	3.650	3.485	3.609	3.581
Reference Water Volume, m ³	(Vwref)	0.680	0.716	0.659	0.685
Moisture Fraction Measured	(BWSmsd)	0.157	0.170	0.154	0.161
Moisture Fraction @ Saturation	(BWSsat)	3.292	3.279	3.449	3.340
Moisture Fraction	(BWS)	0.157	0.170	0.154	0.161
Meter Pressure, kPa	(Pm)	101.35	101.32	98.65	100.44
Volume at Nozzle, m ³	(Vn)	6.156	5.969	6.252	6.13
Isokinetic Sampling Rate, (%)	(I)	98.7	100.9	97.5	99.0

Emission Calculations

Location Reworld - Courtice, ON
Source APC Outlet No. 2
Project No. AST-2024-4547
Parameter TSP, Metals

Run Number		Run 1	Run 2	Run 3	Average
Date		12-3-24	12-3-24	12-5-24	--
Start Time		9:20	1:42	8:12	--
Stop Time		12:33	4:57	11:19	--
Run Time, min		180.0	180.0	180.0	180.0
CALCULATED DATA					
Square Root of ΔP , (in. WC) ^{1/2}	(ΔP)	0.879	0.831	0.884	0.865
Pitot Tube Coefficient	(Cp)	0.842	0.842	0.839	0.841
Barometric Pressure, kPa	(Pb)	100.91	100.91	98.21	100.01
Static Pressure, kPa	(Pg)	-2.713	-2.713	-2.788	-2.738
Stack Pressure, kPa	(Ps)	98.20	98.20	95.42	97.27
Stack Cross-sectional Area, m ²	(As)	1.48	1.48	1.48	1.48
Temperature, °C	(Ts)	137.5	137.3	138.1	137.6
Temperature, °K	(Ts)	410.6	410.5	411.3	410.8
Moisture Fraction Measured	(BWSmsd)	0.157	0.170	0.154	0.161
Moisture Fraction @ Saturation	(BWSsat)	3.292	3.279	3.449	3.340
Moisture Fraction	(BWS)	0.157	0.170	0.154	0.161
O ₂ Concentration, %	(O ₂)	9.11	8.8	8.83	8.91
CO ₂ Concentration, %	(CO ₂)	10.56	10.72	10.48	10.59
CO Concentration, ppmvd	(CO)	11.2	11	27.7	16.63
Ar Concentration, %	(Ar)	0.94	0.95	0.95	0.95
Molecular Weight, lb/lb-mole (dry)	(Md)	30.17	30.18	30.14	30.16
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.26	28.11	28.27	28.21
Velocity, m/s	(Vs)	18.3	17.4	18.6	18.1
VOLUMETRIC FLOW RATE					
At Stack Conditions, m ³ /s	(Qa)	27.04	25.65	27.50	26.73
At Reference Conditions, wet Rm ³ /s	(Qsw)	19.03	18.05	18.78	18.62
At Reference Conditions, dry Rm ³ /s	(Qs)	16.04	14.98	15.88	15.63
At Reference Conditions (corrected), dry Rm ³ /s @ 11% O ₂	(Qsc)	19.10	18.30	19.36	18.92

Reference conditions: 25°C, 1 atm (77°F, 29.92 in. Hg)

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 9:20				Source: APC Outlet No. 2										
Date: 12-3-24		Run 1		VALID		End Time: 12:33		Project No.: AST-2024-4547		Parameter: TSP, Metals								
STACK DATA (EST)				EQUIPMENT		STACK DATA (EST)				FILTER NO.		STACK DATA (FINAL)		MOIST. DATA				
Moisture: 16.0 % est.				Meter Box ID: TEAM 1		Est. Tm: 75 °F						Pb: 29.80 in. Hg		Vlc (ml)				
Barometric: 30.29 in. Hg				Y: 1.008		Est. Ts: -- °F						Pg: -10.90 in. WC		500.3				
Static Press: -10.90 in. WC				AH @ (in. WC): 1.838		Est. AP: -- in. WC						O ₂ : 9.11 %		K-FACTOR				
Stack Press: 29.49 in. Hg				Probe ID: M29-1		Est. Dn: -- in.						CO ₂ : 10.56 %		--				
CO ₂ : 11.2 %				Liner Material: glass		Target Rate: 0.67 scfm						CO: 11.2 ppm						
O ₂ : 8.2 %				Pitot ID: S4								Check Pt.		Initial	Final	Corr.		
N ₂ : 79.7 %				Pitot Cp/Type: 0.842		S-type		LEAK CHECK		Pre	Mid 1	Mid 2	Mid 3	Post	Mid 1 (cf)	142.610	#####	0.460
CO: 14.50 ppm				Nozzle ID: A		glass		Leak Rate (cfm): 0.001		0.001	0.001	0.003	--	0.001	Mid 2 (cf)			--
Md: 30.23 lb/lb-mole				Nozzle Dn (in.): 0.2498				Vacuum (in Hg): 11		10	15	--	15		Mid 3 (cf)			--
Ms: 28.28 lb/lb-mole								Pitot Tube:		--	--	--	--		Mid-Point Leak Check Vol (cf):	0.460		

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube AP (in WC)	Gas Temperatures (°F)		Orifice Press. AH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)		
					DGM Average	Stack				Probe	Filter	Imp	Exit			Aux	
	Amb.	Amb.			Amb.	Amb.	Amb.	Amb.		Amb.							
	73	69			Ideal	Actual	249	248		66	70						
	Begin	End															
1	0.00	2.50	80.190	0.94	74	277	2.14	1.80	3	252	251	50	70	94.4	20.16		
	2.50	5.00	82.060	0.98	74	281	2.22	1.80	3	252	251	49	-	88.2	20.64		
	5.00	7.50	83.840	0.95	74	281	2.15	1.80	3	253	253	47	-	91.1	20.32		
2	7.50	10.00	85.650	0.89	74	281	2.01	1.80	3	253	255	46	-	93.1	19.67		
	10.00	12.50	87.440	0.88	75	281	1.99	2.00	3	253	255	46	-	99.8	19.56		
	12.50	15.00	89.350	0.88	75	281	1.99	2.00	3	253	255	46	-	99.3	19.56		
3	15.00	17.50	91.250	0.84	75	280	1.91	1.90	3	254	256	47	-	99.4	19.09		
	17.50	20.00	93.110	0.83	75	280	1.88	1.90	3	255	256	47	-	98.3	18.98		
	20.00	22.50	94.940	0.85	75	280	1.93	1.90	3	254	256	47	-	98.8	19.21		
4	22.50	25.00	96.800	0.79	75	280	1.79	1.90	3	255	256	47	-	99.7	18.52		
	25.00	27.50	98.610	0.76	75	279	1.73	1.80	3	255	256	48	-	99.3	18.15		
	27.50	30.00	100.380	0.76	75	279	1.73	1.70	3	255	257	48	-	99.3	18.15		
5	30.00	32.50	102.150	0.71	76	278	1.62	1.70	3	255	257	48	-	98.4	17.53		
	32.50	35.00	103.850	0.72	76	278	1.64	1.60	3	255	257	48	-	99.4	17.65		
	35.00	37.50	105.580	0.70	76	278	1.60	1.60	3	255	257	48	-	100.8	17.41		
6	37.50	40.00	107.310	0.61	76	278	1.39	1.60	3	255	257	48	-	99.9	16.25		
	40.00	42.50	108.910	0.62	76	278	1.42	1.40	2	255	257	49	-	99.0	16.38		
	42.50	45.00	110.510	0.62	76	277	1.42	1.40	2	255	257	49	-	99.0	16.37		
7	45.00	47.50	112.110	0.62	77	277	1.42	1.40	2	255	257	49	-	98.2	16.37		
	47.50	50.00	113.700	0.67	77	277	1.53	1.40	2	255	257	49	-	99.8	17.02		
	50.00	52.50	115.380	0.69	77	277	1.58	1.50	2	255	257	49	-	98.9	17.27		
8	52.50	55.00	117.070	0.69	77	278	1.58	1.60	2	255	257	49	-	100.2	17.28		
	55.00	57.50	118.780	0.73	77	277	1.67	1.60	2	255	257	49	-	99.1	17.76		
	57.50	60.00	120.520	0.71	77	278	1.62	1.70	3	255	258	49	-	98.8	17.53		
9	60.00	62.50	122.230	0.72	77	278	1.65	1.60	2	255	257	49	-	99.2	17.65		
	62.50	65.00	123.960	0.73	78	278	1.67	1.60	2	255	257	50	-	99.5	17.78		
	65.00	67.50	125.710	0.74	78	278	1.69	1.70	3	255	257	50	-	98.9	17.90		
10	67.50	70.00	127.460	0.75	78	279	1.72	1.70	3	255	257	50	-	98.8	18.03		
	70.00	72.50	129.220	0.75	78	278	1.72	1.70	3	255	258	50	-	99.9	18.02		
	72.50	75.00	131.000	0.76	78	278	1.74	1.70	3	255	258	51	-	99.2	18.14		
11	75.00	77.50	132.780	0.75	78	278	1.72	1.70	3	255	257	51	-	99.3	18.02		
	77.50	80.00	134.550	0.62	79	279	1.42	1.70	3	255	257	51	-	99.9	16.39		
	80.00	82.50	136.170	0.62	79	277	1.43	1.40	3	255	258	52	-	99.7	16.37		
12	82.50	85.00	137.790	0.61	79	277	1.40	1.40	3	255	258	52	-	98.6	16.24		
	85.00	87.50	139.380	0.60	79	277	1.38	1.40	3	254	258	52	-	98.8	16.10		
	87.50	90.00	140.960	0.65	79	277	1.49	1.40	3	255	258	53	-	99.1	16.76		
1	90.00	92.50	142.610	0.93	78	275	2.14	1.50	3	256	259	54	-	66.9	20.02		
	92.50	95.00	144.400	0.90	78	282	2.05	2.10	3	256	259	50	-	121.8	19.79		
	95.00	97.50	146.770	0.90	78	282	2.05	2.00	3	255	260	47	-	99.2	19.79		
2	97.50	100.00	148.700	0.89	79	282	2.03	2.00	3	255	259	46	-	97.0	19.68		
	100.00	102.50	150.580	0.93	79	281	2.12	2.00	3	256	259	46	-	98.4	20.10		
	102.50	105.00	152.530	0.95	79	281	2.17	2.10	3	256	260	46	-	99.3	20.32		
3	105.00	107.50	154.520	0.94	79	281	2.15	2.20	3	256	259	46	-	99.9	20.21		
	107.50	110.00	156.510	0.93	79	281	2.12	2.10	3	256	260	46	-	99.9	20.10		
	110.00	112.50	158.490	0.91	79	281	2.08	2.10	3	256	259	46	-	99.5	19.89		
4	112.50	115.00	160.440	0.86	79	281	1.96	2.10	3	256	259	47	-	98.6	19.33		
	115.00	117.50	162.320	0.86	79	282	1.96	2.00	3	256	259	47	-	99.2	19.35		
	117.50	120.00	164.210	0.89	79	282	2.03	2.00	3	256	260	47	-	97.5	19.68		
5	120.00	122.50	166.100	0.81	79	282	1.85	2.00	3	257	259	47	-	100.0	18.78		
	122.50	125.00	167.950	0.78	79	282	1.78	1.80	3	257	259	47	-	100.8	18.42		
	125.00	127.50	169.780	0.79	80	282	1.81	1.80	3	256	259	47	-	98.3	18.54		
6	127.50	130.00	171.580	0.71	79	281	1.62	1.80	3	256	259	46	-	102.1	17.57		
	130.00	132.50	173.350	0.70	80	280	1.61	1.60	3	256	260	47	-	99.1	17.43		
	132.50	135.00	175.060	0.71	80	281	1.63	1.60	3	256	260	47	-	100.2	17.57		
7	135.00	137.50	176.800	0.74	80	280	1.70	1.60	3	256	259	47	-	98.6	17.92		
	137.50	140.00	178.550	0.74	80	280	1.70	1.70	3	256	258	47	-	99.8	17.92		
	140.00	142.50	180.320	0.72	80	280	1.65	1.70	3	257	259	47	-	100.6	17.68		
8	142.50	145.00	182.080	0.72	80	280	1.65	1.65	3	256	259	47	-	98.8	17.68		
	145.00	147.50	183.810	0.70	80	280	1.61	1.65	3	256	259	48	-	99.1	17.43		
	147.50	150.00	185.520	0.70	80	279	1.61	1.60	3	256	259	48	-	96.7	17.42		
9	150.00	152.50	187.190	0.73	80	279	1.68	1.60	3	256	259	48	-	100.3	17.79		
	152.50	155.00	188.960	0.75	80	279	1.72	1.70	3	255	258	48	-	100.1	18.03		
	155.00	157.50	190.750	0.75	80	279	1.72	1.70	3	256	259	48	-	100.1	18.03		
10	157.50	160.00	192.540	0.76	80	279	1.74	1.70	3	256	259	48	-	98.9	18.15		
	160.00	162.50	194.320	0.80	80	280	1.83	1.70	3	256	259	48	-	98.6	18.63		
	162.50	165.00	196.140	0.79	80	280	1.81	1.80	3	256	259	48	-	98.8	18.52		
11	165.00	167.50	197.950	0.80	80	280	1.83	1.80	3	256	259	48	-	98.7	18.63		
	167.50	170.00	199.770	0.80	80	280	1.83	1.80	3	255	259	48	-	98.7	18.63		
	170.00	172.50	201.590	0.79	80	280	1.81	1.80	3	256	259	47	-	94.4	18.52		
12	172.50	175.00	203.320	0.80	81	281	1.83	1.80	3	256	259	48	-	102.9	18.65		
	175.00	177.50	205.220	0.79	81	281	1.81	1.80	3	256	259	48	-	99.7	18.53		
	177.50	180.00	207.050	0.79	81	281	1.81	1.80	3	256	259	48	-	98.6	18.53		
Final DGM:			208.860														

RESULTS	Run Time		Vm		AP		Tm		Ts		Max Vac		ΔH		%ISO		BWS		Y _{qs}	
	180.0	min	128.210	ft ³	0.78	in. WC	78.0	°F	279.5	°F	3		1.743	in. WC	98.7	0.157			-1.3	

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 1:42		Source: APC Outlet No. 2																															
Date: 12-3-24		Run 2		VALID		End Time: 4:57		Project No.: AST-2024-4547		Parameter: TSP, Metals																											
STACK DATA (EST)				EQUIPMENT				STACK DATA (EST)				FILTER NO.		STACK DATA (FINAL)				MOIST. DATA																			
Moisture: 16.0 % est.				Meter Box ID: TEAM 1				Est. Tm: 78 °F				Pb: 29.80 in. Hg				Vlc (ml)																					
Barometric: 30.29 in. Hg				Y: 1.008				Est. Ts: 279 °F				Pg: -10.90 in. WC				526.4																					
Static Press: -10.90 in. WC				AH @ (in.WC): 1.838				Est. AP: 0.78 in. WC				O ₂ : 8.8 %				K-FACTOR																					
Stack Press: 29.49 in. Hg				Probe ID: M29-1				Est. Dn: 0.240 in.				CO ₂ : 10.72 %				2.29																					
CO ₂ : 11.2 %				Liner Material: glass				Target Rate: 0.67 scfm				CO: 11 ppm																									
O ₂ : 8.2 %				Pitot ID: S4								Check Pt.				Initial		Final		Corr.																	
N ₂ : 79.7 %				Pitot Cp/Type: 0.842				S-type				LEAK CHECK				Pre				Mid 1		Mid 2		Mid 3		Post		Mid 1 (cf)		75.960		76.410		0.450			
CO: 14.50 ppm				Nozzle ID: A				glass				Leak Rate (cfm): 0.006				0.003				0.005				--				0.002				Mid 2 (cf)				--	
Md: 30.23 lb/lb-mole				Nozzle Dn (in.): 0.2498								Vacuum (in Hg): 15				14				14				--				15				Mid 3 (cf)				--	
Ms: 28.28 lb/lb-mole												Pitot Tube: Pass				--				--				--				Pass				Mid-Point Leak Check Vol (cf): 0.450					

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube AP (in WC)	Gas Temperatures (°F)		Orifice Press. AH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)		
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	Aux				
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.			Amb.	Amb.
					--	--				--	--	--	--			--	--
1	0.00	2.50	9.315	0.87	79	280	1.99	2.00	3	252	252	60	-	106.4	19.48		
--	2.50	5.00	11.330	0.88	79	280	2.01	2.00	3	254	255	60	-	100.8	19.60		
--	5.00	7.50	13.250	0.87	79	281	1.99	2.00	3	254	257	58	-	100.9	19.50		
2	7.50	10.00	15.160	0.89	79	281	2.03	2.00	3	254	257	56	-	99.3	19.72		
--	10.00	12.50	17.060	0.88	79	281	2.01	2.00	3	255	260	56	-	100.9	19.61		
--	12.50	15.00	18.980	0.92	79	281	2.10	2.00	3	255	260	56	-	100.2	20.05		
3	15.00	17.50	20.930	0.90	80	281	2.06	2.10	3	256	260	57	-	100.6	19.83		
--	17.50	20.00	22.870	0.89	80	281	2.04	2.00	3	256	260	57	-	100.6	19.72		
--	20.00	22.50	24.800	0.89	80	281	2.04	2.00	3	256	259	57	-	99.6	19.72		
4	22.50	25.00	26.710	0.87	80	281	1.99	2.00	3	256	258	58	-	100.7	19.50		
--	25.00	27.50	28.620	0.87	80	282	1.99	2.00	3	256	259	58	-	100.8	19.51		
--	27.50	30.00	30.530	0.87	81	283	1.99	2.00	3	256	260	58	-	100.2	19.52		
5	30.00	32.50	32.430	0.81	81	283	1.85	2.00	3	256	260	59	-	100.5	18.84		
--	32.50	35.00	34.270	0.83	81	283	1.90	1.80	3	256	260	59	-	100.3	19.07		
--	35.00	37.50	36.130	0.84	81	283	1.92	1.90	3	256	260	59	-	100.3	19.18		
6	37.50	40.00	38.000	0.78	81	284	1.78	1.90	3	257	261	59	-	100.8	18.50		
--	40.00	42.50	39.810	0.79	81	284	1.80	1.80	3	257	261	60	-	100.7	18.62		
--	42.50	45.00	41.630	0.76	81	284	1.74	1.80	3	257	260	60	-	101.0	18.26		
7	45.00	47.50	43.420	0.81	81	284	1.85	1.70	3	257	264	60	-	99.4	18.85		
--	47.50	50.00	45.240	0.81	81	285	1.85	1.80	3	257	261	60	-	100.1	18.86		
--	50.00	52.50	47.070	0.82	82	285	1.87	1.80	3	257	261	60	-	100.9	18.98		
8	52.50	55.00	48.930	0.81	82	284	1.85	1.90	3	257	263	61	-	101.5	18.85		
--	55.00	57.50	50.790	0.82	82	284	1.88	1.80	3	257	262	60	-	100.8	18.97		
--	57.50	60.00	52.650	0.82	82	284	1.88	1.90	3	257	261	61	-	101.4	18.97		
9	60.00	62.50	54.520	0.83	82	284	1.90	1.90	3	257	263	61	-	100.2	19.08		
--	62.50	65.00	56.380	0.82	82	284	1.88	1.90	3	256	262	61	-	100.3	18.97		
--	65.00	67.50	58.230	0.81	83	283	1.86	1.90	3	257	262	61	-	100.7	18.84		
10	67.50	70.00	60.080	0.80	83	283	1.84	1.90	3	256	262	61	-	100.8	18.72		
--	70.00	72.50	61.920	0.79	83	282	1.82	1.80	3	256	261	60	-	101.3	18.59		
--	72.50	75.00	63.760	0.79	83	281	1.82	1.80	3	256	263	59	-	100.1	18.58		
11	75.00	77.50	65.580	0.68	83	277	1.57	1.80	3	256	263	59	-	101.7	17.19		
--	77.50	80.00	67.300	0.69	83	277	1.60	1.60	3	256	262	58	-	100.3	17.32		
--	80.00	82.50	69.010	0.69	83	277	1.60	1.60	3	256	261	58	-	99.8	17.32		
12	82.50	85.00	70.710	0.68	83	277	1.57	1.60	3	256	262	57	-	96.4	17.19		
--	85.00	87.50	72.340	0.70	84	277	1.62	1.60	3	256	260	57	-	104.7	17.44		
--	87.50	90.00	74.140	0.69	84	277	1.60	1.60	3	256	261	56	-	106.6	17.32		
1	90.00	92.50	75.960	0.73	83	277	1.69	1.70	3	256	262	60	-	103.3	17.81		
--	92.50	95.00	78.220	0.71	82	280	1.63	1.70	3	256	259	58	-	101.1	17.60		
--	95.00	97.50	79.960	0.71	82	281	1.63	1.60	3	257	263	55	-	100.5	17.61		
2	97.50	100.00	81.690	0.70	83	280	1.61	1.60	3	256	262	54	-	101.0	17.48		
--	100.00	102.50	83.420	0.70	83	281	1.61	1.60	3	257	261	53	-	98.7	17.49		
--	102.50	105.00	85.110	0.70	83	280	1.61	1.60	3	256	261	52	-	99.8	17.48		
3	105.00	107.50	86.820	0.70	83	280	1.61	1.60	3	257	262	52	-	101.0	17.48		
--	107.50	110.00	88.550	0.68	83	280	1.57	1.60	3	258	263	52	-	100.7	17.23		
--	110.00	112.50	90.250	0.66	83	280	1.52	1.60	3	257	262	53	-	101.6	16.97		
4	112.50	115.00	91.940	0.60	83	280	1.38	1.50	3	257	260	53	-	102.1	16.18		
--	115.00	117.50	93.560	0.59	83	279	1.36	1.40	3	257	260	53	-	100.4	16.03		
--	117.50	120.00	95.140	0.60	83	279	1.39	1.40	3	257	262	54	-	99.5	16.17		
5	120.00	122.50	96.720	0.56	84	278	1.30	1.40	3	257	262	54	-	101.4	15.61		
--	122.50	125.00	98.280	0.55	84	279	1.27	1.30	3	257	261	53	-	101.1	15.48		
--	125.00	127.50	99.820	0.54	84	277	1.25	1.30	3	257	261	53	-	100.6	15.32		
6	127.50	130.00	101.340	0.53	84	277	1.23	1.30	3	256	261	53	-	100.8	15.18		
--	130.00	132.50	102.850	0.54	84	277	1.25	1.30	3	256	261	54	-	100.6	15.32		
--	132.50	135.00	104.370	0.52	84	277	1.21	1.30	3	257	261	54	-	101.1	15.03		
7	135.00	137.50	105.870	0.54	84	277	1.25	1.20	2	256	266	54	-	100.5	15.32		
--	137.50	140.00	107.390	0.52	84	276	1.21	1.30	2	256	263	54	-	101.1	15.02		
--	140.00	142.50	108.890	0.52	84	276	1.21	1.20	2	256	262	54	-	99.7	15.02		
8	142.50	145.00	110.370	0.53	84	276	1.23	1.20	2	256	263	54	-	100.8	15.17		
--	145.00	147.50	111.880	0.53	84	275	1.23	1.20	2	256	262	54	-	100.7	15.16		
--	147.50	150.00	113.390	0.52	84	275	1.21	1.20	2	256	262	54	-	101.0	15.01		
9	150.00	152.50	114.890	0.55	84	275	1.28	1.20	2	256	263	54	-	101.5	15.44		
--	152.50	155.00	116.440	0.54	84	275	1.26	1.30	2	256	263	54	-	100.4	15.30		
--	155.00	157.50	117.960	0.55	84	275	1.28	1.30	2	256	260	54	-	101.5	15.44		
10	157.50	160.00	119.510	0.55	84	275	1.28	1.30	2	256	262	54	-	100.8	15.44		
--	160.00	162.50	121.050	0.55	85	275	1.28	1.30	2	264	263	54	-	100.0	15.44		
--	162.50	165.00	122.580	0.54	85	275	1.26	1.30	2	257	263	54	-	100.2	15.30		
11	165.00	167.50	124.100	0.54	85	273	1.26	1.30	2	256	261	54	-	101.4	15.28		
--	167.50	170.00	125.640	0.53	85	273	1.24	1.30	2	256	262	54	-	101.1	15.13		
--	170.00	172.50	127.160	0.53	85	273	1.24	1.20	2	255	262	54	-	101.0	15.13		
12	172.50	175.00	128.680	0.53	85	273	1.24	1.20	2	255	261	54	-	100.4	15.13		
--	175.00	177.50	130.190	0.54	85	272	1.26	1.20	2	255	261	54	-	100.0	15.27		
--	177.50	180.00	131.710	0.52	85	273	1.22	1.30	2	256	262	54	-	103.4	14.99		
Final DGM:			133.250														

RESULTS	Run Time		Vm		AP		Tm		Ts		Max Vac		AH		%ISO		BWS		Y _{qs}	
	180.0	min	123.485	ft ³	0.70	in. WC	82.6	°F	279.2	°F	3	1.618	in. WC	100.9	0.170	-1.5				

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 8:12				Source: APC Outlet No. 2							
Date: 12-5-24		Run 3		VALID		End Time: 11:19		Project No.: AST-2024-4547		Parameter: TSP, Metals					
STACK DATA (EST)				EQUIPMENT		STACK DATA (EST)				FILTER NO.		STACK DATA (FINAL)		MOIST. DATA	
Moisture: 16.0 % est.		Meter Box ID: TEAM 1		Est. Tm: 83 °F				Pb: 29.00 in. Hg		Vlc (ml)					
Barometric: 30.29 in. Hg		Y: 1.008		Est. Ts: 279 °F				Pg: -11.20 in. WC		484.3					
Static Press: -10.90 in. WC		AH @ (in.WC): 1.838		Est. AP: 0.70 in. WC				O2: 8.83 %		K-FACTOR					
Stack Press: 29.49 in. Hg		Probe ID: M29-1		Est. Dn: 0.246 in.				CO2: 10.48 %		2.333					
CO2: 11.2 %		Liner Material: glass		Target Rate: 0.67 scfm				CO: 27.7 ppm							
O2: 8.2 %		Pitot ID: 15A						Check Pt.		Initial	Final	Corr.			
N2: 79.7 %		Pitot Cp/Type: 0.839		S-type	LEAK CHECK	Pre	Mid 1	Mid 2	Mid 3	Post	Mid 1 (cf)	153.420	#####	0.530	
CO: 14.50 ppm		Nozzle ID: E		--	Leak Rate (cfm):	0.002	0.002	0.002	--	0.002	Mid 2 (cf)	--	--	--	
Md: 30.23 lb/lb-mole		Nozzle Dn (in.): 0.2510			Vacuum (in Hg):	15	15	15	--	15	Mid 3 (cf)	--	--	--	
Ms: 28.28 lb/lb-mole					Pitot Tube:	Pass	--	--	--	Pass	Mid-Point Leak Check Vol (cf):	0.530			

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft³)	Pitot Tube AP (in WC)	Gas Temperatures (°F)		Orifice Press. AH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)
					DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	Aux		
	Amb.	Amb.			Amb.	Amb.				Amb.	Amb.				
	Begin	End			--	--	--	--		--	--				
1	0.00	2.50	89.740	0.93	75	273	2.16	2.10	3	255	260	63	-	96.9	20.21
--	2.50	5.00	91.700	0.95	75	273	2.20	2.20	3	256	251	60	-	98.4	20.42
--	5.00	7.50	93.710	0.95	75	280	2.18	2.15	3	257	251	55	-	99.3	20.52
2	7.50	10.00	95.730	0.96	74	280	2.20	2.20	3	255	252	52	-	97.6	20.63
--	10.00	12.50	97.720	0.96	74	280	2.20	2.15	3	256	254	50	-	97.0	20.63
--	12.50	15.00	99.700	0.95	74	280	2.18	2.15	3	256	256	50	-	97.6	20.52
3	15.00	17.50	101.680	0.91	75	280	2.09	2.05	3	255	254	51	-	97.5	20.09
--	17.50	20.00	103.620	0.91	74	280	2.09	2.05	3	256	253	50	-	97.1	20.09
--	20.00	22.50	105.550	0.92	74	281	2.11	2.05	3	255	253	50	-	96.7	20.21
4	22.50	25.00	107.480	0.86	74	281	1.97	1.95	3	256	252	49	-	97.4	19.54
--	25.00	27.50	109.360	0.86	75	281	1.97	1.95	3	258	254	50	-	97.7	19.54
--	27.50	30.00	111.250	0.87	75	281	2.00	1.95	3	257	254	50	-	97.7	19.65
5	30.00	32.50	113.150	0.78	75	281	1.79	1.75	3	258	255	50	-	97.7	18.61
--	32.50	35.00	114.950	0.78	76	282	1.79	1.75	3	253	255	50	-	97.5	18.62
--	35.00	37.50	116.750	0.79	76	282	1.81	1.80	3	258	255	50	-	98.0	18.74
6	37.50	40.00	118.570	0.65	76	281	1.50	1.45	3	257	255	50	-	99.6	16.99
--	40.00	42.50	120.250	0.63	77	281	1.45	1.40	3	257	258	50	-	98.0	16.72
--	42.50	45.00	121.880	0.63	77	282	1.45	1.40	3	258	253	50	-	97.4	16.73
7	45.00	47.50	123.500	0.68	77	281	1.57	1.55	3	258	257	50	-	97.2	17.37
--	47.50	50.00	125.180	0.66	77	281	1.52	1.50	3	257	258	49	-	98.1	17.12
--	50.00	52.50	126.850	0.66	77	281	1.52	1.50	3	257	256	43	-	98.1	17.12
8	52.50	55.00	128.520	0.70	77	280	1.62	1.60	3	258	256	49	-	98.0	17.62
--	55.00	57.50	130.240	0.73	77	280	1.68	1.65	3	256	256	49	-	96.0	17.99
--	57.50	60.00	131.960	0.72	78	280	1.66	1.65	3	258	257	49	-	96.5	17.87
9	60.00	62.50	133.680	0.72	78	280	1.66	1.65	3	258	256	50	-	96.5	17.87
--	62.50	65.00	135.400	0.73	78	279	1.69	1.65	3	259	255	49	-	97.4	17.98
--	65.00	67.50	137.150	0.71	78	279	1.64	1.60	3	258	256	50	-	97.7	17.73
10	67.50	70.00	138.880	0.69	78	279	1.60	1.55	3	258	256	50	-	96.8	17.48
--	70.00	72.50	140.570	0.69	78	279	1.60	1.55	3	258	257	50	-	97.9	17.48
--	72.50	75.00	142.280	0.68	78	278	1.58	1.55	3	259	256	50	-	98.0	17.34
11	75.00	77.50	143.980	0.58	78	278	1.35	1.30	3	255	257	51	-	99.2	16.01
--	77.50	80.00	145.570	0.58	78	278	1.35	1.30	3	257	256	51	-	97.3	16.01
--	80.00	82.50	147.130	0.57	78	278	1.32	1.30	3	255	256	52	-	96.9	15.87
12	82.50	85.00	148.670	0.59	78	278	1.37	1.30	3	255	255	52	-	97.1	16.15
--	85.00	87.50	150.240	0.59	78	278	1.37	1.30	3	257	256	52	-	97.1	16.15
--	87.50	90.00	151.810	0.60	79	278	1.39	1.35	3	256	257	52	-	98.6	16.29
1	90.00	92.50	153.420	0.85	78	280	1.96	1.95	3	257	252	53	-	97.7	19.41
--	92.50	95.00	155.840	0.88	78	280	2.03	2.00	3	257	257	53	-	98.0	19.75
--	95.00	97.50	157.770	0.88	78	280	2.03	2.00	3	256	255	51	-	97.0	19.75
2	97.50	100.00	159.680	0.90	78	280	2.08	2.05	3	258	257	51	-	97.5	19.97
--	100.00	102.50	161.620	0.92	78	280	2.12	2.10	3	258	258	51	-	96.9	20.20
--	102.50	105.00	163.570	0.92	78	280	2.12	2.10	3	256	257	52	-	97.9	20.20
3	105.00	107.50	165.540	0.90	78	280	2.08	2.00	3	252	254	52	-	96.9	19.97
--	107.50	110.00	167.470	0.90	78	281	2.08	2.00	3	256	255	52	-	96.5	19.99
--	110.00	112.50	169.390	0.91	79	281	2.10	2.05	3	259	255	52	-	97.8	20.10
4	112.50	115.00	171.350	0.85	78	281	1.96	1.95	3	258	255	53	-	97.7	19.43
--	115.00	117.50	173.240	0.85	79	281	1.96	1.95	3	257	255	53	-	98.1	19.43
--	117.50	120.00	175.140	0.85	79	281	1.96	1.95	3	260	255	53	-	95.5	19.43
5	120.00	122.50	176.990	0.81	79	282	1.87	1.85	3	259	257	53	-	97.9	18.98
--	122.50	125.00	178.840	0.84	79	282	1.94	1.90	3	257	255	54	-	98.7	19.32
--	125.00	127.50	180.740	0.84	79	283	1.94	1.90	3	259	256	54	-	98.3	19.34
6	127.50	130.00	182.630	0.78	78	283	1.80	1.75	3	260	256	54	-	97.2	18.63
--	130.00	132.50	184.430	0.78	79	284	1.80	1.75	3	261	259	54	-	97.7	18.65
--	132.50	135.00	186.240	0.77	78	283	1.77	1.75	3	262	258	54	-	97.3	18.51
7	135.00	137.50	188.030	0.79	79	283	1.82	1.80	3	253	258	54	-	97.5	18.75
--	137.50	140.00	189.850	0.79	78	283	1.82	1.80	3	257	256	55	-	98.3	18.75
--	140.00	142.50	191.680	0.80	78	283	1.84	1.80	3	257	256	55	-	97.6	18.87
8	142.50	145.00	193.510	0.81	78	283	1.86	1.85	3	258	256	54	-	97.0	18.99
--	145.00	147.50	195.340	0.81	78	283	1.86	1.85	3	257	256	55	-	97.6	18.99
--	147.50	150.00	197.180	0.79	78	283	1.82	1.80	3	263	257	54	-	98.8	18.75
9	150.00	152.50	199.020	0.80	78	283	1.84	1.80	3	257	257	54	-	96.6	18.87
--	152.50	155.00	200.830	0.81	78	283	1.86	1.85	3	259	256	54	-	97.0	18.99
--	155.00	157.50	202.660	0.78	78	283	1.80	1.75	3	257	256	53	-	96.7	18.63
10	157.50	160.00	204.450	0.78	78	283	1.80	1.75	3	259	256	53	-	96.7	18.63
--	160.00	162.50	206.240	0.78	78	281	1.80	1.75	3	257	256	53	-	97.1	18.61
--	162.50	165.00	208.040	0.79	78	281	1.82	1.80	3	258	256	54	-	97.0	18.73
11	165.00	167.50	209.850	0.74	78	281	1.71	1.70	3	259	256	53	-	99.7	18.12
--	167.50	170.00	211.650	0.70	77	281	1.61	1.55	3	259	256	53	-	95.8	17.63
--	170.00	172.50	213.330	0.74	78	281	1.71	1.65	3	258	257	54	-	96.9	18.12
12	172.50	175.00	215.080	0.74	78	281	1.71	1.65	3	258	256	54	-	98.6	18.12
--	175.00	177.50	216.860	0.74	77	281	1.71	1.65	3	258	256	54	-	96.5	18.12
--	177.50	180.00	218.600	0.70	77	281	1.61	1.60	3	258	257	54	-	97.0	17.63
Final DGM:			220.300												

RESULTS	Run Time		Vm	AP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Vqs
	180.0	min	130.030	ft³							

APPENDIX 23

Particle Size Distribution Test Emission Calculations (12 pages)

EPA Draft Method - PM_{10/2.5} Calculations

Date: December 5, 2024
Client: Reworld
Plant: DYEC
Location: Courtice, Ontario
Test No.: 1
Test Location: APC Outlet No. 1

Project No.: AST-2024-4547
Operator: DU

Cyclone Sampling Parameters			
Cyclone Q _{ST}	0.35 Rft ³ /min*	9.9 l/min*	
Cyclone Q _{S actual}	0.60 ft ³ /min	17.1 l/min	
Stack Gas Sampling Parameters			
V _{ms}	41.8 Rft ³ *	1.185 Rm ³ *	
Average Cyclone I Cut Diameter		10.17 μm	
Average Cyclone IV Cut Diameter		2.35 μm	
Average Isokineticity		98.7 %	
Stack Gas Physical Parameters			
B _{ws}	14.9 % v/v		
Average m	221.9 (dimensionless)		
M _d	29.99 lbs/lbs mole		
M _w	28.21 lbs/lbs mole		
Average T _s	286 °F	141 °C	
Average U _s	59.3 ft/s	18.1 m/s	
Stack Area	15.9 ft ²	1.48 m ²	
Actual Q _s	56685 ACFM	26.8 m ³ /s	
Wet Reference Q _s	38433 SCFM*	18.1 Rm ³ /s*	
Dry Reference Q _s	32725 SCFM*	15.4 Rm ³ /s*	
Summary of Particulate Emission Rates			
Dry Ref. Conc.		Emission Rate	
Total Part. (a)	1.52 mg/Rm ³ *	0.0235 g/s	
Total Part. (b)	8.36 mg/Rm ³ *	0.129 g/s	
PM ₁₀ Part. (b)	8.02 mg/Rm ³ *	0.124 g/s	
PM _{2.5} Part. (b)	7.68 mg/Rm ³ *	0.119 g/s	
Cond. Part.	6.84 mg/Rm ³ *	0.106 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)	357.0	637.0	764.2	973.0	
final volume or weight (ml or mg)	499.0	637.8	763.0	983.4	
gain in volume or weight (ml or mg)	142.0	0.8	-1.2	10.4	0.0
TOTAL					152.0

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.4	<0.4	<0.4	<0.6	8.1

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: December 5, 2024	Plant: DYEC	Test No.: 1	Project No.: AST-2024-4547
Client: Reworld	Location: Courtice, Ontario	Test location: APC Outlet No. 1	Operator: DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft³)	Delta P ("H₂O)	Desired cfm	Stack Temp (°F)	Meter Temp		Meter Pressure DH ("H₂O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
								Outlet (°F)	Inlet (°F)						
1	1	0.00	10.7	77.55	0.83	0.35	283	75	75	0.38	4.0	63.4	10.16	2.35	91.9
	2	10.7	10.8	81.40	0.92	0.35	283	76	76	0.38	4.0	66.7	9.99	2.28	89.4
	3	21.5	10.6	85.39	0.83	0.35	291	78	78	0.38	4.0	63.7	10.09	2.32	93.6
	4	32.1	10.3	89.27	0.79	0.35	291	79	79	0.38	4.0	62.1	10.23	2.38	94.1
	5	42.4	9.4	92.96	0.66	0.35	291	80	80	0.38	4.0	56.8	10.17	2.36	103.7
	6	51.8	8.8	96.38	0.59	0.35	289	81	81	0.38	4.0	53.6	10.17	2.35	109.6
		60.6		99.57											
2	1	0.00	10.4	99.57	0.80	0.35	289	82	82	0.38	4.0	62.5	10.47	2.48	90.3
	2	10.4	10.4	103.22	0.77	0.35	287	82	82	0.38	4.0	61.2	9.95	2.26	98.8
	3	20.9	10.0	107.14	0.68	0.35	283	83	83	0.38	4.0	57.4	10.46	2.47	97.5
	4	30.9	10.0	110.65	0.63	0.35	282	83	83	0.38	4.0	55.2	9.83	2.22	110.4
	5	40.9	9.6	114.48	0.60	0.35	283	83	83	0.38	4.0	53.9	10.25	2.38	106.8
	6	50.5	8.9	117.94	0.63	0.35	283	83	83	0.38	4.0	55.2	10.27	2.39	104.0
		59.4		121.14											
Averages					0.73		286	80		0.38		59.3	10.17	2.35	98.7

EPA Draft Method - PM_{10/2.5} Calculations

Date: December 5, 2024
Client: Reworld
Plant: DYEC
Location: Courtice, Ontario
Test No.: 2
Test Location: APC Outlet No. 1

Project No.: AST-2024-4547
Operator: DU

Cyclone Sampling Parameters			
Cyclone Q _{ST}	0.35 Rft ³ /min *	9.8 l/min *	
Cyclone Q _{s actual}	0.60 ft ³ /min	17.1 l/min	
Stack Gas Sampling Parameters			
V _{ms}	41.7 Rft ³ *	1.181 Rm ³ *	
Average Cyclone I Cut Diameter	10.15 µm		
Average Cyclone IV Cut Diameter	2.34 µm		
Average Isokineticity	99.6 %		
Stack Gas Physical Parameters			
B _{ws}	15.2 % v/v		
Average m	221.1 (dimensionless)		
M _d	30.01 lbs/lbs mole		
M _w	28.18 lbs/lbs mole		
Average T _s	285 °F	141 °C	
Average U _s	58.5 ft/s	17.8 m/s	
Stack Area	15.9 ft ²	1.48 m ²	
Actual Q _s	55895 ACFM	26.4 m ³ /s	
Wet Reference Q _s	38053 SCFM*	18.0 Rm ³ /s*	
Dry Reference Q _s	32259 SCFM*	15.2 Rm ³ /s*	
Summary of Particulate Emission Rates			
Dry Ref. Conc.		Emission Rate	
Total Part. (a)	1.52 mg/Rm ³ *	0.0232 g/s	
Total Part. (b)	6.94 mg/Rm ³ *	0.106 g/s	
PM ₁₀ Part. (b)	6.60 mg/Rm ³ *	0.101 g/s	
PM _{2.5} Part. (b)	6.26 mg/Rm ³ *	0.095 g/s	
Cond. Part.	5.42 mg/Rm ³ *	0.082 g/s	

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	358.5	665.0	752.9	966.0	
final volume or weight (ml or mg)	504.8	666.0	752.3	975.4	
gain in volume or weight (ml or mg)	146.3	1.0	-0.6	9.4	0.0
TOTAL					156.1

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.4	<0.4	<0.4	<0.6	6.4

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: December 5, 2024		Plant: DVEC		Test No.: 2		Project No.: AST-2024-4547	
Client: Reworld		Location: Courtice, Ontario		Test location: APC Outlet No. 1		Operator: DU	

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft³)	Delta P ("H₂O)	Desired cfm	Stack Temp (°F)	Meter Temp		Meter Pressure DH ("H₂O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
								Outlet (°F)	Inlet (°F)						
2	1	0.00	10.5	21.23	0.85	0.35	287	83	83	0.38	4.0	64.2	10.26	2.39	89.8
	2	10.5	10.3	24.99	0.81	0.35	288	79	79	0.38	4.0	62.7	10.13	2.34	93.8
	3	20.8	9.7	28.72	0.73	0.35	287	80	80	0.38	4.0	59.5	10.13	2.34	98.7
	4	30.5	9.3	32.23	0.67	0.35	287	80	80	0.38	4.0	57.0	10.17	2.35	102.5
	5	39.8	9.1	35.59	0.60	0.35	287	80	80	0.38	4.0	54.0	10.01	2.29	110.6
	6	49.0	9.3	38.94	0.59	0.35	285	80	80	0.38	4.0	53.4	10.16	2.35	109.1
		58.3		42.30											
1	1	0.00	10.7	42.30	0.82	0.35	285	80	80	0.38	4.0	63.0	10.08	2.32	93.5
	2	10.7	11.3	46.20	0.79	0.35	283	80	80	0.38	4.0	61.8	10.12	2.33	94.6
	3	22.0	10.7	50.28	0.77	0.35	283	81	81	0.38	4.0	61.0	10.18	2.36	95.0
	4	32.7	10.4	54.13	0.67	0.35	283	81	81	0.38	4.0	56.9	10.22	2.37	101.4
	5	43.1	9.5	57.87	0.62	0.35	284	81	81	0.38	4.0	54.7	10.15	2.34	106.5
	6	52.7	9.0	61.32	0.59	0.35	284	81	81	0.38	4.0	53.4	10.18	2.35	108.7
		61.7		64.57											

Averages

0.71

285

80

0.38

58.5

10.15

2.34

99.6

EPA Draft Method - PM_{10/2.5} Calculations

Date: December 5, 2024
Client: Reworld
Plant: DYEC
Location: Courtice, Ontario
Test No.: 3
Test Location: APC Outlet No. 1

Project No.: AST-2024-4547
Operator: DU

Cyclone Sampling Parameters			
Cyclone Q _{ST}	0.35 Rft ³ /min *	9.9 l/min *	
Cyclone Q _{s actual}	0.60 ft ³ /min	17.1 l/min	
Stack Gas Sampling Parameters			
V _{ms}	41.9 Rft ³ *	1.187 Rm ³ *	
Average Cyclone I Cut Diameter		10.15 μm	
Average Cyclone IV Cut Diameter		2.34 μm	
Average Isokineticity		95.8 %	
Stack Gas Physical Parameters			
B _{ws}	15.2 % v/v		
Average m	221.6 (dimensionless)		
M _d	29.98 lbs/lbs mole		
M _w	28.16 lbs/lbs mole		
Average T _s	286 °F	141 °C	
Average U _s	60.8 ft/s	18.5 m/s	
Stack Area	15.9 ft ²	1.48 m ²	
Actual Q _s	58130 ACFM	27.4 m ³ /s	
Wet Reference Q _s	39662 SCFM *	18.7 Rm ³ /s *	
Dry Reference Q _s	33634 SCFM *	15.9 Rm ³ /s *	
Summary of Particulate Emission Rates			
Dry Ref. Conc.		Emission Rate	
Total Part. (a)	1.52 mg/Rm ³ *	0.0241 g/s	
Total Part. (b)	6.40 mg/Rm ³ *	0.102 g/s	
PM ₁₀ Part. (b)	6.07 mg/Rm ³ *	0.096 g/s	
PM _{2.5} Part. (b)	5.73 mg/Rm ³ *	0.091 g/s	
Cond. Part.	4.89 mg/Rm ³ *	0.078 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)	357.0	637.0	763.0	931.2	
final volume or weight (ml or mg)	500.3	636.8	761.4	946.2	
gain in volume or weight (ml or mg)	143.3	-0.2	-1.6	15.0	0.0
TOTAL					156.5

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.4	<0.4	<0.4	<0.6	5.8

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: December 5, 2024		Plant: DYEC		Test No.: 3		Project No.: AST-2024-4547	
Client: Reworld		Location: Courtice, Ontario		Test location: APC Outlet No. 1		Operator: DU	

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft³)	Delta P ("H₂O)	Desired cfm	Stack Temp (°F)	Meter Temp		Meter Pressure DH ("H₂O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
								Outlet (°F)	Inlet (°F)						
2	1	0.00	11.0	64.70	0.85	0.35	286	80	80	0.38	4.0	64.1	10.26	2.39	89.8
	2	11.0	10.7	68.60	0.82	0.35	287	78	78	0.38	4.0	63.0	10.35	2.42	90.5
	3	21.7	10.2	72.35	0.81	0.35	287	78	78	0.38	4.0	62.6	10.35	2.42	91.0
	4	31.9	9.7	75.91	0.73	0.35	286	78	78	0.38	4.0	59.4	9.92	2.25	101.7
	5	41.6	9.2	79.53	0.68	0.35	286	79	79	0.38	4.0	57.3	10.03	2.29	103.8
	6	50.8	9.1	82.91	0.65	0.35	286	79	79	0.38	4.0	56.1	9.93	2.25	107.7
		60.0		86.31											
1	1	0.00	10.8	86.31	0.90	0.35	287	80	80	0.38	4.0	66.0	10.03	2.29	90.3
	2	10.8	10.6	90.27	0.88	0.35	286	80	80	0.38	4.0	65.2	10.15	2.34	89.7
	3	21.4	10.4	94.09	0.84	0.35	286	80	80	0.38	4.0	63.7	10.27	2.39	90.3
	4	31.8	9.7	97.80	0.74	0.35	286	80	80	0.38	4.0	59.8	10.21	2.36	97.0
	5	41.5	9.4	101.29	0.68	0.35	286	80	80	0.38	4.0	57.3	10.14	2.34	102.2
	6	50.9	9.1	104.68	0.63	0.35	286	80	80	0.38	4.0	55.2	10.11	2.33	106.6
		60.0		108.00											

Averages

0.77	286	79	0.38	60.8	10.15	2.34	95.8

EPA Draft Method - PM_{10/2.5} Calculations

Date: December 4, 2024
Client: Reworld
Plant: DYEC
Location: Courtice, Ontario
Test No.: 1
Test Location: APC Outlet No. 2

Project No.: AST-2024-4547
Operator: DU

Cyclone Sampling Parameters			
Cyclone Q _{ST}	0.35 Rft ³ /min*	9.9 l/min*	
Cyclone Q _{s actual}	0.61 ft ³ /min	17.2 l/min	
Stack Gas Sampling Parameters			
V _{ms}	42.1 Rft ³ *	1.193 Rm ³ *	
Average Cyclone I Cut Diameter		10.02 µm	
Average Cyclone IV Cut Diameter		2.28 µm	
Average Isokineticity		95.0 %	
Stack Gas Physical Parameters			
B _{ws}	16.0 % v/v		
Average m	219.3 (dimensionless)		
M _d	30.05 lbs/lbs mole		
M _w	28.12 lbs/lbs mole		
Average T _s	280 °F	138 °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	59173 ACFM	27.9 m ³ /s	
Wet Reference Q _s	40746 SCFM*	19.2 Rm ³ /s*	
Dry Reference Q _s	34221 SCFM*	16.2 Rm ³ /s*	
Summary of Particulate Emission Rates			
Total Part. (a)	Dry Ref. Conc.	Emission Rate	
	1.51 mg/Rm ³ *	0.0244 g/s	
Total Part. (b)	6.28 mg/Rm ³ *	0.102 g/s	
PM ₁₀ Part. (b)	5.95 mg/Rm ³ *	0.096 g/s	
PM _{2.5} Part. (b)	5.61 mg/Rm ³ *	0.091 g/s	
Cond. Part.	4.78 mg/Rm ³ *	0.077 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)	357.8	664.0	752.8	946.6	
final volume or weight (ml or mg)	515.2	665.0	752.4	956.6	
gain in volume or weight (ml or mg)	157.4	1.0	-0.4	10.0	0.0
TOTAL					168.0

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.4	<0.4	<0.4	<0.6	5.7

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: December 4, 2024			Plant: DYEC			Test No.: 1			Project No.: AST-2024-4547						
Client: Reworld			Location: Courtice, Ontario			Test location: APC Outlet No. 2			Operator: DU						
Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft³)	Delta P ("H₂O)	Desired cfm	Stack Temp (°F)	Meter Temp		Meter Pressure DH ("H₂O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
								Outlet (°F)	Inlet (°F)						
2	1	0.00	10.2	48.54	0.86	0.35	279	69	69	0.38	4.0	64.2	10.03	2.29	91.4
	2	10.2	10.1	52.16	0.79	0.35	278	68	68	0.38	4.0	61.5	9.98	2.27	96.0
	3	20.3	9.9	55.75	0.82	0.35	279	68	68	0.38	4.0	62.7	10.09	2.31	92.9
	4	30.2	10.1	59.21	0.78	0.35	280	69	69	0.38	4.0	61.2	9.82	2.21	99.0
	5	40.3	10.1	62.89	0.71	0.35	280	69	69	0.38	4.0	58.4	9.94	2.25	102.1
	6	50.4	9.4	66.51	0.62	0.35	279	70	70	0.38	4.0	54.5	9.95	2.26	108.8
		59.8		69.89											
1	1	0.00	10.4	69.89	0.90	0.35	279	71	71	0.38	4.0	65.7	10.14	2.33	88.0
	2	10.4	10.2	73.52	0.93	0.35	279	71	71	0.38	4.0	66.8	10.00	2.28	88.3
	3	20.6	10.5	77.17	0.88	0.35	282	71	71	0.38	4.0	65.1	10.14	2.33	89.3
	4	31.1	10.2	80.85	0.81	0.35	282	72	72	0.38	4.0	62.4	9.95	2.26	95.5
	5	41.3	9.8	84.51	0.79	0.35	281	73	73	0.38	4.0	61.6	10.15	2.34	94.0
	6	51.1	9.1	87.95	0.72	0.35	281	73	73	0.38	4.0	58.8	10.06	2.30	99.7
		60.2		91.19											

EPA Draft Method - PM_{10/2.5} Calculations

Date: December 4, 2024
Client: Reworld
Plant: DYEC
Location: Courtice, Ontario
Test No.: 2
Test Location: APC Outlet No. 2

Project No.: AST-2024-4547
Operator: DU

Cyclone Sampling Parameters			
Cyclone Q _{ST}	0.35 Rft ³ /min *	9.9 l/min *	
Cyclone Q _s actual	0.60 ft ³ /min	16.9 l/min	
Stack Gas Sampling Parameters			
V _{ms}	42.1 Rft ³ *	1.193 Rm ³ *	
Average Cyclone I Cut Diameter	10.20 μm		
Average Cyclone IV Cut Diameter	2.35 μm		
Average Isokineticity	96.7 %		
Stack Gas Physical Parameters			
B _{ws}	15.0 % v/v		
Average m	220.1 (dimensionless)		
M _d	30.05 lbs/lbs mole		
M _w	28.24 lbs/lbs mole		
Average T _s	281 °F	138 °C	
Average U _s	59.2 ft/s	18.0 m/s	
Stack Area	15.9 ft ²	1.48 m ²	
Actual Q _s	56587 ACFM	26.7 m ³ /s	
Wet Reference Q _s	39059 SCFM*	18.4 Rm ³ /s*	
Dry Reference Q _s	33185 SCFM*	15.7 Rm ³ /s*	
Summary of Particulate Emission Rates			
Dry Ref. Conc.		Emission Rate	
Total Part. (a)	1.51 mg/Rm ³ *	0.0236 g/s	
Total Part. (b)	5.53 mg/Rm ³ *	0.087 g/s	
PM ₁₀ Part. (b)	5.20 mg/Rm ³ *	0.081 g/s	
PM _{2.5} Part. (b)	4.86 mg/Rm ³ *	0.076 g/s	
Cond. Part.	4.03 mg/Rm ³ *	0.063 g/s	

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	356.6	636.9	765.9	952.8	
final volume or weight (ml or mg)	492.8	637.5	764.2	973.0	
gain in volume or weight (ml or mg)	136.2	0.6	-1.7	20.2	0.0
TOTAL					155.3

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.4	<0.4	<0.4	<0.6	4.8

* Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: December 4, 2024			Plant: DYEC			Test No.: 2			Project No.: AST-2024-4547						
Client: Reworld			Location: Courtice, Ontario			Test location: APC Outlet No. 2			Operator: DU						
Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft³)	Delta P ("H₂O)	Desired cfm	Stack Temp (°F)	Meter Temp		Meter Pressure DH ("H₂O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
								Outlet (°F)	Inlet (°F)						
2	1	0.00	10.4	91.30	0.84	0.35	281	72	72	0.38	4.0	63.3	10.09	2.31	92.3
	2	10.4	9.9	95.01	0.83	0.35	275	71	71	0.38	4.0	62.7	10.09	2.30	92.3
	3	20.3	10.1	98.55	0.79	0.35	281	72	72	0.38	4.0	61.4	10.09	2.31	95.1
	4	30.5	9.9	102.17	0.73	0.35	281	73	73	0.38	4.0	59.0	10.17	2.34	97.9
	5	40.3	9.4	105.67	0.66	0.35	281	73	73	0.38	4.0	56.1	10.25	2.37	101.8
	6	49.8	8.8	108.97	0.60	0.35	281	74	74	0.38	4.0	53.5	9.94	2.25	111.6
		58.6		112.20											
1	1	0.00	10.6	112.60	0.79	0.35	281	74	74	0.38	4.0	61.4	11.05	2.70	83.7
	2	10.6	10.8	115.95	0.81	0.35	281	74	74	0.38	4.0	62.1	10.15	2.33	93.2
	3	21.4	10.5	119.79	0.77	0.35	281	74	74	0.38	4.0	60.6	10.27	2.38	93.9
	4	31.9	10.1	123.46	0.73	0.35	282	74	74	0.38	4.0	59.0	10.24	2.37	97.1
	5	42.0	9.9	127.00	0.69	0.35	282	75	75	0.38	4.0	57.4	9.87	2.22	105.2
	6	51.9	9.5	130.69	0.61	0.35	282	75	75	0.38	4.0	54.0	10.25	2.37	106.1
		61.4		134.03											
Averages					0.74		281	73		0.38		59.2	10.20	2.35	96.7

EPA Draft Method - PM_{10/2.5} Calculations

Date: December 4, 2024
Client: Reworld
Plant: DYEC
Location: Courtrice, Ontario
Test No.: 3
Test Location: APC Outlet No. 2

Project No.: AST-2024-4547
Operator: DU

Cyclone Sampling Parameters			
Cyclone Q _{ST}	0.35 Rft ³ /min *	9.8 l/min *	
Cyclone Q _{S actual}	0.60 ft ³ /min	17.0 l/min	
Stack Gas Sampling Parameters			
V _{ms}	41.5 Rft ³ *	1.174 Rm ³ *	
Average Cyclone I Cut Diameter		10.09 μm	
Average Cyclone IV Cut Diameter		2.32 μm	
Average Isokineticity		94.5 %	
Stack Gas Physical Parameters			
B _{ws}	15.9 % v/v		
Average m	218.6 (dimensionless)		
M _d	30.07 lbs/lbs mole		
M _w	28.14 lbs/lbs mole		
Average T _s	277 °F	136 °C	
Average U _s	61.3 ft/s	18.7 m/s	
Stack Area	15.9 ft ²	1.48 m ²	
Actual Q _s	58578 ACFM	27.6 m ³ /s	
Wet Reference Q _s	40193 SCFM*	19.0 Rm ³ /s*	
Dry Reference Q _s	33784 SCFM*	15.9 Rm ³ /s*	
Summary of Particulate Emission Rates			
Dry Ref. Conc.		Emission Rate	
Total Part. (a)	1.53 mg/Rm ³ *	0.0244 g/s	
Total Part. (b)	4.85 mg/Rm ³ *	0.077 g/s	
PM ₁₀ Part. (b)	4.51 mg/Rm ³ *	0.072 g/s	
PM _{2.5} Part. (b)	4.17 mg/Rm ³ *	0.067 g/s	
Cond. Part.	3.32 mg/Rm ³ *	0.053 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)	358.5	665.0	752.4	956.6	
final volume or weight (ml or mg)	506.0	671.5	752.9	966.0	
gain in volume or weight (ml or mg)	147.5	6.5	0.5	9.4	0.0
TOTAL					163.9

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.4	<0.4	<0.4	<0.6	3.9

* Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: December 4, 2024	Plant: DYEC	Test No.: 3	Project No.: AST-2024-4547
Client: Reworld	Location: Courtrice, 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 ₂ O)	Desired cfm	Stack Temp (°F)	Meter Temp	Meter Pressure DH ("H ₂ O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
2	1	0.00	10.7	34.10	0.92	0.35	279	74	0.38	4.0	66.6	10.41	2.45	83.7
	2	10.7	10.6	37.73	0.90	0.35	277	72	0.38	4.0	65.8	10.46	2.46	83.9
	3	21.3	10.4	41.30	0.87	0.35	277	72	0.38	4.0	64.7	9.94	2.26	91.7
	4	31.7	10.0	45.04	0.82	0.35	277	72	0.38	4.0	62.8	10.11	2.32	92.2
	5	41.6	9.5	48.55	0.70	0.35	277	72	0.38	4.0	58.0	10.00	2.28	101.4
	6	51.1	9.0	51.94	0.61	0.35	275	73	0.38	4.0	54.1	10.06	2.30	107.5
		60.1		55.15										
1	1	0.00	10.4	55.15	0.84	0.35	277	73	0.38	4.0	63.6	9.94	2.25	93.4
	2	10.4	10.5	58.90	0.84	0.35	276	73	0.38	4.0	63.5	10.00	2.28	92.4
	3	20.9	10.2	62.66	0.79	0.35	279	73	0.38	4.0	61.7	10.02	2.29	95.3
	4	31.1	10.0	66.32	0.72	0.35	279	73	0.38	4.0	58.9	9.97	2.27	100.6
	5	41.1	9.7	69.91	0.72	0.35	278	73	0.38	4.0	58.9	10.15	2.34	97.9
	6	50.7	9.1	73.31	0.67	0.35	277	73	0.38	4.0	56.8	10.01	2.28	103.4
		59.9		76.57										

Averages

0.78	277	73	0.38	61.3	10.09	2.32	94.5

APPENDIX 24

Acid Gases Test Emission Calculations (10 pages)

Emission Calculations

Location **Reworld - Courtice, ON**

Source **APC Outlet No. 1**

Project No. **AST-2024-4547**

Parameter **Acid Gases**

Run Number		Run 1	Run 2	Run 3	Average
Date		12-4-24	12-4-24	12-4-24	--
Start Time		9:07	10:46	11:57	--
Stop Time		10:07	11:46	12:57	--
Run Time, min	(θ)	60.0	60.0	60.0	60.0
INPUT DATA					
Barometric Pressure, kPa	(Pb)	99.560	99.221	98.883	99.22
Meter Correction Factor	(Y)	1.01	1.01	1.01	1.01
Orifice Calibration Value	($\Delta H @$)	1.819	1.819	1.819	1.819
Meter Volume, m ³	(Vm)	1.199	1.209	1.181	1.196
Meter Temperature, °C	(Tm)	20.6	22.0	23.8	22.1
Meter Temperature, °K	(Tm)	293.8	295.1	296.9	295.3
Meter Orifice Pressure, kPa	(ΔH)	0.416	0.417	0.396	0.410
Volume H ₂ O Collected, mL	(Vlc)	159.2	167.7	155.0	160.6
Nozzle Diameter, cm	(Dn)	0.634	0.634	0.634	0.634
Area of Nozzle, cm ²	(An)	0.3162	0.3162	0.3162	0.3162
ISOKINETIC DATA					
Reference Meter Volume, m ³	(Vmref)	1.212	1.212	1.173	1.199
Reference Water Volume, m ³	(Vwref)	0.217	0.228	0.211	0.218
Moisture Fraction Measured	(BWSmsd)	0.152	0.158	0.152	0.154
Moisture Fraction @ Saturation	(BWSsat)	3.276	3.473	3.490	3.413
Moisture Fraction	(BWS)	0.152	0.158	0.152	0.154
Meter Pressure, kPa	(Pm)	99.98	99.64	99.28	99.63
Volume at Nozzle, m ³	(Vn)	2.056	2.090	2.016	2.05
Isokinetic Sampling Rate, (%)	(I)	98.3	98.9	97.7	98.3

Emission Calculations

Location Reworld - Courtice, ON
Source APC Outlet No. 1
Project No. AST-2024-4547
Parameter Acid Gases

Run Number		Run 1	Run 2	Run 3	Average
Date		12-4-24	12-4-24	12-4-24	--
Start Time		9:07	10:46	11:57	--
Stop Time		10:07	11:46	12:57	--
Run Time, min		60.0	60.0	60.0	60.0
CALCULATED DATA					
Square Root of ΔP , (in. WC) ^{1/2}	(ΔP)	0.878	0.883	0.860	0.874
Pitot Tube Coefficient	(Cp)	0.842	0.842	0.842	0.842
Barometric Pressure, kPa	(Pb)	99.56	99.22	98.88	99.22
Static Pressure, kPa	(Pg)	-2.763	-2.763	-2.763	-2.763
Stack Pressure, kPa	(Ps)	96.80	96.46	96.12	96.46
Stack Cross-sectional Area, m ²	(As)	1.48	1.48	1.48	1.48
Temperature, °C	(Ts)	136.8	138.8	138.8	138.1
Temperature, °K	(Ts)	410.0	411.9	411.9	411.3
Moisture Fraction Measured	(BWSmsd)	0.152	0.158	0.152	0.154
Moisture Fraction @ Saturation	(BWSsat)	3.276	3.473	3.490	3.413
Moisture Fraction	(BWS)	0.152	0.158	0.152	0.154
O ₂ Concentration, %	(O ₂)	9.04	8.65	8.92	8.87
CO ₂ Concentration, %	(CO ₂)	10.37	10.61	10.21	10.40
CO Concentration, ppmvd	(CO)	24.6	12	14.5	17.03
Ar Concentration, %	(Ar)	0.95	0.95	0.95	0.95
Molecular Weight, lb/lb-mole (dry)	(Md)	30.13	30.16	30.10	30.13
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.30	28.23	28.26	28.26
Velocity, m/s	(Vs)	18.4	18.6	18.1	18.4
VOLUMETRIC FLOW RATE					
At Stack Conditions, m ³ /s	(Qa)	27.17	27.46	26.80	27.14
At Reference Conditions, wet Rm ³ /s	(Qsw)	18.88	18.92	18.40	18.73
At Reference Conditions, dry Rm ³ /s	(Qs)	16.02	15.92	15.59	15.84
At Reference Conditions (corrected), dry Rm ³ /s @ 11% O ₂	(Qsc)	19.19	19.70	18.87	19.25

Reference conditions: 25°C, 1 atm (77°F, 29.92 in. Hg)

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 9:07		Source: APC Outlet No. 1									
Date: 12-4-24		Run 1		VALID		End Time: 10:07		Project No.: AST-2024-4547		Parameter: Acid Gases					
STACK DATA (EST)			EQUIPMENT		STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA			
Moisture: 16.0 % est.			Meter Box ID: Team 4		Est. Tm: 80 °F				Pb: 29.40 in. Hg			Vlc (ml)			
Barometric: 29.97 in. Hg			Y: 1.01		Est. Ts: -- °F				Pg: -11.10 in. WC			159.2			
Static Press: -11.10 in. WC			ΔH @ (in.WC): 1.819		Est. ΔP: -- in. WC				O ₂ : 9.04 %			K-FACTOR			
Stack Press: 29.15 in. Hg			Probe ID: 6 series		Est. Dn: -- in.				CO ₂ : 10.37 %			--			
CO ₂ : 11.2 %			Liner Material: glass		Target Rate: 0.50 scfm				CO: 24.6 ppm						
O ₂ : 8.1 %			Pitot ID: S4									Check Pt.	Initial	Final	Corr.
N ₂ : 79.8 %			Pitot Cp/Type: 0.842		S-type	LEAK CHECK!	Pre	Mid 1	Mid 2	Mid 3	Post	Mid 1 (cf)	--		
CO: 15.00 ppm			Nozzle ID: 002		glass	Leak Rate (cfm):	0.008	--	--	--	0.008	Mid 2 (cf)	--		
Md: 30.22 lb/lb-mole			Nozzle Dn (in.): 0.2498			Vacuum (in Hg):	15	--	--	--	15	Mid 3 (cf)	--		
Ms: 28.26 lb/lb-mole						Pitot Tube:	Pass	--	--	--	Pass	Mid-Point Leak Check Vol (cf):			--

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)		
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	Aux				
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.			Amb.	Amb.
1	0.00	5.00	2.330	0.74	64	271	1.65	1.60	5	247	249	63	70	99.4	17.93		
	5.00	10.00	5.810	0.78	61	278	1.71	1.65	5	247	245	50	71	98.7	18.50		
	10.00	15.00	9.320	0.78	63	279	1.72	1.65	5	246	248	48	206	97.0	18.51		
	15.00	20.00	12.780	0.78	66	279	1.72	1.65	5	247	244	49	206	98.7	18.51		
	20.00	25.00	16.320	0.75	68	279	1.67	1.60	5	249	249	49	207	98.5	18.15		
	25.00	30.00	19.800	0.74	70	279	1.65	1.60	5	249	244	51	205	98.0	18.03		
	30.00	35.00	23.250	0.78	71	278	1.74	1.65	5	248	249	52	206	97.1	18.50		
	35.00	40.00	26.770	0.78	72	279	1.74	1.70	5	249	244	50	203	96.7	18.51		
	40.00	45.00	30.280	0.78	73	279	1.75	1.75	6	249	250	51	205	97.9	18.51		
	45.00	50.00	33.840	0.78	73	280	1.75	1.75	6	249	244	52	204	99.9	18.52		
	50.00	55.00	37.470	0.78	74	279	1.75	1.75	6	249	249	53	205	99.7	18.51		
	55.00	60.00	41.100	0.78	74	279	1.75	1.70	6	249	243	54	204	98.0	18.51		
Final DGM:			44.670														

RESULTS	Run Time		Vm		ΔP		Tm		Ts		Max Vac		ΔH		%ISO		BWS		Y _{qa}	
	60.0	min	42.340	ft ³	0.77	in. WC	69.1	°F	278.3	°F	6	1.671	in. WC	98.3	0.152			-0.5		

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 10:46		Source: APC Outlet No. 1									
Date: 12-4-24		Run 2		VALID		End Time: 11:46		Project No.: AST-2024-4547		Parameter: Acid Gases					
STACK DATA (EST)			EQUIPMENT		STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)		MOIST. DATA				
Moisture: 16.0 % est.			Meter Box ID: Team 4		Est. Tm: 69 °F				Pb: 29.30 in. Hg		Vlc (ml)				
Barometric: 29.97 in. Hg			Y: 1.01		Est. Ts: 278 °F				Pg: -11.10 in. WC		167.7				
Static Press: -11.10 in. WC			ΔH @ (in.WC): 1.819		Est. ΔP: 0.77 in. WC				O ₂ : 8.65 %		K-FACTOR				
Stack Press: 29.15 in. Hg			Probe ID: 6 series		Est. Dn: 0.210 in.				CO ₂ : 10.61 %		2.23				
CO ₂ : 11.2 %			Liner Material: glass		Target Rate: 0.50 scfm				CO: 12 ppm						
O ₂ : 8.1 %			Pitot ID: S4						Check Pt.		Initial	Final	Corr.		
N ₂ : 79.8 %			Pitot Cp/Type: 0.842		S-type	LEAK CHECK!			Pre	Mid 1	Mid 2	Mid 3	Post	Mid 1 (cf)	--
CO: 15.00 ppm			Nozzle ID: 002		glass	Leak Rate (cfm):			0.006	--	--	--	0.008	Mid 2 (cf)	--
Md: 30.22 lb/lb-mole			Nozzle Dn (in.): 0.2498			Vacuum (in Hg):			15	--	--	--	15	Mid 3 (cf)	--
Ms: 28.26 lb/lb-mole						Pitot Tube:			Pass	--	--	--	Pass	Mid-Point Leak Check Vol (cf): --	

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)		
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	Aux				
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.			Amb.	Amb.
					--	--				--	--	--	--			--	--
1	0.00	5.00	45.140	0.73	62	279	1.60	1.55	5	248	243	60	60	101.5	17.96		
-	5.00	10.00	48.620	0.77	64	281	1.69	1.65	5	249	243	55	202	100.3	18.47		
-	10.00	15.00	52.160	0.78	67	281	1.72	1.70	5	249	249	53	206	100.5	18.59		
-	15.00	20.00	55.750	0.77	70	281	1.71	1.65	5	249	243	55	203	98.6	18.47		
-	20.00	25.00	59.270	0.77	71	280	1.72	1.65	5	249	249	55	206	98.1	18.45		
-	25.00	30.00	62.780	0.77	73	281	1.72	1.65	5	249	243	53	205	97.3	18.47		
-	30.00	35.00	66.270	0.79	74	281	1.77	1.75	5	249	249	50	207	99.4	18.70		
-	35.00	40.00	69.890	0.79	75	282	1.77	1.75	5	249	243	48	204	99.0	18.72		
-	40.00	45.00	73.500	0.79	75	283	1.77	1.65	5	249	250	47	209	97.2	18.73		
-	45.00	50.00	77.040	0.81	76	284	1.81	1.75	5	249	243	46	204	98.0	18.98		
-	50.00	55.00	80.660	0.79	76	284	1.77	1.70	5	249	249	46	209	99.0	18.74		
-	55.00	60.00	84.270	0.79	76	284	1.77	1.65	5	249	244	46	205	97.9	18.74		
Final DGM:			87.840														

RESULTS	Run Time		Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y _{qa}				
	60.0	min	42.700	ft ³	0.78	in. WC	71.6	°F	281.8	°F	5	1.675	in. WC	98.9	0.158

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 11:57		Source: APC Outlet No. 1										
Date: 12-4-24		Run 3		VALID		End Time: 12:57		Project No.: AST-2024-4547		Parameter: Acid Gases						
STACK DATA (EST)			EQUIPMENT		STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA				
Moisture: 16.0 % est.			Meter Box ID: Team 4		Est. Tm: 72 °F				Pb: 29.20 in. Hg			Vlc (ml)				
Barometric: 29.97 in. Hg			Y: 1.01		Est. Ts: 282 °F				Pg: -11.10 in. WC			155.0				
Static Press: -11.10 in. WC			ΔH @ (in.WC): 1.819		Est. ΔP: 0.78 in. WC				O ₂ : 8.92 %			K-FACTOR				
Stack Press: 29.15 in. Hg			Probe ID: 6 series		Est. Dn: 0.209 in.				CO ₂ : 10.21 %			2.226				
CO ₂ : 11.2 %			Liner Material: glass		Target Rate: 0.50 scfm				CO: 14.5 ppm							
O ₂ : 8.1 %			Pitot ID: S4						Check Pt.			Initial	Final	Corr.		
N ₂ : 79.8 %			Pitot Cp/Type: 0.842		S-type	LEAK CHECK!			Pre	Mid 1	Mid 2	Mid 3	Post	Mid 1 (cf)	--	
CO: 15.00 ppm			Nozzle ID: 002		glass	Leak Rate (cfm):			0.005	--	--	--	0.005	Mid 2 (cf)	--	
Md: 30.22 lb/lb-mole			Nozzle Dn (in.): 0.2498			Vacuum (in Hg):			15	--	--	--	15	Mid 3 (cf)	--	
Ms: 28.26 lb/lb-mole						Pitot Tube:			Pass	--	--	--	Pass	Mid-Point Leak Check Vol (cf): --		

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)		
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	Aux				
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.			Amb.	Amb.
					--	--				--	--	--	--			--	--
1	0.00	5.00	88.270	0.78	67	282	1.72	1.70	5	248	248	57	126	100.9	18.62		
-	5.00	10.00	91.900	0.78	70	284	1.73	1.65	5	249	250	49	202	98.0	18.65		
-	10.00	15.00	95.440	0.76	73	284	1.69	1.65	5	248	245	48	203	98.4	18.41		
-	15.00	20.00	98.970	0.72	74	283	1.61	1.55	5	249	250	48	204	97.7	17.90		
-	20.00	25.00	102.390	0.73	75	282	1.64	1.55	5	249	244	49	202	97.0	18.02		
-	25.00	30.00	105.820	0.73	76	281	1.64	1.55	5	249	251	50	203	96.2	18.00		
-	30.00	35.00	109.230	0.73	77	281	1.64	1.55	5	249	243	53	201	96.6	18.00		
-	35.00	40.00	112.660	0.73	77	281	1.64	1.60	5	249	250	55	204	98.0	18.00		
-	40.00	45.00	116.140	0.73	77	281	1.64	1.60	5	249	243	58	201	98.6	18.00		
-	45.00	50.00	119.640	0.73	77	281	1.64	1.60	5	249	249	55	206	98.3	18.00		
-	50.00	55.00	123.130	0.73	77	281	1.64	1.55	5	249	246	54	202	96.9	18.00		
-	55.00	60.00	126.570	0.73	77	281	1.64	1.55	5	249	247	52	205	96.0	18.00		
Final DGM:			129.980														

RESULTS	Run Time		Vm		ΔP		Tm		Ts		Max Vac		ΔH		%ISO		BWS		Y _{qa}	
	60.0	min	41.710	ft ³	0.74	in. WC	74.8	°F	281.8	°F	5	1.592	in. WC	97.7	0.152	-0.5				

Emission Calculations

Location **Reworld - Courtice, ON**

Source **APC Outlet No. 2**

Project No. **AST-2024-4547**

Parameter **Acid Gases**

Run Number		Run 1	Run 2	Run 3	Average
Date		12-3-24	12-3-24	12-3-24	--
Start Time		9:12	11:07	12:14	--
Stop Time		10:12	12:07	13:14	--
Run Time, min	(θ)	60.0	60.0	60.0	60.0
INPUT DATA					
Barometric Pressure, kPa	(Pb)	100.915	100.915	100.915	100.91
Meter Correction Factor	(Y)	0.995	0.995	0.995	0.995
Orifice Calibration Value	($\Delta H @$)	1.823	1.823	1.823	1.823
Meter Volume, m ³	(Vm)	1.177	1.151	1.159	1.162
Meter Temperature, °C	(Tm)	25.8	27.9	30.0	27.9
Meter Temperature, °K	(Tm)	299.0	301.0	303.2	301.1
Meter Orifice Pressure, kPa	(ΔH)	0.407	0.373	0.373	0.385
Volume H ₂ O Collected, mL	(Vlc)	148.4	157.0	164.7	156.7
Nozzle Diameter, cm	(Dn)	0.614	0.614	0.614	0.614
Area of Nozzle, cm ²	(An)	0.2960	0.2960	0.2960	0.2960
ISOKINETIC DATA					
Reference Meter Volume, m ³	(Vmref)	1.166	1.133	1.132	1.144
Reference Water Volume, m ³	(Vwref)	0.202	0.214	0.224	0.213
Moisture Fraction Measured	(BWSmsd)	0.148	0.159	0.165	0.157
Moisture Fraction @ Saturation	(BWSsat)	3.315	3.447	3.528	3.430
Moisture Fraction	(BWS)	0.148	0.159	0.165	0.157
Meter Pressure, kPa	(Pm)	101.32	101.29	101.29	101.30
Volume at Nozzle, m ³	(Vn)	1.946	1.921	1.939	1.94
Isokinetic Sampling Rate, (%)	(I)	99.9	101.5	101.1	100.8

Emission Calculations

Location Reworld - Courtice, ON
Source APC Outlet No. 2
Project No. AST-2024-4547
Parameter Acid Gases

Run Number		Run 1	Run 2	Run 3	Average
Date		12-3-24	12-3-24	12-3-24	--
Start Time		9:12	11:07	12:14	--
Stop Time		10:12	12:07	13:14	--
Run Time, min		60.0	60.0	60.0	60.0
CALCULATED DATA					
Square Root of ΔP , (in. WC) ^{1/2}	(ΔP)	0.877	0.848	0.858	0.861
Pitot Tube Coefficient	(Cp)	0.845	0.845	0.845	0.845
Barometric Pressure, kPa	(Pb)	100.91	100.91	100.91	100.91
Static Pressure, kPa	(Pg)	-2.713	-2.713	-2.713	-2.713
Stack Pressure, kPa	(Ps)	98.20	98.20	98.20	98.20
Stack Cross-sectional Area, m ²	(As)	1.48	1.48	1.48	1.48
Temperature, °C	(Ts)	137.7	139.1	140.0	138.9
Temperature, °K	(Ts)	410.9	412.3	413.1	412.1
Moisture Fraction Measured	(BWSmsd)	0.148	0.159	0.165	0.157
Moisture Fraction @ Saturation	(BWSsat)	3.315	3.447	3.528	3.430
Moisture Fraction	(BWS)	0.148	0.159	0.165	0.157
O ₂ Concentration, %	(O ₂)	9.23	9.1	8.92	9.08
CO ₂ Concentration, %	(CO ₂)	10.51	10.52	10.74	10.59
CO Concentration, ppmvd	(CO)	13.6	9.3	12.1	11.67
Ar Concentration, %	(Ar)	0.94	0.95	0.94	0.94
Molecular Weight, lb/lb-mole (dry)	(Md)	30.16	30.16	30.19	30.17
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.37	28.23	28.18	28.26
Velocity, m/s	(Vs)	18.3	17.8	18.0	18.0
VOLUMETRIC FLOW RATE					
At Stack Conditions, m ³ /s	(Qa)	27.04	26.26	26.62	26.64
At Reference Conditions, wet Rm ³ /s	(Qsw)	19.02	18.41	18.62	18.68
At Reference Conditions, dry Rm ³ /s	(Qs)	16.21	15.49	15.55	15.75
At Reference Conditions (corrected), dry Rm ³ /s @ 11% O ₂	(Qsc)	19.11	18.46	18.81	18.79

Reference conditions: 25°C, 1 atm (77°F, 29.92 in. Hg)

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 9:12		Source: APC Outlet No. 2								
Date: 12-3-24		Run 1		VALID		End Time: 10:12		Project No.: AST-2024-4547		Parameter: Acid Gases				
STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)		MOIST. DATA		
Moisture: 16.0 % est.			Meter Box ID: Team 2			Est. Tm: 80 °F				Ph: 29.80 in. Hg		Vlc (ml)		
Barometric: 29.50 in. Hg			Y: 0.995			Est. Ts: 280 °F				Pg: -10.90 in. WC		148.4		
Static Press: -10.30 in. WC			ΔH @ (in.WC): 1.823			Est. ΔP: 0.80 in. WC				O ₂ : 9.23 %		K-FACTOR		
Stack Press: 28.74 in. Hg			Probe ID: 6A			Est. Dn: 0.236 in.				CO ₂ : 10.51 %		2.008		
CO ₂ : 11.2 %			Liner Material: glass			Target Rate: 0.67 scfm				CO: 13.6 ppm				
O ₂ : 8.2 %			Pitot ID: S11							Check Pt.		Initial	Final	Corr.
N ₂ : 79.7 %			Pitot Cp/Type: 0.845 --			LEAK CHECK: Pre Mid 1 Mid 2 Mid 3 Post				Mid 1 (cf)				
CO: 14.50 ppm			Nozzle ID: C glass			Leak Rate (cfm): 0.010 -- -- -- 0.004				Mid 2 (cf)				
Md: 30.23 lb/lb-mole			Nozzle Dn (in.): 0.2417			Vacuum (in Hg): 15 -- -- -- 10				Mid 3 (cf)				
Ms: 28.28 lb/lb-mole						Pitot Tube: Pass -- -- -- Pass				Mid-Point Leak Check Vol (cf):				

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)
					DGM Average	Stack				Probe	Filter	Imp Exit	NA		
	Amb.				Amb.	Amb.	Amb.	Amb.		Amb.					
	75				75	Ideal	Actual	75		75	75	-			
1	0.00	5.00	24.740	0.80	75	265	1.63	1.60	3	257	253	63	-	96.6	18.47
	5.00	10.00	28.170	0.84	75	282	1.67	1.70	3	259	255	50	-	100.2	19.15
	10.00	15.00	31.770	0.82	75	283	1.63	1.70	3	260	255	49	-	98.3	18.93
	15.00	20.00	35.260	0.80	76	282	1.59	1.70	3	260	255	49	-	98.2	18.69
	20.00	25.00	38.710	0.79	77	282	1.57	1.70	3	260	255	49	-	99.5	18.57
	25.00	30.00	42.190	0.75	78	282	1.50	1.60	3	260	256	56	-	101.6	18.10
	30.00	35.00	45.660	0.78	78	282	1.56	1.60	3	260	257	58	-	99.6	18.45
	35.00	40.00	49.130	0.75	80	281	1.50	1.60	3	261	261	56	-	100.6	18.08
	40.00	45.00	52.580	0.73	81	280	1.47	1.60	3	260	260	52	-	101.1	17.83
	45.00	50.00	56.010	0.73	82	280	1.47	1.60	3	263	256	50	-	100.6	17.83
	50.00	55.00	59.430	0.71	82	280	1.43	1.60	3	262	256	50	-	102.9	17.58
	55.00	60.00	62.880	0.74	83	280	1.50	1.60	3	262	258	50	-	99.4	17.95
Final DGM:			66.290												

RESULTS	Run Time		Vm		ΔP		Tm		Ts		Max Vac		ΔH		%ISO		BWS		Y _{qa}	
	60.0	min	41.550	ft ³	0.77	in. WC	78.5	°F	279.9	°F	3	1.633	in. WC	99.9	0.148	-2.8				

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 11:07		Source: APC Outlet No. 2							
Date: 12-3-24		Run 2		VALID		End Time: 12:07		Project No.: AST-2024-4547		Parameter: Acid Gases			
STACK DATA (EST)			EQUIPMENT		STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)		MOIST. DATA		
Moisture: 16.0 % est.			Meter Box ID: Team 2		Est. Tm: 79 °F				Pb: 29.80 in. Hg		Vlc (ml)		
Barometric: 29.50 in. Hg			Y: 0.995		Est. Ts: 280 °F				Pg: -10.90 in. WC		157.0		
Static Press: -10.30 in. WC			ΔH @ (in.WC): 1.823		Est. ΔP: 0.77 in. WC				O ₂ : 9.1 %		K-FACTOR		
Stack Press: 28.74 in. Hg			Probe ID: 6A		Est. Dn: 0.239 in.				CO ₂ : 10.52 %		2.00		
CO ₂ : 11.2 %			Liner Material: glass		Target Rate: 0.67 scfm				CO: 9.3 ppm				
O ₂ : 8.2 %			Pitot ID: S11						Check Pt.		Initial	Final	Corr.
N ₂ : 79.7 %			Pitot Cp/Type: 0.845 --		LEAK CHECK! Pre Mid 1 Mid 2 Mid 3 Post				Mid 1 (cf)				
CO: 14.50 ppm			Nozzle ID: C glass		Leak Rate (cfm): 0.005 -- -- -- 0.005				Mid 2 (cf)				
Md: 30.23 lb/lb-mole			Nozzle Dn (in.): 0.2417		Vacuum (in Hg): 15 -- -- -- 15				Mid 3 (cf)				
Ms: 28.28 lb/lb-mole					Pitot Tube: Pass -- -- -- Pass				Mid-Point Leak Check Vol (cf):				

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)		
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	NA				
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.			Amb.	Amb.
					--	--				--	--	--	--			--	--
1	0.00	5.00	66.530	0.70	80	280	1.41	1.50	3	265	259	56	-	105.7	17.50		
-	5.00	10.00	70.000	0.71	80	283	1.42	1.50	3	266	264	46	-	102.5	17.66		
-	10.00	15.00	73.380	0.74	81	283	1.48	1.50	3	265	258	45	-	98.7	18.03		
-	15.00	20.00	76.710	0.74	80	284	1.48	1.50	3	264	257	45	-	100.4	18.04		
-	20.00	25.00	80.090	0.74	81	283	1.48	1.50	3	264	259	45	-	100.5	18.03		
-	25.00	30.00	83.480	0.77	82	284	1.54	1.50	3	264	258	45	-	98.1	18.40		
-	30.00	35.00	86.860	0.74	83	283	1.49	1.50	3	264	258	45	-	98.9	18.03		
-	35.00	40.00	90.210	0.72	83	283	1.45	1.50	3	265	259	45	-	102.1	17.78		
-	40.00	45.00	93.620	0.73	84	282	1.47	1.50	3	265	258	45	-	100.2	17.90		
-	45.00	50.00	97.000	0.69	84	282	1.39	1.50	3	264	258	48	-	103.1	17.40		
-	50.00	55.00	100.380	0.68	84	281	1.37	1.50	3	264	258	48	-	104.4	17.26		
-	55.00	60.00	103.780	0.68	84	281	1.37	1.50	3	264	258	50	-	103.8	17.26		
Final DGM:			107.160														

RESULTS	Run Time		Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y _{qa}				
	60.0	min	40.630	ft ³	0.72	in. WC	82.2	°F	282.4	°F	3	1,500	in. WC	101.5	0.159

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 12:14		Source: APC Outlet No. 2								
Date: 12-3-24		Run 3		VALID		End Time: 13:14		Project No.: AST-2024-4547		Parameter: Acid Gases				
STACK DATA (EST)			EQUIPMENT		STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA		
Moisture: 16.0 % est.			Meter Box ID: Team 2		Est. Tm: 82 °F				Pb: 29.80 in. Hg			Vlc (ml)		
Barometric: 29.50 in. Hg			Y: 0.995		Est. Ts: 282 °F				Pg: -10.90 in. WC			164.7		
Static Press: -10.30 in. WC			ΔH @ (in.WC): 1.823		Est. ΔP: 0.72 in. WC				O ₂ : 8.92 %			K-FACTOR		
Stack Press: 28.74 in. Hg			Probe ID: 6A		Est. Dn: 0.242 in.				CO ₂ : 10.74 %			2.010		
CO ₂ : 11.2 %			Liner Material: glass		Target Rate: 0.67 scfm				CO: 12.1 ppm					
O ₂ : 8.2 %			Pitot ID: S11						Check Pt.			Initial	Final	Corr.
N ₂ : 79.7 %			Pitot Cp/Type: 0.845 --		LEAK CHECK! Pre Mid 1 Mid 2 Mid 3 Post				Mid 1 (cf)					
CO: 14.50 ppm			Nozzle ID: C glass		Leak Rate (cfm): 0.005 -- -- -- 0.005				Mid 2 (cf)					
Md: 30.23 lb/lb-mole			Nozzle Dn (in.): 0.2417		Vacuum (in Hg): 10 -- -- -- 15				Mid 3 (cf)					
Ms: 28.28 lb/lb-mole					Pitot Tube: Pass -- -- -- Pass				Mid-Point Leak Check Vol (cf):					

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)		
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	NA				
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.			Amb.	Amb.
					--	--				--	--	--	--			--	--
1	0.00	5.00	7.400	0.70	84	281	1.42	1.50	3	263	258	63	-	104.2	17.53		
-	5.00	10.00	10.820	0.70	84	282	1.41	1.50	3	266	264	53	-	105.8	17.54		
-	10.00	15.00	14.290	0.74	85	283	1.49	1.50	3	266	259	50	-	102.2	18.05		
-	15.00	20.00	17.740	0.76	86	284	1.54	1.50	3	265	256	50	-	100.1	18.30		
-	20.00	25.00	21.170	0.74	86	284	1.50	1.50	3	266	260	49	-	101.2	18.06		
-	25.00	30.00	24.590	0.77	86	285	1.55	1.50	3	265	260	50	-	99.3	18.43		
-	30.00	35.00	28.010	0.74	86	285	1.49	1.50	3	265	260	51	-	101.0	18.07		
-	35.00	40.00	31.420	0.74	87	285	1.50	1.50	3	264	259	51	-	100.2	18.07		
-	40.00	45.00	34.810	0.75	87	285	1.52	1.50	3	264	259	52	-	99.5	18.19		
-	45.00	50.00	38.200	0.74	87	285	1.50	1.50	3	264	259	53	-	99.9	18.07		
-	50.00	55.00	41.580	0.73	87	284	1.48	1.50	3	265	260	55	-	100.5	17.94		
-	55.00	60.00	44.960	0.73	88	284	1.48	1.50	3	263	259	57	-	99.7	17.94		
Final DGM:			48.320														

RESULTS	Run Time		Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y _{qa}
	60.0	min	40.920	ft ³	0.74 in. WC	86.1 °F	283.9 °F	3	1.500 in. WC	101.1	0.165

APPENDIX 25

SVOC Test Emission Calculations (9 pages)

Emission Calculations

Location **Reworld - Courtice, ON**

Source **APC Outlet No. 1**

Project No. **AST-2024-4547**

Parameter **SVOC**

Run Number		Run 1	Run 2	Run 3	Average
Date		12-2-24	12-2-24	12-3-24	--
Start Time		9:10	15:03	8:28	--
Stop Time		14:03	19:10	12:37	--
Run Time, min	(θ)	240.0	240.0	240.0	240.0
INPUT DATA					
Barometric Pressure, kPa	(Pb)	100.237	100.576	100.915	100.58
Meter Correction Factor	(Y)	1.01	1.01	1.01	1.01
Orifice Calibration Value	($\Delta H @$)	1.819	1.819	1.819	1.819
Meter Volume, m ³	(Vm)	4.621	4.678	4.679	4.659
Meter Temperature, °C	(Tm)	29.1	30.9	29.4	29.8
Meter Temperature, °K	(Tm)	302.2	304.1	302.6	302.9
Meter Orifice Pressure, kPa	(ΔH)	0.382	0.391	0.389	0.387
Volume H ₂ O Collected, mL	(Vlc)	646.5	626.5	639.9	637.6
Nozzle Diameter, cm	(Dn)	0.637	0.637	0.637	0.637
Area of Nozzle, cm ²	(An)	0.3187	0.3187	0.3187	0.3187
ISOKINETIC DATA					
Reference Meter Volume, m ³	(Vmref)	4.569	4.613	4.652	4.611
Reference Water Volume, m ³	(Vwref)	0.879	0.852	0.870	0.867
Moisture Fraction Measured	(BWSmsd)	0.161	0.156	0.158	0.158
Moisture Fraction @ Saturation	(BWSsat)	3.658	3.562	3.359	3.526
Moisture Fraction	(BWS)	0.161	0.156	0.158	0.158
Meter Pressure, kPa	(Pm)	100.62	100.97	101.30	100.96
Volume at Nozzle, m ³	(Vn)	7.851	7.833	7.855	7.85
Isokinetic Sampling Rate, (%)	(I)	99.2	98.4	99.2	98.9

Emission Calculations

Location **Reworld - Courtice, ON**
Source **APC Outlet No. 1**
Project No. **AST-2024-4547**
Parameter **SVOC**

Run Number		Run 1	Run 2	Run 3	Average
Date		12-2-24	12-2-24	12-3-24	--
Start Time		9:10	15:03	8:28	--
Stop Time		14:03	19:10	12:37	--
Run Time, min		240.0	240.0	240.0	240.0
CALCULATED DATA					
Square Root of ΔP , (in. WC) ^{1/2}	(ΔP)	0.825	0.833	0.832	0.830
Pitot Tube Coefficient	(Cp)	0.839	0.839	0.839	0.839
Barometric Pressure, kPa	(Pb)	100.24	100.58	100.91	100.58
Static Pressure, kPa	(Pg)	-2.539	-2.539	-2.614	-2.564
Stack Pressure, kPa	(Ps)	97.70	98.04	98.30	98.01
Stack Cross-sectional Area, m ²	(As)	1.48	1.48	1.48	1.48
Temperature, °C	(Ts)	141.1	140.2	138.2	139.8
Temperature, °K	(Ts)	414.2	413.4	411.4	413.0
Moisture Fraction Measured	(BWSmsd)	0.161	0.156	0.158	0.158
Moisture Fraction @ Saturation	(BWSsat)	3.658	3.562	3.359	3.526
Moisture Fraction	(BWS)	0.161	0.156	0.158	0.158
O ₂ Concentration, %	(O ₂)	8.54	8.57	8.77	8.63
CO ₂ Concentration, %	(CO ₂)	10.51	10.36	10.7	10.52
CO Concentration, ppmvd	(CO)	14.4	13.8	14.4	14.20
Ar Concentration, %	(Ar)	0.95	0.95	0.95	0.95
Molecular Weight, lb/lb-mole (dry)	(Md)	30.14	30.11	30.18	30.14
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.18	28.23	28.26	28.22
Velocity, m/s	(Vs)	17.3	17.4	17.3	17.3
VOLUMETRIC FLOW RATE					
At Stack Conditions, m ³ /s	(Qa)	25.52	25.65	25.51	25.56
At Reference Conditions, wet Rm ³ /s	(Qsw)	17.71	17.90	17.94	17.85
At Reference Conditions, dry Rm ³ /s	(Qs)	14.85	15.11	15.11	15.02
At Reference Conditions (corrected), dry Rm ³ /s @ 11% O ₂	(Qsc)	18.54	18.82	18.51	18.63

Reference conditions: 25°C, 1 atm (77°F, 29.92 in. Hg)

Isokinetic Field Data

Location: **Reworld - Courtice, ON**

Date: **12-2-24**

Run 1

VALID

Start Time: **9:10**

End Time: **14:03**

Source: **APC Outlet No. 1**

Project No.: **AST-2024-4547**

Parameter: **SVOC**

STACK DATA (EST)				EQUIPMENT				STACK DATA (EST)				FILTER NO.		STACK DATA (FINAL)				MOIST. DATA	
Moisture: 16.0 % est.				Meter Box ID: Team 4				Est. Tm: 75 °F						Pb: 29.60 in. Hg				Vlc (ml)	
Barometric: 30.15 in. Hg				Y: 1.01				Est. Ts: -- °F						Pg: -10.20 in. WC				646.5	
Static Press: -10.50 in. WC				ΔH @ (in.WC): 1.819				Est. ΔP: -- in. WC						O ₂ : 8.54 %				K-FACTOR	
Stack Press: 29.38 in. Hg				Probe ID: --				Est. Dn: -- in.						CO ₂ : 10.51 %				--	
CO ₂ : 11.2 %				Liner Material: glass				Target Rate: 0.50 scfm						CO: 14.4 ppm					
O ₂ : 8.1 %				Pitot ID: 15A										Check Pt.		Initial	Final	Corr.	
N ₂ : 79.8 %				Pitot Cp/Type: 0.839				LEAK CHECK: Pre Mid 1 Mid 2 Mid 3 Post				Mid 1 (cf)		#####	#####	0.310			
CO: 15.00 ppm				Nozzle ID: 007				Leak Rate (cfm): 0.004 0.002 0.002 -- 0.002				Mid 2 (cf)		--					
Md: 30.22 lb/lb-mole				Nozzle Dn (in.): 0.2508				Vacuum (in Hg): 15 14.5 14.5 -- 15				Mid 3 (cf)		--					
Ms: 28.27 lb/lb-mole								Pitot Tube: Pass -- -- -- Pass				Mid-Point Leak Check Vol (cf):		0.310					

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)		
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	Aux				
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.			Amb.	Amb.
1	0.00	5.00	73.230	0.77	70	284	1.72	1.70	6	246	247	67	42	101.6	18.34		
	5.00	10.00	76.840	0.77	71	284	1.73	1.70	6	247	251	58	45	98.9	18.34		
2	10.00	15.00	80.360	0.77	73	285	1.73	1.70	6	247	250	56	49	96.9	18.35		
	15.00	20.00	83.820	0.77	75	285	1.74	1.75	6	247	252	56	43	100.4	18.35		
3	20.00	25.00	87.420	0.75	78	285	1.70	1.70	6	248	245	56	49	100.1	18.11		
	25.00	30.00	90.980	0.75	79	286	1.70	1.65	6	248	256	56	46	99.4	18.12		
4	30.00	35.00	94.520	0.72	81	285	1.64	1.60	6	247	255	54	44	98.7	17.74		
	35.00	40.00	97.980	0.70	82	286	1.60	1.60	6	247	245	54	44	100.3	17.51		
5	40.00	45.00	101.450	0.61	83	286	1.40	1.35	6	247	256	54	44	96.6	16.34		
	45.00	50.00	104.580	0.61	84	286	1.40	1.35	6	247	252	53	41	102.3	16.34		
6	50.00	55.00	107.900	0.54	84	285	1.24	1.20	6	247	247	52	43	99.1	15.37		
	55.00	60.00	110.930	0.54	85	286	1.24	1.20	6	247	254	50	42	99.0	15.38		
7	60.00	65.00	113.960	0.54	85	286	1.24	1.20	6	247	254	50	42	98.0	15.38		
	65.00	70.00	116.960	0.54	85	286	1.24	1.20	6	247	248	48	41	99.0	15.38		
8	70.00	75.00	119.990	0.65	86	287	1.49	1.45	6	247	254	48	43	99.7	16.88		
	75.00	80.00	123.340	0.67	86	286	1.54	1.50	6	247	247	47	41	98.5	17.13		
9	80.00	85.00	126.700	0.71	86	287	1.63	1.55	6	247	256	47	41	98.9	17.64		
	85.00	90.00	130.170	0.70	86	287	1.61	1.55	7	247	256	48	41	100.2	17.52		
10	90.00	95.00	133.660	0.70	87	287	1.61	1.55	7	247	255	48	40	99.1	17.52		
	95.00	100.00	137.120	0.68	87	285	1.57	1.50	6	247	255	48	41	98.4	17.24		
11	100.00	105.00	140.510	0.68	87	286	1.57	1.50	6	247	250	49	42	98.2	17.26		
	105.00	110.00	143.890	0.65	87	284	1.50	1.45	6	247	248	49	42	99.1	16.85		
12	110.00	115.00	147.230	0.57	87	284	1.32	1.25	6	247	254	49	42	99.1	15.78		
	115.00	120.00	150.360	0.57	87	284	1.32	1.25	6	247	246	49	42	98.4	15.78		
1	120.00	125.00	153.470	0.75	76	284	1.70	1.65	7	246	257	68	42	99.0	18.10		
	125.00	130.00	157.290	0.82	78	286	1.86	1.80	7	247	250	50	42	98.7	18.95		
2	130.00	135.00	160.960	0.82	80	286	1.86	1.80	7	247	257	47	43	100.0	18.95		
	135.00	140.00	164.690	0.87	82	286	1.98	1.95	7	247	256	47	42	98.8	19.52		
3	140.00	145.00	168.500	0.85	84	287	1.94	1.95	7	247	251	46	43	98.9	19.31		
	145.00	150.00	172.280	0.80	85	288	1.83	1.95	7	247	250	46	41	99.7	18.74		
4	150.00	155.00	175.980	0.72	86	288	1.65	1.65	7	247	257	46	42	100.0	17.78		
	155.00	160.00	179.510	0.68	87	288	1.56	1.50	7	247	252	47	41	99.7	17.28		
5	160.00	165.00	182.940	0.64	87	288	1.47	1.45	6	247	247	47	42	99.8	16.76		
	165.00	170.00	186.270	0.64	88	288	1.47	1.45	6	247	248	47	42	99.9	16.76		
6	170.00	175.00	189.610	0.60	88	287	1.38	1.35	6	247	256	47	42	99.4	16.22		
	175.00	180.00	192.830	0.60	88	287	1.38	1.35	6	247	253	48	41	99.1	16.22		
7	180.00	185.00	196.040	0.59	88	287	1.36	1.35	6	247	247	48	41	100.2	16.08		
	185.00	190.00	199.260	0.59	88	286	1.36	1.30	6	247	258	48	42	98.9	16.07		
8	190.00	195.00	202.440	0.64	88	285	1.48	1.40	6	247	253	48	42	99.4	16.73		
	195.00	200.00	205.770	0.68	88	285	1.57	1.50	6	247	250	48	43	95.9	17.24		
9	200.00	205.00	209.080	0.70	88	285	1.62	1.55		247	250	48	43	97.4	17.50		
	205.00	210.00	212.490	0.70	88	285	1.62	1.60	7	247	254	48	44	98.0	17.50		
10	210.00	215.00	215.920	0.71	88	286	1.64	1.65	7	247	246	48	45	99.9	17.63		
	215.00	220.00	219.440	0.71	88	286	1.64	1.65	7	247	248	48	47	99.6	17.63		
11	220.00	225.00	222.950	0.71	88	286	1.64	1.65	7	247	256	49	47	99.0	17.63		
	225.00	230.00	226.440	0.68	88	286	1.57	1.55	7	247	255	49	52	98.9	17.26		
12	230.00	235.00	229.850	0.68	88	286	1.57	1.55	7	247	246	49	57	100.0	17.26		
	235.00	240.00	233.300	0.68	88	286	1.57	1.55	7	27	257	49	60	99.4	17.26		
Final DGM:				236.730													

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y _{qa}
		240.0 min	163.190 ft ³	0.68 in. WC	84.3 °F	285.9 °F	7	1.533 in. WC	99.2	0.161

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 15:03		Source: APC Outlet No. 1										
Date: 12-2-24		Run 2		VALID		End Time: 19:10		Project No.: AST-2024-4547		Parameter: SVOC						
STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA			
Moisture: 16.0 % est.			Meter Box ID: Team 4			Est. Tm: 84 °F				Pb: 29.70 in. Hg			Vlc (ml)			
Barometric: 30.15 in. Hg			Y: 1.01			Est. Ts: 286 °F				Pg: -10.20 in. WC			626.5			
Static Press: -10.50 in. WC			ΔH @ (in.WC): 1.819			Est. ΔP: 0.68 in. WC				O ₂ : 8.57 %			K-FACTOR			
Stack Press: 29.38 in. Hg			Probe ID: 6 series			Est. Dn: 0.214 in.				CO ₂ : 10.36 %			2.29			
CO ₂ : 11.2 %			Liner Material: glass			Target Rate: 0.50 scfm				CO: 13.8 ppm						
O ₂ : 8.1 %			Pitot ID: 15A							Check Pt.			Initial	Final	Corr.	
N ₂ : 79.8 %			Pitot Cp/Type: 0.839			S-type	LEAK CHECK:	Pre	Mid 1	Mid 2	Mid 3	Post	Mid 1 (cf)	#####	#####	0.260
CO: 15.00 ppm			Nozzle ID: 007			glass	Leak Rate (cfm):	0.002	0.002	0.002	--	0.002	Mid 2 (cf)			--
Md: 30.22 lb/lb-mole			Nozzle Dn (in.): 0.2508				Vacuum (in Hg):	15	14.5	14.5	--	15	Mid 3 (cf)			--
Ms: 28.27 lb/lb-mole							Pitot Tube:	Pass	--	--	--	Pass	Mid-Point Leak Check Vol (cf):			0.260

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube AP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)		
	Begin	End			DGM Average	Stack	Ideal	Actual		Probe	Filter	Imp Exit	Aux				
					Amb.	Amb.				Amb.	Amb.	Amb.	Amb.			Amb.	Amb.
					--	--				--	--	--	--			--	--
1	0.00	5.00	37.070	0.76	76	285	1.72	1.65	7	247	247	74	44	96.8	18.18		
--	5.00	10.00	40.540	0.81	76	284	1.83	1.80	7	247	249	62	47	98.4	18.76		
2	10.00	15.00	44.180	0.81	78	284	1.84	1.80	7	247	247	57	49	98.6	18.76		
--	15.00	20.00	47.840	0.81	81	284	1.85	1.80	7	247	248	54	44	97.2	18.76		
3	20.00	25.00	51.470	0.81	83	285	1.85	1.85	8	248	252	53	45	96.7	18.77		
--	25.00	30.00	55.090	0.81	84	285	1.86	1.85	8	247	249	52	43	100.2	18.77		
4	30.00	35.00	58.850	0.71	85	284	1.63	1.65	8	247	248	52	45	100.5	17.56		
--	35.00	40.00	62.390	0.71	86	285	1.63	1.55	8	247	252	53	44	97.8	17.58		
5	40.00	45.00	65.840	0.73	86	285	1.68	1.60	8	247	252	53	44	97.8	17.82		
--	45.00	50.00	69.340	0.76	87	286	1.75	1.75	8	247	249	53	45	99.9	18.20		
6	50.00	55.00	72.990	0.57	88	286	1.32	1.30	7	247	253	54	45	101.8	15.76		
--	55.00	60.00	76.220	0.57	88	285	1.32	1.25	7	247	248	52	41	97.9	15.75		
7	60.00	65.00	79.330	0.64	88	285	1.48	1.40	7	247	251	52	40	97.8	16.69		
--	65.00	70.00	82.620	0.66	89	285	1.53	1.50	7	247	252	50	41	98.5	16.95		
8	70.00	75.00	85.990	0.71	89	285	1.64	1.60	8	247	248	49	41	98.4	17.58		
--	75.00	80.00	89.480	0.71	89	286	1.64	1.60	8	248	252	48	42	101.3	17.59		
9	80.00	85.00	93.070	0.71	89	287	1.64	1.60	8	247	252	48	42	97.4	17.60		
--	85.00	90.00	96.520	0.70	89	286	1.62	1.55	8	247	248	48	42	98.0	17.46		
10	90.00	95.00	99.970	0.67	89	286	1.55	1.50	7	248	253	48	43	98.4	17.08		
--	95.00	100.00	103.360	0.67	90	286	1.55	1.50	7	247	249	48	43	98.8	17.08		
11	100.00	105.00	106.770	0.60	90	286	1.39	1.35	7	247	250	48	44	98.6	16.17		
--	105.00	110.00	109.990	0.60	90	286	1.39	1.35	7	247	253	49	46	98.6	16.17		
12	110.00	115.00	113.210	0.60	90	286	1.39	1.35	7	247	249	49	48	98.6	16.17		
--	115.00	120.00	116.430	0.57	90	286	1.32	1.25	7	247	249	49	51	98.6	15.76		
1	120.00	125.00	119.570	0.77	83	286	1.76	1.70	8	246	247	65	56	97.0	18.32		
--	125.00	130.00	123.370	0.81	85	284	1.86	1.80	8	248	252	48	47	98.6	18.76		
2	130.00	135.00	127.080	0.81	87	284	1.87	1.80	8	247	248	46	41	98.3	18.76		
--	135.00	140.00	130.790	0.84	87	283	1.94	1.90	8	248	252	45	41	98.5	19.09		
3	140.00	145.00	134.580	0.77	88	284	1.78	1.75	8	248	253	45	41	99.0	18.29		
--	145.00	150.00	138.230	0.79	89	285	1.83	1.80	8	247	248	45	41	98.9	18.54		
4	150.00	155.00	141.930	0.74	89	286	1.71	1.70	8	248	252	45	42	98.9	17.95		
--	155.00	160.00	145.510	0.72	89	286	1.66	1.60	8	248	253	45	41	98.3	17.71		
5	160.00	165.00	149.020	0.61	89	286	1.41	1.40	8	247	248	45	40	98.9	16.30		
--	165.00	170.00	152.270	0.56	90	285	1.30	1.30	7	247	251	46	40	97.8	15.61		
6	170.00	175.00	155.360	0.56	90	283	1.30	1.30	7	247	253	46	39	98.6	15.59		
--	175.00	180.00	158.480	0.58	90	283	1.35	1.30	7	247	249	46	40	96.9	15.86		
7	180.00	185.00	161.600	0.68	90	283	1.58	1.60	7	247	250	47	40	97.3	17.18		
--	185.00	190.00	164.990	0.70	90	284	1.63	1.60	7	247	253	46	41	98.3	17.44		
8	190.00	195.00	168.460	0.72	90	284	1.67	1.65	8	247	250	46	41	98.0	17.69		
--	195.00	200.00	171.970	0.72	90	285	1.67	1.65	8	247	250	46	41	98.1	17.70		
9	200.00	205.00	175.480	0.73	90	285	1.69	1.65	8	247	253	46	42	98.2	17.82		
--	205.00	210.00	179.020	0.73	90	282	1.70	1.65	8	247	250	47	42	98.0	17.79		
10	210.00	215.00	182.560	0.72	90	281	1.68	1.65	8	247	249	47	42	98.4	17.65		
--	215.00	220.00	186.090	0.72	90	281	1.68	1.65	8	247	253	47	42	98.4	17.65		
11	220.00	225.00	189.620	0.68	90	281	1.59	1.60	8	247	250	47	44	98.9	17.15		
--	225.00	230.00	193.070	0.69	90	281	1.61	1.60	8	247	249	48	45	97.1	17.28		
12	230.00	235.00	196.480	0.53	90	281	1.24	1.20	8	247	253	48	46	97.3	15.14		
--	235.00	240.00	199.480	0.53	90	281	1.24	1.20	7	247	249	48	47	99.3	15.14		

Final DGM:		202.540	

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y _{qa}
	240.0 min	165.210 ft ³	0.70 in. WC	87.6 °F	284.4 °F	8	1.572 in. WC	98.4	0.156	-1.0

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 8:28		Source: APC Outlet No. 1									
Date: 12-3-24		Run 3		VALID		End Time: 12:37		Project No.: AST-2024-4547		Parameter: SVOC					
STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA		
Moisture: 16.0 % est.			Meter Box ID: Team 4			Est. Tm: 88 °F				Pb: 29.80 in. Hg			Vlc (ml)		
Barometric: 30.15 in. Hg			Y: 1.01			Est. Ts: 284 °F				Pg: -10.50 in. WC			639.9		
Static Press: -10.50 in. WC			ΔH @ (in.WC): 1.819			Est. ΔP: 0.70 in. WC				O ₂ : 8.77 %			K-FACTOR		
Stack Press: 29.38 in. Hg			Probe ID: 6 series			Est. Dn: 0.212 in.				CO ₂ : 10.7 %			2.309		
CO ₂ : 11.2 %			Liner Material: glass			Target Rate: 0.50 scfm				CO: 14.4 ppm					
O ₂ : 8.1 %			Pitot ID: 15A							Check Pt.			Initial	Final	Corr.
N ₂ : 79.8 %			Pitot Cp/Type: 0.839		S-type	LEAK CHECK: Pre Mid 1 Mid 2 Mid 3 Post				Mid 1 (cf)	87.820	88.160	0.340		
CO: 15.00 ppm			Nozzle ID: 007		glass	Leak Rate (cfm): 0.008 0.006 0.006 -- 0.004				Mid 2 (cf)			--		
Md: 30.22 lb/lb-mole			Nozzle Dn (in.): 0.2508			Vacuum (in Hg): 16 15 15 -- 15				Mid 3 (cf)			--		
Ms: 28.27 lb/lb-mole						Pitot Tube: Pass -- -- -- Pass				Mid-Point Leak Check Vol (cf): 0.340					

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube ΔP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)	Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)	
	Begin	End			DGM Average	Stack			Probe	Filter	Imp Exit	Aux			
					Amb.	Amb.			Amb.	Amb.	Amb.	Amb.			
					--	--			Ideal	Actual	--	--			--
1	0.00	5.00	4.830	0.67	71	285	1.50	1.50	6	247	254	71	71	108.8	17.04
--	5.00	10.00	8.440	0.67	72	284	1.51	1.45	6	248	250	66	60	98.0	17.03
2	10.00	15.00	11.700	0.76	75	284	1.72	1.65	6	247	249	65	41	97.1	18.14
--	15.00	20.00	15.160	0.77	77	284	1.74	1.70	7	247	248	63	39	98.1	18.26
3	20.00	25.00	18.690	0.78	80	284	1.78	1.70	7	247	249	62	40	99.7	18.37
--	25.00	30.00	22.320	0.75	81	280	1.72	1.65	7	247	251	60	40	98.7	17.97
4	30.00	35.00	25.860	0.71	82	281	1.63	1.60	6	247	250	59	40	99.3	17.49
--	35.00	40.00	29.330	0.68	83	280	1.57	1.50	6	247	247	58	39	99.1	17.11
5	40.00	45.00	32.730	0.63	84	280	1.46	1.40	6	247	247	58	40	100.0	16.47
--	45.00	50.00	36.040	0.65	84	279	1.50	1.45	6	247	247	58	40	99.6	16.72
6	50.00	55.00	39.390	0.55	85	278	1.28	1.25	6	247	249	56	40	99.9	15.37
--	55.00	60.00	42.490	0.55	85	278	1.28	1.25	6	247	251	54	40	100.2	15.37
7	60.00	65.00	45.600	0.61	85	278	1.42	1.35	6	247	252	53	39	97.7	16.18
--	65.00	70.00	48.790	0.64	86	279	1.49	1.45	6	247	247	52	39	99.1	16.59
8	70.00	75.00	52.110	0.71	86	279	1.65	1.60	6	247	247	51	40	99.3	17.47
--	75.00	80.00	55.610	0.70	86	279	1.62	1.55	6	247	249	52	41	98.0	17.35
9	80.00	85.00	59.040	0.80	87	279	1.86	1.80	7	247	247	53	41	97.9	18.55
--	85.00	90.00	62.710	0.75	87	279	1.74	1.70	7	247	252	54	42	98.1	17.96
10	90.00	95.00	66.270	0.75	87	279	1.74	1.70	7	247	250	55	42	101.4	17.96
--	95.00	100.00	69.950	0.75	87	279	1.74	1.70	7	247	247	55	42	98.6	17.96
11	100.00	105.00	73.530	0.75	87	279	1.74	1.70	7	247	247	56	43	98.3	17.96
--	105.00	110.00	77.100	0.73	87	279	1.70	1.65	7	247	250	57	44	99.1	17.72
12	110.00	115.00	80.650	0.74	87	278	1.72	1.65	7	247	251	57	45	98.1	17.82
--	115.00	120.00	84.190	0.75	87	278	1.75	1.75	7	248	252	58	46	99.9	17.94
1	120.00	125.00	87.820	0.64	79	278	1.47	1.40	6	247	252	67	48	99.1	16.58
--	125.00	130.00	91.440	0.67	82	278	1.55	1.50	7	253	252	53	42	98.4	16.96
2	130.00	135.00	94.790	0.63	84	271	1.47	1.45	6	247	250	50	41	99.4	16.37
--	135.00	140.00	98.100	0.63	85	271	1.48	1.45	6	247	247	48	41	99.3	16.37
3	140.00	145.00	101.410	0.67	86	271	1.57	1.55	7	247	247	48	41	99.6	16.88
--	145.00	150.00	104.840	0.67	87	273	1.57	1.55	7	247	249	48	43	99.0	16.90
4	150.00	155.00	108.250	0.61	87	277	1.42	1.35	6	247	249	48	44	98.8	16.17
--	155.00	160.00	111.490	0.64	87	279	1.49	1.45	6	247	249	48	46	95.1	16.59
5	160.00	165.00	114.680	0.66	87	281	1.53	1.50	6	247	252	48	45	97.6	16.87
--	165.00	170.00	118.000	0.66	87	281	1.53	1.50	6	247	252	48	49	101.4	16.87
6	170.00	175.00	121.450	0.71	87	283	1.64	1.60	7	247	252	48	41	98.5	17.52
--	175.00	180.00	124.920	0.68	87	284	1.57	1.60	7	247	249	48	42	100.7	17.16
7	180.00	185.00	128.390	0.62	88	284	1.43	1.45	7	247	248	48	42	101.3	16.38
--	185.00	190.00	131.730	0.63	88	285	1.46	1.40	7	247	248	49	42	98.7	16.52
8	190.00	195.00	135.010	0.67	87	285	1.55	1.50	7	247	250	50	42	98.6	17.04
--	195.00	200.00	138.380	0.67	88	286	1.55	1.50	7	248	252	50	43	99.3	17.05
9	200.00	205.00	141.780	0.72	88	286	1.66	1.65	7	247	252	50	44	99.8	17.68
--	205.00	210.00	145.320	0.72	88	287	1.66	1.65	7	247	250	51	45	99.6	17.69
10	210.00	215.00	148.850	0.77	88	287	1.77	1.75	7	247	248	51	46	99.9	18.29
--	215.00	220.00	152.510	0.74	88	287	1.70	1.70	7	247	247	52	49	99.6	17.93
11	220.00	225.00	156.090	0.76	88	286	1.75	1.75	7	247	250	52	50	99.1	18.16
--	225.00	230.00	159.700	0.76	88	286	1.75	1.75	7	247	252	53	54	98.0	18.16
12	230.00	235.00	163.270	0.74	88	286	1.71	1.65	7	247	251	54	57	99.0	17.92
--	235.00	240.00	166.830	0.74	88	285	1.71	1.65	7	247	247	54	61	98.9	17.91

Final DGM:		170.390	

RESULTS	Run Time	Vm	ΔP	Tm	Ts	Max Vac	ΔH	%ISO	BWS	Y _{qa}
	240.0 min	165.220 ft ³	0.69 in. WC	85.0 °F	280.8 °F	7	1.563 in. WC	99.2	0.158	-0.3

Emission Calculations

Location **Reworld - Courtice, ON**

Source **APC Outlet No. 2**

Project No. **AST-2024-4547**

Parameter **SVOC**

Run Number		Run 1	Run 2	Average
Date		12-2-24	12-2-24	--
Start Time		9:45	14:48	--
Stop Time		13:54	18:55	--
Run Time, min	(θ)	240.0	240.0	240.0
INPUT DATA				
Barometric Pressure, kPa	(Pb)	100.237	100.237	100.24
Meter Correction Factor	(Y)	1.008	1.008	1.008
Orifice Calibration Value	($\Delta H @$)	1.838	1.838	1.838
Meter Volume, m ³	(Vm)	4.485	4.465	4.475
Meter Temperature, °C	(Tm)	25.1	27.5	26.3
Meter Temperature, °K	(Tm)	298.3	300.6	299.4
Meter Orifice Pressure, kPa	(ΔH)	0.368	0.362	0.365
Volume H ₂ O Collected, mL	(Vlc)	612.2	619.5	615.9
Nozzle Diameter, cm	(Dn)	0.612	0.612	0.612
Area of Nozzle, cm ²	(An)	0.2943	0.2943	0.2943
ISOKINETIC DATA				
Reference Meter Volume, m ³	(Vmref)	4.483	4.428	4.455
Reference Water Volume, m ³	(Vwref)	0.833	0.843	0.838
Moisture Fraction Measured	(BWSmsd)	0.157	0.160	0.158
Moisture Fraction @ Saturation	(BWSsat)	3.360	3.323	3.342
Moisture Fraction	(BWS)	0.157	0.160	0.158
Meter Pressure, kPa	(Pm)	100.61	100.60	100.60
Volume at Nozzle, m ³	(Vn)	7.606	7.534	7.57
Isokinetic Sampling Rate, (%)	(I)	98.6	100.0	99.3

Emission Calculations

Location Reworld - Courtice, ON
Source APC Outlet No. 2
Project No. AST-2024-4547
Parameter SVOC

Run Number		Run 1	Run 2	Average
Date		12-2-24	12-2-24	--
Start Time		9:45	14:48	--
Stop Time		13:54	18:55	--
Run Time, min		240.0	240.0	240.0
CALCULATED DATA				
Square Root of ΔP , (in. WC) ^{1/2}	(ΔP)	0.870	0.849	0.860
Pitot Tube Coefficient	(Cp)	0.845	0.845	0.845
Barometric Pressure, kPa	(Pb)	100.24	100.24	100.24
Static Pressure, kPa	(Pg)	-2.564	-2.564	-2.564
Stack Pressure, kPa	(Ps)	97.67	97.67	97.67
Stack Cross-sectional Area, m ²	(As)	1.48	1.48	1.48
Temperature, °C	(Ts)	138.0	137.6	137.8
Temperature, °K	(Ts)	411.2	410.8	411.0
Moisture Fraction Measured	(BWSmsd)	0.157	0.160	0.158
Moisture Fraction @ Saturation	(BWSsat)	3.360	3.323	3.342
Moisture Fraction	(BWS)	0.157	0.160	0.158
O ₂ Concentration, %	(O ₂)	8.99	8.86	8.93
CO ₂ Concentration, %	(CO ₂)	10.68	10.83	10.76
CO Concentration, ppmvd	(CO)	12.7	12.8	12.75
Ar Concentration, %	(Ar)	0.94	0.94	0.94
Molecular Weight, lb/lb-mole (dry)	(Md)	30.18	30.20	30.19
Molecular Weight, lb/lb-mole (wet)	(Ms)	28.28	28.25	28.26
Velocity, m/s	(Vs)	18.2	17.8	18.0
VOLUMETRIC FLOW RATE				
At Stack Conditions, m ³ /s	(Qa)	26.95	26.30	26.63
At Reference Conditions, wet Rm ³ /s	(Qsw)	18.84	18.40	18.62
At Reference Conditions, dry Rm ³ /s	(Qs)	15.89	15.46	15.67
At Reference Conditions (corrected), dry Rm ³ /s @ 11% O ₂	(Qsc)	19.11	18.80	18.96

Reference conditions: 25°C, 1 atm (77°F, 29.92 in. Hg)

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 9:45		Source: APC Outlet No. 2								
Date: 12-2-24		Run 1		VALID		End Time: 13:54		Project No.: AST-2024-4547		Parameter: SVOC				
STACK DATA (EST)			EQUIPMENT			STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)			MOIST. DATA	
Moisture: 16.0 % est.			Meter Box ID: Team 1			Est. Tm: 75 °F				Pb: 29.60 in. Hg			Vlc (ml)	
Barometric: 29.50 in. Hg			Y: 1.008			Est. Ts: 287 °F				Pg: -10.30 in. WC			612.2	
Static Press: -10.30 in. WC			AH @ (in.WC): 1.838			Est. AP: 0.71 in. WC				O ₂ : 8.99 %			K-FACTOR	
Stack Press: 28.74 in. Hg			Probe ID: 6A			Est. Dn: 0.212 in.				CO ₂ : 10.68 %			1.965	
CO ₂ : 11.2 %			Liner Material: glass			Target Rate: 0.50 scfm				CO: 12.7 ppm				
O ₂ : 8.2 %			Pitot ID: S11							Check Pt. Initial Final Corr.				
N ₂ : 79.7 %			Pitot Cp/Type: 0.845 S-type			LEAK CHECK: Pre Mid 1 Mid 2 Mid 3 Post				Mid 1 (cf) 142.002 142.320 0.318				
CO: 14.50 ppm			Nozzle ID: C --			Leak Rate (cfm): 0.003 0.004 0.004 -- 0.002				Mid 2 (cf) --				
Md: 30.23 lb/lb-mole			Nozzle Dn (in.): 0.2410			Vacuum (in Hg): 13 10 10 -- 10				Mid 3 (cf) --				
Ms: 28.27 lb/lb-mole						Pitot Tube: Pass Pass Pass Pass Pass				Mid-Point Leak Check Vol (cf): 0.318				

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft³)	Pitot Tube AP (in WC)	Gas Temperatures (°F)		Orifice Press. AH (in. WC)		Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)
					DGM Average	Stack	ΔH			Probe	Filter	Imp Exit	Trap		
	Amb.	Amb.			(in. WC)		Amb.	Amb.		Amb.	Amb.				
	Begin	End			71	72	Ideal	Actual		257	250	64	66		
	0.00	5.00	62.975	0.87	75	267	1.76	1.90	3	261	252	67	66	92.2	19.38
	5.00	10.00	66.300	0.87	72	278	1.72	1.30	3	255	261	53	67	85.3	19.52
2	10.00	15.00	69.340	0.86	72	280	1.70	1.20	3	254	261	47	67	84.5	19.44
	15.00	20.00	72.330	0.78	72	280	1.54	1.20	3	254	261	48	69	90.8	18.51
3	20.00	25.00	75.390	0.82	72	280	1.62	1.30	3	254	262	47	69	89.1	18.98
	25.00	30.00	78.470	0.81	73	280	1.60	1.40	3	255	262	47	69	95.9	18.86
4	30.00	35.00	81.770	0.83	73	279	1.64	1.50	3	255	262	46	69	99.0	19.08
	35.00	40.00	85.220	0.83	73	279	1.64	1.60	3	255	262	46	69	99.3	19.08
5	40.00	45.00	88.680	0.73	74	279	1.45	1.60	3	255	262	46	69	101.4	17.89
	45.00	50.00	92.000	0.73	74	279	1.45	1.40	3	256	263	46	68	99.3	17.89
6	50.00	55.00	95.250	0.75	75	279	1.49	1.40	3	255	262	46	69	98.9	18.14
	55.00	60.00	98.540	0.75	75	280	1.49	1.50	3	255	263	46	69	98.7	18.15
7	60.00	65.00	101.820	0.76	76	280	1.51	1.50	3	255	262	46	40	98.5	18.27
	65.00	70.00	105.120	0.80	76	281	1.59	1.50	3	255	262	46	39	96.1	18.76
8	70.00	75.00	108.420	0.81	76	282	1.61	1.50	3	257	267	46	39	93.8	18.89
	75.00	80.00	111.660	0.79	77	283	1.57	1.60	3	256	263	46	40	103.1	18.67
9	80.00	85.00	115.180	0.77	77	283	1.53	1.60	3	255	263	46	41	100.0	18.43
	85.00	90.00	118.550	0.79	77	282	1.57	1.60	3	255	263	46	41	99.5	18.65
10	90.00	95.00	121.950	0.74	78	282	1.47	1.60	3	255	263	47	42	101.4	18.05
	95.00	100.00	125.310	0.74	78	280	1.48	1.50	3	256	263	47	42	97.3	18.03
11	100.00	105.00	128.540	0.74	78	280	1.48	1.50	3	255	263	47	41	106.4	18.03
	105.00	110.00	132.070	0.74	78	280	1.48	1.50	3	255	263	47	41	98.8	18.03
12	110.00	115.00	135.350	0.73	78	280	1.46	1.50	3	255	263	47	41	101.0	17.91
	115.00	120.00	138.680	0.75	78	280	1.50	1.50	3	255	264	47	42	99.4	18.15
13	120.00	125.00	142.002	0.67	78	280	1.34	1.50	3	253	263	52	42	106.1	17.15
	125.00	130.00	145.670	0.91	77	283	1.81	1.50	3	255	264	46	43	96.0	20.03
14	130.00	135.00	149.190	0.90	78	283	1.79	1.80	3	256	264	45	44	98.6	19.92
	135.00	140.00	152.790	0.85	78	283	1.69	1.80	4	256	263	45	45	101.8	19.36
15	140.00	145.00	156.400	0.82	78	282	1.63	1.70	4	256	263	44	46	100.1	19.00
	145.00	150.00	159.890	0.82	78	282	1.63	1.60	4	256	264	45	41	100.4	19.00
16	150.00	155.00	163.390	0.82	78	281	1.63	1.60	4	256	264	45	39	100.0	18.99
	155.00	160.00	166.880	0.76	79	281	1.52	1.60	4	256	264	45	39	95.7	18.28
17	160.00	165.00	170.100	0.76	79	281	1.52	1.50	4	256	264	45	39	105.4	18.28
	165.00	170.00	173.650	0.67	79	281	1.34	1.50	4	256	263	45	39	100.3	17.17
18	170.00	175.00	176.820	0.66	79	280	1.32	1.30	4	256	263	45	40	99.3	17.03
	175.00	180.00	179.940	0.68	79	281	1.36	1.30	4	256	263	45	41	90.4	17.29
19	180.00	185.00	182.820	0.72	80	281	1.44	1.30	4	255	264	46	41	108.7	17.80
	185.00	190.00	186.390	0.71	80	282	1.42	1.50	4	255	264	45	41	100.7	17.68
20	190.00	195.00	189.670	0.69	80	282	1.38	1.40	4	256	265	46	41	103.3	17.43
	195.00	200.00	192.990	0.74	80	282	1.48	1.40	4	256	264	46	40	95.6	18.05
21	200.00	205.00	196.170	0.74	80	281	1.48	1.50	4	255	264	46	41	100.0	18.04
	205.00	210.00	199.500	0.71	80	281	1.42	1.50	4	255	264	46	42	100.3	17.67
22	210.00	215.00	202.770	0.67	80	281	1.34	1.40	4	255	264	46	43	99.8	17.17
	215.00	220.00	205.930	0.68	80	280	1.36	1.30	4	255	264	46	44	99.2	17.28
23	220.00	225.00	209.100	0.68	80	280	1.36	1.40	4	255	264	46	46	99.3	17.28
	225.00	230.00	212.270	0.66	80	280	1.32	1.30	4	255	264	46	51	100.1	17.03
24	230.00	235.00	215.420	0.66	80	280	1.32	1.30	4	255	264	46	54	100.1	17.03
	235.00	240.00	218.570	0.64	80	280	1.28	1.30	4	255	264	47	58	100.0	16.77
Final DGM:			221.670												

RESULTS	Run Time		Vm		AP		Tm		Ts		Max Vac		AH		%ISO		BWS		Y _{qa}	
	240.0	min	158.377	ft³	0.76	in. WC	77.2	°F	280.4	°F	4		1.479	in. WC	98.6	0.157		-1.0		

Isokinetic Field Data

Location: Reworld - Courtice, ON				Start Time: 14:48		Source: APC Outlet No. 2									
Date: 12-2-24		Run 2		VALID		End Time: 18:55		Project No.: AST-2024-4547		Parameter: SVOC					
STACK DATA (EST)			EQUIPMENT		STACK DATA (EST)			FILTER NO.	STACK DATA (FINAL)		MOIST. DATA				
Moisture: 16.0 % est.			Meter Box ID: Team 1		Est. Tm: 77 °F				Pb: 29.60 in. Hg		Vlc (ml)				
Barometric: 29.50 in. Hg			Y: 1.008		Est. Ts: 280 °F				Pg: -10.30 in. WC		619.5				
Static Press: -10.30 in. WC			ΔH @ (in.WC): 1.838		Est. ΔP: 0.76 in. WC				O ₂ : 8.86 %		K-FACTOR				
Stack Press: 28.74 in. Hg			Probe ID: 6A		Est. Dn: 0.208 in.				CO ₂ : 10.83 %		1.99				
CO ₂ : 11.2 %			Liner Material: glass		Target Rate: 0.50 scfm				CO: 12.8 ppm						
O ₂ : 8.2 %			Pitot ID: S11						Check Pt.		Initial	Final	Corr.		
N ₂ : 79.7 %			Pitot Cp/Type: 0.845		S-type	LEAK CHECK:	Pre	Mid 1	Mid 2	Mid 3	Post	Mid 1 (cf)	#####	#####	0.260
CO: 14.50 ppm			Nozzle ID: C		--	Leak Rate (cfm):	0.002	0.002	0.001	--	0.001	Mid 2 (cf)		--	
Md: 30.23 lb/lb-mole			Nozzle Dn (in.): 0.2410			Vacuum (in Hg):	10	10	10	--	11	Mid 3 (cf)		--	
Ms: 28.27 lb/lb-mole						Pitot Tube:	Pass	Pass	Pass	--	Pass	Mid-Point Leak Check Vol (cf):		0.260	

Sample Pt.	Sample Time (minutes)		Dry Gas Meter Reading (ft ³)	Pitot Tube AP (in WC)	Gas Temperatures (°F)		Orifice Press. ΔH (in. WC)	Pump Vac (in. Hg)	Gas Temperatures (°F)				% ISO	Vs (m/s)	
	Begin	End			DGM Average	Stack			Probe	Filter	Imp Exit	Trap			
					Amb.	Amb.			Amb.	Amb.	Amb.	Amb.			
					79	74			Ideal	Actual	251	259			72
--	0.00	5.00	21.935	0.88	79	280	1.76	1.70	4	251	259	66	40	95.4	19.67
--	5.00	10.00	25.380	0.90	79	278	1.80	1.70	4	255	253	64	38	98.2	19.86
2	10.00	15.00	28.970	0.91	78	281	1.81	1.80	4	256	257	60	38	98.3	20.01
--	15.00	20.00	32.570	0.91	78	282	1.81	1.80	4	256	258	58	39	99.2	20.03
3	20.00	25.00	36.200	0.89	78	282	1.77	1.80	4	256	258	55	39	99.7	19.81
--	25.00	30.00	39.810	0.88	79	282	1.75	1.70	4	256	259	51	39	99.3	19.69
4	30.00	35.00	43.390	0.85	79	282	1.69	1.70	4	256	259	50	40	99.6	19.36
--	35.00	40.00	46.920	0.83	79	283	1.65	1.70	4	256	259	49	39	100.0	19.14
5	40.00	45.00	50.420	0.86	80	284	1.71	1.60	4	256	259	49	39	98.4	19.50
--	45.00	50.00	53.930	0.74	80	284	1.47	1.60	4	256	259	48	39	102.4	18.08
6	50.00	55.00	57.320	0.65	80	284	1.29	1.50	4	256	260	49	39	100.6	16.95
--	55.00	60.00	60.440	0.65	81	283	1.30	1.30	4	256	260	48	38	99.9	16.94
7	60.00	65.00	63.550	0.62	81	283	1.24	1.30	4	255	260	49	39	101.3	16.54
--	65.00	70.00	66.630	0.65	81	282	1.30	1.20	4	256	260	49	39	99.2	16.93
8	70.00	75.00	69.720	0.64	81	281	1.28	1.30	4	256	259	49	39	99.9	16.78
--	75.00	80.00	72.810	0.66	81	281	1.32	1.30	4	256	260	50	39	99.0	17.04
9	80.00	85.00	75.920	0.67	82	280	1.35	1.30	4	256	259	49	39	99.0	17.16
--	85.00	90.00	79.060	0.65	82	280	1.31	1.30	4	255	260	49	39	100.5	16.90
10	90.00	95.00	82.200	0.63	82	280	1.27	1.30	4	256	260	49	39	101.4	16.64
--	95.00	100.00	85.320	0.63	82	280	1.27	1.30	4	255	260	48	40	101.4	16.64
11	100.00	105.00	88.440	0.64	82	280	1.29	1.30	4	255	260	49	42	100.3	16.77
--	105.00	110.00	91.550	0.63	82	280	1.27	1.30	4	255	260	49	43	101.1	16.64
12	110.00	115.00	94.660	0.63	82	280	1.27	1.30	4	255	260	49	43	100.8	16.64
--	115.00	120.00	97.760	0.64	83	280	1.29	1.30	4	255	260	49	40	107.5	16.77
13	120.00	125.00	101.100	0.83	82	279	1.67	1.30	4	254	259	50	38	87.5	19.09
--	125.00	130.00	104.450	0.82	82	277	1.65	1.60	4	256	260	46	40	99.1	18.95
14	130.00	135.00	107.930	0.84	82	278	1.69	1.60	4	255	259	44	41	99.3	19.19
--	135.00	140.00	111.460	0.89	82	278	1.79	1.70	4	255	260	44	41	99.5	19.75
15	140.00	145.00	115.100	0.86	82	279	1.73	1.70	4	256	260	44	42	99.9	19.43
--	145.00	150.00	118.690	0.86	82	279	1.73	1.70	4	255	260	45	41	100.2	19.43
16	150.00	155.00	122.290	0.80	82	280	1.61	1.70	4	255	260	45	41	103.4	18.75
--	155.00	160.00	125.870	0.78	82	280	1.57	1.60	4	255	260	45	41	100.6	18.52
17	160.00	165.00	129.310	0.71	82	280	1.43	1.60	4	255	260	45	42	100.5	17.67
--	165.00	170.00	132.590	0.69	82	280	1.39	1.40	4	255	261	46	41	101.3	17.42
18	170.00	175.00	135.850	0.64	82	278	1.29	1.40	4	256	260	46	42	101.2	16.75
--	175.00	180.00	138.990	0.64	82	279	1.29	1.30	4	256	260	46	42	100.3	16.76
19	180.00	185.00	142.100	0.67	82	278	1.35	1.30	4	256	260	47	40	98.6	17.14
--	185.00	190.00	145.230	0.63	82	278	1.27	1.30	4	256	261	46	39	101.6	16.62
20	190.00	195.00	148.360	0.62	82	278	1.25	1.30	4	256	260	47	39	101.1	16.49
--	195.00	200.00	151.450	0.65	83	278	1.31	1.30	4	257	260	47	39	99.2	16.88
21	200.00	205.00	154.560	0.64	83	277	1.29	1.30	4	256	260	47	39	100.6	16.74
--	205.00	210.00	157.690	0.68	83	277	1.38	1.30	4	255	260	47	40	100.1	17.25
22	210.00	215.00	160.900	0.62	83	277	1.25	1.40	4	256	260	47	40	103.5	16.48
--	215.00	220.00	164.070	0.64	83	277	1.30	1.20	4	255	260	46	40	99.0	16.74
23	220.00	225.00	167.150	0.69	83	277	1.40	1.30	4	255	260	47	40	100.0	17.38
--	225.00	230.00	170.380	0.65	83	277	1.31	1.40	4	255	260	47	41	102.1	16.87
24	230.00	235.00	173.580	0.64	83	277	1.29	1.30	4	255	260	47	41	100.6	16.74
--	235.00	240.00	176.710	0.65	83	277	1.32	1.30	4	255	260	47	41	100.1	16.87

Final DGM:		179.850	

RESULTS	Run Time		Vm		ΔP		Tm		Ts		Max Vac		ΔH		%ISO		BWS		Y _{qa}	
	240.0 min		157.655 ft ³		0.72 in. WC		81.4 °F		279.7 °F		4		1.452 in. WC		100.0		0.160		-0.8	

APPENDIX 26

Total Hydrocarbon CEM Data (4 pages)

Reworld Durham York Renewable Energy L.P.
Total Hydrocarbon Sampling at the Boiler No. 1 Quench Inlet

Test No. 1			Test No. 2			Test No. 3		
December 3, 2024			December 3, 2024			December 3, 2024		
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
10:50	0.0		12:10	0.1		13:20	0.0	
10:51	0.0		12:11	0.0		13:21	0.0	
10:52	0.0		12:12	0.0		13:22	0.0	
10:53	0.0		12:13	1.9		13:23	0.0	
10:54	0.0		12:14	6.2		13:24	0.0	
10:55	0.0		12:15	0.7		13:25	0.0	
10:56	0.0		12:16	0.2		13:26	0.0	
10:57	0.0		12:17	0.0		13:27	1.8	
10:58	0.0		12:18	0.0		13:28	3.6	
10:59	0.0	0.0	12:19	0.0	0.9	13:29	0.0	0.5
11:00	0.1	0.0	12:20	6.4	1.6	13:30	4.0	0.9
11:01	0.1	0.0	12:21	1.3	1.7	13:31	0.1	0.9
11:02	4.0	0.4	12:22	0.0	1.7	13:32	0.0	0.9
11:03	7.0	1.1	12:23	0.0	1.5	13:33	0.0	0.9
11:04	5.0	1.6	12:24	0.0	0.9	13:34	0.0	0.9
11:05	5.7	2.2	12:25	0.0	0.8	13:35	0.0	0.9
11:06	5.9	2.8	12:26	0.0	0.8	13:36	4.1	1.4
11:07	5.8	3.4	12:27	3.5	1.1	13:37	0.0	1.2
11:08	7.1	4.1	12:28	0.0	1.1	13:38	0.0	0.8
11:09	12.4	5.3	12:29	0.0	1.1	13:39	0.0	0.8
11:10	11.0	6.4	12:30	0.0	0.5	13:40	1.0	0.5
11:11	8.6	7.2	12:31	0.0	0.3	13:41	0.0	0.5
11:12	5.6	7.4	12:32	0.0	0.3	13:42	0.0	0.5
11:13	3.6	7.1	12:33	0.0	0.3	13:43	0.6	0.6
11:14	3.0	6.9	12:34	0.0	0.3	13:44	2.4	0.8
11:15	2.8	6.6	12:35	0.0	0.3	13:45	1.0	0.9
11:16	1.8	6.2	12:36	3.8	0.7	13:46	0.0	0.5
11:17	1.2	5.7	12:37	0.6	0.4	13:47	0.0	0.5
11:18	0.6	5.0	12:38	0.0	0.4	13:48	0.0	0.5
11:19	15.0	5.3	12:39	0.0	0.4	13:49	0.0	0.5
11:20	9.5	5.2	12:40	0.0	0.4	13:50	0.0	0.4
11:21	0.9	4.4	12:41	0.0	0.4	13:51	0.0	0.4
11:22	0.4	3.9	12:42	0.0	0.4	13:52	0.0	0.4
11:23	0.1	3.5	12:43	0.0	0.4	13:53	0.0	0.3
11:24	9.9	4.2	12:44	0.0	0.4	13:54	0.0	0.1
11:25	9.2	4.8	12:45	1.2	0.6	13:55	0.0	0.0
11:26	0.6	4.7	12:46	9.4	1.1	13:56	0.0	0.0
11:27	0.0	4.6	12:47	2.1	1.3	13:57	1.0	0.1
11:28	0.0	4.5	12:48	0.5	1.3	13:58	1.9	0.3
11:29	2.0	3.3	12:49	0.0	1.3	13:59	0.0	0.3
11:30	12.6	3.6	12:50	0.0	1.3	14:00	0.0	0.3
11:31	11.6	4.6	12:51	0.0	1.3	14:01	0.0	0.3
11:32	6.4	5.2	12:52	0.0	1.3	14:02	0.0	0.3
11:33	0.6	5.3	12:53	0.0	1.3	14:03	0.0	0.3
11:34	0.1	4.3	12:54	0.0	1.3	14:04	0.0	0.3
11:35	0.0	3.4	12:55	0.0	1.2	14:05	0.0	0.3
11:36	0.0	3.3	12:56	1.3	0.4	14:06	0.0	0.3
11:37	0.0	3.3	12:57	1.6	0.3	14:07	0.8	0.3
11:38	0.0	3.3	12:58	1.1	0.4	14:08	4.7	0.6
11:39	0.0	3.1	12:59	0.3	0.4	14:09	0.0	0.6
11:40	0.0	1.9	13:00	0.0	0.4	14:10	3.0	0.9
11:41	0.0	0.7	13:01	0.0	0.4	14:11	0.1	0.9
11:42	0.0	0.1	13:02	6.0	1.0	14:12	0.0	0.9
11:43	0.3	0.0	13:03	0.2	1.1	14:13	0.0	0.9
11:44	1.5	0.2	13:04	0.0	1.1	14:14	0.0	0.9
11:45	1.3	0.3	13:05	0.0	1.1	14:15	0.0	0.9
11:46	1.2	0.4	13:06	2.0	1.1	14:16	1.2	1.0
11:47	1.2	0.5	13:07	7.2	1.7	14:17	1.4	1.0
11:48	1.0	0.6	13:08	3.4	1.9	14:18	0.0	0.6
11:49	0.3	0.7	13:09	0.4	1.9	14:19	2.8	0.9
11:50	11.3	1.8	13:10	0.0	1.9	14:20	0.0	0.5
Min	0.0	0.0	Min	0.0	0.3	Min	0.0	0.0
Max	15.0	7.4	Max	9.4	1.9	Max	4.7	1.4
Avg	3.1	3.4	Avg	1.0	0.9	Avg	0.6	0.6

Reworld Durham York Renewable Energy L.P.
Total Hydrocarbon Sampling at the Boiler No. 1 APC Outlet

Test No. 1			Test No. 2			Test No. 3		
December 3, 2024			December 3, 2024			December 3, 2024		
THC - 1 min		THC - 10 min Avg	THC - 1 min		THC - 10 min Avg	THC - 1 min		THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
10:50	0.6		12:10	0.5		13:20	0.1	
10:51	0.5		12:11	0.4		13:21	0.4	
10:52	0.4		12:12	0.6		13:22	0.7	
10:53	0.4		12:13	0.6		13:23	0.4	
10:54	2.7		12:14	0.6		13:24	0.3	
10:55	2.7		12:15	0.6		13:25	0.2	
10:56	1.4		12:16	0.4		13:26	0.2	
10:57	1.6		12:17	0.5		13:27	0.2	
10:58	1.4		12:18	0.5		13:28	1.7	
10:59	0.6	1.2	12:19	0.5	0.5	13:29	0.6	0.5
11:00	0.9	1.3	12:20	0.5	0.5	13:30	0.4	0.5
11:01	1.0	1.3	12:21	0.5	0.5	13:31	0.2	0.5
11:02	0.9	1.4	12:22	0.4	0.5	13:32	0.2	0.4
11:03	0.7	1.4	12:23	0.4	0.5	13:33	0.3	0.4
11:04	0.7	1.2	12:24	0.3	0.4	13:34	1.6	0.6
11:05	0.8	1.0	12:25	0.4	0.4	13:35	0.6	0.6
11:06	0.4	0.9	12:26	0.4	0.4	13:36	0.3	0.6
11:07	0.7	0.8	12:27	0.4	0.4	13:37	0.1	0.6
11:08	0.4	0.7	12:28	0.4	0.4	13:38	0.1	0.4
11:09	0.3	0.7	12:29	0.4	0.4	13:39	0.1	0.4
11:10	0.3	0.6	12:30	0.3	0.4	13:40	0.2	0.4
11:11	0.2	0.5	12:31	0.3	0.4	13:41	0.1	0.4
11:12	0.2	0.5	12:32	0.2	0.4	13:42	0.1	0.3
11:13	0.2	0.4	12:33	0.2	0.3	13:43	0.2	0.3
11:14	0.2	0.4	12:34	0.3	0.3	13:44	0.2	0.2
11:15	0.6	0.4	12:35	0.3	0.3	13:45	0.2	0.2
11:16	0.4	0.4	12:36	0.3	0.3	13:46	0.1	0.1
11:17	0.9	0.4	12:37	0.3	0.3	13:47	0.0	0.1
11:18	0.7	0.4	12:38	0.2	0.3	13:48	0.0	0.1
11:19	0.6	0.5	12:39	0.3	0.3	13:49	0.0	0.1
11:20	0.6	0.5	12:40	0.3	0.3	13:50	0.0	0.1
11:21	0.5	0.5	12:41	0.3	0.3	13:51	0.0	0.1
11:22	1.0	0.6	12:42	0.3	0.3	13:52	0.3	0.1
11:23	0.8	0.6	12:43	0.3	0.3	13:53	0.7	0.2
11:24	0.8	0.7	12:44	0.1	0.3	13:54	0.3	0.2
11:25	0.7	0.7	12:45	0.1	0.3	13:55	0.1	0.2
11:26	0.5	0.7	12:46	0.3	0.2	13:56	0.0	0.2
11:27	0.3	0.7	12:47	0.3	0.2	13:57	0.0	0.1
11:28	0.4	0.6	12:48	0.3	0.3	13:58	0.0	0.2
11:29	2.5	0.8	12:49	0.3	0.2	13:59	0.1	0.2
11:30	0.9	0.8	12:50	0.3	0.2	14:00	1.5	0.3
11:31	0.7	0.9	12:51	0.3	0.2	14:01	0.3	0.3
11:32	0.4	0.8	12:52	0.2	0.2	14:02	0.0	0.3
11:33	0.1	0.7	12:53	0.0	0.2	14:03	0.0	0.2
11:34	0.3	0.7	12:54	0.2	0.2	14:04	0.0	0.2
11:35	0.3	0.6	12:55	0.2	0.2	14:05	0.1	0.2
11:36	0.2	0.6	12:56	0.2	0.2	14:06	0.0	0.2
11:37	0.1	0.6	12:57	0.2	0.2	14:07	0.3	0.2
11:38	0.9	0.6	12:58	0.2	0.2	14:08	0.6	0.3
11:39	1.7	0.6	12:59	0.2	0.2	14:09	0.2	0.3
11:40	0.6	0.5	13:00	0.3	0.2	14:10	0.0	0.2
11:41	0.2	0.5	13:01	0.2	0.2	14:11	0.1	0.1
11:42	0.1	0.4	13:02	0.3	0.2	14:12	0.1	0.1
11:43	0.3	0.5	13:03	0.3	0.2	14:13	0.0	0.1
11:44	0.3	0.5	13:04	0.1	0.2	14:14	0.0	0.1
11:45	0.2	0.4	13:05	0.2	0.2	14:15	0.0	0.1
11:46	0.0	0.4	13:06	0.1	0.2	14:16	1.3	0.3
11:47	0.1	0.4	13:07	0.2	0.2	14:17	0.8	0.3
11:48	0.1	0.3	13:08	0.0	0.2	14:18	0.1	0.3
11:49	0.0	0.2	13:09	0.1	0.2	14:19	0.0	0.2
11:50	0.0	0.1	13:10	0.0	0.1	14:20	0.0	0.2
Min	0.0	0.1	Min	0.0	0.1	Min	0.0	0.1
Max	2.7	1.4	Max	0.6	0.5	Max	1.7	0.6
Avg	0.6	0.7	Avg	0.3	0.3	Avg	0.3	0.3

Reworld Durham York Renewable Energy L.P.
Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet

Test No. 1			Test No. 2			Test No. 3		
December 4, 2024			December 4, 2024			December 4, 2024		
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
09:00	0.9		10:15	0.0		11:30	0.0	
09:01	1.2		10:16	0.0		11:31	0.0	
09:02	1.4		10:17	0.0		11:32	0.0	
09:03	1.2		10:18	0.0		11:33	0.0	
09:04	0.1		10:19	0.0		11:34	0.0	
09:05	0.0		10:20	0.0		11:35	0.0	
09:06	1.1		10:21	0.0		11:36	0.0	
09:07	0.0		10:22	0.0		11:37	0.0	
09:08	0.0		10:23	0.0		11:38	0.0	
09:09	0.0	0.6	10:24	0.0	0.0	11:39	0.9	0.1
09:10	0.0	0.5	10:25	0.1	0.0	11:40	0.6	0.1
09:11	5.2	0.9	10:26	0.0	0.0	11:41	0.0	0.1
09:12	0.5	0.8	10:27	0.0	0.0	11:42	0.2	0.2
09:13	0.0	0.7	10:28	0.0	0.0	11:43	0.1	0.2
09:14	0.2	0.7	10:29	3.0	0.3	11:44	0.0	0.2
09:15	0.0	0.7	10:30	0.4	0.3	11:45	0.0	0.2
09:16	0.0	0.6	10:31	0.0	0.3	11:46	0.0	0.2
09:17	1.9	0.8	10:32	0.0	0.3	11:47	0.0	0.2
09:18	0.0	0.8	10:33	0.0	0.3	11:48	0.0	0.2
09:19	0.0	0.8	10:34	1.2	0.5	11:49	0.0	0.1
09:20	0.0	0.8	10:35	0.3	0.5	11:50	2.9	0.3
09:21	0.0	0.3	10:36	0.0	0.5	11:51	0.1	0.3
09:22	0.0	0.2	10:37	0.0	0.5	11:52	0.0	0.3
09:23	1.7	0.4	10:38	0.0	0.5	11:53	0.0	0.3
09:24	2.1	0.6	10:39	0.0	0.2	11:54	0.0	0.3
09:25	0.0	0.6	10:40	1.8	0.3	11:55	0.0	0.3
09:26	0.0	0.6	10:41	0.3	0.4	11:56	1.6	0.5
09:27	0.0	0.4	10:42	0.1	0.4	11:57	0.0	0.5
09:28	2.0	0.6	10:43	0.0	0.4	11:58	0.0	0.5
09:29	0.0	0.6	10:44	0.0	0.2	11:59	0.0	0.5
09:30	0.0	0.6	10:45	0.0	0.2	12:00	0.0	0.2
09:31	0.0	0.6	10:46	3.1	0.5	12:01	0.9	0.2
09:32	0.0	0.6	10:47	2.0	0.7	12:02	1.4	0.4
09:33	0.0	0.4	10:48	0.1	0.7	12:03	0.0	0.4
09:34	0.6	0.3	10:49	0.0	0.7	12:04	0.0	0.4
09:35	0.9	0.4	10:50	0.0	0.6	12:05	0.0	0.4
09:36	0.0	0.4	10:51	1.2	0.7	12:06	1.4	0.4
09:37	0.2	0.4	10:52	0.0	0.6	12:07	2.1	0.6
09:38	2.5	0.4	10:53	0.0	0.6	12:08	0.8	0.7
09:39	0.0	0.4	10:54	0.0	0.6	12:09	0.0	0.7
09:40	0.0	0.4	10:55	0.0	0.6	12:10	0.0	0.7
09:41	0.0	0.4	10:56	0.0	0.3	12:11	0.0	0.6
09:42	0.0	0.4	10:57	0.0	0.1	12:12	0.0	0.4
09:43	0.0	0.4	10:58	0.0	0.1	12:13	0.5	0.5
09:44	0.0	0.4	10:59	0.0	0.1	12:14	0.0	0.5
09:45	0.0	0.3	11:00	0.0	0.1	12:15	0.0	0.5
09:46	0.0	0.3	11:01	1.8	0.2	12:16	0.0	0.3
09:47	0.0	0.3	11:02	0.5	0.2	12:17	0.0	0.1
09:48	0.0	0.0	11:03	0.1	0.2	12:18	0.0	0.0
09:49	3.1	0.3	11:04	0.0	0.2	12:19	0.0	0.0
09:50	2.3	0.5	11:05	0.0	0.2	12:20	0.7	0.1
09:51	0.2	0.6	11:06	0.0	0.2	12:21	2.5	0.4
09:52	0.0	0.6	11:07	0.0	0.2	12:22	0.4	0.4
09:53	0.0	0.6	11:08	2.0	0.4	12:23	0.3	0.4
09:54	0.0	0.6	11:09	0.5	0.5	12:24	0.7	0.5
09:55	0.0	0.6	11:10	0.0	0.5	12:25	0.8	0.6
09:56	0.0	0.6	11:11	0.0	0.3	12:26	1.0	0.7
09:57	0.0	0.6	11:12	0.4	0.3	12:27	0.6	0.7
09:58	0.0	0.6	11:13	0.0	0.3	12:28	0.4	0.8
09:59	1.6	0.4	11:14	0.0	0.3	12:29	0.0	0.8
10:00	0.0	0.2	11:15	0.0	0.3	12:30	0.1	0.7
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	5.2	0.9	Max	3.1	0.7	Max	2.9	0.8
Avg	0.5	0.5	Avg	0.3	0.3	Avg	0.3	0.4

Reworld Durham York Renewable Energy L.P.
Total Hydrocarbon Sampling at the Boiler No. 2 APC Outlet

Test No. 1 December 4, 2024			Test No. 2 December 4, 2024			Test No. 3 December 4, 2024		
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
09:00	0.0		10:15	0.3		11:30	0.7	
09:01	0.0		10:16	0.3		11:31	0.6	
09:02	0.0		10:17	0.3		11:32	0.7	
09:03	6.6		10:18	0.3		11:33	0.6	
09:04	0.8		10:19	0.3		11:34	0.6	
09:05	0.3		10:20	0.3		11:35	6.3	
09:06	0.1		10:21	0.3		11:36	1.2	
09:07	0.0		10:22	0.3		11:37	0.7	
09:08	0.0		10:23	0.3		11:38	0.8	
09:09	0.0	0.8	10:24	0.3	0.3	11:39	0.7	1.3
09:10	0.0	0.8	10:25	0.2	0.3	11:40	0.6	1.3
09:11	0.0	0.8	10:26	5.8	0.8	11:41	0.6	1.3
09:12	0.0	0.8	10:27	0.4	0.8	11:42	0.6	1.3
09:13	0.0	0.1	10:28	0.1	0.8	11:43	0.5	1.3
09:14	6.9	0.7	10:29	0.0	0.8	11:44	0.6	1.3
09:15	0.7	0.8	10:30	0.0	0.8	11:45	0.7	0.7
09:16	0.0	0.8	10:31	0.0	0.7	11:46	0.7	0.6
09:17	0.0	0.8	10:32	0.0	0.7	11:47	0.6	0.6
09:18	0.0	0.8	10:33	0.0	0.7	11:48	4.1	1.0
09:19	0.0	0.8	10:34	0.0	0.7	11:49	1.2	1.0
09:20	0.0	0.8	10:35	0.0	0.6	11:50	0.9	1.0
09:21	0.0	0.8	10:36	0.0	0.0	11:51	0.7	1.0
09:22	0.0	0.8	10:37	3.0	0.3	11:52	0.7	1.1
09:23	0.0	0.8	10:38	0.4	0.3	11:53	0.7	1.1
09:24	0.0	0.1	10:39	0.0	0.3	11:54	0.7	1.1
09:25	1.2	0.1	10:40	0.0	0.3	11:55	0.6	1.1
09:26	3.8	0.5	10:41	0.0	0.3	11:56	0.6	1.1
09:27	0.0	0.5	10:42	0.0	0.3	11:57	0.6	1.1
09:28	0.0	0.5	10:43	0.0	0.3	11:58	0.6	0.7
09:29	0.0	0.5	10:44	0.0	0.3	11:59	0.7	0.7
09:30	0.0	0.5	10:45	0.0	0.3	12:00	0.6	0.6
09:31	0.0	0.5	10:46	0.0	0.3	12:01	0.6	0.6
09:32	0.0	0.5	10:47	0.0	0.0	12:02	0.6	0.6
09:33	0.0	0.5	10:48	0.0	0.0	12:03	0.6	0.6
09:34	0.0	0.5	10:49	0.0	0.0	12:04	0.6	0.6
09:35	0.0	0.4	10:50	0.0	0.0	12:05	0.6	0.6
09:36	0.0	0.0	10:51	0.0	0.0	12:06	0.7	0.6
09:37	0.0	0.0	10:52	4.6	0.5	12:07	5.6	1.1
09:38	0.0	0.0	10:53	0.5	0.5	12:08	0.8	1.1
09:39	0.0	0.0	10:54	0.0	0.5	12:09	0.6	1.1
09:40	0.0	0.0	10:55	0.0	0.5	12:10	0.6	1.1
09:41	0.0	0.0	10:56	0.0	0.5	12:11	0.5	1.1
09:42	0.0	0.0	10:57	0.0	0.5	12:12	0.6	1.1
09:43	2.8	0.3	10:58	0.0	0.5	12:13	0.6	1.1
09:44	3.3	0.6	10:59	0.0	0.5	12:14	0.6	1.1
09:45	0.0	0.6	11:00	0.0	0.5	12:15	0.6	1.1
09:46	0.0	0.6	11:01	0.0	0.5	12:16	0.4	1.1
09:47	0.0	0.6	11:02	0.0	0.0	12:17	5.7	1.1
09:48	0.0	0.6	11:03	0.0	0.0	12:18	1.3	1.1
09:49	0.0	0.6	11:04	0.0	0.0	12:19	0.8	1.2
09:50	0.0	0.6	11:05	3.8	0.4	12:20	0.7	1.2
09:51	0.0	0.6	11:06	1.2	0.5	12:21	0.6	1.2
09:52	0.0	0.6	11:07	0.0	0.5	12:22	0.6	1.2
09:53	0.0	0.3	11:08	0.0	0.5	12:23	0.5	1.2
09:54	4.6	0.5	11:09	0.0	0.5	12:24	0.5	1.2
09:55	0.1	0.5	11:10	0.0	0.5	12:25	0.6	1.2
09:56	0.0	0.5	11:11	0.0	0.5	12:26	0.6	1.2
09:57	0.0	0.5	11:12	0.0	0.5	12:27	0.6	0.7
09:58	0.0	0.5	11:13	0.0	0.5	12:28	0.5	0.6
09:59	0.0	0.5	11:14	0.0	0.5	12:29	0.5	0.6
10:00	0.0	0.5	11:15	0.0	0.1	12:30	0.6	0.6
Min	0.0	0.0	Min	0.0	0.0	Min	0.4	0.6
Max	6.9	0.8	Max	5.8	0.8	Max	6.3	1.3
Avg	0.5	0.5	Avg	0.4	0.4	Avg	1.0	1.0

APPENDIX 27

Dispersion Modelling Results for the December 2024 Testing Program (15 pages)



TECHNICAL MEMORANDUM

DATE March 27, 2025

Project No. CA0034428.5376

TO Supreet Kaur
Reworld Durham York Renewable Energy LP

CC Poornitha Suresh

FROM Katie Armstrong

EMAIL katherine.armstrong@wsp.com

CALPUFF MODELLING FOR DECEMBER 2024 VOLUNTARY SOURCE TESTING AT DURHAM YORK ENERGY CENTRE

1.0 INTRODUCTION

Reworld Durham York Renewable Energy L.P. (Reworld) 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 December 2024 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 Alliance Technical Group (formerly Ortech Environmental) in December 2024 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 boiler 1 and two tests on boiler 2 and the tests on each boiler were 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 was 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); and
- 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, NO₂ and SO₂ into HNO₃, NO₃ and SO₄, CALPUFFs RIVAD/ARM3 mechanism was used. Monthly background ozone concentrations are required to generate SPM as well as setting the MCHM 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 NO₂ and SO₂ 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 <i>* NB: Value of "1" reported in ESDM Report but value of "0" actually used in ESDM Report modelling</i>
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 = 1 or 5)
MDISP2	3	3	Back-up method used to compute dispersion when measured turbulence data are missing (Used only if MDISP=1 or 5)
MTAULY	0	0	Method used for Lagrangian timescale for Sigma-y (used only if MDISP=1,2 or MSIDP2=1,2)
MTAUADV	0	0	Method used for Advective-Decay timescale for Turbulence (used only if MDISP=2 or MDISP2=2)
MCTURB	1	1	Method used to compute turbulence sigma-v & sigma-w using micrometeorological variables (Used only if MDISP = 2 or MDISP2 = 2)
MROUGH	0	0	PG sigma y,z adjusted for roughness
MPARTL	1	1	Partial plume penetration of elevated inversion
MTINV	0	0	Strength of temp inversion provided in PROFILE.DAT extended records
MPDF	1	1	Probability Distribution Function used for dispersion under convective conditions 0 = NO; 1 = Yes
MSGTIBL	1	1	Sub-grid TIBL module used for shoreline
MBCON	0	0	Boundary conditions (concentration) modeled
MFOG	0	0	Configure for FOG Model output
MREG	0	0	Test options specified to see if they conform to regulatory values

3.10 Source Parameters

Stack exhaust temperature and flow rate were updated to match the stack characteristics at the time of source testing. All other source parameters are consistent with those used in the ESDM Report. The source parameters modelled are provided in Table 3, below:

Table 3: Modelled Source Parameters

Source ID	Stack Height [m]	Stack Diameter [m]	Flow Rate [m³/s]	Exit Velocity [m/s]	Exhaust Temperature [K]
STCK1	87.6 (No Change)	1.7 (No Change)	53.45 (UPDATED)	23.55 (UPDATED)	411.9 (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 [$\mu\text{g}/\text{m}^3$ per g/s]	45.04	32.76	27.30	1.24	0.17	0.06
Dispersion Factor with meteorological anomaly removal [$\mu\text{g}/\text{m}^3$ per g/s]	17.47	12.71	10.59	1.17	0.17	0.06

The average emission rate for each contaminant presented in Appendix A was multiplied by the applicable dispersion factor above to calculate the maximum point of impingement concentration for emissions from the main stack. The modelled POI concentrations were compared to the 2023 Schedule 3 standards listed in O.Reg. 419/05 and in the case of $\text{PM}_{2.5}$ 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 December 2024 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 March 2024 Source Testing Data. List of contaminants assessed expanded to include all contaminants for which source testing data was performed.
Model and Model Version	Updated model versions in consultation with MECP (See section 3.0)
Meteorology and Terrain data	Updated meteorological and terrain data prepared in consultation with MECP (See Section 3.2)
Receptors	Minor modifications made to receptors located on outskirts of modelling grid to reflect updated domain (See Section 3.3)
Building Downwash	No Change
Deposition	No Change
Chemical Transformations	No Change
Thermal Internal Boundary Layer	No Change
Averaging Times and Conversions	CALPOST input file was modified to generate annual averaging to account for new O.Reg. 419/05 standards introduced in 2016 that include annual averaging periods.
Dispersion Modelling Options	No Change
Background Air Quality Concentrations	Ozone background data used in secondary particulate modelling consistent with the EA.
Emission Summary Table	Updated to include 2023 O.Reg. 419/05 standards introduced after the ECA was approved and contaminants that were not included in the ESDM report but for which source testing data was available.

6.0 CONCLUSIONS

This assessment was completed to document compliance with Condition 8(7) and 8(8) of Schedule E of the ECA for the DYEC. The results of this assessment demonstrate that the Facility is operating in compliance with the POI limits listed in s.20 of O. Reg. 419/05.

7.0 CLOSURE

We trust this memorandum meets your needs at this time. Should you have any questions please contact the undersigned.

WSP Canada Inc.



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PS/KSA/ps/cg



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Team Lead - Air Quality Modelling and Approvals

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 [%]
2	Silo Filling	0.31	Ambient	0.10	5.4864	(680551,4860359)	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	(680513,4860332)	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	(680517,4860333)	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	(680537,4860391)	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	(680475,4860419)	Carbon Monoxide	630-08-0	2.56E-01	½	EF	Marginal	32%
							Nitrogen Oxides	10102-44-0	1.12E+00	½	EF	Marginal	12%
							Sulphur Dioxide	7446-09-5	1.88E-02	½	EF	Above-Average	12%
							Total Particulate Matter	N/A	3.25E-02	½	EF	Above-Average	13%
							Filterable TSP	N/A	2.03E-02	½	EF	Above-Average	58%
							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	92%
							Toluene	108-88-3	9.21E-05	½	EF	Marginal	26%
							Xylenes, m-, p- and o-	1330-20-7	6.32E-05	½	EF	Marginal	80%
							Propylene	115-07-1	9.14E-04	½	EF	Marginal	100%
							Formaldehyde	50-00-0	2.58E-05	½	EF	Marginal	<1%
							Acetaldehyde	75-07-0	8.26E-06	½	EF	Marginal	<1%
							Acrolein	107-02-8	2.58E-06	½	EF	Marginal	3%
							Naphthalene	91-20-3	4.26E-05	½	EF	Marginal	98%
							Acenaphthylene	208-96-8	3.02E-06	½	EF	Marginal	97%
							Acenaphthene	83-32-9	1.53E-06	½	EF	Marginal	95%
							Fluorene	86-73-7	4.19E-06	½	EF	Marginal	96%
							Phenanthrene	85-01-8	1.34E-05	½	EF	Marginal	83%
							Anthracene	120-12-7	4.03E-07	½	EF	Marginal	75%
							Fluoranthene	206-44-0	1.32E-06	½	EF	Marginal	73%
							Pyrene	129-00-0	1.22E-06	½	EF	Marginal	76%
							Benzo(a)anthracene	56-55-3	2.04E-07	½	EF	Marginal	71%
							Chrysene	218-01-9	5.01E-07	½	EF	Marginal	83%
							Benzo(b)fluoranthene	205-99-2	3.64E-07	½	EF	Marginal	82%
							Benzo(k)fluoranthene	207-08-9	7.14E-08	½	EF	Marginal	47%
							Benzo(a)pyrene	50-32-8	8.42E-08	½	EF	Marginal	51%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.36E-07	½	EF	Marginal	62%
							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															Version Date of ACB List (i.e. Version 2.0 - April 2028)	
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			
1-methylnaphthalene	90-12-0	1.63E-07	CALPUFF	2.02E-07	1.90E-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	2.44E-07	CALPUFF	3.03E-07	2.86E-07	24-hour	400	Health	Sch. 3	Guideline	B1	<1%			Version 3.0 April 2023	
1,2,4,5-Tetrachlorobenzene	95-94-3	8.21E-08	CALPUFF	1.02E-07	9.60E-08	24-hour	1	Health	Sch. 3	SL-JSL	B2	Below B2			Version 3.0 April 2023	
1,2-Dichlorobenzene	95-50-1	6.95E-07	CALPUFF	1.90E-05	7.36E-06	1-hour	30500	Health	Sch. 3	Guideline	B1	<1%			Version 3.0 April 2023	
2-methylnaphthalene	91-57-6	3.03E-07	CALPUFF	3.76E-07	3.55E-07	24-hour	35.5	Health	Sch. 3	SL-JSL	B2	Below B2			Version 3.0 April 2023	
2,3,6-Trichlorophenol	58-90-2	4.07E-07	CALPUFF	5.05E-07	4.76E-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	2.04E-06	CALPUFF	2.52E-06	2.38E-06	24-hour	1.5	Health	Sch. 3	SL-JSL	B2	Below B2			Version 3.0 April 2023	
2,4-Dichlorophenol	120-83-2	2.04E-06	CALPUFF	2.52E-06	2.38E-06	24-hour	33.5	Health	Sch. 3	SL-JSL	B2	Below B2			Version 3.0 April 2023	
3-Methylcholanthrene	56-49-5	4.07E-07	CALPUFF	5.05E-07	4.76E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
7,12-Dimethylbenzo(a)anthracene	57-97-6	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Acenaphthene	83-32-9	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Acenaphthylene	208-96-8	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Acetaldehyde	75-07-0	1.45E-02	CALPUFF	1.79E-02	1.69E-02	24-hour	500	Health	Sch. 3	Standard	B1	<1%	Note 10		Version 3.0 April 2023	
Acetaldehyde	75-07-0	1.45E-02	CALPUFF	1.79E-02	1.69E-02	24-hour	5000	—	Sch. 6	URT	—	Below URT	URT - Note 8, Table 4		Version 3.0 April 2023	
Acrolein	107-02-8	9.50E-05	CALPUFF	1.18E-04	1.11E-04	24-hour	0.4	Health	Sch. 3	Standard	B1	<1%	Note 10		Version 3.0 April 2023	
Acrolein	107-02-8	9.50E-05	CALPUFF	2.59E-03	1.01E-03	1-hour	4.5	Health	Sch. 3	Standard	B1	<1%	Note 10		Version 3.0 April 2023	
Ammonia	7664-41-7	2.14E-02	CALPUFF	2.65E-02	2.50E-02	24-hour	100	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4		Version 3.0 April 2023	
Ammonia	7664-41-7	2.14E-02	CALPUFF	2.65E-02	2.50E-02	24-hour	1000	—	Sch. 6	URT	—	Below URT	URT - Note 8, Table 4		Version 3.0 April 2023	
Anthracene	120-12-7	1.37E-07	CALPUFF	1.70E-07	1.60E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Antimony	7440-36-0	1.74E-06	CALPUFF	2.15E-06	2.03E-06	24-hour	25	Health	Sch. 3	Standard	B1	<1%			Version 3.0 April 2023	
Arsenic	7440-38-2	4.34E-06	CALPUFF	5.38E-06	5.08E-06	24-hour	0.3	Health	Sch. 3	Guideline	B1	<1%			Version 3.0 April 2023	
Barium	7440-39-3	4.24E-04	CALPUFF	5.26E-04	4.96E-04	24-hour	10	Health	Sch. 3	Guideline	B1	<1%			Version 3.0 April 2023	
Benzene	71-43-2	2.28E-05	CALPUFF	2.83E-05	2.67E-05	24-hour	0.45	Health	Sch. 3	Standard	B1	<1%	Note 7, Table 2, 3		Version 3.0 April 2023	
Benzene	71-43-2	2.28E-05	CALPUFF	2.83E-05	2.67E-05	24-hour	100	—	Sch. 6	URT	—	Below URT			Version 3.0 April 2023	
Benzene	71-43-2	2.28E-05	CALPUFF	1.37E-06	1.37E-06	Annual	4.5	—	—	AAV	—	<1%			Version 3.0 April 2023	
Benzo(a)anthracene	56-55-3	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Benzo(a)fluorene	238-84-6	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Benzo(a)pyrene	50-32-8	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.00001	Health	Sch. 3	Standard	B1	<1%	Notes 6, 7, Table 2, 3		Version 3.0 April 2023	
Benzo(a)pyrene	50-32-8	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.005	—	Sch. 6	URT	—	Below URT	URT - Note 8, Table 4		Version 3.0 April 2023	
Benzo(a)pyrene	50-32-8	8.14E-08	CALPUFF	4.88E-09	4.88E-09	Annual	0.0001	—	—	AAV	—	<1%			Version 3.0 April 2023	
Benzo(b)fluoranthene	205-99-2	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Benzo(b)fluorene	243-17-4	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Benzo(b)pyrene	123-29-2	8.22E-08	CALPUFF	1.02E-07	9.61E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Benzo(g,h,i)perylene	191-24-2	8.44E-08	CALPUFF	1.05E-07	9.88E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Benzo(k)fluoranthene	207-08-9	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Beryllium	7440-41-7	1.74E-06	CALPUFF	2.15E-06	2.03E-06	24-hour	0.01	Health	Sch. 3	Standard	B1	<1%			Version 3.0 April 2023	
Biphenyl	92-53-3	2.68E-07	CALPUFF	3.32E-07	3.13E-07	24-hour	170	Health	Sch. 3	SL-JSL	B2	Below B2			Version 3.0 April 2023	
Bromodichloromethane	75-27-4	1.38E-05	CALPUFF	1.71E-05	1.62E-05	24-hour	350	Health	Sch. 3	SL-JSL	B2	Below B2			Version 3.0 April 2023	
Bromoform	75-25-2	8.09E-06	CALPUFF	1.00E-05	9.46E-06	24-hour	55	Health	Sch. 3	Guideline	B1	<1%			Version 3.0 April 2023	
Bromomethane	74-83-9	4.12E-05	CALPUFF	5.10E-05	4.82E-05	24-hour	1350	Health	Sch. 3	Guideline	B1	<1%			Version 3.0 April 2023	
Cadmium	7440-43-9	3.14E-05	CALPUFF	3.89E-05	3.67E-05	24-hour	0.025	Health	Sch. 3	Standard	B1	<1%			Version 3.0 April 2023	
Cadmium	7440-43-9	3.14E-05	CALPUFF	3.89E-05	3.67E-05	24-hour	0.25	—	Sch. 6	URT	—	Below URT			Version 3.0 April 2023	
Carbon Monoxide	630-08-0	5.51E-01	CALPUFF	1.81E+01	7.01E+00	½-hour	6000	Health	Sch. 3	Standard	B1	<1%	Note 17		Version 3.0 April 2023	
Carbon tetrachloride	56-23-5	1.10E-05	CALPUFF	1.37E-05	1.29E-05	24-hour	2.4	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4		Version 3.0 April 2023	
Carbon tetrachloride	56-23-5	1.10E-05	CALPUFF	1.37E-05	1.29E-05	24-hour	24	—	Sch. 6	URT	—	Below URT			Version 3.0 April 2023	
Chlorobenzene	108-90-7	1.04E-05	CALPUFF	2.85E-04	1.10E-04	1-hour	3500	Health	Sch. 3	Guideline	B1	<1%	Notes 10, 11		Version 3.0 April 2023	
Chlorobenzene	108-90-7	1.04E-05	CALPUFF	4.69E-04	1.82E-04	10-minute	4,500	Health	Sch. 3	Guideline	B1	<1%	Notes 10, 11		Version 3.0 April 2023	
Chloroform	67-66-3	4.60E-05	CALPUFF	5.71E-05	5.39E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4		Version 3.0 April 2023	
Chloroform	67-66-3	4.60E-05	CALPUFF	5.71E-05	5.39E-05	24-hour	100	—	Sch. 6	URT	—	Below URT			Version 3.0 April 2023	
Chromium (hexavalent)	18540-29-9	3.14E-05	CALPUFF	1.88E-06	1.88E-06	Annual	0.00014	Health	Sch. 3	Standard	B1	1%	Notes 7, 29, Tables 2, 3		Version 3.0 April 2023	
Chromium (hexavalent)	18540-29-9	3.14E-05	CALPUFF	3.89E-05	3.67E-05	24-hour	0.07	—	Sch. 6	URT	—	Below URT			Version 3.0 April 2023	
Chromium (hexavalent)	18540-29-9	3.14E-05	CALPUFF	1.88E-06	1.88E-06	Annual	0.0014	—	—	AAV	—	<1%			Version 3.0 April 2023	
Chrysene	2180-1-9	9.94E-08	CALPUFF	1.23E-07	1.16E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Cobalt	7440-48-4	1.66E-06	CALPUFF	2.06E-06	1.94E-06	24-hour	0.1	Health	Sch. 3	Guideline	B1	<1%			Version 3.0 April 2023	
Copper	7440-50-8	5.48E-05	CALPUFF	6.79E-05	6.41E-05	24-hour	50	Health	Sch. 3	Standard	B1	<1%			Version 3.0 April 2023	
Dibenz(a,c)anthracene	215-58-7	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Dibenz(g,h,i)anthracene	53-70-3	7.50E-08	CALPUFF	9.30E-08	8.77E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Dichlorodifluoromethane	75-71-8	1.91E-05	CALPUFF	2.37E-05	2.24E-05	24-hour	500000	Health	Sch. 3	Guideline	B1	<1%	Note 15		Version 3.0 April 2023	
Dichloroethene, 1,1-	75-34-3	6.32E-06	CALPUFF	7.84E-06	7.40E-06	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	6.32E-06	CALPUFF	7.84E-06	7.40E-06	24-hour	1650	—	Sch. 6	URT	—	Below URT			Version 3.0 April 2023	
Dichloromethane	75-09-2	1.47E-04	CALPUFF	1.83E-04	1.73E-04	24-hour	220	Health	Sch. 3	Standard	B1	<1%	URT - Note 8, Table 4		Version 3.0 April 2023	
Dichloromethane	75-09-2	1.47E-04	CALPUFF	1.83E-04	1.73E-04	24-hour	2200	—	Sch. 6	URT	—	Below URT			Version 3.0 April 2023	
Dioxins, Furans and Dioxin-like PCBs	N/A	0.000097 µg TEQ/s	CALPUFF	0.00012 µg TEQ/m³	0.00011 µg TEQ/m³	24-hour	0.1 pg TEQ/m³	—	Sch. 3	Standard	B1	<1%			Version 3.0 April 2023	
Ethylbenzene	100-41-4	4.12E-06	CALPUFF	1.85E-04	7.19E-05	10-minute	1900	Odour	Sch. 3	Guideline	B1	<1%	Notes 10, 11		Version 3.0 April 2023	
Ethylbenzene	100-41-4	4.12E-06	CALPUFF	5.10E-06	4.82E-06	24-hour	1000	Health	Sch. 3	Standard	B1	<1%	Note 10		Version 3.0 April 2023	
Ethylbenzene	100-41-4	4.12E-06	CALPUFF	5.10E-06	4.82E-06	24-hour	10000	—	Sch. 6	URT	—	Below URT	URT - Note 8, Table 4		Version 3.0 April 2023	
Ethylene Dibromide	106-93-4	1.07E-05	CALPUFF	1.33E-05	1.26E-05	24-hour	3	Health	Sch. 3	Guideline	B1	<1%			Version 3.0 April 2023	
Fluoranthene	206-44-0	4.92E-07	CALPUFF	6.10E-07	5.76E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Fluorene	86-73-7	1.77E-07	CALPUFF	2.20E-07	2.08E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Fluorides	7664-39-3	4.05E-03	CALPUFF	5.02E-03	4.74E-03	24-hour	0.86	Vegetation	Sch. 3	Standard	B1	<1%	Notes 10, 24		Version 3.0 April 2023	
Fluorides	7664-39-3	4.05E-03	CALPUFF	6.89E-04	6.89E-04	30-day	0.34	Vegetation	Sch. 3	Standard	B1	<1%	Notes 10, 24		Version 3.0 April 2023	
Formaldehyde	50-00-0	8.31E-03	CALPUFF	1.03E-02	9.72E-03	24-hour	65	Health	Sch. 3	Standard	B1	<1%			Version 3.0 April 2023	
Hexachlorobenzene	118-74-1	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.011	Health	Sch. 3	SL-JSL	B2	Below B2			Version 3.0 April 2023	
Hexachlorobenzene	118-74-1	8.14E-08	CALPUFF	1.01E-07	9.52E-08	24-hour	0.01	Health	Sch. 3	De Minimus	—	Below De Minimus			Version 3.0 April 2023	
Hydrogen Chloride	7647-01-0	1.16E-01	CALPUFF	1.44E-01	1.36E-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	1.16E-01	CALPUFF	1.44E-01	1.36E-01	24-hour	200	—	Sch. 6	URT	—	Below URT			Version	

APPENDIX 28

DYEC CEMS 1-Hour Average Data (4 pages)

**Reworld Durham York Renewable Energy L.P.
Boiler No. 1 CEMS**

		BH Outlet										Scrubber Inlet
		O ₂	CO		SO ₂		NOx		HCl		THC	O ₂
		%	mg/m ³ @ 11% O ₂		mg/m ³ @ 11% O ₂		mg/m ³ @ 11% O ₂		mg/m ³ @ 11% O ₂		mg/m ³ @ 11% O ₂	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
2-Dec-24	0:00	8.25	13		0		109		2		1	7
2-Dec-24	1:00	7.73	8		0		109		2		1	6
2-Dec-24	2:00	8.36	6		0		107		2		1	7
2-Dec-24	3:00	8.44	9	9.0	3		114		2		1	7
2-Dec-24	4:00	8.40	9	8.0	16		104		4		1	7
2-Dec-24	5:00											7
2-Dec-24	6:00											8
2-Dec-24	7:00	8.55	9		0		117		4		1	7
2-Dec-24	8:00	8.67	7		1		108		3		1	7
2-Dec-24	9:00	8.53	12		0		106		2		1	7
2-Dec-24	10:00	8.83	21	12.3	4		108		1		1	8
2-Dec-24	11:00	8.54	13	13.3	2		117		1		1	7
2-Dec-24	12:00	8.77	10	14.0	0		113		2		1	8
2-Dec-24	13:00	8.19	11	13.8	0		108		1		1	7
2-Dec-24	14:00	8.42	13	11.8	1		109		1		1	7
2-Dec-24	15:00	8.40	15	12.3	5		106		1		1	7
2-Dec-24	16:00	8.77	15	13.5	7		116		2		1	8
2-Dec-24	17:00	8.75	11	13.5	10		105		2		1	8
2-Dec-24	18:00	8.36	10	12.8	3		116		1		1	7
2-Dec-24	19:00	8.58	9	11.3	4		106		1		1	7
2-Dec-24	20:00	8.74	8	9.5	2		104		1		1	8
2-Dec-24	21:00	8.81	7	8.5	0		112		1		1	8
2-Dec-24	22:00	8.69	9	8.3	0		105		1		1	8
2-Dec-24	23:00	9.17	9	8.3	2		112		1		1	8
3-Dec-24	0:00	8.87	12	9.3	4		108		1		1	8
3-Dec-24	1:00	8.91	9	9.8	4		116		2		1	8
3-Dec-24	2:00	9.30	9	9.8	7		102		2		1	8
3-Dec-24	3:00	9.04	8	9.5	7		111		1		1	8
3-Dec-24	4:00	9.22	8	8.5	7		113		1		1	8
3-Dec-24	5:00	9.34	8	8.3			133		1		1	8
3-Dec-24	6:00			8.0								9
3-Dec-24	7:00	9.33	6	7.3	0		111		2		1	8
3-Dec-24	8:00	9.26	6	6.7	1		108		1		1	8
3-Dec-24	9:00	9.45	11	7.7	5		109		1		1	8
3-Dec-24	10:00	8.37	10	8.3	0		103		0		1	7
3-Dec-24	11:00	8.47	21	12.0	1		110		0		1	7
3-Dec-24	12:00	8.50	24	16.5	0		103		0		1	7
3-Dec-24	13:00	8.42	31	21.5	1		116		0		1	7
3-Dec-24	14:00	8.59	14	22.5	3		108		0		1	7
3-Dec-24	15:00	8.85	15	21.0	7		113		0		1	8
3-Dec-24	16:00	9.21	10	17.5	6		102		1		1	8
3-Dec-24	17:00	9.13	10	12.3	4		115		0		1	8
3-Dec-24	18:00	8.71	6	10.3	3		109		0		1	8
3-Dec-24	19:00	8.85	10	9.0	8		112		0		1	8
3-Dec-24	20:00	8.71	8	8.5	6		109		2		1	8
3-Dec-24	21:00	8.69	7	7.8	5		109		1		1	8
3-Dec-24	22:00	9.27	8	8.3	66		111		3		1	8
3-Dec-24	23:00	8.88	7	7.5	24		104		2		1	8
4-Dec-24	0:00	8.85	5	6.8	6		114		1		1	8
4-Dec-24	1:00	8.79	6	6.5	11		107		1		1	8
4-Dec-24	2:00	9.04	5	5.8	16		110		2		1	8
4-Dec-24	3:00	8.71	7	5.8	14		111		2		1	8
4-Dec-24	4:00	9.20	7	6.3	16		112		3		1	8
4-Dec-24	5:00	9.27	7	6.5	28		134		3		1	8
4-Dec-24	6:00	9.12	7	7.0	0	9.6	123	111	1	1.1	1	8
4-Dec-24	7:00	9.19	11	8.0	2	9.7	107	111	2	1.1	1	8
4-Dec-24	8:00	9.27	20	11.3	2	9.8	101	111	1	1.1	1	8
4-Dec-24	9:00	8.97	25	15.8	3	9.7	112	111	0	1.0	1	8
4-Dec-24	10:00	8.60	10	16.5	3	9.8	118	111	0	1.0	1	7
4-Dec-24	11:00	8.80	11	16.5	6	10.0	105	111	0	1.0	1	8
4-Dec-24	12:00	8.93	14	15.0	7	10.3	105	111	0	1.0	1	8
4-Dec-24	13:00	8.69	16	12.8	5	10.5	111	111	0	1.0	1	8
4-Dec-24	14:00	8.70	8	12.3	7	10.6	106	111	0	1.0	1	8
4-Dec-24	15:00	8.48	11	12.3	3	10.5	112	111	0	1.0	1	7
4-Dec-24	16:00	8.33	19	13.5	1	10.3	110	111	0	1.0	1	7
4-Dec-24	17:00	8.48	15	13.3	3	10.2	112	111	0	1.0	1	8
4-Dec-24	18:00	8.21	9	13.5	5	10.3	105	111	0	1.0	1	7
4-Dec-24	19:00	8.12	29	18.0	4	10.1	109	111	0	1.0	1	7
4-Dec-24	20:00	8.26	29	20.5	4	10.0	104	111	0	0.9	1	7
4-Dec-24	21:00	8.27	10	19.3	6	10.1	122	111	0	0.9	1	7
4-Dec-24	22:00	8.39	8	19.0	3	7.5	104	111	0	0.8	1	7
4-Dec-24	23:00	7.88	27	18.5	3	6.6	101	111	0	0.7	1	7

Note: All times are Eastern Standard Time

**Reworld Durham York Renewable Energy L.P.
Boiler No. 1 CEMS**

Date	Time	BH Outlet										Scrubber Inlet
		O ₂	CO		SO ₂		NO _x		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	%
		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
5-Dec-24	0:00	8.19	22	16.8	3	6.5	106	110	0	0.6	1	7
5-Dec-24	1:00	7.89	31	22.0	2	6.1	111	110	0	0.6	1	7
5-Dec-24	2:00	8.14	21	25.3	7	5.7	114	111	0	0.5	1	7
5-Dec-24	3:00	7.86	30	26.0	6	5.4	96	110	0	0.4	1	7
5-Dec-24	4:00	8.01	11	23.3	5	4.9	132	111	0	0.3	1	7
5-Dec-24	5:00	8.05	7	17.3	5	4.0	130	111	0	0.2	1	7
5-Dec-24	6:00	8.04	29	19.3	4	4.1	109	110	1	0.2	1	7
5-Dec-24	7:00	8.40	18	16.3	1	4.1	118	111	1	0.1	1	8
5-Dec-24	8:00	8.95	29	20.8	2	4.1	105	111	1	0.1	1	8
5-Dec-24	9:00	8.98	24	25.0	13	4.5	103	110	1	0.2	1	8
5-Dec-24	10:00	8.91	21	23.0	0	4.4	108	110	0	0.2	1	8
5-Dec-24	11:00	8.86	14	22.0	1	4.2	113	110	0	0.2	1	8
5-Dec-24	12:00	8.38	12	17.8	0	3.9	111	111	0	0.2	1	7
5-Dec-24	13:00	8.61	10	14.3	0	3.7	113	111	0	0.2	1	8
5-Dec-24	14:00	9.14	11	11.8	3	3.5	105	111	0	0.2	1	8
5-Dec-24	15:00	8.98	14	11.8	5	3.6	112	111	0	0.2	1	8
5-Dec-24	16:00	9.34	22	14.3	9	3.9	107	110	0	0.2	1	9
Min		7.73	5	5.8	0	3.5	96	110	0	0.1	1	6
Max		9.45	31	26.0	66	10.6	134	111	4	1.1	1	9
Avg		8.68	13	13.3	5.33	7.2	110	111	1	0.6	1	8
Std Dev		0.40	7.1	5.4	8.4	2.8	6.82	0.3	1.0	0.4	0	0.6

Note: All times are Eastern Standard Time

**Reworld Durham York Renewable Energy L.P.
Boiler No. 2 CEMS**

		BH Outlet										Scrubber Inlet
		O ₂	CO		SO ₂		NOx		HCl		THC	O ₂
		%	mg/m ³ @ 11% O ₂		mg/m ³ @ 11% O ₂		mg/m ³ @ 11% O ₂		mg/m ³ @ 11% O ₂		mg/m ³ @ 11% O ₂	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
2-Dec-24	0:00	8.68	25		0		111		3		0.4	7
2-Dec-24	1:00	8.50	25		0		108		2		0.4	7
2-Dec-24	2:00	8.63	22		0		106		2		0.6	7
2-Dec-24	3:00	9.16	37		13		112		3		0.5	8
2-Dec-24	4:00	9.13	17		6		118		2		0.4	8
2-Dec-24	5:00										0.3	7
2-Dec-24	6:00										0.4	8
2-Dec-24	7:00	9.29	13		17		105		3		0.3	8
2-Dec-24	8:00	8.96	15		9		112		4		0.5	7
2-Dec-24	9:00	8.96	15		0		111		4		0.3	8
2-Dec-24	10:00	9.17	16	14.8	0		113		3		0.4	8
2-Dec-24	11:00	8.68	9	13.8	0		106		3		0.5	7
2-Dec-24	12:00	9.37	15	13.8	0		116		4		0.3	8
2-Dec-24	13:00	8.75	10	12.5	0		104		4		0.3	7
2-Dec-24	14:00	8.87	9	10.8	0		107		3		0.5	8
2-Dec-24	15:00	9.04	13	11.8	0		110		4		0.3	8
2-Dec-24	16:00	8.81	12	11.0	0		108		4		0.3	8
2-Dec-24	17:00	8.84	14	12.0	1		107		4		0.5	8
2-Dec-24	18:00	8.61	11	12.5	0		108		4		0.3	7
2-Dec-24	19:00	8.88	10	11.8	0		111		5		0.3	8
2-Dec-24	20:00	9.02	16	12.8	0		108		4		0.5	8
2-Dec-24	21:00	12.75	28	16.3	0		99		3		0.4	12
2-Dec-24	22:00	10.56	9	15.8	0		110		1		0.3	9
2-Dec-24	23:00	8.52	17	17.5	0		105		1		0.5	7
3-Dec-24	0:00	8.76	17	17.8	0		112		3		0.3	7
3-Dec-24	1:00	8.94	16	14.8	0		107		3		0.3	8
3-Dec-24	2:00	8.90	14	16.0	0		104		3		0.5	8
3-Dec-24	3:00	9.02	10	14.3	0		111		4		0.3	8
3-Dec-24	4:00	9.09	7	11.8	0		116		3		0.3	8
3-Dec-24	5:00	9.37	13	11.0	0		120		3		0.3	8
3-Dec-24	6:00	9.26	14	11.0	0	1.1	111	109	2	3.3	0.3	8
3-Dec-24	7:00	9.38	8	10.5	0	0.4	118	110	1	3.2	0.3	8
3-Dec-24	8:00	9.29	9	11.0	0	0.0	104	109	2	3.1	0.5	8
3-Dec-24	9:00	9.48	13	11.0	0	0.0	104	109	2	3.0	0.3	8
3-Dec-24	10:00	8.98	11	10.3	0	0.0	115	109	1	3.0	0.3	8
3-Dec-24	11:00	8.94	8	10.3	0	0.0	97	109	1	2.9	0.5	8
3-Dec-24	12:00	8.97	11	10.8	0	0.0	110	109	1	2.8	0.3	8
3-Dec-24	13:00	8.87	12	10.5	0	0.0	114	109	2	2.7	0.3	8
3-Dec-24	14:00	8.88	8	9.8	0	0.0	97	109	1	2.6	0.5	8
3-Dec-24	15:00	8.84	12	10.8	0	0.0	106	108	1	2.5	0.3	7
3-Dec-24	16:00	8.49	13	11.3	0	0.0	104	108	1	2.3	0.3	7
3-Dec-24	17:00	8.35	24	14.3	0	0.0	114	109	1	2.2	0.5	7
3-Dec-24	18:00	8.97	15	16.0	0	0.0	108	109	2	2.1	0.3	8
3-Dec-24	19:00	8.82	14	16.5	0	0.0	111	109	2	2.0	0.3	7
3-Dec-24	20:00	8.78	14	16.8	0	0.0	105	108	1	1.9	0.5	8
3-Dec-24	21:00	8.83	15	14.5	0	0.0	109	109	1	1.8	0.3	8
3-Dec-24	22:00	9.15	14	14.3	0	0.0	111	109	2	1.8	0.3	8
3-Dec-24	23:00	9.00	13	14.0	9	0.4	106	109	2	1.9	0.5	8
4-Dec-24	0:00	9.47	15	14.3	4	0.5	111	109	3	1.9	0.3	8
4-Dec-24	1:00	9.10	8	12.5	6	0.8	112	109	3	1.9	0.3	8
4-Dec-24	2:00	9.19	13	12.3	27	1.9	103	109	3	1.9	0.5	8
4-Dec-24	3:00	9.25	14	12.5	27	3.0	110	109	3	1.8	0.3	8
4-Dec-24	4:00	9.14	10	11.3	7	3.3	130	110	2	1.8	0.3	8
4-Dec-24	5:00	9.00	13	12.5	5	3.5	115	109	2	1.8		8
4-Dec-24	6:00	9.67	11	12.0	4	3.7	117	110	2	1.8	0.3	8
4-Dec-24	7:00	9.77	15	12.3	10	4.1	106	109	2	1.8	0.3	9
4-Dec-24	8:00	9.53	13	13.0	0	4.1	107	109	2	1.8	0.4	8
4-Dec-24	9:00	9.06	9	12.0	0	4.1	109	109	2	1.8	0.2	8
4-Dec-24	10:00	9.19	14	12.8	3	4.3	110	109	3	1.9	0.2	8
4-Dec-24	11:00	8.77	10	11.5	1	4.3	105	110	2	1.9	0.4	8
4-Dec-24	12:00	8.99	22	13.8	0	4.3	112	110	3	2.0	0.2	8
4-Dec-24	13:00	8.66	25	17.8	0	4.3	107	109	2	2.0	0.2	7
4-Dec-24	14:00	8.37	11	17.0	0	4.3	107	110	2	2.0	0.3	7
4-Dec-24	15:00	8.85	16	18.5	0	4.3	110	110	1	2.0	0.2	7
4-Dec-24	16:00	8.79	28	20.0	0	4.3	112	110	1	2.0	0.2	7
4-Dec-24	17:00	9.03	40	23.8	0	4.3	104	110	1	2.0	0.4	8
4-Dec-24	18:00	8.58	22	26.5	0	4.3	113	110	1	2.0	0.1	7
4-Dec-24	19:00	8.94	7	24.3	0	4.3	109	110	0	1.9	0.1	7
4-Dec-24	20:00	8.72	11	20.0	0	4.3	101	110	2	2.0	0.3	7
4-Dec-24	21:00	8.53	26	16.5	0	4.3	110	110	2	2.0	0.2	7
4-Dec-24	22:00	8.38	15	14.8	0	4.3	106	110	2	2.0	0.1	7
4-Dec-24	23:00	8.00	18	17.5	0	3.9	105	110	2	2.0	0.3	7

Note: All times are Eastern Standard Time

**Reworld Durham York Renewable Energy L.P.
Boiler No. 2 CEMS**

Date	Time	BH Outlet										Scrubber Inlet
		O ₂	CO		SO ₂		NO _x		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	%
		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
5-Dec-24	0:00	8.44	14	18.3	0	3.8	110	110	3	2.0	0.1	7
5-Dec-24	1:00	8.21	30	19.3	0	3.5	111	110	2	2.0	0.2	7
5-Dec-24	2:00	8.08	22	21.0	0	2.4	108	110	2	1.9	0.3	7
5-Dec-24	3:00	8.56	26	23.0	0	1.3	107	110	2	1.9	0.1	7
5-Dec-24	4:00	8.18	21	24.8	0	1.0	118	109	2	1.9	0.2	7
5-Dec-24	5:00	8.42	25	23.5	0	0.8	119	109	2	1.9		7
5-Dec-24	6:00	8.62	20	23.0	0	0.6	118	109	2	1.9	0.1	7
5-Dec-24	7:00	8.61	18	21.0	0	0.2	107	109	2	1.9	0.1	7
5-Dec-24	8:00	8.61	13	19.0	0	0.2	106	109	1	1.8	0.3	7
5-Dec-24	9:00	8.87	32	20.8	0	0.2	108	109	2	1.8	0.3	8
5-Dec-24	10:00	8.82	27	22.5	0	0.0	115	110	1	1.8	0.2	8
5-Dec-24	11:00	8.64	26	24.5	0	0.0	104	109	1	1.7	0.4	7
5-Dec-24	12:00	8.27	17	25.5	0	0.0	107	109	1	1.6	0.2	7
5-Dec-24	13:00	8.92	22	23.0	0	0.0	111	109	1	1.6	0.3	8
5-Dec-24	14:00	8.80	19	21.0	0	0.0	105	109	1	1.5	0.5	8
5-Dec-24	15:00	8.80	20	19.5	0	0.0	110	109	2	1.6	0.2	7
5-Dec-24	16:00	8.87	26	21.8	0	0.0	110	109	2	1.6	0.3	8
Min		8.00	7	9.8	0	0.0	97	108	0	1.5	0.1	7
Max		12.75	40	26.5	27	4.3	130	110	5	3.3	0.6	12
Avg		8.93	16	15.8	1.71	1.78	109	109	2	2.1	0.3	8
Std Dev		0.57	6.9	4.6	5.0	1.9	5.17	0.5	1.0	0.4	0.1	0.7

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