DRAFT PERMIT

PERMITTEE

Waste Management, Inc.
2700 Northwest 48th Street
Pompano Beach, FL 33073

Authorized Representative:
Mr. Tim Hawkins, South Florida Market Area Vice President

Air Permit No. 0250615-012-AC
Expires: June 1, 2016
PSD-FL-414
Medley Landfill
Facility ID No. 0250615
Landfill Gas-to-Energy Project

PROJECT

This is the final air construction permit, which authorizes the installation and operation of six lean-burn engine/generators sets that will fire landfill gas to produce up to a combined nominal 9.6 megawatts (MW) of power to the electrical grid. The proposed work will be conducted at the existing Medley Landfill, which is a municipal solid waste (MSW) landfill categorized under Standard Industrial Classification No. 4911. The existing facility is located in Miami-Dade County at 9350 Northwest 89th Avenue in Medley, Florida. The UTM coordinates are Zone 17, 565.04 kilometers East and 2,860.02 kilometers North.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); Section 4 (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section 4 of this permit.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

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_____ _____

Michael P. Halpin, P.E., Director (Date)
Division of Air Resource Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit with Appendices) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on _____(DRAFT)_____ to the persons listed below.

Mr. Tim Hawkins, Waste Management, Inc. (thawkins@wm.com)
Mr. James Kisiel, P.E., Waste Management Inc. (jkisiel@wm.com)
Mr. David A. Buff, P.E., Golder Associates Inc. (dbuff@golder.com)
Mr. Lennon Anderson, SED Office (lennon.anderson@dep.state.fl.us)
Ms. Mallika Muthias, Miami-Dade DERM (muthim@miamidade.gov)
Ms. Kathleen Forney, EPA Region 4 (forney.kathleen@epa.gov)
Ms. Heather Abrams, EPA Region 4 (abrams.heather@epa.gov)
Ms. Vickie Gibson, DEP BAR Reading File (victoria.gibson@dep.state.fl.us)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

(DRAFT)

_____ _____
(Clerk) (Date)

FACILITY DESCRIPTION

The existing facility consists of the following active emissions units.

ID No.	Emission Unit Description
001	Flare #1 is an open, candle-type utility flare with a capacity of 3,000 standard cubic feet per minute (scfm) of landfill gas.
002	This emissions unit consists of miscellaneous 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 is an enclosed flare with a capacity of 6,000 scfm of landfill gas (LFG).

PROPOSED PROJECT

This permit authorizes the construction and initial operation of a landfill gas-to-energy plant at the existing Medley Landfill, which will use landfill gas to fuel six lean-burn reciprocating internal combustion engine/generator sets. The six engine/generator sets will deliver a combined nominal 9.6 MW of power to the electrical grid. Prior to combustion in the engines, the landfill gas will be routed through a landfill gas treatment system, which includes dewatering (a moisture knock-out vessel), gas compressors and blowers, air-to-gas coolers and 1 micron particulate filtration. Exhaust gas from each engine will exit an individual stack that is 33 feet tall and equipped with a silencer. Five of the six engines will be housed in an enclosed building. The sixth engine will be located outside the building. The two existing flares will be retained, relocated adjacent to the engines and used as necessary to control residual landfill gas not fired in the engines. The project is subject to PSD preconstruction review for carbon monoxide (CO), nitrogen oxides (NO_X), particulate matter (PM), particulate matter with a mean particle diameter of 10 microns or less (PM_{10}) and particulate matter with a mean particle diameter of 2.5 microns or less ($PM_{2.5}$).

This project will add the following emissions units.

ID No.	Emission Unit Description
006 - 011	Six lean-burn reciprocating internal combustion engine/generator sets

FACILITY REGULATORY CLASSIFICATION

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility does not operate units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is an existing PSD major stationary source in accordance with Rule 62-212.400, F.A.C.
- The facility operates or will operate units subject to the following applicable New Source Performance Standards (NSPS) in Title 40, Part 60 of the Code of Federal Regulations (40 CFR 60): Subpart A (General Provisions), Subpart WWW (MSW Landfills) Subpart JJJJ (Spark Ignition Reciprocating Internal Combustion Engines).
- The facility operates or will operate units subject to the following applicable National Emissions Standards for Hazardous Air Pollutants (NESHAP) in Title 40, Part 63 of the Code of Federal Regulations (40 CFR 63): Subpart A (General Provisions), Subpart AAAA (MSW Landfills) and Subpart ZZZZ (Reciprocating Internal Combustion Engines).

SECTION 2. ADMINISTRATIVE REQUIREMENTS (DRAFT)

1. Permitting Authority: The Permitting Authority for this project is the Bureau of Air Regulation in the Division of Air Resource Management of the Department. The mailing address for the Bureau of Air Regulation is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. Copies of all documents related to applications for permits shall also be submitted to the Compliance Authority.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Southeast District Office and Miami-Dade County Environmental Resources Management (DERM). The mailing address and phone number of the Southeast District Office is: 400 North Congress Avenue, Suite 200, West Palm Beach, Florida 33401. The mailing address and phone number of the Miami-Dade County Environmental Resources Management (DERM) is 701 Northwest 1st Court, Suite 200, Miami, Florida 33136.
3. Appendices: The following Appendices are attached as a part of this permit: Appendix A (Citation Formats and Glossary of Common Terms); Appendix B (General Conditions); Appendix C (Common Conditions); Appendix D (Common Testing Requirements); Appendix E (Final BACT Determinations); Appendix F (NSPS Provisions); and Appendix G (NESHAP Provisions).
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.
5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Modifications: No emissions unit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
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.
   (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.]

8. Actual Emissions Reporting: This permit is based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C. for several pollutants. Therefore, pursuant to Rule 62-212.300(1)(e), F.A.C., the permittee is subject to the following monitoring, reporting and recordkeeping provisions.

   a. The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 10 years following resumption of regular operations after the change. Emissions shall be computed in accordance with the provisions in Rule 62-210.370, F.A.C., which are provided in Appendix C of this permit.

   b. The permittee shall report to the Department within 60 days after the end of each calendar year during the 10-year period setting out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:

      1) The name, address and telephone number of the owner or operator of the major stationary source;

      2) The annual emissions calculations pursuant to the provisions of 62-210.370, F.A.C., which are provided in Appendix C of this permit;

      3) If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

      4) Any other information that the owner or operator wishes to include in the report.

   c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

   For this project, the permit requires the annual reporting of actual sulfur dioxide (SO_2) emissions from the flares and landfill gas engines. *{Permitting Note: Baseline SO_2 emissions were reported as 225.9 tons/year.}*

   [Application 0250615-012-AC and Rules 62-212.300(1)(e) and 62-210.370, F.A.C.]

9. Title V Permit: This permit authorizes new construction of the proposed emissions units as well as initial operation to determine compliance with conditions of this permit. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after completing the required work and commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to each Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

A. Landfill Gas Engines (EU-006 - 011)

This section of the permit addresses the following emissions units.

EU No.	Emission Unit Description
006 - 011	Six lean-burn, spark-ignited reciprocating internal combustion engine/generator sets (Caterpillar Model G3520C or equivalent) fired with landfill gas.

{Permitting Note: In accordance with Rule 62-212.400(PSD), F.A.C., the above engines are subject to Best Available Control Technology (BACT) determinations for the following pollutants: CO, NO_X, $PM/PM_{10}/PM_{2.5}$. The final BACT determinations are presented in Appendix E of this permit.}

EQUIPMENT

1. Landfill Gas Engine/Generator Sets: The permittee is authorized to install and operate six lean-burn, spark-ignited reciprocating internal combustion engine/generator sets (Caterpillar Model G3520C or equivalent) that will fire landfill gas with the following nominal design specifications per engine: a maximum engine rating of 2,233 brake-horsepower (bhp) at 100% load; a nominal electrical generator rating of 1.6 MW; and a heat input rate of approximately 17.6 MMBtu/hour from landfill gas.

   a. Each engine shall be equipped with an air-to-fuel ratio controller and ignition timing to maintain efficient fuel combustion.

   b. Each engine shall be equipped with an automatic fail-safe block valve which must be designed to stop the flow of landfill gas in the event of an engine failure. Excess landfill gas not fired in the engines shall be flared in accordance with the requirements of Subpart WWW in 40 CFR 60.

   c. Each engine shall be equipped with a non-resettable elapsed time meter to indicate the elapsed engine operating time in cumulative hours.

   d. A gas flow meter shall be installed to monitor the total flow rate to all of the landfill gas engines.

   {Permitting Note: The heat input rate is based on 100% load (2,233 bhp), a nominal landfill gas heating value of 500 British thermal units (*Btu) per scf and an approximate landfill gas firing rate of 588 scfm per engine.}* [Application No. 0250615-012-AC; and Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400(PSD), F.A.C.]

2. Landfill Gas Treatment System: The permittee shall install a landfill gas treatment system that includes initial gas dewatering (moisture knock-out vessel), gas compressors and blowers, air-to-gas coolers and particulate removal. The particulate filtration system shall be designed to remove particles down to 1 micron via primary and polishing filters. The gas treatment system shall not be equipped with atmospheric vents. [Application No. 0250615-012-AC and Rule 62-212.400(PSD), F.A.C.]

3. Hours of Operation: Operation of the new engine/generator sets is not limited (8760 hours per year). [Application No. 0250615-012-AC and Rule 62-210.200(PTE), F.A.C.]

PERFORMANCE REQUIREMENTS

4. Permitted Capacity: Each landfill gas engine has a maximum power rating of 2,233 bhp at 100% load (approximately 17.6 MMBtu/hour). The electrical generator set has a nominal power rating of 1,600 kilowatts. [Rule 62-210.200(PTE), F.A.C.]

5. Authorized Fuel: Only landfill gas shall be fired in the engine/generator sets. [Application No. 0250615-012-AC and Rule 62-210.200(PTE), F.A.C.]

6. Operating Requirements: The permittee shall set the air-to-fuel ratio for each engine based on the most recent emissions tests demonstrating compliance with the standards specified in this permit and other

operating conditions identified in NSPS 40 CFR 60, Subpart JJJJ. [Rule 62-212.400(BACT), F.A.C. and NSPS Subpart JJJJ in 40 CFR 60]

7. Applicable NSPS Provisions: The landfill gas engines are subject to, and shall comply with, the applicable provisions in NSPS Subpart A (General Provisions) and NSPS Subpart JJJJ (Stationary Spark Ignition Internal Combustion Engines) of 40 CFR 60, which are identified in Appendix F of this permit. [NSPS Subparts A and JJJJ in 40 CFR 60 and Rule 62-204.800, F.A.C.]

8. Applicable NESHAP Provisions: The landfill gas engines are subject to, and shall comply with, the applicable provisions in NESHAP Subpart A (General Provisions) and NESHAP Subpart ZZZZ (Reciprocating Internal Combustion Engines) of 40 CFR 63, which are identified in Appendix G of this permit. Pursuant to 40 CFR 63.6590, the landfill gas engines shall comply with NESHAP Subpart ZZZZ by complying with NSPS Subpart JJJJ. [NESHAP Subparts A and ZZZZ in 40 CFR 63 and Rule 62-204.800, F.A.C.]

EMISSIONS STANDARDS

9. Nitrogen Oxides: The emissions of NO_X from each engine/generator set shall not exceed 0.6 gram per brake horsepower hour (g/bhp-hour) and 3.0 lb/hour. [Rule 62-212.400(BACT), F.A.C.]

10. Carbon Monoxide: The emissions of CO from each engine/generator set shall not exceed 3.5 g/bhp-hour and 17.2 lb/hour. [Rule 62-212.400(BACT), F.A.C.]

11. Volatile Organic Compounds: The emissions of VOC from each engine/generator set shall not exceed 1.0 g/bhp-hour and 0.8 lb/hour. *{Permitting Note: The "g/bhp-hour" limit is the NSPS Subpart JJJJ standard and the "lb/hour" limit allows the project to avoid PSD preconstruction review for VOC emissions.}* [NESHAP Subparts A and JJJJ in 40 CFR 63 and Rules 62-204.800 and 62-212.400(12), F.A.C.]

12. Particulate Matter: The permittee shall minimize emissions of particulate matter by installing, operating and maintaining the required landfill gas treatment system as well as maintaining the air-to-fuel ratio to ensure efficient combustion. In addition, as determined by EPA Method 9, visible emissions from each engine/generator set shall not exceed 10% opacity, based on a six-minute average. *{Permitting Note: Based on these work practice standards, the maximum emissions of $PM/PM_{10}/PM_{2.5}$ from each engine/generator are estimated to be 0.24 g/bhp-hour, 1.2 lb/hour and 5.2 tons/year}.* [Rule 62-212.400(BACT), F.A.C.]

13. Hydrogen Chloride (HCl): Emissions of HCl from the facility (engines plus flares) shall not exceed 9.9 tons per consecutive 12 months based on the landfill gas analysis and consumption. [Application No. 0250615-012-AC and Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400(12), F.A.C.]

MONITORING REQUIREMENTS

14. Landfill Gas Sampling/Analysis: At least semiannually, the permittee shall obtain the following representative samples of landfill gas: a sample taken during each required compliance stack test; and a sample taken during the next semiannual period and no earlier than 5 months since the previous sample was taken. A representative sample shall be taken in each calendar semiannual period (January – June and July – December) approximately six months apart. Each gas sample shall be collected under normal operating conditions (i.e., with valves open for all operating cells). Each sample shall have an ultimate analysis conducted for at least sulfur. For at least one sample each year, the analysis shall also report chlorine. Results shall also be reported as SO_2 and HCl emission factors in terms of lb/million standard cubic feet (lb/MMscf) of landfill gas. Based on the sampling results and Rule 62-297.310(7)(b)(Special Compliance Tests), F.A.C., the Compliance Authority may request additional gas sampling and analyses. [Rules 62-210.200 and 62-212.400, F.A.C.]

TESTING REQUIREMENTS

15. Test Requirements: During each required compliance stack test, the permittee shall operate a tested landfill gas engine at permitted capacity (90% to 100% of 2,233 bhp). The permittee shall notify the Compliance Authority in writing at least 15 days prior to any scheduled stack tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. *{Permitting Note: Although the NSPS provides for a 30-day test notification, a 15-day notice is sufficient in Florida.}* [Rule 62-297.310(7)(a)9, F.A.C.]

16. Test Methods: Tests required by this permit shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
1 - 4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
7 or 7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources {Note: The method shall be based on a continuous sampling train.}
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)
18	Measurement of Gaseous organic Compound Emissions by Gas Chromatography *{Note: the emission standards are based on VOC measured as methane.}*
25A	Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer *{Note: the emission standards are based on VOC measured as methane.}*

The above methods are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800, 62-212.400(BACT) and Appendix A of 40 CFR 60]

17. Initial Compliance Tests: Each landfill gas engine shall be tested to demonstrate initial compliance with the emissions standards for CO, NOx and VOC under 40 CFR 60, Subpart JJJJ as well as the BACT standards of this permit. In addition, each unit shall be tested for opacity in accordance with EPA Method 9. The initial performance test must be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial startup of each unit. [Rules 62-212.400(BACT), 62-297.310(7)(a)1, F.A.C. and NSPS Subpart JJJJ in 40 CFR 60]

18. Periodic Compliance Tests: Every 8,760 engine hours or at least once every three years, whichever comes first, each landfill gas engine shall be tested to demonstrate compliance with the emissions standards for CO, NOx and VOC under 40 CFR 60, Subpart JJJJ as well as the BACT standards of this permit. During these periodic tests, at least one landfill gas engine shall also be tested for opacity in accordance with EPA Method 9. [Rules 62-212.400(BACT), 62-297.310(7)(a)1 and 4, F.A.C., and NSPS Subpart JJJJ in 40 CFR 60]

MONITORING REQUIREMENTS

19. Monthly Records: Within ten calendar days following each month, the permittee shall observe and record the following information in a written log: number of hours of operation of each engine; total monthly landfill gas flow rate to all engines combined; and hydrochloric acid (HCl) and sulfur dioxide (SO_2) emissions for the month and previous 12 months, rolling total. Emissions of HCl and SO_2 shall be calculated

from the monthly fuel consumption as well as the analytical results for the chlorine and sulfur contents of the landfill gas representative of the given month of operation. [Rule 62-210.200 (232), F.A.C.]

RECORDS AND REPORTS

20. Test Reports: The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA test, shall provide the applicable information identified in Rule 62-297.310(8)(c). [Rule 62-297.310(8), F.A.C.]