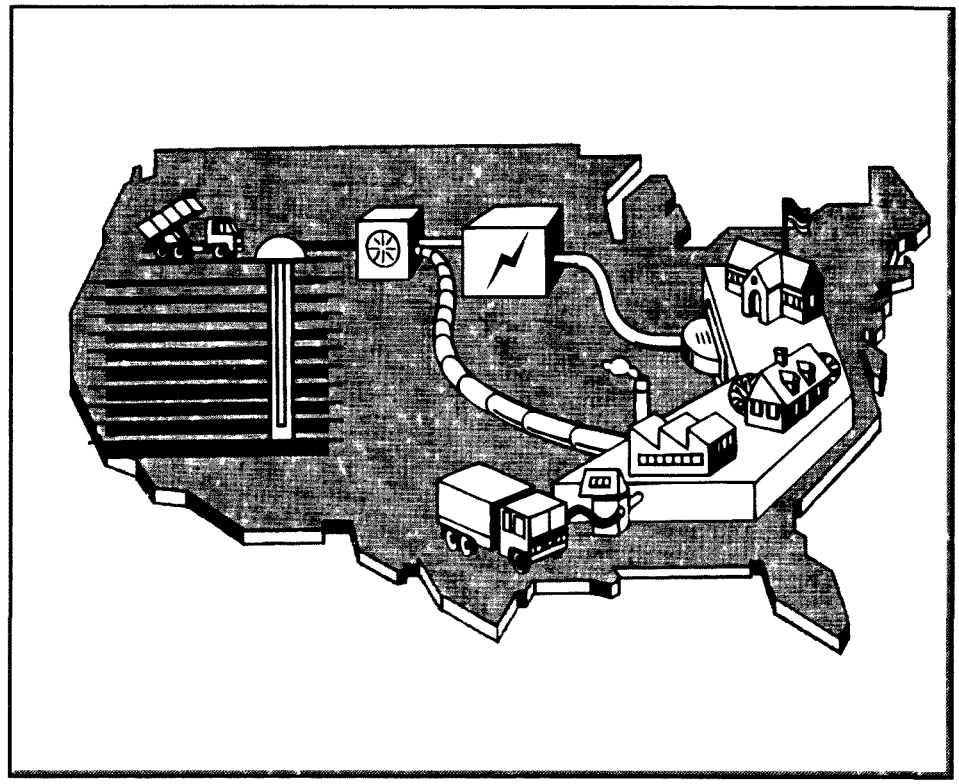
United States Environmental Protection Agency | Office of Air and Radiation (6202J) | EPA 430-K-99-025 January 1999

# Landfill Gas-to-Energy Project Opportunities

## Landfill Profiles for the State of Oklahoma



LANDFILL METHANE OUTREACH PROGRAM

# EPA Landfill Methane Outreach Program


**The EPA Landfill Methane Outreach Program, a key component of the United State's *Climate Change Action Plan*, encourages the use of landfill gas (LFG) as an energy resource. EPA assists utilities, municipal and private landfill owners and operators, tribes, and state agencies in reducing methane emissions from landfills through the development of profitable landfill energy recovery projects. Methane captured from landfills can be transformed into a cost-effective fuel source for electricity, heat, boiler and vehicular fuel, or sale to a pipeline. EPA estimates there are approximately 200 landfill methane recovery projects in the U.S. and that up to 750 landfills could install economically viable landfill energy projects.**

**The Landfill Methane Outreach Program includes five important components: the State Ally, Energy Ally, Industry Ally, Community Partner, and Endorser programs. EPA establishes separate alliances with state agencies, energy providers (including investor-owned, municipal and other public power utilities and cooperatives), key trade and public sector associations, members of the landfill gas development industry (including developers, engineers, equipment vendors, and others) and local communities, municipalities and landfill owner/operators through a Memorandum of Understanding (MOU). By signing the MOU, each Ally/Partner acknowledges a shared commitment to the promotion of landfill gas-to-energy recovery at solid waste landfills, recognizes that the widespread use of landfill gas will reduce emissions of methane and other gases, and commits to undertake activities to enhance development of this resource. In return, EPA agrees to provide landfill gas-to-energy project assistance and public recognition of the Allies' and Partners' participation in the program.**

## Introduction

Since 1994 the U.S. EPA's Landfill Methane Outreach Program (LMOP) has participated in an ongoing effort to gather information on Municipal Solid Waste landfills (MSW). A key component of the LMOP is to provide MSW landfill owners and operators, project developers, utilities, and other potential project participants with information on MSW landfills that may offer attractive energy development opportunities. This document presents state specific landfill information, hereinafter referred to as the landfill profiles. These profiles are useful to evaluate the potential for developing landfill gas-to-energy projects (LFGTE). EPA assembled this information from state and local sources as well as various national solid waste publications, landfill owners and operators, and project developers.

The EPA has prepared a separate document to describe the methodology used to develop the state-specific landfill profiles and estimate the benefits of using LFGTE as an energy source. The document, *Landfill Gas-to-Energy Project Opportunities, Background Information on Landfill Profiles*, contains background information on gas collection and use, describes the data fields according to the five sections listed on the landfill profiles, and where applicable, illustrates calculations and default values used to derive estimates. EPA strongly recommends that users read the document prior to using the landfill profiles. Users can obtain the document by calling the LMOP hotline at 1-888-STAR-YES.

**Data Sources**

- EPA-ORD Landfill Gas Utilization-Survey (Thorneloe, 1997)
- Directory and Atlas of Solid Waste Disposal Facilities (SWA, 1994)
- Implementation Guide for Landfill Gas Recovery Projects in the Northeast (SCS, 1994)
- Landfill Gas-to-Energy 1994-1995 Activity Report (SWT, 1994)
- Methane Recovery from Landfill Yearbook (GAA, 1994)
- Project developers, landfill owners, and operators
- State and local records
- Survey of Landfill Gas Generation Potential (EPRI, 1992)
- U.S. Landfill Directory (SWANA, 1992)

## Landfill Classification

To facilitate the use of available landfill information, EPA has categorized the landfills into five categories: Current Project,[1] Candidate Project, Shutdown, Other, and Unknown waste-in-place (WIP). These categories are based on the status of the landfill's LFGTE project(s) and WIP. The generation of methane is a function of many factors, the most critical being the amount of waste-in-place and the number of years the waste has been in the landfill. Peak methane generation occurs soon after closure; therefore, the longer the landfill has been closed, the less attractive it becomes for methane recovery. Based on the general timing of peak methane generation, EPA assumes that landfills that ceased accepting waste prior to 1993 have a low probability of generating enough methane to make a gas recovery project economical. Consequently, landfills need to be operating in 1993 to be considered as having a Candidate Project.

**Landfill Categorizes**

**Current Project:**
- Landfill with operational LFGTE project or landfill with LFGTE project under construction.

**Candidate Project:**
- Landfill with a potential or planned LFGTE utilization project; or
- Landfill is currently operating or closed after 1993; and has more than 1,000,000 tons of municipal solid waste-in-place.[2]

**Shutdown:**
- Landfill with shutdown LFGTE project.

**Other:**
- Landfill has less than 1,000,000 tons of municipal solid waste-in-place with no current or planned LFGTE project.

**Unknown WIP:**
- Landfill with insufficient data to determine the waste-in-place.

## State Summary

State-specific landfill profile information is summarized in three exhibits. Exhibit 1 presents a summary of the state-specific potential for LFG utilization energy by landfill category. Exhibit 2 summarizes the emissions avoided by fossil fuel displacement for electricity generation and direct use projects. Exhibit 3 presents an index of the state-specific MSW landfills, referenced by category, landfill name and general characteristics.

[1] Current projects illustrate the wide range of successful project development options.

[2] By modeling the relationship between WIP and methane generation, a cut-off of 1,000,000 tons of WIP was established; landfills having at least 1,000,000 tons of WIP are considered candidate landfills.

LANDFILL METHANE OUTREACH PROGRAM

## Exhibit 1: Oklahoma MSW Landfill Summary

| Category | No. of Landfills | Est. Capacity Potential | | Est. CH4 Generation (mmscf/d) | Methane Reduction (tons/yr) | | CO2 Equivalent of CH4 Reduction (tons/yr) | |
|---|---|---|---|---|---|---|---|---|
| | | Electricity (MW) | Gas Capacity (mmBtu/hr) | | Potential | Current | Potential | Current |
| Current | 1 | 5 | 48 | 2 | 8,952 | 0 | 187,998 | 0 |
| Candidate | 12 | 57 | 566 | 18 | 104,648 | 9,251 | 2,197,612 | 194,263 |
| Other | 5 | 7 | 67 | 2 | 12,429 | 0 | 261,007 | 0 |
| Total | 18 | 68 | 681 | 22 | 126,029 | 9,251 | 2,646,617 | 194;263 |

## Exhibit 2: Potential Oklahoma Emissions Avoided by Fossil Fuel Displacement

| Category | Electricity Generation Project | | | | | | Direct Use Project | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CO2 (tons/yr) | | | SO2 (tons/yr) | | | CO2 (tons/yr) | | | SO2 (tons/yr) | | |
| | Coal | Oil | Natural Gas | Coal | Oil | Natural Gas | Coal | Oil | Natural Gas | Coal | Oil | Natural Gas |
| Current | 37,885 | 31,095 | 20,908 | 240 | 200 | 0 | 26,959 | 22,126 | 14,878 | 245 | 129 | 0 |
| Candidate | 447,519 | 367,304 | 246,980 | 2,829 | 2,364 | 0 | 315,134 | 258,648 | 173,918 | 2,868 | 1,507 | 2 |
| Other | 53,671 | 44,051 | 29,620 | 339 | 284 | 0 | 37,428 | 30,719 | 20,656 | 341 | 179 | 0 |
| Total | 539,076 | 442,449 | 297,509 | 3,407 | 2,848 | 0 | 379,521 | 311,493 | 209,452 | 3,453 | 1,815 | 2 |

# Exhibit 3: Index of Landfills in Oklahoma

| Category | Landfill Name | WIP | | | Landfill Operating in 1998 | LFG Collected | LFG Utilization Project | Status of LFGTE Project |
|---|---|---|---|---|---|---|---|---|
| | | <2.5 million tons | 2.5 to 4 million tons | >4 million tons | | | | |
| Current | New Castle LF | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | Operational |
| Candidate | 51st Street LF | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | Unknown |
| Candidate | Broken Arrow LF | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | Planned |
| Candidate | Canadian County SWDA LF | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Candidate | East Oak SLF/Mosley Road LF | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | Potential |
| Candidate | Enid Municipal LF | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Candidate | Lawton LF | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Candidate | Muskogee Community LF | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Candidate | NW Oklahoma SWDA LF | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Candidate | Oklahoma LF | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | Planned |
| Candidate | Pottawatomie County LF | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Candidate | Quarry LF | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | Planned |
| Candidate | Southern OK Regional Disposal LF | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Other | 51 B LF | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Other | Absolute Waste Systems LF | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Other | Cherokee Nation SLF | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Other | Great Plains LF | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | Unknown |
| Other | Longview Waste Systems LF | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | Unknown |

51st Street LF — *Landfill Category:* Candidate

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | BFI | Annual Acceptance Rate (tons): | 325,189 |
| Landfill Owner Type: | Private | Year Annual Acceptance Rate Reported: | 1990 |
| Alternative Landfill Name: | | Design Capacity (tons): | |
| City: | | Acres Currently Landfilled (acres): | |
| County: | Wagoner | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 6,865,818 |
| Year Open: | 1983 | *1998 Waste-in-Place (tons):* | 6,865,818 |
| Year Closed: | 1994 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 2.17 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Unknown |
| Utilization System Type: | Unknown |
| Utilization System Start Year: | |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 7 | | 68 |
| Current Capacity: | | | |
| Planned Capacity: | 4.28 | | 32 |

Utilities in County: East Central Okla El Coop Inc; Lake Region Electric Coop Inc; Oklahoma Gas & Electric Co; Southw

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 12,570 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 263,964 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 53,671 | 339 | 37,852 | 344 |
| *Fuel Oil:* | 44,051 | 284 | 31,067 | 181 |
| *Natural Gas:* | 29,620 | 0 | 20,890 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Donald Fletcher | Richard Grotte |
| Mailing Address: | 1225 North 161 East Avenue | 4343 Will Rogers Parkway |
| Phone Number: | | 405-949-1962 |
| Fax Number: | | |

Broken Arrow LF | *Landfill Category:* Candidate

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | BFI | Annual Acceptance Rate (tons): | 253,022 |
| Landfill Owner Type: | Private | Year Annual Acceptance Rate Reported: | 1995 |
| Alternative Landfill Name: | | Design Capacity (tons): | |
| City: | Tulsa | Acres Currently Landfilled (acres): | |
| County: | Wagoner | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 3,736,131 |
| Year Open: | 1976 | *1998 Waste-in-Place (tons):* | 4,091,953 |
| Year Closed: | 1998 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 1.46 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Planned |
| Utilization System Type: | Medium Btu |
| Utilization System Start Year: | 1998 |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 5 | | 46 |
| Current Capacity: | | | |
| Planned Capacity: | | | |

Utilities in County: East Central Okla El Coop Inc; Lake Region Electric Coop Inc; Oklahoma Gas & Electric Co; Southw

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 8,468 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 177,824 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 36,307 | 230 | 25,500 | 232 |
| *Fuel Oil:* | 29,799 | 192 | 20,929 | 122 |
| *Natural Gas:* | 20,037 | 0 | 14,073 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Dennis Bollinger, Energy Manager | Kip Smith |
| Mailing Address: | 757 N. Eldridge<br>P.O. Box 3151 | 1225 North 161 East Avenue |
| Phone Number: | 281-870-7801 | 918-664-8899 |
| Fax Number: | | |

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | Canadian County | Annual Acceptance Rate (tons): | 44,330 |
| Landfill Owner Type: | Public | Year Annual Acceptance Rate Reported: | 1998 |
| Alternative Landfill Name: | | Design Capacity (tons): | |
| City: | El Reno | Acres Currently Landfilled (acres): | |
| County: | Canadian | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 2,141,804 |
| Year Open: | 1974 | *1998 Waste-in-Place (tons):* | 2,328,050 |
| Year Closed: | 2006 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 1.01 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Unknown |
| Utilization System Type: | Unknown |
| Utilization System Start Year: | |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 3 | | 32 |
| Current Capacity: | | | |
| Planned Capacity: | 1.29 | | 10 |

Utilities in County: Caddo Electric Coop Inc; Cimarron Electric Cooperative; Oklahoma Electric Coop Inc; Oklahoma Ga

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 5,859 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 123,045 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 25,257 | 160 | 17,645 | 161 |
| *Fuel Oil:* | 20,730 | 133 | 14,482 | 84 |
| *Natural Gas:* | 13,939 | 0 | 9,738 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | David Griesel | David Griesel |
| Mailing Address: | PO Drawer 189 | PO Drawer 189 |
| Phone Number: | 405-263-4418 | 405-483-5402 |
| Fax Number: | | |

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | WMI | Annual Acceptance Rate (tons): | 457,600 |
| Landfill Owner Type: | Private | Year Annual Acceptance Rate Reported: | 1998 |
| Alternative Landfill Name: | Mosley Road LF | Design Capacity (tons): | |
| City: | Oklahoma City | Acres Currently Landfilled (acres): | 70 |
| County: | Oklahoma | Average Depth (feet): | 100 |
| State: | OK | Waste-in-Place (tons): | 6,589,455 |
| Year Open: | 1986 | *1998 Waste-in-Place (tons):* | 7,787,537 |
| Year Closed: | 2003 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 2.41 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | 2.4 |
| Collection and Treatment System Required Under NSPS/EG: | Yes |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Potential |
| Utilization System Type: | Unknown |
| Utilization System Start Year: | |
| Electric Utility Provider(s): | Oklahoma G&E Co. |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | Williamson Natural Gas Pipeline, Cruchs El |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 8 | | 75 |
| Current Capacity: | | | |
| Planned Capacity: | 4.91 | | 38 |

Utilities in County: Canadian Valley Elec Coop Inc; Central Rural Electric Coop; Cimarron Electric Cooperative; Edmon

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 13,933 | 9,251 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 292,589 | 194,263 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 59,196 | 374 | 41,957 | 382 |
| *Fuel Oil:* | 48,585 | 313 | 34,436 | 201 |
| *Natural Gas:* | 32,669 | 0 | 23,155 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Jim Meinholz | Jim Meinholz |
| Mailing Address: | 3201 Mosley Road<br>Route 4, Box 310 | 3201 Mosley Road<br>Route 4, Box 310 |
| Phone Number: | 405-427-1112 | 405-427-1112 |
| Fax Number: | | |

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | City of Enid | Annual Acceptance Rate (tons): | 7,150 |
| Landfill Owner Type: | Public | Year Annual Acceptance Rate Reported: | 1998 |
| Alternative Landfill Name: | City of Enid LF | Design Capacity (tons): | |
| City: | Enid | Acres Currently Landfilled (acres): | 106 |
| County: | Garfield | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 2,392,871 |
| Year Open: | 1987 | *1998 Waste-in-Place (tons):* | 2,871,446 |
| Year Closed: | 2017 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 1.15 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Unknown |
| Utilization System Type: | Unknown |
| Utilization System Start Year: | |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 4 | | 36 |
| Current Capacity: | | | |
| Planned Capacity: | 1.76 | | 13 |

Utilities in County: Alfalfa Electric Coop Inc; Central Rural Electric Coop; Cimarron Electric Cooperative; Kay Electric C

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 6,663 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 139,921 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 28,414 | 180 | 20,064 | 183 |
| *Fuel Oil:* | 23,321 | 150 | 16,468 | 96 |
| *Natural Gas:* | 15,681 | 0 | 11,073 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Bill Beck | Bruce Wright |
| Mailing Address: | P.O. Box 1768 | 1313 Southgate Road |
| Phone Number: | 580-249-4917 | 405-249-4917 |
| Fax Number: | | |

Lawton LF — *Landfill Category:* Candidate

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | City of Lawton | Annual Acceptance Rate (tons): | 120,000 |
| Landfill Owner Type: | Public | Year Annual Acceptance Rate Reported: | 1998 |
| Alternative Landfill Name: | City of Lawton LF | Design Capacity (tons): | |
| City: | Lawton | Acres Currently Landfilled (acres): | 120 |
| County: | Comanche | Average Depth (feet): | 80 |
| State: | OK | Waste-in-Place (tons): | 2,950,368 |
| Year Open: | 1984 | *1998 Waste-in-Place (tons):* | 3,404,265 |
| Year Closed: | 2012 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 1.29 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Unknown |
| Utilization System Type: | Unknown |
| Utilization System Start Year: | |
| Electric Utility Provider(s): | Cotton Electric |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 4 | | 40 |
| Current Capacity: | | | |
| Planned Capacity: | 2.42 | | 19 |

Utilities in County: Caddo Electric Coop Inc; Cotton Electric Coop Inc; Public Service Co of Oklahoma; Rural Electric Cc

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 7,451 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 156,467 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 31,571 | 200 | 22,437 | 204 |
| *Fuel Oil:* | 25,912 | 167 | 18,415 | 107 |
| *Natural Gas:* | 17,424 | 0 | 12,383 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Bruce Lukus | Dave Truitt |
| Mailing Address: | 8902 SW 11th Street | 8902 SW 11th Street |
| Phone Number: | 580-581-3385 | 405-581-3468 |
| Fax Number: | | |

Muskogee Community LF — *Landfill Category:* Candidate

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | Waste Management, Inc. | Annual Acceptance Rate (tons): | 226,974 |
| Landfill Owner Type: | Private | Year Annual Acceptance Rate Reported: | 1995 |
| Alternative Landfill Name: | | Design Capacity (tons): | |
| City: | | Acres Currently Landfilled (acres): | |
| County: | Muskogee | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 2,093,541 |
| Year Open: | 1987 | *1998 Waste-in-Place (tons):* | 2,512,252 |
| Year Closed: | 2002 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 1.06 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Unknown |
| Utilization System Type: | Unknown |
| Utilization System Start Year: | |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 3 | | 33 |
| Current Capacity: | | | |
| Planned Capacity: | 2.15 | | 16 |

Utilities in County: Cookson Hills Elec Coop Inc; East Central Okla El Coop Inc; Lake Region Electric Coop Inc; Oklaho

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 6,132 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 128,766 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 26,046 | 165 | 18,465 | 168 |
| *Fuel Oil:* | 21,378 | 138 | 15,155 | 88 |
| *Natural Gas:* | 14,375 | 0 | 10,191 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Mark Daniels | Raymond DeBose, Site Manager |
| Mailing Address: | 2801 South 54th Street West | 2801 South 54th Street West |
| Phone Number: | 918-682-7284 | 918-682-7284 |
| Fax Number: | 918-682-2867 | 918-682-2867 |

NW Oklahoma SWDA LF | *Landfill Category:* Candidate

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | Northwest Oklahoma Solid Waste Authority | Annual Acceptance Rate (tons): | 39,305 |
| Landfill Owner Type: | Public | Year Annual Acceptance Rate Reported: | 1989 |
| Alternative Landfill Name: | | Design Capacity (tons): | |
| City: | | Acres Currently Landfilled (acres): | |
| County: | Woodward | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 982,633 |
| Year Open: | 1972 | *1998 Waste-in-Place (tons):* | 1,061,235 |
| Year Closed: | 2004 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 0.69 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Unknown |
| Utilization System Type: | Unknown |
| Utilization System Start Year: | |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 2 | | 22 |
| Current Capacity: | | | |
| Planned Capacity: | | | |

Utilities in County: Fort Supply Electric Dept; Mooreland Light & Power Dept; Northwestern Electric Coop Inc; Oklahom

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 3,986 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 83,706 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 17,364 | 110 | 12,003 | 109 |
| *Fuel Oil:* | 14,252 | 92 | 9,852 | 57 |
| *Natural Gas:* | 9,583 | 0 | 6,624 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Ralph Triplett | Ralph Triplett |
| Mailing Address: | P.O. Box 427 | P.O. Box 427 |
| Phone Number: | 405-256-8097 | 405-256-8097 |
| Fax Number: | | |

New Castle LF — *Landfill Category:* Current

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | All-American Waste/Allied Waste | Annual Acceptance Rate (tons): | 360,118 |
| Landfill Owner Type: | Private | Year Annual Acceptance Rate Reported: | 1995 |
| Alternative Landfill Name: | Newcastle LF, USA Waste Management LF | Design Capacity (tons): | |
| City: | Newcastle | Acres Currently Landfilled (acres): | |
| County: | McClain | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 3,739,670 |
| Year Open: | 1986 | *1998 Waste-in-Place (tons):* | 4,419,607 |
| Year Closed: | 2004 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 1.55 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Operational |
| Utilization System Type: | Direct Thermal |
| Utilization System Start Year: | |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 5 | | 48 |
| Current Capacity: | 4.0 | | 31 |
| Planned Capacity: | | | |

Utilities in County: Oklahoma Electric Coop Inc; Oklahoma Gas & Electric Co; Peoples Electric Coop Inc; Purcell Public

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 8,952 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 187,998 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 37,885 | 240 | 26,959 | 245 |
| *Fuel Oil:* | 31,095 | 200 | 22,126 | 129 |
| *Natural Gas:* | 20,908 | 0 | 14,878 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Dean Matts | Marty Poage |
| Mailing Address: | 7540 SW 59th | 1741 North Portland Road |
| Phone Number: | 405-387-5677 | 405-387-5677 |
| Fax Number: | | |

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | Allied Waste (old LWS) | Annual Acceptance Rate (tons): | 676,284 |
| Landfill Owner Type: | Private | Year Annual Acceptance Rate Reported: | 1995 |
| Alternative Landfill Name: | | Design Capacity (tons): | |
| City: | Oklahoma City | Acres Currently Landfilled (acres): | |
| County: | Oklahoma | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 10,401,150 |
| Year Open: | 1981 | *1998 Waste-in-Place (tons):* | 11,701,296 |
| Year Closed: | 2022 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 3.41 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Planned |
| Utilization System Type: | Direct Thermal |
| Utilization System Start Year: | 1998 |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | Condea/Vista, GM, and/or Campbell Asphal |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 11 | | 107 |
| Current Capacity: | | | |
| Planned Capacity: | | | |

Utilities in County: Canadian Valley Elec Coop Inc; Central Rural Electric Coop; Cimarron Electric Cooperative; Edmon

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 19,720 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 414,128 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 84,453 | 534 | 59,385 | 540 |
| *Fuel Oil:* | 69,315 | 446 | 48,741 | 284 |
| *Natural Gas:* | 46,608 | 0 | 32,774 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Danny Muck, Landfill Manager | Danny Muck |
| Mailing Address: | 7600 SW 15th Street | 7600 SW 15th Street |
| Phone Number: | 405-745-4141 | 405-745-4141 |
| Fax Number: | | |

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | BFI | Annual Acceptance Rate (tons): | 118,136 |
| Landfill Owner Type: | Private | Year Annual Acceptance Rate Reported: | 1995 |
| Alternative Landfill Name: | Canadian Valley LF | Design Capacity (tons): | |
| City: | Shawnee | Acres Currently Landfilled (acres): | |
| County: | Pottawatomie | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 1,526,225 |
| Year Open: | 1984 | *1998 Waste-in-Place (tons):* | 1,761,030 |
| Year Closed: | 2009 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 0.87 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Unknown |
| Utilization System Type: | Unknown |
| Utilization System Start Year: | |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 3 | | 27 |
| Current Capacity: | | | |
| Planned Capacity: | 1.69 | | 13 |

Utilities in County: Canadian Valley Elec Coop Inc; Oklahoma Electric Coop Inc; Oklahoma Gas & Electric Co; Southwe

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 5,021 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 105,437 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 21,311 | 135 | 15,120 | 138 |
| *Fuel Oil:* | 17,491 | 113 | 12,409 | 72 |
| *Natural Gas:* | 11,761 | 0 | 8,344 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Dennis Johnson | Dennis Johnston |
| Mailing Address: | P.O. Box 30596 | P.O. Box 30596 |
| Phone Number: | 406-834-2244 | 406-834-2244 |
| Fax Number: | 405-275-5369 | |

Quarry LF — *Landfill Category:* Candidate

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | Waste Management, Inc. | Annual Acceptance Rate (tons): | 590,010 |
| Landfill Owner Type: | Public | Year Annual Acceptance Rate Reported: | 1994 |
| Alternative Landfill Name: | | Design Capacity (tons): | |
| City: | Tulsa | Acres Currently Landfilled (acres): | |
| County: | Tulsa | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 4,354,126 |
| Year Open: | 1989 | *1998 Waste-in-Place (tons):* | 5,442,657 |
| Year Closed: | | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 1.81 |
| LFG Collection System Status: | Planned |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Planned |
| Utilization System Type: | Unknown |
| Utilization System Start Year: | 1999 |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 6 | | 57 |
| Current Capacity: | | | |
| Planned Capacity: | | | |

Utilities in County: Collinsville Electric Dept; East Central Okla El Coop Inc; Indian Electric Coop Inc; Oklahoma Gas &

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 10,465 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 219,769 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 44,989 | 284 | 31,515 | 287 |
| *Fuel Oil:* | 36,925 | 238 | 25,866 | 151 |
| *Natural Gas:* | 24,829 | 0 | 17,392 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Aimee Toole | Aimee Toole |
| Mailing Address: | 4041 North 141st East Avenue | 4041 North 141st East Avenue |
| Phone Number: | 918-437-7773 | 918-437-7773 |
| Fax Number: | | |

## A. GENERAL LANDFILL INFORMATION

| | | | |
|---|---|---|---|
| Landfill Owner: | Southern Oklahoma Regional Disposal, Inc. | Annual Acceptance Rate (tons): | 100,100 |
| Landfill Owner Type: | Private | Year Annual Acceptance Rate Reported: | 1998 |
| Alternative Landfill Name: | Ardmore SLF | Design Capacity (tons): | |
| City: | | Acres Currently Landfilled (acres): | |
| County: | Carter | Average Depth (feet): | |
| State: | OK | Waste-in-Place (tons): | 1,195,397 |
| Year Open: | 1979 | *1998 Waste-in-Place (tons):* | 1,328,220 |
| Year Closed: | 2002 | | |

## B. LANDFILL GAS COLLECTION

| | |
|---|---|
| *Estimated Methane Generation (mmscf/d):* | 0.76 |
| LFG Collection System Status: | |
| Current LFG Collected (mmscf/d): | |
| Collection and Treatment System Required Under NSPS/EG: | No |

## C. LANDFILL GAS UTILIZATION

Current Utilization:

| | |
|---|---|
| Utilization System Status: | Unknown |
| Utilization System Type: | Unknown |
| Utilization System Start Year: | |
| Electric Utility Provider(s): | |
| Natural Gas Provider(s): | |
| Energy Purchaser(s): | |

| Capacity: | Electricity Generation Project (MW) | OR | Direct Use Project (mmBtu/hr) |
|---|---|---|---|
| *Estimated Potential Capacity:* | 2 | | 24 |
| Current Capacity: | | | |
| Planned Capacity: | 1.02 | | 8 |

Utilities in County: Cotton Electric Coop Inc; Oklahoma Gas & Electric Co; Peoples Electric Coop Inc; Red River Valley

## D. ENVIROMENTAL BENEFITS OF UTILIZATION

| | *Potential* | Current |
|---|---|---|
| *Methane Reduction (tons/yr):* | 4,381 | 0 |
| *CO2 Equivalent of CH4 Reduction (tons/yr):* | 91,997 | 0 |

| *Emissions Avoided by Fossil Fuel Displacement:* | *Electricity Generation Project* | | *Direct Use Project* | |
|---|---|---|---|---|
| | *CO2 (tons/yr)* | *SO2 (tons/yr)* | *CO2 (tons/yr)* | *SO2 (tons/yr)* |
| *Coal:* | 18,943 | 120 | 13,192 | 120 |
| *Fuel Oil:* | 15,547 | 100 | 10,828 | 63 |
| *Natural Gas:* | 10,454 | 0 | 7,281 | 0 |

## E. CONTACT INFORMATION

| | Landfill Owner | Landfill Operator |
|---|---|---|
| Contact Name: | Troy Duke | Troy Duke |
| Mailing Address: | P.O. Box 1088<br>2405 Cedar Road | P.O. Box 1088<br>2405 Cedar Road |
| Phone Number: | 405-226-1276 | 405-226-1276 |
| Fax Number: | | |