



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 102008-004 Project Number: 2007-11-034

Parent Company: City of Lamar

Parent Company Address: 1104 Broadway, Lamar, MO 64759

Installation Name: Lamar "Green Power" Project #1

Installation Address: Highway 71 and Highway DD, Lamar, MO 64759

Location Information: Barton County, S2, T32N, R31W

Application for Authority to Construct was made for:
Construction of two Caterpillar G3520C Gas Engines that combust landfill gas and natural gas to generate electricity. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

-
- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

OCT 16 2008

EFFECTIVE DATE


DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: Project Number: 2007-11-034

Parent Company: City of Lamar

Parent Company Address: 1104 Broadway, Lamar, MO 64759

Installation Name: Lamar "Green Power" Project #1

Installation Address: Highway 71 and Highway DD, Lamar, MO 64759

Location Information: Barton County, S2, T32N, R31W

Application for Authority to Construct was made for:
Construction of two Caterpillar G3520C Gas Engines that combust landfill gas and natural gas to generate electricity. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

-
- Standard Conditions (on reverse) are applicable to this permit.
 - Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

EFFECTIVE DATE

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

Page No.	3
Permit No.	
Project No.	2007-11-034

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Lamar "Green Power" Project #1
Barton County, S2, T32N, R31W

1. Stack Testing Requirements

- A. The City of Lamar shall conduct performance testing on one of the engines (EU-05 or EU-06) sufficient to quantify the emission rates of carbon monoxide (CO), and nitrogen oxides (NO_x) claimed in the permit application (4.13 grams of CO per boiler horse power hour g CO/bhp-hr and 0.5 g NO_x/bhp-hr) from these sources. The emission tests should provide emission factors for a full range of loads on the generators (i.e. at loads from 50% to 100%) so that an accurate estimate of CO and NO_x emissions from the installation during all modes of operation can be determined. The installation shall conduct tests that represent, at a minimum, three (3) different operational loads for each pollutant. The test(s) shall be done in accordance with the procedures outlined below and subject to the Compliance Section's discretion.
- B. Testing shall be conducted on both of the engines (EU-05 and EU-06) to demonstrate that the engines remove 98 percent of the non-methane organic compounds (NMOC) or that the engine's exhaust contains a NMOC concentration less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen. The test shall be conducted in accordance with test methods 18, 25 or 25C in the Code of Federal Regulations, Title 40, Part 60, Appendix A.
- C. A completed Proposed Test Plan (form enclosed) must be submitted to the Air Pollution Control Program at least 30 days prior to the proposed test date any such performance tests are conducted so that a pretest meeting may be arranged, if necessary, and to assure that the test date is acceptable for an observer from the Air Pollution Control Program to be present. The Proposed Test Plan must be approved by the Director prior to conducting the above required emissions testing.

Page No.	4
Permit No.	
Project No.	2007-11-034

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- D. The stack tests required by this permit shall be performed within 60 days after achieving the maximum generation production rate at which the units will be operated, but not later than 180 days after initial start-up of the engines.
 - E. Two (2) copies of a written report of the performance test results must be submitted to the Director within 90 days of completion of the performance testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required method for at least one sample run for each air pollutant tested.
2. Natural Gas Requirement
- A. The City of Lamar shall install a natural gas pipeline to supply the engines with an alternative fuel source and connect the engines to the pipeline within two years of the issuance of this permit.
 - B. The City of Lamar shall submit, in writing, notification of the completion of the pipeline to the Air Pollution Control Program Permits Section, P.O. Box 176, Jefferson City, MO 65102.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2007-11-034
Installation ID Number: 011-0031
Permit Number:

Lamar "Green Power" Project #1
Highway 71 and Highway DD
Lamar, MO 64759

Complete: 11/8/2007

Parent Company:
City of Lamar
1104 Broadway
Lamar, MO 64759

Barton County, S2, T32N, R31W

REVIEW SUMMARY

- The City of Lamar has applied for authority to construct of two Caterpillar G3520C Gas Engines.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment, but are well below de minimis and screen modeling action levels.
- Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, of the NSPS will apply to the engines.
- Subpart ZZZZ, the National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines does not apply because the installation is not a major source of HAPs. None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) or currently promulgated Maximum Achievable Control Technology (MACT) regulations applies to the proposed equipment.
- Landfill gas emissions are being controlled by the reciprocating internal combustion engines and a flare.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of carbon monoxide (CO) are above de minimis levels.
- This installation is located in Barton County, an attainment area for all criteria air pollutants.
- This installation is not on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2].

- Ambient air quality modeling was performed to determine the ambient impact of CO.
- Emissions testing is required for the engines.
- A Part 70 Operating Permit application is required for the engines within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

PROJECT DESCRIPTION

The City of Lamar has applied to construct two Caterpillar G3520C engines at the Prairie View Regional Waste Facility (PVRWF). The engines will combust landfill gas that has been diverted from the PVRWF flare, and provide power for the City of Lamar. The engines have a rated capacity of 2233 boiler horse power (BHP) and a rated fuel consumption of 6354 Btu/bhp-hr.

For the purpose of construction permits, the Caterpillar engines and PVRWF will not be considered the same installation. Installation is defined in Missouri State Rule 10 CSR 10-6.020 *Definitions and Common Reference Tables*, paragraph (2)(l)7 as operations with the same industrial grouping, on contiguous or adjacent property and under common control are considered the same installation. The engines and the land fill are considered to be in the same industrial grouping because they have the same 2-digit SIC codes, 49, and the engines are located on property that is adjacent to the landfill and leased to the City of Lamar by PVRWF. However the facilities are not considered under common control. Furthermore there is not a support facility relationship between the facilities because the Caterpillar engines are capable of firing natural gas and this alternative fuel source is available in the event PVRWF is unable to provide landfill gas for combustion. The City of Lamar has pledged to install a natural gas pipeline to supply the engines within two years of the issuance of this permit. If the natural gas line is not installed, the engines and the landfill will be considered the same installation.

The engines will be considered the same installation as the other electrical generating units owned and operated by the City of Lamar.

The following construction permit has been issued to the City of Lamar by the Air Pollution Control Program.

Table 1: Construction Permits Issued

Permit Number	Description
062000-013	Diesel Engines

EMISSIONS/CONTROLS EVALUATION

Emissions of nitrogen oxides (NO_x) and carbon monoxide (CO) were calculated using

emissions data provided by the manufacturer. Emissions of particulate matter less than ten (10) microns in aerodynamic diameter (PM₁₀), sulfur oxides (SO_x) and volatile organic compounds (VOCs) were calculated using emission factor from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, "2.4 Municipal Solid Waste Landfills," November 1998. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year.) The following table provides an emissions summary for this project.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory De Minimis Levels	Existing Potential Emissions	Existing Actual Emissions (2007 EIQ)	Potential Emissions of the Application
PM ₁₀	15.0	1.81	0.01	6.53
SO _x	40.0	4.51	0.03	2.20
NO _x	40.0	159.8	2.17	21.57
VOC	40.0	2.45	0.03	37.96
CO	100.0	16.30	0.17	178.14
HAPs	10.0/25.0	N/D	N/D	0.24

N/D = Not Determined

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of CO are above de minimis levels.

APPLICABLE REQUIREMENTS

The City of Lamar shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110

The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required June 1 for the previous year's emissions.

- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

SPECIFIC REQUIREMENTS

- 40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

AMBIENT AIR QUALITY IMPACT ANALYSIS

Screen3 was used to demonstrate compliance with the National Ambient Air Quality Standard (NAAQS) for CO. The maximum concentration of CO from the engines was below the significance level.

Table 3: Air Quality Analysis

Pollutant	Modeled Impact ($\mu\text{g}/\text{m}^3$)	NAAQS/Significance Level ($\mu\text{g}/\text{m}^3$)	Time Period
CO	98.43	40,000/2,000	1-hour
CO	68.90	10,000/500	8-hour

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Michael Mittermeyer
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated 11/08/2007, received 11/08/2007, designating City of Lamar as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Southwest Regional Office Site Survey, dated 12/17/2007.

Mr. Lynn B. Calton
City Administrator
City of Lamar
1104 Broadway
Lamar, MO 64759

RE: New Source Review Permit - Project Number: 2007-11-034

Dear Mr. Calton:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Michael Mittermeyer at the departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH:mm ct first initial

Enclosures

c: Southwest Regional Office
PAMS File: 2007-11-034

Permit Number: