TECHNICAL EVALUATION

AND

PRELIMINARY DETERMINATION

PROJECT

Project No. 0250615-013-AC/PSD-FL-414A
Medley Landfill Gas-To-Energy Project
Facility ID No. 0250615
Air Construction Permit Extension

COUNTY

Miami-Dade County, Florida

APPLICANT

Waste Management, Inc. of Florida
Medley Landfill
9350 NW 89th Ave
Medley, Florida 33178

PERMITTING AUTHORITY

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

March 2013

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

This project is subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The Florida Statutes authorize the Department of Environmental Protection to establish rules and regulations regarding air quality as part of the Florida Administrative Code (F.A.C.). This project is subject to the applicable rules and regulations defined in the following Chapters of the F.A.C.: 62-4 (Permitting Requirements); 62-204 (Ambient Air Quality Requirements, PSD Increments, and Federal Regulations Adopted by Reference); 62-210 (Permits Required, Public Notice, Reports, Stack Height Policy, Circumvention, Excess Emissions, and Forms); 62-212 (Preconstruction Review, PSD Review and BACT, and Non-attainment Area Review and LAER); 62-213 (Title V Air Operation Permits for Major Sources of Air Pollution); 62-296 (Emission Limiting Standards); and 62-297 (Test Methods and Procedures, Continuous Monitoring Specifications, and Alternate Sampling Procedures).

The Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 identifies New Source Performance Standards (NSPS) for a variety of industrial activities. Part 61 specifies National Emissions Standards for Hazardous Air Pollutant (NESHAP) based on specific pollutants. Part 63 specifies NESHAP provisions based on the Maximum Achievable Control Technology (MACT) for given source categories. Federal regulations are adopted in Rule 62-204.800, F.A.C.

Facility and Location

The facility is a municipal solid waste landfill with a Standard Industrial Classification Code of SIC No. 4911. The facility is located at 9350 Northwest 89th Avenue in Medley, Florida. The UTM coordinates are Zone 17, 565.04 kilometers (km) East, and 2,860.02 km North. This existing facility is located in Miami-Dade County, an area designated as "attainment/maintenance" for the pollutant ozone, and attainment for all other criteria pollutants in accordance with Rule 62-204.340, F.A.C.

The Medley Landfill is an open Class I Landfill with a design capacity greater than 2.5 million megagrams by mass or 2.5 million cubic meters by volume. This landfill commenced construction prior to 1980 as a lime rock quarry that was backfilled with fill and municipal solid waste (MSW) placed above the groundwater table. The landfill started receiving waste prior to 1980 and was modified or reconstructed between 1987 and 1993 when Cells 1, 2, and 3 were constructed with geosynthetic liners to accept an estimated 5 million cubic yards of MSW. Between 1997 and 2000, Phase 1, 2, and 3 were developed with geosynthetic liners to accept an estimated 7 million cubic yards. In 2003, the saddle fill was constructed with a geosynthetic liner to provide an additional 2 million cubic yards. Yearly waste acceptance is approximately 700,000 tons.

The nonmethane organic compounds (NMOC) emissions are calculated to be greater than 50 megagrams per year, based on EPA's uncontrolled emission rate estimates. This landfill does not contain a bioreactor and is an active asbestos waste disposal site. Landfill gas emissions are collected and controlled through an extraction well-field system with open and closed flares.

The facility currently operates two flares – one 3,000 standard cubic feet per minute (scfm) open utility flare (EU 001) used primarily as backup, and one 6,000 scfm enclosed flare (EU 005) used as the primary flare. The first flare (EU 001) was installed in 1990. A second flare (EU 005) was installed in October of 2003 and started operation November 5, 2003. Neither the enclosed flare nor the open flare is equipped with a bypass in which landfill gas can bypass the control device in a un-combusted manner.

Facility Regulatory Categories

- The existing facility is not a major source of hazardous air pollutants (HAP).
- The existing facility has no units subject to the acid rain provisions of the Clean Air Act.
- The existing facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.

- The existing 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 landfill is subject to applicable New Source Performance Standards (NSPS) in Title 40, Part 60 of the Code of Federal Regulations.
- The existing facility is subject to applicable National Emissions Standards for Hazardous Air Pollutants (NESHAP) in Title 40, Part 63 of the Code of Federal Regulations.

2. PROJECT DESCRIPTION AND DEPARTMENT REVIEW

On February 15, 2013 the Department received a request from Waste Management, Inc. of Florida to extend air construction permit No. 0250615-012-AC (PSD-FL-414) to construct and operate a landfill gas-to-energy facility at the existing Medley Landfill. The permit under source obligation stated that the authorization to construct shall expire if construction is not commenced within 18 months of receipt of permit. The applicant requests an additional 18 month extension to relocate the two existing flares and install six Caterpillar (CAT) Model G3520C reciprocating internal combustion engine/electrical generator sets. The extension of the 18 month period requires revalidation of the Best Available Control Technology (BACT) by the Department. The six engines will fire landfill gas to generate a total of 9.6 megawatts (MW, nominal) of power (1.6 MW per engines)

The landfill currently generates 4,000 standard cubic feet per minute (scfm) of landfill gas. Each engine uses approximately 588 scfm of landfill gas, giving a total of 3,528 scfm of landfill gas for all six engines. The two existing flares will be retained and relocated adjacent to the engines as backup control devices or to control emissions when more landfill gas is generated than can be handled by the engines. The landfill gas will be transported from the landfill gas collection system to a landfill gas treatment system consisting of: a knock-out vessel to remove water; air-to-gas coolers to remove moisture and control the landfill gas temperature; a filtration system to remove particles larger than 1 micron from the landfill gas; and a gas compressor and blower system. Only treated landfill gas will be delivered to the engines; any excess landfill gas will not be treated, but directly routed to the flares.

The following existing emissions units will be affected by this project.

EU ID	Emission Unit Description
001	Flare #1 – 3,000 scfm open utility (candle type) flare
002	Fugitive non-methane organic compounds (NMOC) and hazardous air pollutant (HAP) emissions from the natural decomposition reactions associated with the landfill, which are not collected by the landfill gas collection system.
005	Flare #3 – 6,000 scfm enclosed flare

The following new emissions units will be added by this project.

EU ID	Emission Unit Description
006	Six Caterpillar (CAT) Model G3520C (CAT 3520) lean-burn internal combustion engines and generator sets

3. PSD APPLICABILITY

General PSD Applicability

The Department regulates major stationary sources in accordance with Florida's PSD program pursuant to Rule 62-212.400, F.A.C. A PSD preconstruction review is required in areas currently in attainment with the state and federal Ambient Air Quality Standards or areas designated as "unclassifiable" for a given pollutant. A

facility is considered "major" with respect to PSD if it emits or has the potential to emit: 250 tons per year or more of any regulated air pollutant; 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the 28 PSD Major Facility Categories; or, 5 tons per year or more of lead.

New projects at existing PSD-major stationary sources are reviewed for PSD applicability based on net emissions increases from the project. Each PSD pollutant is evaluated for applicability based on emissions thresholds known as the Significant Emission Rates as defined in Rule 62-210.200, F.A.C. Pollutant emissions from the project exceeding these rates are considered "significant". In addition, applicants may choose to conduct a "PSD netting analysis" that includes all emissions increases as well as all emissions decreases for a 5-year period contemporaneous with the project to determine whether or not a PSD significant emissions increase will occur. Although a facility may be "major" for only one PSD pollutant, the project may be "significant" for several PSD pollutants. For each significant PSD pollutant, the applicant must employ BACT to minimize emissions and conduct an air quality analysis that demonstrates emissions from the project will not cause or contribute to adverse ambient impacts.

PSD Applicability for the Project

The project is located in Miami-Dade County, which is in an area that is currently designated as "attainment/maintenance" for the pollutant ozone, and attainment for all other criteria pollutants with the state and federal AAQS or otherwise designated as unclassifiable. The applicant reexamined the RACT/BACT/LEAR Clearing House and found the latest project included for landfill gas power production contained the same Cat 3520 engines as the Medley project with the same CO emission limit of 3.5 g/bhp-hr. . Therefore, a new prevention of significant deterioration (PSD) review and a determination of best available control technology (BACT) were not required. A 14-day public notice is required.

4. PRELIMINARY DETERMINATION

The Medley Landfill Gas-to -Energy project will use LFG that is currently being flared as fuel to produce usable electrical energy. This project benefits the environment by recovering useful energy in the LFG and generating electricity. The Department encourages renewable energy projects, including waste-to-energy projects. Since the revalidation of CO BACT limit indicates that the BACT limit has not changed since the time the original permit was issued, the Department validates the CO BACT limit of 3.5 g/bhp-hr as the current CO BACT limit. The Department makes a preliminary determination that an 18 month extension of the proposed project does not trigger preconstruction new source review under PSD. This determination is based on a technical review of the request, reasonable assurances provided by the applicant and the conditions contained in their current air construction permit No. 0250615-012-AC (PSD-FL-414). The current air construction permit No. 0250615-012-AC (PSD-FL-414) will be modified as follows:

The following permit conditions are revised as indicated. ~~Strikethrough~~ is used to denote the deletion of text. Double-underlines are used to denote the addition of text.

PERMIT BEING MODIFIED: PERMIT NO. 0250615-012-AC (PSD-FL-414)

Section 2. Specific Condition 7 is revised as follows.

7. Source Obligation:

   (a) Authorization to construct shall expire if construction is not commenced within 18 months after receipt of the permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. This provision does not apply to the time period between construction of the approved phases of a phased construction project except that each phase must commence construction within 18 months of the commencement date established by the Department in the permit. Waste Management of Florida and the Medley Landfill will have an additional 18 month extension of time to commence construction until August 25, 2014.

(b) At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

(c) At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

[Rule 62-212.400(12), F.A.C.]

Leigh-Ann Pell is the project engineer responsible for reviewing the application and drafting the permit documents. Additional details of this analysis may be obtained by contacting Ms. Pell at 850-717-9033 or at leigh.pell@dep.state.fl.us or at the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.