

**ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR POLLUTION CONTROL**

Summary Report Relative to Permit Application

Submitted By: The City of Fort Smith Sanitary Landfill
5900 Commerce Road
Fort Smith, Arkansas 72916
Sebastian County

Contact Position: Mr. Dan Reikes, Director of Community Services

Phone Number: (501) 784-2431/646-2255

CSN: 66-0226

Permit No.: 1791-A

Date Issued:

Submittals: October 1, 1996, March 13, 1998, March 27, 1998, May 20, 1998, July 21, 1998

Summary

The City of Fort Smith operates a permitted Class I solid waste landfill near Hwy. 45 South. As required under NSPS Subpart WWW §60.752(b)(2), a landfill gas (LFG) collection system is currently being constructed by the NEO Corporation, which specializes in developing LFG utilization projects. Methane gas (which is not classified as a Volatile Organic Compound), and VOCs generated through decomposition, will be collected from both the "open" and the "closed" CFS landfills at this site. The "open" landfill is a Class I Sanitary facility that began accepting at the same time that the "closed" site no longer accepted refuse, in October of 1993. The new landfill area consists of approximately 400 acres, of which 100 acres are designated for the disposal of Municipal Solid Waste (MSW). The landfill will be lined with 24" recompacted clay and a 60 mil vinyl chloride liner, and will be developed in six distinct phases that are expected to provide waste disposal until the year 2013.

An average 1,800 CFM of collected gas, with a BTU value of about 500 BTU/SCF, will be transported through a pipeline to an industrial user near the facility on a contract basis. Excess gas will be burned in an open LFG flare. If all the produced gas goes to the flare, the resulting emissions will consist of 87.6 tpy of CO, 16.2 tpy of NO_x, 5.3 tpy of particulates, and 1.8 tpy of VOCs. HAPs emissions will be below 0.5 tpy.

The facility will be permitted as a minor source of air pollution subject to regulation under the *Arkansas Air Pollution Control Code* (Air Code) and the *Arkansas State Implementation Plan for Air Pollution Control*. It is also subject to the Federal standard (NSPS) *Standards of Performance for Municipal Solid Waste Landfills*, contained in 40 CFR 60 Subpart WWW.

Reviewed By: M. Lloyd Davis, P.E. **Approved By:** Keith A. Michaels
Applicable Regulation: Air Code SIP NSPS

Process Description

The initial phase of waste decomposition produces primarily Carbon Dioxide. As the oxygen supply is depleted, anaerobic bacteria generate a mixture of Carbon Dioxide and Methane at about a 50/50 ratio. In addition, Hydrogen Sulfide and volatile non-Methane organic compounds (NMOC) are produced. The NMOC include a large variety of aromatic and chlorinated hydrocarbons present at very low concentrations, and these are classified as Hazardous Air Pollutants (HAPs).

A total of 21 vertical LFG extraction wells will be installed in the “closed” CFS landfill, which stopped accepting waste in 1993. The “open” landfill currently accepts waste and will have 17 extraction wells of various designs to collect LFG. The gases from each landfill will be exhausted by the suction provided by two 2200 SCFM maximum capacity blowers located at the flare blower station. Condensate traps remove liquids before the gas is forced into the HDPE header piping system. Excess gas above the amount sold under contract will be automatically combusted in the flare. The suction head at each wellhead is periodically adjusted for variations in the Methane production rate. The suction at each wellhead is manually controlled by valves of varying diameters.

Modeling parameters for the landfill based on the EPA emission model results for 1998 submitted with the application indicate that an estimated 7,823 tons of Methane gas are generated at this site annually, and that 17.4 tpy of non-Methane organic compounds are also generated. About 8.2% of these VOCs are Hazardous Air Pollutants (HAPs), principally aromatic and chlorinated hydrocarbons.

The flare for burning excess LFG must conform to the specifications of 40 CFR 60.18, which requires:

- 1) A flame present at all times and a thermocouple for monitoring the pilot flame.
- 2) A minimum net heating value for the gas of 200 BTU/CF when unassisted by steam or air.
- 3) A maximum exit velocity calculated from the net heating value of the gas, the internal cross-sectional area of the flare (0.837 sq. ft.), and equation 60.18(f)(5), but less than 60 ft/second.

In addition, NSPS Subpart WWW §60.752(b)(iii)(B) specifies that the control system be designed and operated to reduce NMOC by 98 weight percent. §60.756(2b)(i) requires flow readings every 15 minutes; in this case, a continuous flow meter will totalize the gas flow.

Specific Conditions

1. TABLE I AND VISIBLE EMISSION REQUIREMENTS

- a.** Emissions shall not exceed the limits set forth in Table I of this permit.
- b.** Visible emissions shall not exceed the opacity limits set forth in Table I of this permit as measured by EPA Method 22 according to the provisions of 40 CFR §60.18(f)(1). Compliance with the opacity limit will be determined by compliance with specific condition #3.
- c.** Visible emissions from any stationary source shall not extend past its property boundaries at ground level if it is determined by the Department to be a nuisance to the surrounding community. A stationary source shall take whatever steps are necessary to prevent visible emissions from extending past property boundaries.

2. REPORTING REQUIREMENTS FOR PLANNED CHANGES: Pursuant to the Arkansas Plan of Implementation for Air Pollution Control (SIP), Regulation No. 19, no person shall cause or permit the construction or modification of equipment at a stationary source without first obtaining a permit from ADEQ.

Additionally, the permittee shall not install, construct, or operate any new source of emissions at this facility without a permit modification.

This condition does not apply to minor permit modifications as defined in the SIP.

This facility must comply with all applicable requirements of the Air Code and SIP regulations.

3. POLLUTION CONTROL EQUIPMENT REQUIREMENTS: All equipment and associated control equipment shall be operated within design specifications as described in the permit application at all times.

- a.** The flare system (SN-01) is subject to and shall comply with 40 CFR 60.18. (See Appendix A).
- b.** As required by 40 CFR 60.18, the flare shall be operated with a flame present at all times. A thermocouple shall be used to monitor the flame.
- c.** In the event of a flame failure, the permittee shall shut down the gas exhaust system to prevent passive venting of the LFG.

Date Amended:

- d. The net heating value of LFG being combusted shall be 200 BTU/SCF (7.45 MJ/SCM) or higher for the non-assisted flare. The net heating value shall be calculated by the method of 40 CFR Section 60.18(f)(3).
- e. The maximum velocity of the gas exiting the flare shall be as calculated by the method of 40 CFR 60.18(f)(5).
- 4. NSPS REQUIREMENTS: This facility is subject to and shall comply with 40 CFR Part 60 Subpart WWW - *Standards of Performance for Municipal Solid Waste Landfills*. (See Appendix B).
- 5. FUEL USAGE LIMITATION: The following requirements apply to this facility:
 - a. The following throughput of fuel to the flare (SN-01) shall not be exceeded in any 12 consecutive months:

Material	12 Consecutive Month Limit
Landfill Gas (LFG)	946 MMSCF

- b. The maximum transient flow rate through the 1.0325 ft ID flare shall not exceed the following hourly rates, based on the analyzed net heat of combustion (HT) of the gas.

Net Heating Value (HT)	Maximum Velocity	Maximum Transient Flow Rate	
BTU/SCF	ft/second	SCF/minute	SCF/hour
295+	60.0	3,000	180,000
275	54.5	2,730	164,000
250	51.4	2,580	154,000
225	47.8	2,400	144,000
200	44.8	2,250	135,000

- c. Cumulative annual records of these throughputs, in the form of flow rates to the flare or totalized cubic feet vs. time, shall be kept on site at all times and shall be

made available to Department personnel upon request. Monthly records shall be kept in the form of manually recorded flow rates or totalized flow rates from a recorder. The records shall be updated no later than the 15th day of the month following the reporting period.

Cumulative annual records of Landfill Gas (LFG) transported off-site in the form of flow rates to specified industrial users (totalized cubic feet vs. time), shall be kept on site at all times and shall be made available to Department personnel upon request. Monthly records shall be kept in the form of manually recorded flow rates or totalized flow rates from a recorder. The records shall be updated no later than the 15th day of the month following the reporting period.

- d. Records of net heating value (BTU/SCF or MJ/SCM) of the gas based on weekly analysis shall be kept on site at all times and shall be made available to Department personnel upon request. The net heating value shall be determined using the formula of 40 CFR 60.18 (f)(3). The flare must be used only with LFG have a net heating value above 200 BTU/SCF

- 6. **ADDITIONAL REQUIREMENTS:** The Department reserves the right to add additional pollution control requirements, as needed.

The City of Fort Smith Sanitary Landfill
 Permit #: 1791-A
 CSN: 66-0226

TABLE I ALLOWABLE EMISSION RATES							
SN	Description	Control Equipment	Emission Rate		Pollutant	Regulation	% Opacity
			lb/hr	tpy			
01	Open LFG Flare	Flow Meter and Valves	1.3	5.3	PM	SIP	5
			1.3	5.3	PM ₁₀		
			0.5	1.8	VOC		
			20.0	87.6	CO		
			3.7	16.2	NO _x		
			0.1	0.5	HAPs*		
TOTAL EMISSIONS			1.3	5.3	PM		
			1.3	5.3	PM ₁₀		
			0.5	1.8	VOC		
			20.0	87.6	CO		
			3.7	16.2	NO _x		
			0.1	0.5	HAPs*		

*HAPs are included in total VOCs.

APPENDIX A

APPENDIX B

APPENDIX C

Public Notice

Pursuant to Section 19.4(k) of the Arkansas Plan of implementation for Air Pollution Control (SIP or Regulation 19), the Arkansas Department of Pollution Control and Ecology gives the following notice:

The City of Fort Smith operates a permitted Class I solid waste landfill at 5900 Commerce Road, and has obtained an Interim Authority to construct and operate a landfill gas collection system (LFG). Methane gas, and other VOCs generated through decomposition, will be collected from both the "open" and the "closed" CFS landfills at this site. An estimated 1,052 MMCF/year of collected gas will be transported through a pipeline to an industrial user near the facility on a contract basis. Excess gas will be burned in an open LFG flare. If all the exhausted gas goes to the flare, the resulting emissions will consist of 97.3 tpy of CO, 17.9 tpy of NO_x, 5.8 tpy of particulates, and 1.9 tpy of VOCs. Hazardous air pollutants (HAPs) in the VOCs are estimated at below 0.5 tpy.

The application has been reviewed by the staff of the Department and has received the Department's tentative approval subject to the terms of this notice.

Citizens wishing to examine the permit application and staff findings and recommendations may do so by contacting Rhonda Sharp, Information Officer. Citizens desiring technical information concerning the application or permit should contact Lloyd Davis, Engineer. Both Rhonda Sharp and Lloyd Davis can be reached at the Department's central office, 8001 National Drive, Little Rock, Arkansas 72209, telephone: (501) 682-0744.

Copies of the draft permit and permit application have been placed in the Fort Smith Public Library, 61 South Eighth Street, Fort Smith, AR 72901. This information may be reviewed during the Library's normal business hours.

Interested or affected persons may also submit written comments on the proposals to the Department at the above address-Attention: Rhonda Sharp. In order to be considered, the comments must be submitted within thirty (30) days of publication of this notice. Although the Department is not proposing to conduct a public hearing, one will be scheduled if significant comments on the permit provisions are received. If a hearing is scheduled, adequate public notice will be given in the newspaper of the largest circulation in the county in which the facility in question is, or will be, located.

The Director shall make a final decision to issue or deny this application or to impose special conditions in accordance with Section 2.1 of the Arkansas Pollution Control and Ecology Commission's Administrative Procedures (Regulation #8).

Dated this

Randall Mathis

Director

AIR DIVISION
INVOICE REQUEST FORM

(1-94)

Route To: FELICIA INMAN

Facility Name & Address:

The City of Fort Smith Sanitary Landfill
5900 Commerce Road
Fort Smith, AR 72916

CSN: 66-0226 **Permit No:** 1791-A

Permit Description: S

(e.g. A = AIR CODE, S=SIP, H=NESHAP, N=NSPS)

Initial Fee Calculations:

FEE = $18.08 \times (\text{TPY PREDOMINANT POLLUTANT, EXCEPT CO})$
not greater than \$65,760 or less than \$500

$$F_I = 18.08 \times (16.2 \text{ tpy NO}_x) = \$293$$

Mod Fee Calculations:

FEE = $18.08 \times (\text{TPY INCREASE PREDOMINANT POLLUTANT, EXCEPT CO})$
no less than \$400

$$F_M =$$

Fee Amount: \$ 400

Engineer: Lloyd Davis

October 20, 1998

Mr. David Neal Taylor
GENESIS ENVIRONMENTAL CONSULTING, INC.
11400 West Baseline Road
Little Rock, AR 72209

Reference: City of Fort Smith Sanitary Landfill
CSN: 66-0226

Dear Dave:

Enclosed is a copy of the Permit Shield that is normally incorporated only upon the request of the applicant.

Using AP-42 Table 13.5-1 for flare emissions, I come up with somewhat lower emission rates than those listed in the submitted Emission Rate Table for SN-01. However, this table is based on essentially 100% natural gas coming from the well. Please let us know the basis for your Emission Rate Table calculations.

We need to write the specific conditions to include the following information and procedures:

- 4) Requirement for a flow meter to assure that daily and annual flow rates do not exceed the allowable limits.
- 5) ID of the flare and ACFM corresponding to the 60 ft/second maximum allowable velocity at the flare tip. Reference: 60.18(f)(4).
- 6) Frequency of analysis of the net heating value of the gas, using the referenced formula in 60.18(f)(3)

If you have any questions, please call me at (501) 682-0733.

Sincerely,

M. Lloyd Davis
Air Division

	ORIGIN	SUPERVISOR	SECTION MGR	DIV CHIEF
<i>concur</i>	LD			
<i>date</i>	2/8/07			

The City of Fort Smith Sanitary Landfill
Permit #: 1791-A
CSN: 66-0226

APPENDIX A

APPENDIX B

APPENDIX C

Public Notice

Pursuant to Section 19.4(k) of the Arkansas Plan of implementation for Air Pollution Control (SIP or Regulation 19), the Arkansas Department of Pollution Control and Ecology gives the following notice:

The City of Fort Smith operates a permitted Class I solid waste landfill at 5900 Commerce Road, and has obtained an Interim Authority to construct and operate a landfill gas collection system (LFG). Methane gas, and other VOCs generated through decomposition, will be collected from both the "open" and the "closed" CFS landfills at this site. A maximum of 946 MMCF/year of collected gas will be transported through a pipeline to an industrial user near the facility on a contract basis. Excess gas will be burned in an open LFG flare. If all the exhausted gas goes to the flare, the resulting emissions will consist of 87.6 tpy of CO, 16.2 tpy of NO_x, 5.3 tpy of particulates, and 1.8 tpy of VOCs. Hazardous air pollutants (HAPs) in the VOCs are estimated at below 0.5 tpy.

The application has been reviewed by the staff of the Department and has received the Department's tentative approval subject to the terms of this notice.

Citizens wishing to examine the permit application and staff findings and recommendations may do so by contacting Rhonda Sharp, Information Officer. Citizens desiring technical information concerning the application or permit should contact Lloyd Davis, Engineer. Both Rhonda Sharp and Lloyd Davis can be reached at the Department's central office, 8001 National Drive, Little Rock, Arkansas 72209, telephone: (501) 682-0744.

Copies of the draft permit and permit application have been placed in the Fort Smith Public Library, 61 South Eighth Street, Fort Smith, AR 72901. This information may be reviewed during the Library's normal business hours.

Interested or affected persons may also submit written comments on the proposals to the Department at the above address-Attention: Rhonda Sharp. In order to be considered, the comments must be submitted within thirty (30) days of publication of this notice. Although the Department is not proposing to conduct a public hearing, one will be scheduled if significant comments on the permit provisions are received. If a hearing is scheduled, adequate public notice will be given in the newspaper of the largest circulation in the county in which the facility in question is, or will be, located.

The Director shall make a final decision to issue or deny this application or to impose special conditions in accordance with Section 2.1 of the Arkansas Pollution Control and Ecology Commission's Administrative Procedures (Regulation #8).

Dated this

Randall Mathis

Director

AIR DIVISION
INVOICE REQUEST FORM

(1-94)

Route To: FELICIA INMAN

Facility Name & Address:

The City of Fort Smith Sanitary Landfill
5900 Commerce Road
Fort Smith, AR 72916

CSN: 66-0226 **Permit No:** 1791-A

Permit Description: S

(e.g. A = AIR CODE, S=SIP, H=NESHAP, N=NSPS)

Initial Fee Calculations:

FEE = $18.08 \times (\text{TPY PREDOMINANT POLLUTANT, EXCEPT CO})$
not greater than \$65,760 or less than \$500

$$F_I = 18.08 \times (16.2 \text{ tpy NO}_x) = \$293$$

Mod Fee Calculations:

FEE = $18.08 \times (\text{TPY INCREASE PREDOMINANT POLLUTANT, EXCEPT CO})$
no less than \$400

$$F_M =$$

Fee Amount: \$ 400

Engineer: Lloyd Davis

