



STEVEN A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

BRAD HENRY
Governor

SOLID WASTE PERMIT MODIFICATION

The Department of Environmental Quality hereby approves the following modification:

Permit Number: 3572033
Facility: Covanta WBH Resource Recovery Facility, Tulsa Oklahoma
Facility Type: Municipal Solid Waste Incinerator
County: Tulsa

Modification:

This modification authorizes the Covanta WBH Resource Recovery Facility in Tulsa Oklahoma to receive and dispose of solid waste in excess of 200 tons/day from out-of-state. This modification incorporates by reference the plan submitted on August 25, 2009. The plan meets the requirements of Oklahoma State Statute 27A O.S. § 2-10-801.

Modification Conditions:

1. The Permittee is authorized to operate in conformity with the approved permit modification application.
2. To maintain authorization to accept out-of-state waste in excess of 200 tons/day, Covanta WBH must be in full compliance with the Oklahoma Solid Waste Management Act, Oklahoma Administrative Code (OAC) 252:510, and Permit No. 3572042.
3. The Permittee is authorized by this modification to receive and dispose in excess of 200 tons/day *only* of individually approved NHIW waste streams from out-of-state. A separate permit modification will be required to receive and dispose in excess of 200 tons/day of Municipal Solid Waste from out-of-state or any type of solid waste delivered from a transfer station or other waste processing facility.
4. The Permittee must provide adequate personnel and equipment to properly manage the additional amounts of waste received and ensure the processing time specified by OAC 252:515-19-91(b) is not exceeded.
5. In addition to the information required for individual approval of NHIW shipped from Oklahoma sources, requests to receive and dispose NHIW shipped from out-of-state must identify the name(s) of transporters who will be transporting the waste to the facility and how the waste will be transported to ensure compliance with OAC 252:515-33-4 (Adequate enclosure) (e.g. fully-enclosed trailers, roll-off containers, packer trucks, etc.), and include copies of any waste transportation contracts.





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6. Requests to receive and dispose NHIW shipped from out-of-state must identify the types and quantities of hazardous wastes generated at the facility from which the NHIW is shipped and provide a comprehensive review of how the hazardous waste is managed.
 7. The Permittee shall reject shipments of solid waste brought into Oklahoma that do not meet all applicable requirements of this permit modification. The same persons who brought it into Oklahoma shall take all rejected solid waste out of state.
 8. In accordance with OAC 252:515-19-34(d)(3), the DEQ must be notified of any updates to the plan within five working days before any changes are implemented.
 9. Commencing operations under this modification constitutes acceptance of, and consent to, the conditions contained herein.
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Saba Tahmassebi, Ph.D., P.E.
Chief Engineer
Land Protection Division

Date: 10/1/09



**OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
NOTICE - APPLICATION FILED**

Application filed. A solid waste Tier III application has been filed with the Department of Environmental Quality (DEQ).

Applicant: The applicant is Covanta Tulsa Renewable Energy LLC, 2122 S. Yukon, Tulsa OK 74107.

Type of final permit or permit action being sought: The applicant seeks to modify an existing permit.

Facility location: The Covanta Tulsa Renewable Energy LLC facility is located at 2122 S. Yukon, Tulsa, OK 74107. See legal description below.*

Activities to be regulated if the application is approved: Covanta Tulsa Renewable Energy LLC seeks approval to process regulated medical waste as a portion of the non-MSW waste streams at the facility. The regulated medical waste would be limited to 40,000 tons per year which represents less than 10% of the Facility's capacity. The waste combustion technology and the air pollution control equipment have been demonstrated to effectively treat pathogens. The facility will install automated delivery systems for the regulated medical waste so that potential contact with workers is reduced. A staging area for short term storage of regulated materials is also contemplated to allow for variations in shift schedules. The permit application seeks a variance from OAC 252:515-23-51 which specifies time and temperature requirements that are unique for two-chamber incinerators. Since Covanta Tulsa's combustion units are single-chamber mass burn waterfall combustion units, the two-chamber design is not applicable to Covanta Tulsa's operation. The application details the efficacy of the combustion units at Covanta Tulsa for achieving microbial deactivation. As a municipal waste combustion facility, Covanta Tulsa Renewable Energy does not accept the following prohibited and/or unacceptable wastes: RCRA hazardous waste, radioactive waste, sewage sludge, human fetal tissue, large pathological waste, chemotherapeutic wastes and other non-processible/unacceptable items, as specified in facility permits.

Statutes and Rules: The DEQ will review the application for compliance with the Environmental Quality Code, including the Solid Waste Management Act, Title 27A of Oklahoma Statutes, Section 2-10-101, *et seq.*, and the rules of the DEQ, Oklahoma Administrative Code, Title 252, Chapters 4 and 515.

Permitting procedures explained: On request, a representative of DEQ will chair a meeting to explain the steps of DEQ's permitting process to interested persons. If a meeting is requested, there will be discussion explaining when oral and written public comments can be made on the proposal. Administrative hearing opportunities will also be discussed. To request a process meeting, send a written request to the DEQ representative named

below within 30 days after the date this notice is published. Please note this is not a meeting on the substance of the application or for protests. Its purpose is to advise interested persons on participation opportunities during the permitting process. For more information about this process meeting, please contact the DEQ representative named below.

Locations where application may be reviewed:

1. Locally at Covanta Tulsa Renewable Energy LLC, 2122 S. Yukon, Tulsa, OK 74107.
2. The DEQ's Central Records Section, located on the 2nd floor of the DEQ building at 707 N. Robinson, Oklahoma City, Oklahoma.
3. DEQ's website at <https://www.deq.ok.gov/land-protection-division/permit-public-participation-process/>.

For more information, contact:

1. For applicant: Deanne Dutton Hughes, PE, Third Branch Engineering, LLC, 2789 East 45th Place, Tulsa, OK, 74105 dhughes@thirdbranchengineering.com, 405.202.9605.
2. For DEQ: (12), DEQ, Land Protection Division, P. O. Box 1677, Oklahoma City, OK 73101-1677; (405) 702-(13); Fax No. (405) 702-5101. (Awaiting contact information from ODEQ to complete this section)

***Legal description of site:** Northerly nine hundred feet (900') of the easterly one thousand eighty-five feet (1085') of NW ¼ of NE ¼ of Section 15, Township 19 North, Range 12 East, Tulsa County, Oklahoma

Appendix M Waste Combustion System

The MWC units at Covanta Tulsa utilize water wall furnaces. Each of the three units is equipped with state-of-the-art combustion technology. The major components of the MWC combustion systems are shown below in Figure M-1 and are described in detail.

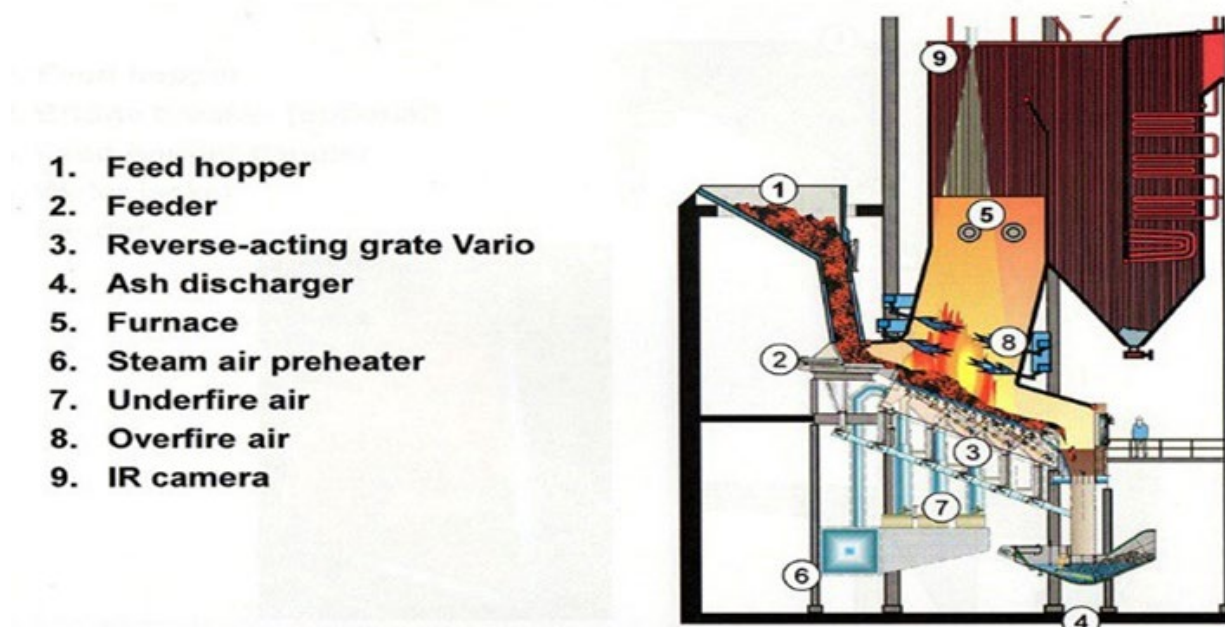


Figure M-1 Components of MWC Combustion System

Feed Chute

The process begins when waste is loaded into the feed hopper (feed chute) depicted at #1. The MSW is loaded into the feed chute from the storage bunker via a grapple crane. RMW will be introduced to the feed chute by way of the automated feed system. The feed chute provides a waste column for feed rams underneath. It also provides an airlock to seal the furnace firebox from the atmosphere.

1. Waste Feed Rams

From the feed chute, waste is metered into the combustion chamber by ram feeders depicted at #2 in **Figure M-1**. The feeder system consists of hydraulically driven feed rams that slide across a feed table to push waste out onto grates. The feeder system is automatically controlled by a combustion computer program that monitors critical combustion parameters such as oxygen levels, temperatures, and steam production rate within the boiler.

2. Combustion Stoker Grate

The Stoker Grate system, depicted at #3 in **Figure M-1**, receives waste from the feeders and provides a surface through which air flows to the fuel bed for combustion. The grates, as shown in **Figure M-2**, provide intense stoking, or agitation of the fuel bed to assure complete

combustion. The stroking forces the fuel at the bottom of the fuel bed upward against its natural downhill movement. This “Reverse-Reciprocating Action” continually mixes and agitates the bed ensuring complete combustion. Like the feed rams, the grates are computer controlled to ensure proper and complete combustion.

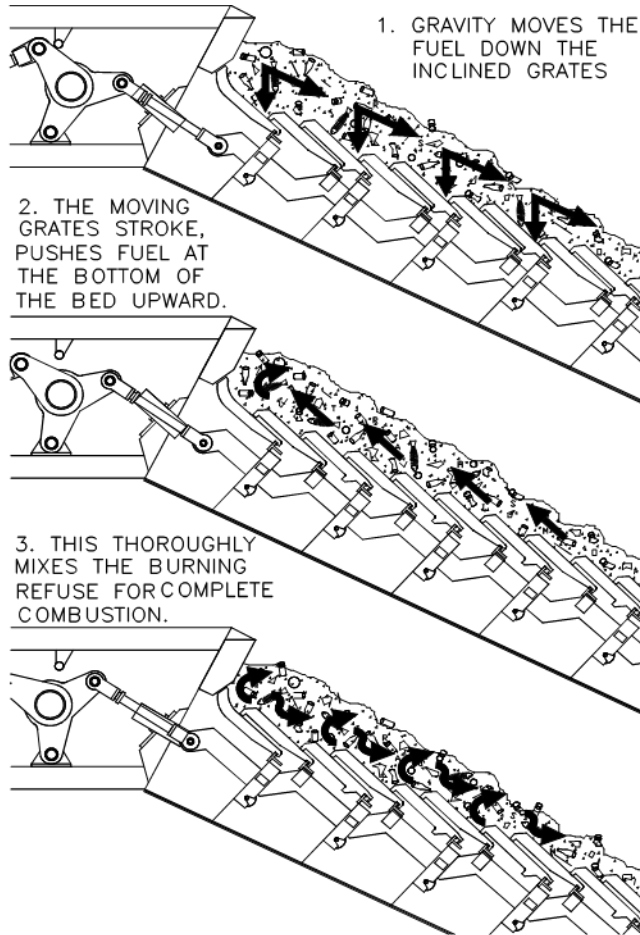


Figure M-2 – Stoker Grate System

3. Primary Under fire Air system

Preheated primary combustion air (also referred to as under fire air (UFA)) depicted at #7, flows up through the grates and waste into the combustion zone. The primary or UFA system as shown in **Figure M-3** provides computer-controlled amounts of combustion air into the furnace from beneath the grates into five areas. The UFA can be heated with air preheaters.

The waste combustion process occurs in two (2) zones. Zone 1 is the inclined, reciprocating grate shown as # 3 in Figure M-1 and Zone 2 is the area above the grate extending up the roof of the MWC. As shown in Figure **M-2**, **the waste combustion process in Zone 1 is conducted in three areas of the grate**. Area 1 of the grate is the first zone to receive fuel from the feeders. It dries the waste in preparation for ignition. Area 2 of the grate is the primary combustion area of the grate. Any remaining combustibles are burned out in Area 3 of the grate.

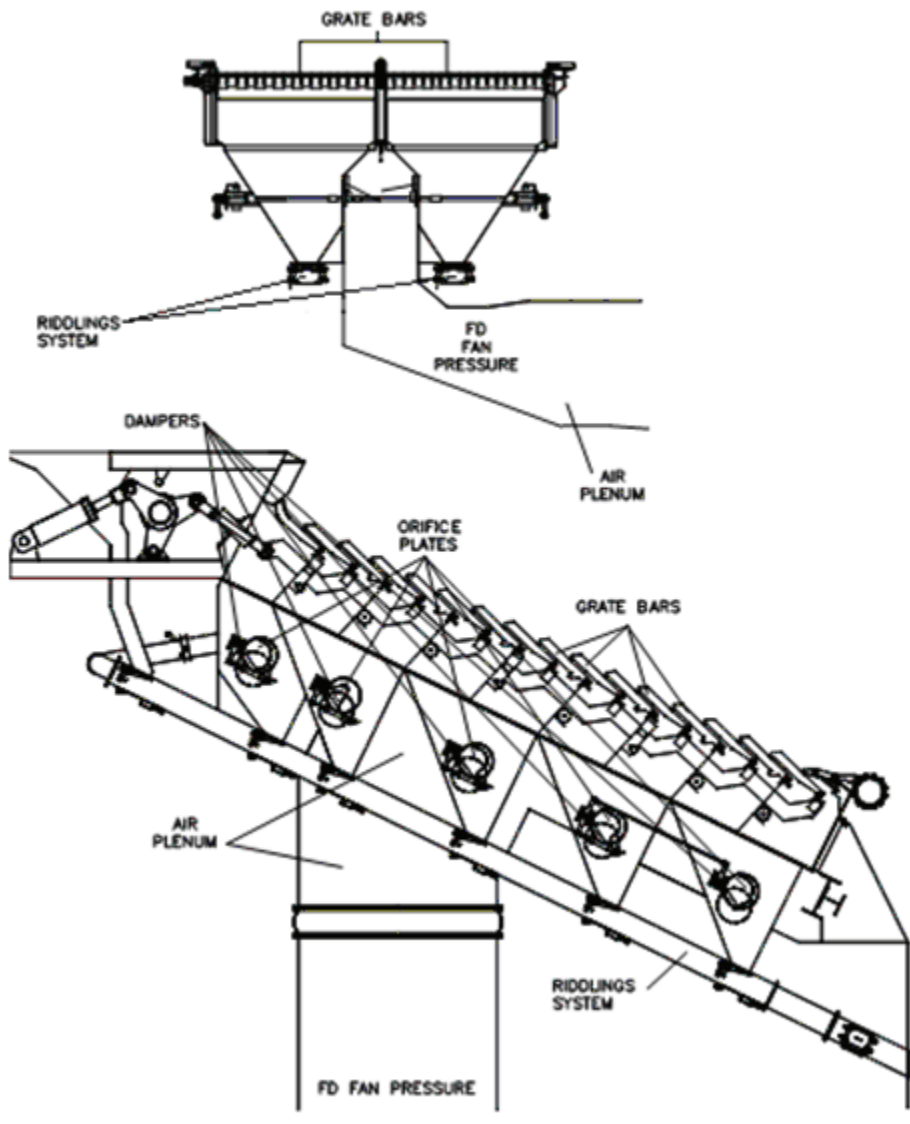


Figure M-3 – Under fire Air System

4. Secondary Over Fire Air (OFA) System

The secondary air or OFA air, depicted at #8 in Figure M-1, supplies the balance of combustion air to horizontal rows of nozzles. These nozzles, located on the front and rear walls of the fire box as shown on **Figure M-4**, admit jets of air to the furnace. This air penetrates the flames rising from the fuel bed. The main purpose of the OFA is to provide oxygen and agitation to complete the combustion of gases released by the fuel.

The combination of the UFA and the OFA is supplied at rates to achieve complete combustion of the waste. The residence time of the waste on the combustion grate varies depending on multiple factors but is generally on the order of 45 to 60 minutes.

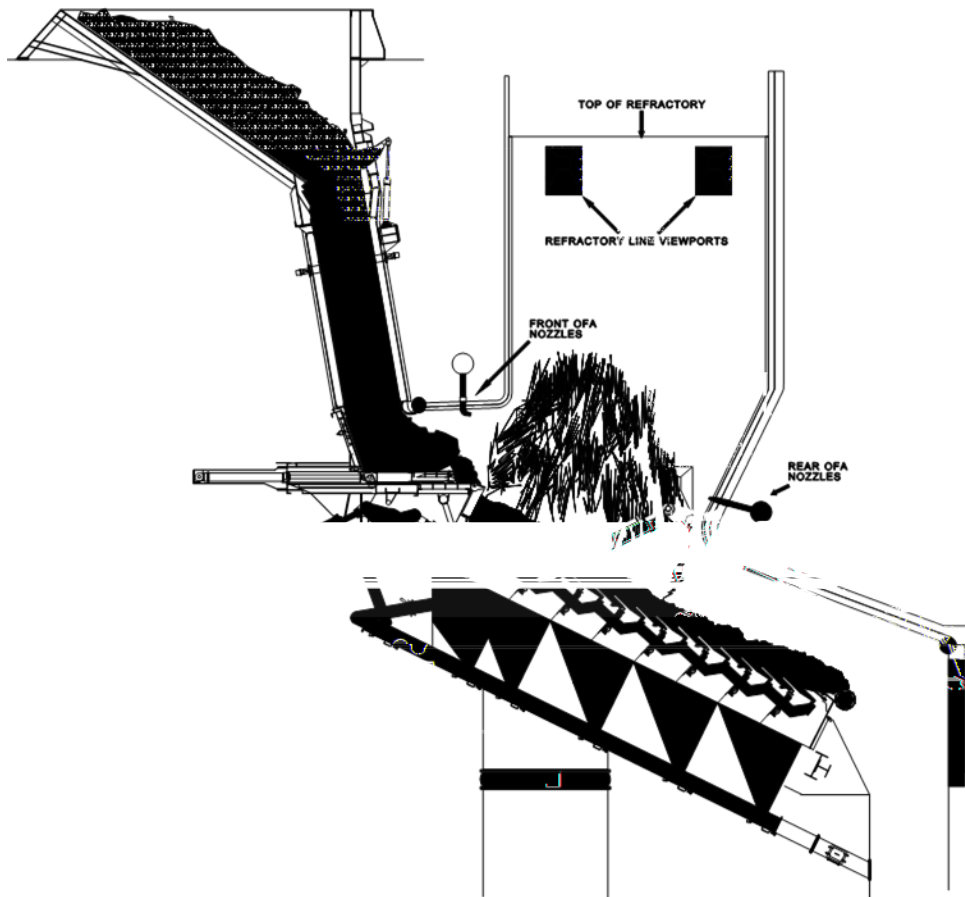


Figure M-4 – Overfire Air System

As discussed above, the combustion rate is closely controlled by the amount of air being supplied through the UFA and OFA systems. The temperature within the upper layer of the waste bed on the grate reaches as high as 2800°F, and the temperature in the area just above the waste bed is typically 2,500°F. These elevated temperatures ensure the organic content of the waste is fully combusted and that pathological components are destroyed.

The furnace is also equipped with auxiliary burners used for unit startup, shutdown and during operations as necessary to ensure proper temperatures are maintained.

5. Ash Dischargers

Once the waste is completely combusted and reduced to combustion ash, the ash drops via gravity off the end of the grate into the ash discharger depicted at #4 in Figure M-1. Like the waste feed chute, the ash discharger serves a dual purpose: first, evacuating the combustion residue (ash) from the furnace, and second, providing an airlock to prevent introduction of unwanted ambient air, similar to the feed chute, but at the end of the combustion process.

Appendix N Air Emissions

Emissions from the Tulsa Facility

The Tulsa Facility operates under a Title V Operating Permit (2014-1722-TV (M-1)). The Municipal Waste Combustors (“MWCs”) at the Tulsa Facility are regulated as Large Existing MWCs in accordance with Title 40 of the Code of Federal Regulations (CFR) Part 60, Subpart Cb (Emission Guidelines and Compliance Times for Large MWCs That are Constructed on or Before September 20, 1994).

MWCs subject to 40 CFR 60, Subpart Cb are exempt from being subject to 40 CFR 60, Subpart Ce (Emission Guidelines and Compliance Times for Hospital/Medical/Infectious Waste Incinerators) (see 40 CFR 60.32e(e)). Thus, the addition of RMW to the MSW streams processed by the Tulsa Facility will not change the federal requirements which apply to the MWC units under 40 CFR 60.

The Tulsa Facility is equipped with state-of-the-art waste combustion technology combustion control systems, combustion air preheaters, and auxiliary natural gas burners to provide for effective burnout of waste. The technologies used to control air emissions from the Facility include SNCR for reducing the emissions of NO_x, activated carbon injection for control of mercury and dioxin/furan emissions, a spray dryer absorber for neutralizing acidic gas emissions (i.e., SO₂, HCl, and HF), and fabric filters for capturing particulate emissions. As shown in **Table N.1** below, these technologies combine to demonstrate emission levels below regulatory and permitted emission limits.

Table N.1 – Tulsa Facility Air Emissions

Covanta Tulsa Facility				
Pollutant	MWC Permit Limits	2020 Emission Averages	2021 Emission Averages	2022 Emission Averages
Particulate Matter (PM)	25 mg/dscm	3.24 mg/dscm	3.68 mg/dscm	5.23 mg/dscm
Cadmium (Cd)	35 µg/dscm	0.644 µg/dscm	0.188 µg/dscm	0.352 ug/dscm
Lead (Pb)	400 µg/dscm	1.63 µg/dscm	1.55 µg/dscm	0.481 ug/dscm
Mercury (Hg)	50 µg /dscm	< 0.743 µg/dscm	0.837 µg/dscm	0.637
Hydrogen Chloride (HCl)	29 ppmdv	3.17 ppmdv	2.52 ppmdv	2.67 ug/dscm
Dioxins/Furans (PCDD/PCDF)	30 ng/dscm	1.17 ng/dscm	0.120 ng/dscm	0.656 ng/dscm
Carbon Monoxide (CO)	100 ppmdv	13.1 ppmdv	18.4 ppmdv	33.8 ppmdv
Sulfur Dioxide (SO ₂)	29 ppmdv	5.86 ppmdv	4.04 ppmdv	4.0 ppmdv

Appendix N Air Emissions

Covanta Tulsa Facility				
Pollutant	MWC Permit Limits	2020 Emission Averages	2021 Emission Averages	2022 Emission Averages
Oxides of Nitrogen (NO _x)	205 ppm _{dv}	166 ppm _{dv}	111/137 ppm _{dv}	158.8 ppm _{dv}
Beryllium (Be)	2.565E-06 lbs/hr	,1.92E-06	NT	<1.33E-06
Volatile Organic Compounds (VOC)	2.3 lbs/hr	0.16	NT	0.17
Fluorides (F)	1,65 lbs/hr	<0,215	NT	0.0231
Sulfuric Acid (H ₂ SO ₄)	9.0 lbs/hr	<1.13E-04	NT	0.25

Acronyms: mg = milligrams, µg = micrograms, ng = nanogram, dscm = dry standard cubic meter, ppm_{dv} = parts per million by volume, dry

Concentration limits and results corrected to 7% oxygen

< - Less than

NT – Not Tested, (biennial testing is required)

MSW/RMW Combustion Emissions

Aside from the infectious aspect, the waste components and characteristics of RMW are very similar to that of MSW. Combusting RMW in MWCs is permitted at Covanta’s Marion County facility located in Brooks, Oregon, Covanta’s Huntsville facility located in Huntsville, Alabama, and Covanta’s Lake County Facility located in Okahumpka, Florida.

An analysis of emissions at the Marion County facility has found no statistically significant relationship between RMW processing rates and emissions concentrations. Stack testing of the MWC units at the Marion Facility was undertaken between 2011 and 2021 while co-firing MSW and RMW. The table below provides a regression analysis using the independent variable of RMW feed rate and the dependent variable of emissions levels during the stack testing to ascertain whether emissions are dependent upon the RMW feed rate. The dataset includes sixty datapoints, roughly equally divided between those with RMW combustion and those without.

As detailed below, there is no statistically significant correlation between RMW feed rate and emissions at the 95% confidence level (p-value > 0.050). The p-values demonstrate that there is no relationship, and therefore, none of the variation in emissions is explained by RMW feed rate.

Appendix N Air Emissions

Table N.2 Regression Analysis Results, Marion Facility, 2011-2021

Pollutant	ALL Data Excluding 2018
	p-value
PM-F	0.586
Cd	0.515
Pb	0.579
Hg	0.432
D/F	0.158

The dataset includes approximately twenty data points representing RMW feedrates of zero and an overall range of feedrates of 0-2 tons/hour. 2018 data was excluded from the dataset due to operational differences for the baghouses that year. The cleaning intervals for the baghouses were reduced to ensure an appropriate draft was maintained and steam output achieved. As a result, while emissions were still well within permitted levels, the filter cake on the bags was thinner than normal, which could potentially impact emissions. Thus, the data was excluded in the analysis.

Conclusion

The Marion dataset represents Covanta's largest dataset related to RMW combustion. The data indicates no dependency on RMW feedrate and emissions at the 95% confidence interval.

APPLICATION REVIEW TRANSFER STATION & PROCESSING FACILITIES CHECKLIST LAND PROTECTION DIVISION SOLID WASTE PROGRAM OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY	Facility Name: <u>Covanta Tulsa Renewable Energy</u> County: <u>Tulsa</u> Date: <u>10/23/23</u>	OAS 252:515 PROCESSING FACILITIES
	Administrative Reviewer: _____ Start Date: _____ Completion Date: _____ Technical Reviewer: _____ Start Date: _____ Completion Date: _____ Issuance Deadline: _____	DEQ Form Number 515-101
		Shaded areas for DEQ use only

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
FILING OF APPLICATION					
PUBLIC PARTICIPATION AND NOTICE					
Information regarding the pending application shall be made available to the public as required in O.S. 27A Sec. 2-14-301, et. Seq., OAC 252:4-7-13. This notice is to allow concerned individuals an opportunity to voice opposition or support.					
1	27A O.S. 2-14-301,302,303 & 252:4-7-13(d)	Public Notice: Shall be made with proof submitted to the Department within twenty (20) days of publication, consisting of a copy of the publication in one (1) newspaper, local to the facility site, in addition to an affidavit from the publishers showing the date of publication.	Draft is provided in Appendix L.		
CERTIFICATION					
2	252:515-3-33 & 252:4-7-13(b)	Oath Required: Applicant shall sign the permit application under oath on forms provided by the DEQ.	Application is signed and provided in Appendix B.		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
3	252:515-3-34(a),(b),(c)	<p>Legal Right to Property:</p> <p>(a) Right of Access: The permit application for a new solid waste disposal facility, or expansion of the permit boundaries of an existing solid waste facility, must contain:</p> <p>(1) A true and correct copy of a legal document filed in the county in which the facility is located, possessor a legal right to access and use the property including any on- or off-site soil borrow areas, throughout the life of the site and the required post-closure monitoring period; and</p> <p>(2) A certification, by affidavit, that the applicant owns the real property, has current lease, or easement to accomplish the permitted purpose, or has provided legal notice to the landowner.</p> <p>(b) Option for Use: If an option for right of access is predicated upon the issuance of a permit prior to the exercise of that option, then the applicant must submit a copy of the option with the permit application. Once the permit has been issued, the applicant must comply with (A) of this Section prior to beginning construction.</p> <p>(c) Easement to the DEQ: Unless the property owner is a unit of government, a temporary easement shall be executed allowing the DEQ and/or its contractors the right to access the property to perform closure, post-closure monitoring, or corrective action in the event of default by the owner/operator.</p>	<p>(a) – Not applicable. Covanta Tulsa is not seeking an expansion of the permitted boundaries.</p> <p>(b) Not applicable.</p> <p>(c) An easement to access the property is already in place.</p>		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
4	252:515-3-35(a),(b),(c) & 27A O.S. 2-10-301(e)	<p>Engineer of Record:</p> <p>(a) Professional engineer seal required. Maps, drawings, surveys, calculations, information, and data submitted in support of permit applications for new solid waste disposal facilities or modifications of existing permits, must be prepared and stamped or sealed by a professional engineer licensed in the State of Oklahoma if the facility serves a population equivalent of 5,000 persons or more.</p> <p>(b) Seal placement: The engineer's stamp or seal shall be placed on the application page. Each map and drawing included in the application shall be stamped or sealed in accordance with the requirements of the State Board of Registration of Professional Engineers and Land Surveyors. (c) Failure to Seal: Documents that are not stamped or sealed in accordance with this Section will be returned to the applicant.</p>	Documents are sealed in accordance with this section.		
GENERAL INFORMATION					
	252:515-3-36(a)	<p>Permit Applications</p> <p>(a) New applications: A permit application for a new solid waste disposal facility shall include all the information required by the Oklahoma Uniform Environmental Permitting Act, including:</p>	Not applicable		
5	252:515-3-36(a)(1)	The owner/operator's name, mailing address and phone number:	Section III		
6	252:515-3-36(a)(2)	The name by which the facility will be known, the mailing address of the facility, the street address of the facility (if different from the mailing address), and the facility phone number;	Section III		
7	252:515-3-36(a)(3)	A disclosure statement completed in accordance with OAC 252:515-3-31(g);	Not required		
8	252:515-3-36(a)(4)	<p>A legal description, by metes and bounds; section, township, and range, or parts thereof; or book and page number of plat records for platted property, of:</p> <p>(A) the proposed permit boundary;</p> <p>(B) the proposed waste processing and/or disposal areas; and</p>	Section III.E		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
		(C) both on- and off-site soil borrow areas, if applicable;			
9	252:515-3-36(a)(5)	Latitude and longitude of all corners of the permit boundary and the facility entrance;	No change to the permitted boundary		
10	252:515-3-36(a)(6)	The location of the site from the nearest town or city;	Appendix A, Map 1, General Location		
11	252:515-3-36(a)(7)	A description of all processing, storage, and disposal operations and units;	Sections 4; Appendices C, E, and F		
12	252:515-3-36(a)(8)	A description of the anticipated waste streams and amount received per day;	Section IV.C		
13	252:515-3-36(a)(9)	The names of the municipalities and/or counties included in the service area;	Not applicable		
14	252:515-3-36(a)(10)	The estimated population served to be determined as follows: (A) the population of each town or city served by the disposal facility, as published in the last decennial census; or (B) the population equivalent served, calculated by dividing the anticipated amount of waste received per day by 4.4 pounds per person per day;	Not applicable for this permit modification		
15	252:515-3-36(a)(11)	The types of road construction and materials to be used to ensure that all access roads within the site are passable during inclement weather by normal vehicular traffic;	No change to roadways is anticipated.		
16	252:515-3-36(a)(12)	A list of anticipated heavy equipment to be used in the construction and operation of the site;	No new heavy equipment anticipated. Yard trucks will be used to move trailers into the processing area as needed.		
17	252:515-3-36(a)(13)	Maps and drawings as required by parts (5) and/or (7) of 252:515-3-36(a)	Appendix A		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
18	252:515-3-36(a)(14)	Data, plans and specifications for the following: (A) a demonstration the proposed facility meets the location restrictions of Subchapter 5 of this Chapter; (B) an operational plan describing how compliance with the operational requirements of Subchapter 19 of this chapter, as applicable to the proposed facility, will be achieved; (C) a plan describing how compliance with the storm water management requirements of Subchapter 17 of this Chapter will be achieved; (D) plans for closure of the facility in accordance with Subchapter 25 of this Chapter; and (E) a plan for achieving compliance with the aesthetic enhancement requirements of OAC 252:515-3-37; and	(A) previously demonstrated (B) Appendix C (C) Appendix G (D) Appendix H (E) Previously demonstrated		
19	252:515-3-36(a)(15)	Establishment of financial assurance in accordance with Subchapter 27 of this Chapter.	Not applicable		
20	252:515-3-36(b)	Information not identified: The DEQ may require the applicant to submit additional data, revise design specifications or propose environmental safeguards as necessary to meet DEQ rules for the protection of human health and the environment.	Noted		
21	252:5115-3-36(c)	Permit modification applications: An applicant requesting a modification to an existing permit shall submit information identified in this Part relating to the proposed modification.	See Items 5 through 19 above.		
22	252:515-3-37	Aesthetic enhancement: Applications for new permits or expansions of an existing permit boundary, shall include plans to enhance the visual harmony of the new disposal facility or the expansion area with the surrounding area, and reduce the transmission of dust and noise from the facility. Such plans may include placement of berms, fences, shrubbery, trees, or other such materials to achieve desired result.	Not applicable.		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
MAPS & DRAWINGS					
23	252:515-3-51(a)	Applicability: The maps and designs identified in this Part shall be submitted with the permit applications for: (1) all new solid waste disposal facilities; (2) expansions of permit boundaries of existing solid waste disposal facilities; (3) expansions of waste handling or disposal boundaries of existing solid waste disposal facilities; and (4) any other modification to an existing permit where the data originally submitted would be made ambiguous, inaccurate, or out of data by the proposed modification.	Maps and drawings are provided in Appendices A and E.		
24	252:515-3-51(c)	Illegible: the permit application will be considered administratively incomplete if any maps or drawings submitted are not legible.	Noted		
25	252:515-3-51(d)	Map sequence: All maps and designs shall be submitted in the permit application in the sequence identified.	Noted		
26	252:515-3-51(e)	Map scale: Unless otherwise identified, all maps submitted as part of a permit application shall be prepared at a scale of one inch equals one hundred feet (1" = 100'). An alternative scale may be used with approval of the DEQ.	Scale is identified on each map/drawing.		
27	252:515-3-51(f)	Map details: (1) All maps shall show as a minimum, legend, title, north arrow, permit boundary, buffer zone, and boundaries of waste disposal or processing areas. (2) If applicable, the locations of groundwater monitoring wells, and gas monitoring probes shall be identified.	Noted		
28	252:515-3-52	General location map: The permit application shall include a county highway map published by the Oklahoma Department of Transportation showing the facility location and any airports within six miles of the facility. If the facility is located within a municipality and a municipal map with better information is available, then it may be used.	1_General Location, Appendix A.		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
29	252:515-3-53	<p>Flood plain map: The permit application shall include a flood plain map from one of the following sources depicting the limits and elevations of any 100-year flood plain on or within one mile of the permit boundary of the proposed facility or expansion area:</p> <p>(1) Flood Insurance Rate maps published by the Federal Emergency Management Agency, or maps prepared by the U.S. Army Corps of Engineers, Flood Plain Management services;</p> <p>(2) Maps of Flood Prone Areas published by the U.S. Geological Survey; or</p> <p>(3) site specific determinations by the U.S. Army Corps of Engineers at the request of the applicant.</p>	2_Floodplain map, Appendix A.		
30	252:515-3-54(a) & (b)	<p>Quadrangle topographic map:</p> <p>(a) Required map: The permit application shall include an original U.S. Geological Survey 7.5 minute series topographic quadrangle map.</p> <p>(1) If 7.5 minute series maps have not been printed, then 15 minute series may be used.</p> <p>(2) If the disposal facility is located on the edge of a quadrangle, then adjoining maps shall be provided.</p> <p>(b) Required details: The quadrangle topographic map shall clearly depict:</p> <p>(1) the location of the facility permit boundaries;</p> <p>(2) access routes within one mile of the facility;</p> <p>(3) homes and buildings within one mile of the facility; (4) public water and wastewater collection, treatment, and distribution facilities within one mile of the facility;</p> <p>(5) receiving waters and surface variations within one mile of the facility; and</p>	3_Topographic Map series, Appendix A.		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
		(6) water wells, including private and municipal, potable and irrigation water within one mile of the facility.			
31	252:515-3-55(a), (b) & (c)	Existing contour map: (a) Required map: The permit application shall include a constructed map showing the topographic contours prior to any operations at the facility. (b) Contour intervals: The contour interval on the map shall not be greater than two feet. (c) Required details: The existing contour map shall show the location and quantities of surface drainage entering and exiting the facility, and the locations of all boreholes with their surface elevations.	Appendix A		
32	252:515-3-56(a) & (b)	Site map: (a) Required map: The permit application shall include a site map, which may be the existing contour map. (b) Required details: The site map shall show the following, as applicable to the facility: (1) the dimensions of the permit boundary as indicated by the legal description; (2) the receiving processing, storage or disposal areas; (3) buffer zones; (4) the locations and surface elevations of each borehole, monitor well, test well, monitoring site, test pit, sampling site and permanent benchmarks; (5) the surface and top casing elevations for each monitoring well or gas probe; (6) the surface drainage, including location of diversion ditches, dikes, dams, pits, ponds, lagoons, berms, terraces, and other relevant information;	Appendices A and E		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
		(7) the location of fencing and gates, utility lines, pipelines, and easements; (8) the access roads into and on the site; (9) employee and equipment shelters; and (10) on- and off-site soil borrow areas.			
33	252:515-3-57	Design drawings: The permit application shall include, as necessary, design drawings and specifications for: (1) receiving, processing, storage or disposal areas; (2) liner construction; (3) Leachate collection systems; (4) typical well installation; (5) dike sections; (6) drainage channels; (7) groundwater monitoring wells, gas monitoring probes, and piezometers; (8) retention structures or other groundwater and surface water protection measures; and (9) any other design drawings or specifications necessary to describe the proposed activities for the facility.	Appendix E		
LOCATION RESTRICTIONS					
34	252:515-5-31 (a)	Scenic Rivers: Not to be located within the drainage basin of any river designated under Oklahoma Scenic Rivers Commission (OSRC) Act unless statement is obtained from OSRC or Oklahoma Tourism & Recreation Department.	Not applicable for modification as the boundary is unchanged.		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
35	252:515-5-31 (b)	Recreation/Preservation Areas: Not to be located within one-half (1/2) mile of area dedicated & managed for public recreation or natural preservation by any governmental agency. Exceptions granted if application includes statement from appropriate agency that proposed site not expected to adversely affect recreation or natural area.	Not applicable for modification as the permitted boundary is unchanged.		
36	252:515-5-31 (c)	Endangered & Threatened Species: Statement required from Oklahoma Department of Wildlife Conservation (ODWC) and Oklahoma Biological Survey (OBS) concerning endangered or threatened wildlife or plant species within one (1) mile of proposed site. If exist, impact statement required.	Not applicable for modification as the permitted boundary is unchanged.		
37	252:515-5-32(a)	100-year flood: Solid waste disposal facility should not be located in the 100-year flood plain. Variance available for transfer station with requirement that no waste retained during non-operating hours.	The facility is not located within a flood plain, see the floodplain map in Appendix A.		
38	252:515-5-32(b)	Public water supply:	Not applicable as all waste is stored on non-permeable surfaces		
39	252:515-5-32(c)	Wellhead protection area	Not applicable as this application does not seek to construct new disposal areas.		
40	252:515-5-32(d)	Wetlands: Not to be located in wetlands. Letter required from Oklahoma Conservation Commission (OCC) stating proposed site not located in wetlands.	Not applicable as this section requires a wetland determination only for "new waste management or disposal areas."		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
WASTE MANAGEMENT					
41	252:515-13-51	Leachate Management	Not required for waste processing facilities – only for land disposal facilities.		
42	252:515-17-3	Discharges	Section V.A and Appendix G.		
43	252:515-5-52(a)	Utility Separation: A minimum horizontal separation of twenty-five (25) feet shall be maintained between a landfill disposal site and any above-ground or underground pipeline; or transmission line.	Not applicable for waste processing facility.		
44	252:515-19-31(a), (b), (c), & (d)	Prohibited Wastes: (a) Hazardous, radioactive, regulated PCB waste. The disposal of any quantity of hazardous, radioactive, or regulated polychlorinated biphenyl (PCB) waste at a solid waste disposal facility is prohibited. (b) Regulated medical waste. The disposal of regulated medical waste at a solid waste disposal facility is prohibited, unless the facility is a permitted regulated medical waste processing facility. (c) Asbestos. The disposal of friable asbestos waste at a solid waste disposal facility is prohibited unless the facility is a MSWLF or NHIW landfill specifically authorized by the permit to accept such waste. (d) NHIW. The disposal of NHIW at a solid waste disposal facility is prohibited, unless specifically authorized by the permit.	Covanta Tulsa is seeking to process regulated medical waste with this application. The facility is already authorized for NHIW.		
45	252:515-19-32	Public Access Control: Control public access and prevent unauthorized traffic and uncontrolled dumping by using artificial and/or natural barriers.	Section VI.D		
46	252:515-19-33(c)	Measuring Waste Procedure: All waste to be measured by either weight or volume (cubic yards).	Section IV.C		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
47	252:515-19-35(a) & (b)	Litter: Blowing litter to be controlled so as not to leave the site. All facility users shall adequately cover loads to prevent blowing litter. Entire site to be policed daily.	Section V.G		
48	252:515-19-36(a), (b) & (c)	Air Quality: (a) All disposal facilities shall be operated in compliance with the Oklahoma Clean Air Act, rules of the Air Quality Division of the DEQ, and any other requirements of an approved State Implementation Plan. (b) Open burning of solid waste is prohibited. (c) Dust control: All disposal facilities shall be operated to prevent the discharge of any visible fugitive dust emissions beyond the property boundaries so as to damage or interfere with the use of adjacent properties, or to cause air quality standards to be exceeded, or interfere with the maintenance of air quality standards.	Section V.H and Appendix K.		
49	252:515-19-37(b)	Disease Vector Control: On-site populations of disease vectors shall be controlled using techniques appropriate for the protection of human health and the environment.	Section V.G		
50	252:515-19-38(b) & (c)	(b) Buffer Zones: Unless otherwise specified in this Subsection, all disposal facilities shall be designed and maintained with a waste-free buffer zone at least 50 feet in width between all waste disposal an/or handling areas and adjacent property. The buffer zone shall be contained within the permit boundary described in the permit application. (c) Use of buffer zone. Buffer zones and other restricted areas may be used for the temporary collection and storage of source separated recyclable materials, if such use is described in an approved recycling plan.	No change to the Buffer Zones is proposed.		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
51	252:515-19-39(a)	Salvage and recycling: Salvage/recycling operations shall be conducted in accordance with a written plan approved by the DEQ.	Not applicable		
52	252:515-19-40(a)	Recordkeeping and reporting: An operating record shall be maintained near each solid waste disposal facility, containing all records concerning the planning, construction, operation, closing, and post-closure monitoring of the facility. Such records shall be maintained until the post-closure monitoring period is terminated and shall include, but are not necessarily limited to, those records required to be maintained and/or submitted to the DEQ by Subchapters 7, 9, 11, 13, 15, 29, and 31 of this Chapter.	Section IX.		
53	252:515-19-91(a)	Processing: All putrescible waste delivered to a processing facility shall be processed within 24 hours.	Section V.B and Appendix C		
54	252:515-19-92	Large or Bulky Items: Provisions to be made for large or bulky items not suitable for facility operations. Narrative of handling procedure shall be included.	Not applicable to the RMW operations.		
55	252:515-19-93	All processed waste and residues produced by the facility shall be appropriately characterized as hazardous or non-hazardous and disposed in a properly permitted disposal facility.	Section IV.L. Covanta Tulsa analyzes its ash annually, and the material is used as daily cover for a nearby landfill. No changes to ash management are proposed related to the RMW processing		
CLOSURE AND POST CLOSURE CARE					
56	252L515-25-2(a)	Closure plan required: A closure plan shall be submitted to the DEQ for approval describing how compliance with the	Appendix H		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
		requirements of Part 3 of this Subchapter will be achieved.			
57	252:515-25-2(b)	Post-closure plan: if required shall be submitted with the operational plan.	Section IV.N		
58	252:515-25-2(c)	Plan amendments: An amended closure or post-closure plan shall be submitted to the DEQ for approval: (1) when a cost estimate adjustment is required; or (2) with each application for a modification of the permit when such modification will affect closure or post-closure duties or requirements.	Not applicable		
59	252:515-25-3(a) & (b)	Records retention: (a) Final closure: Copies of all closure documentation shall be maintained on fill at the site or at the owner/operator's place of business until the DEQ approves the completion of final closure. (b) Post-closure: If post-closure monitoring is required, final closure documentation shall be maintained through the post-closure monitoring period.	Section IV.M and N; Appendix H		
60	252:515-25-4	Corrective Action: If at any time during closure activities or post-closure monitoring, inspection of the facility and/or review of monitoring data indicates an actual release of contaminants into the environment, the DEQ may require corrective action to eliminate or mitigate such a release.	Not applicable		
61	252:515-25-31	Performance standard: The facility shall be closed in accordance with the approved closure plan and in a manner that minimizes the need for further maintenance and controls and minimizes post-closure escape of waste and waste constituents into the environment.	Section IV.N		
62	252:515-25-32(a)	Contents of closure plan: (a) The closure plan for all disposal facilities shall include the following as a minimum: (1) identification of site-specific closure activities, a description of how each is	Appendix H		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
		<p>expected to be performed, and a schedule for completing all activities;</p> <p>(2) calculation of closure cost estimates in accordance with Subchapter 27 of this Chapter, unless the facility is a transfer station, processing facility or composting facility that principally manages municipal solid waste, or is a yard waste composting facility;</p> <p>(3) an estimate of the maximum inventory of waste ever on- site over the active life of the facility;</p> <p>(4) detailed plans for</p> <p>(A) identifying and removing from the site, all equipment, temporary buildings and other improvements not designated as permanent in the permit application;</p> <p>(B) reworking or replacing defective groundwater monitor wells, gas wells, and other defective monitoring equipment, if any;</p> <p>(C) monitoring ground and surface water, if required;</p> <p>(D) collecting and analyzing soil and water samples;</p> <p>(E) disposing of final wastes and affected soils;</p> <p>(F) decontamination of facility structures, if necessary; (G) maintaining site security and access control, if post- closure monitoring is required;</p> <p>(H) redesigning final closure in accordance with existing site conditions and applicable rules;</p> <p>(I) preparing final closure certification and other required documents and notices; and</p> <p>(J) performing any other tasks necessary to achieve final closure of the site.</p>			

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
63	252:515-25-33(a)	DEQ notification: The DEQ shall be notified in writing prior to beginning final closure of the facility.	Appendix H		
64	252:515-25-33(b)	Beginning closure activities: closure activities shall begin no later than 90 days after final receipt of wastes at the facility or final receipt of wastes into a disposal cell, as applicable.	Appendix H		
65	252:515-25-33(c)	Completing closure activities: (1) 180 days: closure activities shall be completed according to the approved closure plan within 180 days after closure activities are initiated. (2) Extensions allowed: extensions of the closure period may be granted by the DEQ if the owner/operator demonstrates that closure will, of necessity, take longer than 180 days and that all steps have been taken, and will continue to be taken, to prevent threats to human health or the environment from the unclosed cell or facility.	Appendix H		
66	252:515-25-34(a) & (c)	Certification of final closure	Appendix H		
67	252:515-25-35(a)&(b)	Final closure approval and extension periods	Appendix H		
69	252:515-25-52(a) &(b)	Extension of Post closure period	Appendix H		
70	252:515-25-53	Contents of post-closure plan, if applicable.	Not applicable		
71	252:515-25-54	Post-closure operational requirements, if applicable.	Section IV.M		
72	252:515-25-55	Post-closure use of the property: (a) Maintain integrity (b) DEQ approval	Section IV.M		
73	252:515-25-56	Certification of post-closure performance	Section IV.M		

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
FINACIAL ASSURANCE			Not applicable per 252:515-27-1 which notes that municipal solid waste facilities are not subject to this Part.		
74	252:515-27-2	Effective date of financial assurance: (a) Closure and post-closure care: DEQ approved financial assurance for closure and post-closure care must be established prior to the initial receipt of waste or April 9, 1997, whichever is later. (b) Corrective action: DEQ approved financial assurance for corrective action must be established no later than 120 days after the corrective action remedy has been selected in accordance with Part 13 of OAC 252:515-9, or an alternative corrective action plan has been approved.			
75	252:515-27-3	Duty to maintain financial assurance			
76	252:515-27-5	Permit transfer with change of owner or operator			
77	252:515-27-6	Effect of non-renewal of, or failure to maintain or provide, financial assurance			
78	252:515-27-7	Substitute financial assurance s			
79	252:515-27-31 thru 33	Cost estimates, detailed, for Closure and post-closure			
80	252:515-27-71 & 252:515-27-72	Financial assurance mechanisms requirements and multiple mechanism allowed			
81	252:515-27-73 thru 252:515-27-85	Allowable types of financial assurance: cash, certificate of deposit, trust fund, escrow account, surety bond, letter of credit, insurance, corporate financial, local government financial test, corporate guarantee, local government guarantee, state approved mechanism			

ITEM #	STATE REGULATIONS OAC 252:515 OR GUIDELINES	GENERAL DESCRIPTION	INFO LOCATION	TECHNICALLY COMPLETE Yes/No/NA	REMARKS
WASTE EXCLUSION PLAN			Appendix F		
82	252:515-29-2	Waste exclusion plan required			
83	252:515-29-3(a)	Random inspections	Appendix F, Section 5		
84	252:515-29-3(b)	Inspection records	Appendix F, Section 8		
85	252:515-29-3(c)	Personnel training	Appendix F, Section 6		
86	252:515-29-3(d)	Trained personnel on-site	Appendix F, Section 1		
87	252:515-29-3(e)	Notification of rejected waste	Appendix F, Section 7.2		
88	252:515-29-3(f)	Safe storage of prohibited wastes	Appendix F, Section 7.5		
89	252:515-29-3(g)	Proper disposal of prohibited wastes	Appendix F, Section 7.6		
90	252:515-29-3(h)	Verification of disposal of prohibited wastes	Appendix F, Section 7.6		
91	252:515-29-4	Maintain records	Appendix F, Section 8		

Appendix O: Applicable Regulations

Covanta has reviewed Oklahoma Administrative Code 252:515 for requirements related to this permit application. This section details the applicability of the various 252:515 subchapters.

252:515-1: General Provisions

This subchapter applies to the modification. Notably, the following definitions are useful in this application:

“Existing”: The Tulsa Covanta facility is considered an Existing source.

“Facility”: Tulsa Covanta is a facility

“NHIW”: Tulsa Covanta currently processes NHIW in accordance with its current permit. Appendix F from Chapter 515 provides examples of NHIW. The facility’s Waste Exclusion Plan (WEP) identifies NHIW processed by the facility.

“Operating record”: This permit modification application includes proposed additions and changes to the operating records for the facility.

“Regulated medical waste”: The definition of Regulated medical waste provides examples of wastes the State of Oklahoma defines as regulated medical waste. This permit application seeks to receive and process regulated medical waste. Importantly, the facility limits the types and amounts of regulated medical waste to be processed at the facility. This application describes the types of regulated medical wastes to be processed at the facility.

“Special waste” – The facility currently receives special wastes in the form of NHIW, used tires, and others. The facility has demonstrated its ability to successfully and safely receive, handle, and process such materials.

The facility is not considered a “Land disposal facility,” “Landfill,” “Large NHIW generator,” “MSWLF (Municipal Solid Waste Landfill).

252:515-1-8(a) articulates that the Covanta facility’s permit remains in effect.

252:515-3. Permit Provisions and Applications

The Covanta facility is subject to permitting requirements as it is “any other type of facility that processes solid waste.” (252:515-3-1(a)(2)(G))

Part 3: Permit Applications and Modifications

Covanta is seeking a permit modification to allow it to receive and treat regulated medical wastes. The application is subject to Oklahoma Uniform Environmental Permitting as well as the requirements of OAC 252:515. Based on discussions with ODEQ to-date, Covanta anticipates this application will be considered a Tier III modification. Forms, certifications, disclosures, and a draft of the Notice of Filing are provided within this application.

Appendix O: Applicable Regulations

252:515-3-32: Based on conversations with ODEQ, this application is seeking a variance from some of the requirements in OAC 252:515-23-Part 5. OAC 252:515-23 Part 5 addresses requirements of Commercial Regulated Medical Waste Incinerators. Although Covanta Tulsa is regulated at a Municipal Waste Combustor and not an incinerator for purposes of the Clean Air Act, and Covanta Tulsa is not of the dual chamber design referenced in the regulations, we understand that ODEQ has concluded that the requirements of Part 5 are applicable. Therefore, the requirements for Time and Temperature in OAC 252:515-23-51 must be addressed through a variance request. Likewise, OAC 252:515-23-53 and OAC 252:515-23-54 require variances as these two regulations also include references to 2,000°F. As demonstrated throughout this application and especially within Appendices P and S, the combustion units at Covanta Tulsa will achieve or exceed the protections accorded by OAC 252:515-23-51.

252:515-3-33: Oath required. The appropriate forms are attached in **Appendix B** with the required Oath.

252:515-3-34: Legal right to the property. There is no change to the permit boundary with this permit modification. All materials to be received and processed will be within the current permit boundary for which DEQ already holds an easement.

252:515-3-35: Engineer of record. The application is prepared under direction of a Professional Engineer and sealed accordingly.

252:515-3-36: Permit application – Covanta is submitting information related to the proposed modification including the following:

- Description of the storage and processing of regulated medical waste
- Description of the anticipated waste streams and amounts received per day
- A list of the equipment to be used in the processing of the regulated medical waste
- Updated facility map identifying receiving and storage areas for regulated medical waste (252:515-3-51(a)(4)).
- Stormwater management impacts from the storage and processing of regulated medical waste (subchapter 17)
- Updates to closure plan (subchapter 25) and the financial assurance requirements (subchapter 27)
- Information regarding other Covanta Energy facilities RMW operations and conclusions reached by other regulatory agencies.

252:515-3-37: Aesthetic enhancement

This section is not applicable as this application is not expanding the existing permitted boundary.

252:515-3-38: Additional information for land disposal facilities

This section is not applicable as Covanta is not a land disposal facility.

252:515-3-40: Permits for commercial regulated medical waste processing facilities

Covanta is not a “commercial regulated medical waste processing facility.” The term is defined in 252:515-23-2 as:

Appendix O: Applicable Regulations

a facility operated as a business for profit that is designed and operated principally for the purpose of processing, including transfer of, regulated medical wastes generated by others. Such facilities shall include those engaged in the processing of regulated medical waste on mobile vehicles at a generator location.

The facility is NOT “operated principally for the purpose of processing ...regulated medical wastes.” The facility is principally a municipal waste combustor. This permit modification does not change the facility’s inherent purpose of receiving municipal waste and processing this waste with the outcome of electricity generation, steam generation, and reduced volume.

Part 5: Required Maps and Drawings

Maps and drawings associated with the Covanta permit modification application are provided in Appendix A and Appendix E.

Part 7: Additional Maps for Land Disposal Facilities

This subpart is not applicable to Covanta.

252:515-5, Parts 3 and 5: Location Restrictions

This section is not applicable to this permit modification application as there is no proposed change in the permitted boundary of the facility.

252:515-7: Subsurface Investigation

252:515-7-1(b) notes that a subsurface investigation will be conducted in the event the Oklahoma DEQ determines groundwater may be affected by the facility. Covanta does not anticipate a subsurface investigation will be required as the area on which the regulated medical wastes will be paved, the wastes will be contained, and impact to groundwater is unlikely.

252:515- 9: Groundwater Monitoring/Corrective Action

DEQ has previously determined that groundwater is not likely to be affected by the Covanta facility. The operations of the facility will not significantly change with the approval to process regulated medical waste at the facility. Thus, Covanta does not anticipate this subchapter to be applicable to the facility.

252:515-11: Liner Design

This subchapter is applicable to land disposal facilities and not to Covanta.

252:515-13: Leachate Collection and Management

This subchapter is applicable to land disposal facilities and not to Covanta.

252:515-15: Methane Gas Monitoring and Control

This subchapter is applicable to land disposal facilities and not to Covanta.

Appendix O: Applicable Regulations

252:515-17: Stormwater Management

As specified in **252:515-17-3(a)**, the Covanta Tulsa facility is operated to prevent the discharge of contaminated stormwater into the City of Tulsa's stormwater system and, ultimately, to waters of the United States. As shown in the drawings in **Appendix E**, the regulated medical waste will be stored indoors or within the delivery trailers until the Facility is ready to unload and process the material. All unloading occurs within a building, and the waste material is loaded onto the AFS under cover as well. 252:515-19: Operational Requirements

Part 3, Operational Requirements for All Disposal Facilities, and Part 9, Additional Operational Requirements for Waste Processing Facilities, are applicable to Covanta.

252:515-19-31: Prohibited Wastes

The Covanta Tulsa facility is seeking permission to dispose of regulated medical waste (subsection b) at the Tulsa facility. Regulated medical wastes to be accepted at the facility are described in **Appendix F**, and these types of materials are already present in the municipal waste stream at the facility. Covanta successfully receives regulated medical waste at its sister facilities in Florida, Oregon, and Alabama. The procedures to be used at the Tulsa facility related to pre-approval, receiving inspections, waste handling, and waste processing are detailed in Appendix I.

The Covanta Tulsa facility is currently permitted to receive and treat NHIW under subsection (d) of this requirement.

252:515-19-32: Public access control

The Facility is already protected from unauthorized traffic and dumping through the use of gates, cameras, and personnel.

252:515-19-33(c): Measuring waste

All waste received by Covanta Tulsa will be measured on a weight basis with records maintained on site and available for DEQ review upon request.

252:515-19-34: Limitations on waste received

The Covanta Tulsa facility is primarily a municipal waste combustor and is an active partner with the City of Tulsa and surrounding metropolitan area to reduce the amount of municipal waste in landfills and to productively and safely generate electricity and steam from the area's waste. The facility may accept more than 200 tons/day from outside the State of Oklahoma as allowed under the permit modification included in **Appendix J**.

The RMW material will be processed as described in **Appendix C** and as allowed by the Facility's Waste Exclusion Plan (**Appendix F**).

Appendix O: Applicable Regulations

The rejection and return of waste (subsections (e) and (f), respectively) are addressed in the procedures for handling regulated medical waste at the facility and are consistent with the facility's operations for NHIW materials. See **Appendix F and Appendix R** for additional details.

252:515-19-35: Litter control

The Facility's litter control plan is unaffected by this modification to receive and process RMW. All RMW to be received at the Facility will be fully enclosed from the time of receipt through disposal.

252:515-19-36: Air criteria

The Covanta Tulsa facility operates under Air Quality Permit 2014-1722-TVR. Covanta is applying for an air quality permit modification to maintain consistency with the facility's land protection permit. This application does not seek to conduct open burning, and dust control is not applicable to the type of material contemplated with this modification.

252:515-19-37: Disease vector control

See Section V.G of the permit application.

252:515-19-38: Placement of waste

The facility's current buffer zone is unaffected by this permit modification application to process regulated medical wastes.

252:515-19-39: Salvage and recycling

Salvage or recycling operations are not applicable to the processing of regulated medical waste.

252:515-19-40: Recordkeeping and reporting

Covanta Tulsa's operating records for the facility will incorporate the documents related to the planning, construction, and operation of the regulated medical waste handling equipment. As specified in (c), additional records to be maintained related to the regulated medical waste processing include the following information as listed in Subchapter 23 (discussed below).

Part 5 of Subchapter 19, Cover and Soil Borrow Requirements for Land Disposal Facilities, does not apply to Covanta.

Part 7 of Subchapter 19, Additional Operational Requirements for Municipal Solid Waste Landfills, does not apply to Covanta.

Part 9 of Subchapter 19, Additional Operational Requirements for Waste Processing Facilities applies to this permit modification as follows:

252:515-19-91. Putrescible waste is to be processed within 24 hours of delivery. The processing time may be extended to 48 hours (with appropriate odor and vector control measures in place). In all cases, processing must occur within 96 hours or the waste must be transported to an alternate permitted site.

Appendix O: Applicable Regulations

Covanta already has a plan in place related to putrescible waste processing (See Section IV.A of the application).

252:515-19-92: Large and bulky items will not be processed as regulated medical waste at Covanta Tulsa.

252:515-19-93: Residue Management. The ash and residue produced by the facility is already subject to characterization as to its hazardous waste status. The ash at Covanta Tulsa has been tested and confirmed to be nonhazardous, and the ash is delivered to a local landfill for use as Daily Cover. Covanta Tulsa is not proposing any changes to its ash testing and monitoring program.

[252:515- 21: Used Tire Processing, Certification, Permits and Compensation](#)

This Subchapter is not applicable to the permit modification for regulated medical waste.

[252:515-23: Regulated Medical Waste Management](#)

Part 1: General Provisions

252:515-23-1: Applicability and exclusions

- (a) **Federal Requirements:** Covanta Tulsa is aware that Department of Transportation, Occupational Safety and Health Administration, and other federal or state agencies may have requirements related to handling, storing, packaging, labelling, and/or transporting regulated medical waste. Covanta Tulsa has several sister facilities processing regulated medical waste, and the company works closely with federal agencies to address applicable requirements.
- (b) **Commercial processing facilities:** As detailed previously in this application, Covanta Tulsa's combustion of regulated medical waste does not fall under the definition of a "commercial processing facility."
- (c) **Commercial incinerators:** Covanta Tulsa's combustion of regulated medical waste in its burners does not fall within the definition of a "commercial regulated medical waste incinerator." Although the facility contemplates combusting regulated medical waste and certainly is a for-profit business, that does not mean the facility meets the definition "as a business for profit for incineration of regulated medical wastes...."

This interpretation is consistent with the regulation of Covanta Tulsa under the Federal Clean Air Act and the delegated authority to ODEQ. The U.S. Environmental Protection Agency has considered the distinctions between Municipal Waste Combustors, Incinerators, and Hospital/Medical/Infectious Waste Incinerators.

The act of combusting RMW in an MWC does not, by itself, reclassify the Facility as a medical waste incinerator at the RMW throughputs proposed by this application. 40 CFR 60 Subparts Cb and Eb address Large Municipal Waste Combustors. Subpart Cb articulates Emission Guidelines which were implemented by ODEQ Air Quality Division in its 111(d) submittal to EPA in 1998. The implementation plan makes the requirements in the facility's air quality permit federally enforceable, and the limits are based on the requirements from Subpart Eb. (The difference

Appendix O: Applicable Regulations

between subparts Cb and Eb is the date of when construction commenced for the facility). Covanta Tulsa is subject to requirements in 40 CFR 60 Subparts Cb and as referenced in Subpart Eb.

Within 40 CFR 60.51b, EPA defines a “cofired combustor” as:

a unit combusting municipal solid waste with nonmunicipal solid waste fuel (e.g., coal, industrial process waste) and subject to a federally enforceable permit limiting the unit to combusting a fuel feed stream, 30 percent or less of the weight of which is comprised, in aggregate, of municipal solid waste as measured on a calendar quarter basis...

Covanta facility is NOT a “cofired combustor” under the Municipal Waste Combustor federal regulations as the facility combusts more than 30% municipal solid waste.

40 CFR 60 Subpart E is the “Standards of Performance for Incinerators.” Within 40 CFR 60.50, EPA clearly states that facilities covered by subpart Cb, Eb... of this part are not covered by this subpart.” (60.50(c)). Thus, EPA does not interpret a municipal waste combustor to also be an incinerator.

40 CFR 60 Subparts Ce and Ec present Emission Guidelines and Standards of Performance for Hospital/Medical/Infectious Waste Incinerators, respectively. Subpart Ec notes that “Any combustor which meets the applicability requirements under subpart Cb, Ea, or Eb of this part...is not subject to this subpart.” (40 CFR 60.50c(e)). Again, EPA is interpreting its regulations such that a facility is either a municipal waste combustor OR an incinerator OR a Hospital/Medical/Infectious Waste incinerator.

In summary, U.S. EPA does not consider Covanta Tulsa to be a commercial processing facility nor commercial incinerator for medical wastes.

Covanta anticipates the following limitations on the percent of regulated medical wastes as listed below.

Anticipated wastes and percent of waste stream, quarterly weight basis:

Type of Waste	Process Rates, weight basis
Municipal Solid Waste	Not to be less than 30%
NHIW (including existing Liquid Disposal Injection system)	Not to be greater than 70%
Regulated Medical Waste (*)	40,000 tons per year

* RMW is a component of the NHIW process rate

Appendix O: Applicable Regulations

Notwithstanding Covanta's contention that Covanta Tulsa is not subject to the portions of Subchapter 23 related to commercial regulated medical waste incinerators, ODEQ has directed Covanta Tulsa to seek variances as needed from Part 5 of subchapter 23. The requested variances are addressed under Part 5 below.

(d) Shared Services – Covanta Tulsa is not a shared services facility.

(e) This section identifies wastes which are not considered regulated medical waste if regulated medical waste is not present. Important to note within these exclusions is (e)(1)(B). In the event that regulated medical wastes are pre-treated in accordance with OAC 252:515-23-4 (ie, microwave sterilization, steam sterilization, chemical disinfection, or any other treatment demonstrated to be effective in consistently achieving microbial inactivation) then those materials are NOT considered regulated medical waste for purposes of calculating quarterly processing rates. Similarly, (e)(1)(E) allows pre-treated laundry and medical equipment wastes to NOT be considered regulated medical waste for purposes of calculating quarterly processing rates.

(e)(3) clarifies that household wastes are not subject to Subchapter 23 even if they contain regulated medical wastes generated in the household from treatment of a resident in the household. Covanta's processes for safely handling and processing medical wastes are already in place – the items are coming to the facility from homes in the community. This permit modification will allow the safe handling of similar items generated in healthcare environments.

252:515-23-3 prohibits disposal of untreated regulated medical waste. Covanta Tulsa's operation will ensure that all received waste will be properly processed through the facility's MWCs. The minimal amount of metal will be recovered in the ferrous and non-ferrous recovery system after being exposed to temperatures in excess of 2,000°F for at least 45 minutes. Emergency procedures to be followed in the event of an unplanned shutdown of an MWC when it is combusting RMW are presented in Section 4.4.3.3 of the Standard Operating Procedures contained in **Appendix C** of this Application. The ash from the facility will not contain any untreated regulated medical waste.

252:515-23-4(a) identifies acceptable forms of treatment for regulated medical waste. As MWC is not listed specifically in this list, Covanta Tulsa meets this section under (a)(4): "any other treatment method demonstrated to be effective in consistently achieving microbial inactivation." Notwithstanding, ODEQ has directed Covanta Tulsa to comply with Part 5 of this chapter as if it is a commercial regulated medical waste incinerator. Data as provided in **Appendix N, Table N.2** and the information contained in **Appendix P** demonstrate the effectiveness of Covanta's operations at similar facilities in achieving treatment and destruction of regulated medicate waste.

252:515-23-4(b) addresses treatment requirements for untreated sharps. The delivery of all regulated medical waste to the facility will be within enclosed totes or other rigid containers. After a receiving inspection (during which safety procedures are followed) the containers of all regulated medical waste (still within the rigid containers) are transported directly to processing as detailed in **Appendix E**.

Appendix O: Applicable Regulations

Part 3: Operational Requirements for all Commercial Regulated Medical Waste Processing Facilities

The facility does not meet the definition for a “Commercial Regulated Medical Waste Processing Facility.” Thus, this Part does not apply. ODEQ and Covanta Tulsa have reviewed the definitions related to Part 3 and are in agreement that Part 3 is not applicable to Covanta Tulsa as the facility is not principally engaged in RMW processing.

Part 5. Additional Operational Requirements for Commercial Regulated Medical Waste Incinerator

As noted in Part 1, above, Covanta Tulsa contends the Tulsa facility is not a “Commercial Regulated Medical Waste Incinerator.” However, ODEQ has directed Covanta Tulsa to address the requirements of Part 5 as if the same are applicable to the Facility when combusting RMW. Therefore, Covanta Tulsa has agreed to address the requirements of Part 5 either by complying with the regulation or by seeking a “variance” as a result of the differences between MWI and MWC equipment.

252:515-23-51. Time and temperature

Incinerators must maintain a minimum temperature of:

- (1) 1,400°F, ± 25°F, in the primary chamber for sufficient time to achieve microbial inactivation; and,*
- (2) 2,000°F, ±25°F, in the secondary chamber for a minimum residence time of two (2) seconds.*

Variance Requested: This requirement is specific to two-chamber medical waste incinerators and identifies the time and temperature requirements for that equipment which achieves microbial deactivation and destruction of organic substances volatilized in the lower chamber of MWI units. Since MWCs are fundamentally different than two-chamber MWI designs, the time and temperature requirements are not appropriate for MWCs. As such, Covanta Tulsa seeks a variance from OAC 252:515-23-51 because 1) there are not two chambers in the MWC, and 2) the temperature profiles and residence times for MWC are very different than MWI. As discussed in Appendix P, the Facility can achieve microbial inactivation by means that are consistent with the design of MWCs.

Covanta Tulsa seeks a variance from this requirement. Covanta Tulsa combustors, as documented in Appendices P and S, have equivalent efficacy for microbial deactivation. Covanta Tulsa requests compliance be demonstrated with this requirement through its Air Quality permit and its periodic stack testing requirements. The facility is subject to federal emission limits.

252:515-23-52. Burning efficiency The incinerator must be operated such that no unburned materials are visible in the residue ash.

Covanta Tulsa’s Air Quality permit contains requirements designed to achieve complete combustion and to operate the facility with good combustion practices. These requirements developed by the USEPA include an emission limit for concentration of carbon monoxide, the load level at which a combustor may be operated, and the temperature at the inlet of the particulate control device.

Appendix O: Applicable Regulations

252:515-23-53. Interlocks

Incinerators must be equipped with automatic loading and protective interlocks to prevent waste from entering the secondary chamber when the temperature is below 2000 F.

Variance Requested. Covanta Tulsa seeks a variance from this requirement since there is no secondary chamber in a MWC and the temperature referenced is not appropriate for MWC safe operation. Covanta Tulsa ensures safe operation through the use of continuous emission monitors (CEMS) on the exhaust stack and cameras which allow the operator to see the internal condition of each boiler.

Covanta Tulsa's air quality permit specifies the facility's start up and shut down procedures as well as limits the total time during which start up and shut down activities may take. Finally, as detailed in Appendix C of this permit application, RMW material is not delivered to the burners until the units are at full operating condition. RMW is delivered to the units via a containerized conveyor belt system. In the event Covanta Tulsa noted a concern, the operator would turn off the RMW delivery system. Waste already in the burner would remain for its normal time. Automatic interlocks are unnecessary for the operations at Covanta Tulsa.

Covanta achieves the intent of complete combustion inherent in this regulatory language through the operating procedures which preclude RMW processing during start up and shut down, operator's control of RMW delivery to the units, the operator's visual monitoring of the units, and CEMS. Interlocks would be redundant with these other measures.

252:515-23-54. Tests

(a) Routine periodic tests. The incinerator design must provide sample injection and collection ports to enable the owner/operator or the DEQ to conduct periodic tests.

Variance Requested. There is not a practical and safe way to add a separate sample injection and collection port into the MWC that would be reflective of the entire 45-to-60-minute combustion process from feed chute to the ash discharger. When utilizing injection and collection ports for sampling, testing protocols call for injecting a tracer which would not otherwise be present in the system. We propose that the existing air quality permit requirements for demonstrating and ensuring complete combustion of MSW and NHIW be considered in support of this variance request. Covanta Tulsa's Continuous Emission Monitoring Systems (CEMS) is already in place and required by the facility's air permit. The CEMS monitor for CO is parametrically used to confirm complete combustion of the waste stream.

(b) Demonstration. Prior to operation, the owner/operator must conduct a demonstration showing complete destruction of a chemical which requires 2000°F for destruction and which is introduced into the unit under normal operating procedures.

Variance Requested. Covanta Tulsa combusts a mixed waste stream. The facility is already subject to air emission limitations through the Air Quality Division Title V air permit. The air permit specifies significant monitoring and testing activities which achieve OAC 252:515-23-54 underlying goal of complete combustion of organic materials. The results of emission testing for volatile organic substances at the

Appendix O: Applicable Regulations

Facility have averaged at or below 1 part per million corrected to 7% oxygen, well below the air quality permit limit. The annual average concentrations of carbon monoxide from the MWCs have also been monitored at levels well below permitted levels, consistent with employing good combustion practices.

252:515-23-55. Monitoring

(a) Monitoring required.

The incinerator shall have continuous monitoring and recording for waste feed, fuel and combustion gas flows; oxygen and carbon monoxide, and temperature.

Noted: Covanta Tulsa already monitors these parameters under the facility's Air Quality permit Specific Condition 1 and/or for managing combustion within the combustion units themselves.

(b) Instrument calibration.

Monitoring devices shall be routinely calibrated in accordance with manufacturer's recommendations.

Noted: Covanta Tulsa follows manufacturer recommendations related to calibration activities. Records of all calibrations are maintained.

(c) DEQ may monitor.

Incinerators shall have the capability for the DEQ to connect its own monitoring or calibration test equipment.

Covanta Tulsa's Air Quality permit already allows DEQ to conduct its own testing at the facility. In the event ODEQ personnel desired to conduct its own monitoring or calibration, the ODEQ personnel would need to complete site safety orientation and training prior to entering the working portions of the facility. Further, any collected samples will be split with Covanta Tulsa as part of the same recovery.

(d) Monitoring data retention. Monitoring data shall be maintained for at least two years.

Noted.

(e) Excursions. In the event more than thirty excursions from the operating parameters occur within any calendar month, the owner/operator shall shut down operations until such time as repairs are made and documented engineering analysis shows how the cause has been corrected.

Noted.

252:515-23-56. Residues

Ash residue shall be managed in accordance with the NHIW management requirements of OAC 252:515-31.

Covanta Tulsa already manages its ash residue in accordance with its permit and the regulation as referenced above.

Appendix O: Applicable Regulations

252:515-25: Closure and Post-Closure Care

Covanta Tulsa is subject to the requirements of Parts 1 and 3 of this subchapter. **Appendix H** provides an updated Closure Plan incorporating the need to close the regulated medical waste operations. The plan meets the requirements of 252:515-25-32 and provides for the Timelines specified in 252:515-25-33, Certifications required in 252:515-25-34, and Notices to be recorded in 252:515-25-36.

Part 5, Post-Closure requirements, are not currently required for Covanta Tulsa. Covanta Tulsa does not anticipate this permit modification to affect the need for Post Closure monitoring at the site.

252:515-27: Cost Estimates and Financial Assurance

As a facility which primarily combusts municipal wastes, Covanta Tulsa is not subject to this requirement.

252:515-29: Exclusion of Prohibited Wastes

As part of this permit modification application, Covanta Tulsa is providing an updated Waste Exclusion Plan (**Appendix F**). The WEP includes the requirements identified in 252:515-29-3 related to random inspections, inspection records, and personnel training. The WEP further requires trained personnel to be on-site during all hours the facility is open to accept wastes and specifies notice to be provided to DEQ in the event prohibited wastes are identified either prior to receipt, at the gate, during random inspections, or following disposal. The WEP also specifies how prohibited wastes are stored until proper disposal can be arranged and requires Covanta to verify proper disposal of those prohibited wastes.

252:515-31: Non Hazardous Industrial Waste (NHIW)

Covanta Tulsa is currently permitted for NHIW processing. Processing of Regulated Medical Waste does not have any impact on the current operations for NHIW nor does it present additional applicable requirements in this subchapter.

252:515-33: Waste Collection and Transportation

This subchapter does not apply to Covanta Tulsa as it is not responsible for any transportation of solid waste.

252:515-35: Oklahoma Recycling Initiative

This subchapter does not apply to Covanta Tulsa as it is not a governmental entity in Oklahoma.

252:515-37: Landfill Gas Incentive Payments

This subchapter does not apply to Covanta Tulsa and the facility does not generate landfill gas.

252:515-39 Oklahoma E-Waste Recycling

This subchapter does not apply to Covanta Tulsa. The rule applies to manufacturer/retailer who manufactures, sells, or imports more than 50 covered devices into the state within a calendar year.

252:515-41: Roofing Material Recycling

This subchapter does not apply to the permit modification to process regulated medical waste at the facility.

Appendix O: Applicable Regulations

252:515-43: Composting Facilities

This subchapter does not apply to Covanta Tulsa since Covanta Tulsa does not engage in composting.

Appendix P: Pathogen Destruction

Process basis for Pathogen Destruction in a Municipal Waste Combustor (MWC)

The MWC units at the Covanta Tulsa facility are an inherently effective technology for the combustion of regulated medical waste (RMW), including chemotherapy and pathological waste, and the thermal destruction of pathogens. Appendix M of this application included detailed information about the combustion of solid wastes in MWCs. This Appendix more specifically addresses pathogen destruction. There are two main areas of focus for pathogen destruction: the furnace grate itself (Zone 1) and the area above the furnace grate and up through the vertical extent of the boiler (Zone 2). Combustion occurs in both Zone 1 and Zone 2. Additional detail in this appendix provides a deeper understanding of the combustion of RMW and associated pathogens or other infectious components.

Zone 1 (Furnace Grate)

Zone 1 is the grate where MSW is dried, ignited, and combusted by heat provided by the furnace chamber as well as by radiant heat from the chamber walls. Moisture is evaporated, and volatile components are vaporized and combusted immediately above the fuel bed. Each MWC unit includes an automatic combustion control system that automatically manages the waste feed rate and supply of combustion air to ensure proper combustion including compliance with United States Environmental Protection Agency's (USEPA) Good Combustion Practices (GCP) which consists of three parameters: carbon monoxide (CO) and, steam flow rate, and flue gas temperature at the baghouse inlet to minimize dioxin/furan formation. RMW and MSW are comprised of similar major components (e.g., paper, plastic, cardboard); however, RMW contains limited quantities of infectious components. MSW and RMW are both effectively combusted for energy recovery on the grate.

The nominal residence time of MSW and RMW in Zone 1 is typically approximately 45 to 60 minutes. Field measurements at similar Covanta facilities have demonstrated that the fuel bed temperature is as high as 2,800°F in the combustion zone. The flue gas temperature immediately above the fuel bed is estimated to be approximately 2,500°F.

Zone 2 (Above Furnace Grate and Vertical Extent of Boiler)

Zone 2 provides an effective and independent mechanism for thermal destruction of any remaining pathogens and volatile substances that have been vaporized or otherwise transferred into the flue gases from the solid RMW on the grate. Any remaining pathogens are exposed to temperatures of 2,500°F immediately above the grate and continue to be exposed to temperatures of up to 1800o F for approximately two seconds. The flue gas is exposed to temperatures in the range of 1500 OF -1,600°F through the entire vertical extent of the boiler which represents an approximate residence time of four to five seconds.

United States Environmental Protection Agency (U.S. EPA)

While differing in design, MWC's achieve, and in many cases exceed, the temperatures and retention times of dual chamber medical waste incinerators.

Appendix P: Pathogen Destruction

The U.S. EPA has published information regarding Medical Waste Incinerators (MWI) and Municipal Waste Combustors¹.

Like MWCs, the USEPA explained that the primary purposes for MWIs are to:

1. Reduce the hazard associated with the waste, and
2. Reduce the volume and mass of the waste.

The USEPA further explained that this is accomplished by:

1. Exposing the waste to high temperatures over a sufficiently long period of time to destroy threatening organisms, and
2. Burning the combustible portion of the waste.

The USEPA noted that a controlled air MWI utilizes two chambers. The lower chamber is operated in a starved air mode at a temperature typically in the range of 1400oF to 1600oF to destroy pathogens and volatilize organic substances. The upper chamber is equipped with a fossil fuel-fired auxiliary burner to achieve temperatures in the 1800oF to 2000oF range to destroy the volatilized organics which exit the lower chamber. Note that this equipment differs from an MWC. Appendix M describes municipal waste combustors and the various zones of the units.

The USEPA went on to recommend that MWIs follow the good combustion practices already utilized by MWCs including:

- Uniform waste feed.
- Adequate supply and good distribution of air.
- Sufficiently high gas temperatures at or above 1,800°F.
- Gas (secondary chamber) residence time.
- Good mixing of combustion gas and air in all zones.
- Minimization of particulate matter (PM) entrainment into flue gas leaving the incinerator; and
- Control of the gas temperature entering the air pollution control system to 450°F or less.

Florida Department of Environmental Protection

The Florida Department of Environmental Protection (FDEP) granted approval in 2018 to co-combust RMW with MSW at Covanta's Lake County, Florida, facility based on its conclusion that the temperatures and residence times provided by the MWC's are more than adequate to complete pathogen destruction.

In 2018, the Florida Department of Environmental Protection (FDEP) conducted a technology review of the Covanta Lake County application proposing to combust RMW together with MSW in its MWC units. During this review, the FDEP reviewed the suitability of MWC units to combust RMW. See FDEP, March 6, 2018 Technical Evaluation & Preliminary Determination Report contained in Appendix U. As part of its review, FDEP compared the design and performance of MWC and MWI. The FDEP concluded in its

¹ <https://www3.epa.gov/ttnchie1/le/dioxin.pdf>, accessed January 12, 2023

Appendix P: Pathogen Destruction

technology evaluation that pathogenic destruction occurs in an MWC's combustion process. The combustion of RMW that is co-fired with MSW material takes place in the furnaces. Additionally, the agency stated that gases which may contain pathogens pass through the SNCR systems with temperatures around 1,600-2,100°F with a residence time of one to two seconds. These temperatures ensure the organic content of the waste is vaporized and pathological components are destroyed.

In comparison, the agency noted that MWI temperatures within a dual chamber unit have secondary chambers (afterburners) which operate between 1,600 and 1,800°F. Residence times in secondary chambers (afterburners) are typically 1.0 second.

The FDEP concluded that while RMW is different from MSW, the temperature and residence time in a MWC's combustion zone in the furnaces and in the SNCR should be more than adequate to provide complete pathogen destruction resulting in exhaust gases free of pathogens.

The FDEP issued its permit to Covanta Lake facility to combust BMW on March 27, 2018.

California Medical Waste Management Act

[The California Department of Public Health confirmed in 2020 that MWCs qualify as an alternative means of treating RMW to ensure pathogen destruction.

The Environmental Management Branch of the California Department of Public Health (CDPH) implements the State's Medical Waste Management Program (Program) to protect the public and the environment from potentially infectious disease-causing agents. The generation, handling, storage, treatment and disposal of medical waste is regulated through the implementation of the California Medical Waste Management Act (Act) of 2017. Under the Program, all medical waste offsite treatment facilities and transfer stations are permitted and inspected.

In addition to treatment methods specifically allowed by the Act, there are alternative medical waste treatment technologies approved for use in California. Chapter 8 of the Act stipulates that in order to be approvable by the CDPH as a means of medical waste treatment, incinerators must provide for complete combustion of the waste into carbonized or mineralized ash. Treatment with alternative technology such as combustion in an MWC may be approved if the extremely high temperatures of treatment in excess of 1,300°F result in the destruction of pathogenic microorganisms.

On September 2, 2020, Covanta requested CDPH evaluate municipal waste combustor technology as an approved method of incineration of medical waste and/or approved alternative medical waste treatment technology. On September 14, 2020, the CDPH confirmed that the MWCs qualify as an alternative medical waste treatment technology under the Act.

National Institutes of Health

The National Institutes of Health, in its recommended practices for the disposal of infectious materials, cited well-operated municipal waste incinerators as an effective means of disposal, noting its high

Appendix P: Pathogen Destruction

temperatures, long retention times and good mixing with excess oxygen as important factors in enhancing the effectiveness of pathogen destruction.

The National Institutes of Health (NIH), a part of the United State Department of Health and Human Services and the nation's medical research agency, has published an article entitled "Biosafety in the Laboratory Prudent Practices for the Handling and Disposal of infectious Materials." The article points out that although the primary purpose of the incineration of municipal waste is volume reduction, municipal waste is generated by both sick and healthy people and thus contains the same array of pathogens as hospital waste. The author's assert that "although not their primary goal, well-designed and well-operated municipal waste incinerators can provide effective destruction of pathogens in the same way that a MWI does. Municipal incinerators often operate at higher temperatures and longer gas retention times, thereby enhancing effectiveness for the destruction of pathogens",

In Section 6, Incineration, the authors of the article state that incineration is the method of choice for treating large volumes of infectious waste, animal carcasses, and contaminated bedding material, The principles of effective combustion of infectious and pathological waste are noted as retention of the waste and the gaseous products of its volatilization at a high for a long enough time to allow for mixing with excess oxygen so that the combustion reactions are completed. It is noted that "A primary combustion temperature of at least 1600°F with good mixing and a gaseous retention time of about two seconds should provide for good burnout of the waste described in this chapter. All pathogens and proteinaceous materials are denatured at temperatures well below that just cited." In the MWC units at the Facility, temperatures at the top of the waste bed and just above the grate of up to 2800°F and combustion gas retention times of 1600°F to 2100°F for approximately two seconds more than meet the conditions cited by the authors needed to achieve pathogen destruction. As discussed earlier in this Application, mixing of the waste in the presence of oxygen is achieved by the reciprocating grates and underfire air systems of the furnaces. Mixing of the combustion gases with oxygen is achieved with an overfire air injection system.

The article's conclusion states that "effective incineration can be achieved by (1) proper equipment design; (2) provision for the time, temperature, turbulence, and air required for complete oxidation; and (3) careful feeding of the unit. The design and operation of the MWCs at the Tulsa Facility provide the necessary components of an effective combustion system for the treatment of RMW.

Conclusion

Based on the retention time of potential solid RMW materials of 45 to 60 minutes on the grate exposed to temperatures up to 2800°F; the exposure of potential pathogens carried into the flue gas stream to temperatures of approximately 1600°F to 2100°F for approximately two seconds, the acceptance of RMW processing at MWCs in Alabama, Florida, and Oregon as well as the conclusions reached by U.S. EPA, FL DEP, NIH, and CDPH, MWCs are well-demonstrated and well-accepted to effectively destroy pathogens in RMW.



**CERTIFICATION FOR DELIVERIES OF REGULATED MEDICAL WASTE
TO COVANTA Tulsa**

Customer hereby certifies that the delivery accompanying this Certification contains only Regulated Medical Waste, as defined in the Profiled Waste Disposal Agreement (“Agreement”) in effect between Customer and Covanta Environmental Solutions (Covanta) and is not subject to regulations as hazardous waste under Federal Resource Conservation and Recovery Act (RCRA). Additionally, Customer hereby certifies that the delivery accompanying this Certification contains no Unacceptable Waste and no human fetal tissue waste as defined in the Agreement. Human fetal tissue means tissue or cells from a dead human embryo or fetus after a spontaneous or induced abortion or after a stillbirth. Human fetal tissue does not include non- fetal products of conception (i.e.: placenta, membranes, umbilical cord and amniotic fluid).

As set forth in the Agreement, Customer acknowledges that Covanta relies on the accuracy of Supplier’s representations, as well as Covanta’s Quality Control process, to determine whether Covanta is permitted to process the waste in this delivery. Customer acknowledges that delivery of Unacceptable Waste or Hazardous Waste will have a material adverse effect on the operation of Covanta’s Facility and will be grounds for rejection, barring of future deliveries, termination and recovery of damages.

Supplier Company Name: _____

Supplier’s Authorized Representative: _____

Signature: _____

Delivery Identification Number: _____

Delivery Date: _____

**THIS CERTIFICATION MUST BE COMPLETED BY THE CUSTOMER AND MUST
ACCOMPANY EACH DELIVERY OF REGULATED MEDICAL WASTE.**

Basic Delivery Information				
Approval Number			Facility QA/QC	
QA/QC Report ID			Manifest Number	
Generator Name			Picture of Manifest	
Type of Inspection			Date of Delivery	
Bay Assignment			Time of Delivery	
Broker			Waste Type	
Ship From Location			Waste Description	
Is this a new Approval- 1 st Inspection?	Yes/No		Is there a scheduling issue with this load?	Yes/No
Acceptance Status	Accept - Reject - Partial Reject		Is there a Discrepancy? No Discrepancy	Yes/No

Load on Arrival		Check	Observations
Missing/Incomplete Paperwork			
Scheduling Issues			
Seal/Lock Broker/Missing-Non DEA			
Witness Issue-Non DEA			
DEA: Seal or Witness Issue			

Load at Opening		Check	Observations
Improper/Missing Labels			
Load Spilled/Shifted/Leaked/Damaged			
Unacceptable Packaging/Pallet Height			
Liner not Sealed			

Material Check		Check	Observations
Sharps Issue			
Unapproved Waste			
BTU Observed over acceptable limit			
Powdered/Dusty Load			
Unacceptable Free/Bulk Liquids			
Unidentified Material			
Monolithic Material			
Unapproved + Unacceptable Waste			
Reaction/Spill			

Safety/Environmental Issue		Check	Observations
Waste Caused a Fire			
Opacity Issue			
Spilled/Leaking Load with Haz Threat			
Hazardous Waste Delivered			

COVANTA

Standard Operating Procedure (SOP)

SOP-Material Compliance (QA/QC)

Revision: 2.0 January 19, 2023

Revision and Signoff Sheet

Applicability / Authorship

Level	Business Unit	Position	Prepared by	Contributors
Corporate	Sustainability	Sr. Manager	Patrick Walsh	

Change Record

Date	Author	Revision	Change Reference	Page #

Name	Version approved	Position	Date

Reviewers

Annual Review

Name	Version approved	Position	Date

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1. Introduction

1.1. Background

This SOP has been created by the Material Compliance and Approvals Team of Covanta. This SOP addresses the responsibilities of the site and the Material Compliance and Approvals team. The COVANTA team is set up to set the standards for information captured in QA/QC process then oversee the reporting of information uploaded into ProcessMap. Material Compliance and Approvals will manage the corrective actions with the customer in coordination with the Sales Support Lead and operations.

1.2. Purpose

- The purpose of this procedure is to clearly define the process flow of the QA/QC inspection process, the associated discrepancy reports and any corrective actions that may be required. The details of a quality inspection will be identified in this SOP.
- To communicate a standard number of quality inspections required to create a world class program by establishing trends with specific customers or approvals. These frequency and severity trends will allow us to identify leading indicators and implement corrective actions. This will allow Covanta to receive profiled waste safely and efficiently.
- To supplement facility Profiled Waste SOP on the process and procedures connecting QA/QC facility activities with the Material Compliance and Approvals mission to ensure compliance thorough waste inspection, documentation, reporting and corrective action.
- Corrective action implementation and discrepancy resolution is one objective of the Material Compliance and Approvals team. The Material Compliance and Approvals Specialist are responsible for resolving higher risk discrepancies. The Material Compliance and Approvals person assigned is responsible for overseeing the resolution of lower risk discrepancies by the Customer Service team.

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- Rejection process coordination with Sales and customer service is a function of the Material Compliance and Approvals reporting. The rejection process is addressed later in the SOP in greater detail.
 - Auditing function of the Material Compliance and Approvals team involves outside audits with customers and internal MPFs that deliver non-hazardous waste that is blended or packaged. Audits are conducted based upon a predetermined priority schedule. This will include high risk discrepancies and repeat discrepancies.

2. Definitions

- **Material Compliance and Approvals** – organized under COVANTA Regional Sales Support with regional roles to execute on what this SOP defines
- **QA/QC Representative** – person at the facility level that inspects and reports on inspection of profiled waste deliveries into various EFW facilities
- **Waste to Energy (WTE)** or Energy from Waste (EFW) Covanta facility where profiled waste is processed
- **Material Processing Facility** – A Covanta term used for a permitted facility designed to receive acceptable waste for processing prior to ultimate disposal.
- **Profiled Waste**- industrial non-hazardous waste determined to be acceptable by Material Approval Group
- **Customer Care Group** – team that is made up of Customer Service Representatives and is organized regionally under Regional Sales Support
- **Discrepancy**- is a finding during an waste inspection that is determined to be off specification from the waste profile and or the approval conditions
- **Corrective action** – is a result of an incident or discrepancy and is a formal resolution established internally and or with the customer to ensure that a discrepancy doesn't happen again
- **Auditing**- can be an internal or external formal inspection and review of process and procedures to ensure compliance with Covanta policy and terms and conditions of approvals.

3. Safety Health and Environment

Safety, health and the environment are major factors when planning or conducting Material Compliance and Approvals activities. Consideration of personal protective equipment must be taken when we come in contact with profiled waste either in the WTE or MPF facility or at a customer site. We must also consider the environment when we manage profiled waste to ensure no waste is improperly managed and allowed to escape into the environment uncontrolled. All efforts must be made to ensure waste is properly packaged, labeled and handled to avoid exposure, ensure general hazardous communication and proper disposition.

3.1. PPE

PPE is provided by the Facility and must be worn at all times, within the boundaries of the Facility in order to safely perform the job responsibilities and duties. This requirement exists for the overall safety of COVANTA employees and to prevent work-related injuries. COVANTA also uses [the HMIS Personal Protection Index](#) to determine PPE requirements for approval packages.

Standard PPE requirements. All Covanta employees handling Profiled Waste must have at a minimum of the following:

- Long-sleeved cotton shirt
- Long pants
- ANSI approved hard hat
- ANSI, Z-87 approved eye protection
- Work shoes, hard sole with leather uppers (steel toe & shank recommended)
- Hearing protection
- Leather palmed gloves

4. Material Compliance and Approvals and Approvals

4.1. Facility Responsibilities

- Provide personnel dedicated to inspections of Profiled Waste per this SOP
- Documentation of Inspections via Process Maps following the standards set in this SOP
- Reporting of Discrepancies via Process Maps following the standards set in this SOP
- Clear communication with COVANTA team to facilitate corrective actions and customer service

4.2. Customer Care Responsibilities

- Provide customer communication related to discrepancy management and resolution
- Execute discrepancy resolution on Risk Level 1 and 2 (see 7.1.1) discrepancies
- Update Process Map on discrepancy resolution
- Clear communication with facility personnel and COVANTA team on all discrepancy related issues
- Track all corrective action items related to risk level 1 and 2 discrepancies and ensure timely closure rate
- Work with the Customer Care and Sales teams to target customers with multiple risk level 1 and 2 discrepancy violations for to prevent future discrepancies
- Update Process Map on discrepancy resolution

4.3. Material Compliance and Approvals Group Responsibilities

- Provide technical support and communication to the COVANTA team related to discrepancy management and resolution
- Support the discrepancy resolution and corrective action process with approval updates as necessary

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- Update Process Map on discrepancy resolution
 - Oversee the gathering of data collected by the QA/QC team at the facility level
 - Report data weekly and monthly to support corrective action efforts and reporting to Management/Sales/Operations
 - Ensure discrepancies are assigned to the appropriate parties for resolution and track the closure of open discrepancies
 - Ensure proper assignment on Risk level 3 and 4 (See 7.1.1) discrepancies and corrective actions are implemented
 - Coordinate with Compliance and Approvals Governance lead on any investigation and corrective action activities regarding Risk Level 4 discrepancies.
 - Work with the Customer Care and Sales teams to target customers with multiple discrepancy violations for corrective actions to prevent future discrepancies
 - Execute Customer audit program for high risk approvals that include TSD Blends, Class A Protocols, Regulated Medical Waste, Controlled Drug Substance Waste and any customer determined to be high risk due to a history of discrepancies.
 - Track all corrective action items related to risk level 3 and 4 discrepancies and ensure timely closure rate

5. Procedure

5.1. Factors determining which loads are checked

- The waste type- Controlled Drug Substance Waste (CDSW) and RMW must be inspected
- First time deliveries get inspection
- Approvals with past discrepancies must be inspected to verify corrective actions have been implemented
- 20% of all profiled waste loads must be inspected

5.2. List of steps to complete a normal QA/QC check with no discrepancy.

- Review schedule for the day to target waste streams that meet criteria in 5.1
 - On tablet or Smart Phone, use ProcessMap (PM) application to document the details of the load by completing all fields
 - Take pictures of the waste at opening, the load paperwork, the waste during inspection
 - Make notes of anything that is noteworthy not captured by a field in PM
 - Complete all fields in ProcessMap and provide detail notes where necessary
 - Take pictures of waste to illustrate what waste was received
-

5.3. QA/QC Checks with Discrepancy

- All discrepancies must be reported within ProcessMAP QA/QC Inspection Report
- The QA/QC person performs the normal quality checks as described in 5.1 and 5.2 above
- If a discrepancy is found, the QA/QC person checks the toggle box marked, 'Is there a discrepancy', to open the QA/QC checklist fields for further reporting
- The QA/QC person marks the boxes that best describes the quality issue causing the discrepancy and records comments to further explain the issue.
- The QA/QC person should take pictures of the discrepancy directly inside the inspection report or attach pictures later if necessary
- Once the information about the discrepancy is recorded, the QA/QC person can then check the toggle for 'action is required'
- The QA/QC person should assign the discrepancy using the (Agent Responsible Field) to the correct department depending on the severity (see Risk Matrix Addendum)
- In the Corrective Action Report (CAR) section, the QA/QC person can close out the report if the issue was handled on-site and they add in notes explaining how the issue was resolved
- If the resolution is deemed unsatisfactory by the Material Compliance and Approvals Group, the issue can be re-opened for investigation

5.4. Passing the Discrepancy to different departments for resolution

- If the discrepancy is a Risk Level 1 or 2, the QA/QC person must assign the discrepancy to the **Customer Care** person (Responsible Agent). If the discrepancy is a Risk Level 3 or 4, the QA/QC person must assign the discrepancy to the **Material Compliance and**

Approvals person (Responsible Agent). By completing the “Responsible Agent” field on the Inspection Form, the report will be assigned to that person for resolution.

- If the discrepancy is resolved by the agent responsible, they must record their notes (and attach any email correspondence with the customer) in the Corrective action report section of the inspection report in PMAPs and then close the report.
- If the discrepancy is escalated to the Material Compliance and Approvals team for resolution, the Material Compliance and Approvals Group will work with the customer and the departments involved, including the facility to resolve the issue and resume customer cooperation. The Material Compliance and Approvals Agent handling the issue will record any actions taken and attach correspondence with customer and the proof of resolution to the inspection report and close the report when resolved.

5.5. Actions on a discrepancy may include one or more of the following:

- Acknowledgement by the generator to correct for future loads
- Discrepancy Investigation
- Approval on hold/ Shipments stop
- Review/ Revision of approval
- Review of Customer Cooperation
- Full Customer Audits
- Required Analytical
- Required Root Cause Analysis
- Required Corrective action report with follow-up review of Process
- Proof of waste stream validation
- End of cooperation with the customer

5.6. Rejections

Facility-level QA/QC Specialists are responsible for evaluating waste for acceptability. A few key factors that will result in a full or partial rejection would be, but not limited to: odor, radioactive, smoldering, unapproved waste, paperwork discrepancy, labeling, waste identified as hazardous waste, potential worker exposure, shifted or improperly loaded materials, permit compliance, waste type that does not adhere to the approval conditions, waste type that does not adhere to the waste profiled and approved.

The overall guiding method for determining and communicating a rejection is summarized by the following:

- **Evaluate** — Assess the material, take pictures of waste and or any labeling or packaging insert that may be available
- **Communicate** — Facility level QA/QC Specialists are responsible to provide as much information as possible regarding a rejection in a timely fashion to COVANTA Customer Care and Material Compliance and Approvals team to facilitate quick communication to the customer regarding rejection details.
- **Make an informed decision** and proceed by to; full rejection, partial rejection or profile & re-direct waste to the nearest Covanta Material Processing Center (MPF).
- **Document and Notify** — Customer Care team will notify customer immediately by phone call and email follow-up when rejecting waste and next steps. If customer has an escalation path on file, this should be followed.

Should facility management, in collaboration with Material Compliance and Approvals, determine that the waste is acceptable with corrections necessary, the decision can be made to process the waste and COVANTA follow up with customer with corrective actions or measures to eliminate/correct the problem.

Should the problem continue, Facility-level QA/QC Specialists and or Material Compliance have the option to suspend approval until customer is able to eliminated/correct the problem.

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- Facility-level QA/QC Specialists are required to elevate suspension request to COVANTA Customer Care & Material Compliance and Approvals team to allow both parties to develop resolution plan to customer.
 - In the event of a full or partial rejection, a Rejection Documentation Form must be completed by Facility-level QA/QC Specialists or facility designee and given to the driver with all appropriate shipping documents to be returned to travel with the rejected waste.
 - COVANTA Sales representative must be notified of all rejections and level 3 and 4 discrepancies.
 - When an approval is put on hold or suspended, a satisfactory resolution must be reached and documented in ProcessMap. In addition, this resolution must be agreed upon by the facility management and Material Compliance and Approvals prior to authorizing future deliveries.

- **Rejections Fees**

Monetary charges may be considered for full or partial rejected loads. The decision to charge or waive fees will be determined by COVANTA Regional Sales Support. Customer Care Team and/or Sales Representative will communicate such fees via email to customer.

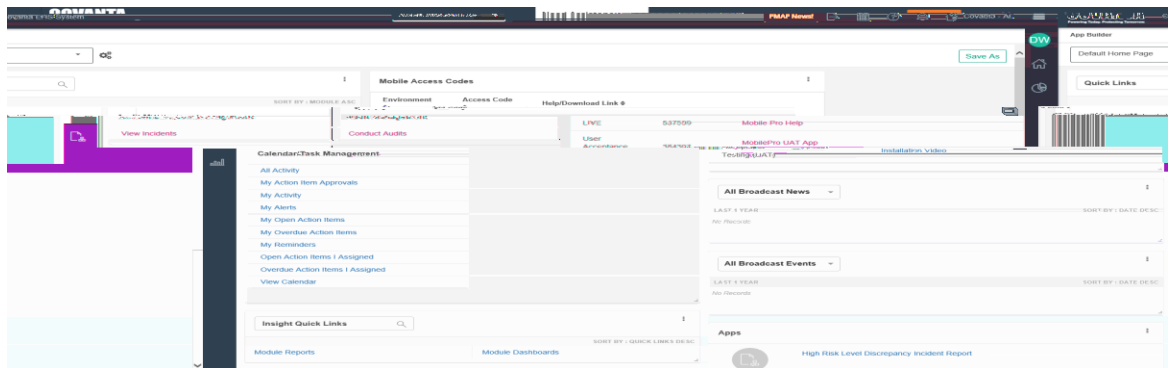
Addendum Reference

A. ProcessMAP Pictures and Links

A step-by-step instruction power point presentation is available for the online and mobile version by contacting #materialcomplianceteam

Process Maps is the software being used to manage safety policies, initiatives, lead/lag indicator tracking and Material Compliance and Approvals and Approvals audit and discrepancy tracking

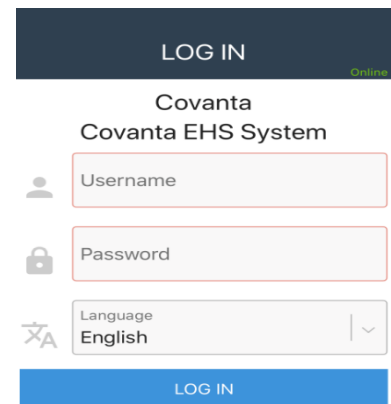
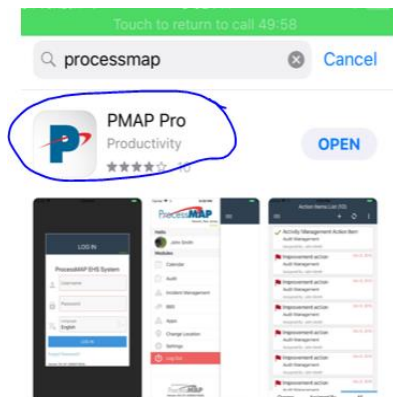
Discrepancies are tracked using the QA/QC Inspection Report in the app builder section of ProcessMAP and via mobile app



ProcessMAP can be accessed at <https://covanta.processmap.com>

The ability to log in to ProcessMAP is managed by Material Compliance and Approvals and the Covanta ProcessMAP administrators

ProcessMAP has a mobile app called ProcessMAP Pro and discrepancies can be logged directly from any mobile device.

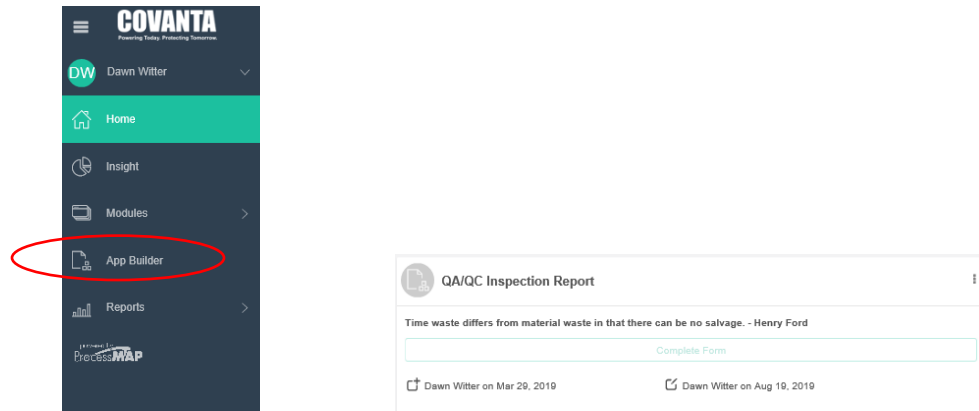


How to use ProcessMAP (Online and Mobile)

Step-by-step list of how to use online version.

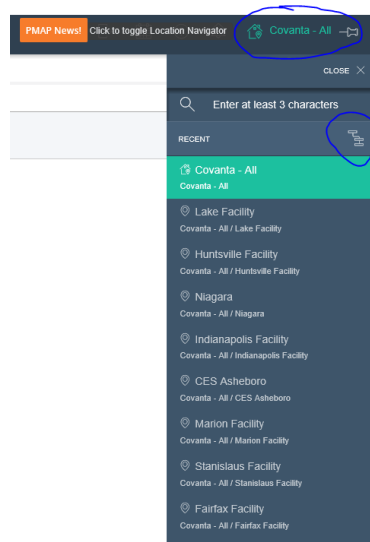
Users can log in to ProcessMAP using their Covanta Email address and Password

Users can click on the App Builder icon in the left-hand list



Users should make sure their location is correct for the location they are performing the QA/QC inspection before beginning the job

To change locations, Click the location indicated at the top right-hand corner and then click the tree icon to open the choices



Locations are organized by region

By clicking on the ellipsis in the top right-hand corner of the QA/QC inspection report box, the box of options can be accessed

Clicking on the list will open the list of all discrepancies reported to date

By clicking on the 'Complete Form' button, the user can log a new discrepancy

The user should enter the approval number and customer name along with all other general information they have at the beginning of the QA/QC inspection

The user should identify what type of inspection is being done;

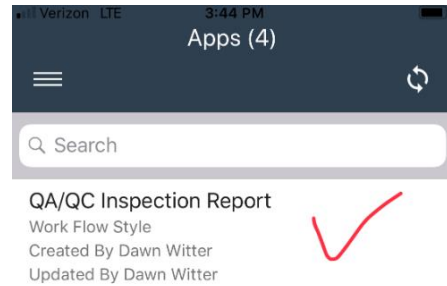
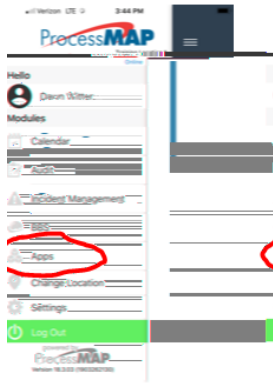
1. EfW Profiled Waste Inspection
2. MPF Load Inspection, or
3. EfW-MSW inspection

The user should finish filling in the fields of the sections that open depending on the inspection type choice.

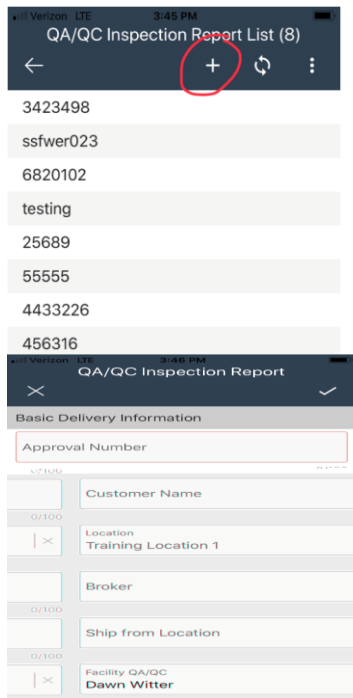
The user should add any pertaining documents or pictures directly to the inspection report before clicking the save button in the top, right-hand corner of the form.

Step-by-step list of how to use mobile version.

1. The user can also access the QA/QC inspection report on a mobile device by logging in to the app and clicking the apps selection in the left-hand list and selecting the form from the list as show below



2. Then the user can start a new inspection report by clicking the '+' sign at the top of the app and then fill in the information as they would online

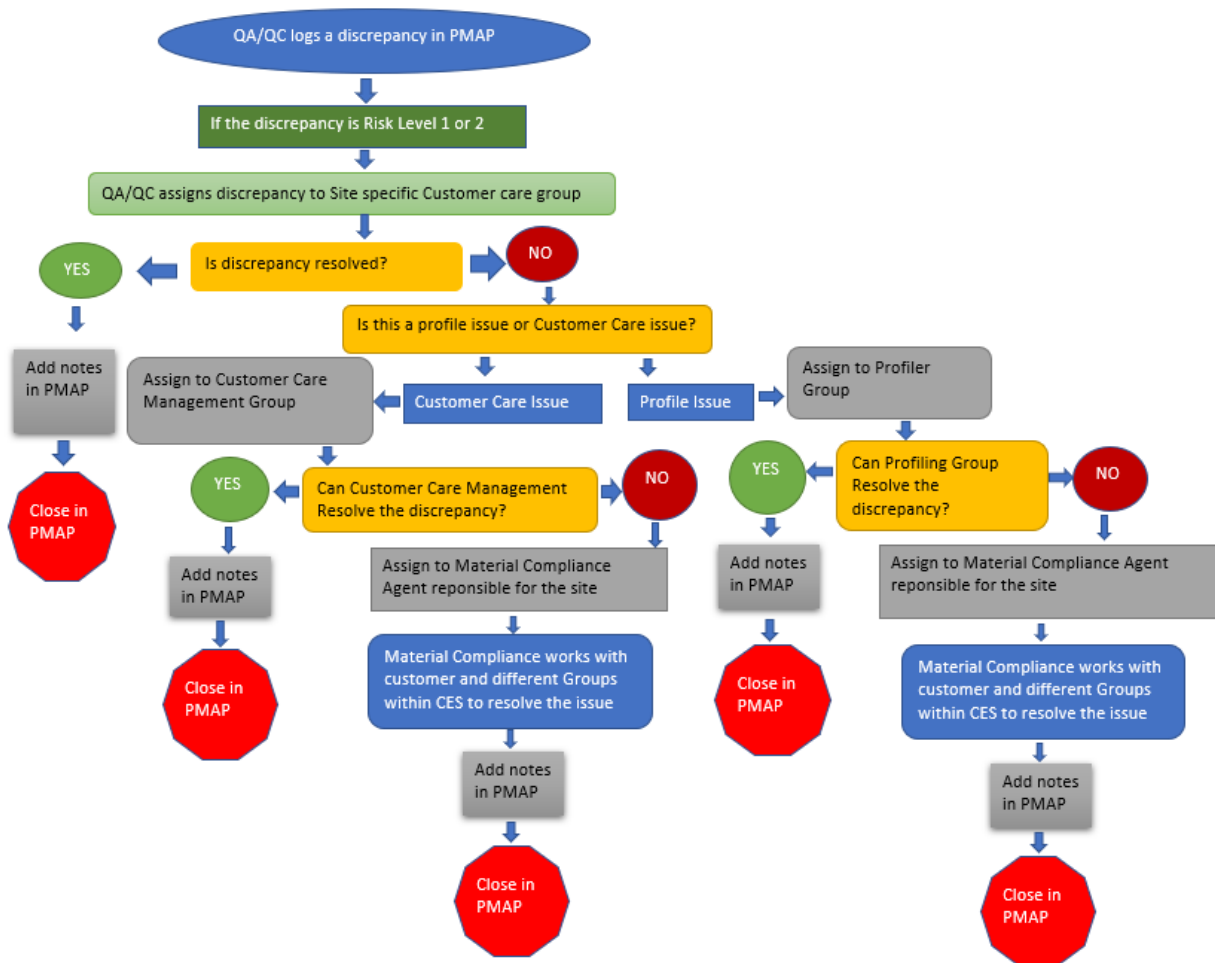


3. The user can take pictures of any discrepancy directly from the app itself by clicking the add pictures button. You must then click the checkmark at the top right corner to save the pictures.

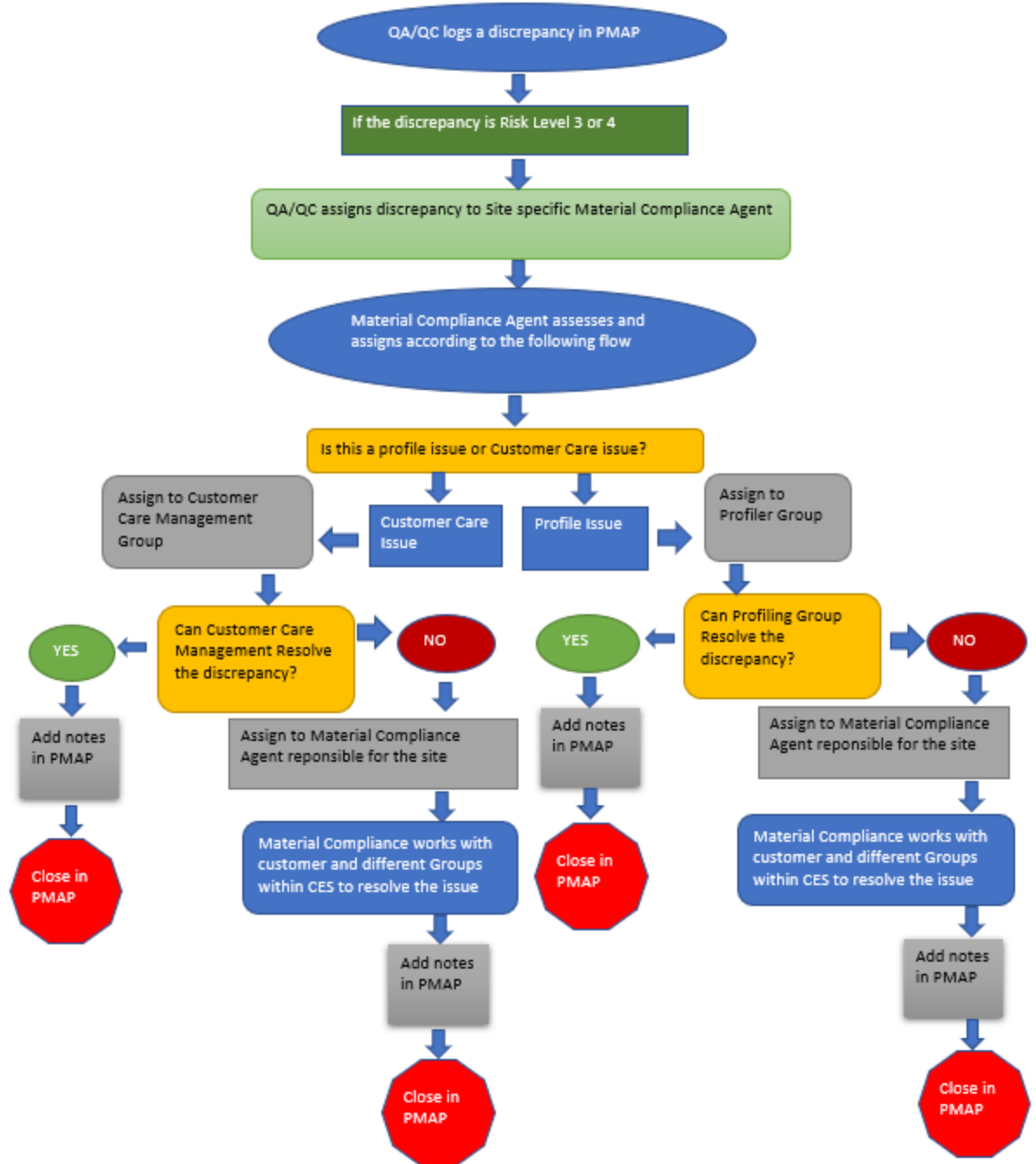


Once all of the information is added, the user must then click the checkmark at the top right corner to save the entire discrepancy

B. Process Flow if the discrepancy is a risk level 1 or 2



C. Process Flow if the discrepancy is a risk level 3 or 4:



D. Risk Matrix

Risk Level	Low RL1	Medium RL2	High RL3	Danger RL4
	Paperwork/Delivery	Packaging/ Load Issues	Material Issues	Environmental/Safety
Discrepancy Type	Improper/Missing Paperwork, Improper/Missing labeling, Unscheduled or Late Delivery, No Witness non DEA, Seal Broken/ missing non DEA, Multiple approvals on load	Load Spilled shifted Load/damaged, Liner not sealed, Unacceptable packaging/container/pallet height	Powder dispersion, Unacceptable Free/ Bulk Liquids, Unidentified Material, Delivery of unacceptable Waste, Delivery of unapproved waste, Unacceptable Monolith, DEA: Insufficient witness/ seal issues /No inventory review, LDI reaction/ Solids/Spill	Waste caused a Fire, Spilled/leaking load presenting immediate danger to personnel, RCRA Hazardous Waste Delivered, Opacity or other Permit related issue
Discrepancies Allowed	5 or less discrepancies resulting in corrective action measures per month	5 or less discrepancies resulting in corrective action measures per month	2 or less discrepancies resulting in corrective action measures per month	1 or less discrepancies resulting in corrective action measures per month
Owner	Customer Care	Material Compliance or Customer Care	Material Compliance Consult with Sales	Material Compliance Consult with Sales
Action	Notification to Customer Care and consultation with Client	Notification to Customer Care and consultation with Client	Potential Rejection Deliveries put on hold Consult with Client	Rejection Deliveries put on hold Consult with Client
Resolution	Customer acknowledgement documented	Customer acknowledgement documented	Customer Signoff or acknowledge Required Resolution	Customer Signoff or acknowledge Required Resolution, S.O.L.V.E. Investigation required

Executive Summary of Covanta RMW US Operations

Covanta has significant experience receiving and processing RMW. This Appendix provides a brief overview of the other Covanta RMW facilities. As noted elsewhere in this Application, there are differences between the design and operation of medical waste incinerators and the mass burn waterwall Municipal Waste Combustion (MWC) units such as those in operation at the facilities in which Covanta processes RMW. These differences are reflected in the regulations and the basis other states have used to evaluate and approve permit applications for the receipt and processing RMW in MWC units.

The MWC units at Covanta's facilities are Martin mass burn waterwall units or are of a similar design. Although not principally designed for the incineration of RMW, the MWC units in Alabama, Florida, and Oregon have been approved by the regulatory agencies for the co-firing of RMW with MSW based on MWC units being capable of achieving pathogen destruction with a negligible effect on air emissions compared to combusting municipal solid waste only.

Marion County, Oregon

Permitted by Oregon Department of Environmental Quality (Oregon DEQ)

At the Marion County Facility, Covanta's Title V Air quality operating permit allows the facility to receive and combust treated and untreated RMW at 10% of the total waste feed rate or the highest rate at which compliance with permit limits has been demonstrated through stack testing/CEMS (currently 20%), whichever is less. The allowable annual amount of RMW that may be processed is 18,000 tons. A total of 15,766 tons of RMW were processed in 2022 and a total of 17,500 is forecast to be processed in 2023.

At OAR-340-230-0020 of the Oregon Incinerator Regulations, the Oregon DEQ distinguishes between the regulatory provisions which apply to MWC units, including those that burn some medical waste, and hospital/medical/infectious waste incinerators. In accordance with OAR-340-230-0120, Solid and Infectious Waste Incinerators, the Oregon DEQ mandates that combustion gases for all solid and medical waste incinerators be maintained at 1,800° F for a residence time of at least one second. In addition, the temperature in the primary chamber of a multi-chamber incinerator (the predominant type of medical waste incinerator discussed during our meeting) must be maintained at or above 1,000° F, the minimum temperature the Oregon DEQ requires to achieve pathogen destruction.

Huntsville, Alabama

Permitted by the Alabama Department of Environmental Management (ADEM)

At the Huntsville Facility, Covanta's Title V air permit allows the facility to co-fire RMW with MSW and other approved profiled wastes. The Facility may accept RMW at any time (not only during emergencies) and without prior approval of ADEM. Medical waste is required to be unloaded from the transport vehicle to a conveyORIZED system that feeds the waste to the MWCs. No onsite storage of medical waste is permitted. Approximately 2,729 tons of RMW were processed at Huntsville in 2021 and 3,138 tons of RMW were processed in 2022. These amounts represented approximately 1.6 percent and 1.9 percent of the total amount of waste combusted in those years, respectively. The forecast quantity of RMW in 2023 is 5,141 tons.

Lake County Resource Recovery Facility, Okahumpka, FL
Permitted by Florida Department of Environmental Protection (FDEP)

At the Lake County Facility, FDEP approved a construction permit in 2018, which authorized the construction of a biomedical waste feed system and the co-firing of acceptable biomedical waste with MSW. The rate of biomedical waste co-firing in the Title V permit for the Facility is limited to no more than 10 percent by weight of the total amount of waste combusted by each of the two (2) MWC units. Compliance is determined on a calendar month basis. Approximately 4,152 tons of RMW were processed at Lake County in 2022, and 5,228 tons of RMW are forecast to be processed in 2023.

The FDEP's technical evaluation of the air permit application for the project (included as **Appendix U** in this Permit Application) concluded that the temperature within the combustion zone above the grate of greater than 2000° F ensures the organic content of the waste is vaporized and that pathological components are destroyed. It was noted that the design and operation of the MWC units at Lake County exceeded the minimum design requirement of 1,800° F for a residence time of at least one second in the secondary (or last) combustion chamber as specified at Rule 62-296.401(4)c(1), Florida Administrative Code for Biomedical Waste Incinerators. The rule prohibits the primary chamber of a multi-chamber incinerator from being counted in calculating the residence time of the combustion zone design.

Covanta successfully manages RMW at its MWC facilities in Oregon, Alabama, and Florida in accordance with state and federal regulations and permits and is gradually increasing the RMW processing rate at these facilities. Covanta Tulsa welcomes the opportunity to provide this service to the State of Oklahoma.



**ENVIRONMENTAL WORKS, INC., INC.
EMERGENCY RESPONSE AGREEMENT**

THIS AGREEMENT is made on this 25 of January 2023, by and between ENVIRONMENTAL WORKS, INC., INC., 1455 E Chestnut Expressway, Springfield, MO, 65802, hereinafter referred to as “EWI” and Covanta Tulsa hereinafter referred to as “Customer”.

WHEREAS, EWI is in the business of providing emergency environmental services (“Services”); and

WHEREAS, Customer desires to retain EWI to provide such Services,

NOW, THEREFORE, EWI and Customer agree as follows:

Agreement: EWI agrees to provide Services to Customer at requested locations as follows:

2122 S Yukon Ave, Tulsa OK 74107

Subject to the terms and conditions in this Agreement and pursuant to a work authorization agreement for specific Services (“Work Authorization Agreement”).

Services: EWI with its own employees, agents and subcontractors (“EWI Personnel”), shall provide emergency or non-emergency response, clean up, and/or remediation services on a 24 hours a day, 365 days a year basis. EWI Personnel shall respond with trained personnel and appropriate equipment adequate to initiate a reasonable response effort. This may involve, without limitation, recovery, removal, disposal, or containment of a release of Hazardous Material, as requested. “Hazardous Material” means any material or substance that is prohibited or regulated by any statute, law, rule, regulation, or ordinance, or that is designated by any governmental authority to be radioactive, toxic, hazardous, or that is otherwise a danger to health, reproduction, or the environment, including, without limitation, petroleum, petroleum products, PCBs, dioxins, asbestos, asbestos-containing material, and urea formaldehyde.

Response Protocol: EWI’s response managers will be in route to the site within one hour, if reasonable, following notification by Customer or Customer’s representative, if reasonably practical. Failure by EWI Personnel to meet the stated time requirements herein shall be excused if caused by circumstances beyond their control, provided that EWI Personnel exercise their reasonably best efforts to achieve a timely and prompt response. Circumstances that shall be excused include, but are not limited to, inclement weather, natural disaster, unpredictable or unforeseen events, etc.

Regulatory Requirements: EWI Personnel will comply with Environmental Laws in performing the Services. “Environmental Laws” mean federal, state, or local laws, statutes, regulations, rules, or ordinances, enacted, promulgated, or issued by any governmental authority relating to the use, handling, transportation, production, disposal, discharge, release, emission, sale, or storage of, or the exposure of any person to, Hazardous Materials including, without limitation, the Federal Solid Waste Disposal Act, The Toxic Substance Control Act, the Comprehensive Environmental Response, Compensation and Liability Act, the Resource Conservation and Recovery Act, the Clean Water Act, the Clean Air Act, and the Occupational Safety and Health Act, all as amended from time to time.

Permits, Licenses, and Certifications: EWI Personnel will have in effect, during this contract, all necessary permits, licenses, and certifications required of EWI to perform the Services. If the Customer is required to obtain permits, licenses, certifications, or approvals required for performance of the Services, Customer, with EWI’s assistance, agrees to obtain those permits, licenses, certifications, or approvals. EWI Personnel shall not be required to perform any Services if all permits, licenses, certifications, or approvals required of Customer have not been properly obtained.

Site Access: Customer agrees to provide EWI Personnel access to its property to perform Services. In the event Customer does not own the property where Services are to be performed, Customer, with EWI’s assistance, agrees to obtain such access as required to perform Services. EWI Personnel shall not be required to perform any Services on property where access has not been properly obtained.

Length of Agreement: This Agreement shall take effect on the date hereof and shall continue for a period of one (1) year, unless earlier terminated by EWI or Customer as herein provided. This Agreement shall automatically renew for additional consecutive one-year periods, unless either party shall give written notice of non-renewal to the other party not later than thirty (30) days prior to the expiration of any one-year period.

Termination: EWI or Customer may mutually agree to terminate this Agreement at any time, and in such case upon any terms as are mutually agreeable, provided that such agreement is made pursuant to a written amendment to this Agreement. Termination of this Agreement can be made by either party prior to the expiration of the initial term or any renewal term upon the other party’s default.

Payment Terms: As compensation for Services provided by EWI, the Customer shall pay EWI’s current charges, which rates are attached hereto. Rates may change from time to time during the initial term of this Agreement or during any renewal term; provided that, Customer has been notified of the changes at least 30 days in advance and Customer does not, during such 30-day period, terminate this Agreement. EWI shall invoice Customer for all amounts due hereunder, said invoice to be due under standard terms, net 30 days. While performing Services pursuant to a Work Authorization Agreement, EWI shall submit invoices and any supporting documentation reasonably requested by Customer to Customer on a timely basis. All uncontested invoices past due can and will be subject to an automatic 1.5% finance charge on the unpaid balance, per month.

Agent's Authority: Each individual executing or attesting this Agreement on behalf of Customer hereby covenants, warrants, and represents: (i) that he or she is duly authorized to execute or attest and deliver this Agreement on behalf of Customer and (ii) that this Agreement is binding upon such Customer.

Service Requests: Customer shall designate individual(s) who shall be authorized to request Services and coordinate performance with EWI. EWI will provide Customer with a list of coordinator and communication links. HMI and Customer agree to provide written updated name and contact information to the other party in the event a change to either or both is made.

1. Waiver: No waiver of any breach of this Agreement shall be held to be a waiver of any other subsequent breach. All remedies afforded in this Agreement shall be taken and construed as cumulative, that is, in addition to every other remedy provided therein or by law. The failure of a party to enforce at any time any of the provisions of this Agreement or to require at any time performance by the other party of any of the provisions therefore, shall in no way be construed to be a waiver of such provisions nor in any way affect the validity of this Agreement or any part thereof or the right of such party to thereafter enforce each and every such provision.
2. Severability: In the event that any one or more provisions contained in this Agreement shall for any reason be held to be unenforceable in any respect by a court of competent jurisdiction, such holding shall not affect any other provisions of this Agreement, and the Agreement shall then be construed as if such unenforceable provisions are not a part hereof.
14. Cooperation and Compliance: EWI Personnel shall comply with all reasonable requests and directions by Customer or Customer's representative. Customer and EWI shall cooperate to determine appropriate responses to a given incident, including use of additional resources and/or equipment on site. Customer will have final authority for all decisions affecting the mitigation of a spill or release incident. EWI reserves the right to terminate its response at any time in the event it believes the situation to be too dangerous or in the event Customer requires Services, which in the good faith belief of EWI, would be in violation of any law, rule, regulation, statute, or ordinance.
15. Communication: EWI shall remain in contact with the EWI Personnel onsite until the Service, performed pursuant to a Work Authorization Agreement, is terminated by the Customer or Customer's representative, or a schedule for a phased response acceptable to Customer is established. Customer reserves the right to terminate any Service at any time. In the event that Customer or Customer's representative terminates the Service for reasons other than the fault of EWI Personnel, Customer shall be responsible for all charges, expenses and personnel time incurred by EWI Personnel.
16. Site Safety: In accordance with the Hazard Communication Standard adopted by OSHA, Customer shall designate, within its facility, a place where all Safety Data Sheets (SDS), also known as Material Safety Data Sheets (MSDS), shall be kept and filed. In addition, Customer shall designate the individual(s) responsible for providing access to SDS (or

MSDS) material. Customer shall provide this information to EWI Personnel at all times Services are being performed. Customer shall also provide a facility drawing and/or site contingency plan at the same location, showing the location and quantities of stored Hazardous Material.

17. Inspection: An annual inspection of Customer's facility and grounds, by an EWI representative, will be conducted to correspond with Customer's requirements for state and federal reporting. The Customer reserves the right to refuse these inspections and EWI agrees to call for prior approval. If an inspection is requested, the fee will be pre-negotiated. No report shall be made available to any regulatory agency unless required by subpoena and only following notification to Customer.
18. Insurance: EWI shall maintain for the life of this Agreement, at its own expense, the following insurance:

General Liability

- \$4,000,000.00 general aggregate
- \$2,000,000.00 each occurrence

A. Automobile Liability

- \$1,000,000.00 combined single limit

B. Excess Liability/Umbrella Form

- \$10,000,000.00 each occurrence
- \$10,000,000.00 aggregate

C. Workers Compensation and Employers' Liability

- \$1,000,000.00 each accident

D. Professional Liability

- \$2,000,000.00 per loss
- \$4,000,000.00 aggregate

E. Contractor Pollution Liability

- \$2,000,000.00 per loss
- \$4,000,000.00 aggregate

(Additional limits of coverage are available at an additional fee.)

19. Independent Services: EWI shall be fully independent in performing the Services and shall not act as an agent or an employee of Customer. EWI shall be solely responsible for its agents, employees and its subcontractor's compensation, benefits, contributions, insurance and taxes, if any.
20. Governing Law: The validity, interpretation, performance and enforcement of this Agreement shall be governed by and construed in accordance with the laws of the State of Missouri, without regard to conflicts of laws principles thereof.

21. Entire Agreement: This Agreement and the attachments hereto, constitute(s) the entire agreement between the parties with respect to its subject matter and constitute and supersede all prior agreements, representations and understandings of the parties, written or oral. Any changes to this Agreement requested by EWI or Customer may only be effected if mutually agreed upon in writing by duly authorized representatives or the parties hereto. No statements, promises, or inducements, made by any party or agent outside of this agreement, either express or implied, shall be valid or binding. This Agreement shall not be modified or amended or any rights of a part to it waived except by such a writing signed by all Parties
22. Indemnification: EWI agrees to indemnify, defend, save and hold harmless Customer and each of its agents, officers, and employees, from and against any and all claims, liabilities, demands, penalties, causes of action, costs, expenses, judgments and suits arising out, related to or resulting from the following: (i) as a result of the action, negligence, or omission by EWI or its employees; (ii) personal injury, death, or damages to property; (iii) any violation of any applicable federal, state, or local law, ordinance, rule or regulations, including rules and regulations governing this Agreement; (iv) claims and liens for labor performed or materials used or furnished for performance of the work; (v) breach of this contract by EWI; or (vi) any reasonable attorney fees, costs and expenses incurred by Customer in enforcing this provision.
23. Confidentiality: EWI agrees that all information received and all documents and communications generated during the course of performing Services under this Agreement shall be deemed confidential information. "Confidential Information" means any nonpublic information disclosed to EWI, whether orally, in writing, through means of communication, by or on behalf of the Customer or Customer's representative. EWI shall not release any information, document, or report obtained or prepared in connection with performance of Services to anyone other than EWI and Customer, except as authorized in writing by EWI or Customer, or in response to a subpoena or court order, and then, only after seven (7) days prior written notice is given to Customer. EWI will promptly notify Customer of any request or demand for any documents relating to the performance of Services under this Agreement.

No language contained in this Agreement shall prevent the Customer or EWI from disclosing or using knowledge or information which (a) was known prior to the receiving party before disclosure by the other party or (b) was part of the public domain or becomes part of the public domain through no act or omission of the receiving party.

24. Notices: Any notice, consent, approval or demand desired or required to be given hereunder shall be in writing and deemed given when personally delivered, sent by facsimile transmission with confirmation of receipt, or deposited in the U.S. Mail, postage prepaid, sent certified or registered, and addressed as respectively set forth below or to such other address as any party shall have previously designated by like notice. If sent by U.S. Mail, the notice, consent, approval or demand shall be addressed as follows:

If to Customer – the address following Customer's signature to this Agreement;

If to EWI – 1455 E Chestnut Expressway, Springfield, MO 65802;

25. Suit or Action: If any suit or action is instituted to interpret or enforce any term of this Agreement, the party not prevailing in such action or suit shall pay to the prevailing party such sums as the court or arbitrators may adjudge reasonable as attorney's fees in such action, in addition to all other sums provided by law.
26. Successors and Assigns: The covenants and agreements contained in this Agreement shall apply to, inure to the benefit of, and be binding upon the parties hereto and upon their respective successors and assigns.
27. Counterparts: This Agreement may be executed in counterparts, each of which shall be deemed to be an original, but all of which, taken together, shall constitute one and the same agreement.

WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first above written.

Customer
By: Tony Blake
Typed Name: Tony Blake
Title: Procurement Specialist

Environmental Works, Inc.,

By: _____

Address: 2122 S Yukon

Tulsa, OK 74107

Phone #: 918.699.0011

Fax #: _____



**TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION**

APPLICANT

Covanta Lake II, Inc.
3830 Rogers Industrial Park Road
Okahumpka, Florida 34762
Lake County Resource Recovery Facility
Facility ID No. 0690046

PROJECT

Co-firing of Biomedical Waste with Municipal Solid Waste (MSW) in Municipal Waste Combustor
(MWC) Unit Nos. 1 & 2 (Project)

Draft Permit No. 0690046-019-AC/PSD-FL-113K
Application for Minor Source Air Construction (AC) Permit

COUNTY

Lake County, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, MS#5505
Tallahassee, Florida 32399-2400

March 6, 2018

1. GENERAL PROJECT INFORMATION

1.1. Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Chapters 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations in Rule 62-204.800, F.A.C.

1.2. Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

1.3. Facility Description and Location

Covanta Lake II, Inc. operates the existing Lake County Resource Recovery Facility (LCRRF), which is categorized under Standard Industrial Classification Code No. 4953. The facility is located in Lake County at 3830 Rogers Industrial Park Road, in Okahumpka, Florida. The UTM coordinates of the existing facility are Zone 17; 413.12 km East; and, 3179.21 km North; Latitude: 28° 44' 22" North; and, Longitude: 81° 53' 23" West. **Figure 1** shows the location of Lake County while **Figure 2** shows the location of the LCRRF. **Figure 3** provides a satellite view of the LCRRF.

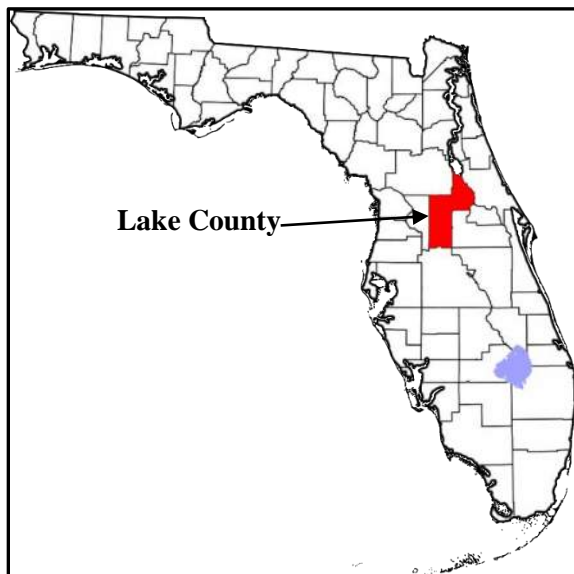


Figure 1. Location of Lake County.

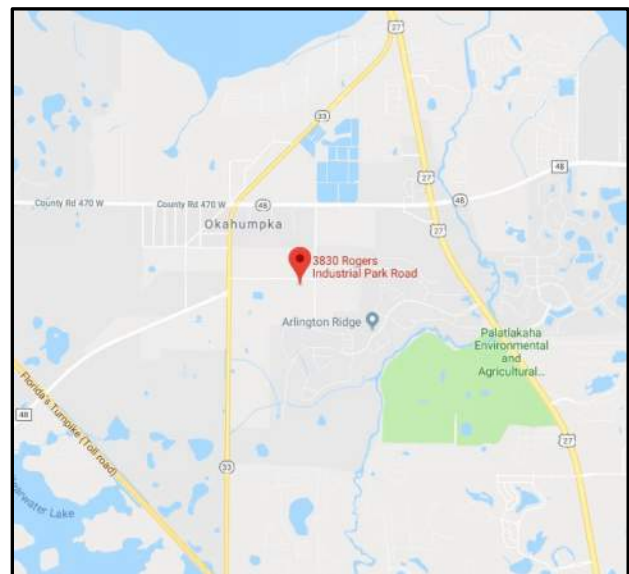


Figure 2. Location of the LCRRF.



Figure 3. Satellite View of the LCRRF.

The LCRRF consists of two identical mass-burn municipal waste combustor (MWC) units (Units 1 and 2) and associated support equipment. Each MWC unit has a nominal capacity of 288 tons of municipal solid waste (MSW) per day (TPD). Each furnace is equipped with an aqueous ammonia (NH_3) injection system based on the principle of selective non-catalytic reduction (SNCR) for nitrogen oxides (NO_x) control. After heat recovery for electricity production, the exhaust gas from each furnace is further cooled by injection of water and slaked lime slurry into a spray dryer absorber (SDA) system where acid gases, such as sulfur dioxide (SO_2) and hydrogen chloride (HCl), react with lime and are converted to solid reaction products. An activated carbon injection (ACI) system after the scrubber is used to control emissions of mercury (Hg), dioxin/furans (D/F) and other hazardous air pollutants. Good combustion practices (GCP) are used to control the emissions of NO_x , carbon monoxide (CO) and volatile organic compounds (VOC). Fly ash, including reaction products from the SDA and ACI systems are removed in a fabric filter baghouse that control emissions of particulate matter (PM) including metals. The exhaust is conveyed via an induced-draft fan into a flue located within the facility stack.

Each MWC unit is equipped with certified continuous emissions monitoring systems (CEMS) for NO_x , SO_2 , and CO, and a continuous opacity monitoring system (COMS) to measure visible emissions (VE) from the stack. Annual stack testing is required for PM, HCl, Hg, D/F, cadmium (Cd) and lead (Pb).

Steam output from the two processing trains drives a 15.7-megawatt steam turbine-electric generator.

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The fly ash, stoker grate bottom ash and other wastes are combined and transported to a Class I landfill or ash monofill having an in-place bottom liner and leachate collection system. The facility also includes a storage silo for activated carbon and an emergency diesel-fueled fire pump engine, rated at 185 horsepower (HP). Also at the facility are miscellaneous insignificant emission units and/or activities.

A summary of the regulated existing emission units at the Lake County Resource Recovery Facility is given in **Table 1** below.

TABLE 1 - REGULATED EMISSION UNITS AT THE FACILITY.

E.U. ID No.	Brief Description
001	288 TPD (maximum) Municipal Solid Waste Combustor & Auxiliary Burners - Unit 1
002	288 TPD (maximum) Municipal Solid Waste Combustor & Auxiliary Burners - Unit 2
003	Activated Carbon Storage Silo
004	185-HP Emergency Diesel-Fueled Fire Pump Engine

1.4. Primary Regulatory Categories

1.4.1. Federal Regulations

Federal regulations adopted by reference are given in Rule 62-204.800, F.A.C. State regulations approved by EPA are given in 40 CFR 52, Subpart K – Florida; also known as the State Implementation Plan (SIP) for Florida. The following federal regulations apply to the facility and this project.

- The LCRRF is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality and Rule 62-210.200 (Definitions), F.A.C.
- This project (as discussed in **subsection 2.2**) does not trigger a PSD review and a requirement to conduct Best Available Control Technology (BACT) determinations pursuant to Department Rule 62-212.400, F.A.C. is not required.
- The LCRRF is a major source of hazardous air pollutants (HAP).
- The LCRRF does not have units regulated under Clean Air Act, Title IV, Acid Rain provisions.
- The LCRRF is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The LCRRF is subject to New Source Performance Standards (NSPS) under Section 111 of the Clean Air Act (CAA) and National Emissions Standards for Hazardous Air Pollutants (NESHAP) under Section 112 of the CAA which are incorporated by reference in Chapter 62-204.800, F.A.C.

1.4.2. State Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish air quality regulations as part of the Florida Administrative Code (F.A.C.), which includes the applicable chapters contained in **Table 2**:

TABLE 2 - APPLICABLE RULES FROM THE F.A.C.

Chapter	Description
<u>62-4</u>	Permits
<u>62-17</u>	Electrical Power Plant Siting
<u>62-204</u>	Air Pollution Control – General Provisions
<u>62-210</u>	Stationary Sources of Air Pollution – General Requirements
<u>62-212</u>	Stationary Sources – Preconstruction Review

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Chapter	Description
62-213	Operation Permits for Major Sources (Title V) of Air Pollution
62-296	Stationary Sources – Emission Standards
62-297	Stationary Sources – Emissions Monitoring

1.5. Project Description

1.5.1. Overview

Shortly after the LCRRF began commercial operation in 1990, the facility’s construction permits were modified to allow for the co-firing (less than 10%) of regulated medical waste along with MSW. In accordance with the modified permits, the LCRRF processed medical waste in MWC Unit No. 1 until 1999 and voluntarily ended the medical waste combustion program in 2000.

The facility now desires to re-initiate the medical waste co-firing program. Consequently, the applicant requested the ability to co-fire biomedical waste with MSW in MWC Unit Nos. 1 & 2 to less than 10% by weight (less than 28.8 TPD) of the total amount of MSW combusted by each individual MWC unit. To accomplish this, the minor source AC permit will authorize: the construction of a biomedical waste handling system; the co-firing of biomedical waste with MSW in MWC Unit Nos. 1 & 2; and, revisions to the waste fuel slate for each MWC. In addition, the permit will include specific conditions to provide reasonable assurance that permitted emission limits are being met and that the biomedical was is processed (received, handled, stored and combusted) safely.

1.5.2. Acceptable Biomedical Wastes

Biomedical waste is defined¹ as:

“Any solid or liquid waste which may present a threat of infection to humans, including nonliquid tissue, body parts, blood, blood products, and body fluids from humans and other primates; laboratory and veterinary wastes which contain human disease-causing agents; and discarded sharps. The following are also included:

- (a) Used, absorbent materials saturated with blood, blood products, body fluids, or excretions or secretions contaminated with visible blood; and absorbent materials saturated with blood or blood products that have dried.*
- (b) Non-absorbent, disposable devices that have been contaminated with blood, body fluids or, secretions or excretions visibly contaminated with blood, but have not been treated by an approved method”*

The regulatory definition cited above is intentionally broad in nature and captures a large universe of medical-field waste streams. However, the applicant recognizes that co-firing of certain biomedical waste streams is best accomplished using technologies not employed at the LCRRF. Accordingly, the LCRRF biomedical waste program will not accept the following subset of non-hazardous biomedical waste streams:

1. EPA hazardous pharmaceutical waste (Nicotine, Warfarin);
2. Human fetal tissue
3. Human remains (fetuses, products of conception and cadavers)
4. Large amounts of free-flowing liquids
5. Radioactive materials
6. Bulk Pathological waste
7. Bulk chemotherapeutic waste
8. Formaldehyde, Iodine or other preservative agents

¹ 64E-16.002(2), F.A.C. and 62-210.200(36), F.A.C.

1.5.3. Biomedical Waste Auditing Procedures

Proper management and handling of biomedical wastes is the responsibility of the medical facility that generates the waste. Once a material is placed into a red bag for disposal, it is difficult and unsafe for either the transporter or the disposal facility to verify the acceptability of the contents. Accordingly, the applicant has developed auditing procedures for the medical facility customers that they work with. These procedures are designed to assist generators with proper biomedical waste handling procedures and to minimize the potential for unacceptable material to be inadvertently delivered to the LCRRF. A copy of these procedures will be included as an appendix of the permit and will be federally enforceable.

1.5.4. Biomedical Waste Feed System

Chapter 64E-16.004(2)(a), F.A.C., requires that packages of biomedical waste remain sealed until treatment. This regulation, in combination with general worker safety concerns, precludes the use of the current crane grapple at the LCRRF as a means of introducing biomedical waste into the combustion units. Accordingly, the applicant intends to construct a single drop automated hopper feed system to transfer biomedical waste from delivery trucks directly to the waste feed chutes of MWC Units 1 and 2. **Figure 4** schematically depicts the proposed hopper feed system.

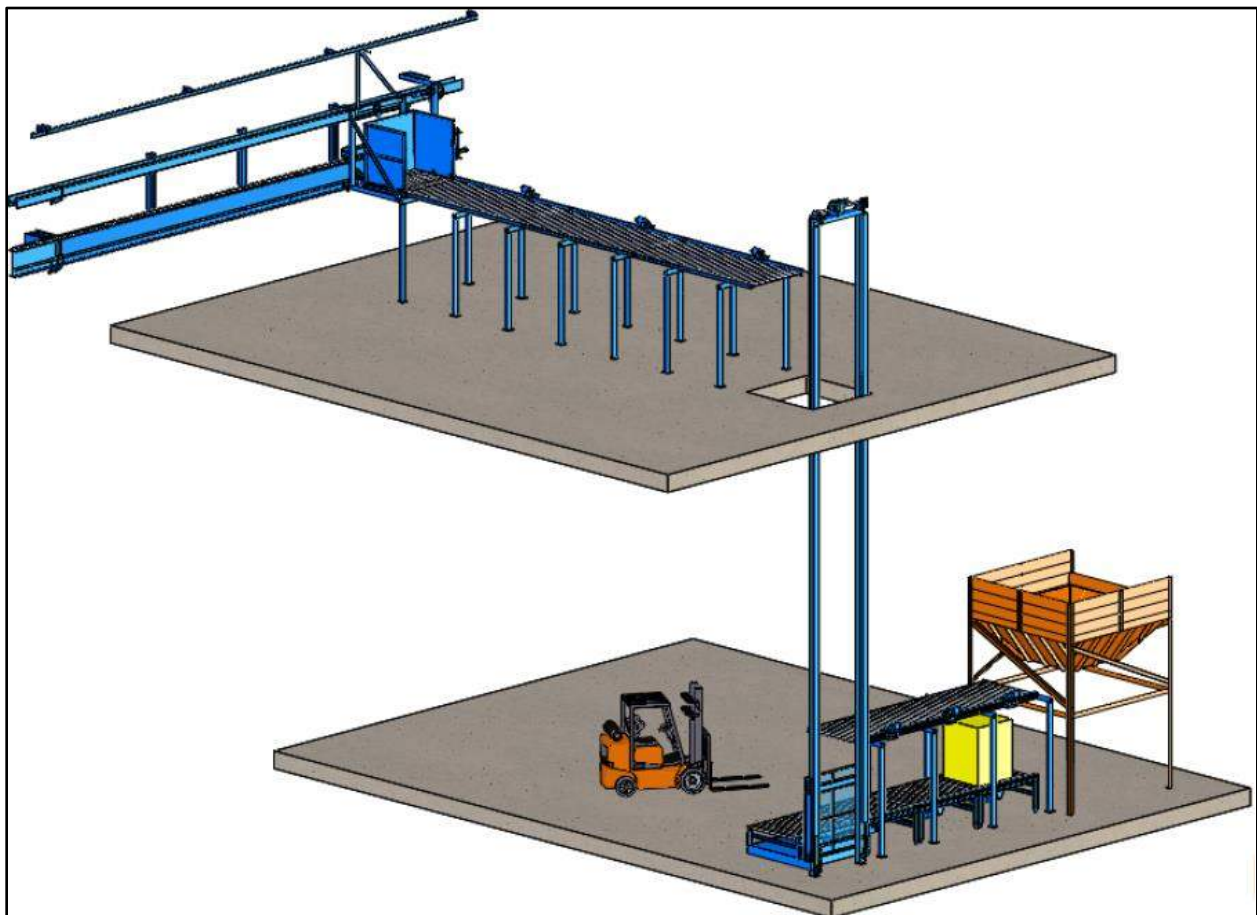


Figure 4. Schematic of Proposed Hopper Feed System.

Boxes of biomedical waste will be manually offloaded on the enclosed tipping floor onto the conveyor system depicted in **Figure 4**. The conveyor system will vertically lift the boxed waste to the charging floor elevation, where it will then be horizontally conveyed by an automated tipping bucket directly into the waste feed chute. Once in the feed chute, the boxes of biomedical waste will mix with MSW and feed by gravity onto the charging table that is integral to each MWC. From the charging table, the waste is

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hydraulically pushed into the combustion chamber described in **subsection 1.5.5** below.

As a backup system to the conveyor system, the applicant intends to utilize a similar automated tipping mechanism that will be hoisted by the existing cranes. **Figure 5** depicts the standard orange peel grapple that is used to transfer MSW from the refuse storage pit to the feed chute. At times when the new biomedical waste conveyor system is down for maintenance, or otherwise unavailable, the standard orange peel grapple will be disconnected from one of the two cranes and a tipping mechanism like that depicted in **Figure 6** will be used to transfer containerized biomedical waste from the tipping floor to the feed chute. As with the primary single drop automated hopper feed system, the backup crane operated hoist system will allow packages of biomedical waste to remain sealed until treatment.



Figure 5. Current grapple at the LCRRF.



Figure 6. Tipping Mechanism.

1.5.5. MWC Combustion Chamber Characteristics

The MWC units at the LCRRF utilize Martin GmbH® combustion technology. **Figure 7** depicts the major components of the Martin combustion system as described in detail below.

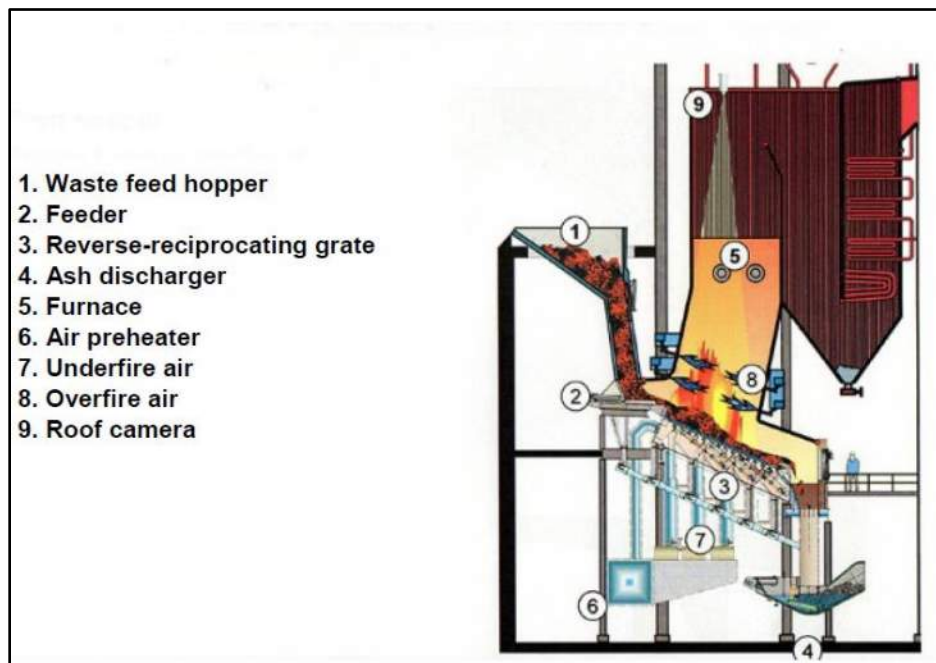


Figure 7. Martin Combustion System.

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The process begins when waste is charged to the feed chute depicted at (1) in **Figure 7**. The primary fuel, i.e., MSW, is loaded into the feed chute from the storage bunker via an orange peel grapple. Boxed biomedical waste will be introduced to the feed chute by way of the automated hopper feed system described in **subsection 1.5.4**. The feed chute not only serves as a mechanism for introducing waste into the combustion chamber, but also serves the purpose of providing an airlock to prevent unwanted ambient air into the combustion chamber, as required by Rule 62-296.401(4)(c)(2), F.A.C. From the feed chute, waste is metered into the combustion chamber by hydraulic ram feeders depicted at (2). The feeder system is automatically controlled by a combustion algorithm that monitors critical combustion parameters such as oxygen levels, temperatures, and steam production rate within the boiler. The feeder periodically meters waste onto the combustion grate depicted at (3). The combustion grate, manufactured by Martin GmbH®, is of reverse reciprocating design, which simultaneously agitates the waste for complete combustion while allowing combustion air (also referred to as underfire air as depicted at (7)) to flow up through the waste. Combustion air is also introduced above the grate in the form of overfire air depicted at (8). The combination of the underfire air and the overfire air is supplied at a rate sufficient to achieve complete combustion of the waste. The residence time of the waste on the combustion grate varies depending on multiple factors but is about 45 minutes. Once the waste is completely combusted it is reduced to combustion ash, which drops via gravity off the end of the grate into the ash discharger depicted at (4). Like the waste feed chute, the ash discharger serves the dual purpose of evacuating combustion residue (ash) from the furnace while providing an airlock to prevent introduction of unwanted ambient air.

Combustion of the waste within the furnace depicted at (5) is accomplished in a single chamber. Initially, heat is applied to the waste through the auxiliary burner. Once combustion of the waste is initiated, liberated heat from the previously fed waste will ignite newly charged waste. As discussed above, the combustion rate is tightly controlled by the amount of air being supplied through the underfire and overfire air systems. The temperature within the combustion zone just above the grate system is designed to be more than 2,000 °F. This temperature will assure that the organic content of the waste is vaporized and that pathological components are destroyed. This temperature also exceeds the minimum design requirement of 1,800 °F specified in Rule 62-296.401(4)(c)(1), F.A.C for Biological Waste Incinerators.

For a description of the Air Pollution Control (APC) equipment for both Units 1 and 2, used to removed contaminants from the flue gas stream generated in the combustion chamber see **subsections 1.3** and **3.1.1**.

1.5.6. Ash Collection

There are two types of ash created from the combustion process at the LCRRF: bottom ash and fly ash. Bottom ash is the ash that is collected from the end of the combustion grate and fly ash is the ash that is collected in the air pollution control system, i.e., baghouse..

Both bottom ash and fly ash are collected in the Martin® ash discharger where they are quenched with water. This combined ash is then periodically expelled from the discharger and conveyed to the Ash Storage Building where it is loaded onto trucks for disposal at a permitted Subtitle D landfill². The combined ash exiting the Ash Storage Building is periodically tested using USEPA sampling protocols to verify that the waste does not exhibit the toxicity characteristic defined at 40 CFR 261.

1.6. Application Processing Schedule

- Application for Air Construction Permit received on December 8, 2017 (complete).
- Draft permit package issued **March 6, 2018**.

² Metal recovery equipment in the Ash Storage Building recovers both ferrous metal and non-ferrous metal from the ash before it is transported to the landfill.

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{Documents specifically related to this project are posted and publicly available on the Department's world wide website at the following link [Application Documents](#) by clicking the "PUBLIC OCULUS LOGIN" button and by entering the project number shown above into the "Application Number" field in Oculus.}

1.7. Relevant Documents

- Permit No. 0690046-018-AV, Current Title V Air Operation Permit (renewal).
- Permit No. 0690046-015-AC/PSD-L-113J, Biosolids Combustion in Municipal Waste Combustor Unit Nos. 1 & 2 and Waste (Fuel Slate) Revisions.
- Permit No. 0690046-014-AC/PSD-FL-113I, Combustion of Higher Rates of Non-MSW Materials; Waste (Fuel Slate) Revisions & Miscellaneous Revision.
- Permit No. 0690046-003-AC/PSD-FL-113E, Waste (Fuel Slate) Revisions.

2. RULE REQUIREMENTS

2.1. General PSD Applicability

For areas currently in attainment with the AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: CO; NO_x; SO₂; PM; PM with a mean particle diameter of 10 microns or less (PM₁₀); PM_{2.5}; volatile organic compounds (VOC); lead (Pb); fluorides (F); sulfuric acid mist (SAM); hydrogen sulfide (H₂S); total reduced sulfur (TRS), including H₂S; reduced sulfur compounds, including H₂S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO₂ and HCl; municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and Hg. In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major

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modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 micro grams per cubic meter ($\mu\text{g}/\text{m}^3$), 24-hour average.

If the potential emission equals or exceeds the defined significant emissions rate (SER) of a PSD pollutant, the project is considered “significant” for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several “significant” regulated pollutants. **Table 3** lists the PSD SERs applicable to the facility.

TABLE 3 - LIST OF SIGNIFICANT EMISSION RATES BY PSD-(AIR) POLLUTANT RELEVANT TO THE FACILITY.

Pollutant	SER (tons/year)	Pollutant	SER (tons/year) ⁴
CO	100	NO _x	40
PM/PM ₁₀ /PM _{2.5}	25/15/10	Ozone (VOC) ²	40
PM _{2.5} (NO _x)	40	PM _{2.5} (SO ₂)	40
Ozone (NO _x) ²	40	SAM	7
SO ₂	40	Pb	0.6
Hg	0.1	Fluoride (F)	3
MWC metals as PM	15	MWC acid gases as SO ₂ & HCl	40
MWC organics as dioxin/furan	3.5 x 10 ⁻⁶	GHGs (total mass basis)	0 ³

1. Excluding pollutants specific to the Pulp and Paper industry and MSW landfills.
 2. Ozone (O₃) is regulated by its precursors (VOC and NO_x). PSD for PM_{2.5} can be triggered by its precursors (NO_x and SO₂).
 3. Pursuant to 40 CFR 52.21(b)(23)(ii), pollutants with no SER listed at 40 CFR 52.21(b)(23)(i) have a SER of zero tons/year.
 4. SER also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 km of a Class I area and have an impact on such area equal to or greater than 1 $\mu\text{g}/\text{m}^3$, 24-hour average.

2.2. PSD Applicability for the Proposed Project

The LCRRF is an existing major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD). As the applicant indicated in the application on page 4-3 the proposed project, specifically the co-firing of biomedical waste with MSW in the MWC Unit Nos. 1 & 2, is a ‘modification’ to emission units at an existing major stationary source -

“... The co-firing of biomedical waste in the MSW combustors at the Lake County facility will qualify as a ‘modification’ because it meets the criteria of a ‘change in the method of operation’ that may “increase the amount of an air pollutant.” ...”

Since this is a ‘modification’ to an existing major stationary source, a PSD Applicability Analysis is required to determine whether or not PSD is triggered. The “Baseline Actual-to-Projected Actual Applicability Test for Modifications at Existing Emissions Units” from Rule 62-212.400(2)(a)1., F.A.C. is required to be used. Basically, baseline actual emissions (BAEs) are compared to future emissions or referred to as projected actual emissions (PAEs). An increase in emissions of a PSD pollutants that equals or exceeds its SER results in PSD being triggered.

Table 4 summarizes the Applicant’s PSD applicability analysis for the project.

TABLE 4- SUMMARY OF THE APPLICANT’S PSD APPLICABILITY FOR THE PROJECT.¹

PSD-(Air) Pollutant	Baseline Actual Emissions, TPY (tons/year)	Projected Actual Emissions, TPY	Increase (+)/Decrease (-) in Emissions, TPY	PSD SER, TPY	PSD SER exceeded?
PM	1.22	1.22	0	25	No

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PSD-(Air) Pollutant	Baseline Actual Emissions, TPY (tons/year)	Projected Actual Emissions, TPY	Increase (+)/Decrease (-) in Emissions, TPY	PSD SER, TPY	PSD SER exceeded?
PM ₁₀	1.22	1.22	0	15	No
PM _{2.5}	1.22	1.22	0	10	No
Pb	0.007	0.007	0	0.60	No
Hg	ND ²	ND		0.1	No
F ³	---	---	---	---	N/A ⁴
NOx	495.31	495.31	0	40	No
CO	16.87	16.87	0	100	No
VOC	1.69	1.69	0	40	No
SO ₂	5.67	5.67	0	40	No
SAM ⁵	---	---	---	---	N/A ⁴
MWC acid gases [SO ₂ + HCl]	22.77	22.77	0	40	No
MWC organics [dioxins/furans]	5.0E-05	5.0E-05	0	3.5E-06	No
MWC metals	1.22	1.22	0	15	
Total GHGs (CO ₂ e)	-	-	-	75,000 ⁶	No

1. The values are for the two MWC units combined as those are the emissions units involved with the modification, i.e., the co-firing of biomedical waste with MSW in the MWC Unit Nos. 1 & 2.
2. ND = non-detect.
3. The LCRRF does not have a Fluoride emission limit.
4. N/A = Not applicable.
5. The LCRRF does not have a SAM emission limit. Also, since SO₂ is well below its SER, it is reasonable to assume there is a minimal increase in SAM emissions.
6. According to guidance³ issued by the EPA in July 2014, a source cannot become subject to PSD review solely based on GHG emissions. a source that triggers PSD review for a traditional PSD pollutant (listed above) would also trigger a PSD review for greenhouse gases (GHGs) if the source would emit or have the potential to emit 75,000 tons per year of GHGs on a carbon dioxide-equivalent basis. Under this framework, the project does not trigger a PSD review for a traditional PSD pollutant, therefore a PSD review is not required for GHG emissions.

As shown in **Table 4**, the project emissions will not equal or exceed the SERs for PSD applicability. Based on what the applicant has provided and based on the Department’s review, it is not expected that there will be a SER increases for any PSD pollutant because of this project. The project therefore is not subject to PSD preconstruction review.

3. DEPARTMENT REVIEW

3.1. Background

3.1.1. Pollution Control

The LCRRF was originally permitted in 1986 under Permit No. AC35-115379/PSD-FL-113 and began commercial operation on August 22, 1990. A typical mass burn, waste-to-energy facility process

³ U.S. Supreme Court opinion dated June 23, 2014. [Link to Supreme Court Opinion](#) EPA guidance dated July 24, 2014. [Link to EPA Guidance](#)

overview is posted and available on Covanta’s website.⁴ MWC Unit Nos. 1 & 2 are identical mass-burn municipal solid waste combustors. Air pollutant emissions are well controlled at the LCRRF. Air Pollutant Control (APC) equipment and practices on each unit include:

- A SNCR system for the control of NO_x emissions;
- GCP to minimize NO_x, CO and VOC emissions;
- A SDA system for the control of acid gas emissions (i.e., SO₂, HCl, hydrogen fluorides (HF), SAM);
- An ACI system for the control of Hg, D/F and other hazardous air pollutant emissions; and,
- A baghouse filter system for the control of PM (including metals) and Hg emissions.

As already indicated, air pollutant emissions of SO₂, NO_x and CO from each unit are monitored by CEMS, while stack testing is performed for: PM, Cd, Hg, Pb, HCl and D/F.

3.1.2. Biomedical Waste Incineration

“Biomedical_waste” is defined in the DEP’s air pollution rules in Chapter 62-210.200, F.A.C ([Link to 62-210.200](#)) and in the Department of Health’s (DOH’s) Biomedical Waste Program rule, specifically in Chapter 64E-16, F.A.C ([Link to 64E-16](#)). In the U.S. EPA federal regulations covering air pollutant emissions from MWCs (the Emission Guidelines 40 CFR 60, Subpart Cb for ‘existing’ MWCs, [Link to Subpart Cb](#)), MSW does not include medical waste. It is widely known that medical waste is not part of the MSW stream. MSW’s typical composition is shown by the following pie chart from U.S. EPA given in **Figure 8**.

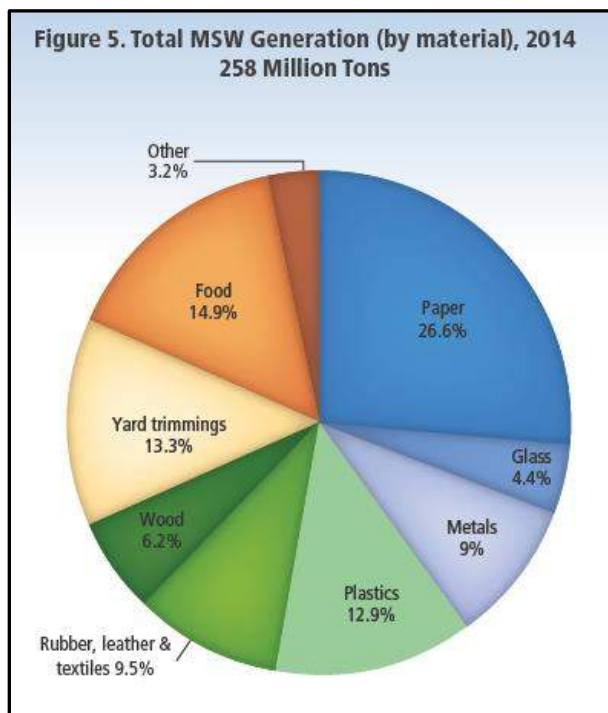


Figure 8. Typical Composition of MSW.

Therefore, EPA does not consider “biomedical waste” or “medical waste” to be included in the MSW definition, in other words as part of the typical MSW going to an MWC. Although biomedical waste is not considered to be part of the typical MSW, the federal regulations of 40 CFR 60, Subparts Cb/Eb do

⁴ Covanta. World Wide Web Site - Diagram of the energy-from waste process: <http://www.covanta.com/en/services/technologies/energy-from-waste.aspx>. Accessed on 08/25/2014.

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not prohibit it from being combusted in an MWC.⁵ Specifically, a MWC that meets the definition of a co-fired combustor is exempt from federal Hospital/Medical/Infectious Waste Incinerators (HMIWI) rules. The definition (defined in §60.51c) of a co-fired combustor is:

Co-fired combustor means a unit combusting hospital waste and/or medical/infectious waste with other fuels or wastes (e.g., coal, municipal solid waste) and subject to an enforceable requirement limiting the unit to combusting a fuel feed stream, 10 percent or less of the weight of which is comprised, in aggregate, of hospital waste and medical/infectious waste as measured on a calendar quarter basis. For purposes of this definition, pathological waste, chemotherapeutic waste, and low-level radioactive waste are considered “other” wastes when calculating the percentage of hospital waste and medical/infectious waste combusted.

In general, a co-fired combustor is not subject to a HMIWI rule if the owner or operator of the co-fired combustor:

- (1) Notifies the Administrator of an exemption claim;
- (2) Provides an estimate of the relative weight of hospital waste, medical/infectious waste, and other fuels and/or wastes to be combusted; and
- (3) Keeps records on a calendar quarter basis of the weight of hospital waste and medical/infectious waste combusted, and the weight of all other fuels and wastes combusted at the co-fired combustor.

If a MWC unit does not meet the definition of a co-fired combustor it would become subject to one of the HMIWI rules:

- Subpart Ce - Emission Guidelines and Compliance Times for Municipal Waste Combustors That Are Constructed on or Before December 19, 1995; or
- Subpart Ec - Standards of Performance for Hospital/Medical/Infectious Waste Incinerators for Which Construction Is Commenced After June 20, 1996.

3.1.3. General - Sources of Biomedical Waste

An estimated 3.4 million tons of medical waste are generated annually in the United States from hospitals, veterinary facilities, pharmaceutical companies, medical research facilities, nursing homes, and other facilities. These wastes include both infectious (“red bag”) medical wastes as well as non-infectious, general housekeeping wastes.⁶

Medical waste also includes wastes generated at physicians’ offices, dental practices and blood banks. Generally, medical waste is healthcare waste that that may be contaminated by blood, body fluids or other potentially infectious materials and is often referred to as regulated medical waste.⁷

3.1.4. General - Biomedical Waste Disposal in Florida

According to the U.S. EPA, more than 90 percent of potentially infectious medical waste was incinerated before 1997. Potential alternatives to incineration of medical waste include the following:

- Thermal treatment, such as microwave technologies;
- Steam sterilization, such as autoclaving;

⁵ U.S. EPA Federal Register, Volume 60, No. 243, page 65392, dated December 19, 1995. Preamble to amendments for 40 CFR 60 Subparts Cb/Eb. Municipal solid waste definition discussion. Accessed in 01/2012.

⁶ U.S. EPA’s AP 42, Fifth Edition, Volume I, Chapter 2: Solid Waste Disposal. Final Section & Background Document for Medical Waste Incineration. U.S. EPA World Wide Web Site:

<https://www3.epa.gov/ttn/chief/ap42/ch02/final/c02s03.pdf> &

<https://www3.epa.gov/ttn/chief/ap42/ch02/bgdocs/b02s03.pdf>. Accessed in 01/11/2017.

⁷ U.S. EPA’s Medical Waste web page. U.S. EPA World Wide Web Site: <https://www.epa.gov/rcra/medical-waste>. Accessed in 01/11/2017.

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- Electro pyrolysis; and,
- Chemical mechanical systems, among others.⁸

The DOH lists 15 commercial biomedical waste treatment facilities in Florida. Thirteen (13) of the 15 facilities are autoclaves, one (1) is an alternative (thermal friction) and one (1) is an incinerator. None of the ten operating MWC facilities in Florida are currently permitted to accept and combust segregated loads of biomedical waste.

3.1.5. General - Medical Waste Incineration

Three main types of incinerators are used: controlled air, excess air, and rotary kiln. The primary purposes for incinerators are to: 1) reduce the hazard associated with the waste; and 2) reduce the volume and mass of the waste. These objectives are accomplished by exposing the waste to high temperatures over a sufficiently long period of time to destroy threatening organisms and burn the combustible portion of the waste.⁹

3.1.6. Biomedical Waste Heat Content Value

Biomedical waste has a slightly higher heating value than MSW. For information purposes, **Table 5** below compares the heat content value of biomedical waste to other materials.

TABLE 5- HEAT CONTENT VALUE OF BIOMEDICAL WASTE COMPARED TO OTHER SOLID WASTES/FUELS.

Biomedical Waste	MSW)	Distillate oil	Tires	Coal (bituminous)
8,500 Btu/lb ¹⁰	5,000 Btu/lb	19,910 Btu/lb	15,800 Btu/lb	12,500 Btu/lb

3.2. **Air Pollutant Emissions while Co-firing of Biomedical Waste**

The applicant provided stack test results from a similar MWC plant (two units, each at 288 TPD) in the U.S. while co-firing biomedical waste: the Covanta-Marion plant located in Brooks, Marion County, Oregon. The stack testing on Unit 1 were performed at the plant in August 2017. The quantity of biomedical waste co-fired during the stack testing was about 2% of the total MSW capacity. Stack test data while no biomedical waste was being fired was retrieved by the Department from the State of Oregon. Consequently, stack test data while co-firing biomedical waste with MSW can be compared to stack tests when there is no co-firing of biomedical waste with MSW. **Table 6** summarizes this comparison.

TABLE 6- COVANTA-MARION PLANT: COMPARING STACK TEST DATA TO WHILE CO-FIRING BIOMEDICAL WASTE WITH MSW.

Parameter/Air Pollutant	Units for the Parameter/Air Pollutant ¹	Air Pollutant Standards/Limits	Stack tests while <u>not</u> co-firing biomedical waste 2014-2016 years (3-year avg.) ²	Stack tests <u>while</u> co-firing biomedical waste August 2017 ²	Change increase (+)/ decrease (-)
Opacity	%	10	ND	ND	-
Particulate	mg/dscm @ 7% O ₂	25	3.47 (13.9%)	3.31 (13.2%)	-0.16

⁸ U.S. EPA's Medical Waste web page. U.S. EPA World Wide Web Site: <https://www.epa.gov/rcra/medical-waste>. Accessed in 01/12/2017.

⁹ U.S. EPA's AP 42, Fifth Edition, Volume I, Chapter 2: Solid Waste Disposal. Final Section & Background Document for Medical Waste Incineration. U.S. EPA World Wide Web Site: <https://www3.epa.gov/ttn/chief/ap42/ch02/bgdocs/b02s03.pdf>. Accessed in 01/12/2017.

¹⁰ U.S. EPA's AP 42, Fifth Edition, Volume I, Chapter 2: Solid Waste Disposal. Final Section & Background Document for Medical Waste Incineration. U.S. EPA World Wide Web Site: <https://www3.epa.gov/ttn/chief/ap42/ch02/bgdocs/b02s03.pdf>. Accessed in 01/12/2017.

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Matter (PM)					
Cadmium (Cd)	mg/dscm @ 7% O ₂	0.02	0.0008 (4%)	0.000915 (4.6%)	+0.000115
Lead (Pb)	mg/dscm @ 7% O ₂	0.2	0.0069 (3.5%)	0.00403 (2%)	-0.00287
Mercury (Hg)	mg/dscm @ 7% O ₂	0.050	ND (N/A)	0.00300 (6%)	+0.003
Hydrogen Chloride (HCl)	ppm @ 7% O ₂	29	13 (68.4%)	7.83 (27%)	-5.17
Dioxin/Furans (PCDD/PCDF)	µg/dscm @ 7% O ₂	15	0.576 (3.8%)	0.400 (2.7%)	-0.176
Carbon Monoxide ³ (CO)	ppm @ 7% O ₂	100	11 (11%)	15 (15%)	+4
Sulfur Dioxide (SO ₂) ⁴	ppm @ 7% O ₂	29	10 (34.5%)	1 (3.4%)	-9
Nitrogen Oxides (NO _x) ⁵	ppm @ 7% O ₂	205	177 (86.3%)	179 (87.3%)	+2
Notes:					
1. mg/dscm @ 7% O ₂ means milligram per dry standard cubic meter, corrected to 7 percent oxygen; µg/dscm @ 7% O ₂ means micrograms per dry standard cubic meter, corrected to 7 percent oxygen; ppm @ 7% O ₂ means parts per million by volume, dry, corrected to 7% O ₂ .					
2. Number in parenthesis is the percentage the stack test result is relative to the emission limit.					
3. Expressed as a 4-hr average per 40 CFR 60, Subpart Cb.					
4. Expressed as a 24-hr geometric average per 40 CFR 60, Subpart Cb.					
5. Expressed as a 4-hr arithmetic average per 40 CFR 60, Subpart Cb.					

Based on the test results shown in **Table 6**, the effects on air pollutant emissions while co-firing biomedical waste (2% by weight) with MSW in the MWC unit were minimal. All pollutant stack tests, either while or not firing biomedical waste, were well below their respective emission limits; closest to the limit was NO_x at ~85%. Note, at the LCRRF NO_x emissions are continuously monitored.

The differences between stack test results, while firing and not firing biomedical waste, were very small and showed no discernible trend, e.g., an increase in emissions when firing biomedical waste. In addition, some variability in stack test results when only firing MSW should be expected because MSW is not a homogenous fuel. Consequently, the variations between the stack test results in **Table 6** could be attributable to variations in the MSW being combusted while the stack testing was taking place.

The Department acknowledges that stack test results presented in **Table 6** were at a biomedical firing rate of 2% by weight compared to the applicant's requested limit of less than 10%. However, the Department does not feel that pollutant emissions will increase significantly even at the higher firing rate of less than 10% for the following reasons:

1. The high combustion temperatures (~ 2,000 °F) in the MWC units will oxidize and destroy the components of the biomedical waste turning them into their elemental components that subsequently will be control by the unit's APC systems;
2. At 2% by weight, as demonstrated by the stack test results in **Table 6**, the effect of biomedical waste on pollutant emissions was not discernable; and
3. As described in **subsections 1.3** and **3.1.1**, the extensive APC equipment and procedures (SNCR, GCP, ACI, SDA and baghouse) on each MWC unit should effectively limit any possible increase in emissions while firing biomedical waste at a rate of less than 10% by weight.

3.3. NSPS/NESHAP Applicability for the Proposed Project

MWC Unit Nos. 1 & 2 are regulated under the federal 40 Code of Federal Regulations (CFR) 60, Subpart Cb, Emissions Guidelines (EG) and Compliance Times for Large Municipal Waste Combustors. The applicant addressed New Source Performance Standards (NSPS) of 40 CFR 60 applicability in Section 5.1.3, pages 5-1 through 5-4 of the application. Subpart Cb is a requirement of Section 129 of the CCA and consequently addresses both NSPS and NESHAP requirements. No additional NSPS or NESHAP requirements apply to the proposed project. The Department concurs with the applicant’s assessment of NSPS and NESHAP applicability.

3.4. State of Florida, Stationary Source Requirements

The Department through Chapter 62-296, F.A.C. established emission limiting standards and compliance requirements for stationary sources of air pollutant emissions. This chapter includes emission limitations for specific categories of facilities and emissions units. Rule 62-296.401(4), F.A.C. for Biological Waste Incinerators (BWI) applies to the LCRRF when co-firing biomedical waste with MSW in the MWC units. Rule 62-296.401(4), F.A.C. for Biological Waste Incinerators only contains specific air emission standards/limits for PM, HCl & CO emissions. A summary of the specific air emission standards/limits is shown in **Table 7** along with the corresponding Subpart Cb requirements.

TABLE 7 - COMPARISON OF RULE 62-296.401(4), F.A.C. FOR BIOLOGICAL WASTE INCINERATORS TO EXISTING PERMIT STANDARDS/LIMITS FOR THE PROJECT.

Basis	PM	HCl	CO
Rule 62-296.401(4), F.A.C. for Biological Waste Incinerators	0.020 gr/dscf, corrected to 7% O ₂ {46 mg/dscm} by stack test	50 ppmv, corrected to 7% O ₂ by stack test or ≥ 90% reduction	100 ppmv, corrected to 7% O ₂ , 1-hour average
40 CFR 60 Subpart Cb/existing permit standards/limits	25 mg/dscm by stack test	29 ppmv, corrected to 7% O ₂ by stack test or ≥ 95% reduction	100 ppmv, corrected to 7% O ₂ , 4-hour block average

After reviewing the values provided in **Table 7**, one can see that the specific air emission standards/limits for PM, HCl & CO emissions from Subpart Cb are more stringent than the state requirements, except for the averaging period for CO emissions. The applicant indicated that the CEMS equipment for each MWC unit will be configured to calculate CO emissions over a 1-hour averaging period when the unit is co-firing biomedical waste {see page 6-1 of the application}.

The state BWI Rule (62-296.401(4)(c)1., F.A.C.) requires that when the MWC units co-fire biomedical waste with MSW that they “... operate with a combustion zone design temperature of no less than 1,800 degrees Fahrenheit for at least a 1.0 second gas residence time in the secondary (or last) combustion chamber. The primary chamber and stack volumes shall not be utilized in calculating this residence time.”

To provide reasonable assurances that the minimum combustion zone temperature and combustion chamber residence time specified at BWI Rule are met, the LCRRF conducted a temperature correlation study in 1991. The purpose of the study was to correlate combustion zone temperatures (which are not continuously monitored) with furnace roof temperatures (which are continuously monitored). A handheld infrared monitoring device was utilized to record temperatures at various elevations within the furnace, starting at the combustion zone and progressing up towards the furnace roof (where the conditions can sustain permanent thermocouple placement). Using the data from the measurements, it was concluded that a combustion zone temperature of 1,800 °F correlates to a temperature of 1,138 °F at the furnace roof.

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The 1991 measurements were also used to calculate a combustion chamber residence time of approximately 1.5 seconds. A copy of the measurements and calculations were provided in Appendix E of the application. T

3.5. Permit Requirements

The following will be included as requirements in the draft air construction permit

3.5.1. Combustion Zone Temperature

A specific condition will be added to the permit to require that the applicant install, calibrate, operate and maintain a temperature monitor for the furnace roof. In addition, to ensure that the combustion zone temperature is equal to or greater than 1,800 °F, the furnace roof temperature shall be above 1,138 °F with a residence time of not less than 1.5 seconds to meet the requirements of the BWI Rule. The other requirements from BWI Rule will also be included in the permit.

3.5.2. Unacceptable Biomedical Wastes

A permit condition will specify that the following biomedical waste are not acceptable:

1. EPA hazardous pharmaceutical waste (nicotine, warfarin);
2. Human fetal tissue;
3. Human remains (fetuses, products of conception and cadavers);
4. Large amounts of free-flowing liquids;
5. Radioactive materials;
6. Bulk pathological waste;
7. Bulk chemotherapeutic waste; and,
8. Formaldehyde, iodine or other preservative agents.

These exclusions are specifically added to the waste/fuel slate.

3.5.3. Waste (Fuel Slate) Requested Changes

Specific changes to the waste (fuel slate) specific conditions in the current valid Title V air operation permit No. 0690046-018-AV are necessary as part of the request to co-fire biomedical waste with MSW in MWC Unit Nos. 1 & 2. These specific conditions contain very specific types and descriptions of fuels/wastes allowed to be combusted and those not allowed to be combusted in MWC Unit Nos. 1 & 2. The Department's review indicates that **Specific Condition A.5.** of the current Title V air operation permit No. 0690046-018-AV originates from **Specific Conditions 1.e.** of an AC/PSD permit, 0690046-003-AC/PSD-FL-113E which has been revised since. Because the waste (fuel slate) permit specific condition originates from an underlying AC/PSD permit, this permit specific condition cannot be revised in the Title V air operation permit; the underlying AC/PSD permit must be revised. As part of the applicant's request the underlying AC/PSD permit will be revised.

3.5.4. Waste Auditing Procedures

The applicant has developed auditing procedures for the medical facility customers that they work with. These procedures are designed to assist generators with proper biomedical waste handling procedures and to minimize the potential for unacceptable material to be inadvertently delivered to the facility. A copy of these procedures will be included in the permit. The permit will require that the auditing procedures include in the permit be further developed into BMPs that shall be submitted to the Permitting and Compliance Authority for approval at least 90 days prior to any biomedical waste being fired at the LCRRF. These BMPs will be incorporated in to the Title V air operation permit for the LCRRF. In addition, a record of the waste characterization is required to be kept at the facility

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3.5.5. Handling, Storage and the Co-firing of Biomedical Waste with MSW in the MWC Units

Subsection 1.5.4 describes how biomedical waste will be manually offloaded from delivery trucks onto a conveyor system. Best management practices (BMP) in the handling and any storing of biomedical waste need to be developed and implemented by the applicant. A requirement to develop such BMP is included in the permit. These BMPs will be incorporated in to the Title V air operation permit for the LCRRF

Subsection 1.5.4 also describes how biomedical waste will then be fed by proposed new conveyors into a feed chute where it will be mixed with MSW prior to being combusted in the MWC units. BMP in the co-firing of biomedical waste with MSW need to be followed by the applicant. A requirement to develop such BMP is included in the permit. These BMPs will be incorporated in to the Title V air operation permit for the LCRRF.

A concept graphic of the “Single Drop Automated Hopper Feed” system is given **Subsection 1.5.4**. A final photo of the actual system(s) installed is required by the permit.

To provide reasonable assurances that BMPs in the handling, storage and the co-firing of biomedical waste with MSW in the MWC Units at the LCRRF are followed, a requirement to develop a training plan for plant personnel (includes plant operators) is included in the permit. The training plan will be incorporated in to the Title V air operation permit for the LCRRF.

To ensure compliance with the less than 10% by weight biomedical waste co-firing restriction, each day, the total weight of biomedical waste received that is subject to the 10% restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous days in the current calendar month. At the end of each calendar month, the resultant monthly total weight of biomedical waste shall be divided by the total weight of all waste materials received in the same calendar month, and the resulting number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 10% limitation. Note these restrictions are more stringent than the co-fired combustor definition which is on a 10% or less weight basis and a quarterly not a monthly basis.

3.5.6. Testing Requirements

To evaluate PM, Cd, Pb, Hg, HCl and dioxin/furan emissions and to demonstrate compliance with the existing emission standards/limits while co-firing biomedical waste with MSW, stack tests will be required for PM, Cd, Pb, Hg, HCl and dioxin/furan emissions.

To evaluate VE and to demonstrate compliance with the VE standard/limit while co-firing biomedical waste with MSW a VE test will be required. The VE test is fulfilled by submitting COMS data for VE.

To evaluate SO₂, NO_x and CO emissions and to demonstrate compliance with the SO₂, NO_x and CO emission standards/limits while co-firing biomedical waste with MSW an SO₂, NO_x and CO test will be required. This testing requirement is fulfilled by submitting CEMS data for SO₂, NO_x and CO emissions.

3.5.7. Odor Control

Odors from the MWC facility are controlled by drawing combustion air from the refuse tipping floor area. The applicant proposes to unload and store biosolids within the building enclosing the tipping floor. Odors from the unloaded and stored biosolids within the building should be drawn into the combustion air.

3.5.8. Pathogenic Emissions

Pathogenic destruction occurs in a combustion process. The combustion of biomedical waste that is co-fired with MSW material takes place in the furnaces. Additionally, gases containing potentially

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pathogens pass through the SNCR systems with temperatures around 1,600-2,100 degrees F with a residence time of 1-2 seconds.¹¹

In comparison, medical waste incinerator temperatures within a dual chamber unit have secondary chambers (afterburners) which operate between 1,600-1,800 degrees F. Residence times in secondary chambers (afterburners) are typically 1.0 seconds. The Department's BWI Rule contains temperature and residence time requirements.

Obviously, biomedical waste is different from municipal solid waste (MSW). However, the temperature and residence time in an MWC's combustion zone in the furnaces and in the SNCR should be more than adequate to provide complete pathogen destruction resulting in exhaust gases free of pathogens.

The spread of pathogens could occur when improperly storing, handling and mixing of biomedical waste. As indicated in **subsection 3.5.5**, conditions in the permit will require the development of BMPs for proper storage, handling and mixing of biomedical waste.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state rules and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions.

Mr. Scott M. Sheplak, CPM, P.E. is the permit processor responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting him in the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. He may be contacted by telephone at 850/717-9074 or by e-mail at scott.sheplak@dep.state.fl.us.

¹¹ A&WMA Air Pollution Engineering Manual. Waste Incineration, SNCR. 1992.