Covanta Marion, Inc.
A Covanta Energy Company
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SOURCE TEST PLAN - COV REPORT NO. 4571
July 21, 2022

Source Information

Facility:	Covanta Marion, Inc. 4850 Brooklake Road, N.E. Brooks, OR 97305
Purpose of Test:	To conduct source sampling for specific reportable Toxic Air Contaminants (TAC) included under OAR 340-245-8020 for the purposes of generating a representative emissions inventory pursuant to OAR 340-245-0040 for the Cleaner Air Oregon (CAO) program.
Person(s) to Contact:	Mr. Kirk Little, Facility Manager (503) 393-0890 Mr. Paul Kantola Director, Environmental Compliance Testing (862) 591-9087

Testing Information

Procedure:	Testing one of two (2) municipal solid waste-fired boilers for specific toxic air contaminants.
Proposed Test Dates:	August 31 – September 2, 2022

Statement of Certification: *Based on information and belief formed after reasonable inquiry, the statements and information in this document and any attachments are true, accurate and complete. I also certify that all statements made concerning compliance, which are based on monitoring required by the permit but not required to be submitted to the Department, are true, accurate and complete based on information and belief formed after reasonable inquiry.*

Kirk Little
Name of Designated Responsible Official

Facility Manager
Title of Responsible Official

Signature of Responsible Official

7/21/22
Date (mm/dd/yy)

Testing Firm Information

Company: AirKinetics Inc (AKI).
Address: 1308 S Allec St, Anaheim, CA 92805
Project Director: Justin Thompson
Email: thompsonj@airkineticsinc.com
Phone Number: 714-254-1945
Field Chemist: Christopher Wymore
Report Writer: Jason Mai

Lab Information

Emission Parameter	**Analytical Lab**
Hydrogen Chloride (HCl), Hydrogen Fluoride (HF), Hydrogen Bromide (HBr), Chloride (Cl_2), and Bromide (Br)	Element One
Ammonia	AKI
Formaldehyde, acetaldehyde, acrolein	AAC
Volatile Organic Compounds (VOC) and VOC-derivatives	Eurofin

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1.0 INTRODUCTION

A contractor for Covanta Marion, Inc. (CMI) will test various air emissions of the CMI Municipal Solid Energy-From-Waste Facility. This testing is being conducted to fulfill requirements of the Cleaner Air Oregon (CAO) program pursuant to OAR 340-245-0040(1). Results from this testing will be used for the purpose of CAO compliance and not for demonstrating compliance with Covanta's source testing requirements pursuant to conditions 35 through 44 of CMI's Title V Operating permit. The Oregon Department of Environmental Quality (DEQ) Source Sampling Manual identifies specific conditions that must be met for compliance testing. It should be noted that not all conditions will be met for the purpose of the CAO testing. The test is scheduled for the week of August 29, 2022.

This testing program is being undertaken to confirm emission results under specified 'high fire' operating conditions utilizing minimum waste feed rates as outlined in Section 2.3. Results from this testing program are considered to be a supplement to the CAO testing that CMI completed in March 2022 as contained in the revised Source Test Report submitted to DEQ on July 5, 2022.

2.0 DESCRIPTION OF OPERATIONS

Covanta Marion, Inc.

Brooks, Oregon

The Marion County Solid Waste-to-Energy Facility began commercial operation in March 1987, servicing the solid waste management needs of the more than 270,000 people of Marion County. The facility processes 550 tons per day of solid waste, which generates up to 13.1 megawatts of renewable energy that is sold to Portland General Electric. The Marion facility was the first mass burn waterwall resource recovery facility burning municipal solid waste in the United States to use dry flue gas scrubbers and fabric filter baghouses to control acid gases and particulates. In addition to municipal solid waste, Marion processes about 90 tons per month of supplemental waste including non-hazardous medical waste. The facility is located in Brooks, a small farming community about four miles north of Salem, the state capital, and 40 miles south of Portland.

The Marion County
Solid Waste-to-Energy Facility

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Recycling Waste Into Energy

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue which is approximately 10% of its original volume; combustion ash is disposed of in a specially lined ash monofill which is owned and operated by the County and located about 10 miles north of the facility. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment, including dry flue gas scrubbers and fabric filter baghouses.

An Integrated System

The Marion County Solid Waste-to-Energy Facility is the cornerstone of the County's integrated waste management system. In addition to converting waste into energy, the County provides curbside pick-up of recyclable materials such as metals, glass and newspaper. The County also runs a drop-off program for collection of yard waste; these organic materials are then composted and used in agricultural applications. Ferrous metal recovered from combustion ash is also a major contributor to the County's recycling efforts. A unique feature of the County's integrated system is its state-of-the-art ash monofill and leachate system. Leachate from the ash monofill is treated through a vacuum distillation process and clean drinking-quality water is discharged.

The Marion County Solid Waste-to-Energy Facility is located in Brooks, about 4 miles north of Salem. For information or to arrange a tour, please call 503-393-0890.

Facility Specifications

Rated Refuse Combustion Capacity
550 tons per day

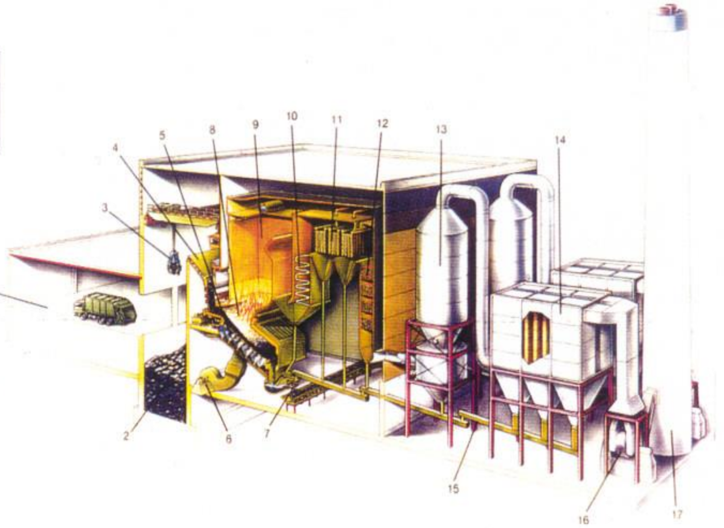
Unit Design
Two 275 ton-per-day waterwall furnaces

Guaranteed Throughput
170,000 tons per year

Guaranteed Waste Delivery
145,000 tons per year

Energy Generation at Rated Capacity
Up to 13.1 MW, sold to Portland General Electric Company

A Typical COVANTA Waste-to-Energy Facility



1. Tipping Floor
2. Refuse Holding Pit
3. Grapple Feed Chute
4. Feed Chute
5. Martin Stoker Grate
6. Combustion Air Fan
7. Martin Ash Discharger
8. Combustion Chamber
9. Radiant Zone (furnace)
10. Convection Zone
11. Superheater
12. Economizer
13. Dry Gas Scrubber
14. Baghouse
15. Fly Ash Handling System
16. Induced Draft Air Fan
17. Stack

Refuse collection trucks are weighed at the scalehouse and monitored for safety. Once cleared, they enter the tipping building and dump their waste into the storage pit. An overhead crane mixes the waste in the pit and lifts the waste up into a feed chute leading to the furnace. From the feed chute, waste is pushed by hydraulic ram feeders onto a stoker grate. The MARTIN Reverse-Reciprocating Stoker is sloped downward and is composed of alternate rows of fixed and moving grate bars. The grate bars push upward against the natural downward movement of the waste bed. This constant movement ensures that the burning waste is continually agitated and pushed back, thus serving as underfire for freshly-fed waste. A forced draft fan supplies the primary combustion air underneath the grate. In addition, overfire air is injected through the front and rear walls of the furnace.

Inside the steel tubes that form the furnace walls and the boiler, heat from the combustion process converts water to steam. The superheater further heats the steam before it is sent to a turbine generator to produce electricity. After passing through the boiler sections, the hot combustion gases are used to preheat boiler feedwater in the economizer.

While the combustion gases move through the boiler, the bottom ash slowly makes its way to the end of the grate where it falls into the water quench trough of the Martin Ash Discharger. From the boiler, the cooled gases enter the advanced air pollution control system. Using the lime slurry, the dry scrubber neutralizes any acid-forming gases, such as sulfur oxides and hydrogen chloride.

As the gas stream travels through these filter devices, more than 99 percent of particulate matter is removed. Captured fly ash particles fall into hoppers and are transported by an enclosed conveyor system to the Martin Ash Discharger where they are wetted to prevent dust, and mixed with the bottom ash from the grate. The ash residue is then conveyed to an enclosed building where it is loaded into trucks and taken to a landfill designed to protect against groundwater contamination. Ash residue from the furnace can be processed for removal of recyclable scrap iron.

All aspects of the plant's operation are monitored from the central control room 24 hours a day, seven days a week, 365 days a year.

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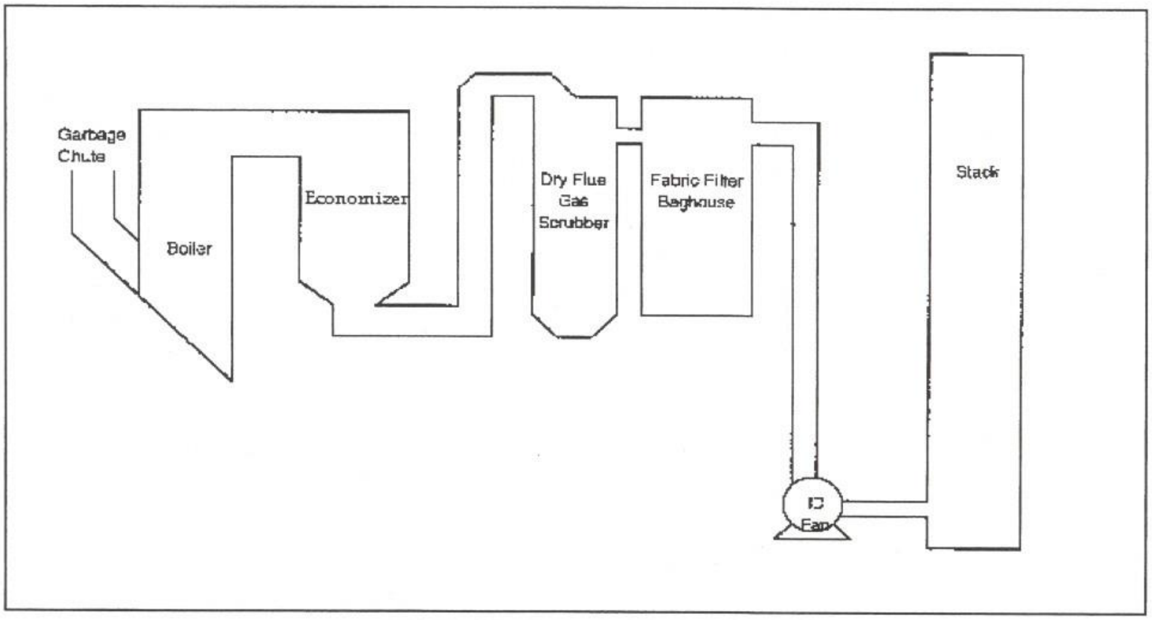
2.2 Flow Diagram of Process



The Marion County Solid Waste-to-Energy Facility is located in Brooks, Oregon. The facility consists of two identical municipal solid waste-fired boilers of Martin GmbH Stoker Combustion System design. The combustors each have a capacity greater than 250 tons per day. The facility produces up to 13.1 MW of electricity daily. Each MWC unit exhausts through a common flue stack. Air pollution equipment for each independent train includes semi-dry flue gas scrubbers for acid gas control, fabric filter for particulate removal, selective non-catalytic reduction (SNCR) for control of nitrogen oxides and dry activated carbon injection for mercury emission controls. Each unit is also equipped with a continuous emission monitoring system to provide feedback on the effectiveness of the air pollution control (APC) equipment.

2.3 OPERATING CONDITIONS

CMI will conduct testing under high fire/increased steam load (90-110% of design steam load) conditions in order to characterize chronic health risk.

Design steam load capacity is approximately 67 Klbs/hr. A summary detailing which test methods will be conducted can be found in Section 3.0. CMI will test under ‘worst case’ conditions (as referenced above) for the Cleaner Air Oregon required testing, as described in detail in Section 2.9 of the DEQ Source Sampling Manual, i.e., during high fire/increased steam load operating conditions. Since the “high fire/increased steam load” operating condition includes a significant portion of the operating hours in a year for each boiler, the testing program found in Section 3.1 will adequately address the chronic cancer and non-cancer health effects in an HRA prepared using those test results.

The testing of those toxic air contaminants that typically comprise the majority of the chronic cancer and non-cancer health effects in an HRA will include: PCDD/F’s, PCB’s, PAH’s, VOC’s, Metals, Acid gases (including all halides and halogens), Ammonia, Formaldehyde and other aldehydes, Chlorophenols and Chlorobenzenes. These specific parameters to be tested are discussed in Section 3.1.

The fuel processed during testing will primarily consist of municipal solid waste and other approved wastes (e.g., regulated medical waste, industrial solid wastes). CMI will track the amounts of regulated medical waste and industrial waste that is received during each testing day. CMI will not operate under any process state that may jeopardize compliance with any condition of the Title V permit. In the event that the Continuous Emissions Monitoring System (CEMS), Continuous Opacity Monitoring System (COMS), or other Parametric Monitoring System indicate that an emission or air pollution control device parameter is at or near a permitted limit, CMI will adjust operating conditions accordingly in order to ensure continuous compliance.

Operating conditions for this test program will include:

a) Minimum steam load (Klbs/hr) ≥ 90% of design or ~60 Klbs/hr
b) Minimum rate of regulated medical waste (RMW) per unit (tons/hr) = 1.5
c) Minimum rate of liquid direct injection (LDI) per unit (gal/hr) = 180
d) Wastes deliveries during the days of testing will be quantified and listed in the source test report.

3.0 SOURCE TEST INFORMATION

3.0 SOURCE TEST INFORMATION

3.1 EMISSION TEST PARAMETERS – CHRONIC TOXICITY TESTING

Emission Parameter	Sampling Method	Location	Unit No.	Replicates	Approximate Sampling Time (Min)
Volatile Organic Compounds (VOC) and VOC-derivatives	U.S. EPA SW-846 0031	Stack	2	1, 2, 3, 4	40
Formaldehyde, acetaldehyde, acrolein	CARB 430	Stack	1-2	1, 2, 3	60
Ammonia	BAAQMD ST-1B	Stack	1	1, 2, 3	60
Hydrogen Chloride (HCl), Hydrogen Fluoride (HF), Hydrogen Bromide (HBr), Chloride (Cl_2), and Bromide (Br)	U.S. EPA Method 26A (Modified)	Stack	2	1, 2, 3	60

3.3 ESTIMATED DETECTION LIMITS FOR TOXIC AIR CONTAMINANTS TO BE TESTED

Note: Analytical and in stack detection limits have been provided as estimates only. The analytical detection limits are the best available pre-test estimates from the analytical laboratories. The in-stack detection limit estimates are based on the expected total sampled volume of stack gas for each test method. Actual analytical and in stack detection limits will be affected by the actual volumes of stack gas and the contents of each sample matrix, so they may not exactly match these estimated values. AirKinetics, Inc will work up to the test dates to achieve the lowest DL's from all available laboratories and if another laboratory is found with lower DL's, DEQ-CAO will be notified.

3.3.1 Volatile organic compounds (SW-846 Method 0031)

CAS Number	Compound	Analytical Detection Limit, µg	In Stack Detection Limit, ng/dscm
67-64-1	Acetone	0.284	1.42E-02
71-43-2	Benzene	0.0133	6.65E-04
108-86-1	Bromobenzene	0.0083	4.15E-04
74-97-5	Bromochloromethane	0.0191	9.55E-04
75-27-4	Bromodichloromethane	0.0113	5.65E-04
75-25-2	Bromoform	0.0134	6.70E-04
74-83-9	Bromomethane	0.059	2.95E-03
78-93-3	2-Butanone (MEK)	0.144	7.20E-03
104-51-8	n-Butylbenzene	0.028	1.40E-03
135-98-8	sec-Butylbenzene	0.023	1.15E-03
98-06-6	tert-Butylbenzene	0.0151	7.55E-04

75-15-0	Carbon disulfide	0.022	1.10E-03
56-23-5	Carbon tetrachloride	0.0314	1.57E-03
108-90-7	Chlorobenzene	0.0065	3.25E-04
124-48-1	Chlorodibromomethane	0.0167	8.35E-04
75-00-3	Chloroethane	0.0401	2.01E-03
67-66-3	Chloroform	0.0175	8.75E-04
74-87-3	Chloromethane	0.0515	2.58E-03
95-49-8	2-Chlorotoluene	0.0133	6.65E-04
106-43-4	4-Chlorotoluene	0.0154	7.70E-04
96-12-8	1,2-Dibromo-3-Chloropropane	0.0316	1.58E-03
106-93-4	1,2-Dibromoethane (EDB)	0.0183	9.15E-04
74-95-3	Dibromomethane	0.0152	7.60E-04
95-50-1	1,2-Dichlorobenzene	0.0159	7.95E-04
541-73-1	1,3-Dichlorobenzene	0.0139	6.95E-04
106-46-7	1,4-Dichlorobenzene	0.0155	7.75E-04
75-71-8	Dichlorodifluoromethane	0.0452	2.26E-03
75-34-3	1,1-Dichloroethane	0.0122	6.10E-04
107-06-2	1,2-Dichloroethane	0.0113	5.65E-04
75-35-4	1,1-Dichloroethene	0.0153	7.65E-04
156-59-2	cis-1,2-Dichloroethene	0.011	5.50E-04
156-60-5	trans-1,2-Dichloroethene	0.0111	5.55E-04
78-87-5	1,2-Dichloropropane	0.0123	6.15E-04
142-28-9	1,3-Dichloropropane	0.0102	5.10E-04
594-20-7	2,2-Dichloropropane	0.0123	6.15E-04
563-58-6	1,1-Dichloropropene	0.0121	6.05E-04
10061-01-5	cis-1,3-Dichloropropene	0.0088	4.40E-04
10061-02-6	trans-1,3-Dichloropropene	0.0144	7.20E-04
100-41-4	Ethylbenzene	0.016	8.00E-04
87-68-3	Hexachlorobutadiene	0.03	1.50E-03
591-78-6	2-Hexanone	0.1065	5.33E-03
98-82-8	Isopropylbenzene	0.019	9.50E-04
99-87-6	4-Isopropyltoluene	0.022	1.10E-03
75-09-2	Methylene Chloride	0.166	8.30E-03
108-10-1	4-Methyl-2-pentanone (MIBK)	0.1041	5.21E-03
91-20-3	Naphthalene	0.0899	4.50E-03
103-65-1	N-Propylbenzene	0.0202	1.01E-03
100-42-5	Styrene	0.0121	6.05E-04
630-20-6	1,1,1,2-Tetrachloroethane	0.0092	4.60E-04
79-34-5	1,1,2,2-Tetrachloroethane	0.0324	1.62E-03
127-18-4	Tetrachloroethene	0.0105	5.25E-04
108-88-3	Toluene	0.0307	1.54E-03
87-61-6	1,2,3-Trichlorobenzene	0.0452	2.26E-03
120-82-1	1,2,4-Trichlorobenzene	0.0365	1.83E-03
71-55-6	1,1,1-Trichloroethane	0.0168	8.40E-04

79-00-5	1,1,2-Trichloroethane	0.0163	8.15E-04
79-01-6	Trichloroethene	0.0118	5.90E-04
75-69-4	Trichlorofluoromethane	0.0363	1.82E-03
96-18-4	1,2,3-Trichloropropane	0.0374	1.87E-03
95-63-6	1,2,4-Trimethylbenzene	0.0181	9.05E-04
108-67-8	1,3,5-Trimethylbenzene	0.012	6.00E-04
75-01-4	Vinyl chloride	0.0294	1.47E-03
95-47-6	o-Xylene	0.0159	7.95E-04
179601-23-1	m,p-Xylene	0.016	8.00E-04

Note: The detection limits shown are from TBD

3.3.2 Aldehydes (CARB Method 430)

CAS Number	Compound	Analytical Detection Limit, µg per sample	In Stack Detection Limit, µg/dscm
50-00-0	Formaldehyde	0.25	8.9
75-07-0	Acetaldehyde	0.25	8.9
107-02-8	Acrolein	0.25	8.9

Note: The detection limits shown are from TBD

3.3.3 Ammonia (BAAQMD Method ST-1B)

CAS Number	Compound	Analytical Detection Limit, µg per sample	In Stack Detection Limit, µg/dscm
7664-41-7	Ammonia	100	147

Note: The detection limits shown are from TBD

3.3.4 Hydrogen chloride, halides, and halogens. (EPA Method 26A)

CAS Number	Compound	Analytical Detection Limit	In Stack Detection Limit
7726-95-6	Bromine	200 µg/sample	59 µg/dscm
7782-50-5	Chlorine	200 µg/sample	59 µg/dscm
7647-01-0	Hydrochloric acid	200 µg/sample	59 µg/dscm
10035-10-6	Hydrogen bromide	100 µg/sample	29 µg/dscm
7664-39-3	Hydrogen fluoride	100 µg/sample	29 µg/dscm

Note: The detection limits shown are from TBD

4.0 SCHEDULE OF ACTIVITIES

4.0 SCHEDULE OF ACTIVITIES (1)

Day	Unit/Location	Parameter	Reference Method	Replicates	Sampling Time (Minutes)
0 – Aug 29	---------------------	Setup			
1 – Aug 31	1 Stack	Formaldehyde, acetaldehyde, acrolein	CARB 430	1, 2, 3	60
2 – Sept 1	2 Stack	SLO-SMVOC and SMVOC (2)	EPA SW-846-0031	1, 2, 3, 4	160
3 – Sept 2	1 Stack	Ammonia	BAAQMD ST 1B	1,2,3	60
	2 Stack	HCl, HF, HBr, Cl2 & Br2	EPA 26A	1, 2, 3	60

(1) Schedule may be changed during testing to accommodate site conditions and/or contractor availability. Every effort will be made to keep CAO/ODEQ informed of any schedule changes.

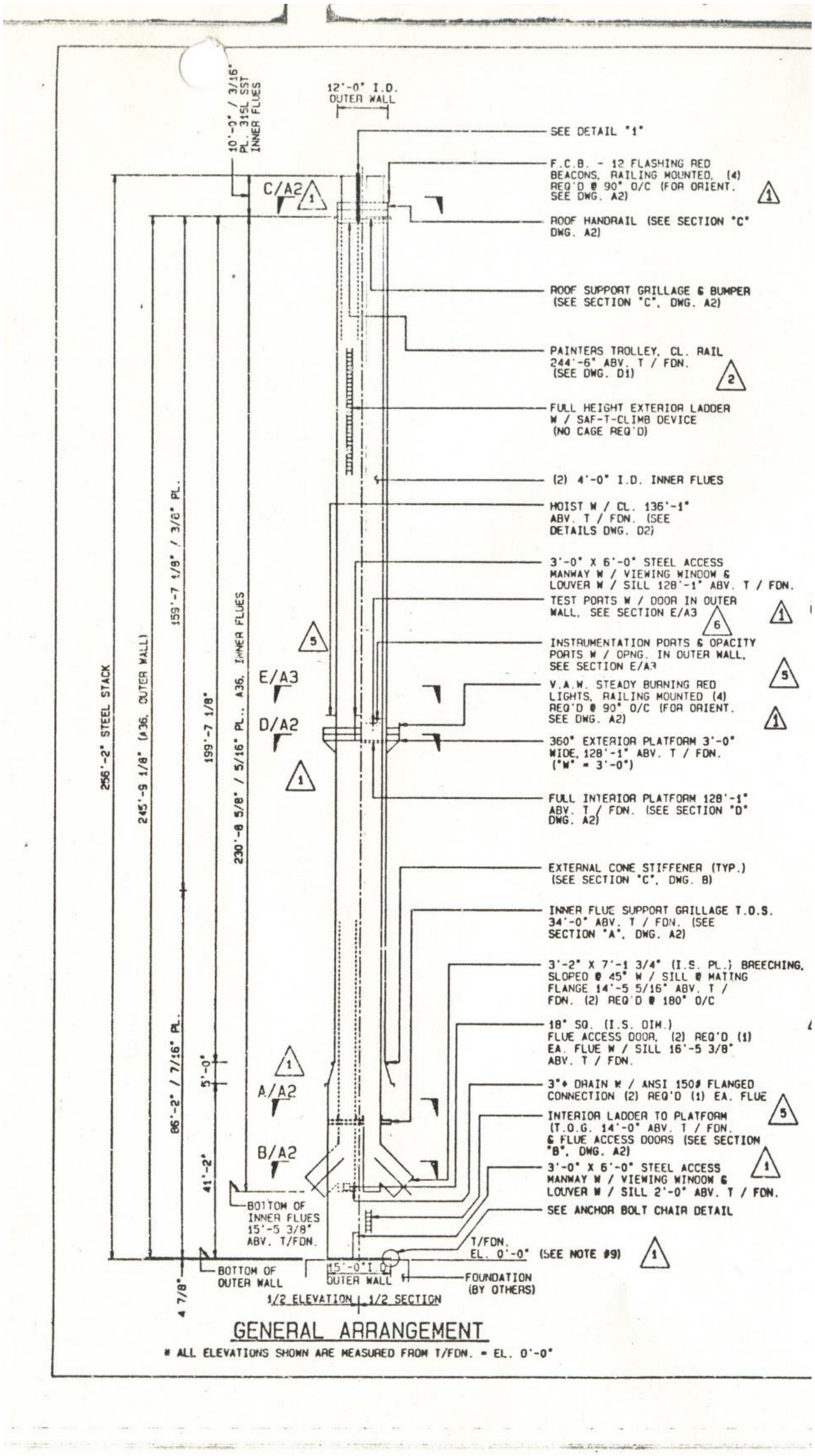
(2) SLO-VOC will test for bromomethane, chloroethane, vinyl bromide, and vinyl chloride.

5.0 SAMPLING AREA DESCRIPTIONS

5.0 SAMPLING AREA DESCRIPTIONS

The outlet sampling area at Covanta Marion, Inc. (CMI) is located on a platform 128 feet above the ground outside of the steel stack (see Figure 1). The stack is equipped with a rope and pulley to facilitate hauling equipment up and down. The ladder is equipped with a Saf-T-Climb® climbing device. Each stack has two 4 inch diameter test ports at 90° and one 4 inch single port available.

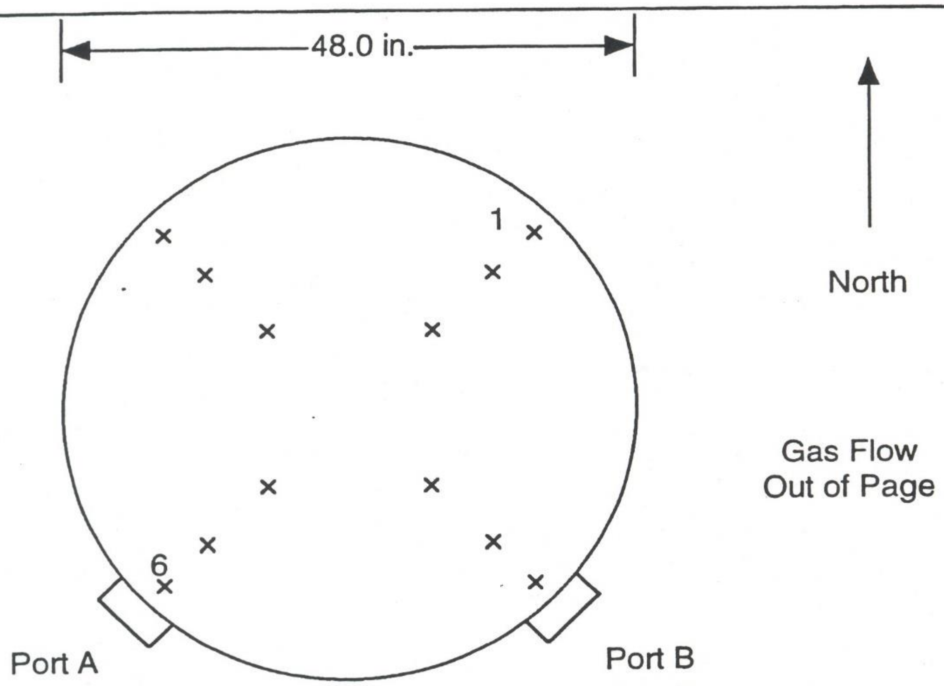
	Sampling Area Parameters
Testing platform elevation above ground:	128 ft.
Test ports elevation:	131 ft.
Test ports flange size:	4 in.
Flue diameter:	4 ft.
Nearest downstream disturbance:	120 ft.
Nearest upstream disturbance:	100 ft.



Figures 2 and 3 depict the sampling point determinations.

METHODOLOGY

SAMPLING POINT DETERMINATION (CONTINUED)



Traverse Point	Port to Point Distance (in.)
1	45.9
2	41.0
3	33.8
4	14.2
5	7.0
6	2.1

CEM Sampling Point	Port to Point Distance (in.)
1	40.0
2	24.0
3	8.0

Diameters to upstream disturbance: >8	Limit: 2
Diameters to downstream disturbance: >2	Limit: 0.5

Units 1 and 2 Stack Sampling Point Determination (EPA Method 1)

Figure 3

6.0 TEST METHODS DESCRIPTIONS

6.1 Sampling and Analytical Methods

This section briefly describes the sampling and analytical procedures that are used and any deviations from the methods. The planned methods, techniques and laboratories have been chosen to provide the lowest feasible detection limits for the planned test run times and sampled volumes.

EPA Methods 1-4. EPA Methods 1 through 4 are utilized in conjunction with each isokinetic test method. EPA Method 1 is used to determine the location of the sampling points. EPA Method 2 is used to measure the flue gas flow rate. EPA Methods 3A/3B are used to determine the flue gas molecular weight. EPA Method 4 is used to determine the flue gas moisture content. The information provided by these methods is used in determining isokinetics, parameter concentrations, and parameter emission rates.

EPA Method 26A (Modified). Concentrations of Halogens and halides are measured using EPA Method 26A with isokinetic sampling. This provides sampling similar to Method 26 but using full-size impingers and the larger sampled volume in place of the midget impingers and smaller sampled volume of Method 26.

The following will also apply:

1.) The probe & filter must be kept above the exhaust temperature and greater than 248°F.
2.) A separate blank solution of the absorbing reagent should be prepared for analysis with the field samples.
3.) At a minimum, results of testing are to be reported in the following units. Test results shall be reported as not blank corrected.
    - ppmdv
    - ppmdv @ 7% O_2
    - lb/hr (outlet only)
    - lb/1,000 lbs of steam produced

The equipment is operated in accordance with EPA Method 26A except that:

- The sampling will be conducted at a constant sampling rate rather than at isokinetic sampling rates,

- The sampling probe may be a “straight” tube rather than including a nozzle for isokinetic sampling.

- The sampled volume will be measured using a “Method 5” style dry gas meter console.

Each test run will be 1 hour in duration.

At the end of each test run, each impinger is weighed to compare with pre-sampling weights for determination of the stack gas moisture content (i.e. EPA Method 4). The contents of the H_2SO_4 impingers are recovered into one sample bottle, and the contents of the NaOH impingers are recovered into a separate sample bottle for each test run.

The full load test samples are analyzed in accordance with EPA Method 26A for the halides and halogens identified in Section 1.1 of EPA Method 26 (i.e. HCl, HBr, HF, Cl_2 and Br_2), but the low load tests samples will only be analyzed for the halides (HCl and HF).

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EPA SW-846 Method 0031. Concentrations of volatile organic compounds are measured using a single sampling train for SW-846 Method 0031 The system includes a sampling rate of 0.5 L/min for 40 minutes as in the “SLO-SMVOC” criteria to collect the very volatile compounds without significant breakthrough (i.e. less than 5% in the final Tenax trap). The laboratory and our internal method expert VP Technical both assure us that such a run provides the results needed for the full set of compounds requested. The only compounds not analyzed by 0031 are Ethylene, Propylene and 1,3-Dichloropropene; measurement of these may be provided by a TIC scan by EPA Method 8270. A list of the normally applicable compounds is available in Section 1.1 of the method.

The method employs a sampling module and meter box to withdraw a 20-L sample of effluent gas containing volatile organic compounds from a stationary source at a flow rate of 0.5 L/min, using a glass-lined probe heated to 130 ± 5°C and a “Sampling method for volatile organic compounds” (SMVOC) train. The gas stream is cooled to 20°C by passage through a water-cooled condenser and volatile organic compounds are collected on a set of sorbent traps (Tenax®-GC/Tenax®-GC/Anasorb®-747). Liquid condensate is collected in an impinger placed between the two Tenax®-GC traps and the Anasorb®-747 trap.

Sample fractions are recovered, stored, shipped and analyzed as described in Method 0031.

CARB Method 430. Sampling and analysis are conducted in accordance with CARB Method 430, modified to include sampling and analysis of acrolein and to mitigate interference from NO_X in the stack gas. Gaseous emissions are drawn through a probe and sample line (tubing) and two impingers in series, each impinger containing an aqueous acidic solution of 2,4-dinitrophenyl-hydrazine (DNPH). The sampling train includes a probe of heated glass or Teflon tubing, a connecting sample line of Teflon tubing, the two impingers, vacuum pump, control valves and dry gas meter.

Modifications for sampling include the use of a calibrated liter-range dry gas meter to measure the volume of sampled dry stack gas (in place of the rotameter described in the Method, as the rotameter measures only the sampling rate). Note that the meter box includes a rotameter or similar device for measurement of the sampling rate so that the rate will be no higher than 500 ml per minute.

Sampling is also modified by the addition of a toluene “float” to each DNPH impinger. This modification has been well-studied by several researchers and has become common practice among testers who routinely use CARB Method 430. The modification prevents interference from NO_X, allows accurate measurement of acrolein, and provides immediate, continuous extraction to stay within the 7-day hold-time for extraction described in Section 8.3 of Method 430.

Approximately 2 to 5 ml of toluene is added to each DNPH impinger prior to sampling and is recovered from the impinger with the DNPH solution. This modification provides continuous extraction of the hydrozone derivatives (formed from the aldehydes reacting with the DNPH) as the samples are collected. Since the derivative for acrolein is not water-soluble, it is continuously extracted into and preserved in the toluene; this allows for accurate laboratory analysis of the acrolein content (which would not be possible using the Method as written). The continuous extraction of the other derivatives (from formaldehyde and acetaldehyde) into the toluene prevents interference from NO_X, as the reactions with NO_X take place only in an aqueous solution.

At the completion of sampling, the probe is rinsed with 2 ml of impinger solution into the first impinger. Each impinger is recovered separately into a glass sample vials with a gas tight lid and each impinger is rinsed with 2 ml of impinger solution. An aldehyde reacts with DNPH by nucleophilic addition on the carbonyl followed by 1,2- elimination of water and the formation of a 2,4-dinitrophenylhydrazone. Acid is required to promote protonation of the carbonyl because DNPH is a weak nucleophile. After organic solvent extraction, the sample is analyzed using reverse phase HPLC with an ultraviolet (UV) absorption detector operated at 360 nm. Impingers are analyzed separately. Formaldehyde and acetaldehyde in the sample are identified and quantified by comparison of retention times and area counts of sample extracts with those of standards.

Bay Area Air Quality Management District (BAAQMD) Source Test Procedure ST-1B.
The sampling procedures outlined in BAAQMD Method ST-1B is used to determine the ammonia emissions. The sampling train consists of a heated glass or titanium probe liner, a heated borosilicate glass filter holder with a Teflon filter support, four chilled impingers in series, a pump, a dry gas meter and a calibrated orifice. The impingers are placed in an ice bath to maintain the impinger temperature at 45^{o} F or less.

All glassware is precleaned by washing with soap, hot tap water and rinsed with deionized water. For sampling, the first two impingers are each charged with 100 ml of 0.1 N hydrochloric acid (HCl). The third impinger is empty, and the fourth impinger contain silica gel. The leak check and sampling procedures are performed according to the method. Each impinger is weighed before and after sampling.

The contents of the first impinger are transferred to a Nalgene sample bottle. The contents of the second impinger are transferred to a separate Nalgene sample bottle.
The samples are delivered to the laboratory for separate analysis of the first and second impinger contents for the ammonia concentrations using a calibrated ion specific electrode.

7.0 QUALITY ASSURANCE / QUALITY CONTROL

7.0 QUALITY ASSURANCE / QUALITY CONTROL

Covanta has instituted a rigorous Quality Assurance/Quality Control (QA/QC) program for all its compliance source testing. This program ensures that the emission data reported for Covanta facilities are as accurate and meaningful as possible.

Glass or Teflon® is employed in all the sampling equipment in contact with the sample gas. This includes the nozzle, probe liner, filter housing, sample line and impingers. Calibration of all gas meters, thermocouples, and pitot tubes used in the test program will be performed using reference methods with calibration sheets included in the final report.

Transportation blanks, method blanks, inert sample containers, field data and chain of custody forms from the U.S. EPA QA Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods, EPA-600/4-77-027b, are used during all phases of the test program.

All test programs include a supervising engineer from Covanta's corporate office to ensure the integrity of the test program according to the Source Test Plan. All field data sheets for each test run listed in the source test plan including any aborted test runs will be included in the final test report.

8.0 OPERATIONAL PARAMETERS

8.1 OPERATIONAL PARAMETERS

During the source testing, plant process data will be monitored and collected by Covanta personnel to ensure representative operation of the facility. Steam flow rate will be documented to ensure representative heat input at design conditions.

The following operating parameters will be included in the final report:

Steam Production: Steam Flow (lb/hr)

> Steam Flow will be measured and reported for all test runs. Steam load (i.e. high fire) will be 90-110% of design steam load capacity.

Temperature: Baghouse Inlet

Lime slurry feed rate: dry lbs/hr

Ammonia injection rate: gal/hr

Air Pollution Control: Carbon Feed Rate (lb/hr to each unit)

Supplemental fuel usage during the tests, if used

Municipal Solid Waste totals during testing

Regulated Medical Waste:

> Regulated Medical Waste (RMW) is composed of several subcategories, which include pathology, trace chemotherapy, pharmaceuticals, sharps, and biohazardous waste. Due to state-specific requirements for treatment technologies, CMI primarily processes pathology, trace chemotherapy, and pharmaceutical wastes. These wastes are packaged in either U.S. Department of Transportation (DOT) approved single-use packaging or reusable packaging. Processing of single use packaged RMW will likely contain higher quantities of plastic and corrugated cardboard. CMI does not refer to either packaging or waste type as ‘grey bin’ or ‘blue bin.’ In addition, this terminology is not identified in any regulatory context. CMI will track volumes of medical waste processed and will differentiate between single-use and reusable packaging for reporting purposes.

- Packaging type (reusable or single use)
- Number of containers or pallets
- Total tons processed

Liquid Direct Injection (LDI) waste totals during testing to include:

- Waste description
- Approximate injection rates
- Total tons and/or gallons processed
- Analysis of leachate injected during the testing

  - Chloride – Method 300.0 – Data already obtained for LDI
  - Total Metals – Method 6020A - Data already obtained for LDI
  - Total Halogenated Organics – Method 9020B -

Supplemental waste (also referred to as Special waste) during testing to include:

- Waste description
- Total tons received

9.0 SOURCE TEST RESULTS

9.1 SOURCE TEST RESULTS

Source test results will be submitted to the ODEQ Agency Headquarters, 700 NE Multnomah Street, Suite 600, Portland, OR 97232 within 60 days following the completion of the source test.

Emissions to be tested shall be reported as:

VOCs:	ppb @ 7% O_2, lb/hr, lb/1000lb steam
Hydrogen chloride, halides, and halogens:	ppm @ 7%, lb/hr, lb/1000lb steam
Formaldehyde and other aldehydes:	ppm @ 7%, lb/hr, lb/1000lb steam
Ammonia:	ppm @ 7%, lb/hr, lb/1000lb steam