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**PERMITTEE**

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Authorized Representative:
Cleveland Ferguson, Deputy Chief Administrative Officer

Air Permit No. 0310358-014-AC
and PSD-FL-374D
Permit Expires: Date
Minor Air Construction Permit

Trail Ridge Landfill
Miscellaneous Revisions

**PROJECT**

This is the final air construction permit, which authorizes the removal of Emissions Units 012 through 015, found in permit 0310358-012-AC / PSD-FL-374C. These emissions units will not be constructed. The proposed work will be conducted at the existing Trail Ridge Landfill, which is a Municipal Solid Waste Landfill categorized under Standard Industrial Classification No. 4953. The existing facility is located in Duval County at 5110 U. S. Highway 301 South in Baldwin, Florida. The UTM coordinates are Zone 17, 399.765 kilometers (km) East and 3344.919 km North.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); and 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. As noted in the Final Determination provided with this final permit, only minor changes and clarifications were made to the draft 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 is not subject to 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.

Executed in Tallahassee, Florida

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## CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Air Permit package 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 the date indicated below to the following persons.

Mr. Cleveland Ferguson, City of Jacksonville (cferguson@coj.net)
Mr. Max Lee, PhD, PE, Koogler and Associates (mlee@kooglerassociates.com)
Mr. Richard Rachal, Northeast District Office (richard.rachal@dep.state.fl.us)
Ms. Lorinda Shepherd, EPA Region 4 (shepherd.lorinda@epa.gov)
Ms. Heather Ceron, US EPA Region 4 (ceron.heather@epa.gov)
Ms. Lorinda Shepherd, EPA Region 4: shephard.lorinda@epa.gov
Ms. Lynn Scearce, DEP OPC: (lynn.scearce@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.

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## FACILITY DESCRIPTION

The existing facility consists of the following emissions units.

| Facility ID No. 0310358 | |
|---|---|
| **ID No.** | **Emission Unit Description** |
| 001 | Municipal Solid Waste Landfill |
| 004 | Internal Combustion Engine (#1) |
| 005 | Internal Combustion Engine (#2) |
| 006 | Internal Combustion Engine (#3) |
| 007 | Internal Combustion Engine (#4) |
| 008 | Internal Combustion Engine (#5) |
| 009 | Internal Combustion Engine (#6) |
| 010 | 5,000 SCFM Open, Non-assisted Utility Flare |

## PROPOSED PROJECT

As part of the project for the Title V air operation permit renewal (Project No. 0310358-015-AV), the applicant requested a concurrent air construction permit revision to remove Emissions Units 012 through 015, found in permit 0310358-012-AC / PSD-FL-374C. These emissions units will not be constructed.

This project will modify the following emissions units.

| Facility ID No. 0310358 | |
|---|---|
| **ID No.** | **Emission Unit Description** |
| 012 | Internal Combustion Engine (#7) |
| 013 | Internal Combustion Engine (#8) |
| 014 | Internal Combustion Engine (#9) |
| 015 | Internal Combustion Engine (#10) |

## 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 62-213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.

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The following permit conditions and emissions unit description in Permit No. 0310358-012-AC / PSD-FL-374C are revised as indicated. ~~Strikethrough~~ is used to denote the deletion of text. Double-underlines are used to denote the addition of text. All changes are emphasized with yellow highlight in the electronic document.

## ~~SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS~~

### ~~B. EU 012-015~~

~~This section of the permit addresses the following emissions units.~~

| ~~ID No.~~ | ~~Emission Unit Description~~ |
|---|---|
| ~~012-015~~ | ~~Four Caterpillar Model G3520C or equivalent landfill gas fueled internal combustion engines and electricity generators. Each engine has a power generation rating of 2,233 brake horsepower at 100 percent load. The generator has a power output rating of 1,600 kilowatt. The engines will be fueled exclusively with landfill gas generated by and received from the Trail Ridge Landfill facility. The landfill gas will go through a gas treatment system prior to combustion in the engines~~ |

~~*{Permitting Note: Emission Unit ID Nos. 012 and 013 are planned to be installed once the permit is issued and Emission Unit ID Nos. 014 and 015 will be installed at a later date.}*~~

**~~EQUIPMENT~~**

1. ~~Landfill Gas Engine/Generator Sets: The permittee is authorized to install and operate four (Caterpillar Model G3520C or equivalent) spark-ignited reciprocating internal combustion engines. Each engine is a 20-cylinder engine with a total displacement of approximately 86.3 liters. Each engine has a maximum rating of 2,233 bhp and is coupled to a 1,600 kW generator (nominal rating) for the generation of up to a total of 6.4 MW of electricity. The maximum rating when coupled to the electrical generator is 2,233 bhp. Each engine will fire LFG. The LFG will pass through a gas treatment system prior to combustion in the engines.~~

   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.~~

   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 580 scfm per engine.}* [Application No. 0310358-012-AC; and Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400(PSD), F.A.C.]~~

2. ~~LFG Treatment System: The permittee shall design, install, operate and maintain a LFG Treatment System including equipment for: gas compression (blowers/compressors), de-watering (knock-out and chilling system) and particulate removal (filtration). Specifically, the permittee shall design, install, maintain and operate 1 micron primary and polishing filters to remove particulate matter from the LFG prior to combustion in the engines. The LFG treatment system shall not be equipped with atmospheric vents. [Application No. 0310358-012-AC; and Rule 62-212.400, F.A.C.]~~

3. ~~Construction Milestones: The permittee shall submit to the Office of Permitting and Compliance a construction schedule and any changes to the schedule for the first two engines (Emission Unit ID Nos. 012 and 013) within 90 days of the permit issuance. For the remaining two engines (Emission Unit ID Nos. 014~~

~~and 015), the permittee shall submit the construction schedule within one year of issuance of the permit. [Rule 62-212.400(12), F.A.C.]~~

~~**PERFORMANCE RESTRICTIONS**~~

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: Each engine shall fire only landfill gas. [Application No. 0310358-012-AC and Rule 62-210.200(PTE), F.A.C.]~~

6. ~~Restricted Operation: The hours of operation are not limited (8760 hours per year). [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]~~

7. ~~Operating Requirements: The permittee shall set the air-to-fuel ratio for each engine based on the most recent emissions tests or each engine shall be operated within 0.5 percent of the oxygen content in the exhaust gas at the air-to-fuel ratio operated at during the most recent performance test 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., Construction Permit No. 0310358-004-AC/PSD-FL-374 and NSPS Subpart JJJJ in 40 CFR 60]~~

8. ~~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 ICE of this permit. [NSPS Subparts A and JJJJ in 40 CFR 60 and Rule 62-204.800, F.A.C.]~~

9. ~~Applicable NESHAP Provisions: The landfill gas engines are subject to, and shall comply with, initial notification, reporting and recordkeeping requirement of the subpart applicable NESHAP provisions in 40 CFR 63 for Subpart A (General Provisions) and Subpart ZZZZ (Reciprocating Internal Combustion Engines) of 40 CFR 63, which are identified in Appendix ICE of this permit. Pursuant to 40 CFR 63.6590, the landfill gas engines complies 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**~~

10. ~~Nitrogen Oxides (NOx): The emission rate of NOx from each engine/generator set exhaust shall not exceed 0.6 gram per brake horsepower hour (g/bhp-hr) and a maximum of 3.0 pounds per hour (lb/hr). [Rule 62-212.400(12), F.A.C.]~~

11. ~~Carbon Monoxide (CO): The emission rate of CO from each engine/generator set exhaust shall not exceed 3.5 g/bhp-hr and a maximum of 17.2 lb/hr. [Rule 62-212.400(12), F.A.C.]~~

12. ~~Particulate Matter/Particulate Matter less than 10 microns ($PM/PM_{10}$): Emissions of $PM/PM_{10}$ shall be minimized by the following work practice standards: installing, maintaining and operating the LFG Treatment System that meets the filtration specification; and, as determined by EPA Method 9, visible emissions from each engine exhaust shall not exceed 10% opacity. {*Permitting Note: Based on these work practice standards, the expected maximum $PM/PM_{10}$ emissions from each engine is 0.24 g/bhp-hr and a maximum of 1.2 lb/hr.*} [Rule 62-212.400(BACT), F.A.C.]~~

13. ~~Volatile Organic Compounds (VOC): The emission rate of total VOC from each engine/generator set exhaust shall not exceed 0.28 g/bhp-hr and a maximum of 1.4 lb/hr. {*Permitting Note: 1.0 g/bhp-hour limit is the NSPS Subpart JJJJ standard, however the "g/bhp-hour" and "lb/hour" limits allow 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.]~~

14. ~~Sulfur Dioxide ($SO_2$): Sulfur dioxide emissions from all four engines shall not exceed 16.6 tons during any rolling 12 months. Emissions shall be calculated based on the representative sulfur content of each fuel and the actual monthly fuel consumption rate of each fuel based on the following:~~

    ~~a. LFG: The representative sulfur content for a given month shall be the sulfur content determined from sampling and analysis within the same semiannual period.~~

    ~~b. Fuel Consumption: The monthly fuel consumption shall be determined from the fuel flow monitors.~~

    ~~Compliance with the $SO_2$ emissions cap shall be determined by summing the calculated monthly $SO_2$ emissions from each fuel based on stoichiometry for a rolling 12-month period. *{Permitting Note: The project avoids PSD review based on this emissions cap.}* [Rule 62-212.400(12)(Source Obligation), F.A.C.]~~

15. ~~Hydrogen Chloride (HCl): Hydrogen chloride emissions from the facility shall not exceed 9.0 tons during any rolling 12 months. Emissions shall be calculated based on the representative chlorine content of LFG and the actual monthly fuel consumption rate of the engines and the amount flared based on the following:~~

    ~~a. LFG: The representative chlorine content for a given month shall be the chlorine content determined from sampling and analysis within the same semiannual period.~~

    ~~b. Fuel Consumption: The monthly fuel consumption shall be determined from the fuel flow monitors on the engines as well as the flares.~~

    ~~Compliance with the HCl emissions cap shall be determined by summing the calculated monthly HCl emissions from LFG based on stoichiometry for a rolling 12-month period. *{Permitting Note: This emissions cap ensures that the facility remains an area source of HAP emissions with regard to NESHAP Subpart ZZZZ in 40 CFR 63 (less than 10 tons per year of any single HAP and less than 25 tons per year for the combination of all HAPs)}.* [Applicant Request and Rule 62-4.070(3), F.A.C.]~~

16. ~~Visible emissions: Visible emissions from each engine/generator set exhaust shall not exceed 10% opacity. [Rule 62-212.400, F.A.C.]~~

**~~EXCESS EMISSIONS~~**

17. ~~Excess Emissions Allowed: Excess CO and NOx emissions (as specified in this subsection) resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing best operational practices to minimize emissions are adhered to and:~~

    ~~a. To the extent practicable, the operator shall strive to complete engines startups within 30 minutes; and~~

    ~~b. The duration of excess emissions due to malfunctions shall be minimized but in no case exceed two hours in any 24-hour period.~~

    ~~[Rule 62-210.700(1), F.A.C.]~~

**~~TESTING REQUIREMENTS~~**

18. ~~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. *{Permitting Note: Since the BACT emission standards are more stringent than 40 CFR 60, Subpart JJJJ emission standards, compliance with the BACT emission standards will satisfy compliance with the 40 CFR 60, Subpart JJJJ emission standards.}* [Rules 62-212.400(BACT), 62-297.310(7)(a)1, F.A.C. and NSPS Subpart JJJJ in 40 CFR 60]~~

19. ~~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. *{Permitting Note: Since the BACT emission standards are more stringent than 40 CFR 60, Subpart JJJJ emission standards, compliance with the BACT emission standards will satisfy compliance with the 40 CFR 60, Subpart JJJJ emission standards.}* [Rules 62-212.400(BACT), 62-297.310(7)(a)1 and 4, F.A.C., and NSPS Subpart JJJJ in 40 CFR 60]~~

20. ~~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.]~~

21. ~~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.}*~~ |
| ~~ALT-078~~ | ~~Clarification of Approval of an Alternative to Method 18 for 40 CFR Part 60, Subpart JJJJ~~ |

~~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. ALT-078 method is included in the Appendices. [Rules 62-204.800, 62-212.400(BACT) and Appendix A of 40 CFR 60]~~

22. ~~LFG Composition Analysis: The following methods shall be used to satisfy the sampling/analysis of LFG:~~

~~a. Sulfur Content: ASTM Method D5504-01 or equivalent.~~

~~b. Chlorine Content: Modified EPA Method TO-15 or equivalent.~~

~~c. The LFG shall be collected and transported in an appropriate canister (e.g. SUMMA®, Bottle-Vac Sampler or equivalent).~~

~~[Rule 62-4.070(3), F.A.C.]~~

**~~MONITORING REQUIREMENTS~~**

23. ~~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. 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) by appropriate canister (e.g. SUMMA®, Bottle-Vac Sampler or equivalent). Each sample shall have an ultimate analysis conducted for at least sulfur and 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.]~~

24. ~~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 HCl and $SO_2$ 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 based on the semiannual sampling for that period. [Rule 62-210.200 (232), F.A.C.]~~

**~~RECORDS AND REPORTS~~**

25. ~~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.]~~

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