PERMITTEE

City of Jacksonville
Public Works Department
117 West Duval Street, St. James Building, 4th Floor
Jacksonville, FL 32202

PERMITTING AUTHORITY

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

PROJECT

Air Permit No. 0310358-012-AC
PSD-FL-374C, Air Construction Permit
Trail Ridge Energy, LLC

The permittee proposes the installation and operation of four new Caterpillar Model No. G3520C or equivalent engine generator sets and modifies the CO emissions standard as Best Available Control Technology (BACT) for the proposed and existing engine generator sets. In addition, the applicant requested a concurrent revision of the Title V air operation permit.

NOTICE AND PUBLICATION

The Department distributed a draft minor air construction permit package on August 19, 2011. The applicant published the Public Notice in the Financial News and Daily Record on August 26, 2011. The Department received the proof of publication on September 6, 2011. No requests for administrative hearings or requests for extensions of time to file a petition for administrative hearing were received.

COMMENTS

Applicant

On August 30, 2011, the Department received comments from the applicant. The following summarizes the comments and the Department's response.

1. *Comment*: Section 3.A EU004-009 (Existing Engines) Condition 1, each CAT® G3520C engine has 20 cylinders.

   Response: The condition has been changed as follows:

   Landfill Gas Engine/Generator Sets: The permittee is authorized to install and operate six (Caterpillar Model G3520C or equivalent) spark-ignited reciprocating internal combustion engines. Each engine is a ~~4~~ 20-cylinder engine with a total displacement of 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 9.6 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.

2. *Comment*: Condition 1.b specifies that *Excess landfill gas not fired in the engines shall be flared in accordance with the requirements of Subpart WWW in 40 CFR 60*. The flares are under the control of the City of Jacksonville and Trail Ridge Landfill, Inc. Trail Ridge Energy requests that this be removed as the

landfill gas (LFG) collection and control requirements are addressed in Title V air operation permit issued to Trail Ridge Landfill, Inc.

Response: This condition has been changed as follows:

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.~~

3. *Comment*: Condition 2 specifies that *LFG shall be directed to the new engines, the existing flares or some other appropriate treatment or control system*. Trail Ridge Energy requests that this be removed from the permit. LFG collection and control requirements are adequately addressed in Title V air operations permit issued to the landfill owner/operator.

   Response: This condition has been changed as follows:

   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. ~~LFG shall be directed to the new engines, the existing flares or some other appropriate treatment or control system.~~ [Application No. 0310358-004-AC; and Rule 62-212.400, F.A.C.]

4. *Comment*: Condition 3, LFG Flaring, requires that the permittee *install and maintain an automatic fail-safe block valve on each engine*, and that excess LFG be *flared or directed to some other appropriate treatment or control system.* The requirement to install an automatic fail-safe block valve on each engine is already specified in Condition 1.b and the requirement to route excess LFG to an alternate control device is the responsibility of the landfill owner/operator and is adequately addressed in Title V air operation permit issued to the landfill owner/operator.

   Response: The conditions have been changed to show this requirement only in Condition 1.b. and the requirement for the flares has been removed.

5. *Comment*: Condition 3 on page 8 of 19 specifies that the *permittee shall set the air-to-fuel ratio for each engine based on the most recent emissions tests*. The air-to-fuel ratio is adjusted electronically based on constantly monitoring the inlet gas methane content (i.e., heat value) and other engine parameters that indicate efficient fuel combustion. A more accurate requirement is to operate each engine within 0.5% of the exhaust gas oxygen (O_2) content measured during the performance test.

   Response: The condition regarding operating each engine within 0.5% of the exhaust gas oxygen has been added as follows:

   <u>Operating Requirements</u>: The permittee shall set the air-to-fuel ratio for each engine based on the most recent emissions tests <u>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</u> demonstrating compliance with the standards specified in this permit and other operating conditions. [Rule 62-212.400(BACT), F.A.C. ; Appendix F of Construction Permit Application; Construction Permit No. 0310358-004-AC/PSD-FL-374]

6. *Comment*: The engines are fueled exclusively with treated LFG and references to diesel and biodiesel fuels should be deleted from Condition 6.

   Response: The references to diesel/biodiesel have been removed.

7. Please modify Condition 9.a for consistency with the annual chlorine sampling requirement.

   Response: The sampling of the chlorine content is to be done semiannually while the reporting of HCl emissions is to be done annually. The HCl emissions limit are close to the hazardous air pollutant (HAP) threshold, therefore the conditions were clarified to be consistent with the requirement for a 12-month rolling total.

8. *Comment*: Trail Ridge Energy requests that VOC testing be removed from Condition 14 or that Condition 14 include the option to use USEPA alternate method 78 (ALT-078) for the direct measurement of VOC emissions from internal combustion engine exhausts..

   Response: The alternative method, USEPA-ALT-078, is acceptable and has been added to the condition as follows:

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]

9. Condition 15.a specifies ASTM Method D3588 or equivalent for measuring LFG Lower Heating Value (LHV). Please remove this condition referencing LHV and ASTM Method D3588.

   Response: The requirement to determine lower heating value has been removed.

10. Condition 17 requires that engine operating data and emission calculations be recorded in a written log. Trail Ridge Energy requests that this be modified (or clarified) to allow the information to be stored electronically.

    Response: This condition has been changed as follows:

    Monthly Records: Within ten calendar days following each month, the permittee shall observe and record the following information in a written log or electronic format accessible to a compliance inspector: 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. [Rule 62-210.200 (232), F.A.C.]

11. Section 3.B EU012-015 (Proposed Engines) The comments and requests for Section 3.B for the proposed new CAT® G3520C engines (emission units EU012-015) are largely the same as those for Section 3.A for the existing engines (EU004-009) and are summarized in the following text.

    Response: Section 3.B. has been changed to conform to changes requested in Section 3.A.

The Department

The Department made corrections to clerical errors and the following changes.

1. *Comment*: In condition 8 in Section 2, number 5) was removed as it is included in paragraph c.

2. *Comment*: Recording the HCl and SO_2 emissions has been made consistent for 12 months, rolling total, as these pollutants are PSD pollutants. Also, condition 20 in Section 3.A. and condition 24 in Section 3.B. has been clarified as follows:

   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.]

CONCLUSION

The final action of the Department is to issue the permit with the minor changes, corrections and clarifications as described above.