



**TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION**

APPLICANT

Wheelabrator North Broward, Inc.
2600 North West 48th Street
Pompano Beach, FL 33073

North Broward Resource Recovery Facility
Facility ID No. 0112120

PROJECT

Project No. 0112120-011-AC
Application for Minor Source Air Construction Permit
Wet Dust Collection System

COUNTY

Broward County, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
Chemicals and Combustion Group
2600 Blair Stone Road, MS#5505
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1. GENERAL PROJECT INFORMATION

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.

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.

Facility Description and Location

This facility consists of three municipal solid waste (MSW) combustors (Unit Nos. 001, 002 and 003) with auxiliary burners, lime storage and processing facilities, ash storage and processing facilities, a metal recovery facility, a cooling tower and ancillary support equipment. The nominal electric generator nameplate capacity of the facility is 67.6 megawatts (MW), which is sold to the local utility. Each combustor unit includes an acid gas, air toxics, and particulate matter emissions control system consisting of a lime spray dryer with baghouse. Nitrogen oxides are controlled by a urea injection system that operates under the principle of selective non-catalytic reduction (SNCR). There is a metals recovery facility which is a potential source of fugitive emissions.

The facility is categorized as an existing refuse system with a Standard Industrial Classification Code No. 4953. The facility is located in Broward County at 2600 North West 48th Street, Pompano Beach. The Universal Transverse Mercator (UTM) map coordinates are: Zone 17, 583.541 km East and 2907.498 km North. Latitude is: 26° 17' 12" North and Longitude: 80° 09' 48" West. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to Ambient Air Quality Standards (AAQS).

Facility Regulatory Categories

- The facility is a major source of hazardous air pollutants (HAP).
- The facility has no units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The facility 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.
- The facility is regulated in accordance with Rule 62-204.800(9)(d), F.A.C., the Emissions Guidelines and Compliance Times for Large Municipal Waste Combustors that are constructed on or before September 20, 1994 (Subpart Cb of 40 CFR 60).

Description of Metal Recovery Facility

The North Broward Resource Recovery Facility includes a metal recovery facility (EU-007), which was approved by the Department as a modification to Site Certification No. PA 86-22J on April 15, 2011. It consists of a series of conveyors and mechanical devices to separate ferrous and non-ferrous metals from the bottom ash of the MSW

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combustors. The processing of bottom ash will occur in the new building constructed adjacent to the existing ash load out buildings at the site, which represents an extension of the ash handling system. The building will be enclosed, with entrance and exit openings for ash and recovered metals. The metal recovery facility is also designed to handle fly ash. The ash processed in the metal recovery facility typically has moisture content of 20% or higher, which ensures minimal fugitive dust emissions.

Bottom ash and fly ash will enter the facility through conveyors. Bottom ash will be transported to the metal recovery facility using an enclosed belt conveyor. The enclosed belt conveyor has a roof, sides, and a bottom pan. The bottom ash belt conveyor will enter the metal recovery facility in the northeast corner of the building. Fly ash will be transported to the metal recovery facility in a totally enclosed drag conveyor. The totally enclosed drag conveyor will have four sides without any opening for fugitive emissions to escape. The fly ash drag conveyor will enter the southeast corner of the metal recovery facility.

The ferrous and non-ferrous material from bottom ash will be removed from other material using a series of equipment that includes screens, magnetic separators, eddy current separators, and associated conveyors. Metals recovered from the system will be discharged into concrete bunkers. Metals will then be transferred using a front end loader to trucks parked within the building. The trucks will deliver the metals to a separately-owned, operated, and permitted metal processing facility. The number of trucks leaving the North Broward Resource Recovery Facility site is not expected to change relative to current operations.

The metal recovery facility will handle on average 34 tons per hour (TPH) of bottom ash, producing about 4.3 TPH of ferrous metal and 0.6 TPH of non-ferrous metals. The equipment will be designed to handle 2.5 times the average to allow for peak loads. The bottom ash with ferrous and non-ferrous metals removed will be conveyed to ash trucks that will be transported to the adjacent landfill, as is the current practice for all ash. Oversized bottom ash, referred to as “bulkies” and also known as “overs,” will also be placed in ash trucks for transport to the adjacent landfill. Bulkies typically consist of non-metallic materials (e.g., large pieces of wood not combusted, concrete, etc.) that are 6 inches in size and larger. The metals are not expected to contain significant amounts of dust and will therefore not generate fugitive emissions during loading.

The metal recovery facility will also handle and process fly ash. Fly ash will enter the metal recovery facility using a totally enclosed drag conveyor that empties into a totally enclosed fly ash surge hopper. From the surge hopper, the fly ash will be transported to a conditioning system using a totally enclosed screw conveyor. The fly ash will be conditioned and mixed with processed bottom ash on the ash load out conveyor for transport to ash trucks. Mixing fly ash and bottom ash in this manner is the same as the current practice

Fly ash may be processed during certain conditions such as when the new ash processing equipment is not operating. In this case, fly ash from the existing fly ash processing system will be routed to the existing bottom ash belt conveyor. Fly ash typically makes up only about 15% of the total ash from the facility.

Proposed Project Description

On May 17, 2012, the Department received an application for a minor air construction permit requesting authorization to install a new wet dust collection (WDC) system on the metal recovery facility, which was not included in the original design. The new equipment will consist of an additional ventilation system for the metal recovery facility (EU-007) that will exhaust to the ambient atmosphere through two high-efficiency wet dust collectors identified as WDC-2 and WDC-3. Each dust collector will be a Tri-Mer® Corporation Whirl Wet® Model W/W-170 high-efficiency dust collector with a design outlet dust loading of 0.013 grains per standard cubic feet (scf) at a nominal flow rate of 17,000 standard cubic feet per minute (scfm). Fugitive dust from the processing equipment area will be controlled by WDC-2, while fugitive dust generated from storage and loading areas will be controlled by WDC-3. The purpose of the new system is to improve and maintain indoor air quality and for employee comfort and safety within the metal recovery facility.

The Department notes the following information from EPA’s Air Pollution Control Technology Fact Sheets for wet scrubbers:

“Mechanically-Aided Scrubber ... This type of technology is a part of the group of air pollution controls collectively referred to as “wet scrubbers.” ... Mechanically-aided scrubbers are primarily used to control

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PM, including PM less than or equal to 10 micrometers (μm) in aerodynamic diameter (PM_{10}), PM less than or equal to 2.5 μm in aerodynamic diameter ($\text{PM}_{2.5}$), down to PM with an aerodynamic diameter of approximately 1 μm (Avallone, 1996). ... Mechanically-aided scrubber's collection efficiencies range from 80 to 99 percent, depending upon the application. This type of scrubber relies almost exclusively on inertial interception for PM collection, and is capable of high collection efficiencies, but only with commensurate high energy consumption (EPA, 1998; Josephs, 1999).”¹

2. PSD APPLICABILITY

The North Broward Resource Recovery Facility is an existing PSD major stationary source located in an area that is in attainment with, or otherwise designated as unclassifiable for, all ambient air quality standards. Therefore, emissions increases from the project must be compared to the PSD significant emissions rates to determine the applicability of PSD preconstruction review to the project. The following table summarizes the potential emissions from the project.

Table1. Summary of Particulate Matter (PM) Emissions from Each Wet Dust Collector

Parameter	Data	Units	Basis
WDC Inlet	15,000	$\mu\text{g}/\text{m}^3$	Based on OSHA Limit
Inlet PM Concentration to WDC	0.0066	gr/scf	$(15,000 \mu\text{g}/\text{m}^3)(1 \text{ g}/10^6 \mu\text{g})(\text{lb}/453.6 \text{ g})(7,000 \text{ gr}/\text{lb})(\text{m}^3/35.31 \text{ ft}^3)$
WDC Efficiency	99%	Percent	Design
WDC Flow Rate, Each	17,000	scfm	Design
Inlet PM Emissions, (based on 15,000 $\mu\text{g}/\text{m}^3$)	0.96	lb/hr	$17,000 \text{ scfm} \times 0.0066 \text{ gr}/\text{scf} \times 60 \text{ min}/\text{hr} \times \text{lb}/7,000 \text{ gr}$
	4.20	TPY	$0.96 \text{ lb}/\text{hr} \times 8,760 \text{ hr}/\text{yr} \times \text{ton}/2,000 \text{ lb}$
Outlet PM Emissions	0.0096	lb/hr	$0.96 \text{ lb}/\text{hr} \times (1 - 0.99)$
	0.042	TPY	$4.20 \text{ TPY} \times (1 - 0.99)$

“ $\mu\text{g}/\text{m}^3$ ” means micrograms per cubic meter.
 “gr/scf” means grains per standard cubic foot.
 “scfm” means standard cubic feet per minute.
 “TPY” means tons per year.

As shown, total project emissions (0.084 TPY) are minimal and will not exceed the PSD significant emissions rates of: 25 TPY of PM, 15 TPY of PM less than 10 microns, and 10 TPY of PM less than 2.5 microns. Therefore, the project is not subject to PSD preconstruction review.

3. DEPARTMENT REVIEW

The project is minor with respect to particulate matter emissions and subject only to the general preconstruction review requirements in Rule 62-210.300, F.A.C. No existing emissions limits or compliance requirements will change as a result of this project. A minor source air construction permit is necessary to authorize construction of the new air pollution control equipment.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state 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. Yousry (Joe) Attalla is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

¹ *Air Pollution Control Technology Fact Sheet: Mechanically-Aided Scrubber*; Document No. EPA-452/F-03-013; U.S. EPA, 2003.