



Missouri Department of dnr.mo.gov

NATURAL RESOURCES

Eric R. Greitens, Governor

Carol S. Comer, Director

NOV 02 2017

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

RE: New Source Review Permit Amendment - Permit Number: 092017-007A
Project Number: 2017-10-043; Installation Number: 011-0031

Dear Mr. Calton:

On 10/23/2017, the Missouri Department of Natural Resources (MoDNR) received your application to amend construction permit (CP) 092017-007 in order to allow the operation of the EP-07 Guascor landfill gas (LFG) engine. Originally, two 1609 Bhp Guascor engines (EP-07 and EP-08) were permitted in CP 092012-009. During the review for CP 092017-007, City of Lamar informed the MoDNR that they would be removing a single Guascor engine (EP-07). In order to take credit for the Guascor removal in the project potential to emit calculations, Special Condition 3 of CP 092017-007 required City of Lamar to remove EP-07 prior to startup of the new EP-09 and EP-10 Caterpillar LFG engines. However, due to negotiations and agreements that were reached with the Guascor manufacturer which now support keeping EP-07 in service, the City of Lamar no longer intends to remove EP-07. With this amendment, Special Condition 3 of CP 092017-007 is being superseded (removed) in order to again allow the operation of the EP-07 Guascor. There will be a total of six LFG engines operating at the installation:

- EP-05 and EP-06 Caterpillar engines – 2233 Bhp each (Originally permitted in CP 102008-004)
- EP-07 and EP-08 Guascor engines – 1609 Bhp each (Originally permitted in CP 092012-009)
- EP-09 and EP-10 Caterpillar engines – 2242 Bhp each (Originally permitted in CP 092017-007)

In CP 092017-007, City of Lamar requested a 250.0 tpy CO limit be placed on the entire facility in order to avoid major source applicability. Therefore, with this amendment, EP-07 will now be required to track CO emissions as a part of that limit along with EP-05, EP-06, EP-08, EP-09, and EP-10. While only Special Conditions 2, 4, 5 and 6 of CP 092017-007 are being altered with this amendment, all special conditions are being superseded for clarity (i.e. to maintain consistent special condition numbering since certain Special Conditions reference each other). The Guascors' original construction permit was not superseded by CP 092017-007 and therefore the



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Special Conditions within the Guascors' original permit will still apply to EP-07. Allowing the EP-07 Guascor to operate will not principally change the permitting type as the installation will continue to be a minor source of NOx, VOC, CO, and PM_{2.5} and a de minimis source for all other pollutants. The table below has been updated from the Table 2 Emissions Summary of CP 092017-007 in order to reflect emissions increases from the operation of EP-07. Only the City of Lamar's installation wide conditioned potential will increase for PM/PM₁₀/PM_{2.5} from 11.2 tpy to 13.9 tpy. Existing emissions for the Guascor engine can be found in CP 092012-009 and were included in this project. For a more detailed emissions calculation analysis, see the Emissions/Controls Evaluation section of CP 092017-007.

Table 1 Emissions Summary (tpy)

Pollutant	Regulatory De Minimis Levels or SMAL	Existing Potential Emissions ¹	Existing Actual Emissions (2016 EIQ)	Potential Emissions of the Project ²	City of Lamar Conditioned Potential ³
PM	25.0	11.9	7.3	1.99	13.9
PM ₁₀	15.0	11.9	7.3	1.99	13.9
PM _{2.5}	10.0	11.9	7.3	1.99	13.9
SO ₂	40.0	4.3	2.6	1.72	5.99
NOx	40.0	< 80.0	32.1	< 40.0	120.0
VOC	40.0	73.0	4.4	< 40.0	113.0
CO	40.0	< 239.3	113.4	< 100.0	< 250.0
HAPs	10.0/25.0	0.33	N/D	4.38	4.71
Formaldehyde	2.0	N/D	N/D	< 2.0	N/D
HCl	10.0	N/D	N/D	1.70	N/D
Toluene	10.0	N/D	N/D	0.05	N/D

N/A = Not Applicable; N/D = Not Determined

¹Existing Potential Emissions were calculated as the sum of emissions within the columns *Existing Potential Emissions*, *Potential Emissions of the Application*, and *New Project Conditioned Potential* Found in Table 2: Emissions Summary (tons per year) of Construction Permit No. 092012-009.

²Potential Emissions of the Project take into account only the addition of the two (2) Caterpillar engines.

³*City of Lamar Conditioned Potential* includes the two new Caterpillar engines as well as the existing Caterpillar and Guascor engines.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty 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

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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 administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.ao.mo.gov/ahc.

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

Sincerely,

AIR POLLUTION CONTROL PROGRAM



Kendall B. Hale
Permits Section Chief

KBH:hrj

Enclosures

c: Southwest Regional Office
PAMS File: 2017-10-043

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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."

City of Lamar
Barton County, S2, T32N, R31W

1. **Superseding Condition**

The conditions of this permit supersede all special conditions found in the previously issued construction permit 092017-007 issued by the Air Pollution Control Program.

2. **Emissions Limitations**

- A. City of Lamar shall emit less than 250.0 tons of CO in any consecutive 12-month period from the entire installation which includes the three (3) existing LFG engines (EP-05, EP-06, EP-07, EP-08) and the two (2) new Caterpillar LFG engines (EP-09, EP-10).
- B. City of Lamar shall emit less than 100.0 tons of CO in any consecutive 12-month period from the two (2) 2242 bhp Caterpillar LFG engines (EP-09, EP-10).
- C. City of Lamar shall emit less than 40.0 tons of NO_x in any consecutive 12-month period from the two (2) 2242 bhp Caterpillar LFG engines (EP-09, EP-10).
- D. City of Lamar shall emit less than 40.0 tons of VOC in any consecutive 12-month period from the two (2) 2242 bhp Caterpillar LFG engines (EP-09, EP-10).
- E. City of Lamar shall emit less than 2.0 tons of Formaldehyde in any consecutive 12-month period from the two (2) 2242 bhp Caterpillar LFG engines (EP-09, EP-10).
- F. The City of Lamar shall develop and use forms to demonstrate compliance with Special Condition 2.A, 2.B, 2.C, 2.D, and 2.E. The forms shall

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

contain at a minimum the following information,

- 1) Installation name
- 2) Installation ID
- 3) Permit number
- 4) Current month
- 5) Current 12-month date range
- 6) Monthly production, electric kilowatt hours (ekWH), for each of the engines (EP-05, EP-06, EP-07, EP-08, EP-09 and EP-10)
- 7) Type of fuel combusted during the month per engine.
- 8) Emission factors for NO_x, CO, VOC, and Formaldehyde for EP-09 and EP-10 from the most recent stack test and fuel type.
 - a. Emissions that result from the operation of EP-09 and EP-10 without a control device shall be calculated using the most recent uncontrolled emission factors determined through testing.
 - b. If a catalyst is used, City of Lamar shall calculate emissions for EP-09 and EP-10 using the most recent controlled emission factors developed from stack tests in which the catalyst – of a specific make and model – is used. If a different catalyst is used – of a different make and/or model – then City of Lamar shall calculate emissions using the controlled emission factors developed from testing the different catalyst. Any pollutants that require recordkeeping which were not tested for controlled emission factors shall instead use uncontrolled emission factors.
 - c. City of Lamar shall calculate total CO emissions defined in Special Condition 2.A, using the most recent CO emission factors for all engines (EP-05, EP-06, EP-07, EP-08, EP- 09, and EP-10) from performance testing.
- 9) Monthly emissions for EP-09 and EP-10 are calculated using the following equation (Pollutants include NO_x, VOC, CO and Formaldehyde.

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$$\begin{aligned}
 & \text{Pollutant emissions (tons)} \\
 & = \text{Total Power Output for the Month (electrical KWH)} \\
 & \times 1.34102 \left(\frac{\text{bhp} - \text{hr}}{\text{KWH}} \right) \\
 & \times \text{Emission unit specific emission factor} \left(\frac{\text{grams Pollutant}}{\text{bhp} - \text{hr}} \right) \\
 & \times \left(\frac{1 \text{ lb Pollutant}}{453.5924 \text{ grams Pollutant}} \right) \times \frac{1 \text{ ton}}{2000 \text{ lbs}}
 \end{aligned}$$

- 10) 12-month rolling total NO_x, CO, VOC, and Formaldehyde emissions from EP-09 and EP-10 and the sum of all NO_x, CO, VOC, and Formaldehyde emissions from startup, shutdown, and malfunction as reported the Air Pollution Control Program's Compliance/Enforcement Section
 - 11) Monthly emissions of CO from the five (5) landfill gas engines (EP-05, EP-06, EP-07, EP-08, EP-09, and EP-10) calculated using the equation described in Special Condition 2.F.9).
 - 12) 12-month rolling total emissions of CO from the five (5) landfill gas engines (EP-05, EP-06, EP-07, EP-08, EP-09, and EP-10) including CO emissions from startup, shutdown, and malfunction as reported the Air Pollution Control Program's Compliance/Enforcement Section
 - 13) Indication of compliance with Special Condition 2.A, 2.B, 2.C, 2.D, and 2.E.
3. Performance Testing
- A. The City of Lamar shall conduct performance testing of the (2) Caterpillar engines (EP-09 and EP-10) for NO_x, CO, VOC, and Formaldehyde. All test methods shall be authorized by the Air Pollution Control Program's Compliance/Enforcement Section prior to testing.
 - B. Testing shall be performed at permitted capacity of 90 to 100 percent of the MHDR defined as 1622 EKW from each engine. The test shall note fuel consumption rate (SCFM), fuel higher heating value (Btu/SCF); and if a control device is used, the inlet and outlet temperature, pressure drop, control device name and type. If it is impractical to test at permitted capacity, emission unit(s) may be tested at less than the permitted capacity; in this case, subsequent operation of the emission unit(s) is limited to 110 percent of the test rate until a new test is conducted. Once

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the emission units are so limited, operation at higher capacities is allowed for no more than 15 total days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity.

- C. The initial stack tests shall be performed within 60 days after achieving the maximum production rate of the engine, but not later than 180 days after initial start-up for commercial operation and shall be conducted in accordance with the Stack Test Procedures outlined in Special Condition 3.B. *If a control device is used, the initial stack test shall include testing before and after the control device so that uncontrolled and controlled emission factors can be developed.*
- D. Following the initial stack test, City of Lamar shall test EP-09 and EP-10 engines as required by 40 CFR 60 JJJJ. (i.e. every 8760 hours or every 3 years of operation, whichever comes sooner). While this testing is required for NO_x, CO, VOC, and Formaldehyde as a part of this permit, City of Lamar may test for either controlled or uncontrolled emissions [See Special Condition 2.F.8)b]. If EP-09 and EP-10 begin to operate without a catalyst while previously operating with a catalyst, City of Lamar shall test for uncontrolled emission factors within 45 days of operating without a catalyst unless the uncontrolled emission factors obtained in the initial performance test are within 8760 operating hours. Every instance that a different catalyst is used – either of differing make and/or model from the previous catalyst or if no catalyst was used previously – City of Lamar shall conduct a stack test before and after the catalyst to determine uncontrolled and controlled emission factors using the new catalyst within 45 days of catalyst operation. All tests shall be conducted in accordance with the Stack Test Procedures outlined in Special Condition 3.B.
- E. City of Lamar shall conduct stack testing in accordance with Special Conditions 2 within 45 days of using a new type of fuel (i.e. compressed natural gas). The testing shall only be required for those engines which utilize the new fuel type.
- F. A completed Proposed Test Plan Form (enclosed) must be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification

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

and must be approved by the Director prior to conducting the required emission testing.

- G. One electronic copy of a written report of the performance test results shall be submitted to the Stacktesting@dnr.mo.gov within 60 days of completion of any required testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one sample run.

4. Control Device Requirement – Catalyst

- A. The City of Lamar may choose (at their discretion) to control emissions from the two Caterpillar engines (EP-09 and EP-10) using a catalyst. The City of Lamar may develop via stack testing and use controlled emission factors for periods when the catalyst is installed and operational.
- B. City of Lamar shall keep records of when the catalyst is operated so that the correct emission factors are used in compliance tracking. The records will need to indicate the dates that controlled emission factors and the catalyst were used for emission calculations and the dates that uncontrolled factors without a catalyst were used for emission calculations.
- C. The catalyst shall be operated and maintained in accordance with the manufacturer's specifications and the operating ranges for pressure drop and temperatures across the catalyst as established per Special Condition 4.E.
- D. The catalyst shall be equipped with gauges or meters, which indicate the pressure drop and temperatures across the catalyst. These gauges or meters shall be located such that the Department of Natural Resources' employees may easily observe them. The pressure drop and temperatures shall be measured and recorded at least once every 24 hours when in operation.

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- E. City of Lamar shall submit a report to the Air Pollution Control Program's Compliance/Enforcement Section establishing ranges for the operating parameters of the catalyst, if used, and show how the ranges were developed (e.g. directly from compliant testing, calculations from test data, actual operations and manufacturer's specifications). At minimum, the operating ranges to be established include pressure drop, inlet and outlet temperatures and anticipated catalyst replacement frequency. The report shall be submitted within 30 days of the submittal of the test report in Special Condition 3.G.
- F. City of Lamar shall maintain a copy of the catalyst manufacturer's performance warranty on site.
- G. City of Lamar shall maintain an operating and maintenance log for the catalyst which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
 - 3) Dates of all above schedules, incidents, activities, and actions.
- 5. Alternative Fuel
 - A. City of Lamar shall install a "T" connection to the existing fuel supply piping which will allow all engines at the facility to accept natural gas as an alternative fuel to landfill gas prior to the start-up of operation of EP-09 or EP-10.
- 6. Record Keeping and Reporting Requirements
 - A. City of Lamar shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
 - B. City of Lamar shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.