

CONSTRUCTION PERMIT - REVISED
NSPS/NESHAP SOURCE

PERMITTEE

Prairie View Recycling and Disposal Facility
A Subsidiary of Waste Management of Illinois, Inc.
Attn: Ian Johnson
29755 S. Prairie View Drive
Wilmington, Illinois 60481

Application No.: 10040014 I.D. No.: 197804AAB
Applicant's Designation: Date Received: April 5, 2010
Subject: Landfill Gas-to-Energy Facility
Date Issued:
Location: Prairie View Landfill, 29755 S. Prairie View Drive, Wilmington

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a landfill gas-to-energy facility including a landfill gas treatment system and two internal combustion engines, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Introduction

- a. i. This permit authorizes construction of a landfill gas (LFG) treatment system and two internal combustion engines (Caterpillar Model 3520, Nominal Rating 1,600 kW) for a new gas-to-energy facility (the affected facility) located at the Prairie View landfill (the affected landfill), which is also operated by the Permittee. The affected engines would be fired with LFG collected from this landfill that has been treated by the LFG treatment system.
- ii. This revised permit authorizes installation of third LFG fired engine (Caterpillar Model 3520, Nominal Rating 1,600 kW) for the affected facility.

For the purpose of this permit, the three engines are referred to as the "affected engines". The "source" is the combination of the affected facility and the affected landfill.

- ii. This permit also authorizes certain future changes to the affected engines as part of the maintenance and repair of these engines. (See Condition 12.)
- b. This permit is issued based on the existing flare at the landfill will remain in service and be used as a backup for controlling LFG that cannot be used at the gas-to-energy facility.
- c. This permit does not relax any requirements and conditions that apply to the existing emission units at the affected landfill, including

applicable emission standards, testing, monitoring, recordkeeping, and reporting requirements established in the current permits issued to the source.

2. Applicable Federal Emission Standards

- a. Pursuant to 40 CFR 60.4230(a)(4), the affected engines are subject to the applicable requirements of the New Source Performance Standards (NSPS) for Spark Ignition Combustion Engines, 40 CFR 60 Subpart JJJJ and related requirements in 40 CFR 60 Subpart A, General Provisions (the Engine NSPS). Pursuant to the Engine NSPS, each affected engine shall comply with the applicable emission standards in Table 1 of 40 CFR 60 Subpart JJJJ. The Permittee shall also comply with other applicable requirements of the Engine NSPS for each affected engine.
- b. This permit is issued based on the source being an "area source" for emissions of hazardous air pollutants (HAPs), as defined by 40 CFR 63.6585(c). Accordingly, the Permittee shall comply with the applicable requirements of the NESHAP for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63 Subpart ZZZZ (the Engine NESHAP) and related requirements of General Provisions in 40 CFR 63 Subpart A, for each affected engine that meets the applicability provisions of this NESHAP, e.g., the engine is manufactured after June 11, 2006. In particular, pursuant to this NESHAP, 40 CFR 63.6590(c), each such subject engine shall comply with the applicable requirements of the Engine NSPS. No further requirements of the Engine NESHAP apply to subject engines other than to comply with the Engine NSPS.
- c. i. The source is subject to the New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills, 40 CFR 60 Subpart WWW (the Landfill NSPS) and related requirements in 40 CFR 60 Subpart A, General Provisions. Pursuant to the Landfill NSPS, emissions from any atmospheric vent from a LFG treatment system at the affected facility, including any engines, are subject to the requirements of 40 CFR 60.752(b)(2)(iii)(A) and (B).

Note: The affected facility is subject to the Landfill NSPS because the affected landfill is subject to this NSPS and the facility receives untreated LFG collected from the landfill. For the purpose of the Landfill NSPS, this permit is issued based on the Permittee treating the LFG that is combusted at the affected facility (i.e., processing the LFG with compression, de-watering and filtration, with a system designed and operated to remove nonmethane organic compounds (NMOC) from the collected LFG in accordance with 40 CFR 60.752(b)(iii)(C)). As a consequence, the affected engines are not subject to the emission standards of the Landfill NSPS, pursuant to a site-specific determination made by the USEPA in a letter dated January 25, 2010. Compliance with the Landfill NSPS is not dependent upon the control efficiency for NMOC achieved by the engines and emission testing of the engines is not required pursuant to this NSPS.

- ii. If the affected engines are relied upon in the future to comply with the requirements of the Landfill NSPS (e.g., the LFG treatment system is unable to treat all LFG being used as fuel in the engines):

- A. For purposes of compliance with the NSPS, the affected engines are considered to be enclosed combustor type control devices, as defined under 40 CFR 60.751.
 - B. Pursuant to 40 CFR 60.752(b)(2)(iii)(B), the affected engines shall be operated to reduce NMOC emissions by 98 weight percent or reduce the outlet NMOC concentration for each engine to less than 20 parts per million by volume (ppmv), dry basis as hexane at 3 percent oxygen.
 - C. The Permittee shall operate the affected engines so as to comply with the provisions of 40 CFR 60.753. Specifically, these include:
 - I. Operation of the affected engines in compliance with 40 CFR 60.752(b)(2)(iii). In the event the affected engines are inoperable, the gas mover system shall be shut down and all valves in the control system contributing to venting off the gas to the atmosphere shall be closed within one hour. [40 CFR 60.753(e)]
 - II. Operation of the affected engines at all times when the collected gas is routed to them. [40 CFR 60.753(f)]
 - III. Fulfillment of all applicable operating, monitoring, testing, recordkeeping, and reporting requirements of the Landfill NSPS.
 - D. The Permittee shall conduct timely performance tests for the affected engines as required pursuant to the Landfill NSPS.
- d. The source is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills, 40 CFR 63, Subpart AAAA and related requirements in 40 CFR 63 Subpart A, General Provisions (the Landfill NESHAP). Pursuant to this NESHAP, 40 CFR 63.1960, the Permittee must develop and implement a written Startup, Shutdown, and Malfunction Plan for the affected facility in accordance with 40 CFR 63.6(e)(3).
 - e. As the source is subject to the Landfill NSPS and Landfill NESHAP, the Permittee shall at all times, to the extent practicable, maintain and operate the affected facility, including LFG treatment systems, in a manner consistent with good air pollution control practice for minimizing emissions, as required pursuant to 40 CFR 60.11(d) and 63.6(e)(3).
3. Applicable State Emission Standards
- a. The affected engines are subject to 35 IAC 212.123(a), which provides that no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit except as allowed by 35 IAC 212.123(b) and 212.124.

- b. The affected engines are subject to 35 IAC 214.301, which provides that no person shall cause or allow the emissions of sulfur dioxide (SO₂) into the atmosphere from any process emission unit to exceed 2000 ppm.

4. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203, and Prevention of Significant Deterioration (PSD), 40 CFR 52.21. The Permittee has addressed the applicability of MSSCAM and PSD to this project in the application. The limits in this permit are intended to ensure that the project as proposed in this construction permit application does not constitute a major project pursuant to these rules. In particular, this permit is issued based on the source continuing to not be a major source of emissions under the PSD and MSSCAM rules. (See Condition 5(b)(ii).)

Note: If expansion of the affected facility is proposed in the future, accompanied by emissions of 100 tons or more per year of NO_x, SO₂, VOM, or PM_{2.5} or emissions of 250 tons or more per year of CO, PM, or PM₁₀, the affected facility would become a major project subject to MSSCAM or PSD, respectively.

- b. This permit is also issued based on the source not being a major source of emissions of hazardous air pollutants (HAPs).

5. Operational Requirements and Emission Limits

- a.
 - i. LFG shall be the only fuel fired in the affected engines.
 - ii. The rated heat input capacity of each affected engine shall not exceed 18.2 million Btu per hour (higher heating value).
- b.
 - i. The emissions from the affected engines shall not exceed the following limits. These limits are based on information provided in the application, including maximum firing rate, and continuous operation.

Pollutant	Hourly Limits for Each Engine (Lbs/hour)	Annual Limits (Tons/year)	
		Each Engine	Total
NO _x	4.91	21.5	64.5
CO	17.2	75.3	226.0
SO ₂	6.0	26.2	78.6
PM/PM ₁₀ /PM _{2.5}	0.9	3.9	11.7
VOM/NMOC	0.92	4.0	12.0
Total HAPs	0.3	1.3	3.9

- ii. The total emissions of the source, i.e., the combination of the affected engines, flare, and the landfill, shall not exceed the following limits:

Pollutant	Limit (Tons/year)
NO _x	96
CO	245
SO ₂	96
VOM/NMOC	50.0
PM/PM ₁₀	30/20*
Single HAP	8.0
Total HAPs	20.0

* Limits only address filterable PM and do not include fugitive PM emissions from the landfill operations.

- c. i. Compliance with annual limits shall be determined from a running total of 12 months of data.
 - ii. Emissions shall be determined using appropriate emission factors, which in order of preference shall be factors from on-site emission testing, manufacturer's emission data, and emission factors from USEPA's *Compilation of Air Pollutant Emission Factors* (AP-42), with appropriate adjustments to reflect any deficiencies in the operation of a unit.
6. Observations and Testing Requirements
- a. Upon written request of the Illinois EPA, the Permittee shall promptly conduct observations of operation and opacity of the affected engines. Opacity shall be determined in accordance with USEPA Method 9, during representative operation of the engines.
 - b. For each affected engine, if emission testing is required pursuant to the NSPS, 40 CFR 60 Subpart JJJJ (for example, if the affected engine is non-certified by the manufacturer or the certified engine is not operated and maintained in accordance with the manufacturer's emissions-related written instructions), the Permittee shall comply with the applicable testing requirements of the NSPS, 40 CFR 60.8 and 60.4243(b)(2)(ii) for such engine.
 - c. The Permittee shall have performance tests conducted for the affected engines for NO_x, CO, SO₂, PM, and NMOC/VOM by an approved independent testing service during conditions that are representative of maximum emissions. Testing shall be conducted using USEPA approved methods and procedures as specified under NSPS, 40 CFR 60, Appendix A:
 - i. Within 60 days of the date that the engine(s) are first relied upon as a control system for compliance with Landfill NSPS or if the engine(s) are relied upon periodically for compliance with Landfill NSPS, within 60 days of relying on engines for compliance for more than 15 days in a calendar year.
 - ii. Within 90 days of a written request from the Illinois EPA, or the date agreed upon by the Illinois EPA, whichever is later.

7. Monitoring Requirements
 - a. For the affected engines, the Permittee shall comply with the applicable monitoring requirements of the Engine NSPS.
8. Sampling and Analysis of Landfill Gas
 - a. The Permittee shall conduct sampling and analysis at least once per year for the composition of LFG burned in the engines and the flare. The samples shall be analyzed for methane, sulfur, and NMOC content (percent by volume) and heat content (Btu/cubic foot) of the LFG. If USEPA Method 18 is used to determine NMOC content, the minimum list of compounds to be tested shall be those published in the most recent version of AP-42. These analyses may be performed by the Permittee or an independent company. Written notification of testing or submittal of a formal testing protocol is not required for these tests.
 - b. The Permittee shall keep records for this activity, including both collected data and documentation for the sampling and analysis.
9. Recordkeeping Requirements
 - a.
 - i. For the affected engines, the Permittee shall comply with the applicable recordkeeping requirements of the Engine NSPS and Engine NESHAP.
 - ii. The Permittee shall maintain records for the affected facility, as necessary, to demonstrate compliance with the Landfill NSPS, including actions taken by the Permittee to verify that the LFG supply to the affected engines has been properly treated and any period when engines were relied upon or should have been relied upon for compliance, with explanation.
 - b. The Permittee shall maintain a file for each affected engine containing the following:
 - i. Manufacturer's data for the engine including emissions guarantees, horsepower or rated heat input capacity (mmBtu/hour), and operating and maintenance procedures suggested by the manufacturer.
 - ii. The maximum hourly emission rates for NO_x, CO, SO₂, PM, VOM, NMOC, and HAPs (lbs/hour), with supporting documentation and calculations.
 - c. The Permittee shall maintain a file containing the written procedures that are being followed as good combustion practices and good air pollution control practice to minimize emissions in accordance with Condition 2(e), which procedure may incorporate procedures provided by the manufacturer and be combined with other procedures maintained for affected engines and flare(s) by the Permittee.
 - d. The Permittee shall maintain an operating log or other records for each affected engine that at a minimum includes:
 - i. The operating schedule of each engine.

- ii. Identification of any period when engine(s) operated with LFG that was not properly treated, with date, time, duration and description.
- iii. Identification of any period when an engine continued to operate after a malfunction or breakdown of the engine's combustion system, with date, time, duration and description.
- e. The Permittee shall keep inspection, maintenance and repair logs with dates and the nature of such activities for the LFG treatment system and each affected engine.
- f. The Permittee shall maintain following records related to emissions:
 - i. Records for the heat content and composition of the LFG, based on representative sampling and analysis.
 - ii. LFG throughput (scf/month and scf/year) to the affected facility.
 - iii. A file identifying the maximum level(s) of sulfur in LFG combusted at the affected facility at which compliance with 35 IAC 214.301 is maintained, with supporting documentation and analysis.
 - iv. A file containing: 1) The emission factors or emission rates used by the Permittee for calculating emissions of NO_x, CO, PM, VOM, NMOC and HAPs, with supporting documentation; and 2) Engineering calculations for the maximum hourly emissions of NO_x, CO, PM, VOM, NMOC and HAPs from the engines.
 - v. Records of the emissions of NO_x, CO, SO₂, PM, VOM, NMOC, and HAPs from the affected engines (tons/month and tons/year), based on the operation of the facility, the composition of the LFG and the appropriate emission factors, with supporting data and calculations.
 - vi. Records of the emissions of NO_x, CO, SO₂, PM, VOM, NMOC and HAPs from the source (tons/month and tons/year), based on the operation of the source, the composition of the LFG and the appropriate emission factors, with supporting data and calculations, which records shall be compiled on at least a quarterly basis.
- g. The Permittee shall maintain records for all opacity measurements made in accordance with USEPA Method 9 for the affected engines that the Permittee conducts or that are conducted on its behalf by individuals who are qualified to make such observations. For each occasion on which such observations are made, these records shall include the identity of the observer, a description of the various observations that were made, the observed opacity, and copies of the raw data sheets for the observations.
- h. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least five years from the date of entry and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request. Any records retained in an electronic format (e.g., computer) shall be capable of

being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA or USEPA request for records during the course of a source inspection.

10. Notification and Reporting Requirements

- a. For the affected engines, the Permittee shall comply with the applicable notification and reporting requirements of the Engine NSPS and Engine NESHAP.
- b. If any affected engine has been relied upon for compliance with the Landfill NSPS, during outages of the LFG treatment system during a calendar half, the Permittee shall notify the Illinois EPA with the semi-annual report required by the Landfill NESHAP.
- c.
 - i. The Permittee shall notify the Illinois EPA within 10 days if the affected engine(s) are being relied upon for routine compliance with the Landfill NSPS (rather than treatment of LFG), with explanation.
 - ii. If affected engine(s) are being relied upon for routine compliance with the Landfill NSPS, the Permittee shall notify the Illinois EPA as soon as it becomes aware that the affected facility will not or is not controlling collected LFG so as to comply with applicable requirements for control of LFG.
- d. If there is any deviation from the requirements of this permit, the Permittee shall submit a report to the Illinois EPA within 30 days after the deviation. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, and a description of the deviation or violation and efforts to reduce emissions and future occurrences. The report shall include the emissions released in accordance with recordkeeping requirements, a copy of the relevant records, and a description of the deviation and efforts taken to minimize emissions and future occurrences.
- e. The Permittee shall notify the Illinois EPA if an affected engine is permanently removed from service. This notification shall include a demonstration that the remaining units are sufficient for the LFG generated from the affected landfill.

11. Addresses for Notifications and Reports

Two copies of all reports, notifications, and correspondence required by this permit shall be sent to:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

Tel: 217/782-5811 Fax: 217/782-6348

and one copy shall be sent to:

Illinois Environmental Protection Agency
Division of Air Pollution Control
9511 West Harrison
Des Plaines, Illinois 60016

Tel: 847-294-4000 Fax: 847-294-4018

12. Provisions for Maintenance, Repair, and Replacement of Engines
 - a. This permit authorizes installation of manufacturer supplied replacement engine or engine components for the affected engines that takes place either as part of scheduled maintenance of the engines or in the event of malfunction or unscheduled outage and subsequent repairs. This authorization does not address activities for which a construction permit is not required, such as routine preventive maintenance, minor replacement of engine components or assemblies, or activities that do not involve, either directly or indirectly, emission-related components or activities that do not involve, either directly or indirectly, emission-related components or assemblies of the engines.
 - b. This authorization is limited to activities that can be accommodated by the original installation of the affected engines and that are performed in conjunction with an ongoing program of maintenance, repair, and replacement, so as to not constitute a modification of the engines with respect to the MSSCAM or PSD rules. The replacement engine or engine component must be in good operating condition and come from either a manufacturer or dealer/service provider. This authorization does not extend to installation of a replacement engine that is a different make and model than the original engine, or to activities that are intended to, or would have the result of, increasing the design capacity of an engine.
 - c. This authorization does not relax or otherwise revise any requirements and conditions that apply to the operation of the affected engines, including applicable emission limits, monitoring, testing, recordkeeping, and reporting requirements of the current CAAPP permit or construction permit issued for the source, which shall continue to apply to the affected engines.
 - d. This authorization also does not excuse the Permittee from any new regulatory requirements that are adopted and applicable to the affected engines.
 - e. The Permittee shall expeditiously have performance testing conducted on an engine following replacement of components or assemblies, if requested by the Illinois EPA.
 - f.
 - i. The Permittee shall maintain following records at the source for the replacement activities authorized by this permit:
 - A. A file containing the paperwork for original and replacement engine components or engines, including documentation for engine model numbers and serial numbers and copies of the specifications for the engines.

- B. Details of activities performed pursuant to this permit including the date that the engine is removed from the service and the date the engine is returned to service.
 - ii. Notwithstanding the provisions of this permit, the records required by Condition 12(f)(i) shall be retained for at least five years after the date that the engine is permanently removed from the service.
 - g. The Permittee shall notify the Illinois EPA prior to carrying out activities pursuant to this Condition 12. This notification shall be submitted at least 15 days in advance or as soon as it is practicable to do so, e.g., in the event of engine failure. This notification shall include:
 - i. A description of the activities that are to be performed and the expected schedule for the activities.
 - ii. A confirmation that the activities fall within the authorization provided by this permit, the replacement engine or engine component is in good operating conditions and the outage of an engine will not interfere with compliance with applicable requirements, with supporting information.
 - h. The authorization provided for the affected engines pursuant to this Condition 12 will terminate when an engine is permanently removed from service or 30 days after notification from the Illinois EPA that this authorization is being terminated, whichever occurs first. As related to the replacement activities authorized by this permit, this condition supersedes Standard Condition 1.
13. Effect of This Permit
- This permit does not relieve the Permittee of the responsibility to comply with all Local, State and Federal Regulations which are part of the applicable Illinois State Implementation Plan, as well as all other applicable Federal, State and Local requirements. In particular, this permit does not excuse the Permittee from the obligation to undertake further actions at the source as may be needed to eliminate air pollution, including nuisance due to odors, such as implementation of additional work practices for handling of LFG at this source.
14. Authorization for Operation
- The Permittee may operate the affected facility pursuant to this construction permit until a CAAPP permit is issued that addresses the facility and the activities authorized by this permit. This condition supersedes Standard Condition 6.

Please note has this permit has been revised to address installation of a third engine at the affected facility.

If you have any questions on this permit, please call Kunj Patel at 217/782-2113

Edwin C. Bakowski, P.E.
Manager, Permit Section
Division of Air Pollution Control

Date Signed: _____

ECB:CPR:KMP:

cc: Region 1