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From: Rick McCormick
322 East Front St., Suite 200
Boise ID 83702

Attn: Mr. Bill Rogers

Date: October 12, 2011

Re: Ada County Landfill Title V Renewal

We Are Sending You:

Method of shipment: Hand Delivery

X	Attached		Under separate cover via		
	Shop Drawings	X	Documents		Tracings
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	Copy of letter	X	Other: CD		

Quantity	Description
1	Hard Copy – Ada County Landfill Title V Operating Permit Application
1	CD enclosed with application including pdf and MS EXCEL Emission Spreadsheets

If the material received is not as listed, please notify us at once.

cc. Mr. Ted Hutchinson, Director Ada County Solid Waste Management

389811

Final

Ada County Landfill

Title V Operating Permit Application

Prepared on behalf of

Ada County Commissioners

200 West Front Street
Boise, ID 83702

Submitted to

Idaho Department of Environmental Quality

Boise Regional Office

October 2011

CH2MHILL®

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Background

The Ada County Solid Waste Management Department is required to renew its Title V Operating Permit for the Ada County Landfill (ACLF) in accordance with permitting requirements in IDAPA 58.01.01.313.03 – *Procedures and Requirements for Tier I Operating Permits.* The original Title V Operating Permit (2009-0009) was issued to the ACLF on September 28, 2009, and expires April 13, 2012. This Title V Operating Permit renewal application has been prepared to satisfy the requirements of IDAPA 58.01.01.300.

The ACLF triggered the Title V Operating Permit requirements because of two past developments.

The first development involves a nonmethane organic compound (NMOC) emission rate exceedance of 50 megagrams per year for the existing Hidden Hollow Landfill (HHLF) Cell. The NMOC exceedance of 50 megagrams per year was reported in a Tier 2 NMOC Emissions Report to the Idaho Department of Environmental Quality (DEQ) in April 2005.

As the Tier 2 NMOC Emissions Report was being prepared, the provisions of 40 CFR 60 Subpart Cc – *Emission Guidelines and Compliance Times for MSW Landfills* were reviewed. The provisions for Subpart Cc applicability include the following:

- The landfill has accepted waste at any time since November 8, 1987, or has additional design capacity available for future waste deposition.
- The landfill has a design capacity greater than or equal to 2.5 million megagrams or 2.5 million cubic meters.
- The landfill has an NMOC emission rate of 50 megagrams per year or more.

ACLF satisfies the requirements of these three conditions which triggers the applicability of Subpart Cc, which in turn triggers requirements in Subpart WWW.

The second development is based on the ACLF expansion through the design and construction of the North Ravine Cell (NRC). The provisions of 40 CFR 60 Subpart WWW apply to municipal solid waste (MSW) landfills that commence construction on or after May 30, 1991. Construction of the NRC expansion commenced in February 2006. Therefore, the New Source Performance Standards (NSPS) provisions of Subpart WWW apply to the ACLF.

Two emergency diesel backup generators were discovered during data review in preparation of this Title V permit renewal. A 33-kilowatt (kW) Detroit Diesel emergency generator was installed in 1998 to support the Household Hazardous Waste Building, and a 40-kW Kohler diesel emergency generator was installed in August 2011 to support the new Scale House. In both cases, Permit-to-Construct (PTC) exemption analyses were performed based on the assumption that each was a stand-alone project. They each satisfy the general exemption criteria from receiving a PTC in accordance with IDAPA 58.01.01.220 and Category II exemption criteria per IDAPA 58.01.01.222.01.c.i. Copies of the PTC exemptions are included in Appendix A.

The ACLF has identified the following air emission sources to be addressed in this Title V Operating Permit application which also includes fugitive emissions:

- Two enclosed landfill gas flares that combust landfill gas collected from the current ACLF. Plans are to expand the landfill gas collection and piping network to the new NRC as needed.
- A Diamond Z Manufacturing wood chipper used to chip wood debris in the operations area of the ACLF. The wood chipper is powered by a Caterpillar diesel engine generator.
- A CEC Power Screen also located at the operations area and running in concert with the wood chipper. The screen separates fines from larger debris coming from the wood chipper and is powered by a Deutz diesel engine generator.

- Two emergency backup generators including a 33-kW Detroit Diesel engine generator located at the Household Hazardous Waste Building, and a 40-kW Kohler engine generator located at the newly constructed Scale House.
- Fugitive dust emissions created from a number of sources: paved and unpaved roads, landfill equipment, wood chipper and power screen operations, and storage piles.

The Title V Operating Permit application has been organized to present information in the order provided by IDAPA 58.01.01.314.

1.0 Application Forms

1.1 Introduction

IDAPA 314. Required Standard Application Form and Required Information.

01. ***General Requirements***

a. Applications shall be submitted on a form or forms provided by the Department or by other means prescribed by these rules or the Department. The application shall be certified by the responsible official in accordance with Section 123. If the Tier I source is regulated under 42 U.S.C. Sections 7651 through 7651o, the owner or operator shall also submit nationally-standardized acid rain forms provided by EPA.

b. All information shall be in sufficient detail so that the Department may efficiently and effectively determine the applicability of requirements and make all other necessary evaluations and determinations.

This section of the application provides the specific equipment forms for all emission units at the ACLF. Application forms are included in Appendix B. Allowable (potential) emissions were calculated in pounds per hour (lb/hr) and tons per year based on the maximum operating capacity. The application forms include potential emission estimates only. Actual emissions are included with allowable emission estimates in Section 4. A site plan illustrating the emission source locations is included as Figure 1.

Application forms are included for the following:

- General Information
- Landfill Gas Flare
- Wood Chipper (Operations Area)
  - Internal Combustion Engine
  - Power Screen
  - Storage Pile
- Household Hazardous Waste Building emergency backup generator
- Scale House emergency backup generator
- Fugitive road dust sources
- Fugitive landfill operations (R1P, R2P, R2 P/U, R3 P/U)

1.2 Landfill Gas Flare and Collection System

A landfill gas (LFG) collection and flare system was installed at the ACLF in 2004 as a voluntary control measure. The purpose of the LFG collection and flare system is to control emissions and odor resulting from LFG production and to enhance groundwater remediation by controlling landfill soil gas migration. The following pages contain the application forms for the ACLF flare. Table 1 lists the landfill gas flares at the ACLF.

TABLE 1
Landfill Gas Flare Description

Process Code	Process Description[a]	Emission Estimate Documentation[b]
FLARE 1	Landfill Gas Flare 1	Sections 4.2, 4.3
FLARE 2	Landfill Gas Flare 2	Sections 4.2, 4.3

Notes:
[a] Refer to Section 2 of the permit application for additional detail.
[b] This column denotes the permit application section number of the emissions estimate documentation.

The ACLF NMOC emission estimate is presented in Section 4.2. Actual and potential emission calculations are presented in Section 4.3.

1.3 Wood Chipper

The following pages contain the application forms for the ACLF Wood Chipper. Table 2 lists the wood chipper and related processes (power screen) at the ACLF.

TABLE 2
Wood Chipper Description

Process Code	Process Description[a]	Emission Estimate Documentation[b]
Wood Chipper		**Section 4.4**
GEN1	Internal Combustion Engine	
WC-01	Chipping Process	
Power Screen		**Section 4.5**
GEN2	Internal Combustion Engine	
PS-01	Screening Process	

[a] Refer to Section 3 of the permit application for additional detail.
[b] This column denotes the permit application section number of the emissions estimate documentation.

Actual and potential emission calculations are presented in Sections 4.4 and 4.5 for the wood chipper and power screen, respectively.

1.4 Emergency Backup Generators

The following pages contain the application forms for the Household Hazardous Waste Building and the Scale House emergency backup generators. Table 3 lists the related process for the two emergency backup generators.

TABLE 3
Wood Chipper Description

Process Code	Process Description[a]	Emission Estimate Documentation[b]
GEN3	Internal Combustion Engine	Section 4.6
GEN4	Internal Combustion Engine	Section 4.6

[a] Refer to Section 3 of the permit application for additional detail.
[b] This column denotes the permit application section number of the emissions estimate documentation.

Actual and potential emission calculations are presented in Sections 4.6 for the Household Hazardous Waste and Scale House emergency backup generators.

1.5 Storage Pile Forms

The following pages contain the application forms for the wood chip storage pile(s). The data required to estimate fugitive dust emissions from the storage pile(s) is provided in Section 4.7.

1.6 Fugitive Road Dust Sources

The following pages contain the application forms for fugitive road dust sources. Table 4 lists the paved and unpaved roads at the ACLF. Figure 2 is a site plan with the road locations and codes.

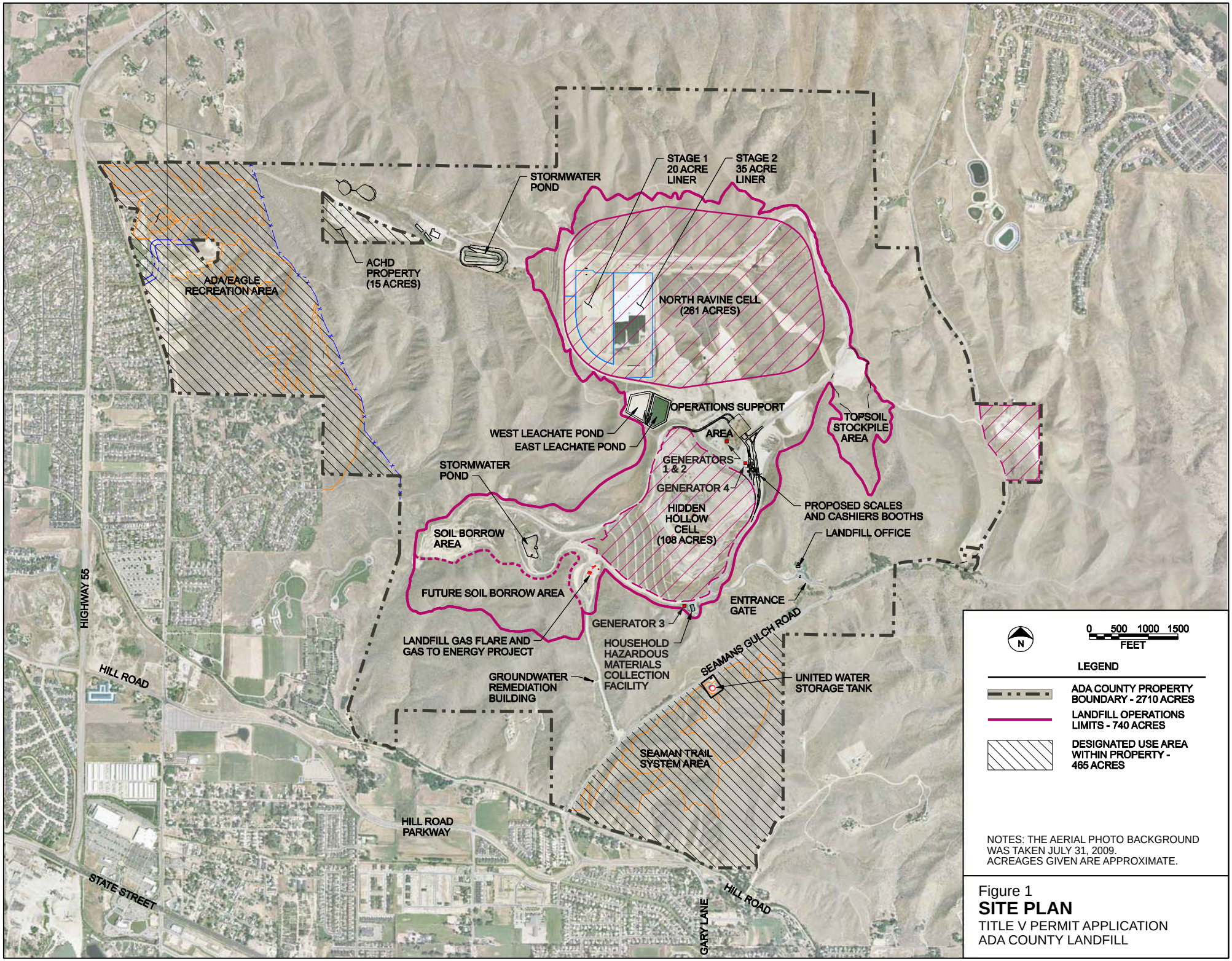

Figure 1
SITE PLAN
TITLE V PERMIT APPLICATION
ADA COUNTY LANDFILL

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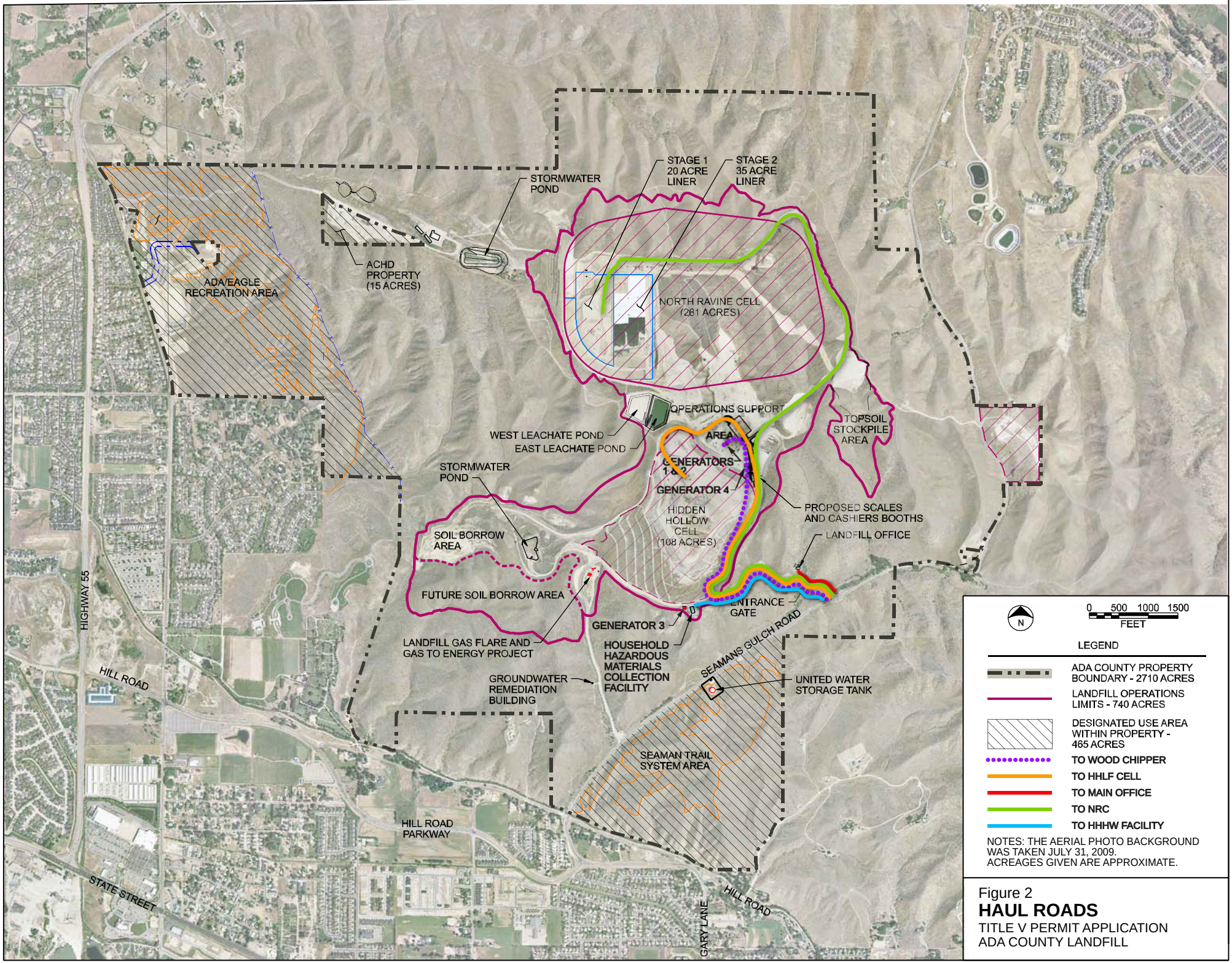


Figure 2
HAUL ROADS
TITLE V PERMIT APPLICATION
ADA COUNTY LANDFILL

ES091411003742BOI

TABLE 4
Fugitive Road Dust Source Descriptions

Process Code[a]	Landfill Destination[b]	Emission Estimate Documentation
R1 P	Landfill Office	Section 4.8
R2 P	Household Hazardous Waste Building	Section 4.8
R2 P/U	Hidden Hollow Landfill Cell	Section 4.8
R3 P/U	North Ravine Cell	Section 4.8
R4 P/U	Wood Chipper	Section 4.8

[a] The U and the P shown in the process code refer to the unpaved and paved portions of the road.

[b] All destinations within the landfill start at the landfill entrance off of Seamans Gulch Road.

Fugitive dust emission estimates from paved and unpaved roads are derived from landfill destinations and assumptions presented in Section 4.8.

1.7 Fugitive Landfill Operations

The following pages contain the application forms for the fugitive landfill operations. Landfill operations include dozing and grading activities for compressing MSW and applying daily cover.

The data required to estimate fugitive dust emissions from landfill operations are provided in Section 4.9.

2.0 General Information for the Facility

2.1 Introduction

IDAPA 314 Required Standard Application Form and Required Information.

.02 General Information for the Facility

a. Provide identifying information, including the name, address and number of:

i. *The owner;*

ii. *The Operator;*

iii. *The facility where the Tier I source is located;*

iv. *The registered agent of the owner;*

v. *The registered agent of the operator;*

vi. *The responsible official;*

vii. *The contact person*

b. Provide a general description of the processes used and products produced by the facility where the Tier I source is located, including any associated with each requested alternative operating scenario and trading scenario. The description shall include narrative and applicable SIC codes.

c. Provide a general description of each process line affecting a Tier I source

The information required by IDAPA 314.02.a is included in the General Information Form found in Section 1, Application Forms, of this application. The information required by IDAPA 314.02.b and c is provided in this section and includes a brief description of the processes within the ACLF. The ACLF is comprised of four distinct and separate operations (see Table 5).

TABLE 5
ACLF Processes

Process	SIC Code	SIC Description
Municipal solid waste landfill	4953	Refuse Systems
Recycling	5093	Scrap and Waste Materials
Wood chipping	2421	Sawmills and Planing Mills, General
Screening	2421	Sawmills and Planing Mills, General

The ACLF accepts MSW from residents and businesses in Ada County, as well as solid waste generated by Bogus Basin Mountain Resort in Boise County. Incoming waste is hauled by waste sanitation trucks or personal vehicles into the active landfill cell where it is sorted and dumped in designated areas. Landfill personnel, using large loaders with sheepsfoot wheels level and compact the dumped waste. At the end of each business day, a layer of soil is placed on top of the waste to limit waste being blown away, prevent fire, reduce waste related odors, and control vectors (for example, birds and rodents).

The decomposition of organic material in the municipal solid waste produces LFG. LFG is an odorous and combustible gas produced in MSW landfills. LFG is typically a mixture of approximately half methane and half carbon dioxide by volume, with trace quantities of other compounds. Although methane and carbon dioxide are odorless, other gases are produced from biodegradation, including some toxic organic gases, hydrogen sulfide,

and other odorous gas constituents. Landfills may continue to generate LFG for 10 to 20 years or longer after the landfill has been closed.

The rate of production of methane and other LFGs varies depending on the characteristics of the solid waste, environmental conditions, and the length of time the refuse has been in place. LFG moves within the landfill environment through two mechanisms: diffusion and convection. Diffusion is a process that causes the gases to move from an area of higher concentration to an area of lower concentration. Convection is a process that causes the gas to move from an area of higher pressure to an area of lower pressure. The convection process is usually the primary mechanism that affects LFG movement. For example, pressure gradients caused by LFG generation within the HHLF Cell (high pressure) to the atmosphere or permeable soil (low pressure) cause LFG to flow from the HHLF Cell to the air or permeable soil.

2.2 ACLF Gas Flare System

2.2.1 Existing Flare System

As a voluntary control measure, the LFG flare system (FLARE 1 and FLARE 2) was installed during Phase I of the HHLF Cell closure. The LFG flare system was designed to accommodate maximum gas flows expected once all phases of the closure are completed and consists of the following components:

- Condensate system (condensate traps, pump, and controls)
- Two variable speed exhausters (blowers)
- Two enclosed smokeless flare units
- Two propane tank pilot ignition systems

Flare system components are illustrated in Figure 3, and a simplified process flow diagram of the exhaust/flare system is shown in Figure 4. The extracted LFG is drawn to the flare system by the two exhausters (vacuum blowers). Condensate is captured ahead of the exhausters and pumped to one of two leachate ponds located west of the landfill operator area (see Figure 1). The condensate is expected to consist primarily of water vapor generated at a rate of approximately 0.0004 gallon per cubic foot of LFG.

The exhausters blow the LFG into the flares. Two enclosed flares were source tested on October 15-16, 2008, and are each capable of handling a minimum flowrate of 400 standard cubic feet per minute (scfm) and a maximum flowrate of 2,320 scfm (FLARE 1) and 2,379 scfm (FLARE 2) of LFG. Propane-fired pilots provide for auto-ignition startup of the LFG flares. Sensors (thermocouples) in the flare stack continuously monitor flare operation. In the event the flame goes out, or deviates b by 100 degrees Fahrenheit (°F) from the flare temperature set point, the integrated control system shuts down the exhausters. These flares are an enclosed or shielded where the flame is not visible under normal operation. System operators are also be able to monitor the presence of the flame through sight glasses.

The physical and operation specifications for each flare, on the basis of the manufacturer's submittal, are as follows:

- Manufacturer/model—John Zink enclosed ZTOF flare system
- Height–40.0 feet
- Diameter–12.0 feet
- Exhaust flow rates–400 to 2,320 scfm (FLARE 1) and 2,379 scfm (FLARE 2)
- Operating temperature range–1,400 to 1,800°F
- Heat release–maximum 65,520,000 British thermal units per hour (Btu/hour)

The total flare system capacity is a maximum of 4,699 scfm of LFG with both flares operating.

Figure 3
FLARE LAYOUT
TITLE V PERMIT APPLICATION
ADA COUNTY LANDFILL

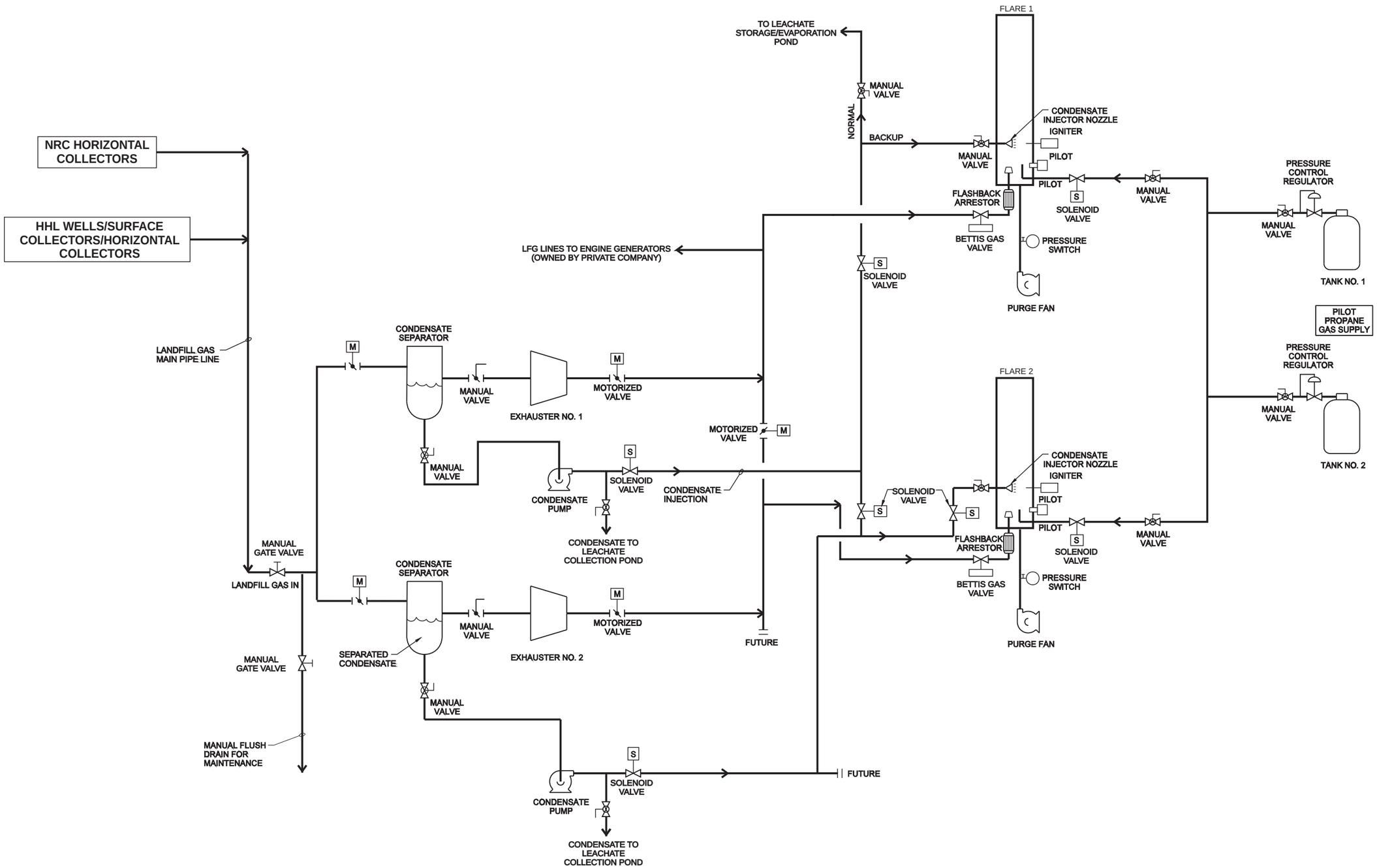


Figure 4
FLARE DIAGRAM
TITLE V PERMIT APPLICATION
ADA COUNTY LANDFILL

For future considerations, horizontal collectors, deep extraction wells, monitoring stations and perimeter soil vapor extraction wells will be installed in accordance with the Design Plan for the HHLF Cell and NRC. The ACLF Design Plan was included in the Permit-to-Construct Modification submitted to DEQ in December 2005. Horizontal gas collectors are being installed in conjunction with the placement of uniform lifts of waste over the remaining landfill area until final grades are achieved. The LFG extraction wells will be installed when the landfill surface is filled to final grade at the designated well locations. One or more collector lines will be connected with subheader piping to a monitoring station. Each main subheader connects to the main landfill gas collection header located around the landfill perimeter. In addition, soil vapor extraction wells will be installed at select locations along the landfill perimeter to enhance LFG collection.

A private company, Fortistar, under a completely separate PTC, operates an LFG to electrical energy system on leased land adjacent to the flare system. This system draws LFG from the main header pipe before the vacuum blowers and flares and uses the gas in two Caterpillar engines/generators to produce electrical power. Fortistar plans on adding two additional engines to produce electrical power. The schedule for installation is yet to be determined. Operation of this system is essentially parallel of flares and dependent on the landfill gas collection system operations. The operation or nonoperation of this system has no effect on the flare and landfill gas collection system of operating in compliance with the PTC and provisions of this Title V permit.

2.2.2 NRC Expansion

A separate design plan has been prepared for the NRC expansion of the ACLF. A preliminary design report was submitted to DEQ on July 20, 2005, for the NRC in accordance with Idaho Code Title 39, Chapter 74, Solid Waste Facilities Act, Section 39-7411. The design plan is for a 260-acre footprint expansion in a ravine northwest of the current HHLF Cell. Transitioning from the HHLF Cell to the NRC will be done over the next several years, at which point the HHLF Cell will be closed and all MSW will be disposed at the NRC. Construction of the NRC commenced in March 2006 with multiple construction activities. The NRC starting collecting waste in 2008 and has gone through one additional expansion in 2009. In June, 2010, the ACLF began collecting LFG from the active portion of the NRC.

While transitioning from the HHLF Cell to the NRC, the majority of the MSW will be disposed in the NRC. A minor percentage will continue to be disposed in the HHLF Cell to fill settled areas until the final finished surface grade is achieved.

2.3 Recycling

The ACLF manages incoming waste streams to facilitate segregation of targeted wastes for recycling and household hazardous materials for disposal/recycling offsite by approved methods. Recycled wastes collected and recycled offsite include televisions and computer screens, refrigerators and air conditioners, tires, and wood waste material. Additionally, the household hazardous materials facility, located within the ACLF, accepts household hazardous materials including paints, stains, used motor oil, batteries, solvents, fertilizers, etc. Ada County has established a reuse program for household products that are in their original packaging and are at least half full of usable product. The products are offered to the public free of charge. The remainder of household hazardous materials is sent offsite for proper disposal or recycling.

2.4 Wood Chipper

To help reduce the amount of MSW entering the landfill cell, the ACLF began separating wood waste material (for example, yard wood waste, Christmas trees, stumps/trees and construction waste lumber). The incoming wood waste stream is handled separately from MSW, and loads are stockpiled in a designated area. Four emission sources are associated with wood recycling: an internal combustion engine, a wood chipper, and two transfer points.

2.4.1 Internal Combustion Engine

The wood chipping unit is powered by a single Caterpillar diesel engine located on the wood chipper (GEN 1). Exhaust from the engine is vented directly to the atmosphere without passing through any emission control device.

2.4.2 Wood Chipping

An excavator equipped with a bucket and thumb grabs wood debris from the stockpile and feeds the tub grinder that is equipped with a 12-foot-diameter tub. A 48-inch hammermill pulverizes the wood waste as it passes through the bottom of the tub (WC-02). As the tub empties, wood chips from the hammermill drop out the bottom to the conveyor that transfers the chips to the screen for additional processing or to storage. Waste is constantly fed to the chipper to minimize debris and chips from being thrown from the mouth of the chipper.

2.4.3 Material Transfer

The wood chipper has two material transfer points. The first is as the wood debris is passed through the tub grinder and the resulting wood chips fall onto a conveyor belt. The second material transfer point is where the wood chips fall off the end of the conveyor belt onto a storage pile or into the power screen hopper.

2.4.4 As-Built Specifications of the Wood Chipper

The physical and operational specifications for the wood chipper, on the basis of the manufacturer's specifications are as follows:

- Manufacturer/model—Diamond Z Manufacturing
- Existing power production: Caterpillar C18 at 700 horsepower (replaced Caterpillar 3412C at 650 horsepower)
- Weight—50,000 lb (approximately)
- Length—32 feet, 6 inches
- Tub diameter—12.0 feet
- 48-inch hammermill with 20 hammers at 40 lb each
- Capable of processing up to 60 cubic yards per hour of construction and demolition waste

2.5 Power Screens

Operational since 2002, the power screen can be set up with a wide variety of screen slot sizes to sort wood chips. The screen has four emission sources: an internal combustion engine, a vibratory power bed screen, and two transfer points.

2.5.1 Internal Combustion Engine

The power screen unit is powered by a single Deutz diesel engine located on the power screen (GEN 2). Exhaust from the engine is vented directly to the atmosphere without passing through any emission control device.

2.5.2 Vibratory Bed Screen

Wood chips from the wood chipper fall into a hopper and are conveyed to a 6- by 16-foot vibratory bed screen (PS-02). The vibratory screen separates the chips by size, allowing the smaller pieces to fall through the screen and the larger pieces to pass along on top of the screen. Screens can be equipped with varying sizes of screen slots.

2.5.3 Material Transfer

The power screen has two material transfer points. The first material transfer point is where the wood chips that have been collected in the hopper are conveyed and dropped onto the vibratory screen. The second material

transfer point is where the wood chips fall off of the conveyor belt, after having passed through the screen, onto a storage pile.

2.5.4 As-Built Specifications of Each Power Screen

The physical and operational specifications for the power screen, on the basis of the manufacturer's specifications, are as follows:

- Manufacturer/Model—CEC
- Power Production—Deutz BF4L913 at 106 horsepower
- Height—13 feet 6 inches
- Length—48 feet 10 inches
- Charge hopper—15 cubic yards
- Hopper load height—12 feet
- Screen size—6 by 16 feet (on rubber spring suspension)

2.6 Emergency Backup Generators

2.6.1 Internal Combustion Engine

Currently, two emergency backup generators are located at the ACLF. One emergency generator is located at the Household Hazardous Waste Building (GEN 3). The other emergency generator is located at the newly constructed Scale House (GEN 4). Both are used to provide backup power during power outages. Electric power is the primary source of power to both facilities.

2.6.2 As-built Specifications of Household Hazardous Waste Emergency Generator (GEN 3)

The physical and operational specifications for GEN 3, on the basis of the manufacturer's specifications are as follows:

- Manufacturer/model—Detroit Diesel
- Engine rating—33 kW
- Stack height—7 feet
- Stack diameter—2.5 inches
- Stack exhaust temperature—903.7°F
- Stack exhaust flow—417 cfm

2.6.3 As-Built Specifications of Scale House Emergency Generator (GEN 4)

The physical and operational specifications for GEN 4, on the basis of the manufacturer's specifications are listed as follows:

- Manufacturer/model—Kohler
- Engine rating—60 kW
- Stack height—70 inches
- Stack diameter—2.5 inches
- Stack exhaust temperature—896°F
- Stack exhaust flow—549 cfm

3.0 Specific Information for Each Emissions Unit

3.1 Introduction

IDAPA 314 Required Standard Application Form and Required Information.

.03 Specific Information for Each Emissions Unit.

The owner or operator shall provide, in an itemized format, all of the information identified in Subsections 314.04 through 314.11 for each emission unit unless the emissions unit is an insignificant activity.

Sections 4 through 12 of this application are prepared to correspond with IDAPA sections 314.04 through 314.12. Section 4 provides emissions calculations and documentation for each emissions unit. Section 5 provides a listing of applicable requirements for the facility (regulatory applicability to specific emission units is detailed in Section 10). Section 6 is for other information that may be necessary to determine the applicability of a requirement. Section 7 provides additional descriptions to explain interpretations of nonapplicability. Section 8 is for alternate operating scenarios. No alternate operating scenarios are proposed for the ACLF. Section 9 describes the current compliance certifications and compliance certification methods per emissions unit basis. Section 10 describes methods for demonstrating compliance with each applicable requirement per emissions unit. Section 11 is for identifying trading scenarios. No trading scenarios or alternate emission limits are proposed. Section 12 includes any additional information that the facility determines is necessary for defining Tier I operating permit conditions and/or determining compliance with applicable requirements. This section also identifies insignificant emission unit activities.

4.0 Emissions Estimates

4.1 Introduction

IDAPA 314 Required Standard Application Form and Required Information.

04. Emissions

a. Identify and describe all emissions of pollutants for which the source is major and all emissions of regulated air pollutants from each emissions unit. Fugitive emissions shall be included in the application in the same manner as stack emissions, regardless of whether the source category is included in the list of sources contained in the definition of major facility.

b. Emissions rates shall be quantified in tons per year (tpy) or for radionuclides the effective dose equivalent (EDE) in millirem per year and in such additional terms as are necessary to determine compliance consistent with the applicable test method.

c. Identify and describe all points of emissions in sufficient detail to establish the basis for fees and applicability of requirements of the Clean Air Act.

d. To the extent it is needed to determine or regulate emissions, identify and quantify all fuels, fuel use, raw materials, production rates, and operating schedules.

e. *Identify and describe all air pollution control equipment and compliance monitoring devices or activities.*

f. Identify and describe all limitations on source operation or any work practice standards affecting emissions.

g. Provide the calculations on which the information provided under Subsection 314.04.1. through 314.04.i. is based.

4.2 Landfill Gas Emission Calculation

The quantity of LFG generated over time by the HHLF Cell and NRC was determined using EPA's LANDGEM (LFG Emissions Model) program (Version 3.02, May 2005).

The recommended AP-42 default input parameters were used in the HHLF Cell and NRC LANDGEM models:

- L_o, methane generation potential = 170 m^3/megagram
- k, methane generation rate constant = 0.02 yr^{-1} for areas receiving less than 25 inches/yr of rain

The following site-specific input parameters were used in the HHLF Cell LANDGEM model:

- R, Annual refuse acceptance rate
- Year to begin accepting MSW = 1972
- Closure year = 2020
- Methane content of offgas = 45 percent
- Carbon dioxide content of offgas = 50 percent
- NMOC concentration = 55.3 parts per million by volume (ppmv) as hexane
- Landfill temperature = 20°F

The following site-specific input parameters were used in the NRC LANDGEM model:

- R, Annual refuse acceptance rate
- Year to begin accepting MSW = 2008
- Closure year = 2100
- Methane content of offgas = 45 percent

- Carbon dioxide content of offgas = 50 percent
- NMOC concentration = 55.3 ppmv as hexane
- Landfill temperature = 20°F

The annual refuse acceptance rate is based on actual and projected data developed by Ada County for the period from 1972 through 2010 for the HHLF Cell, and from 2010 through 2100 for the NRC. LANDGEM calculated the annual rates to achieve HHLF Cell full capacity by the year 2020 and achieve NRC full capacity by the year 2100. The methane generation rate constant is based on the recommended AP-42 default value for dry areas with low precipitation (less than 25 inches per year). The site-specific methane content is less than the AP-42 default value of 55 percent. The balance of the offgas consists primarily of moisture, nitrogen, and NMOC constituents.

The offgas collection system is presumed to have a collection efficiency of 80 to 90 percent based on the spacing of the wells. A value of 85 percent was used in the emissions calculations. This is higher than the AP-42 default value of 75 percent.

On April 4, 2010, CH2M HILL, collected LFG samples from the ACLF header pipe for NMOC concentrations in accordance with EPA Method 25C. A site-specific NMOC average concentration was reported at 297 ppmv as methane. CH2M HILL converted the laboratory reported NMOC concentration of 297 ppmv as methane to 55.3 ppmv as hexane. The NMOC methane/hexane conversion calculation is included in Appendix C-1.

Individual LANDGEM modeling was performed for both the HHLF Cell and the NRC to estimate future LFG generation. The LANDGEM results report for both the HHLF Cell and the NRC are included in Appendix D.

The flare system was designed to collect LFG based on a maximum flow rate of 4,699 scfm. Current HHLF Cell LFG flow rates are approximately 2,200 to 2,800 cfm. Flow rates were estimated for the HHLF Cell and NRC. Flow rates were estimated for each cell separately and by combining the two cells together. Exhibit 1 is an LFG flow chart.

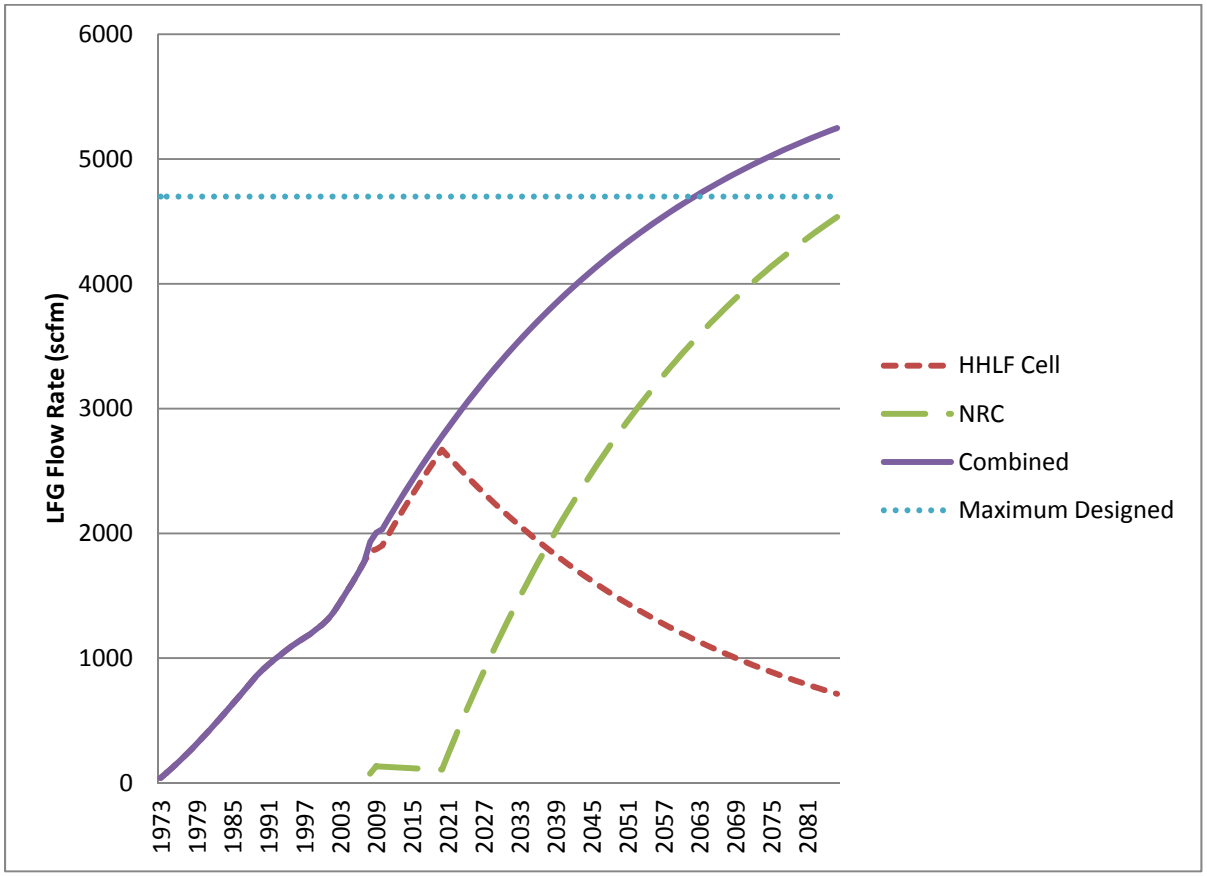


FIGURE 5
ACLF Combined LFG Flow Rate (HHLF Cell and NRC)

On the basis of current LANDGEM modeling data, the total combined future peak gas flows for the existing HHLF Cell and NRC are more than 4,699 cfm in 2060. Therefore, data indicate that the existing flare system has the potential capacity to control LFG flows until 2059—which includes NRC operations for the first 50 years assuming both flares operating. Currently the HHLF Cell and NRC combined produce between 2,500 and 2,800 scfm of LFG—approximately 500 to 800 scfm higher than the LANDGEM model predicts. Currently, approximately 1,200 scfm of LFG is routed to the two Caterpillar generators owned and operated by Fortistar for power production. The remaining LFG goes directly to the flares. Two additional generators are planned to be installed at the ACLF by Fortistar. They will require an additional 1,200 scfm of LFG, bringing the total LFG to generators to 2,400 scfm. During times of maintenance or shutdown of the generators, the entire LFG flow goes to the two flares. Under the current operating plan, one flare operates on the excess LFG not being used by the generators. The second flare can operate in parallel with the first flare or operate as a backup flare to comply with the provisions of the Startup, Shutdown and Malfunctions (SSM) Plan.

4.3 LFG Collection and Control

The LFG collection and control system has the potential to emit (PTE) air emission pollutants from two LFG flares. The collected landfill gas is routed to two enclosed LFG flares, with the design capacity to effectively combust 2,320 scfm (FLARE 1) and 2,379 scfm (FLARE 2) for a combined total of 4,699 scfm. The overall destruction efficiency of the LFG control system is designed to perform at 98 percent at 1,500°F. The current estimate of the LFG flow rate ranges from approximately 2,200 to 2,800 scfm. Actual emission calculations are based on an LFG flow rate of 2,700 cfm being captured in the LFG collection and control system. Actual emission calculations are provided in Appendix C-2.

Blowers are used to move LFG through the collection and control system. Electric power is currently provided to the blowers by the electrical system running through the ACLF. The system is designed to operate 24 hours per day, 7 days per week, with shutdown and startup only occurring during maintenance activities.

PTE calculations were based on the design capacity of two enclosed smokeless flares. Potential emission calculations for the collection and control system are provided in Appendix E-1.

4.4 Wood Chipper

The ACLF is responsible for managing the wood chipping operation. The wood chipper consists of a 12-foot-diameter cone designed to cut and shred various wood debris. The chipper uses a Caterpillar diesel engine generator with a rated input capacity of 5.32 MMBtu/hr to power the wood chipper. The wood chipper operates during normal business hours—not to exceed 3,300 hours in any consecutive 12-month period.

The wood chipper has three sources of air emissions.

The first emission source consists of particulate matter released into the air as a result of the wood chipping. Large hammers located at the bottom of the feed drum rotate at a high rate on an axle, breaking apart wood waste materials. During this process, the hammering process throws wood chips into the air along with fugitive dust.

The second air emission source is fugitive dust generated as a result of the transfer of wood waste. Two transfer points are associated with the wood chipper. The first is the loading of the drum—usually by a front end loader or some other mechanical loading device. Once the wood waste passes through the hammermill, the resulting wood chips are conveyed along a conveyor belt to their destination. This conveyor is the second transfer.

The third air emission source is the exhaust from the diesel engine used to supply power to the wood chipper and all associated processes.

No air emission controls exist on the wood chipper. In the event of an excess emission or maintenance, the wood chipper will be shut down. Actual and potential emission calculations for the wood chipper diesel engine generator are provided in Appendices C-3 and E-2, respectively. Wood chipper fugitive dust emission calculations are provided in Appendix C-4 (actual emissions are assumed to equal potential emissions).

4.5 Power Screen

A power screen is used to separate the processed material using a shaking/screen that sorts the material by various sizes. The ACLF utilizes a Deutz diesel engine generator with a rated input capacity of 0.86 MMBtu/hr to supply power to the power screen. In coordination with the wood chipper, the power screen diesel engine generator is permitted to operate 3,300 hours during any consecutive 12-month period.

The power screen has three sources of air emissions. The first emission source is particulate matter released into the air as a result of the screen shaking. Wood chips are dropped from a conveyor into a hopper which feeds the shaking screen. Small wood chips pass through the screen and are conveyed into one pile; larger wood chips which do not pass through the screen are conveyed to a separate pile. Two transfer points are associated with the power screen. The first is the loading of the hopper where the wood chips pass from the chipper to the screen via a conveyor belt. Once the wood wastes pass through the screen, a second conveyor transfers the wood chips to where they drop into sorted piles. The third air emission source is the exhaust from the diesel engine used to supply power to the power screen and all associated processes. No air emission controls exist on the power screen. Actual and potential emission calculations for the power screen diesel engine generator are provided in Appendices C-5 and E-3, respectively. Fugitive dust emission calculations for the power screen are provided in Appendix C-6 (actual emissions are assumed to equal potential emissions).

4.6 Emergency Backup Generators

Two stationary emergency backup generators are located at the ACLF: one at the Household Hazardous Waste Building and one at the newly constructed Scale Facility. The purpose of the emergency generators is to provide backup power during normal day-to-day operations in the event of the loss of electric power. These emergency generators will only run during normal business hours and only during times of power outage. The only other time these emergency generators will run is for maintenance and testing purposes. Maintenance and testing will be limited to semi-annual operation of no more than 4 hours per generator—8 hour per year for each emergency generator. Actual emission estimates are provided in Appendix C-7; potential emission estimates are provided in Appendix E-4.

4.7 Fugitive Dust from Storage Piles

Wood chips pass through the power screens and are conveyed to nearby storage piles. Storage piles resulting from the chipping/screening process are a source of fugitive dust.

Storage pile emissions are based on a maximum wood chip/sawdust production rate of 31,045 tons per year. Screen slot size is determined by the size of wood chips needed.

The screened wood chip storage piles are situated around the power screen. Piles can range up to 12 feet high, 12 feet wide, and 32.5 feet long. No fuels are used in building the storage piles. Water spray is applied as needed to control fugitive dust associated with the storage piles. No air pollution control devices are associated with the storage piles. Emission calculations for the storage piles are provided in Appendix C-8 (actual emissions are assumed to equal potential emissions).

4.8 Fugitive Dust from Paved and Unpaved Roads

The roads (both paved and unpaved) within the ACLF generate fugitive dust. Traffic enters and exits the landfill site on Seamans Gulch Road. The variety of vehicles that commonly enter the site range from personal automobiles to waste sanitation trucks. The following four destination points are within the ACLF:

- The main landfill office located north of the gate house can be accessed only by paved roads for ACLF customers.
- Customers accessing the Household Hazardous Waste Building located within the ACLF remain on paved roads and use a paved parking lot.

- Customers destined for the current HHLF Cell will use both paved and unpaved haul roads. Unpaved haul roads will be maintained within the HHLF Cell because of changing the active portion of the landfill. Paved haul roads will be maintained from the edge of the HHLF Cell to the ACLF entrance/exit off of Seamans Gulch Road.
- Customers destined for the NRC will use both paved and unpaved haul roads. Unpaved haul roads will be maintained within the cell aligned to the active portion of the landfill. Paved haul roads will be maintained from the edge of the NRC to the ACLF entrance/exit off of Seamans Gulch Road.
- Customers destined for the wood chipper will use both paved and unpaved haul roads. Unpaved haul roads will be maintained within the operations area of the landfill where the wood chipping takes place. Paved haul roads will be maintained from the scales to the ACLF entrance/exit off of Seamans Gulch Road.

The following site-specific input parameters were used to estimate emissions from both paved and unpaved roads. The parameters for paved roads are as follows:

- E—particulate emission factor
- k—particle size multiplier for PM_{10} = 0.020 lb/vehicle mile travelled (VMT)
- sL—road surface silt loading = 7.4 g/m^2
- W—average weight of vehicles traveling on the road
- C—emission factor for 1980s vehicle fleet exhaust, brake wear and tire wear = 0.00047 lb/VMT

The parameters for unpaved roads are as follows:

- E—size-specific emission factor (lb/VMT)
- s—surface material silt content = 6.4 percent
- W—mean vehicle weight (tons)
- S—mean vehicle speed = 15 mph
- C—emission factor for 1980s vehicle fleet exhaust, brake wear and tire wear = 0.00047 lb/VMT
- k—empirical constant for public roads = 1.8 lb/VMT
- a—empirical constant for public roads = 1 (unit less)
- c—empirical constant for public roads = 0.2 (unit less)
- d—empirical constant for public roads = 0.5 (unit less)

Emissions from unpaved roads are controlled through surface treatment (wetting the surface). Water helps bind dust particles together which makes them less likely to become airborne when vehicular traffic passes. The effectiveness of treating the surface depends on the time it takes for the road to dry which depends on the frequency of water application, amount of water applied, vehicular traffic, and evaporation. Emission calculations for the paved and unpaved roads can be found in Appendix C-9 (actual emissions are assumed to equal potential emissions).

4.9 Fugitive Dust from Landfill Operations

Landfill operations include dozing and grading activities for compressing MSW and applying daily cover. Emission calculations are based on the fugitive dust generated from moving topsoil or other earthen materials during daily operations. Dozing and/or scraping activities are based on 8 hours per day. Grading operations are based on 10 hours per day. Emission calculations for the landfill operations are provided in Appendix C-10 (actual emissions are assumed to equal potential emissions).

4.10 Emission Estimates Summary

The ACLF actual and potential emission estimates are summarized in Table 6 and Table 7, respectively.

TABLE 6
Actual Emission Estimates Summary

Pollutant	$PM_{2.5}$		PM_{10}		NO_X		SO_2		CO		VOC		HAPs	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
FLARE 1	0.91	4.00	0.91	4.00	1.74	7.62	6.02	26.38	0.44	1.91	2.66	11.63	1.22	0.28
FLARE 2	0.94	4.13	0.94	4.13	1.80	7.87	6.22	27.24	0.45	1.97	2.74	12.01	1.26	0.29
Wood chipper generator (GEN 1)	0.296	0.122	0.305	0.126	5.36	2.22	0.008	0.003	0.96	0.39	0.12	0.05	0.0079	0.0033
Power screen generator (GEN 2)	0.27	0.11	0.27	0.11	3.79	1.57	0.001	0.001	0.82	0.34	0.30	0.12	0.0055	0.0023
HHHW generator (GEN 3)	0.13	0.0017	0.13	0.0017	0.40	0.0052	0.0006	0.000008	1.85	0.024	0.15	0.0019	0.0027	0.000035
Scale house generator (GEN 4)	0.20	0.0026	0.20	0.0026	0.62	0.0080	0.0010	0.000013	2.86	0.037	0.23	0.0029	0.0041	0.000054
Wood chipper fugitive (WC-01)	0.43	0.178	0.43	0.178										
Power screen fugitives (PS-01)	0.004	0.002	0.025	0.0103										
Wood chipper storage piles (WC-02)	0.0013	0.0021	0.0013	0.0021										
Unpaved roads	2.02	3.40	27.06	45.54										
Paved Roads	2.33	3.86	9.49	15.71										
Landfill operations (dozing)	0.07	0.08	0.47	0.58										
Landfill operations (grading)	0.05	0.07	0.92	1.40										
Total	**7.65**	**15.96**	**41.15**	**71.79**	**13.71**	**19.29**	**12.25**	**53.62**	**7.37**	**4.67**	**6.20**	**23.81**	**2.50**	**0.58**

CO = carbon monoxide
HAPs = hazardous air pollutants
lb/hr = pounds per hour
PM_{10} = particulate matter smaller than 10 microns
No_x = nitrogen oxides
SO_2 = sulfur dioxide
ton/yr = tons per year
VOC = volatile organic compounds

TABLE 7
Potential Emission Estimates Summary

Pollutant	$PM_{2.5}$		PM_{10}		NO_X		SO_2		CO		VOC		HAPs	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
FLARE 1	1.59	6.97	1.59	6.97	3.03	13.27	7.47	32.73	0.76	3.32	4.02	20.24	2.12	0.49
FLARE 2	1.64	7.19	1.64	7.19	3.13	13.70	7.72	33.79	0.78	3.43	4.77	20.90	2.19	0.50
Wood chipper generator (GEN 1)	0.30	0.49	0.30	0.50	5.36	8.84	0.01	0.01	0.95	1.57	0.12	0.20	0.0079	0.013
Power screen generator (GEN 2)	0.27	0.44	0.27	0.44	3.79	6.25	0.001	0.002	0.82	1.35	0.30	0.50	0.0055	0.009
HHHW generator (GEN 3)	0.13	0.0017	0.13	0.0017	0.40	0.0052	0.0006	0.000008	1.85	0.024	0.15	0.0019	0.0027	0.000035
Scale house generator (GEN 4)	0.20	0.0026	0.20	0.0026	0.62	0.0080	0.001	0.000013	2.86	0.037	0.23	0.0029	0.0041	0.000054
Wood chipper fugitive (WC-01)	0.43	0.71	0.43	0.71										
Power screen fugitives (PS-01)	0.0038	0.0062	0.025	0.041										
Wood chipper storage piles (WC-02)	0.0013	0.0021	0.008	0.014										
Unpaved roads	2.02	3.40	27.06	45.54										
Paved Roads	2.33	3.86	9.49	15.71										
Landfill operations (dozing)	0.07	0.08	0.47	0.58										
Landfill operations (grading)	0.05	0.07	0.92	1.40										
Total	**9.04**	**23.22**	**42.54**	**79.10**	**16.33**	**42.07**	**15.20**	**66.53**	**8.02**	**9.73**	**10.19**	**41.84**	**4.33**	**1.01**

5.0 Applicable Requirements

5.1 Introduction

IDAPA 314. Required Standard Application Form and Required Information.

05. Applicable Requirements.

a. Cite and describe all applicable requirements affecting the emission unit; and

b. Describe or reference all methods required by each applicable requirement for determining the compliance status of the emissions unit with the applicable requirement, including any applicable monitoring

Table 8 of this application provides a summary of the significant state and federal regulations that apply to emissions units at the ACLF. A detailed list of all applicable state and federal requirements affecting the ACLF is included in Section 9. Section 9 also contains the compliance certification, the method of compliance, compliance status, and information relating to compliance plans. Section 10 contains the specific compliance plans for demonstrating continuous compliance with the applicable regulations.

ACLF is in the process of modifying its current air quality PTC to address hydrogen sulfide (SO_2) concentrations within the LFG in order to demonstrate compliance with the 1-hour SO_2 National Ambient Air Quality Standard (NAAQS). Therefore, Ada County Solid Waste Management Department is requesting a permit shield for these applicable requirements summarized in Section 5.2.

TABLE 8
Significant Applicable Regulations Summary by Emissions Unit

Emissions Unit	Control Device	Applicable Regulations	Applicable To / Notes
Landfill	Flares	40 CFR §60, Subpart A, and §60.18 (flares)	Landfill operation, flares
	Flares	40 CFR §60.750, Subpart WWW	Standards of Performance for Municipal Solid Waste Landfills
	Flares	40 CFR §63.1910, Subpart AAAA	Municipal Solid Waste Landfill NESHAP
	None	40 CFR §61, Subpart M, §61.154	National Emission Standard For Asbestos. Standard for active waste disposal sites
	None	40 CFR §82, Subpart F	Recycling and Emissions Reduction; regulations pertaining to use and handling of ozone-depleting substances
	Flares	IDAPA 58.01.01.859	MSW Landfills that commenced construction or were modified on or after May 30, 1991.
	Flares	IDAPA 58.01.01.786.01	PM Limitations
	Flares	IDAPA 58.01.01.210	TAPs Compliance
	Flares	IDAPA 58.01.01.107.03.b	NAAQS
	None	IDAPA 58.01.01.650-651	Fugitive Dust

TABLE 8
Significant Applicable Regulations Summary by Emissions Unit

Emissions Unit	Control Device	Applicable Regulations	Applicable To / Notes
Diesel Generators (2)	None	IDAPA 58.01.01.725-728	Sulfur in Fuel Limitations
		IDAPA 58.01.01.625.02	Visible Emissions Limits
		IDAPA 58.01.01.107.03.b	NAAQS
Wood Chipping and Screening	None	IDAPA 58.01.01.625.02	Visible Emissions Limits
		IDAPA 58.01.01.107.03.b	NAAQS
Haul Roads, Storage Piles, Material Handling, Placement and Grading	None	IDAPA 58.01.01.650-651	Fugitive Dust
Refer to Section 12	None	IDAPA 58.01.01.317	Insignificant Activities

5.2 Permit Shield for an Applicable Requirement

This section provides the information necessary to protect the source from enforcement of an applicable requirement. Ada County Solid Waste Management Department is in the process of completing an air quality PTC modification to comply with an increase in sulfur dioxide (SO_2) emissions. The SO_2 emissions will be dependent upon the amount of sulfur entering in the gas stream, typically most of this is in the form of hydrogen sulfide (H_2S). Our assumption is that 100% of the H_2S will oxidize into SO_2 when mixed with oxygen.

Ada County Solid Waste Management Department is requesting that the DEQ include a permit shield in the Title V permit under 504(f) of the CAA, and 40 CFR 70.69(f) for the for the applicable requirement in Table 9.

TABLE 9
Permit Shield for an Applicable Requirement

Applicable Requirement	Permit Shield
IDAPA 58.01.01.107.03.b —Incorporates the National Primary and Secondary Ambient Air Quality Standards, 40 CFR Part 50 by reference.	Facility-wide stationary sources are assumed to be compliance with the 1-h**our** sulfur dioxide standard in 40 CFR 50.17.

Furthermore, Ada County Solid Waste Management Department is requesting that the PTC modification requirements to attain compliance with the new SO_2 1-hour National Ambient Air Quality Standard (NAAQS) of 196 milligrams per cubic meter (mg/m^3) be incorporated into the Tier I Operating Permit (Permit No. T1-060050) as a permit shield in accordance with IDAPA 58.01.01.325.01.a.

In order to comply with the 1-hr SO_2 regulatory limit, air dispersion modeling was performed using the BEEST (version 9.90a) program to establish a maximum H_2S concentration in the collected LFG, and a maximum flowrate to the control devices. Air dispersion modeling is based on a maximum H_2S concentration of 453.5 ppm at a LFG flowrate of 3,350 cfm. The actual flow rate is approximately 2,700 cfm. The higher flowrate of 3,350 cfm established a maximum H_2S concentration while demonstrating compliance with the 1-hr SO_2 regulatory limit. Ambient dispersion modeling inputs are shown in Table 10. Refer to the potential emission calculations for the conversion of H_2S to SO_2 in Appendix E-1. Results of the modeling compared to the 1-hr SO_2 NAAQS are summarized in Table 11.

TABLE 10
Air Dispersion Modeling Inputs

Source Name	Source ID	Sulfur Dioxide Concentration (lb/hr)
Landfill Gas Flare 1 [a]	Flare 1	7.471
Landfill Gas Flare 2 [a]	Flare 2	7.715
Chipper Generator [b]	Gen 1	0.0081
Screen Generator [b]	Gen 2	0.0013

[a] Emission estimates for Flare 1 and Flare 2 are based on Hydrogen sulfide concentration of 453.5 ppm and a LFG flowrate of 3,350 cfm.

[b] Emission estimates for Gen 1 and Gen 2 are based on 3,300 maximum annual operating hours.

TABLE 11
Air Dispersion Modeling Results

Operating Scenario [a]				
Operating Hours ($\mu g/m^3$) [b]	Non-Operating Hours ($\mu g/m^3$) [c]	Background ($\mu g/m^3$) [d]	Total Concentration ($\mu g/m^3$) [e]	NAAQS Concentration (ug/m^3)[f]
76	147.8	47.1	194.9	196

[a] Based on five year meteorological data (2001 through 2005) provided by IDEQ

[b] 7:00 AM to 6:00 PM Monday through Friday, 8:00 AM through 6:00 PM Saturday, closed Sunday

[c] 24-hour per day, 7 days per week

[d] Provided by IDEQ

[e] Maximum value between operating hours and non-operating hours plus background concentration

[f] NAAQS 1-hr SO_2 regulatory limit

6.0 Other Requirements

6.1 Introduction

IDAPA 314. Required Standard Application Form and Required Information.

06. Other Requirements.

Other specific information that may be necessary to determine the applicability of, implement or enforce any requirement of the Act, these rules, 42 U.S.C Sections 7401 through 7671q or federal regulations.

No information other than that provided in other sections of this application is necessary to determine applicability of any requirements.

7.0 Proposed Exemptions and Determinations of Nonapplicability

7.1 Introduction

IDAPA 314. Required Standard Application Form and Required Information.

.07 Proposed Determinations of Nonapplicability.

Identify requirements for which the applicant seeks a determination of nonapplicability and provide an explanation of why the requirement is not applicable to the Tier I source.

No information other that provided in other sections of this application is necessary to determine applicability of any requirements. ACLF requests that DEQ confirm the nonapplicability of the following regulatory programs:

- **Compliance Assurance Monitoring (CAM) 40 CFR Part 64.** The flares at the ACLF are not subject to subject to enhanced monitoring as found at IDAPA 58.01.01.314.09(iv), later modified to the "Compliance Assurance Monitoring," (CAM) Rule at 40 CFR Part 64. In accordance with 40 CFR Part 64 Compliance Assurance Monitoring (CAM), emission limitations or standards proposed after November 15, 1990 pursuant to section 111 or 112 are exempt from CAM (40 CFR §64.2(b)(1)). All applicable monitoring requirements from Subpart WWW have been included in the permit. Since Subpart WWW was promulgated on March 1996 under the authority of Section 111 of New Source Performance Standards (NSPS), this standard is exempt from CAM requirements and no additional monitoring has been incorporated into the permit application.
- **Prevention of Significant Deterioration (PSD) 40 CFR Part 52.21. T**he PSD rules found at 40 CFR 52.21 and IDAPA 58.01.01.205 do not apply to the landfill because the regulated pollutants in this section, after controls, do not equal or exceed the major stationary source threshold of 250 tons per year (40 CFR 52.21(b)(1)(i)(b).
- **Risk Management Plan (RMP) Chemical Accident Prevention Provisions 40 CFR Part 68.** The RMP rules do not apply because no regulated toxic or flammable substances are present in a process at the ACLF above the thresholds found at 40 CFR 68.130.

8.0 Alternative Operating Scenarios

8.1 Introduction

IDAPA 314. Required Standard Application Form and Required Information.

08. Alternative Operating Scenarios

a. Identify all requested alternative operating scenarios.

b. Provide a detailed description of all requested alternative operating scenarios. Include all the information required by Section 314 that is relevant to the alternative operating scenario.

No alternate operating scenarios are presented in this application.

9.0 Compliance Certifications

9.1 Compliance Certification Rule

IDAPA 314. Required Standard Application Form and Required Information.

09. Compliance Certifications.

a. Provide a compliance certification regarding the compliance status of each emissions unit at the time the application is submitted to the Department that:

i Identifies all applicable requirements affecting each emissions unit.

ii Certifies the compliance status of each emissions unit with each of the applicable requirements.

iii Provides a detailed description of the method(s) used for determining the compliance status of each emissions unit with each applicable requirement, including a description of any monitoring, recordkeeping, reporting and test methods that were used. Also provide a detailed description of the method(s) required for determining compliance.

iv Certifies the compliance status of the emissions unit with any applicable enhanced monitoring requirements.

v Certifies the compliance status of the emission unit with any applicable enhanced compliance certification requirements.

vi Provides all other information necessary to determining the compliance status of the emissions unit.

b. Provide a schedule for submission of compliance certifications during the term of the Tier I operating permit. The schedule shall require compliance certification to be submitted no less frequently than annually, or more frequently if specified by the underlying applicable requirement or by the Department.

9.2 Applicability Review and Compliance Certification Summary

This section provides the information necessary to fulfill the requirements listed above on a per emissions unit basis. Section 9 also contains the compliance certification, the method of compliance, compliance status and information relating to compliance plans. Table 12 summarizes facility-wide compliance certification. Table 13 summarizes the compliance certification for the wood chipper. Table 14 summarizes the compliance certification for the power screens. Table 15 summarizes the compliance certification for the flare. For each applicable requirement, the emissions will continue to comply with the applicable requirement (IDAPA 58.01.01.314.10(a)i).

TABLE 12
Facility-Wide Applicability, Compliance Certification, and Method of Compliance at Time of Application (IDAPA 58.01.01 Rule 314.10(a)

Emissions Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Facility-wide	IDAPA 58.01.01. 121	**Compliance Requirements by DEQ.** Any person engaged in an activity which may violate the air quality provisions of the Act, violate an air quality order issued or entered in accordance with the Act or these rules, or violate any of these rules, may be required by DEQ to do any of the following: prepare a schedule, submit periodic reports, maintain records, monitor, develop episode plans.	X		In December 2005, the ACLF submitted a 15-day Pre-Permit Construction application to modify the existing ACLF for expansion of the NRC. DEQ issued a PTC to the ACLF in May 2006. The PTC provides requirements for demonstrating compliance with state and federal rules. ACLF monitors and maintains records for each emission generating unit.
Facility-wide	IDAPA 58.01.01. 122	**Information Orders by DEQ**. The Department may issue information orders.	X		ACLF has submitted all information requested by DEQ.
Facility-wide	IDAPA 58.01.01. 123	**Certification of Documents**. All documents submitted to DEQ shall contain a certification by a responsible official. The certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.	X		Documents submitted to DEQ contain a certification in accordance with the requirements of this rule.
Facility-wide	IDAPA 58.01.01. 124	**Truth, Accuracy, and Completeness of Documents**. All documents submitted to the Department shall be truthful, accurate, and complete.	X		Documents submitted to DEQ are truthful, accurate, and complete based on information and belief formed after reasonable inquiry.
Facility-wide	IDAPA 58.01.01. 125	**False Statements**. No person shall knowingly make any false statement, representation, or certification in any form, notice, or report required under any permit, or any applicable rule or order in force pursuant thereto.	X		All statements, representation, or certification submitted are, to the best of the knowledge of the ACLF, true.
Facility-wide	IDAPA 58.01.01. 126	**Tampering**. No person shall knowingly render inaccurate any monitoring device or method required under any permit, or any applicable rule or order in force pursuant thereto.	X		To the best knowledge of the ACLF, no person has knowingly tampered with a monitoring device or method required under any permit issued to the ACLF.
Facility-wide	IDAPA 58.01.01. 127	**Format of Responses**. All responses and information submitted to DEQ shall be provided in a format approved by DEQ.	X		The ACLF will submit all responses and information to DEQ in an approved format.
Facility-wide	IDAPA.58. 01.01.128	**Confidential Information.** If the information for which the person is requesting confidential treatment is submitted to DEQ under Sections 300 through 386 or the terms or conditions of a Tier I operating permit, the person shall also submit the same information directly to the EPA	X		The ACLF will submit all Tier I information to the EPA.

TABLE 12
Facility-Wide Applicability, Compliance Certification, and Method of Compliance at Time of Application (IDAPA 58.01.01 Rule 314.10(a)

Emissions Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Facility-wide	IDAPA 58.01.01. 130-136	**Startup, Shutdown, Scheduled Maintenance, Safety Measures, Upset and Breakdown.** Establish procedures and requirements to be implemented in all excess emissions events caused by startup, shutdown, scheduled maintenance, upset, or breakdown of any emissions unit or which occur as a direct result of the implementation of any safety measure.	X		Compliance with this rule is described for the LFG flares in Table 15.
Facility-wide	IDAPA 58.01.01. 155	**Circumvention**. No person shall willfully cause or permit the installation or use of any device or use of any means that conceals emissions of pollutants that would otherwise violate the provisions of this chapter without resulting in a reduction in the total amount of emissions.	X		Devices and/or methods are not used to conceal an emission of air pollutants which would otherwise violate the provisions of this chapter.
Facility-wide	IDAPA 58.01.01. 156	**Total Compliance.** Where more than one (1) section of these rules applies to a particular situation, all such rules must be met for total compliance, unless otherwise provided for in these rules.	X		The ACLF will comply with all the rules that apply.
Facility-wide	IDAPA 58.01.01. 157	**Test Methods and Procedures**. The purpose of this Section is to establish procedures and requirements for test methods and results. Unless otherwise specified in these rules, permit, order, consent decree, or prior written approval by DEQ:	X		Sampling and analytical procedures required by DEQ are conducted in accordance with sampling and analytical procedures approved by DEQ.
Facility-wide	IDAPA 58.01.01. 161	**Toxic Substances**. Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.	X		All toxic substances emitted by the ACLF are below concentrations that may injure or unreasonable affect human or animal life or vegetation.
Facility-wide	IDAPA 58.01.01. 200 - 299	**Procedures and Requirements for Permits to Construct**. The purposes of Sections 200 through 228 are to establish uniform procedures and requirements for the issuance of “Permits to Construct”.	X		DEQ issued a PTC to the ACLF in July 2009 (permit number 2009.0001). The ACLF is subject to the rules and requirements within the facility PTC.

TABLE 12
Facility-Wide Applicability, Compliance Certification, and Method of Compliance at Time of Application (IDAPA 58.01.01 Rule 314.10(a)

Emissions Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Facility-wide	IDAPA 58.01.01. 300 – 316	**Procedures and Requirements for Tier I operating Permits**. Prohibits the operation of a Tier I source without an effective Tier I operating permit unless the owner or operator is in compliance with Sections 311 – 315 and DEQ has not taken final action on the application. Establishes requirements for the contents and submittal deadline of applications. Requires applicants to supplement or correct incomplete or inaccurate portions of the application upon becoming aware of an incomplete or inaccurate submittal.	X		The submission of this permit application demonstrates compliance with this rule.
Facility-wide	IDAPA 58.01.01. 317	**Insignificant Activities**. This Section contains the criteria for identifying insignificant activities for the purposes of the Tier I operating permit program. Notwithstanding any other provision of this rule, no emission unit or activity subject to an applicable requirement shall qualify as an insignificant emission unit or activity. Applicants may not exclude from Tier I operating permit applications information that is needed to determine whether the facility is major or whether the facility is in compliance with applicable requirements.	X		The submission of this permit lists those activities at the ACLF that are insignificant. The basis for the selection of the insignificant emissions sources is detailed in Section 12.2 of this application.
Facility-wide	IDAPA 58.01.01. 380 - 397	**Changes to Tier I Operating Permits**. Establishes procedures to be followed when altering, changing, modifying, or reopening a Tier I Operating Permit.	X		No alterations, changes, modifications, or re-openings of the Tier I operating permit are being requested as part of this permit application.
Facility-wide	IDAPA 58.01.01. 510	**Stack Heights and Dispersion Techniques.** The purpose of Sections 510 through 516 is to establish criteria for good engineering practice for stack heights and dispersion techniques and shall apply to existing, new, and modified stationary sources and facilities.	X		The ACLF will adopt good engineering practices and dispersion techniques for all stacks.
Facility-wide	IDAPA 58.01.01. 513	**Stack Height And Dispersion Techniques Requirements**. The required degree of emission control of any regulated or toxic air pollutant shall not be affected by the amount of any stack height that exceeds good engineering practice (GEP) or by any other dispersion technique.	X		The required degree of emission control of any air pollutant is not affected by the amount of any stack height that exceeds good engineering practice or by any other dispersion technique.
Facility-wide	IDAPA 58.01.01. 561	**Air Pollution Emergency—General Rules**. Establishes specific requirements to be followed in designated stricken areas during each stage of an emergency episode.	X		ACLF will comply with the General Rules for an Air Pollution Emergency.

TABLE 12
Facility-Wide Applicability, Compliance Certification, and Method of Compliance at Time of Application (IDAPA 58.01.01 Rule 314.10(a)

Emissions Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Facility-wide	IDAPA 58.01.01. 590	**New Source Performance Standards**. The owner or operator of any stationary source shall comply with 40 CFR Part 60 as applicable to the stationary source. The applicable definitions for this Section shall be the definitions set forth in 40 CFR Part 60.	X		Compliance methods are described for each emission unit in Tables 11 through 13.
Facility-wide	IDAPA 58.01.01. 591	**National Emission Standards for Hazardous Air Pollutants**. The owner or operator of any stationary source shall comply with 40 CFR Part 61 and 40 CFR Part 63 as applicable to the stationary source.	X		Compliance methods are described for each emission unit in Tables 11 through 13.
Facility-wide	IDAPA 58.01.01. 603	**Open Burning – General Restrictions**. Prohibits open burning except for categories of open burning set forth in Section 606 – 617 and prohibits the open burning of several materials.	X		ACLF will not conduct open burning in categories other than those allowed in Sections 606 through 617.
Facility-wide	IDAPA 58.01.01. 607	**Recreational and Warming Fires**. Fires used for the preparation of food or for recreational purposes (e.g. campfires, ceremonial fires, and barbecues), or small fires set for hand warming purposes, are allowable forms of open burning.	X		Recreational and warming fires are used as allowed by this rule. However, are not approved at the ACLF.
Facility-wide	IDAPA 58.01.01. 608	**Weed Control Fires**. Open outdoor fires used for the purpose of weed abatement such as along fence lines, canal banks, and ditch banks is an allowable forms of open burning.	X		Weed control fires are used only for the purpose of weed abatement. However, are not generally used for weed control at the ACLF.
Facility-wide	IDAPA 58.01.01. 609	**Training Fires**. Training fires shall not be allowed to smolder after the training session has terminated. Training fires are exempt from Subsections 603.01.c. and 603.01.e. through 603.01.j.	X		Training fires are not allowed to smolder after a training session has terminated.
Facility-wide	IDAPA 58.01.01. 610	**Industrial Flares**. Industrial flares, used for the combustion of flammable gases are allowable forms of open burning. Industrial flares are subject to permitting requirements in Sections 200 through 223.	X		Two enclosed industrial flares are used for the combustion of flammable gas and are allowable forms of open burning subject to permitting requirements in Sections 200 through 223.
Facility-wide	IDAPA 58.01.01. 612	**Landfill Disposal Site Fires.** The use of fires for the disposal of solid waste at any solid waste landfill disposal site or facility is an allowable form of open burning only if conducted in accordance with IDAPA 58.01.06, "Solid Waste Management Rules and Standards" or the Solid Waste Facilities Act, Chapter 74, Title 39, Idaho Code.	X		The ACLF currently does not use fires for the disposal of solid waste. Upon initiation of using fires for the disposal of solid waste, the ACLF will comply with IDAPA 58.01.06 or Chapter 74, Title 39 of the Idaho Code.

TABLE 12
Facility-Wide Applicability, Compliance Certification, and Method of Compliance at Time of Application (IDAPA 58.01.01 Rule 314.10(a)

Emissions Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Facility-wide	IDAPA 58.01.01. 625	**Visible Emissions**. Shall not exceed 20% opacity for more than 3 minutes in any 60-minute period unless 20% opacity is exceeded because of the presence of uncombined water, nitrogen oxides, and/or chlorine gas.	X		Compliance methods are described for each emission unit in Tables 11 through 13.
Facility-wide	IDAPA 58.01.01. 650-651	**Rules for Control of Fugitive Dust—General Rules**. All reasonable precautions shall be taken to prevent particulate matter from becoming airborne.	X		The ACLF will take precautions to prevent particulate matter from becoming airborne including but not limited to: • Use of water or chemicals on paved and unpaved roads • Paving unpaved roads • Covering haul trucks • Use of control equipment
Facility-wide	IDAPA 58.01.01. 676	**Standards for New Sources**. A person shall not discharge into the atmosphere from any fuel burning equipment with a maximum rated input of ten (10) million Btu's per hour or more, and commencing operation on or after October 1, 1979.	X		This requirement is applicable to the LFG flares. LFG flares operate below 0.015 grain per dry standard cubic foot (gr/dscf) for landfill gas corrected to 3% oxygen. Demonstrated compliance with this requirement in previous PTC application submittal to DEQ.
Facility-wide	IDAPA 58.01.01. 677	**Standards for Minor and Existing Source**. A person shall not discharge into the atmosphere from any fuel burning equipment in operation prior to October 1, 1979, or with a maximum rated input of less than ten (10) million Btu per hour.	X		This requirement is applicable to both the wood chipper and power screen diesel engine generators. These diesel generators operate below 0.05 gr/dscf for liquid distillate fuel corrected to 3% oxygen. Demonstrated compliance with this requirement in previous PTC application submittal to DEQ.
Facility-wide	IDAPA 58.01.01. 679	**Averaging Period**. Establishes procedure for determining averaging period.	X		This requirement is applicable to the LFG flares, wood chipper, and power screen. Particulate emissions are averaged based on one hour of operation representing worst-case conditions.
Facility-wide	IDAPA 58.01.01. 680	**Altitude Correction**. Standard conditions shall be adjusted for the altitude of the source by subtracting one-tenth (0.10) of an inch of mercury for each one hundred (100) feet above sea level from the standard atmospheric pressure at sea level of twenty-nine and ninety-two one hundredths (29.92) inches of mercury.	X		Altitudes for the LFG flares, wood chipper, and power screen were adjusted accordingly in previous PTC applications submitted to DEQ.

TABLE 12
Facility-Wide Applicability, Compliance Certification, and Method of Compliance at Time of Application (IDAPA 58.01.01 Rule 314.10(a)

Emissions Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Facility-wide	IDAPA 58.01.01. 681	**Test Method Procedures**. The appropriate test method under Sections 675 through 680 shall be EPA Method 5 contained in 40 CFR Part 60 or such comparable and equivalent method approved in accordance with Subsection 157.02.d.	X		The ACLF will use approved EPA test methods and equipment.
Facility-wide	IDAPA 58.01.01. 728	**Distillate Fuel Oil**. No person shall sell, distribute, use or make available for use, any distillate fuel oil containing more than the following percentages of sulfur: **01. ASTM Grade 1.** ASTM Grade 1 fuel oil – 0.3% by weight. **02. ASTM Grade 2.** ASTM Grade 2 fuel oil – 0.5% by weight.	X		The ACLF will comply with the sulfur grade percentages by weight.
Facility-wide	IDAPA 58.01.01. 776	**Rules for Control of Odors—General Rules**. No person shall allow, suffer, cause or permit the emission of odorous gases, liquids or solids into the atmosphere in such quantities as to cause air pollution.	X		The ACLF controls odor by collecting landfill gas by use of the gas control system. The landfill gas is combusted through the enclosed flares. Compliance with this rule is described for the LFG flares in Table 15.
Facility-wide	IDAPA 58.01.01. 785-787	**Rules for Control of Incinerators.** Prevent excessive emissions of particulate matter from incinerators.	X		Compliance with this rule is described for the LFG flares in Table 15.
Facility-wide	IDAPA 58.01.01. 859	**Standards of Performance for Municipal Solid Waste Landfills the Commenced Construction, Reconstruction or Modification on or After May 30, 1991**. All owners or operators of existing small or large municipal solid waste landfills with modifications after May 30, 1991;	X		ACLF is in compliance with the requirements of this rule.
Facility-wide	IDAPA 58.01.01. 860	**Emission Guidelines for Municipal Solid Waste Landfills that Commenced Construction, Reconstruction or Modification Before May 30, 1991.** All owners or operators of any small or large municipal solid waste landfills that have accepted waste since November 8, 1987.	X		ACLF is in compliance with the requirements of this rule.
Internal combustion engines	40 CFR 60 Subpart IIII	**Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.**	X		ACLF maintains a 60-kW Kohler engine generator to supply backup power to the new Scale House building. Refer to specific applicable requirements for the emergency engine rating in Appendix F.
Facility-wide	40 CFR 60 Subpart CC	**Standards of Performance for New Stationary Sources—Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills**	X		ACLF maintains compliance with this subpart.
Facility-wide	40 CFR 60 Subpart WWW	**Standards of Performance for New Stationary Sources—Standards of Performance for Municipal Solid Waste Landfills.**	X		ACLF maintains compliance with this subpart.

TABLE 12
Facility-Wide Applicability, Compliance Certification, and Method of Compliance at Time of Application (IDAPA 58.01.01 Rule 314.10(a)

Emissions Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Facility-wide	40 CFR 63 Subpart AAAA	**National Emission Sources for Hazardous Air Pollutants for Source Categories—Municipal Solid Waste Landfills**	X		ACLF maintains compliance with this subpart.
Landfill asbestos disposal	40 CFR 61.154(a), or (c) or (d)	National Emission Standards for Asbestos—Standards for Active Waste Disposal Sites (a) Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of paragraph (c) or (d) of this section must be met. (c) Rather than meet the no visible emission requirement of paragraph (a) of this section, at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall: Be covered with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or Be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent. (d) Rather than meet the no visible emission requirement of paragraph (a) of this section, use an alternative emissions control method that has received prior written approval by the Administrator according to the procedures described in 61.149(c)(2).	X		No visible emissions are allowed for the active disposal site where ACM has been deposited, or ACM is covered at the end of each operating day with at least 6 inches of nonasbestos containing material. Observations will be made whenever ACM is placed in the active disposal site, and observations logged. The ACLF complies with the applicable requirements of this provision regarding asbestos waste disposal within a permitted MSW landfill.
Landfill asbestos disposal	40 CFR 61.154(b)	**Standards for Active Waste Disposal Sites - Warning Signs, Fencing or Natural Barrier.** Unless a natural barrier adequately deters general public access, either warning signs or fencing must be installed and maintained. If warning signs are required, they must meet the specifications of this subpart.	X		Fencing and controlled access is installed and maintained to prevent access by the general public. Warning signs are not required. Alternately, the ACM may be covered with at least 6 inches of nonasbestos-containing material.

TABLE 12
Facility-Wide Applicability, Compliance Certification, and Method of Compliance at Time of Application (IDAPA 58.01.01 Rule 314.10(a)

Emissions Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Landfill asbestos disposal	40 CFR 61.154(e)	Standards for Active Waste Disposal Sites—Records, Actions Upon Receipt of Open ACM, and Discrepancy Reporting. Maintain waste shipment records, include the following information: The name, address, and telephone number of the waste generator and transporter(s). The quantity of the asbestos-containing waste material in cubic meters (cubic yards). The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. Report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the disposal site, by the following working day, the presence of a significant amount of improperly enclosed or uncovered waste. Submit a copy of the waste shipment record along with the report and the date of the receipt. As soon as possible and no longer than 30 days after receipt of the waste, send a copy of the signed waste shipment record to the waste generator. Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, immediately report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the disposal site. Describe the discrepancy and attempts to reconcile it, and submit a copy of the waste shipment record along with the report. Retain a copy of all records and reports required by this paragraph for at least 2 years.	X		For all ACM received, records shall be maintained for each shipment as specified by this section. For any shipment that contains ACM that is not enclosed in leak-proof containers, reporting to local, state and federal offices shall be made by the following working day. If a significant discrepancy is noted between the amount on the shipping record and the amount received, ACLF shall attempt to reconcile and report immediately to local, state and federal offices as required by the section. Records shall be kept for at least 2 years.

TABLE 12
Facility-Wide Applicability, Compliance Certification, and Method of Compliance at Time of Application (IDAPA 58.01.01 Rule 314.10(a)

Emissions Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Landfill asbestos disposal	40 CFR 61.154(f)	**Standards for Active Waste Disposal Sites—ACM placement records and map.** Maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area	X		ACLF will maintain the required records and a map or diagram of the ACM disposal area.
Landfill asbestos disposal	40 CFR 61.154(g), (h), (i)	Standards for Active Waste Disposal Sites - Prevention of public exposure, or signage, records submittal and onsite retention. Upon closure, comply with all the provisions of section 61.151, "Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations." Also submit to the Administrator, upon closure of the facility, a copy of records of asbestos waste disposal locations and quantities and,. Furnish upon request, and make available during normal business hours for inspection by the Administrator, all records required under this section.	X		ACLF will submit records upon ACM site closure and provide records upon request. No ACM disposal locations have been closed. Once closed, the disposal site will meet the regiments in 61.151.
Landfill asbestos disposal	40 CFR 61.154(J)	**Closed ACM Site Disturbance**. Notify the Administrator in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Administrator at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice: Scheduled starting and completion dates. Reason for disturbing the waste. Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Administrator may require changes in the emission control procedures to be used. Location of any temporary storage site and the final disposal site.	X		ACLF will comply with these requirements if an ACM disposal site will be excavated or disturbed.

TABLE 12
Facility-Wide Applicability, Compliance Certification, and Method of Compliance at Time of Application (IDAPA 58.01.01 Rule 314.10(a)

Emissions Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Stationary RICE	40 CFR Subpart ZZZZ	**NESHAP for Stationary Reciprocating Internal Combustion Engines.** The ACLF is classified as an area source of HAP emission defined as potential-to-emit (PTE) 10 tons per year or less for any single HAP or PTE less than 25 tons per year for total HAPs.	X		ACLF maintains and operates two nonemergency and one emergency RICE subject to this rule. Nonemergency engines used at the wood chipping operations include a Caterpillar D398 (650 bhp rating) and a Deutz ® (106 bhp) installed prior to June 12, 2006. A Detroit diesel 33-kW engine generator used for emergency backup power at the Household Hazardous Waste Building. Refer to specific applicable requirements for nonemergency and emergency engine rating in Appendix G.
Ozone depleting substances	82.154	**Prohibitions.** No person maintaining, servicing, repairing, or disposing may knowingly vent any nonexempt refrigerant into the environment, except for de minimis releases as described in this section.	X		ACLF accepts white goods and segregates these items in one area of the landfill. A contractor is used to help manage and to reclaim white goods offsite. No ozone depleting chemicals (ODCs) are knowingly vented in accordance with this subpart.
Ozone depleting substances	82.156(a-h)	**Required practices**. Persons disposing of nonexempt appliances must evacuate the refrigerant. Persons opening appliances must use approved equipment and techniques and meet the levels of evacuation as described in this section.	X		Any nonexempt appliances will be evacuated of ODCs in accordance with this section prior to disposal in ACLF.
Ozone depleting substances	82.158	**Recovery equipment standards**. Equipment used in evacuation shall meet the applicable requirements of this section.	X		Evacuation of ODCs does not occur at the ACLF. If evacuation does occur, the contractor used by ACLF will use equipment that meets the requirements of the section.
Ozone depleting substances	82.161	**Technician Certification**. Technicians that service repair or maintain appliances must be certified by an approved certification program as required by this section.	X		Certification kept on file.

TABLE 13
Wood Chipper and Power Screen Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Wood chipper and power screen two diesel generators	PTC Condition 3.3 and IDAPA 58.01.01.625	**Opacity Limit**. Shall not exceed 20% opacity for more than 3 minutes in any 60-minute period unless 20% opacity is exceeded because of the presence of uncombined water, nitrogen oxides, and/or chlorine gas.	X		ACLF will conduct quarterly see/no see evaluations of visible emissions. ACLF will maintain records of the results of each visible emissions inspection in accordance with PTC Condition 3.7.
Wood chipper and power screen and two diesel generators	PTC Condition 3.4 and IDAPA 58.01.01.650 – 651	**Reasonable Control of Fugitive Emissions.** All reasonable precautions shall be taken to prevent particulate matter from becoming airborne.	X		ACLF will comply with these requirements and take reasonable precautions to prevent fugitive dust from becoming airborne.
Wood chipper and power screen and two diesel generators	PTC Condition 3.5 and IDAPA 58.01.01.725	**Fuel Oil Sulfur Content.** No diesel fuel oil containing sulfur in excess of 0.5% by weight shall be burned in the diesel engine generators.	X		ACLF uses ULSD less than 0.0015% by weight. ACLF will retain sulfur content documentation from the vendor delivering fuel oil to the facility. Records will be kept onsite for the most recent two year period in accordance with PTC Condition 3.8.
Wood chipper and power screen and two diesel generators	PTC Condition 3.6	**Hours of Operation.** The operation of each diesel engine generator shall not exceed a maximum of 3,300 hours in any consecutive 12-month period.	X		The ACLF will monitor and record the date and hours of operation for each diesel generator. Records will be kept of site for the most recent 2-year period in accordance with PTC Condition 3.9.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	PTC Condition 2.3 and IDAPA 58.01.01.625	**Opacity Limit**. Shall not exceed 20% opacity for more than 3 minutes in any 60-minute period unless 20% opacity is exceeded because of the presence of uncombined water, nitrogen oxides, and/or chlorine gas.	X		ACLF staff perform a see/no see evaluation for each flare of visible emissions. If visible emissions are observed from any flare, a Method 9 opacity test will be performed by the procedures contained in Rule 625.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	PTC Condition 2.4 and IDAPA 58.01.01.786	**Particulate Matter Emissions Limit for Incinerators**. PM emissions from each of the flares shall not exceed 0.2 pounds per 100 pound of landfill gas combusted.	X		Demonstrated compliance with this requirement in previous PTC application submittal to DEQ.
HHLF Cell and NRC LFG collection and control	Permit Condition 2.5 and IDAPA 58.01.01.776	**Control of Odors from Flares**. No person shall allow, suffer, cause or permit the emission of odorous gases, liquids or solids into the atmosphere in such quantities as to cause air pollution.	X		The ACLF controls odor by collecting LFG and combusting through the enclosed flares. The ACLF must maintain records of all odor complaints received (date, description, and validity) and take appropriate corrective action as necessary and date action was taken.
HHLF Cell and NRC LFG collection and control	PTC Condition 2.6 and IDAPA 58.01.01.130-136	**Excess Emissions.** The permittee shall comply with the procedures and requirements of IDAPA 58.01.01.130 – 136 for excess emissions because of startup, shutdown, scheduled maintenance, safety measures, upsets and breakdowns.	X		ACLF will document and submit excess emission events for the LFG control system according to the procedures and requirements Rules 130 through 136.
HHLF Cell and NRC LFG collection and control	PTC Condition 2.9	**Operations and Maintenance Manual.** Within 60 days after startup of landfill gas flares, the permittee shall have developed an O&M manual for the landfill gas flares, which describes the procedures that will be followed to comply with General Provision 2 and the manufacturer specifications for the flares. This manual shall remain onsite at all times and shall be made available to DEQ representatives upon request. Within 30 days of O&M manual development the permittee shall submit a copy of the manual to DEQ.	X		The LFG O&M manual is located at the ACLF and is available upon request.
HHLF Cell and NRC LFG collection and control	PTC Condition 2.10	**LFG Control System.** The LFG to the flares shall not exceed the following limits: • 2,320 scfm to FLARE 1 • 2,379 to FLARE 2	X		Source test performed on October 15-16, 2008 for FLARE 1 and FLARE 2.
		The flares shall be operated within the parameter ranges established by the manufacturer: • Gas temp outlet = 1,400-1,800 F	X		
HHLF Cell and NRC LFG collection and control	IDAPA 58.01.01.157, and 40 CFR 756-757	**Performance Test of LFG Control System.** Establish procedures and requirements for test methods and results.	X		Last DEQ approved source test was performed on October 15-16, 2008 for FLARE 1 and FLARE 2.
HHLF Cell and NRC LFG collection and control	PTC Condition 2.13 and IDAPA 58.01.01.859	**Reporting Requirements.** The permittee shall submit an annual NMOC report until nonmethane emissions are less than 50 megagrams per year in accordance with IDAPA 58.01.01.859.05.a.ii. The report shall be submitted to DEQ by September 30 each year.	X		ACLF will prepare and submit an annual NMOC report to DEQ by September 30 each year

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** The owner or operator of ACLF is subject to part 70 or Title V permitting requirements.	X		ACLF is subject to Title V permitting requirements. Compliance demonstration is stated herein.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(i)	**Standards for Air Emissions from Municipal Solid Waste Landfills**. The owner or operator shall submit a collection and control system design plan prepared by a professional engineer to DEQ within one year of when the calculated NMOC emission rate is equal to or greater than 50 megagrams.	X		The collection and control design plan for the HHLF Cell was submitted to DEQ in the ACLF PTC Modification Application dated December 2005.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(i)(A)	**Standards for Air Emissions from Municipal Solid Waste Landfills**. The owner or operator of ACLF shall ensure that the collection and control system as described in the plan shall meet the design requirements of 40 CFR 60.752(b)(2)(ii)	X		The collection and control system was designed to meet the requirements of 40 CFR 60.752(b)(2)(ii)
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(i)(C)	**Standards for Air Emissions from Municipal Solid Waste Landfills**. The owner or operator shall ensure that the collection and control system design plan shall conform with specifications for active collection system in 40 CFR 60.759	X		The design plans for the collection and control system at the ACLF conforms with the specifications for active collection systems in 40 CFR 60.759
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(ii)	**Standards for Air Emissions from Municipal Solid Waste Landfills**. The owner or operator shall install a collection and control system that captures the gas generated within the landfill as required by 40 CFR 60.752(b)(2)(ii)(A) and 40 CFR 60.752(b)(2)(iii) within 30 months after the first annual report in which the emission rate equals or exceeds 50 megagrams per year.	X		ACLF is currently operating the LFG collection and control system for the HHLF Cell. The LFG collection and control system began capturing and combusting LFG in the flares voluntarily in March 2004. Construction of the NRC commenced in March 2006.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(ii)(A)(*1*)	**Standards for Air Emissions from Municipal Solid Waste Landfills**. An active collection system shall be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control or treatment system equipment.	X		The LFG collection and control system was designed to handle the maximum expected gas flow rate of 4,000 scfm.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(ii)(A)(*2*)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** An active collection system shall collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 5 years or more if active.	X		The HHLF Cell is an active cell which has been collecting MSW since 1972. The collection system will be expanded and installed in phases as landfill operations shift to the new NRC.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(ii)(A)(*2*)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** An active collection system shall collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 2 years or more if closed or at final grade.	X		The active collection system is currently collecting LFG from the HHLF Cell. The HHLF Cell has been in operation since 1972. The active LFG collection system began operating in March 2004.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(ii)(A)(*3*)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** Collect gas at a sufficient extraction rate.	X		LFG is currently being extracted at a flow rate ranging between 1,000-1,300 scfm.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(ii)(A)(*4*)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** The collection and control system shall be designed to minimize offsite migration of subsurface gas.	X		LFG detection wells have been placed near the landfill property perimeter. ACLF performs periodic monitoring of the perimeter wells for offsite migration.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(iii)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** Route all the collected gas to a control system that complies with the requirements of 40 CFR 60.752(b)(2)(iii)(B)	X		The current LFG collection and control system was designed to meet the requirements of 40 CFR 60.752(b)(2)(iii)(B).
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(iii)(B)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** A control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight-percent or reduce the outlet NMOC concentration to less than 20 ppm by volume, dry basis as hexane at 3% oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance test to be completed no later than 180 days after the initial startup of the approved control system using the test methods specified in 40 CFR 60.754(d)	X		The ACLF has two enclosed LFG flares for control operating at a control efficiency of 99.3%. (September 28, 2004 NMOC testing performed by Optimal Air Testing Services, Inc. in accordance with EPA Method 25C)
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(iii)(B)(*2*)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** The control device shall be operated within the parameter ranges established during the initial or most recent performance test as required in Permit Condition 2.13. The operating parameters to be monitored are specified in 40 CFR 60.756.	X		The NMOC and methane are combusted by the flares. The flares have a design combustion temperature range of 1,400 to 1,800°F. NMOC destruction efficiency is greater than 98% with a residence time of 0.7 second measured at the current flare set point temperature of 1,500°F

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(iv)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** Operate the Collection and control device installed to comply with this subpart in accordance with the provisions of 40 CFR 60.753, 60.755 and 60.756.	X		The collection and control system was designed to meet the requirements of 40 CFR 60.753, 60.755, and 60.756. All required monitoring devices and ports were installed on the enclosed flare assembly and monitoring is done monthly.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(v)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** The collection and control system may be capped or removed provided that all the conditions of 40 CFR 60.752(b)(2)(v)(A), (B), and (C) are met.	X		ACLF will consider capping or removing the LFG control system once all the conditions of this subpart are met.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(v)(A)	**Standards for Air Emissions from Municipal Solid Waste Landfills**. The landfill shall be a closed landfill as defined in 40 CFR 60.751. A closure report shall be submitted to DEQ as provided in 40 CFR 60.757(d).	X		A closure report will be submitted to DEQ once the requirements of 40 CFR 60.757(d) are met.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(v)(B)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** The collection and control system shall have been in operation a minimum of 15 years.	X		The LFG collection and control system began full time operation in March 2004 for the existing HHLF Cell.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(b)(2)(v)(C)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** Following the procedures specified in 40 CFR 60.754 (b), the calculated NMOC gas produced by the landfill shall be less than 50 megagrams per year on three successive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart.	X		ACLF will comply with the provisions in 40 CFR 60.754(b) for LFG generation.
HHLF Cell and NRC LFG collection and control	40 CFR 60.752(d)	**Standards for Air Emissions from Municipal Solid Waste Landfills.** When a MSW landfill subject to this subpart is closed, the owner or operator is no longer subject to the requirement to maintain an operating permit under 40 CFR 70 for the landfill if the landfill is not otherwise subject to the requirements of 40 CFR 70 and if the owner or operator meets the conditions for control system removal specified in 40 CFR 60.752(b)(2)(v)		X	Not yet applicable: ACLF is an active landfill site and is not required to meet the requirements of this subpart at this time.
HHLF Cell and NRC LFG collection and control	40 CFR 60.753(a)	**Operational Standards for Collection and Control Systems.** Each owner or operator of an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 60.752(b)(2)(ii) shall operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for 5 or more years if active or 2 years or more if closed or at final grade.	X		The HHLF Cell is an active cell which has been collecting MSW since 1972. The collection system will be expanded and installed in phases as landfill operations shift to the new NRC.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.753(b)	**Operational Standards for Collection and Control Systems.** Each owner or operator of an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 60.752(b)(2)(ii) shall operate the collection system with negative pressure at each wellhead except under the following conditions: a fire or increased well temperature, use of a geomembrane or synthetic cover, use of a geomembrane or synthetic cover, or a decommissioned well.	X		The LFG collection system will be operated under negative pressure at all times, except in the event that one of the exceptions listed in this subpart occurs.
HHLF Cell and NRC LFG collection and control	40 CFR 60.753(c)	**Operational Standards for Collection and Control Systems.** Operate each interior wellhead in the collection system with a landfill gas temperature less than 55°C and with either a nitrogen level less than 20% or an oxygen level less than 5%. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens.	X		ACLF is operating all wellheads within the standard operating parameters for temperature, nitrogen content, and oxygen content. ACLF will install temperature probes at each wellhead and perform monthly temperature monitoring.
HHLF Cell and NRC LFG collection and control	40 CFR 60.753(c)(1)	**Operational Standards for Collection and Control Systems.** The nitrogen level shall be determined using Method 3C, unless an alternative test method is established as allowed by 40 CFR 60.752(b)(2)(i)	X		ACLF will perform monthly nitrogen monitoring using a Gem 500 Landfill Gas Monitor
HHLF Cell and NRC LFG collection and control	40 CFR 60.753(c)(2)	**Operational Standards for Collection and Control Systems.** Unless an alternative test method is established as allowed by 40 CFR 60.752(b)(2)(i), the oxygen shall be determined by an oxygen meter using Method 3A or 3C	X		ACLF will perform monthly oxygen monitoring using a Gem 500 Landfill Gas Monitor

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.753(d)	**Operational Standards for Collection and Control Systems.** Operate the collection system so that the methane concentration is less than 500 ppm above background at the surface of the landfill. To determine if this level is exceeded, the owner or operator shall conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan shall be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30 meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing.	X		To date, no background surface monitoring for methane gas has been performed. Surface monitoring for methane will be part of the quarterly monitoring program performed by the ACLF.
HHLF Cell and NRC LFG collection and control	40 CFR 60.753(e)	**Operational Standards for Collection and Control Systems.** Operate the system such that all collected gases are vented to a control system designed and operated in compliance with 40 CFR 60.752(b)(2)(iii). In the event the collection or control system is inoperable, the gas mover system shall be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere shall be closed within one hour.	X		Blowers move the collected LFG to the flares. If one of the flares is inoperable, LFG will be automatically diverted to the second flare (as long as the flow rate does not exceed the design capacity of the flare). If both landfill gas flares are inoperable, the collection system will shut down and no LFG is moved.
HHLF Cell and NRC LFG collection and control	40 CFR 60.753(f)	**Operational Standards for Collection and Control Systems.** Operate the control or treatment system at all times when the collected gas is routed to the system.	X		The ACLF control system was designed to operate at all times while LFG is routed to the flares. Each flare was designed to combust LFG at a minimum of 400 scfm.
HHLF Cell and NRC LFG collection and control	40 CFR 60.753(g)	**Operational Standards for Collection and Control Systems.** If monitoring demonstrates that the operational requirements in 40 CFR 60.753(b), (c), or (d) are not met, corrective action shall be taken as specified in 40 CFR 60.755(a)(3) through (5) or 40 CFR 60.755(c).	X		In the event that monitoring demonstrates that the LFG collection and control system is not meeting the requirements of this subpart, ACLF will take corrective action specified in 40 CFR 60.755(a)(3) through (5) or 40 CFR 60.755(c).

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.754(a)(1)	**Testing Methods and Procedures.** The landfill owner or operator shall calculate the NMOC emission rate using either the equation provided in 40 CFR 60.754(a)(1)(i) or the equation provided in 40 CFR 60.754(a)(1)(ii). Both equations may be used if the actual year-to-year solid waste acceptance rate is known, as specified in 40 CFR 60.754(a)(1)(i), for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in 40 CFR 60.754 (a)(1)(ii), for part of the life of the landfill.	X		ACLF used equation 60.754(a)(1)(ii) to determine the NMOC concentration for an unknown year-to-year acceptance rate.
HHLF Cell and NRC LFG collection and control	40 CFR 60.754(b)	**Testing Methods and Procedures.** After the installation of a collection and control system in compliance with 40 CFR 60.755, the owner or operator shall calculate the NMOC emission rate for purposes of determining when the system can be removed as provided in 40 CFR 60.755(b)(2)(v).	X		Until the requirements for removal are met, the ACLF will continue to monitor NMOC concentration levels.
HHLF Cell and NRC LFG collection and control	40 CFR 60.754(b)(1)	**Testing Methods and Procedures.** The flow rate of landfill gas, Q_{LFG}, shall be determined by measuring the total landfill gas flow rate at the common header pipe that leads to the control device using a gas flow measuring device calibrated according to the provisions of Section 4 of Method 2E of Appendix A of 40 CFR 60.	X		The Q_{LFG} is currently measured from the main header pipe leading to the LFG flares calibrated to manufacturer specifications which complies with Method 2E of Appendix A of 40 CFR 60.
HHLF Cell and NRC LFG collection and control	40 CFR 60.754(b)(2)	**Testing Methods and Procedures.** The average NMOC concentration, C_{NMOC}, shall be determined by collecting and analyzing landfill gas sampled from the common header pipe before the gas moving or condensate removal equipment using the procedures in Method 25C or Method 18 of Appendix A of 40 CFR 60. If using Method 18 of Appendix A of 40 CFR 60, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42). The sample location on the common header pipe shall be before any condensate removal or other gas refining units. The landfill owner or operator shall divide the NMOC concentration from Method 25C of Appendix A of 40 CFR 60 by six to convert from C_{NMOC} as carbon to C_{NMOC} as Hexane.	X		An NMOC concentration sample was collected September 28, 2004 and analyzed using Method 25C. Results were reported in the ACLF Tier II Emission Report submitted to DEQ May 2, 2005.
HHLF Cell and NRC LFG collection and control	40 CFR 60.754(b)(3)	**Testing Methods and Procedures.** The owner or operator may use another method to determine landfill gas flow rate and NMOC concentration if the method has been approved by DEQ.	X		The ACLF will get approval from DEQ prior to using any methods other than those listed in this subpart.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.754(d)	**Testing Methods and Procedures.** For the performance test required in 40 CFR 60.752(b)(2)(iii)(B), Method 25, 25C or Method 18 of Appendix A of 40 CFR 60 must be used to determine compliance with the 98 weight-percent efficiency of the 20 ppmv outlet concentration level, unless another method to demonstrate compliance has been approved by DEQ as provided by 40 CFR 60.752(b)(2)(i)(B),. Method 3 or 3A shall be used to determine oxygen for correcting the NMOC concentration as hexane to three percent.	X		On September 28, 2004, performance testing was performed by collecting LFG from the common header pipe and analyzed using Method 25C of Appendix A of 40 CFR 60. Results were reported in the ACLF Tier II Emission Report submitted to DEQ May 2, 2005.
HHLF Cell and NRC LFG collection and control	40 CFR 60. 755(a)	**Compliance Provisions.** The following specified methods in 40 CFR 60.755(a)(1) through 40 CFR 60.755(a)(6) shall be used to determine whether the gas collection system is in compliance with 40 CFR 60.752(b)(2)(ii)	X		Equation 40 CFR 60.755(a)(1)(i) may be used to estimate LFG flow rates in lieu of actual LFG flow data from the active collection and control system.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(a)(1)	**Compliance Provisions.** For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with 40 CFR 60.752(b)(2)(ii)(A)(*1*), equation 40 CFR 60.755(a)(1)(i) or 40 CFR 60.755(a)(1)(ii) shall be used. The k and L_O kinetic factors should be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42) or other site specific values demonstrated to be appropriate and approved by DEQ. A value of no more than 15 years shall be sued for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure.	X		Equation 40 CFR 60.755(a)(1)(i) will be used to estimate LFG flow rates in lieu of actual LFG flow data from the active collection and control system.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(a)(1)(iii)	**Compliance Provisions.** If a collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, the equations in 40 CFR 60.755(a)(1)(i) and (ii). If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using the equations in 40 CFR 60.755(a)(1)(i) or (ii) or other methods shall be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment.	X		A collection and control system has been installed so actual LFG flow rates are known. The HHLF Cell is still accepting MSW.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(a)(2)	**Compliance Provisions.** For the purposes of determining sufficient density of gas collectors for compliance with 40 CFR 60.752(b)(2)(ii)(A)(*2*), the owner or operator shall design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to DEQ, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards.	X		The LFG collection and control system was designed to meet the requirements of this subpart by including vertical wells and horizontal collectors capable of controlling and extracting LFG from all portions of the landfill.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(a)(3)	**Compliance Provisions.** For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with 40 CFR 60.752(b)(2)(ii)(A)(*3*), the owner or operator shall measure gauge pressure in the gas collection header at each individual well, monthly. If a positive pressure exists, action shall be initiated to correct the exceedance within 5 calendar days, except for the three conditions allowed under 40 CFR 60.753(b). If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial measurement of positive pressure. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to DEQ for approval.	X		The ACLF performs monthly gauge pressure monitoring at each well. If positive pressure exists, ACLF will comply with the provisions of this subpart.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(a)(4)	**Compliance Provisions.** Owners of operators are not required to expand the system as required in 40 CFR 60.755(a)(3) during the first 180 days after gas collection system startup.	X		The LFG collection and control system started up in May 2004.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(a)(5)	**Compliance Provisions.** For the purpose of identifying whether excess air infiltration into the landfill is occurring, the owner or operator shall monitor each well monthly for temperature and nitrogen or oxygen as provided in 40 CFR 60.753(c). If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within 5 calendar days. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to DEQ for approval.	X		If an exceedance occurs, ACLF will take action to correct the exceedance. If the exceedance persists, the landfill will have to expand the collection system to correct the exceedance within 120 days of the initial exceedance.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(a)(6)	**Compliance Provisions.** An owner or operator seeking to demonstrate compliance with 40 CFR 60.752(b)(2)(ii)(A)(*4*) through the use of a collection system not conforming to the specifications provided in 40 CFR 60.759 shall provide information satisfactory to DEQ as specified in 40 CFR 60.752(b)(2)(i)(C) demonstrating that offsite migration is being controlled.	X		The collection system conforms to the specifications provided in 40 CFR 60.759.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(b)	**Compliance Provisions.** For purposes of compliance with 40 CFR 60.753(a), each owner or operator of a controlled landfill shall place each well or design component as specified in the approved design plan as provided in 40 CFR 60.752(b)(2)(i). Each well shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of 5 years of more if active, or 2 years or more if closed or at final grade.	X		All wells and design components will be placed as specified in the approved design plan.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(c)	**Compliance Provisions.** The following procedures found in 40 CFR 60.755(c)(1) through (5) shall be used for compliance with the surface method operational standard as provided in 40 CFR 60.753(d)	X		ACLF will comply with the procedures found in 40 CFR 60.755(c)(1) through (5)
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(c)(1)	**Compliance Provisions.** After installation of the collection system, the owner or operator shall monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals (or a site-specific established spacing) for each collection area on a quarterly basis using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in paragraph (d) of this section.	X		ACLF will monitor perimeter methane levels quarterly using a handheld FID and monitor for methane surface concentrations at 30-meter intervals.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755 (c)(2)	**Compliance Provisions.** The background concentration shall be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells.	X		Background concentrations will be collected upwind and downwind of the landfill and at least 30 meters outside the perimeter of the landfill wells.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(c)(3)	**Compliance Provisions.** Surface emission monitoring shall be performed in accordance with section 4.3.1 of Method 21 of appendix A of this part, except that the probe inlet shall be placed within 5 to 10 centimeters of the ground. Monitoring shall be performed during typical meteorological conditions.	X		ACLF will perform surface monitoring in accordance with section 4.3.1 of Method 21 of appendix A of this part. The probe will be within 5 to 10 centimeters of the ground.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(c)(4)	**Compliance Provisions.** Any reading of 500 parts per million or more above background at any location shall be recorded as a monitored exceedance and the actions specified in paragraphs (c)(4)(i) through (v) of this section shall be taken. As long as the specified actions are taken, the exceedance s not a violation of the operational requirements of 40 CFR 60.753(d).	X		In the event that a reading exceeds 500 ppm or more above background, ACLF will take actions as specified in paragraphs (c)(4)(i) through (v) of this section.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(c)(4)(i)	**Compliance Provisions.** The location of each monitored exceedance shall be marked and the location recorded.	X		ACLF will mark the location of each monitored exceedance.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(c)(4)(ii)	**Compliance Provisions.** Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance shall be made and the location shall be re-monitored within 10 calendar days of detecting the exceedance.	X		Within 10 calendar days of the initial exceedance, ACLF will increase the vacuum of the adjacent wells to increase gas collection in the vicinity of each exceedance.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(c)(4)(iii)	**Compliance Provisions.** If the re-monitoring of the location shows a second exceedance, additional corrective action shall be taken and the location shall be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in paragraph (c)(4)(v) of this section shall be taken, and no further monitoring of that location is required until the action specified in paragraph (c)(4)(v) has been taken.	X		In the event that a second exceedance occurs, ACLF will take corrective actions. If a third exceedance occurs, the action specified in (c)(4)(v) of this section shall be taken.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(c)(4)(iv)	**Compliance Provisions.** Any location that initially showed an exceedance but has methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified in paragraph (c)(4)(ii) or (iii) of this section shall be re-monitored 1 month from the initial exceedance. If the 1-month re-monitoring shows a concentration less the 500 parts per million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month re-monitoring shows an exceedance, the action specified in paragraph (c)(4)(iii) or (v) shall be taken.	X		ACLF will comply with the provisions as stated in this citation.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(c)(4)(v)	**Compliance Provisions.** For any location where monitored methane concentration equals or exceeds 500 parts per million above background three times within a quarterly period, a new well or other collection device shall be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the Administrator for approval.	X		In the event that a monitored exceedance is recorded three times in a quarter, ACLF will install a new well or other collection device within 120 calendar days of the initial exceedance. Any other remedy to the exceedance will be submitted to the Administrator for approval.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(c)(5)	**Compliance Provisions.** The owner or operator shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.	X		ACLF will perform monthly visual inspections of the landfill cover and repair the cover if needed.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(d)	**Compliance Provisions.** Each owner or operator seeking to comply with the provisions in paragraph (c) of this section shall comply with the following instrumentation specifications and procedures for surface emission monitoring devices:	X		ACLF will comply with the provisions of paragraph (d) of this section.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(d)(1)	**Compliance Provisions.** The portable analyzer shall meet the instrument specifications provided in section 3 of Method 21 of appendix A of this part, except that “methane” shall replace all references to VOC.	X		ACLF will use a portable FID that meets the specifications provided in Section 3 of Method 21 of appendix A of this part.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(d)(2)	**Compliance Provisions.** The calibration gas shall be methane, diluted to a nominal concentration of 500 parts per million in air.	X		Methane will be used as the calibration gas.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(d)(3)	**Compliance Provisions.** To meet the performance evaluation requirements in section 3.1.3 of Method 21 of appendix A of this part, the instrument evaluation procedures of section 4.4 of Method 21 of appendix A of this part shall be used.	X		ACLF will use the procedures of section 4.4 of Method 21 of appendix A of to meet the performance evaluation requirements in section 3.1.3 of Method 21 of appendix A of this part.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(d)(4)	**Compliance Provisions.** The calibration procedures provided in section 4.2 of Method 21 of appendix A of this part shall be followed immediately before commencing a surface monitoring survey.	X		ACLF will follow the calibration procedures in section 4.2 of Method 21 of appendix A prior to commencing a surface monitoring survey.
HHLF Cell and NRC LFG collection and control	40 CFR 60.755(e)	**Compliance Provisions.** The provisions apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction shall not exceed 5 days for collection systems and shall not exceed 1 hour for treatment or control devices.	X		ACLF will comply with these provisions at all times except during periods of start-up, shutdown, or malfunction.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.756(a)	**Monitoring of Operations.** Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(ii)(A) for an active gas collection system shall install a sampling port and a thermometer, other temperature measuring device, or an access part of temperature measurements at each wellhead.		X	Completed for each active well.
HHLF Cell and NRC LFG collection and control	40 CFR 60.756(a)(1)	**Monitoring of Operations.** Measure the gauge pressure in the gas collection header on a monthly basis as provided in 40 CFR 60.755(a)(3).		X	Compliance monitoring is performed monthly.
HHLF Cell and NRC LFG collection and control	40 CFR 60.756(a)(2)	**Monitoring of Operations.** Monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis as provided in 40 CFR 60.755(a)(5).		X	Compliance monitoring is performed monthly.
HHLF Cell and NRC LFG collection and control	40 CFR 60.756(a)(3)	**Monitoring of Operations.** Monitor temperature of the landfill gas on a monthly basis as provided in 40 CFR 60.755(a)(5).		X	Compliance monitoring is performed monthly.
HHLF Cell and NRC LFG collection and control	40 CFR 60.756(b)	**Monitoring of Operations.** Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(iii) using an enclosed combustor shall calibrate, maintain, and operate according to the manufacturer's specification, the following equipment.	X		ACLF calibrates, maintains, and operates equipment according to the manufacturer's specification, 40 CFR 60.756(b)(1) through (2)(i)
HHLF Cell and NRC LFG collection and control	40 CFR 60.756(b)(1)	**Monitoring of Operations.** A temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of ±1 percent of the temperature being measured expressed in degrees Celsius or ±0.5 degrees Celsius, whichever is greater.	X		ACLF has installed and calibrated a temperature monitoring device equipped with a continuous recorder that satisfies the requirements of this provision.
HHLF Cell and NRC LFG collection and control	40 CFR 60.756(b)(2)(i)	**Monitoring of Operations.** A device that records flow to or bypass of the control device. The owner or operator shall either install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes.	X		ACLF has installed and calibrated a LFG flow rate measuring device to record the flow to a control device at least every 15 minutes.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.756(d)	**Monitoring of Operations.** Each owner or operator seeking to demonstrate compliance with 40 CFR 60.752(b)(2)(iii) using a device other than an open flare or an enclosed combustor shall provide information satisfactory to DEQ as provided in 40 CFR 60.752(b)(2)(i)(B) describing the operation of the control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. DEQ shall review the information and either approve it, or request that additional information be submitted. DEQ may specify additional appropriate monitoring procedures.	X		ACLF may choose an alternative control device. At that time, this subpart will be applicable.
HHLF Cell and NRC LFG collection and control	40 CFR 60.756(f)	**Monitoring of Operations.** Each owner or operator seeking to demonstrate compliance with 40 CFR 60.755(c), shall monitor surface concentrations of methane according to the instrument specifications and procedures provided in 40 CFR 60.755(d). Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.	X		ACLF will use a GEM 500 Landfill Gas Monitor to monitor surface concentrations of methane on a quarterly basis according to the manufacturer's specifications and procedures.
HHLF Cell and NRC LFG collection and control	40 CFR 60.757(a)	**Reporting Requirements.** Each owner or operator subject to the requirements shall submit an initial design capacity report to DEQ.	X		An initial design capacity report for the ACLF was submitted to DEQ as part of the 15-Day Pre-Permit Construction PTC Modification application dated December 2005.
HHLF Cell and NRC LFG collection and control	40 CFR 60.757(b) and PTC condition 2.14	**Reporting Requirements.** Each owner or operator subject to the requirements shall submit an NMOC emission rate report to DEQ initially and annually thereafter, except as provided for in 40 CFR 60.757(b)(3). DEQ may request such additional information as may be necessary to verify the reported NMOC emission rate.	X		An NMOC emission rate (Tier 2) report for the ACLF was submitted to DEQ on May 2, 2005. Submit an annual NMOC emission rate report to DEQ by September 30 each year. The NMOC report will comply with 40 CFR 60.757(b)(2).
HHLF Cell and NRC LFG collection and control	40 CFR 60.757(b)(3)	**Reporting Requirements.** Each owner or operator subject to the requirements is exempted from the requirements of 40 CFR 60.757 (b)(1) and 40 CFR 60.757(b)(2), after the installation of a collection and control system in compliance with 40 CFR 60.757(b)(2), during such time as the collection and control system is in operation and in compliance with 40 CFR 60.753 and 40 CFR 60.755.		X	Not Applicable—ACLF has not satisfied the compliance criteria to apply for the exemption of this provision.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.757(c)	**Reporting Requirements.** Each owner or operator subject to the provisions of 40 CFR 60.752(b)(2)(i) shall submit a collection and control system design plan to DEQ within one year of the first report required under 40 CFR 60.757(b) in which the emission rate equals or exceeds 50 megagrams per year.	X		ACLF submitted a collection and control design plan for the HHLF Cell and NRC as part of the *15-Day Pre-Permit Construction PTC Modification* application dated December 2005.
HHLF Cell and NRC LFG collection and control	40 CFR 60.757(d)	**Reporting Requirements.** Each owner or operator of a controlled landfill shall submit a closure report to DEQ within 30 days of waste acceptance cessation. DEQ may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to DEQ, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4).		X	Not Applicable—ACLF has not closed any MSW Cell. ACLF will comply with this requirement upon future Cell closure.
HHLF Cell and NRC LFG collection and control	40 CFR 60.757(e)	**Reporting Requirements.** Each owner or operator of a controlled landfill shall submit an equipment removal report to DEQ 30 days prior to removal or cessation of operation of the control equipment.		X	Not Applicable—ACLF will submit an equipment removal report to DEQ within 30 days prior to removal or waste acceptance cessation of operational control equipment. The report will incorporate 40 CFR 60.757(e)(1) through (e)(2).
HHLF Cell and NRC LFG collection and control	40 CFR 60.757(f)	**Reporting Requirements.** Each owner or operator of a landfill seeking to comply with 40 CFR 60.752(b)(2) using an active collection system designed in accordance with 40 CFR 60.752(b)(2)(ii) shall submit to DEQ annual reports of the recorded information in 40 CFR 60.757(f)(1) through 40 CFR 60.757(f)(6). The initial annual report shall be submitted within 180 days of installation and start-up of the collection and control system, and shall include the initial performance test report required under 40 CFR 60.8. For enclosed combustion devices and flares, reportable exceedances are defined under 40 CFR 60.758(c).		X	The initial annual report will be submitted to DEQ by October 28, 2007 in order to comply with the recorded information in 40 CFR 60.757(f)(1) through (f)(6). After submittal of the initial annual report by April 28, 2007, a semi-annual report will be prepared and submitted to DEQ every 6 months to comply with the requirements of 40 CFR Subpart WWW.
HHLF Cell and NRC LFG collection and control	40 CFR 60.757(g)	**Reporting Requirements.** Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(iii) shall include the following information with the initial performance test report required under 40 CFR 60.8.		X	ACLF will conduct an initial performance test on the flares before April 28, 2007. The performance test report will include the required information in order to comply with 40 CFR 60.757(g)(1)-(g)(6).

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(a)	**Recordkeeping Requirements.** Each owner or operator of an MSW landfill subject to the provisions of 40 CFR 60.752(b) shall keep for at least 5 years up-to-date, readily accessible, onsite records of the design capacity report which triggered 40 CFR 60.752(b), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Offsite records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.	X		ACLF maintains onsite records of the current amount of solid waste in-place, and the year-by-year waste acceptance rate.
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(b)	**Recordkeeping Requirements.** Each owner or operator of a controlled landfill shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed in 40 CFR 60.758(b)(1) through 40 CFR 60.758(b)(4) as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring shall be maintained for a minimum of 5 years. Records of the control device vendor specifications shall be maintained until removal.	X		The ACLF will keep up-to-date records for the life of the control equipment onsite.
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(b)(1)	**Recordkeeping Requirements.** Where an owner or operator subject to the provisions of this subpart seeks to demonstrated compliance with 40 CFR 60.752(b)(2)(ii).	X		The active collection and control system was designed to meet the requirements of 40 CFR 60.752(b)(2)(ii).
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(b)(1)(i)	**Recordkeeping Requirements.** The maximum expected gas generation flow rate as calculated in 40 CFR 60.755(a)(1). The owner or operator may use another method to determine the maximum gas generation flow rate, if the method has been approved by DEQ.	X		Equation 40 CFR 60.755(a)(1)(i) will be used to estimate LFG flow rates in lieu of actual LFG flow data from the active collection and control system in accordance with 60.755(a)(1)(iii).
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(b)(1)(ii)	**Recordkeeping Requirements.** The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 60.759(a)(1).	X		The design and placement of wells, horizontal collectors, and surface collectors meets the requirements in 40 CFR 60.759(a)(1).
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(b)(2)	**Recordkeeping Requirements.** Where an owner or operator subject to the provisions of the subpart seeks to demonstrate compliance with 40 CFR 60.752(b)(2)(iii) through use of an enclosed combustion device other than a boiler or process heater with a design heat input capacity equal to or greater than 44 megawatts.		X	Not applicable—The heat input per flare is currently 19.2 megawatts.

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(b)(2)(i)	**Recordkeeping Requirements.** The average combustion temperature measured at least every 15 minutes and averaged over the same time period of the performance test.		X	Not applicable—Voluntarily ACLF will maintain records showing combustion temperatures measured at least every 15 minutes and averaged over the same time period of the performance test.
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(b)(2)(ii)	**Recordkeeping Requirements.** The percent reduction of NMOC determined as specified in 40 CFR 60.752(b)(2)(iii)(B) achieved by the control device.	X		The Tier 2 Emissions Report submitted to DEQ on May 2, 2005 reported that the control system had an NMOC destruction efficiency of 99.3% which satisfies the NMOC percent reduction requirement of 98 weight-percent.
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(b)(3)	**Recordkeeping Requirements.** Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 CFR 60.752(b)(2)(iii)(B)(*1*) through use of a boiler or process heater of any size: a description of the location at which the collected gas vent stream is introduced into the boiler or process heater over the same time period of the performance testing.		X	Not applicable—The ACLF does not use a boiler or process heater at this time to control LFG.
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(b)(4)	**Recordkeeping Requirements.** Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 CFR 60.752(b)(2)(iii)(A) through use of an open flare, the flare type (i.3., steam-assisted, air-assisted, or nonassisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in 40 CFR 60.18; continuous records of the flare pilot flames or flare flame monitoring and records of all periods of operations during which the pilot flame of the flare flame is absent.		X	Not applicable—The ACLF currently uses two enclosed blower assisted flares.
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(c)	**Recordkeeping Requirements.** Except as provided in 40 CFR 60.752(b)(2)(i)(B), each owner or operator of a controlled landfill subject to the provisions of this subpart shall keep for 5 years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in 40 CFR 60.756 as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.	X		ACLF will comply with the applicable requirements of 40 CFR 60.758(c)(1) through (c)(3).

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(d)	**Recordkeeping Requirements.** Each owner or operator subject to the provisions of this subpart shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector.	X		ACLF will keep an up-to-date, readily accessible plot plan showing the location of all collectors and planned collectors.
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(d)(1)	**Recordkeeping Requirements.** Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under 40 CFR 60.755(b).	X		For any new collectors, ACLF will keep up-to-date, readily accessible records of the installation date and newly installed collectors.
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(d)(2)	**Recordkeeping Requirements.** Each owner or operator subject to the provisions of this subpart shall keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in 40 CFR 60.759(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in 40 CFR 60.759(a)(3)(ii).	X		ACLF will keep readily accessible records of asbestos-containing or nondegradable waste excluded from collection as well as any nonproductive areas excluded from collection.
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(e)	**Recordkeeping Requirements.** Each owner or operator subject to the provisions of this subpart shall keep for at least 5 years up–to-date, readily accessible records of all collection and control system exceedances of the operational standards in 40 CFR 60.753, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.	X		ACLF will keep up-to-date, easily accessible records of all collection and control exceedances and any subsequent exceedances that may occur.
HHLF Cell and NRC LFG collection and control	40 CFR 60.758(f)	**Recordkeeping Requirements.** Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than 2.5 million megagrams		X	Not applicable
HHLF Cell and NRC LFG collection and control	40 CFR 60.759(a)	**Specifications for Active Collection Systems.** Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(i) shall site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by DEQ as provided in 40 CFR 60.752(b)(2)(i)(C) and (D).	X		The ACLF system design complies with the applicable requirements of 40 CFR 60.759(a)(1) through (a)(iii).
HHLF Cell and NRC LFG collection and control	40 CFR 60.759(b)	**Specifications for Active Collection Systems.** Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(i)(A) shall construct the gas collection devices using equipment or procedures listed in 40 CFR 60.759(b)(1) through (3).	X		The ACLF system design complies with the applicable requirements of 40 CFR 60.759(b)(1) through (b)(3).

TABLE 14
HHLF Cell and NRC LFG Collection and Control Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
HHLF Cell and NRC LFG collection and control	40 CFR 60.759(c)	**Specifications for Active Collection Systems.** Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(i)(A) shall convey the landfill gas to a control system in compliance with 40 CFR 60.752(b)(2)(iii) through the collection header pipe(s). The gas mover equipment shall be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the procedures in 40 CFR 60.759(c)(1) and (2).	X		The ACLF system design complies with the applicable requirements of 40 CFR 60.759(c)(1) through (c)(2).

TABLE 15
Landfill Gas Flares Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance		Method Used to Determine Compliance
			Yes	No	
Flare	40 CFR 60.18 (c)(1)	**General Control Device Requirements.** Flares shall be designed for and operated with no visible emissions as determined by the methods specified in paragraph (f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.	X		Vendor Guarantee. Flare system designed to operate 100% smokeless at design capacity.
Flare	40 CFR 60.18 (c)(2)	**General Control Device Requirements.** Flares shall be operated with a flame present at all times, as determined by the methods specified in paragraph (f).	X		Flare design includes stack mounted thermocouples in accordance with 40 CFR.18(f)(2).
Flare	40 CFR 60.18 (c)(3)	**General Control Device Requirements.** An owner/operator has the choice of adhering to either the heat content specifications in paragraph (c)(3)(ii) of this section and the maximum tip velocity specifications in paragraph (c)(4) of this section, or adhering to the requirements in paragraph (c)(3)(i) of this section.	X		Flare design is a nonassisted system meeting the requirements listed in 40 CFR 60.18(c)(3)(ii) and 40 CFR 60.18(c)(4). Minimum gas heating value is >200 Btu/scf and design maximum tip velocity is <18.3 meters per second (m/sec).
Flare	40 CFR 60.18 (c)(4)(i)	**General Control Device Requirements.** Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4) of this section, less than 18.3 m/sec (60 ft/sec), except as provided in paragraphs (c)(4) (ii) and (iii) of this section.	X		Minimum gas heating value is >200 Btu/scf and design maximum tip velocity is <18.3 m/sec.

TABLE 15
Landfill Gas Flares Compliance Certification at Time of Application

Emission Unit	Citation	Applicable Requirements	Compliance Yes	Compliance No	Method Used to Determine Compliance
Flare	40 CFR 60.18 (d)	**General Control Device Requirements.** Owners or operators of flares used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs. Applicable subparts will provide provisions stating how owners or operators of flares shall monitor these control devices.	X		O&M program in accordance with manufacturer's specifications will be prepared and implemented.
Flare	40 CFR 60.18 (e)	**General Control Device Requirements.** Flares used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.	X		Flare controls include a logic and control system to shutdown blower unit if flare flame failure is detected. No piping bypasses the flare.
Flare	40 CFR 60.18 (f)(1) and PTC Condition 2.11	**General Control Device Requirements.** Method 22 of appendix A to this part shall be used to determine the compliance of flares with the visible emission provisions of this subpart. The observation period is 2 hours and shall be used according to Method 22.	X		Visible emission monitoring from each flare will be inspected quarterly—see/no see evaluation.
Flare	40 CFR 60.18 (f)(2)	**General Control Device Requirements.** The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.	X		Flare design includes stack mounted thermocouples.
Flare	40 CFR 60.18 (f)(3)	**General Control Device Requirements.** The net heating value of the gas being combusted in a flare shall be calculated according to provisions of this subpart.		X	Not yet applicable: To be measured when system performs performance test.
Flare	40 CFR 60.18 (f)(4)	**General Control Device Requirements.** The actual exit velocity of a flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D as appropriate; by the unobstructed (free) cross sectional area of the flare tip.		X	Not yet applicable: To be measured when system performs performance test.
Flare	40 CFR 60.18 (f)(5)	**General Control Device Requirements.** The maximum permitted velocity, V_{max}, for flares complying with paragraph (c)(4)(iii).		X	Not applicable – system complies with (c)(4)(i).
Flare	40 CFR 60.18 (f)(6)	**General Control Device Requirements.** The maximum permitted velocity, V_{max}, for air-assisted flares.		X	Not applicable—system is not air-assisted.

10.0 Compliance Certification During Permit Term Summary

10.1 Compliance Certification Rules

IDAPA 314. Required Standard Application Form and Required Information.

10. Compliance Plans.

a. Provide a compliance description as follows:

i For each applicable requirement with which the emissions unit is in compliance, state that the emissions unit will continue to comply with the applicable requirement.

ii. For each applicable requirement that will become effective during the term of the Tier I operating permit that does not contain a more detailed schedule, state that the emissions unit will meet the applicable requirement on a timely basis.

iii. For each applicable requirement that will become effective during the term of the Tier I operating permit that contains a more detailed schedule, state that the emissions unit will comply with the applicable requirement on the schedule provided in the applicable requirement.

iv. For each applicable requirement with which the emission unit is not in compliance, state that the emissions unit will be in compliance with the applicable requirement by the time the Tier I operating permit is issued or provide a compliance schedule in accordance with Subsection 314.10.b.

b. All compliance schedules shall:

i. Include a schedule of remedial measures leading to compliance, including an enforceable sequence of actions and specific dates for achieving milestones and achieving compliance.

ii. Incorporate the terms and conditions of any applicable consent order, judicial order, judicial consent decree, administrative order, settlement agreement or judgment.

iii. Be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based.

c. Provide a schedule for submission to the Department of periodic progress reports no less frequently than every six (6) months or at a more frequent period if one (1) is specified in the underlying applicable requirement or by the Department.

The following text, in combination with Sections 9 and 10.2 of this application, provides the information necessary to fulfill the requirements of IDAPA 314.10. All compliance plans not listed in this section are otherwise included in Section 9.

i. For each applicable requirement with which an emissions unit are in compliance, the emissions unit will continue to comply with the applicable requirement.

ii. For each applicable requirement that will become effective during the term of the Tier I operating permit that contains a more detailed schedule, the emissions unit will meet the applicable requirement on a timely basis.

iii. For each applicable requirement that will become effective during the term of the Tier I operating permit that contains a more detailed schedule, the emissions unit will comply with the applicable requirement on the schedule provided in the applicable requirement.

iv. For each applicable requirement with which an emission unit is not in compliance, the emissions unit will be in compliance with the applicable requirement by the time the Tier I operating permit is issued or provide a compliance schedule in accordance with Section 314.10.b.

Applicable requirements that are one-time requirements are not included in the application (provided the requirement has been fulfilled). One example is the requirement to notify DEQ of the date of startup of a piece of equipment.

10.2 Compliance Plans Summary

This section provides the information necessary to fulfill the requirements and compliance status listed above per emissions unit basis. Table 16 summarizes the compliance certification plan for the wood chipper and power screens. Table 17 summarizes the compliance certification plan for the HHLF Cell and NRC. A schedule for compliance certifications that will occur during the term of the permit is included in the "Proposed Compliance Demonstration Method" description. All compliance plans not listed in this section are otherwise included in Section 9.

TABLE 16
Wood Chipper and Power Screen Compliance Certification During Permit Term

Emissions Unit	Citation	Applicable Requirements	Proposed Compliance Demonstration Method	Frequency of Certification
Wood chipper and power screen and two diesel generators	PTC Condition 3.3 and IDAPA 58.01.01.625	**Opacity Limit**. Shall not exceed 20% opacity for more than 3 minutes in any 60minute period unless 20% opacity is exceeded because of the presence of uncombined water, nitrogen oxides, and/or chlorine gas.	ACLF will conduct quarterly see/no see evaluations of visible emissions. ACLF will maintain records of the results of each visible emissions inspection in accordance with PTC Condition 3.7.	Quarterly
Wood chipper and power screen and two diesel generators	PTC Condition 3.4 and IDAPA 58.01.01.650 – 651	**Reasonable Control of Fugitive Emissions.** All reasonable precautions shall be taken to prevent particulate matter from becoming airborne.	ACLF will comply with these requirements and take reasonable precautions to prevent fugitive dust from becoming airborne.	Wood chipping operations wetted down periodically, as needed
Wood chipper and power screen and two diesel generators	PTC Condition 3.5 and IDAPA 58.01.01.725	**Fuel Oil Sulfur Content.** No diesel fuel oil containing sulfur in excess of 0.5% by weight shall be burned in the diesel engine generators.	ACLF will retain sulfur content documentation from the vendor delivering fuel oil to the facility. Records will be kept onsite for the most recent 2-year period.	ACLF uses ULSD less than 0.0015% by weight. Maintained per Diesel Fuel Delivery
Wood chipper and power screen and two diesel generators	PTC Condition 3.6	**Hours of Operation.** The operation of each diesel engine generator shall not exceed a maximum of 3,300 hours in any consecutive 12-month period.	The ACLF will monitor and record the date and hours of operation for each diesel generator. Records will be kept onsite for the most recent 2-year period.	Daily

TABLE 17
HHLF Cell and NRC LFG Collection and Control Compliance Certification During Permit Term

Emissions Unit	Citation	Applicable Requirements	Proposed Compliance Demonstration Method	Frequency of Certification
HHLF Cell and NRC LFG collection and control	PTC Condition 2.3 and IDAPA 58.01.01.625	**Opacity Limit**. Shall not exceed 20% opacity for more than 3 minutes in any 60-minute period unless 20% opacity is exceeded because of the presence of uncombined water, nitrogen oxides, and/or chlorine gas.	ACLF staff perform a see/no see evaluation for each flare of visible emissions. If visible emissions are observed from any flare, a Method 9 opacity test will be performed by the procedures contained in Rule 625.	Quarterly
HHLF Cell and NRC LFG collection and control	PTC Condition 2.4 and IDAPA 58.01.01.786	**Particulate Matter Emissions Limit for Incinerators**. PM emissions from each of the flares shall not exceed 0.2 pounds per 100 pounds of landfill gas combusted.	Demonstrated compliance with this requirement in previous PTC application submittal to DEQ.	Condition met
HHLF Cell and NRC LFG collection and control	Permit Condition 2.5 and IDAPA 58.01.01.776	**Control of Odors – from Flares**. No person shall allow, suffer, cause or permit the emission of odorous gases, liquids or solids into the atmosphere in such quantities as to cause air pollution.	The ACLF controls odor by collecting LFG and combusting through the enclosed flares. The ACLF must maintain records of all odor complaints received (date, description, validity) and take appropriate corrective action as necessary and date action was taken.	Per odor compliant received
HHLF Cell and NRC LFG collection and control	PTC Condition 2.6 and IDAPA 58.01.01.130-136	**Excess Emissions**. The permittee shall comply with the procedures and requirements of IDAPA 58.01.01.130 – 136 for excess emissions because of startup, shutdown, scheduled maintenance, safety measures, upsets and breakdowns.	ACLF will document and submit excess emission events for the LFG control system according to the procedures and requirements Rules 130 – 136.	Per excess emissions event
HHLF Cell and NRC LFG collection and control	PTC Condition 2.9	**Operations and Maintenance Manual.** Within 60 days after startup of landfill gas flares, the permittee shall have developed an O&M manual for the landfill gas flares, which describes the procedures that will be followed to comply with General Provision 2 and the manufacturer specifications for the flares. This manual shall remain onsite at all times and shall be made available to DEQ representatives upon request. Within 30 days of O&M manual development the permittee shall submit a copy of the manual to DEQ.	X	Condition met

TABLE 17
HHLF Cell and NRC LFG Collection and Control Compliance Certification During Permit Term

Emissions Unit	Citation	Applicable Requirements	Proposed Compliance Demonstration Method	Frequency of Certification
HHLF Cell and NRC LFG collection and control	PTC Condition 2.10	**LFG Control System.** The LFG to the flares shall not exceed the following limits: • 2,320 scfm to FLARE 1 • 2,379 to FLARE 2 The flares shall be operated within the parameter ranges established by the manufacturer: Gas temp outlet = 1,400-1,800 F	X	Condition met
HHLF Cell and NRC LFG collection and control	IDAPA 58.01.01.157, and 40 CFR 756-757	**Performance Test of LFG Control System.** Establish procedures and requirements for test methods and results.	Last DEQ approved source test was performed on October 15-16, 2008 for FLARE 1 and FLARE 2.	As needed
HHLF Cell and NRC LFG collection and control	PTC Condition 2.13 and IDAPA 58.01.01.859	**Reporting Requirements.** The permittee shall submit an annual NMOC report until nonmethane emissions are less than 50 megagrams per year in accordance with IDAPA 58.01.01.859.05.a.ii. The report shall be submitted to DEQ by September 30 each year.	ACLF will prepare and submit an annual NMOC report to DEQ by September 30 each year until the NMOC results are less than 50 megagrams per year.	Annually—by September 30 each year
HHLF Cell and NRC LFG collection and control	PTC Condition 2.30	**What records and reports must I keep and submit? (40 CFR 63.1980)**	A semi-annual report will be prepared and submitted to DEQ every 6 months to comply with the requirements of 40 CFR Subpart WWW.	The first initial semi-annual report will be submitted to DEQ by October 28, 2007. Semi-annual reports will be submitted to DEQ by April 30, and annual report by October 30 each year.

11.0 Trading Scenarios

11.1 Introduction

IDAPA 314. Required Standard Application From and Required Information.

11. Trading Scenarios.

a. Identify all requested trading scenarios, including alternative emissions limits (bubbles) authorized by Section 440.

b. Provide a detailed description of all requested trading scenarios. Include all the information required by Section 314 that is relevant to the trading scenario and all the information required by Section 440, if applicable. Emissions trades must comply with all applicable requirements.

c. Provide proposed replicable procedures and permit terms that ensure the emissions trades are quantifiable and enforceable. Emissions trades involving emissions units for which the emissions are not quantifiable or for which there are no replicable procedures to enforce the emissions trade shall not be approved.

No trading scenarios are presented in this application.

12.0 Additional Information

12.1 Introduction

IDAPA 314. Required Standard Application From and Required Information.

12. Additional Information.

Provide all additional information that the Department determines is necessary for the Department to efficiently and effectively perform its functions. Such functions include, but are not limited to, determining the applicability of requirements for all regulated air pollutants, determining compliance with applicable requirements, developing or defining Tier I operating permit terms and conditions, defining all approved alternative operating scenarios, evaluating excess emission procedures or making all necessary evaluations and determinations.

12.2 Insignificant Emissions

This section contains the insignificant emissions units (IEUs) at the ACLF. IDAPA 58.01.01.317 specifies the criteria for identifying insignificant activities. Section (a.) lists the categorically insignificant emission units. This is a list of process, devices, or facilities which need not be listed in an operating permit application. The categorically insignificant emission units identified at the ACLF are listed in Table 18, with a citation of the basis for their IEU designation.

IDAPA 58.01.01.317.b defines those emission units which are insignificant based on size or production rate. These units must be listed in the application, along with the -documentation necessary to verify their insignificant status. Table 19 lists the insignificant emission units based on size or production rate followed by citation(s) of the basis for their IEU status. The documentation necessary to verify the IEU status of each of the units is contained in Sections 12.2 through 12.7. The final section contains a copy of IDAPA 58.01.01.317 for reference.

TABLE 18
Presumptively Insignificant Emission Units

IEU ID	Description	Basis for IEU Designation (IDAPA 58.01.01)
Facility-wide	Mobile transport tanks	317.01.a.i.2
Household Hazardous Waste Building	Pressurized storage of inert gases	317.01.a.i.5
Facility-wide	Storage of solid material	317.01.a.i.6
LFG collection and control system	Continuous emission monitors	317.01.a.i.8
Facility-wide	Internal combustion engines for powering a vehicle	317.01.a.i.10
Facility-wide	Welding equipment and cutting torches where components of metal do not generate hazardous air pollutants	317.01.a.i.12
Facility-wide dust control	Equipment used for surface coating or spraying operations	317.01.a.i.17
Facility-wide	Portable electric generators moved by hand	317.01.a.i.19
LFG collection and control system	Plastic pipe welding	317.01.1.i.26
Facility-wide and structures	Plant maintenance and upkeep activities.	317.01.a.i.28
Facility-wide	Maintenance of paved streets and parking lots	317.01.a.i.30
Facility-wide (wastewater collection)	Portable drums and totes	317.01.a.i.37

TABLE 18
Presumptively Insignificant Emission Units

IEU ID	Description	Basis for IEU Designation (IDAPA 58.01.01)
Facility-wide structures	Comfort air conditioning	317.01.a.i.41
Facility-wide	Natural and forced air venting for bathrooms	317.01.a.i.43
Facility-wide	Office activities	317.01.a.i.44
Facility-wide	Sampling equipment for quality assurance and inspection purposes	317.01.a.i.45
Facility-wide activities	Equipment used for cutting, sawing, grinding, sanding, polishing, drilling, welding and brazing and other uses	317.01.a.i.49
Facility-wide	Temporary construction activities	317.01.a.i.53
Facility-wide structures	Gas cabinets for nonregulated gases	317.01.a.i.56
Facility-wide	Repair maintenance shops not related to primary activity	317.01.a.i.64
Facility-wide	Solid waste containers	317.01.a.i.69
Leachate ponds	Pond dredging	317.01.a.i.102
Leachate ponds	Process wastewater and ponds	317.01.a.i.109

TABLE 19
Insignificant on the Basis of Size or Production Rate

IEU ID	Description	Basis for IEU Designation (IDAPA 58.01.01)
Facility-wide	Liquid fuel tanks ≤ 10,000 gallons	317.01.b.i.3
Facility-wide	Welding using less than 1 ton of rod per day	317.01.b.i.9
Facility-Wide structures	Combustion source, space and hot water heaters < 5 MMBtu/hr	317.01.b.i.9 and 18
Emergency GEN 3	Detroit diesel rated at 33 kW	317.01.b.i.30
Emergency GEN 4	Kohler diesel rated at 60 kW	317.01.b.i.30

Appendix A

PTC Exemption Reports (Generators 3 and 4)

September 30, 2011

Ada County Solid Waste Management
200 West Front Street
Boise, ID 83702

Subject: Permit-To-Construct Exemption
Ada County Solid Waste Management
Ada County Landfill
10300 North Seamans Gulch Road
Boise, Idaho

Introduction

The Ada County Landfill (ACLF), located at 10300 North Seamans Gulch Road in Boise, Idaho, currently owns an emergency backup generator (Generator 3) located at the Household Hazardous Waste (HHHW) facility. The generator is diesel-fired to provide emergency back-up power only during normal day-to-day operations at the affected facility. ACLF is documenting a Permit-to-Construct (PTC) exemption in accordance with the *Rules for the Control of Air Pollution in Idaho,* IDAPA 58.01.01.220 and 222.

Emission Unit Operations:

Generator 3 – HHHW facility (see Attachment A)

Manufacturer:	Detroit Diesel
Model Number:	30DS60
Engine Rating:	33 kW (44 HP)
Fuel:	Diesel (3.9 gallon/hour max fuel usage estimate)
Annual maintenance usage:	4 hours per day/two days per year (testing purposes)
Installed:	1998

A non-resettable hour meter will be installed for the emergency standby generator. The total number of operating hours per year will be monitored and records kept for *emergency* and *non-emergency (i.e., maintenance and testing)* use.

Exemption Requirements

The equipment listed herein satisfies the exemption requirements in accordance with IDAPA 58.01.01.220 and 58.01.01.222.02.c.

The engine rating is approximately 44 horsepower (HP) for the emergency backup generator located at the HHHW.

Applicable exemption criteria for PTC exemptions are discussed below:

220. GENERAL EXEMPTION CRITERIA FOR PERMIT TO CONSTRUCT EXEMPTIONS.

> ***01. General Exemption Criteria.*** *Sections 220 through 223 may be used by owners or operators to exempt certain sources from the requirement to obtain a permit to construct. Nothing in these sections shall preclude an owner or operator from choosing to obtain a permit to construct. For purposes of Sections 220 through 223, the term source means the equipment or activity being exempted. For purposes of Sections 220 through 223, fugitive emissions shall not be considered in determining whether a source meets the applicable exemption criteria unless required by federal law. No permit to construct is required for a source that satisfies all of the following criteria, in addition to the criteria set forth at Sections 221, 222, or 223:*
>
> ***a.*** *The maximum capacity of a source to emit an air pollutant under its physical and operational design without consideration of limitations on emission such as air pollution control equipment, restrictions on hours of operation and restrictions on the type and amount of material combusted, stored or processed would not:*
>
> *i. Equal or exceed one hundred (100) tons per year of any regulated air pollutant.*

The ACLF does not exceed 100 tons per year of any regulated air pollutant as defined by IDAPA 58.01.01.008.10.c. (See Attachment B).

> *ii. Cause an increase in the emissions of a major facility that equals or exceeds the significant emissions rates set out in the definition of significant at Section 006.*

No significant emission rates are exceeded per IDAPA 58.01.01.006.106. PTE calculations are less than the significant emission rates for PM_{10}, NOx, SOx, CO, and VOC. (See Appendix B). Note that the PTE calculations are based on EPA AP-42 emission factors for the emergency diesel engine generator.

> *b. Combination. The source is not part of a proposed new major facility or part of a proposed major modification.*

The ACLF is not part of a new major facility or a major modification.

> ***02. Record Retention.*** *Unless the source is subject to and the owner or operator complies with Section 385, the owner or operator of the source, except for those sources listed in Subsections 222.02.a. through 222.02.g., shall maintain documentation on site which shall identify the exemption determined to apply to the source and verify that the source qualified for the identified exemption. The records and documentation shall be kept for a period of time not less than five (5) years from the date the exemption determination has been made or for the life of the source for which the exemption has been determined to apply, which ever is greater, or until such time as a permit to construct or an operating permit is*

issued which covers the operation of the source. The owner or operator shall submit the documentation to the Department upon request.

222. *CATEGORY II EXEMPTION.*

No permit to construct is required for the following sources.

01. ***Exempt Source****. A source that satisfies the criteria set forth in Section 220 and that is specified below: (4-5-00)*

c. *Stationary internal combustion engines of less than or equal to six hundred (600) horsepower and which are fueled by natural gas, propane gas, liquefied petroleum gas, distillate fuel oils, residual fuel oils, and diesel fuel; waste oil, gasoline, or refined gasoline shall not be used. To qualify for this exemption, the source must be operated in accordance with the following: (5-1-94)*

i. One hundred (100) horsepower or less -- unlimited hours of operation.

The engine rating is approximately 44 HP for the emergency backup generator located at the HHHW. Therefore, the ACLF satisfies the Category II exemption criteria per IDAPA 58.01.01.222.01.c.i.

Federal Regulation

New Source Performance Standards—40 CFR Part 60

In 40 CFR Part 60, the EPA established emission performance standards for specific categories of sources. These standards include emission limitations for various regulated pollutants and provide a variety of requirements for monitoring, record keeping, and reporting of emissions and other information. Any stationary source which contains an affected facility constructed after the New Source Performance Standards (NSPS) subpart took effect, must comply with the provisions of 40 CFR 60 Subpart A (codified at 40 CFR 60.1 through 60.18).

There are no applicable NSPS requirements that apply to the 33 kW Detroit diesel emergency generator.

National Emission Standards for Hazardous Air Pollutants - 40 CFR Part 63

The 33 kW Detroit diesel emergency generator will be classified as an area source subject to Subpart ZZZZ, *"NESHAPS for Stationary Reciprocating Internal Combustion Engines (RICE),* defined as RICE with PTE < 10 tpy for any single HAP or PTE < 25 tpy for total HAPs.

ACLF must comply with the applicable emission limitations and operating limitations no later than May 3, 2013.

The applicable requirements are provided below for the diesel-fired *emergency* engine < 100 HP:

- **During Startup**
  - Minimize engine idle time to period needed for appropriate and safe loading, not to exceed 30 minutes

- **Work Practice Standards Except During Startup**
  - Change oil and filter every 500 hours of operation or annually, whichever comes first
  - Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first
  - Inspect hoses and belts every 500 hours of operation or annually, whichever comes first
- **Operating Limitations**
  - Maintenance and readiness checks limited to 100 hours/year
  - Can operate engine for 50 hours/year for non-emergency purposes, but counted towards maintenance and readiness. The 50 hours cannot be used to generate income for a facility, except 15 hours/year is allowed as part of an emergency demand response program
- **Fuel Requirements (for engines with displacement < 30 liters/cylinder)**
  - None
- **Demonstrating Compliance**
  - Operate and maintain the stationary RICE according to manufacturer's instructions or implement a maintenance plan that provides for the maintenance and operation in a manner consistent with good air pollution control practices for minimizing emissions
  - Install a non-resettable hour meter
- **Testing**
  - None

Conclusion

The PTE from 33 kW Detroit diesel generator is below the significant emission rates for the regulated pollutants. Additionally, the Detroit diesel engine rating is approximately 44 HP. Therefore, the ACLF satisfies the Category II exemption criteria per IDAPA 58.01.01.222.01.c.i. The ACLF will keep a copy of this exemption evaluation on file.

Certification

I, Ted Hutchinson, certify that the statements and information in this document are true, accurate, and complete in accordance with IDAPA 58.01.01.123-124.

Ted Hutchinson

Ted Hutchinson, Director
Ada County Landfill

Appendices

Attachment A – Manufacturer Information
Attachment B – PTE Calculations

Attachment A – Manufacturer Information

SPECTRUM®

DETROIT DIESEL

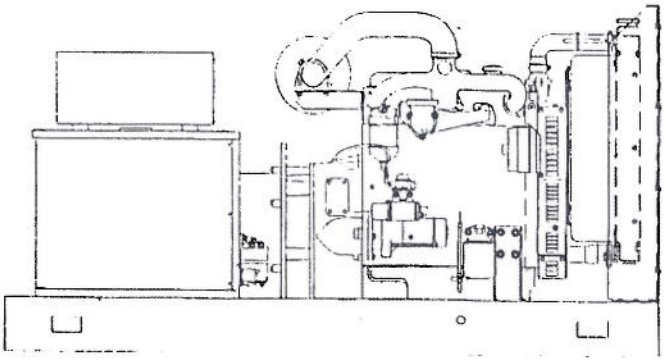
Model: 30DS

Diesel

ISO 9001
INTERNATIONALLY REGISTERED
SPECTRUM®

Standard Features

- Spectrum® product distributors provide one-source responsibility for the generating system and accessories.
- All generator sets and components are prototype tested, factory built, and production tested.
- A one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are available.
- Generator features:
  - Brushless, rotating-field generator has broadrange reconnectability.
  - A permanent magnet-excited generator (PMG) provides superior short-circuit capability.
- Other features:
  - Controllers are available to meet all applications. See controller features inside.
  - Low coolant level shutdown protects generator set from overheating.
  - Integral vibration isolation eliminates the need for installation of vibration spring isolators under the unit.



Generator Ratings

Model Series	Voltage Code	Voltage	Standby Amps	Phase	Hz	Generator Model	Standby kW/kVA	Prime kW/kVA
30DS60	01	120/240	105	3	60	4P5	35/44	32/40
30DS60	51	139/240	102	3	60	4P5	34/43	31/39
30DS60	51	127/220	112	3	60	4P5	34/43	31/39
30DS60	61	120/240	138	1	60	4P5	33/33	30/30
30DS60	71	277/480	51	3	60	4P5	34/43	31/39
30DS60	71	220/380	67	3	60	4P5	35/44	32/40
30DS60	81	120/208	121	3	60	4P5	35/44	32/40
30DS60	91	347/600	40	3	60	4P5	33/41	30/38
30DS50	01	110/220	89	3	50	4P5	27/34	25/31
30DS50	51	110/190	103	3	50	4P5	27/34	25/31
30DS50	61	110/220	118	1	50	4P5	26/26	24/24
30DS50	71	220/380	51	3	50	4P5	27/34	25/31
30DS50	71	230/400	47	3	50	4P5	26/33	24/30
30DS50	71	240/416	45	3	50	4P5	26/33	23/29
30DS50	81	120/208	90	3	50	4P5	26/33	23/29

RATINGS: Standby ratings are continuous for the duration of any power outage. No overload capacity is specified at this rating. Prime ratings are continuous per BS 5514, DIN 6271, ISO-3046, and IEC 34-1 with 10% overload capacity one hour in twelve hours. All single-phase units are rated at 1.0 power factor. All 3-phase units are rated at 0.8 power factor. Contact the factory for ratings of city water-cooled and remote radiator models. Larger generators may be used to meet special application requirements. Availability is subject to change without notice. The manufacturer of Spectrum products reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local Spectrumproducts distributor for availability. DERATION: Maximum altitude before generator deration, ft. (m): 500 (152). Altitude deration factor, % per 1000 ft. (305 m): 2.0. Maximum intake air temperature before generator deration, °F (°C): 104 (40). Temperature deration factor, % per 18°F (10°C): 2.5.

Alternator Specifications

Type	4-Pole, Rotating Field
Exciter type	Brushless, Permanent Magnet
Number of leads	12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation: NEMA MG1-1.66,	
Material	Class H
Temperature rise	130°C, Standby
Bearing, number, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no load to full load	±2%
One-step load acceptance per NFPA 110	100% of Rating
Peak motor starting kVA:	(35% dip for 480 V, 60 Hz and 380 V, 50 Hz)
4P5	140 (60Hz), 95 (50Hz)
4P7	195 (60Hz), 135 (50Hz)

- Compliance with NEMA, IEEE, and ANSI standards for temperature rise.
- Sustained short-circuit current up to 300% of rated current for up to 10 seconds.
- Sustained short-circuit capability enabling downstream circuit breakers to trip without collapsing the generator field.
- Self-ventilation and drip-proof construction.
- Vacuum-impregnated windings with fungus-resistant epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- A solid-state, volts-per-hertz voltage regulator with ±2% no-load to full-load regulation.
- A brushless alternator with brushless exciter for excellent load response.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Supplier	Detroit Diesel	
Engine, model, type	4.236, 4-Cycle Natural Aspiration	
Cylinder arrangement	4 In-line	
Displacement, cu. in. (L)	236 (3.870)	
Bore and stroke, in. (mm)	3.875 x 5.0 (98.4 x 127)	
Compression ratio	16.0:1	
Piston speed, ft/min. (m/sec.)	1500 (7.62)	1248 (6.35)
Main bearings: number, type	5, Replaceable Insert	
Rated rpm	1800	1500
Max. power at rated rpm, hp (kW)	64.0 (47.7)	56.0 (41.8)
Cylinder head material	Cast Iron	
Crankshaft material	Forged Steel	
Valve material:		
Intake	Carbon Steel	
Exhaust	Chromium Steel	
Governor, type, make/model	Mechanical, Stanadyne/ DB2	
Frequency regulation, no load to full load	5%	
Frequency regulation, steady state	±0.5%	
Air cleaner type, all models	Dry, Paper Element	

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust flow at rated kW, cfm (m^3/min.)	270 (7.6)	220 (6.2)
Exhaust temperature at rated kW, dry exhaust, °F (°C)	1075 (579)	1060 (571)
Maximum allowable back pressure, in. Hg (kPa)	3 (10.2)	
Exhaust outlet size at hookup, in. (mm)	2.50 O.D. (63.5)	

Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:		
Ground (negative/positive)	Negative	
Volts (DC)	12	
Ampere rating	66	
Starter motor rated voltage (DC)	12	
Recommended battery cold cranking amps (CCA) rating for 0°F	800	
Quantity of batteries	1	
Battery voltage (DC)	12	
Rolling current at 32°F	-	

Fuel

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, in. (mm)	0.25 (6)	
Fuel return line, min. ID, in. (mm)	0.25 (6)	
Max. lift, engine-driven fuel pump, ft. (m)	6.0 (1.8)	
Max. fuel flow, g/h (L/h)	4.7 (17.8)	4.3 (16.1)
Fuel prime pump	Manual	
Fuel filter	Primary and Secondary	
Recommended fuel	#2 Diesel, min. 45 Cetane	

Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, qts. (L)	7.5 (7.1)	
Oil pan capacity with filter, qts. (L)	8.6 (8.1)	
Oil filter, quantity, type	1, Cartridge	
Oil cooler	-	

Application Data

Cooling (Standard Radiator)

Cooling System	60 Hz	50 Hz
Ambient temperature °F (°C)	122 (50)	
Engine jacket water capacity, gal. (L)	2.5 (9.5)	
Radiator system capacity, including engine, gal. (L)	3.6 (13.6)	
Engine jacket water flow, gpm (Lpm)	24 (91)	20 (76)
Heat rejected to cooling water at rated kW, dry exhaust Btu/min.	1400	1040
Water pump type	Centrifugal	
Fan diameter, including blades, in. (mm)	19.0 (482.6)	
Fan hp (kW)	3.5 (2.6)	2.0 (1.5)
Max. restriction of cooling air, intake and discharge side of rad., in. H_2O (in. Hg)	0.5 (0.037)	

Cooling (Optional Systems)

Remote Radiator System	60 Hz	50 Hz
Exhaust manifold type	Dry	
Connection sizes:		
Water inlet, in. (mm)	1.88 (48)	
Water outlet, in. (mm)	1.50 (38)	
Remote radiator:		
Make	Modine	
Model	M2VR2P1.5	
Mounting	Vertical	
Discharge	Horizontal	
Fan motor: phase, hp (kW)	3, 1.5, (1.1)	
Radiator capacity, gal. (L)	3.5 (13.2)	
Static head allowable above engine, ft. (m)	10.7 (3.8)	7.5 (2.3)
Tank top (inlet), in.	1.5 NPT	
Bottom tank (outlet), in.	1.5 NPT	
Dry weight, lb. (kg)	320 (145)	

City Water Cooling System	60 Hz	50 Hz
Exhaust manifold type	Dry	
System capacity, gal. (L)	2.9 (10.9)	
City water consumption,* gpm (Lpm) at 50°F (10°C)	2.3 (8.7)	1.9 (7.2)
Connection sizes:*		
Water inlet, in.	1/2 NPT	
Water outlet, in.	1/2 NPT	

* Data based on Thermal Transfer Products B-702-B4 heat exchanger with thermostatically controlled water-saver valve, electric solenoid valve, and surge tank.

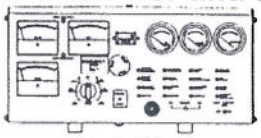
Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, cfm (m^3/min.)	5500 (156)	4100 (116)
Cooling air required for gen. set when equipped with CWC or remote radiator, based on 25°F (14°C) rise and ambient temp. of 85°F (29°C), cfm (m^3/min.)	2000 (56.6)	1400 (39.6)
Combustion air, cfm (m^3/min.)	102 (2.9)	88 (2.5)
Heat rejected to ambient air:		
Engine BTU/min.	520	380
Generator BTU/min.	320	220

Fuel Consumption	60 Hz	50 Hz
Diesel, gph (Lph) at % load		
100%	3.0 (11.2)	2.2 (8.3)
75%	2.3 (8.5)	1.7 (6.4)
50%	1.7 (6.3)	1.3 (4.9)
25%	1.2 (4.5)	0.9 (3.4)

Controllers

Standard Controller and Features



- Type: 16-light microprocessor (NFPA 110, level 1)
- Power source, with circuit protection: 12-volt DC
- Panel lamps (2)
- Analog Meters:
  - AC meters, 2.5 in. (64 mm) 2% full-scale accuracy on voltmeter and ammeter, 0.5% full-scale accuracy on frequency meter
  - DC meters, 2 in. (51 mm), 2% full-scale accuracy (volts, engine water temperature, oil pressure)
  - Running time meter
- Switches and Controls:
  - Alarm horn and silencing switch
  - Cyclic cranking
  - Engine cooldown timer, 5-minute
  - Front-mounted voltage-adjusting rheostat ±5%
  - Lamp test switch
  - Local emergency stop button switch (optional)
  - Meter phase selector switch, 7 position
  - Overvoltage protection shutdown
  - Prime power mode
  - Run/off-reset/auto switch (engine start), local/remote two-wire
- Fault and Condition Lamps:
  - Air damper (red) (200-1600 kW diesel only)
  - Auxiliary fault (red)
  - Auxiliary prealarm (yellow)*
  - Battery charger fault (red)*
  - Emergency stop (red)*
  - Generator switch not in auto (red)
  - High engine temperature safety shutdown (red)
  - Low battery voltage (red)*
  - Low coolant level shutdown (auxiliary)
  - Low fuel (red)*
  - Low oil pressure safety shutdown (red)
  - Low water temperature (red)*
  - Overcrank safety shutdown (red)
  - Overspeed safety shutdown (red)
  - Prealarm high engine temperature (yellow)*
  - Prealarm low oil pressure (yellow)*
  - System ready (green)

* Requires optional kit or user-provided device for lamp to function.

Optional Controllers

- Engine gauge box for paralleling controller (switchgear)
- Manual controller
- Manual paralleling microprocessor controller
- Oversized meterbox controller
- 7-light controller (NFPA 110, level 2)
  (For optional controller features, see controller spec sheet.)

SPECTRUM®
DETROIT DIESEL

SPECTRUM, N7650 County Trunk LS, Sheboygan, Wisconsin 53083 U.S.A.
Phone 414-459-1877
Fax 414-459-1825 (U.S.A. Sales), Fax 414-459-1614 (International)

Accessories

Enclosed Unit

- ○ Exhaust Silencer, Critical or Industrial
- ○ Silencer Mounting Kit for Housing
- ○ Sound Shield Enclosure
- ○ Tail Pipe and Rain Cap Kit
- ○ Weather Housing

Open Unit

- ○ Exhaust Silencer, Critical or Industrial
- ○ Flexible Exhaust Connector, Stainless Steel

Cooling System

- ○ Block Heater
- ○ City Water Cooling
- ○ Radiator Duct Flange
- ○ Remote Radiator Cooling

Fuel System

- ○ Auxiliary Fuel Pump
- ○ Day Tanks
- ○ Flexible Fuel Lines
- ○ Fuel Pressure Gauge
- ○ Subbase Fuel Tanks

Electrical System

- ○ Battery
- ○ Battery Charger, Equalize/Float Type
- ○ Battery Charger, Trickle Type
- ○ Battery Heater
- ○ Battery Rack and Cables

Engine and Generator

- ○ Air Cleaner, Heavy Duty
- ○ Air Cleaner Restriction Indicator
- ○ Bus Bar Kits
- ○ CSA Certification
- ○ Electronic Isochronous Governor
- ○ Generator Strip Heater
- ○ Line Circuit Breaker
- ○ Line Circuit Breaker with Shunt Trip
- ○ NFPA 110 Literature
- ○ Oil Drain Extension with Valve Kit
- ○ Optional Generators
- ○ Rated Power Factor Testing
- ○ Safeguard Breaker
- ○ Voltage Regulation, 1%
- ○ Voltage Regulator Sensing, Three-Phase

Paralleling System

- ○ Load-Sharing Module
- ○ Reactive Droop Compensator
- ○ Remote Speed Adjust Potentiometer/Electronic Governor
- ○ Voltage Adjust Potentiometer
- ○ Voltage Regulator Relocation Kit

Maintenance

- ○ General Maintenance Literature Kit
- ○ Maintenance Kit (includes air, oil, and fuel filters)
- ○ Overhaul Literature Kit

Controller (Standard Controller)

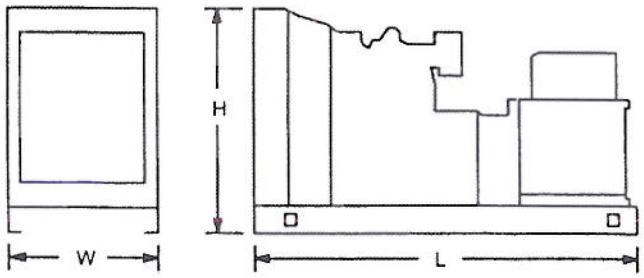
- ○ Common Failure Relay Kit
- ○ Customer Connection Kit
- ○ Dry Contact Kit (Isolated Alarm)
- ○ Extension Wiring Harness for Remote Mounting of Controller
- ○ FASTCHECK® Diagnostic Fault Detector
- ○ Prealarm Sender Kit (NFPA 110)
- ○ Remote Annunciator Panel
- ○ Remote Audio/Visual Alarm Panel
- ○ Remote Emergency Stop Kit
- ○ Run Relay Kit
- ○ Tachometer Kit/Oversize Meterbox
- ○ Wattmeter Kit/Oversize Meterbox

Miscellaneous Accessories

- ○ _____
- ○ _____
- ○ _____
- ○ _____
- ○ _____
- ○ _____
- ○ _____
- ○ _____
- ○ _____

WEIGHTS AND DIMENSIONS

Overall Size, L x W x H, in. (mm):	82.00 x 29.00 x 43.40 (2083 x 737 x 1102)
Weight (Radiator Model), wet lb. (kg):	1615 (733)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

DISTRIBUTED BY:

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Attachment B – PTE Calculations

Ada County Landfill - HHHW Facility
Emergency Generator

Generator Manufacturer	**Detroit Diesel**
Engine Manufacturer	**Detroit Diesel**
Engine Model No.	**30DS60**
Engine Power Rating (hp)	44
Fuel Type	Distillate #2
- maximum sulfur content	0.0015%
Maximum fuel consumption (gals/hr)	3.0
Maximum Heat Input Rating (Btu/hr)	420,000
Maximum Hours of Operation	26
Maximum Firing Rate (gals/yr)	78
Annual Operation Limit (hrs/yr)	26
Annual Firing Rate (gals/yr)	78
Heat Value of Fuel (Btu/gal)	140,000

			Uncontrolled Potential to Emit		
Criteria 'Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1]		0.31	0.13	3.39	0.0017
Total Particulate Matter ($PM_{2.5}$)[2]		0.31	0.13	3.39	0.0017
Particulate Matter (PM10)[3]		0.31	0.13	3.39	0.0017
Nitrogen Oxides (NOx)[4]		4.41	1.85	48.16	0.024
Sulfur Oxides (SO_2)[5]		0.00152	0.00	0.02	0.0000
Carbon Monoxide (CO)[4]		0.95	0.40	10.37	0.0052
TOC as VOC[4]		0.35	0.15	3.82	0.0019

Notes:
[1] PM is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)
[2] $PM_{2.5}$ is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)
[3] PM_{10} emission factor (AP-42, Table 3.3-1, 10/96)
[4] NOx, CO and TOC emission factors(Table 3.3-1, 10/96). Note TOC is based on exhaust emission factor for VOC.
[5] SO_2 is based on AP-42, Table 3.4-1, 10/96, multiplied by sulfur content of fuel

September 30, 2011

Ada County Solid Waste Management
200 West Front Street
Boise, ID 83702

Subject: Permit-To-Construct Exemption
Ada County Solid Waste Management
Ada County Landfill
10300 North Seamans Gulch Road
Boise, Idaho

Introduction

The Ada County Landfill (ACLF), located at 10300 North Seamans Gulch Road in Boise, Idaho, currently owns an emergency backup engine generator (Generator 4) located at the newly constructed scales. The engine generator is diesel-fired to provide emergency back-up power only during normal day-to-day operations at the affected facility. ACLF is documenting a Permit-to-Construct (PTC) exemption in accordance with the *Rules for the Control of Air Pollution in Idaho,* IDAPA 58.01.01.220 and 222.

Emission Unit Operations:

Generator 4 – Scales (see Attachment A)

Manufacturer:	Kohler
Model Number:	40 RE02JC
Engine Manufacturer	John Deere
Engine Model Number:	4024 HF 285
Engine Rating:	60 kW (80 HP)
Emission Rating:	Tier III
Fuel:	Diesel (4.73 gallon/hour max fuel usage)
Annual maintenance usage:	4 hours per day/two days per year (testing purposes)
Installed:	August 2011

A non-resettable hour meter will be installed for the emergency standby generator. The total number of operating hours per year will be monitored and records kept for *emergency* and *non-emergency (i.e., maintenance and testing)* use.

Exemption Requirements

The equipment listed herein satisfies the exemption requirements in accordance with IDAPA 58.01.01.220 and 58.01.01.222.02.c.

The engine rating is approximately 80 horsepower (HP) for the emergency backup generator located at the scale house.

Applicable exemption criteria for PTC exemptions are discussed below:

220. GENERAL EXEMPTION CRITERIA FOR PERMIT TO CONSTRUCT EXEMPTIONS.

> ***01. General Exemption Criteria.*** *Sections 220 through 223 may be used by owners or operators to exempt certain sources from the requirement to obtain a permit to construct. Nothing in these sections shall preclude an owner or operator from choosing to obtain a permit to construct. For purposes of Sections 220 through 223, the term source means the equipment or activity being exempted. For purposes of Sections 220 through 223, fugitive emissions shall not be considered in determining whether a source meets the applicable exemption criteria unless required by federal law. No permit to construct is required for a source that satisfies all of the following criteria, in addition to the criteria set forth at Sections 221, 222, or 223:*
>
> ***a.*** *The maximum capacity of a source to emit an air pollutant under its physical and operational design without consideration of limitations on emission such as air pollution control equipment, restrictions on hours of operation and restrictions on the type and amount of material combusted, stored or processed would not:*
>
> *i. Equal or exceed one hundred (100) tons per year of any regulated air pollutant.*

The ACLF does not exceed 100 tons per year of any regulated air pollutant as defined by IDAPA 58.01.01.008.10.c. (See Attachment B).

> *ii. Cause an increase in the emissions of a major facility that equals or exceeds the significant emissions rates set out in the definition of significant at Section 006.*

No significant emission rates are exceeded per IDAPA 58.01.01.006.106. PTE calculations are less than the significant emission rates for PM_{10}, NOx, SOx, CO, and VOC. (See Appendix B). Note that the PTE calculations are based on EPA AP-42 emission factors for the emergency diesel engine generator.

> *b. Combination. The source is not part of a proposed new major facility or part of a proposed major modification.*

The ACLF is not part of a new major facility or a major modification.

> ***02. Record Retention.*** *Unless the source is subject to and the owner or operator complies with Section 385, the owner or operator of the source, except for those sources listed in Subsections 222.02.a. through 222.02.g., shall maintain documentation on site which shall identify the exemption determined to apply to the source and verify that the source qualified for the identified exemption. The records and documentation shall be kept for a period of time not less than five (5) years from the date the exemption determination has been made or for the life of the source for which the exemption has been determined to apply, which ever is greater, or until such time as a permit to construct or an operating permit is*

issued which covers the operation of the source. The owner or operator shall submit the documentation to the Department upon request.

222. *CATEGORY II EXEMPTION.*

No permit to construct is required for the following sources.

01. ***Exempt Source.*** *A source that satisfies the criteria set forth in Section 220 and that is specified below: (4-5-00)*

c. *Stationary internal combustion engines of less than or equal to six hundred (600) horsepower and which are fueled by natural gas, propane gas, liquefied petroleum gas, distillate fuel oils, residual fuel oils, and diesel fuel; waste oil, gasoline, or refined gasoline shall not be used. To qualify for this exemption, the source must be operated in accordance with the following: (5-1-94)*

i. One hundred (100) horsepower or less -- unlimited hours of operation.

The engine rating is approximately 80 horsepower (HP) for the emergency backup generator located at the scale house. Therefore, the ACLF satisfies the Category II exemption criteria per IDAPA 58.01.01.222.01.c.i.

Federal Regulation

New Source Performance Standards—40 CFR Part 60

In 40 CFR Part 60, the EPA established emission performance standards for specific categories of sources. These standards include emission limitations for various regulated pollutants and provide a variety of requirements for monitoring, record keeping, and reporting of emissions and other information. Any stationary source which contains an affected facility constructed after the New Source Performance Standards (NSPS) subpart took effect, must comply with the provisions of 40 CFR 60 Subpart A (codified at 40 CFR 60.1 through 60.18).

The NSPS requirements of Subpart IIII -*Standards of Performance for Stationary Compressor Ignition Internal Combustion Engines* apply to the 60 kW Kohler diesel emergency generator installed in August 2011.

The applicable requirements are provided below for the Tier III diesel-fired *emergency* engine:

- **The engine will be certified by the manufacturer** – Although the rule allows for engines to be certified by the owner or operator, it is expected that most engines subject to this rule will be certified by the manufacturer. It is essential that manufacturer certification is received from the engine manufacturer. The John Deere emergency standby diesel engine is EPA nonroad Tier III.

- **Comply with the Tier III emission standards -** NHMC + NOx = 4.7 g/kw-hr; CO = 5.0 g/kw-hr; PM= 0.40 g/kw-hr (per Table 1 per 40 CFR 89.112)

- **Emission requirements for emergency generators -** Maintenance and testing hours of operation for emergency stationary CI ICE will not exceed 100 hours per year. ACLF proposes to take a self-proposed maintenance limit of 8 hours per year.
- **Monitoring requirements for emergency generators -** A non-resettable hour meter is required to be installed for each *emergency* stationary CI ICE.
- **An initial engine notification is not required.**
- **No controls are required.**

Conclusion

The PTE from 60 kW John Deere engine is below the significant emission rates for the regulated pollutants. Additionally, the John Deere engine rating is approximately 80 HP. Therefore, the ACLF satisfies the Category II exemption criteria per IDAPA 58.01.01.222.01.c.i. The ACLF will keep a copy of this exemption evaluation on file.

Certification

I, Ted Hutchinson, certify that the statements and information in this document are true, accurate, and complete in accordance with IDAPA 58.01.01.123-124.

Ted Hutchinson

Ted Hutchinson, Director
Ada County Landfill

Appendices

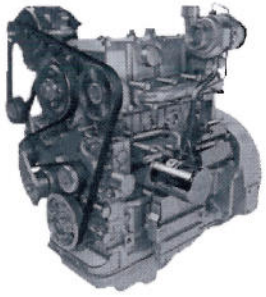
Attachment A – Manufacturer Information
Attachment B – PTE Calculations

Attachment A – Manufacturer Information

PowerTech E
4024H Diesel Engine

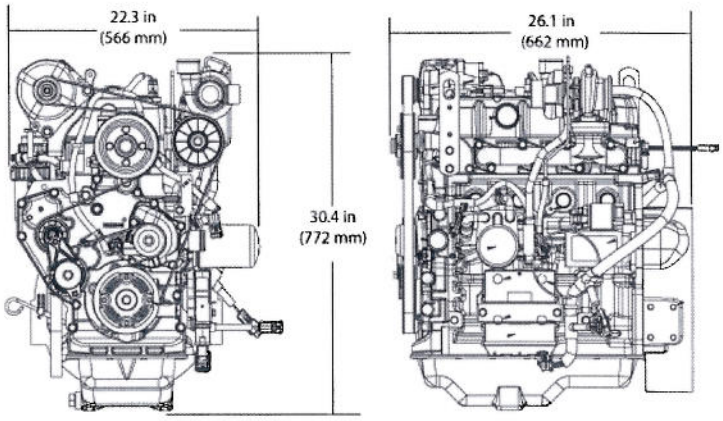
Generator Drive Engine Specifications

JOHN DEERE



4024H shown

Dimensions



Certifications

CARB

EPA Tier 3

General data

Model	4024HF285
Number of cylinders	4
Displacement - L (cu in)	2.4 (146)
Bore and Stroke-- mm (in)	86 x 105 (3.39 x 4.13)
Compression Ratio	18.2:1
Engine Type	In-line, 4-Cycle
Aspiration	Turbocharged and air-to-air aftercooled
Length - mm (in)	662 (26.1)
Width - mm (in)	566 (22.3)
Height-- mm (in)	772 (30.4)
Weight, dry-- kg (lb)	251 (553)

Performance data

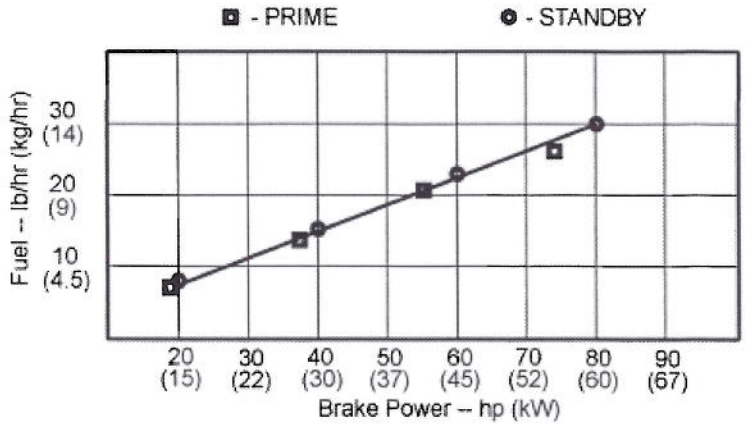
Prime power at 60 Hz (1800 rpm)	55 kW (74 hp)
Standby power at 60 Hz (1800 rpm)	60 kW (80 hp)

The prime power gen-set engine rating is the nominal power an engine is capable of delivering with a variable load for an unlimited number of hours per year with normal maintenance intervals observed. This rating incorporates a 10% overload capability which is available for up to 2 hours at a time. Operating time between 100% and 110% of the prime power rating is not to exceed 8% of the total engine operating time. This rating conforms to ISO 8528-1 "prime power (PRP)". The permissible average power for the prime or PRP rating is not to exceed 70% of rated prime power when calculated per ISO 8528-1.

The standby gen-set engine rating is the nominal engine power available at varying load factors for up to 200 hours per year with normal maintenance intervals observed. No overload capability is available for this rating. This rating conforms to ISO 8528-1 "Emergency Standby Power (ESP)". The permissible average power for the standby or ESP rating is calculated per ISO 8528-1.

Photographs may show non-standard equipment.

Performance curve



Performance data

Hz (rpm)	Generator efficiency %	Rated fan power		Power factor	Calculated generator set output			
					Prime		Standby	
		kW	hp		kWe	kVA	kWe	kVA
60 (1800)	88-92	3.6	4.8	0.8	45-47	56-59	50-52	63-65

Features and benefits

2-Valve Cylinder Head

- U-flow head design provides excellent breathing from a lower-cost 2-valve cylinder head

Electronic Unit Pump (EUP) Fuel System

- Regulated rated speed flexibility and improved cold-start and warm-up control

Fixed Geometry Turbocharger

- Fixed geometry turbochargers are precisely matched to the power level and application

Air-to-Air Aftercooled

- This is the most efficient method of cooling intake air to help reduce engine emissions while maintaining low-speed torque, transient response time, and peak torque. It enables an engine to meet emissions regulations with better fuel economy and the lowest installed costs

John Deere Electronic Engine Controls

- Electronic engine controls monitor critical engine functions, providing warning and/or shutdown to prevent costly engine repairs and eliminate the need for add-on governing components, all lowering total installed costs

Compact Size

- Mounting points are the same as previous engine models

Engine Performance

- Block loading capability provided with standard electronic governor control

Additional Features

- Self-adjusting poly-vee fan drive
- Forged-steel connecting rods
- Either-side service
- 500-hour oil change
- Gear driven auxiliary drive
- Glow plugs
- Optional balancer shafts

John Deere Power Systems
3801 W. Ridgeway Ave.
PO Box 5100
Waterloo, IA 50704-5100
Phone: 1-800-533-6446
Fax: 319.292.5075

John Deere Power Systems
Usine de Saran
La Foulonnerie - B.P. 11.13
45401 Fleury les Aubrais Cedex
France
Phone: 33.2.38.82.61.19
Fax: 33.2.38.82.60.00

All values at rated speed and power with standard options unless otherwise noted. Specifications and design subject to change without notice.

Litho in U.S.A. (11-07) © 2010 JOHN DEERE

Attachment B – PTE Calculations

Ada County Landfill - Scale House
Emergency Generator

Generator Manufacturer	**Kohler**
Engine Manufacturer	**John Deere**
Engine Model No.	**4024 HF 285**
Engine Power Rating (hp)	80
Fuel Type	Distillate #2
- maximum sulfur content	0.0015%
Maximum fuel consumption (gals/hr)	4.6
Maximum Heat Input Rating (Btu/hr)	644,000
Maximum Hours of Operation	26
Maximum Firing Rate (gals/yr)	120
Annual Operation Limit (hrs/yr)	26
Annual Firing Rate (gals/yr)	120
Heat Value of Fuel (Btu/gal)	140,000

			Uncontrolled Potential to Emit		
Criteria 'Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1]		0.31	0.20	5.19	0.0026
Total Particulate Matter ($PM_{2.5}$)[2]		0.31	0.20	5.19	0.0026
Particulate Matter (PM10)[3]		0.31	0.20	5.19	0.0026
Nitrogen Oxides (NOx)[4]		4.41	2.84	73.84	0.037
Sulfur Oxides (SO_2)[5]		0.00152	0.00	0.03	0.0000
Carbon Monoxide (CO)[4]		0.95	0.61	15.91	0.0080
TOC as VOC[4]		0.35	0.23	5.86	0.0029

Notes:
[1] PM is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)
[2] $PM_{2.5}$ is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)
[3] PM_{10} emission factor (AP-42, Table 3.3-1, 10/96)
[4] NOx, CO and TOC emission factors(Table 3.3-1, 10/96). Note TOC is based on exhaust emission factor for VOC.
[5] SO_2 is based on AP-42, Table 3.4-1, 10/96, multiplied by sulfur content of fuel

Appendix B

DEQ Forms

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

General Information **Form GI**
Revision 7
2/18/10

Please see instructions on page 2 before filling out the form.

All information is required. If information is missing, the application will not be processed.

IDENTIFICATION

1. Company Name	2. Facility Name:
Ada County Solid Waste Management	Ada County Landfill

3. Brief Project Description:	Tier I renewal application

FACILITY INFORMATION

4. Primary Facility Permit Contact Person/Title	Ted Hutchinson		Director	
5. Telephone Number and Email Address	208-577-4725		thutchinson@adaweb.net	
6. Alternate Facility Contact Person/Title	Rick Schreiber		Environmental Systems Coordinator	
7. Telephone Number and Email Address	208-577-4725		rschreiber@adaweb.net	
8. Address to Which the Permit Should be Sent	10300 North Seamans Gulch Road			
9. City/County/State/Zip Code	Boise	Ada	Idaho	83714
10. Equipment Location Address (if different than the mailing address above)				
11. City/County/State/Zip Code				
12. Is the Equipment Portable?	☐ Yes ☒ No			
13. SIC Code(s) and NAICS Code	Primary SIC: 4953	Secondary SIC: 5093	NAICS: 562212	
14. Brief Business Description and Principal Product	Municipal solid waste landfill for Ada County, Idaho			
15. Indentify any adjacent or contiguous facility that this company owns and/or operates				
16. Specify the reason for the application	☐ Permit to Construct (PTC) For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit. ☐ Incorporate the PTC at the time of the Tier I renewal ☐ Co-process the Tier I modification and PTC ☐ Administratively amend the Tier I permit to incorporate the PTC upon your request (IDAPA 58.01.01.209.05.a, b, or c) ☒ Tier I Permit ☐ Tier II Permit ☐ Tier II/Permit to Construct			

CERTIFICATION

In accordance with **IDAPA 58.01.01.123 (**Rules for the Control of Air Pollution in Idaho**), I** certify based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

17. Responsible Official's Name/Title	Ted Hutchinson	Director	
18. Responsible Official's Signature	Ted Hutchinson	Date:	9/30/11

19. ☐ Check here to indicate that you would like to review the draft permit prior to final issuance.

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Cover Sheet for Air Permit Application – Tier I **Form CSTI**
Revision 5
08/28/08

Please see instructions on page 2 before filling out the form.

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER			
1. Company Name	Ada County Solid Waste Management		
2. Facility Name	Ada County Landfill	3. Facility ID No.	001-00195
4. Brief Project Description - One sentence or less	Tier I operating permit renewal		

PERMIT APPLICATION TYPE

5. ☐ Initial Tier I ☐ Tier I Administrative Amendment ☐ Tier I Minor Modification ☐ Tier I Significant Modification
☒ Tier I Renewal: Permit No.: 2009-0009 Date Issued: 4/13/2007

FORMS INCLUDED

Included	N/A	Forms		DEQ Verify
☒	☐	Form CSTI – Cover Sheet		☐
☒	☐	Form GI – Facility Information		☐
☒	☐	Form EU0 – Emissions Units General		☐
☒	☐	Form EU1– Industrial Engine Information	Please specify number of EU1s attached: 4	☐
☐	☒	Form EU2– Nonmetallic Mineral Processing Plants	Please specify number of EU2s attached: _____	☐
☐	☒	Form EU3– Spray Paint Booth Information	Please specify number of EU3s attached: _____	☐
☐	☒	Form EU4– Cooling Tower Information	Please specify number of EU4s attached: _____	☐
☐	☒	Form EU5 – Boiler Information	Please specify number of EU5s attached: _____	☐
☐	☒	Form CBP– Concrete Batch Plant	Please Specify number of CBPs attached: _____	☐
☐	☒	Form HMAP – Hot Mix Asphalt Plant	Please specify number of HMAPs attached:	☐
☐	☒	PERF – Portable Equipment Relocation Form		☐
☐	☒	Form BCE– Baghouses Control Equipment		☐
☐	☒	Form SCE– Scrubbers Control Equipment		☐
☐	☒	Form VSCE – Venturi Scrubber Control Equipment		☐
☐	☒	Form ESP – Electrostatic Precipitator		☐
☐	☒	Form AO – Afterburner/Oxidizer		☐
☐	☒	Form CYS – Cyclone Separator		☐
☐	☒	Form CA – Carbon Adsorber		☐
☐	☒	Forms EI-CP1 - EI-CP4– Emissions Inventory– criteria pollutants	(Excel workbook, all 4 worksheets)	☐
☒	☐	Form CAM – Compliance Assurance Monitoring		☐
☒	☐	Form FRA – Federal Regulation Applicability		☐

Instructions for Form CSTI

This form is the cover sheet for an air quality permit application. It provides DEQ with basic information regarding the company and the proposed permitting action. This form helps DEQ efficiently determine whether the application is administratively complete. This form also provides the applicant with a list of forms available to aid the applicant to successfully submit a complete application.

Company Name, Facility Name, and Facility ID Number

1-3. Provide the name of your company, the name of the facility (if different than company name), and the facility identification (ID) number (Facility ID No.) in the boxes provided. The facility ID number is also known as the AIRS number or AIRS/AFS number (example: 095-00077). If you already have a permit, the facility ID number is located in the upper right hand corner of the cover page. The facility ID number must be provided unless your facility has not received one, in which case you may leave this box empty. **Use these same names and ID number on all forms**. This is useful in case any pages of the application are separated.

4. Provide a brief description of this permitting project in one sentence or less. Examples might be "Tier I Administrative Amendment to allow for the change of ownership of this facility" or "Tier I Significant Modification to change the existing monitoring, recordkeeping, and reporting requirements Boiler #1." **This description will be used by DEQ as a unique identifier for this permitting project, in conjunction with the name(s) and ID number referenced in 1-3.** You will need to put this description, using the exact same words, on all other forms that are part of this project application. This is useful in case any pages of the application are separated.

   If this Tier I is being issued as a result of a PTC issued pursuant to IDAPA 58.01.01.209.05.c, the source or modification may operate upon submittal for an administrative amendment issued pursuant to IDAPA 58.01.01.381.

Permit Application Type

5. Provide the reason you are submitting the permit application by checking the appropriate box and filling in the number and/or date if needed.

Forms Included

Check the "Included" box for each form included in this permit to construct application. If there are multiples of a form for multiple units of that type, check the box and fill in the number of forms in the blank provided.

The "N/A" box should only be checked if the form is absolutely unnecessary to complete the application. Additional information may be requested.

When complete, enclose the hardcopy application certified by a responsible official (as defined in IDAPA 58.01.01.006.94), and send to:

Air Quality Program Office – Application Processing
Department of Environmental Quality
1410 N. Hilton
Boise, ID 83706-1255

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Ada County Solid Waste Management	Ada County Landfill	001-00195
4. Brief Project Description:	Tier I operating permit renewal	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	FLARE 1
6.	EU ID Number:	Flare 1
7.	EU Type:	☐ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #:2009-0009 Date Issued: 9/28/09
8.	Manufacturer:	JOHN ZINC
9.	Model:	ZTOF
10..	Maximum Capacity:	2320 CFM OF LFG
11.	Date of Construction:	2004
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8760 HOURS PER YEAR
23.	Maximum Operation:	8760 HOURS PER YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☐ Operation Hour Limit(s):	
	☒ Production Limit(s):	2,320 CFM OF LFG
	☐ Material Usage Limit(s):	
	☒ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	STACK TESTING ESTABLISHED LIMITS BASED ON MAXIMUM ALLOWABLE EMISSIONS

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Ada County Solid Waste Management	Ada County Landfill	001-00195
4. Brief Project Description:	Tier I operating permit renewal	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	FLARE 2
6.	EU ID Number:	FLARE 2
7.	EU Type:	☐ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #:2009-0009 Date Issued: 9/28/09
8.	Manufacturer:	JOHN ZINC
9.	Model:	ZTOF
10..	Maximum Capacity:	2379 CFM OF LFG
11.	Date of Construction:	2004
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8760 HOURS PER YEAR
23.	Maximum Operation:	8760 HOURS PER YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☐ Operation Hour Limit(s):	
	☒ Production Limit(s):	2,379 CFM OF LFG
	☐ Material Usage Limit(s):	
	☒ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	STACK TESTING ESTABLISHED LIMITS BASED ON MAXIMUM ALLOWABLE EMISSIONS

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
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Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Ada County Solid Waste Management	Ada County Landfill	001-00195
4. Brief Project Description:	Tier I operating permit renewal	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	WOOD CHIPPER
6.	EU ID Number:	WC-01
7.	EU Type:	☐ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #:2009-0009 Date Issued: 9/28/09
8.	Manufacturer:	DIAMON Z MANUFACTURING
9.	Model:	
10..	Maximum Capacity:	45.5 TONS/HOUR
11.	Date of Construction:	2005
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:		
15. Date of Installation:	16. Date of Modification (if any):	
17. Manufacturer and Model Number:		
18. ID(s) of Emission Unit Controlled:		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No	
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)	

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8.1 TONS/HOUR
23.	Maximum Operation:	45.1 TONS/HOUR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	3,300 HOURS/YEAR
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	PERMITTED GENERATOR OPERATING LIMIT

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Ada County Solid Waste Management	Ada County Landfill	001-00195
4. Brief Project Description:	Tier I operating permit renewal	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	POWER SCREEN
6.	EU ID Number:	PS-01
7.	EU Type:	☐ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #:2009-0009 Date Issued: 9/28/09
8.	Manufacturer:	CEC
9.	Model:	
10..	Maximum Capacity:	45.5 TONS/HOUR
11.	Date of Construction:	2005
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8.1 TONS/HOUR
23.	Maximum Operation:	45.1 TONS/HOUR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	3,300 HOURS/YEAR
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	PERMITTED GENERATOR OPERATING LIMIT

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
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Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Ada County Solid Waste Management	Ada County Landfill	001-00195
4. Brief Project Description:	Tier I operating permit renewal	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	WOOD CHIP STORAGE PILE
6.	EU ID Number:	WC-02
7.	EU Type:	☐ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #:2009-0009 Date Issued: 9/28/09
8.	Manufacturer:	
9.	Model:	
10..	Maximum Capacity:	1485 CUBIC YARDS
11.	Date of Construction:	2005
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:		
15. Date of Installation:	16. Date of Modification (if any):	
17. Manufacturer and Model Number:		
18. ID(s) of Emission Unit Controlled:		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No	
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)	

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	9,720 TONS/YEAR (8.1 ton/hour x 1,200 hour/year)
23.	Maximum Operation:	148,830 TONS/YEAR (45.5 ton/hour x 3,300 hour/year

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☐ Operation Hour Limit(s):	
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	

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Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Ada County Solid Waste Management	Ada County Landfill	001-00195
4. Brief Project Description:	Tier I operating permit renewal	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5. Emissions Unit (EU) Name:	PAVED AND UNPAVED ROADS
6. EU ID Number:	
7. EU Type:	☐ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #:2009-0009 Date Issued: 9/28/09
8. Manufacturer:	
9. Model:	
10.. Maximum Capacity:	
11. Date of Construction:	
12. Date of Modification (if any):	
13. Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22. Actual Operation:	11 HOURS PER DAY MON. THROUGH FRI, 10 HOURS SAT.
23. Maximum Operation:	11 HOURS PER DAY MON. THROUGH FRI, 10 HOURS SAT.

REQUESTED LIMITS

24. Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
☒ Operation Hour Limit(s):	11 hours per day Mon. through Fri, 10 hours Sat.
☐ Production Limit(s):	
☐ Material Usage Limit(s):	
☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
☐ Other:	
25. Rationale for Requesting the Limit(s):	NORMAL OPERATING HOURS

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Ada County Solid Waste Management	Ada County Landfill	001-00195
4. Brief Project Description:	Tier I operating permit renewal	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5. Emissions Unit (EU) Name:	LANDFILL OPERATIONS FUGITIVE DUST
6. EU ID Number:	
7. EU Type:	☐ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #:2009-0009 Date Issued: 9/28/09
8. Manufacturer:	
9. Model:	
10.. Maximum Capacity:	
11. Date of Construction:	
12. Date of Modification (if any):	
13. Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22. Actual Operation:	12 HOURS PER DAY MON. THROUGH FRI, 11 HOURS SAT.
23. Maximum Operation:	12 HOURS PER DAY MON. THROUGH FRI, 11 HOURS SAT.

REQUESTED LIMITS

24. Are you requesting any permit limits?	☐ Yes ☒ No (If Yes, indicate all that apply below)
☐ Operation Hour Limit(s):	
☐ Production Limit(s):	
☐ Material Usage Limit(s):	
☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
☐ Other:	
25. Rationale for Requesting the Limit(s):	

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1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Units - Industrial Engine Information **Form EU1**
Revision 8
1/15/10

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	
Ada County Solid Waste Management	Ada County Landfill	
3 Brief Project Description:	Tier I permit renewal	

ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

4. Type of Unit:	☐ New Unit ☐ Unpermitted Existing Unit ☒ Modification to a Unit with Permit #:2009-0009 Date Issued: 9/28/09		
5. Engine Displacement:	18.13 liters (liters per cylinder)	6. Ignition Type:	☒ Compression ☐ Spark
7. Use	☐ Emergency ☒ Non-Emergency		
8. Engine ID Number:	9. Maximum Rated Engine Power:		
GEN 1	_____ Brake Horsepower (bhp)		
10. Construction Date:	11. Manufacturer:	12. Model:	13. Model Year:
2005	Caterpillar	C18 DITA	
14. Date of Modification (if applicable):	15. Serial Number (if available):	16. Control Device (if any):	

FUEL DESCRIPTION AND SPECIFICATIONS

17. Fuel Type	☒ Diesel Fuel (#2) (gal/hr)	☐ Gasoline Fuel (gal/hr)	☐ Natural Gas (cf/hr)	☐ Other Fuels (unit:)
18. Full Load Consumption Rate	39.8			
19. Actual Consumption Rate	20.2			
20. Sulfur Content wt%	0.0015	N/A	N/A	

OPERATING LIMITS & SCHEDULE

21. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):

3,300 hours per year

22. Operating Schedule (hours/day, months/year, etc.):

Up to 11 hours per day

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Units - Industrial Engine Information **Form EU1**
Revision 8
1/15/10

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	
Ada County Solid Waste Management	Ada County Landfill	
3 Brief Project Description:	Tier I permit renewal	

ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

4. Type of Unit:	☐ New Unit ☐ Unpermitted Existing Unit ☒ Modification to a Unit with Permit #:2009-0009 Date Issued: 9/28/09		
5. Engine Displacement:	1.1 (liters per cylinder)	6. Ignition Type:	☒ Compression ☐ Spark
7. Use	☐ Emergency ☒ Non-Emergency		
8. Engine ID Number:	9. Maximum Rated Engine Power:		
GEN 2	_____ Brake Horsepower (bhp)		
10. Construction Date:	11. Manufacturer:	12. Model:	13. Model Year:
2005	Deutz (or similar)	BF4L913	
14. Date of Modification (if applicable):	15. Serial Number (if available):	16. Control Device (if any):	

FUEL DESCRIPTION AND SPECIFICATIONS

17. Fuel Type	☒ Diesel Fuel (#2) (gal/hr)	☐ Gasoline Fuel (gal/hr)	☐ Natural Gas (cf/hr)	☐ Other Fuels (unit:)
18. Full Load Consumption Rate	6.5			
19. Actual Consumption Rate	3.9			
20. Sulfur Content wt%	0.0015	N/A	N/A	

OPERATING LIMITS & SCHEDULE

21. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):

3,300 hours per year

22. Operating Schedule (hours/day, months/year, etc.):

Up to 11 hours per day

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Units - Industrial Engine Information **Form EU1**
Revision 8
1/15/10

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	
Ada County Solid Waste Management	Ada County Landfill	
3 Brief Project Description:	Tier I permit renewal	

ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

4. Type of Unit:	☒ New Unit ☐ Unpermitted Existing Unit ☐ Modification to a Unit with Permit #:2009-0009 Date Issued: 9/28/09		
5. Engine Displacement:	4.4 liters (liters per cylinder)	6. Ignition Type:	☒ Compression ☐ Spark
7. Use	☒ Emergency ☐ Non-Emergency		
8. Engine ID Number:	9. Maximum Rated Engine Power:		
GEN 3	_____ Brake Horsepower (bhp)		
10. Construction Date:	11. Manufacturer:	12. Model:	13. Model Year:
1998	Detroit Diesel	30D560	
14. Date of Modification (if applicable):	15. Serial Number (if available):	16. Control Device (if any):	
	389914		

FUEL DESCRIPTION AND SPECIFICATIONS

17. Fuel Type	☒ Diesel Fuel (#2) (gal/hr)	☐ Gasoline Fuel (gal/hr)	☐ Natural Gas (cf/hr)	☐ Other Fuels (unit:)
18. Full Load Consumption Rate	3.0			
19. Actual Consumption Rate	3.0			
20. Sulfur Content wt%	0.0015	N/A	N/A	

OPERATING LIMITS & SCHEDULE

21. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):

4 hours per day, 2 days per year

22. Operating Schedule (hours/day, months/year, etc.):

4 hours per day, 2 days per year

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
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Emissions Units - Industrial Engine Information **Form EU1**
Revision 8
1/15/10

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	
Ada County Solid Waste Management	Ada County Landfill	
3 Brief Project Description:	Tier I permit renewal	

ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

4. Type of Unit:	☒ New Unit ☐ Unpermitted Existing Unit ☐ Modification to a Unit with Permit #:2009-0009 Date Issued: 9/28/09		
5. Engine Displacement:	0.6 (liters per cylinder)	6. Ignition Type:	☒ Compression ☐ Spark
7. Use	☒ Emergency ☐ Non-Emergency		
8. Engine ID Number:	9. Maximum Rated Engine Power:		
GEN 4	_____ Brake Horsepower (bhp)		
10. Construction Date:	11. Manufacturer:	12. Model:	13. Model Year:
11/2010	John Deere (engine)	4024 HF 285	2010
14. Date of Modification (if applicable):	15. Serial Number (if available):	16. Control Device (if any):	
	2325625 (generator)	Tier III	

FUEL DESCRIPTION AND SPECIFICATIONS

17. Fuel Type	☒ Diesel Fuel (#2) (gal/hr)	☐ Gasoline Fuel (gal/hr)	☐ Natural Gas (cf/hr)	☐ Other Fuels (unit:)
18. Full Load Consumption Rate	4.73			
19. Actual Consumption Rate	4.73			
20. Sulfur Content wt%	0.0015	N/A	N/A	

OPERATING LIMITS & SCHEDULE

21. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):

4 hours per day, 2 days per year

22. Operating Schedule (hours/day, months/year, etc.):

4 hours per day, 2 days per year

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

AIR PERMIT APPLICATION

Revision 6
10/7/09

For each box in the table below, CTRL+click on the blue underlined text for instructions and information.

IDENTIFICATION	
1. Company Name:	2. Facility Name:
Ada County Solid Waste Management	Ada County Landfill
3. Brief Project Description:	Tier I operating permit renewal

APPLICABILITY DETERMINATION	
4. List applicable subparts of the New Source Performance Standards (NSPS) (40 CFR part 60). Examples of NSPS affected emissions units include internal combustion engines, boilers, turbines, etc. The applicant must thoroughly review the list of affected emissions units.	List of applicable subpart(s): 40 CFR 60, Subpart IIII ☐ Not Applicable
5. List applicable subpart(s) of the National Emission Standards for Hazardous Air Pollutants (NESHAP) found in 40 CFR part 61 and 40 CFR part 63. Examples of affected emission units include solvent cleaning operations, industrial cooling towers, paint stripping and miscellaneous surface coating. EPA has a web page dedicated to NESHAP that should be useful to applicants.	List of applicable subpart(s): 40 CFR 63, Subpart ZZZZ ☐ Not Applicable
6. For each subpart identified above, conduct a complete a regulatory analysis using the instructions and referencing the example provided on the following pages. **Note** - Regulatory reviews must be submitted with sufficient detail so that DEQ can verify applicability and document in legal terms why the regulation applies. Regulatory reviews that are submitted with insufficient detail will be determined incomplete.	☐ A detailed regulatory review is provided (Follow instructions and example). ☐ DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date.

IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT 1-877-5PERMIT

It is emphasized that it is the applicant's responsibility to satisfy all technical and regulatory requirements, and that DEQ will help the applicant understand what those requirements are prior to the application being submitted but that DEQ will not perform the required technical or regulatory analysis on the applicant's behalf.

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Version 1, August 2010

Facility Wide Potential to Emit Emission Inventory

Application Template and Instructions

For new stationary sources provide the facility's potential to emit for all NSR Regulated Air Pollutants. The potential to emit provided here must match the emissions rates which are requested to be permitted.

For modifications to existing facilities (including the addition of new emissions units), if the existing facility classification is in question an existing facility wide potential to emit emission inventory will be required to be submitted[1]. Contact DEQ to determine if a facility wide emission inventory for the existing facility is required.

All emissions inventories must be submitted with thorough documentation. The emission inventories will be subjected to technical review. Therefore, prepare your application with sufficient documentation so that the public and DEQ can verify the validity of the emission estimates. **Applications submitted without sufficient documentation are incomplete. Follow the instructions provided on page 2; do not proceed until you have read the instructions.**

Applicants must use the Potential to Emit Summary table provided below.

Table 1. POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS

Emissions Unit	PM	PM-10	PM-2.5	CO	SOx	NOx	VOC
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Point Sources							
Flare 1	6.97	6.97	6.97	3.32	45.90	13.27	20.24
Flare 2	7.19	7.19	7.19	3.43	47.40	13.70	20.90
Generator 1	0.50	0.50	0.49	1.57	0.01	8.84	0.20
Generator 2	0.44	0.44	0.44	1.35	0.002	6.25	0.50
Generator 3	0.0017	0.0017	0.0017	0.024	0.000008	0.0052	0.0019
Generator 4	0.0026	0.0026	0.0026	0.037	0.000013	0.0080	0.0029
Fugitive Sources *{For listed source categories only, see item 3 below in the instructions}*							
Wood Chipper	0.859	0.859	0.859				
Power Screen	0.050	0.050	0.0075				
Wood Chipper Storage Piles	0.017	0.017	0.0025				
Unpaved Roads	45.54	45.54	3.40				
Paved Roads	15.71	15.71	3.86				
Landfill Ops – Dozing	0.58	0.58	0.08				
Landfill Ops - Grading	1.40	1.40	0.07				
Totals	**79.26**	**79.26**	**23.37**	**9.73**	**93.31**	**42.07**	**41.84**

a) NSR Regulated air Pollutants are defined[2] as: Particulate Matter (PM, PM-10, PM-2.5), Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone (VOC), Sulfur Dioxide, all pollutants regulated by NSPS (40 CFR 60) (i.e. TRS, fluoride, sulfuric acid mist) & Class I & Class II Ozone Depleting Substances (40 CFR 82)(i.e. CFC, HCFC, Halon, etc.)

---

[1] The applicant must determine if the existing facility is a major facility. If the facility is an existing PSD major facility and changes are being made to the facility the major modification test must be conducted.

[2] 40 CFR 52.21(b)(50), as incorporated by reference at IDAPA 58.01.01.107.03.d

Applicants are encouraged to call DEQ's Air Quality Permit Hotline (1-877-573-7648) to ask questions as they prepare the application.

Emission Inventory Instructions:

1. Use the same emission unit name throughout the application (i.e. in air pollution control equipment forms and for modeling purposes).

2. The application must **show in detail all calculations** used to develop the PTE summary and include:

   - Electronic copies of any spreadsheets used to estimate emissions. If a spreadsheet is used submit an electronic copy of the spread sheet (i.e. Excel File).
   - Documentation of all calculations conducted by hand (i.e. show all calculations).
   - Clear statements on all assumptions relied upon in estimating emissions.
   - Documentation of the emissions factors used to estimate emissions. If the emissions factor documentation is readily available to DEQ, such as an EPA AP-42 emissions factor, a simple reference to the emissions factor suffices. If the emissions factor documentation is not readily available to DEQ the applicant must submit the documentation with the application; ask DEQ if you are uncertain. **Applications without sufficient documentation are incomplete.** Documentation may consist of manufacturer guarantees, research conducted by trade organizations, published emission factors, and source test results. **If there are multiple factors for a given operation, note why the factor used is the most representative.**
   - Copies of manufacturer guarantees upon which emission inventories are based.
   - The best available emission information (see DEQ's Guidance on Emissions Data Hierarchy).
   - If source tests are used as the basis for emissions estimates the source test report must be submitted. If the source test report is on file with DEQ provide the date of the source test was submitted along with the name of the facility and the emission unit that was tested. Source data from similar emissions units may be considered reliable provided it is clearly described why the sources are similar. Similar sources are those that the applicant has shown serve a similar function, use similar raw materials, and have similar processing rates.

3. Fugitive emissions of NSR regulated air pollutants from the source categories listed below must be included in the emission inventory.

Listed Source Categories for Inclusion of Fugitive Emissions

- Coal cleaning plants (with thermal dryers)
- Kraft pulp mills
- Portland cement plants
- Primary zinc smelters
- Iron and steel mills
- Primary aluminum ore reduction plants
- Primary copper smelters
- Municipal incinerators -250 T/day of refuse
- Hydrofluoric, sulfuric, or nitric acid plants
- Petroleum refineries
- Lime plants
- Phosphate rock processing plants
- Coke oven batteries
- Sulfur recovery plants
- Carbon black plants (furnace process)
- Primary lead smelters
- Fuel conversion plants
- Sintering plants
- Secondary metal production plants
- Chemical process plants (excluding ethanol plants by natural fermentation).
- Fossil-fuel fired boilers totaling more than 250 MMBtu/hr
- Petroleum storage and transfer units with total capacity of 300,000 barrels
- Taconite ore processing plants
- Glass fiber processing plants
- Charcoal production plants
- Fossil fuel-fired steam electric plants greater than 250 MMBtu/hr)
- Categories regulated by NSPS or NESHAP prior to 8/7/80

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Version 1, August 2010

Facility Wide Hazardous Air Pollutant Potential to Emit
Application Template and Instructions

Provide the facility wide potential to emit for all Hazardous Air Pollutants (HAPs). **The potential to emit provided here must match the emissions rates which are requested to be permitted.**

HAPs are pollutants that are required to be regulated under the Clean Air Act. A list of the HAPs may be found by following this link: HAP list; review the list carefully to be sure you have included all listed HAPs.

All emissions inventories must be submitted with thorough documentation. The emission inventories will be subjected to technical review; prepare your application with sufficient documentation so that either the public or DEQ can verify the validity of the emission estimates. **Applications submitted without sufficient documentation are incomplete. Follow the instructions provided on the following page; do not proceed until you have read the instructions.**

Applicants must use the Potential to Emit Summary table provided below. Identify the individual HAP with the highest emissions and total HAP emissions. The potential to emit provided here must match the emissions rates which are requested to be permitted. **All fugitive emissions of HAPs must be included.**

Table X HAP POTENTIAL TO EMIT EMISSIONS SUMMARY

HAP Pollutants	PTE (T/yr)
1,1,2,2-Tetrachloroethane	**0.0102**
1,1,2-Trichloroethane	**0.000727**
1,3-Butadiene	**0.0000559**
1,1-Dichloroethane	**0.0127**
1,1-Dichloroethene	**0.00106**
1,2-Dichloroethane	**0.00221**
Benzene	**0.00937**
Dichloromethane	**0.0662**
Formaldehyde	**0.00238**
Perchloroethylene	**0.0337**
Vinyl Chloride	**0.025**
Total	**0.1636**

* Maximum Individual HAP

Applicants are encouraged to call DEQ's Air Quality Permit Hotline (1-877-573-7648) to ask questions as they prepare the application.

Emission Inventory Instructions:

1. Use the same emission unit name throughout the application (i.e. in air pollution control equipment forms and for modeling purposes).

2. The application must **show in detail all calculations** used to develop the PTE summary and include:

   - Electronic copies of any spreadsheets used to estimate emissions. If a spreadsheet is used submit an electronic copy of the spread sheet (i.e. Excel File).
   - Documentation of all calculations conducted by hand (i.e. show all calculations).
   - Clear statements on all assumptions relied upon in estimating emissions.
   - Documentation of the emissions factors used to estimate emissions. If the emissions factor documentation is readily available to DEQ, such as an EPA AP-42 emissions factor, a simple reference to the emissions factor suffices. If the emissions factor documentation is not readily available to DEQ the applicant must submit the documentation with the application; ask DEQ if you are uncertain. **Applications without sufficient documentation are incomplete.** Documentation may consist of manufacturer guarantees, research conducted by trade organizations, published emission factors, and source test results. **If there are multiple factors for a given operation, note why the factor used is the most representative.**
   - Copies of manufacturer guarantees upon which emission inventories are based.
   - The best available emission information (see DEQ's Guidance on Emissions Data Hierarchy).
   - If source tests are used as the basis for emissions estimates the source test report must be submitted. If the source test report is on file with DEQ provide the date of the source test was submitted along with the name of the facility and the emission unit that was tested. Source data from similar emissions units may be considered reliable provided it is clearly described why the sources are similar. Similar sources are those that the applicant has shown serve a similar function, use similar raw materials, and have similar processing rates.

2. **All fugitive emissions of HAPs must be included[1].**

[1] November 27, 2001 (66 FR 59161), EPA published a rule, "Change to Definition of Major Source," that requires the fugitive emissions of all hazardous air pollutants ("HAPs") listed under section 112(b) of the Act in determining whether the source is a major source.

Appendix C

Actual Emissions

C-1: Ada County Landfill 2010 NMOC Report

CH2M HILL
322 East Front Street
Suite 200
Boise, ID 83702-7359
Tel 208.345.5310
Fax 208.345.5315

CH2MHILL

August 12, 2010

Air Quality Permit Compliance
Department of Environmental Quality
Boise Regional Office
1445 North Orchard
Boise, ID 83709-2239

Subject: Ada County Landfill
Tier 2 NMOC Emissions Report

On behalf of the Ada County Solid Waste Management Department, CH2M HILL has prepared a Non-Methane Organic Compounds (NMOC) Annual Report in accordance with the Tier I Operating Permit (Title V) T1-060050 dated April 13, 2007, for the Ada County Landfill (ACLF). This report presents the most recent landfill emissions testing and rate reporting in accordance with IDAPA 58.01.01.859.05.a.ii and the Tier I Reporting Requirement 3.14.

On April 14, 2010, NMOC testing was performed by CH2M HILL in accordance with the methodology via Modified EPA Method 25C. Three 1-liter samples of landfill gas (LFG) were collected from the header pipe at the flare inlet. Laboratory results reported an NMOC concentration of 297 ppmv as methane averaged over three samples. Analytical results of the NMOC emission rate are included in the laboratory results prepared by Columbia Analytical Services, Inc. (Appendix A).

CH2M HILL converted the laboratory reported NMOC concentration of 297 ppmv as methane to 55.3 ppmv NMOC as hexane (C_6H_{14}). The April 14, 2010, site-specific NMOC emissions rate was calculated to be 4.0 megagrams per year (Mg/yr), as calculated per the methodology in the NSPS 40 CFR 60, Subpart WWW. The April 14, 2010 NMOC emission rate is below the 50 Mg/yr regulatory threshold. The NMOC emissions rate calculation is included in Appendix B.

Sincerely,

CH2M HILL

Michael Wirtz, P.E.
Project Engineer

Attachments:
Appendix A: NMOC Analytical Results
Appendix B: NMOC Mass Emission Rate
cc: Craig Caldwell, P.E./CH2M HILL

Appendix A – NMOC Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Ada County Solid Waste Management**
Client Project ID: **Ada Co. Landfill NMOC / 396486.TM.04** CAS Project ID: P1001337

Total Gaseous Nonmethane Organics (TGNMO) as Methane

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Wade Henton
Sampling Media: 1.0 L Summa Canister(s)
Test Notes:

Date(s) Collected: 4/14/10
Date Received: 4/15/10
Date Analyzed: 4/17/10

Client Sample ID	CAS Sample ID	Canister Dilution Factor	Injection Volume ml(s)	**Result ppmV**	MRL ppmV	Data Qualifier
Flare 1	P1001337-001	1.20	0.50	**240**	1.2	
Flare 2	P1001337-002	1.20	0.50	**350**	1.2	
Flare 3	P1001337-003	1.26	0.50	**300**	1.3	
Method Blank	P100417-MB	1.00	0.50	ND	1.0	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By:_____ Date:_____

Appendix B - NMOC Mass Emission Rate

Non-Methane Organic Compound (NMOC) Mass Emission Rate

$M_{NMOC} = 2 * L_o * R * (e^{-kc} - e^{-kt}) (C_{NMOC}) * (3.6 \times 10^{-9})$

NSPS Subpart WWW: 40 CFR 60.754(a)(1)(ii)

Variable	Value	Description	Basis
M_{NMOC} =	***4.0***	Mass emission rate of NMOC (Mg/yr)	Calculated
L_o =	100	Methane generation potential (m_3 CH_4/ Mg refuse)	EPA AP-42, Section 2.4.4, page 2.4-4 (11/98)
R =	205,926	Average annual refuse acceptance rate (Mg/yr)[1]	EPA AP-42, Section 2.4.4, page 2.4-4 , areas with less than 25 inches/year precipitation (11/98) Waste first placed 1973
k =	0.02	Methane generation constant (yr^{-1})	
t =	33	age of landfill (time since initial refuse placement), (yrs)	
C_{NMOC} =	55	Concentration of NMOC, parts per million by volume as hexane	April 2010 test[2]
c =	0	Time since landfill closure (yrs); c = 0 for active landfills	
3.6×10^{-9} =		Conversion factor, per 40 CFR 60.754(a)(1)(ii)	

Footnote:

[1] Average annual refues accpetance rate for the Hidden Hollow Landfill Cell is calculated from 2005 to 2010. This value does not include anticipated acceptance rates of the new NRC.

[2] NMOC test reported 297 ppmv $CH_{4(methane)}$ ---> x ppmv $C_6H_{14(hexane)}$; x = 55.3 ppmv C_6H_{14}

C-2: Landfill Gas Collection and Control

Actual Landfill Emissions Calculations

C-2 LFG Collection and Control (Worksheet 1)

Given:

Assume actual LFG flow of 2700 scfm

$Q_{CH4\ Max}$ = 2.010E+07 m^3/yr Design maximum; w/ 50% methane content

Uncontrolled Emissions of PM-10

Manufacturer Specifications

CM_{PM10} = 0.042 lb/MMBTU

Qr_{max} = 65,520,000 Maximum flare heat release (BTU/hr); based on design specifications

LHV = 546 Landfill gas lower heating value (BTU/SCF), based on design specifications

Q_{CH4} = 2.010E+07 m^3/yr

7.10E+08 ft^3/yr

Qr_{Total} = 44,226,000 Lower flare heat release (BTU/hr)

CM_{PM10} = 1.86 lb/hr 8.14 tons/yr Combined

AP-42 Emission Factor (Section 2.4, 11/98, Table 2.4-5)

CM_{PM10} = 17 lb/MMdscf

CM_{PM10} = 1.38 lb/hr 6.03 tons/yr Combined

Note: Conservative Engineering Assumption PM10 is assumed to equal PM10 and PM2.5

Actual Landfill Emissions Calculations
C-2 LFG Collection and Control (Worksheet 2)

Given:

$Q_{CH4\ Max}$ = 2.010E+07 m^3/yr Design maximum; w/ 50% methane content

Estimate of NMOC & Other Constituent Concentrations

$Q_P = F * Q_{CH4} * (C_P / 1E+06)$ Eqn 3

Q_P =		Emission rate of pollutant P (m^3/yr)
$Q_{CH4\ Max}$ =	2.010E+07	Methane generation rate at time t (m^3/yr)
C_P =	172.5	Concentration of pollutant P in landfill gas sample, corrected (ppmv)
F =	2.0	Multiplication factor; 1.82 for landfill gas at 55% CH_4; 2.0 for landfill gas at 50% CH_4

Q_P = 6,933 m^3/yr NMOC = 0.47 cfm NMOC Combined Flares

Uncontrolled Mass Emissions Rate

$UM_P = Q_P * (MW_P * 1\ atm) / (8.205E-05\ m3\text{-}atm/gmol\text{-}K * 1000\ g/kg * (273 + T)\ K)$ Eqn 4

UM_P =		Uncontrolled mass emission rate of pollutant P (kg/yr)
Q_P =	6,933	Emission rate of pollutant P (m^3/yr)
MW_P =	86.18	Molecular weight of pollutant P; NMOC = hexane, MW =86.18 (g/gmol)
T =	20	Temperature of landfill gas (C); default 25 C.

UM_P = 24,853 kg/yr NMOC = 6.24 lb/hr NMOC Combined Flares

27.4 Tons/yr NMOC

Controlled Emissions of Methane, NMOC and Speciated Emissions

$CM_P = UM_P * (1- n_{col}) + UM_P * n_{col} * (1 - n_{cnt})$ Eqn 5

CM_P =		Controlled mass emissions of pollutant P (kg/yr)
UM_P =		Uncontrolled mass emissions of pollutant P (kg/yr); use Eqn 4
n_{col} =	85.0%	Gas collection system control efficiency; default 75% = 0.75
n_{cnt} =		Emission control device control efficiency

CM_P = *Calculated values given in NMOC & TAPS emissions table*

Controlled Emissions of Carbon Dioxide and Sulfur Dioxide

Carbon Dioxide Emissions

$CM_{CO2} = UM_{CO2} + UM_{CH4} * n_{col} * 2.75$ Eqn 6

CM_{CO2} =		Controlled mass emissions of carbon dioxide (kg/yr)
UM_{CO2} =	3.677E+07	Uncontrolled mass emissions of carbon dioxide (kg/yr); Design Maximum value
$UM_{CH4\ Max}$ =	1.340E+07	Uncontrolled mass emissions of methane (kg/yr); Design maximum value

n_{col} = 85.0% Gas collection system control efficiency; default 75% = 0.75

CM_{CO2} = 68,104,748 kg/yr CO_2 = 17,103.93 lb/hr NMOC Combined Flares
75,051 Tons/yr CO_2

If site-specific total reduced sulfur compound data is available --

Eqn 7

$CM_{SO2} = UM_S * n_{col} * 2.0$

CM_{SO2} = Controlled mass emissions of sulfur dioxide (kg/yr)
UM_S = Uncontrolled mass emissions of reduced sulfur compounds (kg/yr); use Eqn 3 & 4
n_{col} = 75% Gas collection system control efficiency; default 75% = 0.75

Sulfur Dioxide Emissions

If site-specific total reduced sulfur compound data is not available --

$C_S = \text{Sigma}\ (C_P * S_P)$ Eqn 8

C_S = 46.9 Concentration of total reduced sulfur compounds (ppmv as S); default value 46.9 ppmv.
C_P = NA Concentration of each reduced sulfur compound (ppmv)
S_P = NA No. of moles of S produced from combustion of each reduced sulfur compound
F = 2.0 Multiplication factor; 1.82 for landfill gas at 55% CH_4; 2.0 for landfill gas at 50% CH_4
$Q_{CH4\ Max}$ = 2.010E+07 Methane generation rate at time t (m^3/yr)
MW_S = 32.06 Molecular weight of sulfur (g/gmol)

$Q_S = F * Q_{CH4} * (C_S / 1E+06)$ Eqn 3

Q_S = 1,885 ppmv S, sulfur

$UM_S = Q_S * (MW_S * 1\ \text{atm}) / (8.205E\text{-}05\ \text{m3-atm/gmol-K} * 1000\ \text{g/kg} * (273 + T)\ \text{K})$ Eqn 4

UM_S = 2,514 Uncontrolled mass emission rate of sulfur (kg/yr)

$CM_{SO2} = UM_S * n_{col} * 2.0$ Eqn 7

CM_{SO2} = Controlled mass emissions of sulfur dioxide (kg/yr)
UM_S = 2,514 Uncontrolled mass emissions of reduced sulfur compounds (kg/yr); use Eqn 3 & 4
n_{col} = 85% Gas collection system control efficiency; default 75% = 0.75

CM_{SO2} = 4,273 kg/yr SO_2 Combined Flares
4.7 Tons/yr SO_2 = 1.08 lb/hr SO_2 Existing PTE

Controlled Emissions of Hydrochloric Acid

$C_{Cl} = \text{Sigma}\ (C_P * Cl_P)$ Eqn 9

C_{Cl} = 42.0 Concentration of total chloride (ppmv as Cl^-); default value 42.0 ppmv.
C_P = NA Concentration of each chlorinated compound (ppmv)
Cl_P = NA No. of moles of Cl^- produced from combustion of each reduced sulfur compound
F = 2.0 Multiplication factor; 1.82 for landfill gas at 55% CH_4; 2.0 for landfill gas at 50% CH_4

$Q_{CH4\ Max}$ = 2.010E+07 Methane generation rate at time t (m^3/yr)
MW_{Cl} = 35.453 Molecular weight of chloride, Cl^- (g/gmol)

$Q_{Cl} = F * Q_{CH4} * (C_{Cl} / 1E+06)$ Eqn 3

Q_{Cl} = 1,688 ppmv Chloride, Cl^-

$UM_S = Q_S * (MW_S * 1\ atm) / (8.205E-05\ m3\text{-}atm/gmol\text{-}K * 1000\ g/kg * (273 + T)\ K)$ Eqn 4

UM_{Cl} = 2,489 Uncontrolled mass emission rate of chlorine, Cl^- (kg/yr)

$CM_{HCl} = UM_{Cl} * n_{col} * 1.03 * n_{cnt}$ Eqn 10

CM_{HCl} = Controlled mass emissions of HCl (kg/yr)
UM_{Cl} = 2,489 Uncontrolled mass emissions of chlorinated compounds (kg/yr); use Eqn 3 & 4
n_{col} = 85% Gas collection system control efficiency; default 75% = 0.75
n_{cnt} = 99% Emission control device control efficiency (for flare, halogenated species, high-end of range)

CM_{HCl} = 2,158 kg/yr HCl Combined Flares
2.4 Tons/yr HCl = 0.54 lb/hr HCL

Uncontrolled Emissions of Nitrogen Oxides (NOx) and Carbon Monoxide

Manufacturer Specifications
CM_{NOx} = 0.06 lb/MMBTU @1,600°F
0.08 lb/MMBTU @1,800°F

CM_{CO} = 0.02 lb/MMBTU @1,600°F
0.015 lb/MMBTU @1,800°F

Qr_{max} = 65,520,000 Maximum flare heat release (BTU/hr); based on design specifications

LHV = 546 Landfill gas lower heating value (BTU/SCF), based on design specifications
$Q_{CH4\ Max}$ = 2.01E+07 m^3/yr
7.10E+08 ft3/yr 1.35E+03
Q_{rTotal} = 44,226,000 Total flare heat release (BTU/hr)

CM_{NOx} = 2.65 lb/hr @1,600° F 11.62 tons/yr Combined
3.54 lb/hr @1,800° F 15.50 tons/yr Combined

CM_{CO} = 0.88 lb/hr @1,600° F 3.87 tons/yr Combined
0.66 lb/hr @1,800° F 2.91 tons/yr Combined

Landfill Emissions Calculations - NMOC & TAP Emissions
C-2 LFG Collection and Control (Worksheet 3)

Note: Values already corrected for air infiltration
Uncontrolled Pollutant Concentrations (AP-42 Table 2.4-1, 11/98)

Year: 2011
$Q_{CH4\ Max}$ = 2.010E+07 m^3/yr Design maximum for all pollutants except H2S and S02 (Existing Permit Conditions)
$Q_{CH4\ Max}$ = 2.010E+07 m^3/yr Design maximum for H2S and SO2
Collection system efficiency: 85.0%
Landfill Temp: 20 C

Pollutant	CAS No.	MW	Concentration in Landfill Gas	Landfill Uncontrolled Emission Rates - No Flare				Flare Emissions (Emissions After Collection and Control)			IDAPA 58.01.01.585/586 Standards			Flare - Controlled	Flare Control Efficiency
				Volume	Mass - Annual		Mass - Hourly				EL	AAC	AACC		
		(g/gmol)	(ppmv)	(m^3/yr)	(kg/yr)	(lb/yr)	(lb/hr)	(kg/yr)	(lb/yr)	(lb/hr)	(lb/hr)	(mg/m^3)	(ug/m^3)		
1,1,1-Trichloroethane	71-55-6	133.41	0.48	1.93E+01	1.07E+02	2.36E+02	2.69E-02	1.82E+00	4.01E+00	4.58E-04	127	95.5		Below	98.0%
1,1,2,2-Tetrachloroethane	79-34-5	167.85	1.11	4.46E+01	3.11E+02	6.87E+02	7.84E-02	5.30E+00	1.17E+01	1.33E-03	1.10E-05		1.70E-02	Exceeds	98.0%
1,1,2-Trichloroethane	79-00-5	133.41	0.10	4.02E+00	2.23E+01	4.92E+01	5.61E-03	3.79E-01	8.36E-01	9.54E-05	***4.20E-04***	NA	NA	Below	98.0%
1,1-Dichloroethane (ethylidene dichloride)	75-34-3	98.97	2.35	9.44E+01	3.89E+02	8.57E+02	9.79E-02	6.61E+00	1.46E+01	1.66E-03	2.50E-04		3.80E-02	Exceeds	98.0%
1,1-Dichloroethene (vinylidene chloride)	75-35-4	96.94	0.2	8.04E+00	3.24E+01	7.15E+01	8.16E-03	5.51E-01	1.21E+00	1.39E-04	1.30E-04		2.00E-02	Exceeds	98.0%
1,2-Dichloroethane (ethylene dichloride)	107-06-2	98.96	0.41	1.65E+01	6.78E+01	1.50E+02	1.71E-02	1.15E+00	2.54E+00	2.90E-04	2.50E-04		3.80E-02	Exceeds	98.0%
1,2-Dichloropropane (propylene dichloride)	78-87-5	112.99	0.18	7.23E+00	3.40E+01	7.50E+01	8.56E-03	5.78E-01	1.27E+00	1.45E-04	23.133	17.35		Below	98.0%
2-Propanol (isopropyl alcohol)	67-63-0	60.11	50.1	2.01E+03	5.03E+03	1.11E+04	1.27E+00	1.28E+01	2.83E+01	3.23E-03	6.53E+01	49		Below	99.7%
Acetone	67-64-1	58.08	7.01	2.82E+02	6.81E+02	1.50E+03	1.71E-01	1.74E+00	3.83E+00	4.37E-04	119	89		Below	99.7%
Acrylonitrile	107-13-1	53.06	6.33	2.54E+02	5.61E+02	1.24E+03	1.41E-01	1.43E+00	3.16E+00	3.60E-04	9.80E-05		1.50E-02	Exceeds	99.7%
Bromodichloromethane	75-27-4	163.83	3.13	1.26E+02	8.57E+02	1.89E+03	2.16E-01	1.46E+01	3.21E+01	3.67E-03	NA	NA	NA		98.0%
Butane	106-97-8	58.12	5.03	2.02E+02	4.89E+02	1.08E+03	1.23E-01	1.25E+00	2.75E+00	3.14E-04	NA	NA	NA		99.7%
Carbon disulfide	75-15-0	76.13	0.58	2.33E+01	7.38E+01	1.63E+02	1.86E-02	1.88E-01	4.15E-01	4.74E-05	2	1.5		Below	99.7%
Carbon tetrachloride	56-23-5	153.84	0.004	1.61E-01	1.03E+00	2.27E+00	2.59E-04	1.75E-02	3.86E-02	4.40E-06	4.40E-04		6.70E-02	Below	98.0%
Carbonyl sulfide	463-58-1	60.07	0.49	1.97E+01	4.92E+01	1.08E+02	1.24E-02	3.35E-01	7.38E-01	8.42E-05	0.027	0.02		Below	99.2%
Chlorobenzene	108-90-7	112.56	0.25	1.00E+01	4.70E+01	1.04E+02	1.18E-02	8.00E-01	1.76E+00	2.01E-04	23.3	17.5		Below	98.0%
Chlorodifluoromethane	75-45-6	86.47	1.3	5.22E+01	1.88E+02	4.14E+02	4.73E-02	3.19E+00	7.04E+00	8.04E-04	NA	NA	NA		98.0%
Chloroethane (ethyl chloride)	75-00-3	64.52	1.25	5.02E+01	1.35E+02	2.97E+02	3.39E-02	2.29E+00	5.05E+00	5.77E-04	176	132		Below	98.0%
Chloroform	67-66-3	119.39	0.03	1.21E+00	5.99E+00	1.32E+01	1.51E-03	1.02E-01	2.24E-01	2.56E-05	2.80E-04		4.30E-02	Below	98.0%
Chloromethane (methylchloride)	74-87-3	50.49	1.21	4.86E+01	1.02E+02	2.25E+02	2.57E-02	1.74E+00	3.83E+00	4.37E-04	NA	NA	NA		98.0%
Dichlorobenzene	95-50-1	147	0.21	8.44E+00	5.16E+01	1.14E+02	1.30E-02	8.77E-01	1.93E+00	2.21E-04	20	15		Below	98.0%
Dichlorodifluoromethane	75-71-8	120.91	15.7	6.31E+02	3.17E+03	7.00E+03	7.99E-01	5.39E+01	1.19E+02	1.36E-02	NA	NA	NA		98.0%
Dichlorofluoromethane	75-43-4	102.92	2.62	1.05E+02	4.51E+02	9.94E+02	1.13E-01	7.66E+00	1.69E+01	1.93E-03	2.67	2		Below	98.0%
Dichloromethane (methylene chloride)	75-09-2	84.94	14.3	5.75E+02	2.03E+03	4.48E+03	5.11E-01	3.45E+01	7.61E+01	8.69E-03	1.60E-03		2.40E-01	Exceeds	98.0%
Dimethyl sulfide (methyl sulfide)	75-18-3	62.13	7.82	3.14E+02	8.12E+02	1.79E+03	2.04E-01	5.52E+00	1.22E+01	1.39E-03	NA	NA	NA		99.2%
Ethane	74-84-0	30.07	889	3.57E+04	4.47E+04	9.85E+04	1.12E+01	1.14E+02	2.51E+02	2.87E-02	NA	NA	NA		99.7%
Ethanol	64-17-5	46.08	27.2	1.09E+03	2.10E+03	4.62E+03	5.27E-01	5.34E+00	1.18E+01	1.34E-03	125	94		Below	99.7%
Ethyl mercaptan (ethanethiol)	75-08-1	62.13	2.28	9.16E+01	2.37E+02	5.22E+02	5.96E-02	6.04E-01	1.33E+00	1.52E-04	0.067	0.05		Below	99.7%
Ethylbenzene	100-41-4	106.16	4.61	1.85E+02	8.18E+02	1.80E+03	2.06E-01	2.09E+00	4.60E+00	5.25E-04	29	21.75		Below	99.7%
Ethylene dibromide	106-93-4	187.88	0.001	4.02E-02	3.14E-01	6.92E-01	7.90E-05	5.34E-03	1.18E-02	1.34E-06	3.00E-05		4.50E-03	Below	98.0%
Fluorotrichloromethane	75-69-4	137.38	0.76	3.05E+01	1.75E+02	3.85E+02	4.39E-02	2.97E+00	6.54E+00	7.47E-04	NA	NA	NA		98.0%
Hexane	110-54-3	86.18	6.57	2.64E+02	9.47E+02	2.09E+03	2.38E-01	2.41E+00	5.32E+00	6.07E-04	12	9		Below	99.7%
Hydrogen sulfide	7783-06-4	34.08	453.5	1.82E+04	2.58E+04	5.70E+04	6.50E+00	1.76E+02	4.56E+02	5.20E-02	0.933	0.7		Below	99.2%
Mercury (total)	7439-97-6	200.61	0.000292	1.17E-02	9.79E-02	2.16E-01	2.46E-05	8.32E-02	1.84E-01	2.09E-05	0.007	0.005		Below	0.0%
Methyl ethyl ketone (MEK)	78-93-3	72.11	7.09	2.85E+02	8.55E+02	1.88E+03	2.15E-01	2.18E+00	4.80E+00	5.49E-04	39.3	29.5		Below	99.7%
Methyl isobutyl ketone (MIBK)	108-10-1	100.16	1.87	7.52E+01	3.13E+02	6.90E+02	7.88E-02	7.98E-01	1.76E+00	2.01E-04	13.7	10.25		Below	99.7%
Methyl mercaptan	74-93-1	48.11	2.49	1.00E+02	2.00E+02	4.42E+02	5.04E-02	5.11E-01	1.13E+00	1.29E-04	0.033	0.025		Below	99.7%
Pentane	109-66-0	72.15	3.29	1.32E+02	3.97E+02	8.75E+02	9.99E-02	1.01E+00	2.23E+00	2.55E-04	118	88.5		Below	99.7%
Perchloroethylene (tetrachloroethylene)	127-18-4	165.83	3.73	1.50E+02	1.03E+03	2.28E+03	2.60E-01	1.76E+01	3.88E+01	4.42E-03	1.30E-02		2.10E+00	Below	98.0%
Propane	74-98-6	44.09	11.1	4.46E+02	8.18E+02	1.80E+03	2.06E-01	2.09E+00	4.60E+00	5.25E-04	NA	NA	NA		99.7%
trans-1,2-Dichloroethene	540-59-0	96.94	2.84	1.14E+02	4.60E+02	1.01E+03	1.16E-01	7.82E+00	1.72E+01	1.97E-03	52.7	39.5		Below	98.0%
Trichoroethylene	79-01-6	131.4	2.82	1.13E+02	6.19E+02	1.37E+03	1.56E-01	1.05E+01	2.32E+01	2.65E-03	17.93	13.45		Below	98.0%
Vinyl chloride	75-01-4	62.5	7.34	2.95E+02	7.67E+02	1.69E+03	1.93E-01	1.30E+01	2.87E+01	3.28E-03	9.40E-04		1.40E-01	Exceeds	98.0%
Xylenes	1330-20-7	106.16	12.1	4.86E+02	2.15E+03	4.73E+03	5.40E-01	5.48E+00	1.21E+01	1.38E-03	29	21.75		Below	99.7%
Carbon monoxide	630-08-0	28.01	141	5.67E+03	6.60E+03	1.46E+04	1.66E+00	2.41E+04	5.32E+04	6.07E+00	NA	NA	NA		12,000

Codisposal Pollutant Concentrations (AP-42 Table 2.4-2, 11/98)

Pollutant	CAS No.	MW	Concentration	Uncontrolled		Uncontrolled		Flare	Flare		IDAPA 58.01.01.585/586 Standards			Total - Controlled	Flare
		(g/gmol)	(ppmv)	Volume Emission Rate Uncontrolled (m^3/yr)	Mass Emission Rate - Uncontrolled (kg/yr)	Mass Emission Rate - Annual (lb/yr)	Mass Emission Rate - Hourly Avg (lb/hr)	Mass Emission Rate - Controlled (kg/yr)	Mass Emission Rate - Controlled (lb/yr)	Mass Emission Rate - Hourly Avg (lb/hr)	EL (lb/hr)	AAC (mg/m^3)	AACC (ug/m^3)	Exceeds EL?	
Benzene															
Co-disposal	71-43-2	78.11	11.1	4.46E+02	1.45E+03	3.20E+03	3.65E-01	3.70E+00	8.15E+00	9.30E-04	8.00E-04		1.20E-01	Exceeds	99.7%
No or unknown co-disposal	71-43-2	78.11	1.91	7.68E+01	2.49E+02	5.50E+02	6.28E-02	6.36E-01	1.40E+00	1.60E-04	8.00E-04		1.20E-01	Below	99.7%
NMOC (as hexane)															
Co-disposal		86.18	2,420	9.73E+04	3.49E+05	7.69E+05	8.77E+01	2.37E+03	5.23E+03	5.97E-01	NA	NA	NA		99.2%
No or unknown co-disposal		86.18	595	2.39E+04	8.57E+04	1.89E+05	2.16E+01	5.83E+02	1.29E+03	1.47E-01	NA	NA	NA		99.2%
Regulatory default		86.18	4,000	1.61E+05	5.76E+05	1.27E+06	1.45E+02	3.92E+03	8.64E+03	9.86E-01	NA	NA	NA		99.2%
Site-Specific Value		86.18	172.5	6.93E+03	2.49E+04	5.48E+04	6.25E+00	2.11E+04	4.66E+04	5.32E+00	NA	NA	NA		
Toluene															
Co-disposal	108-88-3	92.13	165	6.63E+03	2.54E+04	5.60E+04	6.40E+00	6.48E+01	1.43E+02	1.63E-02	25	18.75		Below	99.7%
No or unknown co-disposal	108-88-3	92.13	39.3	1.58E+03	6.05E+03	1.33E+04	1.52E+00	1.54E+01	3.40E+01	3.88E-03	25	18.75		Below	99.7%

Notes:
1. 1,1,2-Trichloroethane emissions calculated by LANDGEM but not in AP-42 listing (Table 2.4-1, 11/98)
2. Carbon monoxide emissions from flare: 12,000kg/10^6 dscm CH_4

Landfill Emissions Calculations
C-2 LFG Collection and Control (Worksheet 4)

Based on Design Maximum rates

	Flare - Controlled		Flare1 - Controlled		Flare 2- C
	(Tons/yr)	(lb/hr)	(Tons/yr)	(lb/hr)	(Tons/yr)
Sulfur Dioxide	**53.6**	**12.24**	**26.38**	**6.02**	**27.24**
Nitrogen Oxides	**15.50**	**3.54**	**7.62**	**1.74**	**7.87**
Carbon Monoxide	**3.87**	**0.88**	**1.91**	**0.44**	**1.97**
PM10	**8.14**	**1.86**	**4.00**	**0.91**	**4.13**

		Flare - Controlled		Flare1 - Controlled		Flare 2- C
HAP/VOC		(Tons/yr)	(lb/hr)	(Tons/yr)	(lb/hr)	(Tons/yr)
HAP	1,1,1-Trichloroethane	2.01E-03	4.58E-04	9.87E-04	2.25E-04	1.02E-03
HAP/VOC	1,1,2,2-Tetrachloroethane	5.84E-03	1.33E-03	2.87E-03	6.56E-04	2.97E-03
HAP/VOC	1,1,2-Trichloroethane	4.18E-04	9.54E-05	2.06E-04	4.69E-05	2.12E-04
HAP/VOC	1,1-Dichloroethane (ethylidene dichloride)	7.29E-03	1.66E-03	3.58E-03	8.18E-04	3.70E-03
HAP/VOC	1,1-Dichloroethene (vinylidene chloride)	6.07E-04	1.39E-04	2.99E-04	6.82E-05	3.09E-04
HAP/VOC	1,2-Dichloroethane (ethylene dichloride)	1.27E-03	2.90E-04	6.25E-04	1.43E-04	6.46E-04
HAP/VOC	1,2-Dichloropropane (propylene dichloride)	6.37E-04	1.45E-04	3.13E-04	7.16E-05	3.24E-04
VOC	2-Propanol (isopropyl alcohol)	1.42E-02	3.23E-03	6.96E-03	1.59E-03	7.19E-03
*	Acetone	1.91E-03	4.37E-04	9.41E-04	2.15E-04	9.72E-04
HAP/VOC	Acrylonitrile	1.58E-03	3.60E-04	7.76E-04	1.77E-04	8.02E-04
VOC	Bromodichloromethane	1.61E-02	3.67E-03	7.90E-03	1.80E-03	8.16E-03
VOC	Butane	1.37E-03	3.14E-04	6.76E-04	1.54E-04	6.98E-04
HAP/VOC	Carbon disulfide	2.07E-04	4.74E-05	1.02E-04	2.33E-05	1.05E-04
HAP/VOC	Carbon tetrachloride	1.93E-05	4.40E-06	9.48E-06	2.17E-06	9.79E-06
HAP/VOC	Carbonyl sulfide	3.69E-04	8.42E-05	1.81E-04	4.14E-05	1.87E-04
HAP/VOC	Chlorobenzene	8.82E-04	2.01E-04	4.34E-04	9.90E-05	4.48E-04
VOC	Chlorodifluoromethane	3.52E-03	8.04E-04	1.73E-03	3.96E-04	1.79E-03
HAP/VOC	Chloroethane (ethyl chloride)	2.53E-03	5.77E-04	1.24E-03	2.84E-04	1.28E-03
HAP/VOC	Chloroform	1.12E-04	2.56E-05	5.52E-05	1.26E-05	5.70E-05
HAP/VOC	Chloromethane (methylchloride)	1.91E-03	4.37E-04	9.42E-04	2.15E-04	9.72E-04
HAP/VOC	Dichlorobenzene	9.67E-04	2.21E-04	4.76E-04	1.09E-04	4.91E-04
VOC	Dichlorodifluoromethane	5.95E-02	1.36E-02	2.93E-02	6.68E-03	3.02E-02
VOC	Dichlorofluoromethane	8.45E-03	1.93E-03	4.16E-03	9.49E-04	4.29E-03
HAP	Dichloromethane (methylene chloride)	3.81E-02	8.69E-03	1.87E-02	4.27E-03	1.93E-02
VOC	Dimethyl sulfide (methyl sulfide)	6.09E-03	1.39E-03	3.00E-03	6.84E-04	3.09E-03
VOC	Ethane	1.26E-01	2.87E-02	6.18E-02	1.41E-02	6.38E-02
VOC	Ethanol	5.89E-03	1.34E-03	2.90E-03	6.62E-04	2.99E-03
VOC	Ethyl mercaptan (ethanethiol)	6.66E-04	1.52E-04	3.27E-04	7.48E-05	3.38E-04
HAP/VOC	Ethylbenzene	2.30E-03	5.25E-04	1.13E-03	2.58E-04	1.17E-03
HAP/VOC	Ethylene dibromide	5.89E-06	1.34E-06	2.90E-06	6.61E-07	2.99E-06
VOC	Fluorotrichloromethane	3.27E-03	7.47E-04	1.61E-03	3.67E-04	1.66E-03
HAP/VOC	Hexane	2.66E-03	6.07E-04	1.31E-03	2.99E-04	1.35E-03
*	Hydrogen sulfide	2.28E-01	5.20E-02	1.12E-01	2.56E-02	1.16E-01
HAP	Mercury (total)	9.18E-05	2.09E-05	4.51E-05	1.03E-05	4.66E-05
HAP/VOC	Methyl ethyl ketone (MEK)	2.40E-03	5.49E-04	1.18E-03	2.70E-04	1.22E-03
HAP/VOC	Methyl isobutyl ketone (MIBK)	8.80E-04	2.01E-04	4.33E-04	9.89E-05	4.47E-04
VOC	Methyl mercaptan	5.63E-04	1.29E-04	2.77E-04	6.32E-05	2.86E-04
VOC	Pentane	1.12E-03	2.55E-04	5.49E-04	1.25E-04	5.67E-04
HAP/VOC	Perchloroethylene (tetrachloroethylene)	1.94E-02	4.42E-03	9.53E-03	2.18E-03	9.84E-03
VOC	Propane	2.30E-03	5.25E-04	1.13E-03	2.58E-04	1.17E-03
*	trans-1,2-Dichloroethene	8.62E-03	1.97E-03	4.24E-03	9.69E-04	4.38E-03
HAP/VOC	Trichoroethylene	1.16E-02	2.65E-03	5.71E-03	1.30E-03	5.90E-03
HAP/VOC	Vinyl chloride	1.44E-02	3.28E-03	7.07E-03	1.61E-03	7.30E-03
HAP/VOC	Xylenes	6.04E-03	1.38E-03	2.97E-03	6.78E-04	3.07E-03
HAP	Hydrochloric Acid	2.38E+00	5.43E-01	1.17E+00	2.67E-01	1.21E+00
HAP/VOC	Benzene					
	No or unknown co-disposal	7.01E-04	1.60E-04	3.45E-04	7.87E-05	3.56E-04
VOC	NMOC (as hexane)					
	Site-Specific Value	2.33E+01	5.32E+00	1.15E+01	2.62E+00	1.18E+01
HAP/VOC	Toluene					
	No or unknown co-disposal	1.70E-02	3.88E-03	8.37E-03	1.91E-03	8.64E-03
	Total TAPS	**2.79**	**0.64**	1.37E+00	3.13E-01	1.42E+00
	Total HAPS	**2.48**	**0.57**	1.22E+00	2.79E-01	1.26E+00
	Total VOCS	**23.64**	**5.40**	1.16E+01	2.65E+00	1.20E+01

	Flare 1		**Flare 2**	
	Tons/yr	**lb/hr**	**Tons/yr**	**lb/hr**
Total TAPS	**1.37**	**0.31**	**1.42**	**0.32**
Total HAPS	**1.22**	**0.28**	**1.26**	**0.29**
Total VOCS	**11.63**	**2.655**	**12.01**	**2.741**

Notes:
* Not classified as either HAP or VOC
1. 1,1,2-Trichloroethane emissions calculated by LANDGEM but not in AP-42 listing (Table 2.4-1, 11/98)

H2S Conversion from lb/hr H2S to lb/hr SO2

C-2 LFG Collection and Control (Worksheet 5)

Assumptions:

34	MW of H2S
32	MW of Sulfur
64	MW of SO2
6.50E+00	lb/hr H2S

Assume 100% H2S conversion for SO2

$CM_{SO2} = UM_S * n_{col} * 2.0$ Eqn 7

6.12	lb/hr S
0.19	lb-mol S
12.24	lb/hr SO2

CM_{SO2} = Controlled mass emissions of sulfur dioxide (lb/hr)

UM_S = 6.12 lb/hr S

n_{col} = 2 Gas collection system control efficiency

CM_{SO2} = 12.24 lb/hr SO_2 Combined Flares

53.6 Tons/yr SO_2

Current SO2 Limits:

1.87	lb/hr SO2 Combined Flares
0.92	lb/hr SO2 Flare 1
0.95	lb/hr SO2 Flare 2

SO2 Net Increase:

10.37	lb/hr SO2 Combined Flares
5.102	lb/hr SO2 Flare 1
5.268	lb/hr SO2 Flare 2

SO2 Total Flares (facility wide modeling)

12.24	lb/hr SO2 Combined Flares	53.61	Ton/yr SO2 Combined Flares
6.022	lb/hr SO2 Flare 1	26.38	Ton/yr SO2 Flare 1
6.218	lb/hr SO2 Flare 2	27.24	Ton/yr SO2 Flare 2

C-3: Wood Chipper Diesel Engine Generator (GEN 1)

Actual Emission Calculations

ACLF - Wood Chipper Diesel Engine Emissions (Gen 1)

Emission Point No.	**SC-E-1**	
Model No.	**CAT C18**	
Engine Power Rating (bhp)	650	
Fuel Type	Distillate #2	
- maximum sulfur content	0.0015%	Ultra low sulfur fuel
Maximum Firing Rate (gals/hr)	38.0	
Maximum Heat Input Rating (Btu/hr)	5,320,000	
(hp)	2,090	*Large Engine*
Maximum Hours of Operation	827	
Maximum Firing Rate (gals/yr)	31,426	
Heat Capacity of Fuel (Btu/gal)	140,000	

			Uncontrolled Potential to Emit		
Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1]		0.0697	0.37	307	0.15
Total Particulate Matter ($PM_{2.5}$)[2]		0.0556	0.30	245	0.12
Particulate Matter (PM_{10})[3]		0.0573	0.30	252	0.13
Sulfur Oxides (SO_2)[4]		0.00152	0.0081	6.67	0.003
Nitrogen Oxides (NOx)[5]			**5.36**	4,433	2.22
Carbon Monoxide (CO)[5]			**0.95**	786	0.39
HC as VOC[5]			**0.12**	99	0.05

			Uncontrolled Potential to Emit					
	CAS Number	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**	**HAP**
Benzene	71-43-2	7.76E-04	4.13E-03	3.41E+00	1.71E-03	8.00E-04	**Exceeds**	HAP
Formaldehyde	50-00-0	7.89E-05	4.20E-04	3.47E-01	1.74E-04	5.10E-04	Below	HAP
Naphthalene	91-20-3	1.30E-04	6.92E-04	5.72E-01	2.86E-04	3.33E+00	Below	HAP
Toluene	108-88-3	2.81E-04	1.49E-03	1.24E+00	6.18E-04	2.50E+01	Below	HAP
o-Xylenes	1330-20-7	1.93E-04	1.03E-03	8.49E-01	4.25E-04	2.90E+01	Below	HAP
Acetaldehyde	75-07-0	2.52E-05	1.34E-04	1.11E-01	5.54E-05	3.00E-03	Below	HAP
Acrolein	107-02-8	7.88E-06	4.19E-05	3.47E-02	1.73E-05	1.70E-02	Below	HAP
Acenaphthene	83-32-9	4.68E-06	2.49E-05	2.06E-02	1.03E-05	#N/A	#N/A	
Acenaphthylene	203-96-8	9.23E-06	4.91E-05	4.06E-02	2.03E-05	#N/A	#N/A	
Anthracene	120-12-7	1.23E-06	6.54E-06	5.41E-03	2.71E-06	#N/A	#N/A	
Benz(a)anthracene	56-55-3	6.22E-07	3.31E-06	2.74E-03	1.37E-06	#N/A	#N/A	
Benzo(b)fluoranthene	205-99-2	1.11E-06	5.91E-06	4.88E-03	2.44E-06	#N/A	#N/A	
Benzo(k)fluoranthene	205-82-3	2.18E-07	1.16E-06	9.59E-04	4.80E-07	#N/A	#N/A	
Benzo(g,h,I)perylene	191-24-2	5.56E-07	2.96E-06	2.45E-03	1.22E-06	#N/A	#N/A	
Chrysene	218-01-9	1.53E-06	8.14E-06	6.73E-03	3.37E-06	#N/A	#N/A	
Dibenzo(a,h)anthracene	53-70-3	3.46E-07	1.84E-06	1.52E-03	7.61E-07	#N/A	#N/A	
Indeno(1,2,3-cd)pyrene	193-39-5	4.14E-07	2.20E-06	1.82E-03	9.11E-07	#N/A	#N/A	
Benzo(a)pyrene	50-32-8	2.57E-07	1.37E-06	1.13E-03	5.65E-07	#N/A	#N/A	
Total PAH			2.69E-05	2.22E-02	1.11E-05	2.00E-06	**Exceeds**	
Fluoroanthene	206-44-0	4.03E-06	2.14E-05	1.77E-02	8.87E-06	#N/A	#N/A	
Fluorene	86-73-7	1.28E-05	6.81E-05	5.63E-02	2.82E-05	#N/A	#N/A	
Phenanthrene	85-01-8	4.08E-05	2.17E-04	1.80E-01	8.98E-05	#N/A	#N/A	
Pyrene	129-00-0	3.71E-06	1.97E-05	1.63E-02	8.16E-06	#N/A	#N/A	
Propylene	115-07-1	2.79E-03	1.48E-02	1.23E+01	6.14E-03	#N/A	#N/A	
Total HAPS			**7.94E-03**		**3.28E-03**			

[1] Total PM emission factor (AP-42, Table 3.4-2, 10/96)

[2] Total $PM_{2.5}$ emission factor based on filterable particulate < 3 *u*m plus condensable particulate (AP-42, Table 3.4-2, 10/96)

[3] PM_{10} emission factor is the sum of filterable and condensible PM10 emission factors (AP-42,Table 3.4-2, 10/96)

[4] SO_2 emission factor multiplied by sulfur content of fuel (Ap-42, Table 3.4.1, 10/96)

[5] Manufacturer (Caterpillar) provided worst case emission estimates "Not to exceed data" for NOx, CO, and HC.

C-4: Wood Chipper Fugitive Dust (WC-01)

Actual Emission Calculations

ACLF - Wood Chipper

Fugitive Dust Emissions - based on log debarking EF and material transfer equation

Assumptions

Wood Chips/Sawdust Production Rate:			*Based on grinder loading*
	31,045	tons/yr	
Annual Operating Hours [1]:	5.8	hours/day	*2.84* days/week
			50 wk/yr
Actual Average:	37.7	tons/hour	- as an annual hourly average

Emission Factors

Log Debarking	1.10E-02	lb PM_{10}/ton	FIRE Database, SCC30700801	
Material Transfer	E_{PM10}	lb PM_{10}/ton	AP-42, Section 13.2.4, Eqn. (1)	

E_{PM10} = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

Where:

k = particle size multiplier; 0.35 for < 10 micron particles

U = mean wind speed (mph)

= 9 mph (Ref: Climatic Wind Data for the United States, Nov. 1998)

M = material moisture content (%)

= 11 %

E_{PM10} = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

= 2.21E-04 lb PM_{10}/ton

Revised Fugitive Emission Estimates:

Wood Chipper Emissions:	**4.1464E-01**	**lb PM_{10}/hr**	*- based on log debarking factor*
Transfer Point Emissions =	**1.6667E-02**	**lb PM_{10}/hr**	*- based on material transfer factor*
			- assume two transfer points

Total Wood Chipper Fugitive PM_{10} Emissions:

	0.431	**lb PM_{10}/hr**	***- based on log debarking factor***
Annual Total:	**0.1776**	**tons/year**	***- based on log debarking factor***

Note:
Assume PM10 is equal to PM2.5

[1] Based on FY 2010 actual operating data for the wood chipper generator (Gen 1) and the screen generator (Gen 2). Provided by Ted Hutchinson, ACLF Director on October 7, 2010

C-5: Power Screen Diesel Engine Generator (GEN 2)

Actual Emission Calculations

ACLF - Power Wood Screen Diesel Engine Emissions

Emission Point No.	**SC-E-2**	
Model No.	**Deutz BF4L913**	
Engine Power Rating (bhp)	106	
Fuel Type	Distillate #2	
- maximum sulfur content	0.0015%	Ultra low sulfur fuel
Maximum Firing Rate (gals/hr)	6.1	
Maximum Heat Input Rating (Btu/hr)	858,600	
(hp)	337	*Small Engine*
Maximum Hours of Operation	827	
Maximum Firing Rate (gals/yr)	5,072	
Heat Capacity of Fuel (Btu/gal)	140,000	

			Uncontrolled Potential to Emit		
Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1]		0.31	0.27	220	0.11
Total Particulate Matter ($PM_{2.5}$)[2]		0.31	0.27	220	0.11
Particulate Matter (PM10)[3]		0.31	0.27	220	0.11
Nitrogen Oxides (NOx)[4]		4.41	3.79	3,131	1.57
Sulfur Oxides (SO_2)[5]		0.00152	0.0013	1.076	0.001
Carbon Monoxide (CO)[4]		0.95	0.82	675	0.34
TOC as VOC[4]		0.35	0.30	249	0.12

			Uncontrolled Potential to Emit					
	CAS Number	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**	**HAP**
Benzene	71-43-2	9.33E-04	8.01E-04	6.62E-01	3.31E-04	8.00E-04	**Exceeds**	HAP
Formaldehyde	50-00-0	1.18E-03	1.01E-03	8.38E-01	4.19E-04	5.10E-04	**Exceeds**	HAP
Naphthalene	91-20-3	8.48E-05	7.28E-05	6.02E-02	3.01E-05	3.33E+00	Below	HAP
Toluene	108-88-3	4.09E-04	3.51E-04	2.90E-01	1.45E-04	2.50E+01	Below	HAP
o-Xylenes	1330-20-7	2.85E-04	2.45E-04	2.02E-01	1.01E-04	2.90E+01	Below	HAP
Propylene	115-07-1	2.58E-03	2.22E-03	1.83E+00	9.16E-04	NA	NA	HAP
Acetaldehyde	75-07-0	7.67E-04	6.59E-04	5.45E-01	2.72E-04	3.00E-03	Below	HAP
Acrolein	107-02-8	9.25E-05	7.94E-05	6.57E-02	3.28E-05	1.70E-02	Below	HAP
1,3-Butadiene	106-99-0	3.91E-05	3.36E-05	2.78E-02	1.39E-05	2.40E-05	**Exceeds**	HAP
Acenaphthene	83-32-9	1.42E-06	1.22E-06	1.01E-03	5.04E-07	NA	NA	
Acenaphthylene	203-96-8	5.06E-06	4.34E-06	3.59E-03	1.80E-06	NA	NA	
Anthracene	120-12-7	1.87E-06	1.61E-06	1.33E-03	6.64E-07	NA	NA	
Benz(a)anthracene	56-55-3	1.68E-06	1.44E-06	1.19E-03	5.96E-07	NA	NA	
Benzo(b)fluoranthene	205-99-2	9.91E-08	8.51E-08	7.04E-05	3.52E-08	NA	NA	
Benzo(k)fluoranthene	205-82-3	1.55E-07	1.33E-07	1.10E-04	5.50E-08	NA	NA	
Benzo(g,h,I)perylene	191-24-2	4.89E-07	4.20E-07	3.47E-04	1.74E-07	NA	NA	
Chrysene	218-01-9	3.53E-07	3.03E-07	2.51E-04	1.25E-07	NA	NA	
Dibenzo(a,h)anthracene	53-70-3	5.83E-07	5.01E-07	4.14E-04	2.07E-07	NA	NA	
Indeno(1,2,3-cd)pyrene	193-39-5	3.75E-07	3.22E-07	2.66E-04	1.33E-07	NA	NA	
Benzo(a)pyrene	50-32-8	1.88E-07	1.61E-07	1.33E-04	6.67E-08	NA	NA	
Total PAH			3.37E-06	2.78E-03	1.39E-06	2.00E-06	**Exceeds**	
Fluoroanthene	206-44-0	7.61E-06	6.53E-06	5.40E-03	2.70E-06	NA	NA	
Fluorene	86-73-7	2.92E-05	2.51E-05	2.07E-02	1.04E-05	NA	NA	
Phenanthrene	85-01-8	2.94E-05	2.52E-05	2.09E-02	1.04E-05	NA	NA	
Pyrene	129-00-0	4.78E-06	4.10E-06	3.39E-03	1.70E-06	NA	NA	
Total HAPS			**5.47E-03**		**2.26E-03**			

[1] PM is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[2] $PM_{2.5}$ is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[3] PM_{10} emission factor (AP-42, Table 3.3-1, 10/96)

[4] NOx, CO and TOC emission factors(Table 3.3-1, 10/96). Note TOC is based on exhaust emission factor for VOC.

[5] SO_2 is based on AP-42, Table 3.4-1, 10/96, multiplied by sulfur content of fuel

C-6: Power Screen Fugitive Dust (PS-01)

Actual Emission Calculations

ACLF - Power Screen

Fugitive Dust Emissions - Based on material transfer equation

Assumptions

Wood Chips/Sawdust Production Rate: *Based on grinder loading*

	96,563	yards		
	643	lb/yards density		
	31,045	tons/yr		
Annual Operating Hours [1]:	5.8	hours/day	*2.84*	days/week
			50	wk/yr

Actual Average: 37.7 tons/hour - as an annual hourly average

Emission Factors

Material Transfer E_{PM10} lb PM_{10}/ton AP-42, Section 13.2.4, Eqn. (1)

E_{PM10} = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

Where:

k = particle size multiplier; 0.35 for < 10 micron particles

U = mean wind speed (mph)

= 9 mph (Ref: Climatic Wind Data for the United States, Nov. 1998)

M = material moisture content (%)

= 11 %

E_{PM10} = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

= 2.21E-04 lb/ton PM10

Revised Fugitive Emission Estimates:

Power Screen Emissions:	**8.33E-03**	**lb/hr PM10**	*- based on material transfer factor*
Transfer Point Emissions =	**1.67E-02**	**lb/hr PM10**	*- based on material transfer factor* *- assume two transfer points*

Total Power Screen Fugitive PM_{10} Emissions:

	0.025	**lb/hr PM10**	***- based on material transfer factor***
Annual Total:	**0.0103**	**tons/year**	***- based on material transfer factor***

Notes

[1] Based on FY 2010 actual operating data for the wood chipper generator (Gen 1) and the screen generator (Gen 2). Provided by Ted Hutchinson, ACLF Director on October 7, 2010

Actual Emission Calculations

ACLF - Power Screen

Fugitive Dust Emissions - Based on material transfer equation

Assumptions

Wood Chips/Sawdust Production Rate:			*Based on grinder loading*	
	31,045	tons/yr		
Annual Operating Hours [1]:	5.8	hours/day	*2.84*	days/week
			50	wk/yr
Actual Average:	37.7	tons/hour	- as an annual hourly average	

Emission Factors

Material Transfer	$E_{PM2.5}$	lb PM2.5/ton	AP-42, Section 13.2.4, Eqn. (1)

$E_{PM2.5}$ = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

Where:

k = particle size multiplier; 0.053 for < 2.5 micron particles

U = mean wind speed (mph)

= 9 mph (Ref: Climatic Wind Data for the United States, Nov. 1998)

M = material moisture content (%)

= 11 %

$E_{PM2.5}$ = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

= 3.35E-05 lb/ton PM2.5

Revised Fugitive Emission Estimates:

Power Screen Emissions:	**1.26E-03**	**lb/hr PM2.5**	*- based on material transfer factor*
Transfer Point Emissions =	**2.52E-03**	**lb/hr PM2.5**	*- based on material transfer factor* *- assume two transfer points*

Total Power Screen Fugitive PM2.5 Emissions:

	0.0038	**lb/hr PM2.5**	***- based on material transfer factor***
Annual Total:	**0.0016**	**tons/year**	***- based on material transfer factor***

Notes

[1] Based on FY 2010 actual operating data for the wood chipper generator (Gen 1) and the screen generator (Gen 2). Provided by Ted Hutchinson, ACLF Director on October 7, 2010

C-7: Emergency Backup Generators (GEN 3 and GEN 4)

Actual Emission Calculations

ACLF - HHHW Diesel Engine Emissions

Emission Point No.	**SC-E-2**	
Model No.	**Detroit Diesel 30DS60**	
Engine Power Rating (bhp)	44	
Fuel Type	Distillate #2	
- maximum sulfur content	0.0015%	Ultra low sulfur fuel
Maximum Firing Rate (gals/hr)	3.0	
Maximum Heat Input Rating (Btu/hr)	420,000	
(hp)	165	*Small Engine*
Maximum Hours of Operation	26	
Maximum Firing Rate (gals/yr)	78	
Heat Capacity of Fuel (Btu/gal)	140,000	

			Uncontrolled Potential to Emit		
Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1]		0.31	0.13	3	0.00
Total Particulate Matter ($PM_{2.5}$)[2]		0.31	0.13	3	0.00
Particulate Matter (PM10)[3]		0.31	0.13	3	0.00
Nitrogen Oxides (NOx)[4]		4.41	1.85	48	0.02
Sulfur Oxides (SO_2)[5]		0.00152	0.0006	0.017	0.000
Carbon Monoxide (CO)[4]		0.95	0.40	10	0.01
TOC as VOC[4]		0.35	0.15	4	0.00

			Uncontrolled Potential to Emit					
	CAS Number	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**	**HAP**
Benzene	71-43-2	9.33E-04	3.92E-04	1.02E-02	5.09E-06	8.00E-04	**Below**	HAP
Formaldehyde	50-00-0	1.18E-03	4.96E-04	1.29E-02	6.44E-06	5.10E-04	**Below**	HAP
Naphthalene	91-20-3	8.48E-05	3.56E-05	9.26E-04	4.63E-07	3.33E+00	Below	HAP
Toluene	108-88-3	4.09E-04	1.72E-04	4.47E-03	2.23E-06	2.50E+01	Below	HAP
o-Xylenes	1330-20-7	2.85E-04	1.20E-04	3.11E-03	1.56E-06	2.90E+01	Below	HAP
Propylene	115-07-1	2.58E-03	1.08E-03	2.82E-02	1.41E-05	NA	NA	HAP
Acetaldehyde	75-07-0	7.67E-04	3.22E-04	8.38E-03	4.19E-06	3.00E-03	Below	HAP
Acrolein	107-02-8	9.25E-05	3.89E-05	1.01E-03	5.05E-07	1.70E-02	Below	HAP
1,3-Butadiene	106-99-0	3.91E-05	1.64E-05	4.27E-04	2.13E-07	2.40E-05	**Below**	HAP
Acenaphthene	83-32-9	1.42E-06	5.96E-07	1.55E-05	7.75E-09	NA	NA	
Acenaphthylene	203-96-8	5.06E-06	2.13E-06	5.53E-05	2.76E-08	NA	NA	
Anthracene	120-12-7	1.87E-06	7.85E-07	2.04E-05	1.02E-08	NA	NA	
Benz(a)anthracene	56-55-3	1.68E-06	7.06E-07	1.83E-05	9.17E-09	NA	NA	
Benzo(b)fluoranthene	205-99-2	9.91E-08	4.16E-08	1.08E-06	5.41E-10	NA	NA	
Benzo(k)fluoranthene	205-82-3	1.55E-07	6.51E-08	1.69E-06	8.46E-10	NA	NA	
Benzo(g,h,I)perylene	191-24-2	4.89E-07	2.05E-07	5.34E-06	2.67E-09	NA	NA	
Chrysene	218-01-9	3.53E-07	1.48E-07	3.85E-06	1.93E-09	NA	NA	
Dibenzo(a,h)anthracene	53-70-3	5.83E-07	2.45E-07	6.37E-06	3.18E-09	NA	NA	
Indeno(1,2,3-cd)pyrene	193-39-5	3.75E-07	1.58E-07	4.10E-06	2.05E-09	NA	NA	
Benzo(a)pyrene	50-32-8	1.88E-07	7.90E-08	2.05E-06	1.03E-09	NA	NA	
Total PAH			1.65E-06	4.28E-05	2.14E-08	2.00E-06	**Below**	
Fluoroanthene	206-44-0	7.61E-06	3.20E-06	8.31E-05	4.16E-08	NA	NA	
Fluorene	86-73-7	2.92E-05	1.23E-05	3.19E-04	1.59E-07	NA	NA	
Phenanthrene	85-01-8	2.94E-05	1.23E-05	3.21E-04	1.61E-07	NA	NA	
Pyrene	129-00-0	4.78E-06	2.01E-06	5.22E-05	2.61E-08	NA	NA	
Total HAPS			**2.68E-03**		**3.48E-05**			

[1] PM is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[2] $PM_{2.5}$ is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[3] PM_{10} emission factor (AP-42, Table 3.3-1, 10/96)

[4] NOx, CO and TOC emission factors(Table 3.3-1, 10/96). Note TOC is based on exhaust emission factor for VOC.

[5] SO_2 is based on AP-42, Table 3.4-1, 10/96, multiplied by sulfur content of fuel

Actual Emission Calculations

ACLF - Scale House Emergency Backup Generator

Emission Point No.	**SC-E-2**	
Model No.	**John Deere 4024 HF 285**	
Engine Power Rating (bhp)	80	
Fuel Type	Distillate #2	
- maximum sulfur content	0.0015%	Ultra low sulfur fuel
Maximum Firing Rate (gals/hr)	4.6	
Maximum Heat Input Rating (Btu/hr)	648,000	
(hp)	255	*Small Engine*
Maximum Hours of Operation	26	
Maximum Firing Rate (gals/yr)	120	
Heat Capacity of Fuel (Btu/gal)	140,000	

			Uncontrolled Potential to Emit		
Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1]		0.31	0.20	5	0.0026
Total Particulate Matter ($PM_{2.5}$)[2]		0.31	0.20	5	0.0026
Particulate Matter (PM10)[3]		0.31	0.20	5	0.0026
Nitrogen Oxides (NOx)[4]		4.41	2.86	74	0.037
Sulfur Oxides (SO_2)[5]		0.00152	0.0010	0.026	0.000013
Carbon Monoxide (CO)[4]		0.95	0.62	16	0.0080
TOC as VOC[4]		0.35	0.23	6	0.0029

			Uncontrolled Potential to Emit					
	CAS Number	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**	**HAP**
Benzene	71-43-2	9.33E-04	6.05E-04	1.57E-02	7.86E-06	8.00E-04	**Below**	HAP
Formaldehyde	50-00-0	1.18E-03	7.65E-04	1.99E-02	9.94E-06	5.10E-04	**Exceeds**	HAP
Naphthalene	91-20-3	8.48E-05	5.50E-05	1.43E-03	7.14E-07	3.33E+00	Below	HAP
Toluene	108-88-3	4.09E-04	2.65E-04	6.89E-03	3.45E-06	2.50E+01	Below	HAP
o-Xylenes	1330-20-7	2.85E-04	1.85E-04	4.80E-03	2.40E-06	2.90E+01	Below	HAP
Propylene	115-07-1	2.58E-03	1.67E-03	4.35E-02	2.17E-05	NA	NA	HAP
Acetaldehyde	75-07-0	7.67E-04	4.97E-04	1.29E-02	6.46E-06	3.00E-03	Below	HAP
Acrolein	107-02-8	9.25E-05	5.99E-05	1.56E-03	7.79E-07	1.70E-02	Below	HAP
1,3-Butadiene	106-99-0	3.91E-05	2.53E-05	6.59E-04	3.29E-07	2.40E-05	**Exceeds**	HAP
Acenaphthene	83-32-9	1.42E-06	9.20E-07	2.39E-05	1.20E-08	NA	NA	
Acenaphthylene	203-96-8	5.06E-06	3.28E-06	8.53E-05	4.26E-08	NA	NA	
Anthracene	120-12-7	1.87E-06	1.21E-06	3.15E-05	1.58E-08	NA	NA	
Benz(a)anthracene	56-55-3	1.68E-06	1.09E-06	2.83E-05	1.42E-08	NA	NA	
Benzo(b)fluoranthene	205-99-2	9.91E-08	6.42E-08	1.67E-06	8.35E-10	NA	NA	
Benzo(k)fluoranthene	205-82-3	1.55E-07	1.00E-07	2.61E-06	1.31E-09	NA	NA	
Benzo(g,h,I)perylene	191-24-2	4.89E-07	3.17E-07	8.24E-06	4.12E-09	NA	NA	
Chrysene	218-01-9	3.53E-07	2.29E-07	5.95E-06	2.97E-09	NA	NA	
Dibenzo(a,h)anthracene	53-70-3	5.83E-07	3.78E-07	9.82E-06	4.91E-09	NA	NA	
Indeno(1,2,3-cd)pyrene	193-39-5	3.75E-07	2.43E-07	6.32E-06	3.16E-09	NA	NA	
Benzo(a)pyrene	50-32-8	1.88E-07	1.22E-07	3.17E-06	1.58E-09	NA	NA	
Total PAH			2.54E-06	6.61E-05	3.30E-08	2.00E-06	**Exceeds**	
Fluoroanthene	206-44-0	7.61E-06	4.93E-06	1.28E-04	6.41E-08	NA	NA	
Fluorene	86-73-7	2.92E-05	1.89E-05	4.92E-04	2.46E-07	NA	NA	
Phenanthrene	85-01-8	2.94E-05	1.91E-05	4.95E-04	2.48E-07	NA	NA	
Pyrene	129-00-0	4.78E-06	3.10E-06	8.05E-05	4.03E-08	NA	NA	
Total HAPS			**4.13E-03**		**5.37E-05**			

[1] PM is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[2] $PM_{2.5}$ is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[3] PM_{10} emission factor (AP-42, Table 3.3-1, 10/96)

[4] NOx, CO and TOC emission factors(Table 3.3-1, 10/96). Note TOC is based on exhaust emission factor for VOC.

[5] SO_2 is based on AP-42, Table 3.4-1, 10/96, multiplied by sulfur content of fuel

C-8: Wood Chipping Storage Piles Fugitive Dust (WC-02)

Actual Emission Calculations

ACLF - Storage Piles

Fugitive Dust Emissions - Based on material transfer equation

Assumptions

Wood Chips/Sawdust Production Rate:			*Based on grinder loading*	
	96,563	yards		
	643	lb/yards density		
	31,045	tons/yr		
Operation Schedule [1]:	5.8	hours/day	2.84	days/week
			50	weeks/year
Actual Average:	37.7	tons/hour	- as an annual hourly average	

Emission Factors

Material Transfer	E_{PM10}	lb PM_{10}/ton	AP-42, Section 13.2.4, Eqn. (1) dated 11/06

E_{PM10} = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

Where:

k = particle size multiplier; 0.35 for < 10 micron particles

U = mean wind speed (mph)

= 9 mph (Ref: Climatic Wind Data for the United States, Nov. 1998)

M = material moisture content (%)

= 11 %

E_{PM10} = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

= 2.21E-04 lb/ton PM10

Revised Fugitive Emission Estimates:

Storage Pile Emissions = **8.33E-03 lb/hr PM10** *- based on material transfer factor*

Total Storage Pile Fugitive PM_{10} Emissions:

8.33E-03 lb/hr PM10 ***- based on material transfer factor***

Annual Total: **1.38E-02 tons/year PM10** ***- based on material transfer factor***

Notes

[1] Based on FY 2010 actual operating data for the wood chipper generator (Gen 1) and the screen generator (Gen 2). Provided by Ted Hutchinson, ACLF Director on October 7, 2010

Actual Emission Calculations

ACLF - Storage Piles

Fugitive Dust Emissions - Based on material transfer equation

Assumptions

Wood Chips/Sawdust Production Rate:	31,045	tons/yr	*Based on grinder loading*
Operation Schedule [1]:	5.8	hours/day	2.84 days/week
			50 weeks/year
Actual Average:	37.7	tons/hour	- as an annual hourly average

Emission Factors

Material Transfer	$E_{PM2.5}$	lb PM2.5/ton	AP-42, Section 13.2.4, Eqn. (1) dated 11/06

$E_{PM2.5}$ = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

Where:

k = particle size multiplier; 0.053 for < 10 micron particles

U = mean wind speed (mph)

= 9 mph (Ref: Climatic Wind Data for the United States, Nov. 1998)

M = material moisture content (%)

= 11 %

$E_{PM2.5}$ = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

= 3.35E-05 lb/ton PM2.5

Revised Fugitive Emission Estimates:

Storage Pile Emissions = 1.26E-03 lb/hr PM2.5 *- based on material transfer factor*

Total Storage Pile Fugitive PM2.5 Emissions:

0.0013 lb/hr PM2.5 ***- based on material transfer factor***

Annual Total: 0.0021 tons/year PM2.5 ***- based on material transfer factor***

Notes

[1] Based on FY 2010 actual operating data for the wood chipper generator (Gen 1) and the screen generator (Gen 2). Provided by Ted Hutchinson, ACLF Director on October 7, 2010

C-9: Paved and Unpaved Roads Fugitive Dust

Actual and Potential Emissions for Paved and Unpaved Haul Roads at the ACLF
Paved Roads Worksheet

Paved road emission factor to Household hazardous waste building

$E= k(sL)^{0.91}(W)^{1.02}$ AP-42 Equation 13.2.1.3 (1) (January 2011)

	k - PM10 (lb/VMT)	k - PM2.5 (lb/VMT)	sL (g/m2)	W (tons)	E - PM10 (lb/VMT)	E - PM2.5 (lb/VMT)
Standard Pickup	0.0022	0.00054	7.4	2.5	0.035	0.0085

Notes:
E = Particulate emission factor
k = Particle size multiplier for particle size range and units of interest, AP-42 Table 13.2.1-1
sL = road surface silt loading, AP-42 Table 13.2.1-3
W = Average weight of the vehicles traveling the road

	Days open per year	Amount hauled (Trips per year)	Percentage trucked	Amount hauled (Trips per day)	Hauling hours (per day)	Amount hauled (trips per hour)	Haul road round trip (miles)	VMT (per hour)	VMT (annual)	PM10 (lb/hr)	PM10 (ton/yr)	PM2.5 (lb/hr)	PM2.5 (ton/yr)
Standard Pickup	100	6700	100%	67.00	11	6.09	1.08	6.58	7236.00	0.228	0.13	0.056	0.031
	Total	**6700**	**100%**	**67.00**		**6.09**		**6.58**	**7236.00**	**0.228**	**0.13**	**0.056**	**0.031**

Paved road emission factor to Operations Staging Area (HHLF Cell)

$E= k(sL)^{0.91}(W)^{1.02}$ AP-42 Equation 13.2.1.3 (1) (January 2011)

	k - PM10 (lb/VMT)	k - PM2.5 (lb/VMT)	sL (g/m2)	W (tons)	E - PM10 (lb/VMT)	E - PM2.5 (lb/VMT)
Standard Pickup	0.0022	0.00054	7.4	2.5	0.035	0.0085
Large Pickup/trailer	0.0022	0.00054	7.4	5	0.070	0.017
3 axel or more truck	0.0022	0.00054	7.4	13	0.186	0.046

Notes:
E = Particulate emission factor
k = Particle size multiplier for particle size range and units of interest, AP-42 Table 13.2.1-1
sL = road surface silt loading, AP-42 Table 13.2.1-3
W = Average weight of the vehicles traveling the road

	Haul truck load (tons/truck)	Day open per year	Amount hauled (per year)	Percentage trucked	Amount hauled (per day)	Hauling hours (per day)	Amount hauled (per hour)	Haul road round trip (miles)	Round trips (per hour)	round trips (per year)	VMT (per hour)	VMT (annual)	PM10 (lb/hr)	PM10 (ton/yr)	PM2.5 (lb/hr)	PM2.5 (ton/yr)
Standard Pickup	0.5	306	66389	60%	216.96	11	19.72	2	39.45	132778	78.89	265555	2.731	4.60	0.670	1.128
Large Pickup/trailer	2	306	22130	20%	72.32	11	6.57	2	3.29	11065	6.57	22130	0.462	0.78	0.113	0.191
3 axel or more truck	5	306	22129	20%	72.32	11	6.57	2	1.31	4426	2.63	8852	0.489	0.82	0.120	0.202
		Total	**110648**	**100%**	**361.59**		**32.87**		**44.05**	**148268**	**88.10**	**296537**	**3.68**	**6.20**	**0.90**	**1.52**

Paved road emission factor to new NRC

$E= k(sL)^{0.91}(W)^{1.02}$ AP-42 Equation 13.2.1.3 (1) (January 2011)

	k - PM10 (lb/VMT)	k - PM2.5 (lb/VMT)	sL (g/m2)	W (tons)	E - PM10 (lb/VMT)	E - PM2.5 (lb/VMT)
Standard Pickup	0.0022	0.00054	7.4	2.5	0.035	0.0085

Large Pickup/trailer	0.0022	0.00054	7.4	5	0.070	0.017
3 axel or more truck	0.0022	0.00054	7.4	13	0.186	0.046

Notes:
E = Particulate emission factor
k = Particle size multiplier for particle size range and units of interest, AP-42 Table 13.2.1-1
sL = road surface silt loading, AP-42 Table 13.2.1-3
W = Average weight of the vehicles traveling the road

	Haul truck load (tons/truck)	Day open per year	Amount hauled (per year)	Percentage trucked	Amount hauled (per day)	Hauling hours (per day)	Amount hauled (per hour)	Haul road round trip (miles)	Round trips (per hour)	round trips (per year)	VMT (per hour)	VMT (annual)	PM10 (lb/hr)	PM10 (ton/yr)	PM2.5 (lb/hr)	PM2.5 (ton/yr)
Standard Pickup	0.5	306	44259	60%	144.64	11	13.15	4.5	26.30	88518	118.34	398333	4.097	6.90	1.006	1.692
Large Pickup/trailer	2	306	14753	20%	48.21	11	4.38	4.5	2.19	7377	9.86	33195	0.692	1.17	0.170	0.286
3 axel or more truck	5	306	14753	20%	48.21	11	4.38	4.5	0.88	2951	3.94	13278	0.734	1.24	0.180	0.303
		Total	**73765**	**100%**	**241.06**		**21.91**		**29.37**	**98846**	**132.15**	**444805**	**5.52**	**9.30**	**1.36**	**2.28**

Paved road emission factor to the landfill office

$E= k(sL)^{0.91}(W)^{1.02}$ AP-42 Equation 13.2.1.3 (1) (January 2011)

	k - PM10 (lb/VMT)	k - PM2.5 (lb/VMT)	sL (g/m2)	W (tons)	E - PM10 (lb/VMT)	E - PM2.5 (lb/VMT)
Standard Pickup	0.0022	0.00054	7.4	2.5	0.035	0.0085

Notes:
E = Particulate emission factor
k = Particle size multiplier for particle size range and units of interest, AP-42 Table 13.2.1-1
sL = road surface silt loading, AP-42 Table 13.2.1-3
W = Average weight of the vehicles traveling the road

	Days open per year	Trips (per year)	Percentage trucked	Trips (per day)	Hauling hours (per day)	Trips (per hour)	Haul road round trip (miles)	VMT (per hour)	VMT (annual)	PM10 (lb/hr)	PM10 (ton/yr)	PM2.5 (lb/hr)	PM2.5 (ton/yr)
Standard Pickup	306	2400	100%	7.84	11	0.71	0.26	0.19	624.00	0.006	0.01	0.002	0.003
	Total	**2400**	**100%**	**7.84**		**0.71**		**0.19**	**624.00**	**0.006**	**0.01**	**0.002**	**0.003**

Paved road emission factor to the wood chipping

$E= k(sL)^{0.91}(W)^{1.02}$ AP-42 Equation 13.2.1.3 (1) (January 2011)

	k - PM10 (lb/VMT)	k - PM2.5 (lb/VMT)	sL (g/m2)	W (tons)	E - PM10 (lb/VMT)	E - PM2.5 (lb/VMT)
Standard Pickup	0.0022	0.00054	7.4	2.5	0.035	0.0085

Notes:
E = Particulate emission factor
k = Particle size multiplier for particle size range and units of interest, AP-42 Table 13.2.1-1
sL = road surface silt loading, AP-42 Table 13.2.1-3
W = Average weight of the vehicles traveling the road

	Days open per year	Trips (per year)	Percentage trucked	Trips (per day)	Hauling hours (per day)	Trips (per hour)	Haul road round trip (miles)	VMT (per hour)	VMT (annual)	PM10 (lb/hr)	PM10 (ton/yr)	PM2.5 (lb/hr)	PM2.5 (ton/yr)
Standard Pickup	306	2400	100%	7.84	11	0.71	2	1.43	4800.00	0.049	0.08	0.012	0.020
	Total	**2400**	**100%**	**7.84**		**0.71**		**1.43**	**4800.00**	**0.049**	**0.08**	**0.012**	**0.020**

Actual and Potential Emissions for Paved and Unpaved Haul Roads at the ACLF
Unpaved Roads Worksheet

Unpaved road emission factor to HHLF Cell (Operations Staging Area to working face)

$$E = \frac{k\,(s/12)^a (S/30)^d - C}{(M/0.5)^c}$$ (AP 42 Equation 13.2.2-3 (1b)) (November 2006)

	k - PM10 (lb/VMT)	k - PM2.5 (lb/VMT)	s (%)	S (MPH)	C - PM10 (lb/VMT)	C - PM2.5 (lb/VMT)	M (%)	a	c	d	E - PM10 (lb/VMT)	E - PM2.5 (lb/VMT)
Standard Pickup	1.8	0.18	6.4	15	0.00047	0.00036	15	1	0.2	0.5	0.343	0.034
Large Pickup/trailer	1.8	0.18	6.4	15	0.00047	0.00036	15	1	0.2	0.5	0.343	0.034
3 axel or more truck	1.8	0.18	6.4	15	0.00047	0.00036	15	1	0.2	0.5	0.343	0.034

Notes:
- E Size-specific emission factor
- s Surface material silt content, AP-42 Table 13.2.2-1
- M Surface material moisture content
- S Mean Vehicle speed
- C Emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear, AP4-42 Table 13.2.2-4
- k Empirical constant for PM_{10}, AP-42 Table 13.2.2-2
- a Empirical constant for PM_{10}, AP-42 Table 13.2.2-2
- c Empirical constant for PM_{10}, AP-42 Table 13.2.2-2
- d Empirical constant for PM_{10}, AP-42 Table 13.2.2-2

	Haul truck load (tons/truck)	Day open per year	Amount hauled (per year)	Percentage trucked	Amount hauled (per day)	Hauling hours (per day)	Amount hauled (per hour)	Haul road round trip (miles)	Round trips (per hour)	round trips (per year)	VMT (per hour)	VMT (annual)
Standard Pickup	0.5	306	66389	60%	216.96	11.00	19.72	1.00	39.45	132,777.60	39.45	132,778
Large Pickup/trailer	2	306	22130	20%	72.32	11.00	6.57	1.00	3.29	11,064.90	3.29	11,065
3 axel or more truck	5	306	22129	20%	72.32	11.00	6.57	1.00	1.31	4,425.84	1.31	4,426
		Total	**110648**	**100%**	**361.59**		**32.87**		**44.05**	**148,268.34**	**44.05**	**148,268**

With the addition of rain and watering the unpaved haul roads

$$Eext = E\,[(365 - P)/365]$$

	E (PM_{10})	E ($PM_{2.5}$)	P	Eext (PM_{10})	Eext ($PM_{2.5}$)	PM10 Emissions (lb/hr)	PM10 Emissions (ton/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (ton/yr)
Standard Pickup	0.343	0.034	90	0.259	0.026	13.54	22.8	1.01	1.70
Large Pickup/trailer	0.343	0.034	90	0.259	0.026	1.13	1.9	0.084	0.14
3 axel or more truck	0.343	0.034	90	0.259	0.026	0.45	0.8	0.034	0.06
				Total		**15.12**	**25.5**	**1.13**	**1.9**

Notes:
P = number of days in a year with rainfall accumulation no less than 0.01 inches. AP-42 Figure13.2.2-1

Unpaved road emission factor for NRC

$$E = \frac{k\,(s/12)^a (S/30)^d - C}{(M/0.5)^c}$$ (AP 42 Equation 13.2.2-3 (1b)) (November 2006)

	k - PM10 (lb/VMT)	k - PM2.5 (lb/VMT)	s (%)	S (MPH)	C - PM10 (lb/VMT)	C - PM2.5 (lb/VMT)	M (%)	a	c	d	E - PM10 (lb/VMT)	E - PM2.5 (lb/VMT)
Standard Pickup	1.8	0.18	6.4	15	0.00047	0.00036	15	1	0.2	0.5	0.343	0.034
Large Pickup/trailer	1.8	0.18	6.4	15	0.00047	0.00036	15	1	0.2	0.5	0.343	0.034
3 axel or more truck	1.8	0.18	6.4	15	0.00047	0.00036	15	1	0.2	0.5	0.343	0.034

Notes:
- E Size-specific emission factor
- s Surface material silt content, AP-42 Table 13.2.2-1
- M Surface material moisture content
- S Mean Vehicle speed
- C Emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear, AP4-42 Table 13.2.2-4
- k Empirical constant for PM_{10}, AP-42 Table 13.2.2-2
- a Empirical constant for PM_{10}, AP-42 Table 13.2.2-2
- c Empirical constant for PM_{10}, AP-42 Table 13.2.2-2
- d Empirical constant for PM_{10}, AP-42 Table 13.2.2-2

	Haul truck load (tons/truck)	Day open per year	Amount hauled (per year)	Percentage trucked	Amount hauled (per day)	Hauling hours (per day)	Amount hauled (per hour)	Haul road round trip (miles)	Round trips (per hour)	round trips (per year)	VMT (per hour)	VMT (annual)
Standard Pickup	0.5	306	44259	60%	144.64	11	13.15	1	26.30	88518	26.30	88518.40
Large Pickup/trailer	2	306	14753	20%	48.21	11	4.38	1	2.19	7377	2.19	7376.60
3 axel or more truck	5	306	14753	20%	48.21	11	4.38	1	0.88	2951	0.88	2950.56
		Total	**73765**	**100%**	**241.06**		**21.91**		**29.37**	**98846**	**29.37**	**98845.56**

With the addition of rain and watering the unpaved haul roads

Eext = E [(365 - P)/365]

	E (PM_{10})	E ($PM_{2.5}$)	P	Eext (PM_{10})	Eext ($PM_{2.5}$)	PM10 Emissions (lb/hr)	PM10 Emissions (ton/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (ton/yr)
Standard Pickup	0.343	0.034	90	0.259	0.026	9.03	15.2	0.67	1.13
Large Pickup/trailer	0.343	0.034	90	0.259	0.026	0.75	1.3	0.056	0.09
3 axel or more truck	0.000	0.000	90	0.000	0.000	0.00	0.0	0.000	0.00
				Total		**9.78**	**16.5**	**0.73**	**1.2**

Notes:
P = number of days in a year with rainfall accumulation no less than 0.01 inches. AP-42 Figure13.2.2-1

Unpaved road emission factor for Wood Chipper

$$E = \frac{k\,(s/12)^a (S/30)^d}{(M/0.5)^c} - C$$

(AP 42 Equation 13.2.2-3 (1b)) (November 2006)

	k - PM10 (lb/VMT)	k - PM2.5 (lb/VMT)	s (%)	S (MPH)	C - PM10 (lb/VMT)	C - PM2.5 (lb/VMT)	M (%)	a	c	d	E - PM10 (lb/VMT)	E - PM2.5 (lb/VMT)
Standard Pickup	1.8	0.18	6.4	15	0.00047	0.00036	15	1	0.2	0.5	0.343	0.034
Large Pickup/trailer	1.8	0.18	6.4	15	0.00047	0.00036	15	1	0.2	0.5	0.343	0.034
3 axel or more truck	1.8	0.18	6.4	15	0.00047	0.00036	15	1	0.2	0.5	0.343	0.034

Notes:
- E Size-specific emission factor
- s Surface material silt content, AP-42 Table 13.2.2-1
- M Surface material moisture content
- S Mean Vehicle speed
- C Emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear, AP4-42 Table 13.2.2-4
- k Empirical constant for PM_{10}, AP-42 Table 13.2.2-2
- a Empirical constant for PM_{10}, AP-42 Table 13.2.2-2
- c Empirical constant for PM_{10}, AP-42 Table 13.2.2-2
- d Empirical constant for PM_{10}, AP-42 Table 13.2.2-2

	Haul truck load (tons/truck)	Day open per year	Amount hauled (per year)	Percentage trucked	Amount hauled (per day)	Hauling hours (per day)	Amount hauled (per hour)	Haul road round trip (miles)	Round trips (per hour)	round trips (per year)	VMT (per hour)	VMT (annual)
Standard Pickup	0.5	306	44259	60%	144.64	11	13.15	0.22	26.30	88518	5.79	19474.05
Large Pickup/trailer	2	306	14753	20%	48.21	11	4.38	0.22	2.19	7377	0.48	1622.85
3 axel or more truck	5	306	14753	20%	48.21	11	4.38	0.22	0.88	2951	0.19	649.12
		Total	**73765**	**100%**	**241.06**		**21.91**		**29.37**	**98846**	**6.46**	**21746.02**

With the addition of rain and watering the unpaved haul roads

Eext = E [(365 - P)/365]

	E (PM_{10})	E ($PM_{2.5}$)	P	Eext (PM_{10})	Eext ($PM_{2.5}$)	PM10 Emissions (lb/hr)	PM10 Emissions (ton/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (ton/yr)
Standard Pickup	0.343	0.034	90	0.259	0.026	1.99	3.3	0.15	0.25
Large Pickup/trailer	0.343	0.034	90	0.259	0.026	0.17	0.3	0.012	0.02
3 axel or more truck	0.000	0.000	90	0.000	0.000	0.00	0.0	0.000	0.00
				Total		**2.15**	**3.62**	**0.16**	**0.27**

Notes:
P = number of days in a year with rainfall accumulation no less than 0.01 inches. AP-42 Figure13.2.2-1

Actual Emission Calculations

Summary for Paved Roads

Destination	Annual Trips	Annual PM10 (lb/hr)	Annual PM10 (ton/yr)	Annual PM.5 (lb/hr)	Annual PM.5 (ton/yr)
Landfill office	2,400	0.0064	0.011	0.0016	0.003
Household hazardous waste	6,700	0.23	0.13	0.056	0.03
HHLF	148,268	3.68	6.20	0.90	1.52
NRC	98,846	5.52	9.30	1.36	2.28
Wood Chipping	2,400	0.049	0.08	0.012	0.02
Total	**256,214**	**9.49**	**15.71**	**2.33**	**3.86**

Summary for Unpaved Roads

Destination	Annual Trips	Annual PM10 Emissions w/water suppressant (lb/hr)	Annual PM10 Emissions w/water suppressant (ton/yr)	Annual PM2.5 Emissions w/water suppressant (lb/hr)	Annual PM2.5 Emissions w/water suppressant (ton/yr)
HHLF	148,268	15.12	25.45	1.13	1.90
NRC	98,846	9.78	16.46	0.73	1.23
Wood Chipping	73,765	2.15	3.62	0.16	0.27
Total	**247114**	**27.06**	**45.54**	**2.02**	**3.40**

Note:
Assume actual emissions are equal to potential emissions

C-10: Landfill Operations Fugitive Dust

Actual Emission Calculations
Landfill Operations (Fugitive Dust Emissions)

Assumptions:

Emission Factors Equations were derived from AP-42, *Section 11.9 - Western Surface Coal Mining, Table 11.9-1, dated 10/98*

Bulldozing (Overburden Material) - Particulate Matter ≤ 15 um: Table 11.9-1, Overburden

$BEF = 1.0(s)^{1.5}/(M)^{1.4} * (0.75)^{a}$
where:
[a] = Multiply the ≤ 15 um equation by this fraction to determine emissions for scaling ≤ 10 um
BEF = Bulldozing emission factor (lb/hr)
s = Material silt content, % (assumed s = 6.9%)
M = Material moisture content, % (assumed M = 7.9%)
Days of operation: 6 days/wk*52 wk/yr - 6 holidays = 306 days/yr
Hours of operation (dozing/scraping) = 8 hr/day
Annual hours of operation: 306 days/yr* 8hr/day = 2,448 hr/yr

Grading - Particulate Matter ≤ 15 um: Table 11.9-1

$GEF = 0.051(S)^{2.0} * (0.60)^{a}$
where:
[a] = Multiply the ≤ 15 um equation by this fraction to determine emissions for scaling ≤ 10 um
GEF = Grader emission factor (lb/VMT) - Note: VMT = vehicle miles traveled = 0.77 lb/VMT
S = Average vehicle speed, km/hr (assume S = 5 mi/hr)
Estimated grader miles traveled during the year = 3,672 VMT/yr
Days of operation: 6 days/wk*52 wk/yr - 6 holidays = 306 days/yr
Hours of operation (dozing/scraping) = 10 hr/day
Annual hours of operation: 306 days/yr* 10 hr/day = 3,060 hr/yr

Landfill Activity	PM_{10} lb/hr	PM_{10} ton/yr
Bulldozing	0.47	0.58
Grading	0.92	1.40

Note:
Actual emissions are assumed to equal potential emissions

Actual Emission Calculations
Landfill Operations (Fugitive Dust Emissions)

Assumptions:

Emission Factors Equations were derived from AP-42, *Section 11.9 - Western Surface Coal Mining, Table 11.9-1, dated 10/98*

Bulldozing (Overburden Material) - Particulate Matter ≤ 15 um: Table 11.9-1, Overburden

$BEF = 1.0(s)^{1.5}/(M)^{1.4} * (0.105)^{a}$
where:
[a] = Multiply the ≤ 15 um equation by the TSP scaling factor ≤ 2.5 um
BEF = Bulldozing emission factor (lb/hr)
s = Material silt content, % (assumed s = 6.9%)
M = Material moisture content, % (assumed M = 7.9%)
Days of operation: 6 days/wk*52 wk/yr - 6 holidays = 306 days/yr
Hours of operation (dozing/scraping) = 8 hr/day
Annual hours of operation: 306 days/yr* 8hr/day = 2,448 hr/yr

Grading - Particulate Matter ≤ 15 um: Table 11.9-1

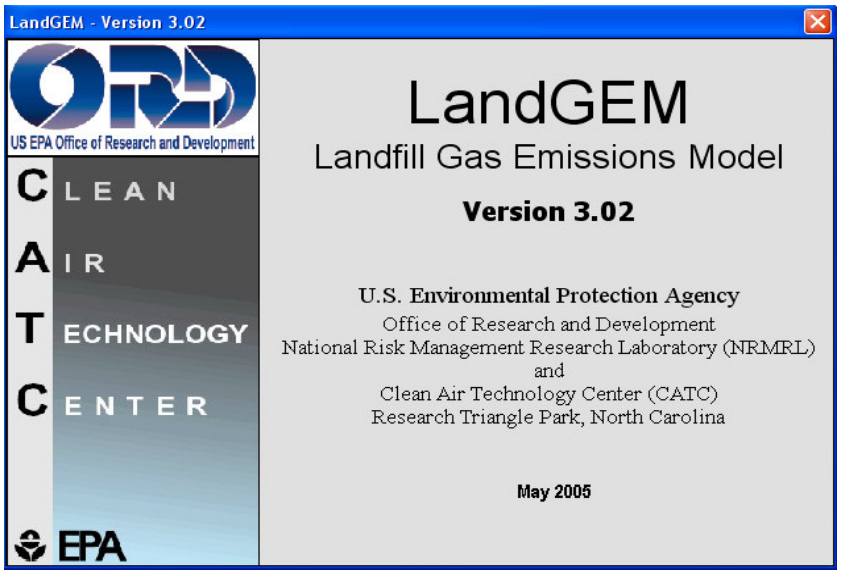
$GEF = 0.051(S)^{2.0} * (0.031)^{a}$
where:
[a] = Multiply the ≤ 15 um equation by the TSP scaling factor ≤ 2.5 um
GEF = Grader emission factor (lb/VMT) - Note: VMT = vehicle miles traveled = 0.77 lb/VMT
S = Average vehicle speed, km/hr (assume S = 5 mi/hr)
Estimated grader miles traveled during the year = 3,672 VMT/yr
Days of operation: 6 days/wk*52 wk/yr - 6 holidays = 306 days/yr
Hours of operation (dozing/scraping) = 10 hr/day
Annual hours of operation: 306 days/yr* 10 hr/day = 3,060 hr/yr

Landfill Activity	$PM_{2.5}$ lb/hr	$PM_{2.5}$ ton/yr
Bulldozing	0.07	0.08
Grading	0.05	0.07

Note:
Actual emissions are assumed to equal potential emissions

Appendix D

LANDGEM Model and Results



Summary Report

Landfill Name or Identifier: Ada County Landfill HHLF Cell

Date: Tuesday, September 20, 2011

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^{n} \sum_{j=0.1}^{1} k L_o \left(\frac{M_i}{10} \right) e^{-k t_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation *(m^3/year)*
i = 1-year time increment
n = (year of the calculation) - (initial year of waste acceptance)
j = 0.1-year time increment
k = methane generation rate *($year^{-1}$)*
L_o = potential methane generation capacity *(m^3/Mg)*

M_i = mass of waste accepted in the ith year *(Mg)*
t_{ij} = age of the jth section of waste mass M_i accepted in the ith year *(decimal years, e.g., 3.2 years)*

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at http://www.epa.gov/ttnatw01/landfill/landflpg.html.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for convential landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	**1972**	
Landfill Closure Year (with 80-year limit)	**2020**	
Actual Closure Year (without limit)	***2020***	
Have Model Calculate Closure Year?	**No**	
Waste Design Capacity	**11,121,000**	*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.020**	*$year^{-1}$*
Potential Methane Generation Capacity, L_o	**170**	*m^3/Mg*
NMOC Concentration	**55**	*ppmv as hexane*
Methane Content	**45**	*% by volume*

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	**Total landfill gas**
Gas / Pollutant #2:	**Methane**
Gas / Pollutant #3:	**Carbon dioxide**
Gas / Pollutant #4:	**NMOC**

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
1972	79,158	87,074	0	0
1973	84,214	92,635	79,158	87,074
1974	88,138	96,952	163,372	179,709
1975	93,360	102,696	251,510	276,661
1976	98,692	108,561	344,870	379,357
1977	102,727	113,000	443,562	487,918
1978	108,225	119,047	546,289	600,917
1979	113,833	125,217	654,513	719,965
1980	117,979	129,777	768,347	845,181
1981	121,814	133,996	886,326	974,958
1982	125,709	138,280	1,008,140	1,108,954
1983	128,000	140,800	1,133,849	1,247,233
1984	131,984	145,183	1,261,849	1,388,034
1985	136,028	149,630	1,393,833	1,533,217
1986	138,379	152,217	1,529,861	1,682,847
1987	142,511	156,763	1,668,240	1,835,064
1988	144,893	159,382	1,810,751	1,991,826
1989	131,442	144,586	1,955,644	2,151,208
1990	120,996	133,095	2,087,085	2,295,794
1991	116,021	127,623	2,208,081	2,428,889
1992	111,828	123,011	2,324,102	2,556,512
1993	117,966	129,763	2,435,930	2,679,523
1994	114,355	125,790	2,553,896	2,809,286
1995	104,468	114,915	2,668,251	2,935,076
1996	105,189	115,708	2,772,719	3,049,991
1997	108,748	119,623	2,877,907	3,165,698
1998	121,925	134,118	2,986,655	3,285,321
1999	123,974	136,371	3,108,581	3,419,439
2000	140,167	154,183	3,232,554	3,555,810
2001	169,774	186,751	3,372,721	3,709,993
2002	205,530	226,083	3,542,495	3,896,744
2003	209,086	229,994	3,748,025	4,122,828
2004	213,518	234,870	3,957,111	4,352,822
2005	222,937	245,231	4,170,629	4,587,692
2006	236,400	260,040	4,393,566	4,832,922
2007	244,208	268,629	4,629,966	5,092,963
2008	99,759	109,735	4,874,174	5,361,591
2009	132,722	145,995	4,973,933	5,471,326
2010	241,982	266,180	5,106,655	5,617,321
2011	241,982	266,180	5,348,638	5,883,501

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2012	241,982	266,180	5,590,620	6,149,682
2013	241,982	266,180	5,832,602	6,415,862
2014	241,982	266,180	6,074,584	6,682,043
2015	241,982	266,180	6,316,566	6,948,223
2016	241,982	266,180	6,558,549	7,214,403
2017	241,982	266,180	6,800,531	7,480,584
2018	241,982	266,180	7,042,513	7,746,764
2019	241,982	266,180	7,284,495	8,012,945
2020	0	0	7,526,477	8,279,125
2021	0	0	7,526,477	8,279,125
2022	0	0	7,526,477	8,279,125
2023	0	0	7,526,477	8,279,125
2024	0	0	7,526,477	8,279,125
2025	0	0	7,526,477	8,279,125
2026	0	0	7,526,477	8,279,125
2027	0	0	7,526,477	8,279,125
2028	0	0	7,526,477	8,279,125
2029	0	0	7,526,477	8,279,125
2030	0	0	7,526,477	8,279,125
2031	0	0	7,526,477	8,279,125
2032	0	0	7,526,477	8,279,125
2033	0	0	7,526,477	8,279,125
2034	0	0	7,526,477	8,279,125
2035	0	0	7,526,477	8,279,125
2036	0	0	7,526,477	8,279,125
2037	0	0	7,526,477	8,279,125
2038	0	0	7,526,477	8,279,125
2039	0	0	7,526,477	8,279,125
2040	0	0	7,526,477	8,279,125
2041	0	0	7,526,477	8,279,125
2042	0	0	7,526,477	8,279,125
2043	0	0	7,526,477	8,279,125
2044	0	0	7,526,477	8,279,125
2045	0	0	7,526,477	8,279,125
2046	0	0	7,526,477	8,279,125
2047	0	0	7,526,477	8,279,125
2048	0	0	7,526,477	8,279,125
2049	0	0	7,526,477	8,279,125
2050	0	0	7,526,477	8,279,125
2051	0	0	7,526,477	8,279,125

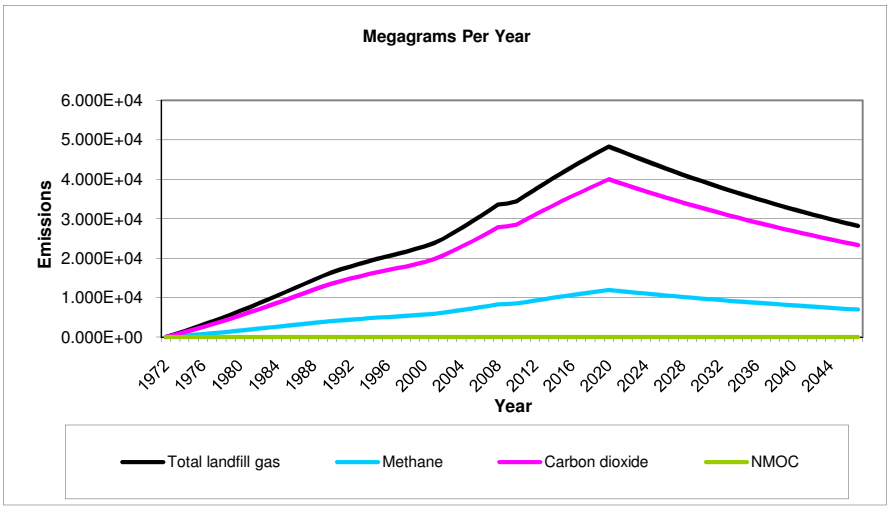
Pollutant Parameters

		Gas / Pollutant Default Parameters:		User-specified Pollutant Parameters:	
	Compound	Concentration (*ppmv*)	Molecular Weight	Concentration (*ppmv*)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

Pollutant Parameters (Continued)

	Compound	Gas / Pollutant Default Parameters: Concentration (*ppmv*)	Molecular Weight	User-specified Pollutant Parameters: Concentration (*ppmv*)	Molecular Weight
Pollutants	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13		
	Ethylbenzene - HAP/VOC	4.6	106.16		
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88		
	Fluorotrichloromethane - VOC	0.76	137.38		
	Hexane - HAP/VOC	6.6	86.18		
	Hydrogen sulfide	36	34.08		
	Mercury (total) - HAP	2.9E-04	200.61		
	Methyl ethyl ketone - HAP/VOC	7.1	72.11		
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16		
	Methyl mercaptan - VOC	2.5	48.11		
	Pentane - VOC	3.3	72.15		
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83		
	Propane - VOC	11	44.09		
	t-1,2-Dichloroethene - VOC	2.8	96.94		
	Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13		
	Toluene - Co-disposal - HAP/VOC	170	92.13		
	Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40		
	Vinyl chloride - HAP/VOC	7.3	62.50		
	Xylenes - HAP/VOC	12	106.16		

Graphs


Megagrams Per Year
Emissions
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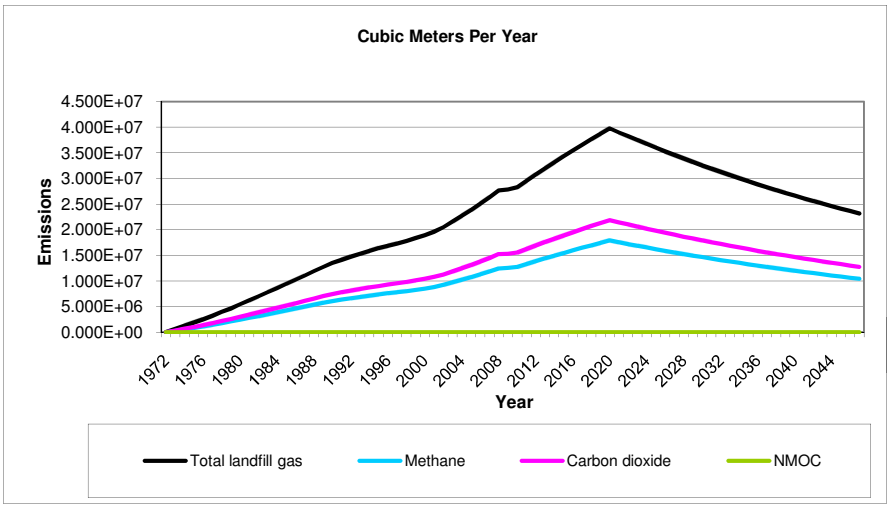
5.000E+04
4.000E+04
3.000E+04
2.000E+04
1.000E+04
0.000E+00
1972 1976 1980 1984 1988 1992 1996 2000 2004 2008 2012 2016 2020 2024 2028 2032 2036 2040 2044
Year
Total landfill gas
Methane
Carbon dioxide
NMOC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3.000E+07
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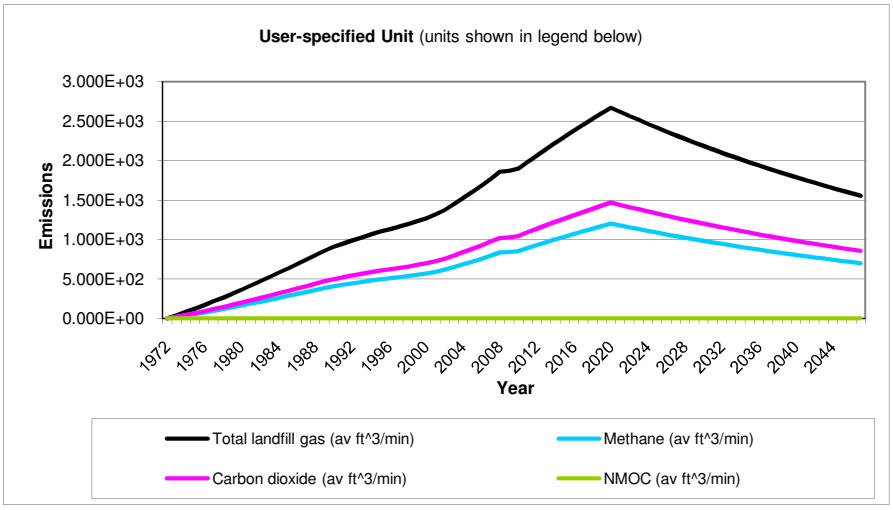
2.000E+07
1.500E+07
1.000E+07
5.000E+06
0.000E+00
1972 1976 1980 1984 1988 1992 1996 2000 2004 2008 2012 2016 2020 2024 2028 2032 2036 2040 2044
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
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2.500E+03
2.000E+03
1.500E+03
1.000E+03
5.000E+02
0.000E+00
1972 1976 1980 1984 1988 1992 1996 2000 2004 2008 2012 2016 2020 2024 2028 2032 2036 2040 2044
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

Results

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1972	0	0	0	0	0	0
1973	7.204E+02	5.927E+05	3.983E+01	1.779E+02	2.667E+05	1.792E+01
1974	1.473E+03	1.212E+06	8.141E+01	3.637E+02	5.452E+05	3.663E+01
1975	2.246E+03	1.848E+06	1.241E+02	5.547E+02	8.314E+05	5.586E+01
1976	3.051E+03	2.510E+06	1.687E+02	7.536E+02	1.130E+06	7.589E+01
1977	3.889E+03	3.199E+06	2.150E+02	9.605E+02	1.440E+06	9.673E+01
1978	4.747E+03	3.905E+06	2.624E+02	1.172E+03	1.757E+06	1.181E+02
1979	5.638E+03	4.638E+06	3.116E+02	1.392E+03	2.087E+06	1.402E+02
1980	6.562E+03	5.399E+06	3.627E+02	1.621E+03	2.429E+06	1.632E+02
1981	7.506E+03	6.175E+06	4.149E+02	1.854E+03	2.779E+06	1.867E+02
1982	8.466E+03	6.965E+06	4.680E+02	2.091E+03	3.134E+06	2.106E+02
1983	9.442E+03	7.769E+06	5.220E+02	2.332E+03	3.496E+06	2.349E+02
1984	1.042E+04	8.573E+06	5.760E+02	2.574E+03	3.858E+06	2.592E+02
1985	1.142E+04	9.392E+06	6.310E+02	2.820E+03	4.226E+06	2.840E+02
1986	1.243E+04	1.022E+07	6.870E+02	3.070E+03	4.601E+06	3.091E+02
1987	1.344E+04	1.106E+07	7.430E+02	3.320E+03	4.976E+06	3.343E+02
1988	1.447E+04	1.191E+07	8.000E+02	3.574E+03	5.358E+06	3.600E+02
1989	1.550E+04	1.276E+07	8.570E+02	3.829E+03	5.740E+06	3.857E+02
1990	1.639E+04	1.349E+07	9.062E+02	4.049E+03	6.069E+06	4.078E+02
1991	1.717E+04	1.413E+07	9.491E+02	4.241E+03	6.357E+06	4.271E+02
1992	1.789E+04	1.472E+07	9.887E+02	4.418E+03	6.622E+06	4.449E+02
1993	1.855E+04	1.526E+07	1.025E+03	4.582E+03	6.867E+06	4.614E+02
1994	1.926E+04	1.584E+07	1.064E+03	4.756E+03	7.129E+06	4.790E+02
1995	1.992E+04	1.638E+07	1.101E+03	4.919E+03	7.373E+06	4.954E+02
1996	2.047E+04	1.684E+07	1.132E+03	5.056E+03	7.579E+06	5.092E+02
1997	2.102E+04	1.730E+07	1.162E+03	5.193E+03	7.784E+06	5.230E+02
1998	2.160E+04	1.777E+07	1.194E+03	5.334E+03	7.996E+06	5.372E+02
1999	2.228E+04	1.833E+07	1.232E+03	5.503E+03	8.248E+06	5.542E+02
2000	2.297E+04	1.890E+07	1.270E+03	5.673E+03	8.503E+06	5.713E+02
2001	2.379E+04	1.957E+07	1.315E+03	5.875E+03	8.807E+06	5.917E+02
2002	2.486E+04	2.045E+07	1.374E+03	6.141E+03	9.204E+06	6.184E+02
2003	2.624E+04	2.159E+07	1.451E+03	6.481E+03	9.715E+06	6.527E+02
2004	2.762E+04	2.273E+07	1.527E+03	6.823E+03	1.023E+07	6.871E+02
2005	2.902E+04	2.388E+07	1.604E+03	7.168E+03	1.074E+07	7.219E+02
2006	3.047E+04	2.507E+07	1.685E+03	7.527E+03	1.128E+07	7.581E+02
2007	3.202E+04	2.635E+07	1.770E+03	7.909E+03	1.186E+07	7.966E+02
2008	3.361E+04	2.765E+07	1.858E+03	8.302E+03	1.244E+07	8.361E+02
2009	3.385E+04	2.785E+07	1.871E+03	8.362E+03	1.253E+07	8.421E+02
2010	3.439E+04	2.829E+07	1.901E+03	8.494E+03	1.273E+07	8.555E+02
2011	3.591E+04	2.955E+07	1.985E+03	8.870E+03	1.330E+07	8.933E+02
2012	3.740E+04	3.077E+07	2.068E+03	9.239E+03	1.385E+07	9.304E+02
2013	3.887E+04	3.198E+07	2.148E+03	9.600E+03	1.439E+07	9.668E+02
2014	4.030E+04	3.315E+07	2.228E+03	9.953E+03	1.492E+07	1.002E+03
2015	4.170E+04	3.431E+07	2.305E+03	1.030E+04	1.544E+07	1.037E+03
2016	4.308E+04	3.544E+07	2.381E+03	1.064E+04	1.595E+07	1.072E+03
2017	4.443E+04	3.655E+07	2.456E+03	1.097E+04	1.645E+07	1.105E+03
2018	4.575E+04	3.764E+07	2.529E+03	1.130E+04	1.694E+07	1.138E+03
2019	4.705E+04	3.871E+07	2.601E+03	1.162E+04	1.742E+07	1.170E+03
2020	4.832E+04	3.975E+07	2.671E+03	1.193E+04	1.789E+07	1.202E+03
2021	4.736E+04	3.897E+07	2.618E+03	1.170E+04	1.753E+07	1.178E+03

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2022	4.642E+04	3.819E+07	2.566E+03	1.147E+04	1.719E+07	1.155E+03
2023	4.550E+04	3.744E+07	2.515E+03	1.124E+04	1.685E+07	1.132E+03
2024	4.460E+04	3.670E+07	2.466E+03	1.102E+04	1.651E+07	1.110E+03
2025	4.372E+04	3.597E+07	2.417E+03	1.080E+04	1.619E+07	1.088E+03
2026	4.285E+04	3.526E+07	2.369E+03	1.058E+04	1.587E+07	1.066E+03
2027	4.201E+04	3.456E+07	2.322E+03	1.038E+04	1.555E+07	1.045E+03
2028	4.117E+04	3.388E+07	2.276E+03	1.017E+04	1.524E+07	1.024E+03
2029	4.036E+04	3.320E+07	2.231E+03	9.968E+03	1.494E+07	1.004E+03
2030	3.956E+04	3.255E+07	2.187E+03	9.771E+03	1.465E+07	9.841E+02
2031	3.878E+04	3.190E+07	2.144E+03	9.578E+03	1.436E+07	9.646E+02
2032	3.801E+04	3.127E+07	2.101E+03	9.388E+03	1.407E+07	9.455E+02
2033	3.726E+04	3.065E+07	2.059E+03	9.202E+03	1.379E+07	9.268E+02
2034	3.652E+04	3.004E+07	2.019E+03	9.020E+03	1.352E+07	9.084E+02
2035	3.579E+04	2.945E+07	1.979E+03	8.841E+03	1.325E+07	8.904E+02
2036	3.509E+04	2.887E+07	1.940E+03	8.666E+03	1.299E+07	8.728E+02
2037	3.439E+04	2.829E+07	1.901E+03	8.495E+03	1.273E+07	8.555E+02
2038	3.371E+04	2.773E+07	1.863E+03	8.326E+03	1.248E+07	8.386E+02
2039	3.304E+04	2.719E+07	1.827E+03	8.161E+03	1.223E+07	8.220E+02
2040	3.239E+04	2.665E+07	1.790E+03	8.000E+03	1.199E+07	8.057E+02
2041	3.175E+04	2.612E+07	1.755E+03	7.841E+03	1.175E+07	7.897E+02
2042	3.112E+04	2.560E+07	1.720E+03	7.686E+03	1.152E+07	7.741E+02
2043	3.050E+04	2.510E+07	1.686E+03	7.534E+03	1.129E+07	7.588E+02
2044	2.990E+04	2.460E+07	1.653E+03	7.385E+03	1.107E+07	7.437E+02
2045	2.931E+04	2.411E+07	1.620E+03	7.239E+03	1.085E+07	7.290E+02
2046	2.873E+04	2.363E+07	1.588E+03	7.095E+03	1.064E+07	7.146E+02
2047	2.816E+04	2.317E+07	1.557E+03	6.955E+03	1.042E+07	7.004E+02
2048	2.760E+04	2.271E+07	1.526E+03	6.817E+03	1.022E+07	6.866E+02
2049	2.705E+04	2.226E+07	1.495E+03	6.682E+03	1.002E+07	6.730E+02
2050	2.652E+04	2.182E+07	1.466E+03	6.550E+03	9.818E+06	6.596E+02
2051	2.599E+04	2.138E+07	1.437E+03	6.420E+03	9.623E+06	6.466E+02
2052	2.548E+04	2.096E+07	1.408E+03	6.293E+03	9.433E+06	6.338E+02
2053	2.497E+04	2.055E+07	1.380E+03	6.168E+03	9.246E+06	6.212E+02
2054	2.448E+04	2.014E+07	1.353E+03	6.046E+03	9.063E+06	6.089E+02
2055	2.399E+04	1.974E+07	1.326E+03	5.926E+03	8.883E+06	5.969E+02
2056	2.352E+04	1.935E+07	1.300E+03	5.809E+03	8.707E+06	5.850E+02
2057	2.305E+04	1.897E+07	1.274E+03	5.694E+03	8.535E+06	5.735E+02
2058	2.260E+04	1.859E+07	1.249E+03	5.581E+03	8.366E+06	5.621E+02
2059	2.215E+04	1.822E+07	1.224E+03	5.471E+03	8.200E+06	5.510E+02
2060	2.171E+04	1.786E+07	1.200E+03	5.362E+03	8.038E+06	5.401E+02
2061	2.128E+04	1.751E+07	1.176E+03	5.256E+03	7.879E+06	5.294E+02
2062	2.086E+04	1.716E+07	1.153E+03	5.152E+03	7.723E+06	5.189E+02
2063	2.045E+04	1.682E+07	1.130E+03	5.050E+03	7.570E+06	5.086E+02
2064	2.004E+04	1.649E+07	1.108E+03	4.950E+03	7.420E+06	4.985E+02
2065	1.964E+04	1.616E+07	1.086E+03	4.852E+03	7.273E+06	4.887E+02
2066	1.926E+04	1.584E+07	1.064E+03	4.756E+03	7.129E+06	4.790E+02
2067	1.887E+04	1.553E+07	1.043E+03	4.662E+03	6.988E+06	4.695E+02
2068	1.850E+04	1.522E+07	1.023E+03	4.570E+03	6.849E+06	4.602E+02
2069	1.813E+04	1.492E+07	1.002E+03	4.479E+03	6.714E+06	4.511E+02
2070	1.778E+04	1.462E+07	9.826E+02	4.390E+03	6.581E+06	4.422E+02
2071	1.742E+04	1.433E+07	9.631E+02	4.303E+03	6.451E+06	4.334E+02
2072	1.708E+04	1.405E+07	9.441E+02	4.218E+03	6.323E+06	4.248E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2073	1.674E+04	1.377E+07	9.254E+02	4.135E+03	6.198E+06	4.164E+02
2074	1.641E+04	1.350E+07	9.071E+02	4.053E+03	6.075E+06	4.082E+02
2075	1.608E+04	1.323E+07	8.891E+02	3.973E+03	5.955E+06	4.001E+02
2076	1.577E+04	1.297E+07	8.715E+02	3.894E+03	5.837E+06	3.922E+02
2077	1.545E+04	1.271E+07	8.542E+02	3.817E+03	5.721E+06	3.844E+02
2078	1.515E+04	1.246E+07	8.373E+02	3.741E+03	5.608E+06	3.768E+02
2079	1.485E+04	1.222E+07	8.207E+02	3.667E+03	5.497E+06	3.693E+02
2080	1.455E+04	1.197E+07	8.045E+02	3.595E+03	5.388E+06	3.620E+02
2081	1.426E+04	1.174E+07	7.886E+02	3.523E+03	5.281E+06	3.548E+02
2082	1.398E+04	1.150E+07	7.729E+02	3.454E+03	5.177E+06	3.478E+02
2083	1.371E+04	1.128E+07	7.576E+02	3.385E+03	5.074E+06	3.409E+02
2084	1.343E+04	1.105E+07	7.426E+02	3.318E+03	4.974E+06	3.342E+02
2085	1.317E+04	1.083E+07	7.279E+02	3.253E+03	4.875E+06	3.276E+02
2086	1.291E+04	1.062E+07	7.135E+02	3.188E+03	4.779E+06	3.211E+02
2087	1.265E+04	1.041E+07	6.994E+02	3.125E+03	4.684E+06	3.147E+02
2088	1.240E+04	1.020E+07	6.855E+02	3.063E+03	4.591E+06	3.085E+02
2089	1.216E+04	1.000E+07	6.720E+02	3.002E+03	4.500E+06	3.024E+02
2090	1.192E+04	9.803E+06	6.587E+02	2.943E+03	4.411E+06	2.964E+02
2091	1.168E+04	9.609E+06	6.456E+02	2.885E+03	4.324E+06	2.905E+02
2092	1.145E+04	9.419E+06	6.328E+02	2.828E+03	4.238E+06	2.848E+02
2093	1.122E+04	9.232E+06	6.203E+02	2.772E+03	4.154E+06	2.791E+02
2094	1.100E+04	9.049E+06	6.080E+02	2.717E+03	4.072E+06	2.736E+02
2095	1.078E+04	8.870E+06	5.960E+02	2.663E+03	3.992E+06	2.682E+02
2096	1.057E+04	8.694E+06	5.842E+02	2.610E+03	3.912E+06	2.629E+02
2097	1.036E+04	8.522E+06	5.726E+02	2.559E+03	3.835E+06	2.577E+02
2098	1.015E+04	8.353E+06	5.613E+02	2.508E+03	3.759E+06	2.526E+02
2099	9.952E+03	8.188E+06	5.502E+02	2.458E+03	3.685E+06	2.476E+02
2100	9.755E+03	8.026E+06	5.393E+02	2.410E+03	3.612E+06	2.427E+02
2101	9.562E+03	7.867E+06	5.286E+02	2.362E+03	3.540E+06	2.379E+02
2102	9.373E+03	7.711E+06	5.181E+02	2.315E+03	3.470E+06	2.332E+02
2103	9.187E+03	7.559E+06	5.079E+02	2.269E+03	3.401E+06	2.285E+02
2104	9.005E+03	7.409E+06	4.978E+02	2.224E+03	3.334E+06	2.240E+02
2105	8.827E+03	7.262E+06	4.879E+02	2.180E+03	3.268E+06	2.196E+02
2106	8.652E+03	7.118E+06	4.783E+02	2.137E+03	3.203E+06	2.152E+02
2107	8.481E+03	6.977E+06	4.688E+02	2.095E+03	3.140E+06	2.110E+02
2108	8.313E+03	6.839E+06	4.595E+02	2.053E+03	3.078E+06	2.068E+02
2109	8.148E+03	6.704E+06	4.504E+02	2.013E+03	3.017E+06	2.027E+02
2110	7.987E+03	6.571E+06	4.415E+02	1.973E+03	2.957E+06	1.987E+02
2111	7.829E+03	6.441E+06	4.328E+02	1.934E+03	2.898E+06	1.947E+02
2112	7.674E+03	6.313E+06	4.242E+02	1.895E+03	2.841E+06	1.909E+02

Results (Continued)

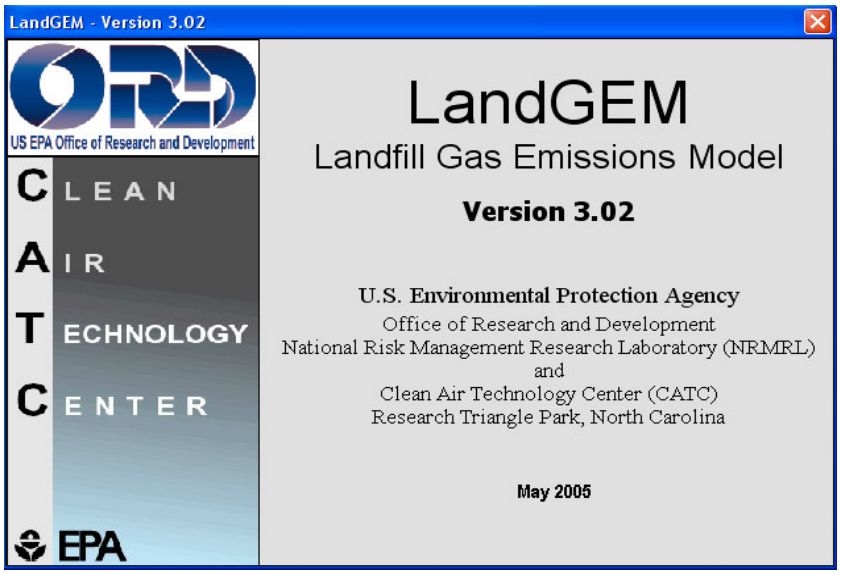
Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1972	0	0	0	0	0	0
1973	5.967E+02	3.260E+05	2.190E+01	1.175E-01	3.278E+01	2.202E-03
1974	1.220E+03	6.664E+05	4.477E+01	2.402E-01	6.700E+01	4.502E-03
1975	1.860E+03	1.016E+06	6.828E+01	3.662E-01	1.022E+02	6.865E-03
1976	2.527E+03	1.381E+06	9.276E+01	4.975E-01	1.388E+02	9.326E-03
1977	3.221E+03	1.760E+06	1.182E+02	6.342E-01	1.769E+02	1.189E-02
1978	3.932E+03	2.148E+06	1.443E+02	7.741E-01	2.160E+02	1.451E-02
1979	4.670E+03	2.551E+06	1.714E+02	9.194E-01	2.565E+02	1.723E-02
1980	5.435E+03	2.969E+06	1.995E+02	1.070E+00	2.986E+02	2.006E-02
1981	6.217E+03	3.396E+06	2.282E+02	1.224E+00	3.415E+02	2.295E-02
1982	7.012E+03	3.831E+06	2.574E+02	1.381E+00	3.852E+02	2.588E-02
1983	7.821E+03	4.273E+06	2.871E+02	1.540E+00	4.296E+02	2.886E-02
1984	8.631E+03	4.715E+06	3.168E+02	1.699E+00	4.741E+02	3.185E-02
1985	9.455E+03	5.165E+06	3.471E+02	1.862E+00	5.194E+02	3.490E-02
1986	1.029E+04	5.623E+06	3.778E+02	2.027E+00	5.654E+02	3.799E-02
1987	1.113E+04	6.082E+06	4.086E+02	2.192E+00	6.115E+02	4.109E-02
1988	1.199E+04	6.548E+06	4.400E+02	2.360E+00	6.584E+02	4.424E-02
1989	1.284E+04	7.015E+06	4.714E+02	2.528E+00	7.054E+02	4.739E-02
1990	1.358E+04	7.418E+06	4.984E+02	2.673E+00	7.458E+02	5.011E-02
1991	1.422E+04	7.769E+06	5.220E+02	2.800E+00	7.812E+02	5.249E-02
1992	1.481E+04	8.093E+06	5.438E+02	2.917E+00	8.137E+02	5.468E-02
1993	1.536E+04	8.394E+06	5.640E+02	3.025E+00	8.439E+02	5.670E-02
1994	1.595E+04	8.713E+06	5.854E+02	3.140E+00	8.761E+02	5.886E-02
1995	1.650E+04	9.012E+06	6.055E+02	3.248E+00	9.061E+02	6.088E-02
1996	1.696E+04	9.263E+06	6.224E+02	3.339E+00	9.314E+02	6.258E-02
1997	1.741E+04	9.513E+06	6.392E+02	3.429E+00	9.565E+02	6.427E-02
1998	1.789E+04	9.773E+06	6.566E+02	3.522E+00	9.826E+02	6.602E-02
1999	1.845E+04	1.008E+07	6.774E+02	3.633E+00	1.014E+03	6.811E-02
2000	1.902E+04	1.039E+07	6.983E+02	3.745E+00	1.045E+03	7.021E-02
2001	1.970E+04	1.076E+07	7.232E+02	3.879E+00	1.082E+03	7.272E-02
2002	2.059E+04	1.125E+07	7.559E+02	4.054E+00	1.131E+03	7.600E-02
2003	2.173E+04	1.187E+07	7.978E+02	4.279E+00	1.194E+03	8.021E-02
2004	2.288E+04	1.250E+07	8.398E+02	4.505E+00	1.257E+03	8.444E-02
2005	2.404E+04	1.313E+07	8.823E+02	4.733E+00	1.320E+03	8.871E-02
2006	2.524E+04	1.379E+07	9.265E+02	4.970E+00	1.386E+03	9.316E-02
2007	2.652E+04	1.449E+07	9.736E+02	5.222E+00	1.457E+03	9.789E-02
2008	2.784E+04	1.521E+07	1.022E+03	5.481E+00	1.529E+03	1.027E-01
2009	2.804E+04	1.532E+07	1.029E+03	5.521E+00	1.540E+03	1.035E-01
2010	2.849E+04	1.556E+07	1.046E+03	5.609E+00	1.565E+03	1.051E-01
2011	2.975E+04	1.625E+07	1.092E+03	5.857E+00	1.634E+03	1.098E-01
2012	3.098E+04	1.693E+07	1.137E+03	6.100E+00	1.702E+03	1.143E-01
2013	3.219E+04	1.759E+07	1.182E+03	6.338E+00	1.768E+03	1.188E-01
2014	3.338E+04	1.823E+07	1.225E+03	6.572E+00	1.833E+03	1.232E-01
2015	3.454E+04	1.887E+07	1.268E+03	6.801E+00	1.897E+03	1.275E-01
2016	3.568E+04	1.949E+07	1.310E+03	7.025E+00	1.960E+03	1.317E-01
2017	3.680E+04	2.010E+07	1.351E+03	7.245E+00	2.021E+03	1.358E-01
2018	3.790E+04	2.070E+07	1.391E+03	7.461E+00	2.082E+03	1.399E-01
2019	3.897E+04	2.129E+07	1.430E+03	7.673E+00	2.141E+03	1.438E-01
2020	4.002E+04	2.186E+07	1.469E+03	7.880E+00	2.198E+03	1.477E-01
2021	3.923E+04	2.143E+07	1.440E+03	7.724E+00	2.155E+03	1.448E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2022	3.845E+04	2.101E+07	1.411E+03	7.571E+00	2.112E+03	1.419E-01
2023	3.769E+04	2.059E+07	1.383E+03	7.421E+00	2.070E+03	1.391E-01
2024	3.694E+04	2.018E+07	1.356E+03	7.274E+00	2.029E+03	1.363E-01
2025	3.621E+04	1.978E+07	1.329E+03	7.130E+00	1.989E+03	1.336E-01
2026	3.550E+04	1.939E+07	1.303E+03	6.989E+00	1.950E+03	1.310E-01
2027	3.479E+04	1.901E+07	1.277E+03	6.850E+00	1.911E+03	1.284E-01
2028	3.410E+04	1.863E+07	1.252E+03	6.715E+00	1.873E+03	1.259E-01
2029	3.343E+04	1.826E+07	1.227E+03	6.582E+00	1.836E+03	1.234E-01
2030	3.277E+04	1.790E+07	1.203E+03	6.451E+00	1.800E+03	1.209E-01
2031	3.212E+04	1.755E+07	1.179E+03	6.324E+00	1.764E+03	1.185E-01
2032	3.148E+04	1.720E+07	1.156E+03	6.198E+00	1.729E+03	1.162E-01
2033	3.086E+04	1.686E+07	1.133E+03	6.076E+00	1.695E+03	1.139E-01
2034	3.025E+04	1.652E+07	1.110E+03	5.955E+00	1.661E+03	1.116E-01
2035	2.965E+04	1.620E+07	1.088E+03	5.838E+00	1.629E+03	1.094E-01
2036	2.906E+04	1.588E+07	1.067E+03	5.722E+00	1.596E+03	1.073E-01
2037	2.849E+04	1.556E+07	1.046E+03	5.609E+00	1.565E+03	1.051E-01
2038	2.792E+04	1.525E+07	1.025E+03	5.498E+00	1.534E+03	1.031E-01
2039	2.737E+04	1.495E+07	1.005E+03	5.389E+00	1.503E+03	1.010E-01
2040	2.683E+04	1.466E+07	9.847E+02	5.282E+00	1.474E+03	9.901E-02
2041	2.630E+04	1.437E+07	9.652E+02	5.177E+00	1.444E+03	9.705E-02
2042	2.578E+04	1.408E+07	9.461E+02	5.075E+00	1.416E+03	9.513E-02
2043	2.527E+04	1.380E+07	9.274E+02	4.974E+00	1.388E+03	9.324E-02
2044	2.476E+04	1.353E+07	9.090E+02	4.876E+00	1.360E+03	9.140E-02
2045	2.427E+04	1.326E+07	8.910E+02	4.779E+00	1.333E+03	8.959E-02
2046	2.379E+04	1.300E+07	8.734E+02	4.685E+00	1.307E+03	8.781E-02
2047	2.332E+04	1.274E+07	8.561E+02	4.592E+00	1.281E+03	8.607E-02
2048	2.286E+04	1.249E+07	8.391E+02	4.501E+00	1.256E+03	8.437E-02
2049	2.241E+04	1.224E+07	8.225E+02	4.412E+00	1.231E+03	8.270E-02
2050	2.196E+04	1.200E+07	8.062E+02	4.325E+00	1.206E+03	8.106E-02
2051	2.153E+04	1.176E+07	7.903E+02	4.239E+00	1.183E+03	7.946E-02
2052	2.110E+04	1.153E+07	7.746E+02	4.155E+00	1.159E+03	7.788E-02
2053	2.069E+04	1.130E+07	7.593E+02	4.073E+00	1.136E+03	7.634E-02
2054	2.028E+04	1.108E+07	7.442E+02	3.992E+00	1.114E+03	7.483E-02
2055	1.987E+04	1.086E+07	7.295E+02	3.913E+00	1.092E+03	7.335E-02
2056	1.948E+04	1.064E+07	7.151E+02	3.836E+00	1.070E+03	7.190E-02
2057	1.910E+04	1.043E+07	7.009E+02	3.760E+00	1.049E+03	7.047E-02
2058	1.872E+04	1.023E+07	6.870E+02	3.685E+00	1.028E+03	6.908E-02
2059	1.835E+04	1.002E+07	6.734E+02	3.612E+00	1.008E+03	6.771E-02
2060	1.798E+04	9.824E+06	6.601E+02	3.541E+00	9.878E+02	6.637E-02
2061	1.763E+04	9.630E+06	6.470E+02	3.471E+00	9.682E+02	6.505E-02
2062	1.728E+04	9.439E+06	6.342E+02	3.402E+00	9.490E+02	6.377E-02
2063	1.694E+04	9.252E+06	6.216E+02	3.334E+00	9.302E+02	6.250E-02
2064	1.660E+04	9.069E+06	6.093E+02	3.268E+00	9.118E+02	6.127E-02
2065	1.627E+04	8.889E+06	5.973E+02	3.204E+00	8.938E+02	6.005E-02
2066	1.595E+04	8.713E+06	5.854E+02	3.140E+00	8.761E+02	5.886E-02
2067	1.563E+04	8.541E+06	5.738E+02	3.078E+00	8.587E+02	5.770E-02
2068	1.532E+04	8.372E+06	5.625E+02	3.017E+00	8.417E+02	5.656E-02
2069	1.502E+04	8.206E+06	5.513E+02	2.957E+00	8.251E+02	5.544E-02
2070	1.472E+04	8.043E+06	5.404E+02	2.899E+00	8.087E+02	5.434E-02
2071	1.443E+04	7.884E+06	5.297E+02	2.841E+00	7.927E+02	5.326E-02
2072	1.415E+04	7.728E+06	5.192E+02	2.785E+00	7.770E+02	5.221E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2073	1.387E+04	7.575E+06	5.090E+02	2.730E+00	7.616E+02	5.117E-02
2074	1.359E+04	7.425E+06	4.989E+02	2.676E+00	7.465E+02	5.016E-02
2075	1.332E+04	7.278E+06	4.890E+02	2.623E+00	7.318E+02	4.917E-02
2076	1.306E+04	7.134E+06	4.793E+02	2.571E+00	7.173E+02	4.819E-02
2077	1.280E+04	6.993E+06	4.698E+02	2.520E+00	7.031E+02	4.724E-02
2078	1.255E+04	6.854E+06	4.605E+02	2.470E+00	6.891E+02	4.630E-02
2079	1.230E+04	6.718E+06	4.514E+02	2.421E+00	6.755E+02	4.539E-02
2080	1.205E+04	6.585E+06	4.425E+02	2.373E+00	6.621E+02	4.449E-02
2081	1.182E+04	6.455E+06	4.337E+02	2.326E+00	6.490E+02	4.361E-02
2082	1.158E+04	6.327E+06	4.251E+02	2.280E+00	6.362E+02	4.274E-02
2083	1.135E+04	6.202E+06	4.167E+02	2.235E+00	6.236E+02	4.190E-02
2084	1.113E+04	6.079E+06	4.084E+02	2.191E+00	6.112E+02	4.107E-02
2085	1.091E+04	5.959E+06	4.004E+02	2.148E+00	5.991E+02	4.025E-02
2086	1.069E+04	5.841E+06	3.924E+02	2.105E+00	5.873E+02	3.946E-02
2087	1.048E+04	5.725E+06	3.847E+02	2.063E+00	5.756E+02	3.868E-02
2088	1.027E+04	5.612E+06	3.770E+02	2.022E+00	5.642E+02	3.791E-02
2089	1.007E+04	5.501E+06	3.696E+02	1.982E+00	5.531E+02	3.716E-02
2090	9.869E+03	5.392E+06	3.623E+02	1.943E+00	5.421E+02	3.642E-02
2091	9.674E+03	5.285E+06	3.551E+02	1.905E+00	5.314E+02	3.570E-02
2092	9.482E+03	5.180E+06	3.481E+02	1.867E+00	5.208E+02	3.500E-02
2093	9.295E+03	5.078E+06	3.412E+02	1.830E+00	5.105E+02	3.430E-02
2094	9.111E+03	4.977E+06	3.344E+02	1.794E+00	5.004E+02	3.362E-02
2095	8.930E+03	4.879E+06	3.278E+02	1.758E+00	4.905E+02	3.296E-02
2096	8.753E+03	4.782E+06	3.213E+02	1.723E+00	4.808E+02	3.230E-02
2097	8.580E+03	4.687E+06	3.149E+02	1.689E+00	4.713E+02	3.167E-02
2098	8.410E+03	4.594E+06	3.087E+02	1.656E+00	4.619E+02	3.104E-02
2099	8.244E+03	4.503E+06	3.026E+02	1.623E+00	4.528E+02	3.042E-02
2100	8.080E+03	4.414E+06	2.966E+02	1.591E+00	4.438E+02	2.982E-02
2101	7.920E+03	4.327E+06	2.907E+02	1.559E+00	4.350E+02	2.923E-02
2102	7.763E+03	4.241E+06	2.850E+02	1.529E+00	4.264E+02	2.865E-02
2103	7.610E+03	4.157E+06	2.793E+02	1.498E+00	4.180E+02	2.808E-02
2104	7.459E+03	4.075E+06	2.738E+02	1.469E+00	4.097E+02	2.753E-02
2105	7.311E+03	3.994E+06	2.684E+02	1.440E+00	4.016E+02	2.698E-02
2106	7.167E+03	3.915E+06	2.631E+02	1.411E+00	3.936E+02	2.645E-02
2107	7.025E+03	3.838E+06	2.578E+02	1.383E+00	3.859E+02	2.593E-02
2108	6.886E+03	3.762E+06	2.527E+02	1.356E+00	3.782E+02	2.541E-02
2109	6.749E+03	3.687E+06	2.477E+02	1.329E+00	3.707E+02	2.491E-02
2110	6.616E+03	3.614E+06	2.428E+02	1.303E+00	3.634E+02	2.442E-02
2111	6.485E+03	3.543E+06	2.380E+02	1.277E+00	3.562E+02	2.393E-02
2112	6.356E+03	3.472E+06	2.333E+02	1.251E+00	3.491E+02	2.346E-02



Summary Report

Landfill Name or Identifier: Ada County Landfill NRC Cell

Date: Tuesday, September 20, 2011

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^{n} \sum_{j=0.1}^{1} k L_o \left(\frac{M_i}{10} \right) e^{-k t_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation *(m^3/year)*
i = 1-year time increment
n = (year of the calculation) - (initial year of waste acceptance)
j = 0.1-year time increment
k = methane generation rate *($year^{-1}$)*
L_o = potential methane generation capacity *(m^3/Mg)*

M_i = mass of waste accepted in the ith year *(Mg)*
t_{ij} = age of the jth section of waste mass M_i accepted in the ith year *(decimal years, e.g., 3.2 years)*

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at http://www.epa.gov/ttnatw01/landfill/landflpg.html.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for convential landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	**2008**	
Landfill Closure Year (with 80-year limit)	**2087**	**Landfill Closure Year entered exceeds the 80-year waste**
Actual Closure Year (without limit)	***2100***	**acceptance limit. See Section 2.6 of the User's Manual.**
Have Model Calculate Closure Year?	**No**	
Waste Design Capacity	**48,654,375**	*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.020**	*$year^{-1}$*
Potential Methane Generation Capacity, L_o	**170**	*m^3/Mg*
NMOC Concentration	**55**	*ppmv as hexane*
Methane Content	**45**	*% by volume*

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	**Total landfill gas**
Gas / Pollutant #2:	**Methane**
Gas / Pollutant #3:	**Carbon dioxide**
Gas / Pollutant #4:	**NMOC**

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2008	148,505	163,355	0	0
2009	119,020	130,921	148,505	163,355
2010	0	0	267,524	294,277
2011	0	0	267,524	294,277
2012	0	0	267,524	294,277
2013	0	0	267,524	294,277
2014	0	0	267,524	294,277
2015	0	0	267,524	294,277
2016	0	0	267,524	294,277
2017	0	0	267,524	294,277
2018	0	0	267,524	294,277
2019	0	0	267,524	294,277
2020	0	0	267,524	294,277
2021	241,982	266,180	267,524	294,277
2022	241,982	266,180	509,506	560,457
2023	241,982	266,180	751,488	826,637
2024	241,982	266,180	993,470	1,092,817
2025	241,982	266,180	1,235,451	1,358,997
2026	241,982	266,180	1,477,433	1,625,177
2027	241,982	266,180	1,719,415	1,891,357
2028	241,982	266,180	1,961,397	2,157,537
2029	241,982	266,180	2,203,379	2,423,717
2030	241,982	266,180	2,445,361	2,689,897
2031	241,982	266,180	2,687,342	2,956,077
2032	241,982	266,180	2,929,324	3,222,257
2033	241,982	266,180	3,171,306	3,488,437
2034	241,982	266,180	3,413,288	3,754,617
2035	241,982	266,180	3,655,270	4,020,797
2036	241,982	266,180	3,897,251	4,286,977
2037	241,982	266,180	4,139,233	4,553,157
2038	241,982	266,180	4,381,215	4,819,337
2039	241,982	266,180	4,623,197	5,085,517
2040	241,982	266,180	4,865,179	5,351,697
2041	241,982	266,180	5,107,161	5,617,877
2042	241,982	266,180	5,349,142	5,884,057
2043	241,982	266,180	5,591,124	6,150,237
2044	241,982	266,180	5,833,106	6,416,417
2045	241,982	266,180	6,075,088	6,682,597
2046	241,982	266,180	6,317,070	6,948,777
2047	241,982	266,180	6,559,051	7,214,957

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2048	241,982	266,180	6,801,033	7,481,137
2049	241,982	266,180	7,043,015	7,747,317
2050	241,982	266,180	7,284,997	8,013,497
2051	241,982	266,180	7,526,979	8,279,677
2052	241,982	266,180	7,768,961	8,545,857
2053	241,982	266,180	8,010,942	8,812,037
2054	241,982	266,180	8,252,924	9,078,217
2055	241,982	266,180	8,494,906	9,344,397
2056	241,982	266,180	8,736,888	9,610,577
2057	241,982	266,180	8,978,870	9,876,757
2058	241,982	266,180	9,220,851	10,142,937
2059	241,982	266,180	9,462,833	10,409,117
2060	241,982	266,180	9,704,815	10,675,297
2061	241,982	266,180	9,946,797	10,941,477
2062	241,982	266,180	10,188,779	11,207,657
2063	241,982	266,180	10,430,761	11,473,837
2064	241,982	266,180	10,672,742	11,740,017
2065	241,982	266,180	10,914,724	12,006,197
2066	241,982	266,180	11,156,706	12,272,377
2067	241,982	266,180	11,398,688	12,538,557
2068	241,982	266,180	11,640,670	12,804,737
2069	241,982	266,180	11,882,651	13,070,917
2070	241,982	266,180	12,124,633	13,337,097
2071	241,982	266,180	12,366,615	13,603,277
2072	241,982	266,180	12,608,597	13,869,457
2073	241,982	266,180	12,850,579	14,135,637
2074	241,982	266,180	13,092,561	14,401,817
2075	241,982	266,180	13,334,542	14,667,997
2076	241,982	266,180	13,576,524	14,934,177
2077	241,982	266,180	13,818,506	15,200,357
2078	241,982	266,180	14,060,488	15,466,537
2079	241,982	266,180	14,302,470	15,732,717
2080	241,982	266,180	14,544,451	15,998,897
2081	241,982	266,180	14,786,433	16,265,077
2082	241,982	266,180	15,028,415	16,531,257
2083	241,982	266,180	15,270,397	16,797,437
2084	241,982	266,180	15,512,379	17,063,617
2085	241,982	266,180	15,754,361	17,329,797
2086	241,982	266,180	15,996,342	17,595,977
2087	241,982	266,180	16,238,324	17,862,157

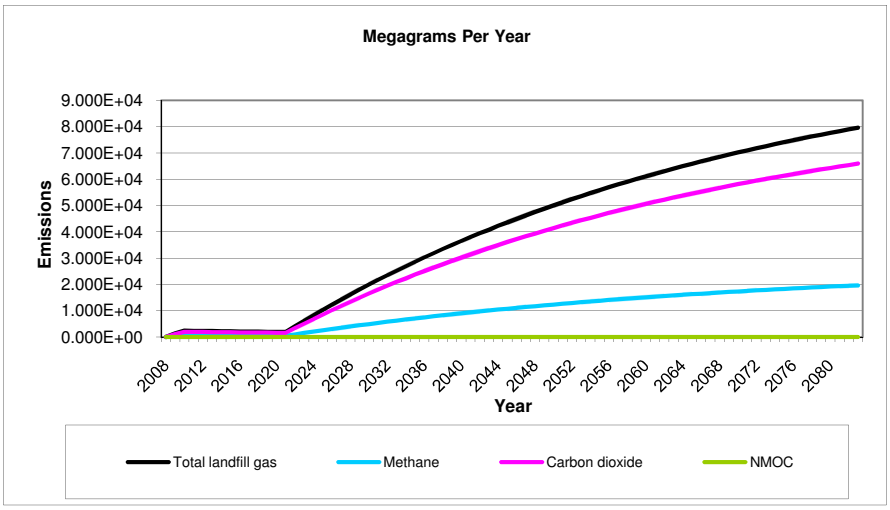
Pollutant Parameters

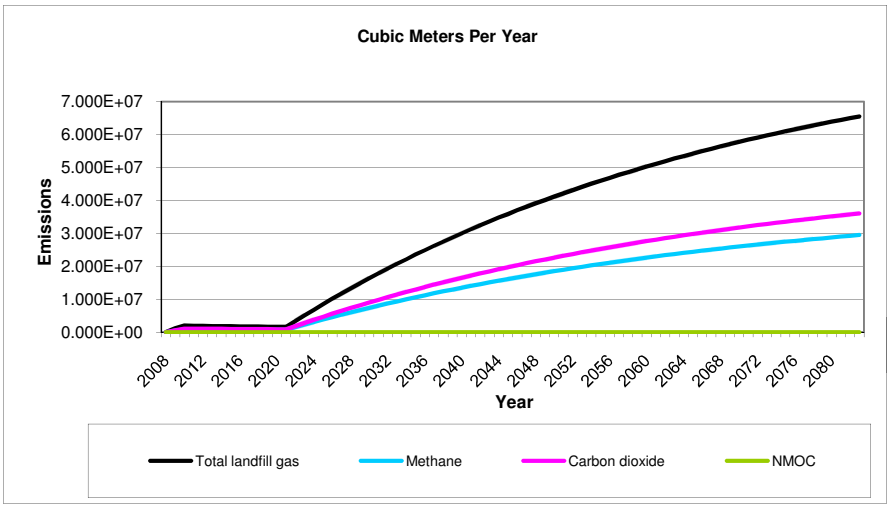
		Gas / Pollutant Default Parameters:		User-specified Pollutant Parameters:	
	Compound	Concentration (*ppmv*)	Molecular Weight	Concentration (*ppmv*)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

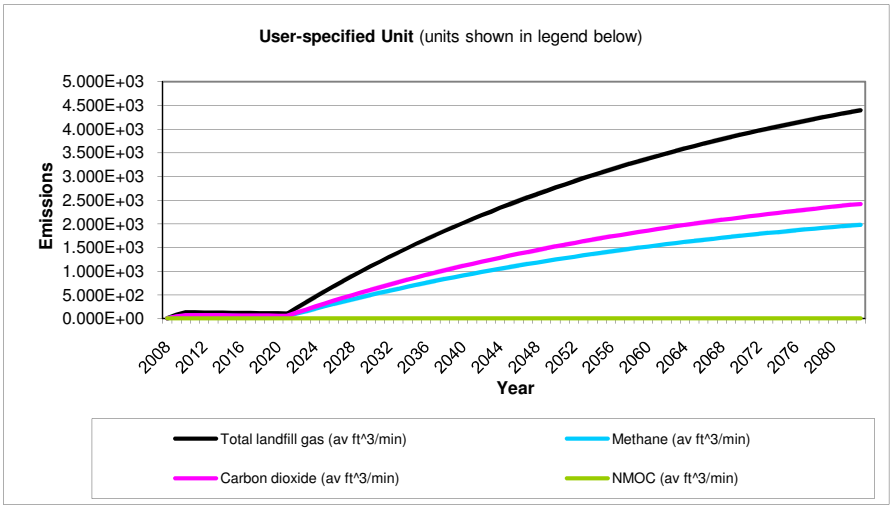
Pollutant Parameters (Continued)

	Compound	Gas / Pollutant Default Parameters: Concentration (*ppmv*)	Molecular Weight	User-specified Pollutant Parameters: Concentration (*ppmv*)	Molecular Weight
Pollutants	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13		
	Ethylbenzene - HAP/VOC	4.6	106.16		
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88		
	Fluorotrichloromethane - VOC	0.76	137.38		
	Hexane - HAP/VOC	6.6	86.18		
	Hydrogen sulfide	36	34.08		
	Mercury (total) - HAP	2.9E-04	200.61		
	Methyl ethyl ketone - HAP/VOC	7.1	72.11		
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16		
	Methyl mercaptan - VOC	2.5	48.11		
	Pentane - VOC	3.3	72.15		
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83		
	Propane - VOC	11	44.09		
	t-1,2-Dichloroethene - VOC	2.8	96.94		
	Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13		
	Toluene - Co-disposal - HAP/VOC	170	92.13		
	Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40		
	Vinyl chloride - HAP/VOC	7.3	62.50		
	Xylenes - HAP/VOC	12	106.16		

Graphs


Megagrams Per Year
Emissions
9.000E+04
8.000E+04
7.000E+04
6.000E+04
5.000E+04
4.000E+04
3.000E+04
2.000E+04
1.000E+04
0.000E+00
2008 2012 2016 2020 2024 2028 2032 2036 2040 2044 2048 2052 2056 2060 2064 2068 2072 2076 2080
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


Cubic Meters Per Year
Emissions
7.000E+07
6.000E+07
5.000E+07
4.000E+07
3.000E+07
2.000E+07
1.000E+07
0.000E+00
2008 2012 2016 2020 2024 2028 2032 2036 2040 2044 2048 2052 2056 2060 2064 2068 2072 2076 2080
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
5.000E+03
4.500E+03
4.000E+03
3.500E+03
3.000E+03
2.500E+03
2.000E+03
1.500E+03
1.000E+03
5.000E+02
0.000E+00
2008 2012 2016 2020 2024 2028 2032 2036 2040 2044 2048 2052 2056 2060 2064 2068 2072 2076 2080
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

Results

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2008	0	0	0	0	0	0
2009	1.352E+03	1.112E+06	7.472E+01	3.338E+02	5.004E+05	3.362E+01
2010	2.408E+03	1.981E+06	1.331E+02	5.948E+02	8.915E+05	5.990E+01
2011	2.360E+03	1.942E+06	1.305E+02	5.830E+02	8.739E+05	5.872E+01
2012	2.314E+03	1.904E+06	1.279E+02	5.715E+02	8.566E+05	5.755E+01
2013	2.268E+03	1.866E+06	1.254E+02	5.602E+02	8.396E+05	5.641E+01
2014	2.223E+03	1.829E+06	1.229E+02	5.491E+02	8.230E+05	5.530E+01
2015	2.179E+03	1.793E+06	1.204E+02	5.382E+02	8.067E+05	5.420E+01
2016	2.136E+03	1.757E+06	1.181E+02	5.275E+02	7.907E+05	5.313E+01
2017	2.093E+03	1.722E+06	1.157E+02	5.171E+02	7.751E+05	5.208E+01
2018	2.052E+03	1.688E+06	1.134E+02	5.068E+02	7.597E+05	5.105E+01
2019	2.011E+03	1.655E+06	1.112E+02	4.968E+02	7.447E+05	5.003E+01
2020	1.972E+03	1.622E+06	1.090E+02	4.870E+02	7.299E+05	4.904E+01
2021	1.933E+03	1.590E+06	1.068E+02	4.773E+02	7.155E+05	4.807E+01
2022	4.097E+03	3.370E+06	2.265E+02	1.012E+03	1.517E+06	1.019E+02
2023	6.218E+03	5.116E+06	3.437E+02	1.536E+03	2.302E+06	1.547E+02
2024	8.297E+03	6.826E+06	4.587E+02	2.049E+03	3.072E+06	2.064E+02
2025	1.034E+04	8.503E+06	5.713E+02	2.553E+03	3.826E+06	2.571E+02
2026	1.233E+04	1.015E+07	6.818E+02	3.046E+03	4.566E+06	3.068E+02
2027	1.429E+04	1.176E+07	7.900E+02	3.530E+03	5.291E+06	3.555E+02
2028	1.621E+04	1.334E+07	8.961E+02	4.004E+03	6.002E+06	4.032E+02
2029	1.809E+04	1.488E+07	1.000E+03	4.469E+03	6.698E+06	4.500E+02
2030	1.994E+04	1.640E+07	1.102E+03	4.924E+03	7.381E+06	4.959E+02
2031	2.174E+04	1.789E+07	1.202E+03	5.371E+03	8.050E+06	5.409E+02
2032	2.352E+04	1.935E+07	1.300E+03	5.808E+03	8.706E+06	5.850E+02
2033	2.525E+04	2.078E+07	1.396E+03	6.237E+03	9.349E+06	6.282E+02
2034	2.695E+04	2.218E+07	1.490E+03	6.658E+03	9.979E+06	6.705E+02
2035	2.862E+04	2.355E+07	1.582E+03	7.070E+03	1.060E+07	7.120E+02
2036	3.026E+04	2.489E+07	1.673E+03	7.474E+03	1.120E+07	7.527E+02
2037	3.186E+04	2.621E+07	1.761E+03	7.870E+03	1.180E+07	7.926E+02
2038	3.343E+04	2.751E+07	1.848E+03	8.258E+03	1.238E+07	8.317E+02
2039	3.497E+04	2.877E+07	1.933E+03	8.638E+03	1.295E+07	8.700E+02
2040	3.648E+04	3.002E+07	2.017E+03	9.011E+03	1.351E+07	9.076E+02
2041	3.796E+04	3.123E+07	2.099E+03	9.377E+03	1.406E+07	9.444E+02
2042	3.941E+04	3.243E+07	2.179E+03	9.735E+03	1.459E+07	9.805E+02
2043	4.084E+04	3.360E+07	2.257E+03	1.009E+04	1.512E+07	1.016E+03
2044	4.223E+04	3.474E+07	2.334E+03	1.043E+04	1.563E+07	1.050E+03
2045	4.360E+04	3.587E+07	2.410E+03	1.077E+04	1.614E+07	1.084E+03
2046	4.494E+04	3.697E+07	2.484E+03	1.110E+04	1.664E+07	1.118E+03
2047	4.625E+04	3.805E+07	2.557E+03	1.142E+04	1.712E+07	1.150E+03
2048	4.753E+04	3.911E+07	2.628E+03	1.174E+04	1.760E+07	1.182E+03
2049	4.880E+04	4.015E+07	2.697E+03	1.205E+04	1.807E+07	1.214E+03
2050	5.003E+04	4.116E+07	2.766E+03	1.236E+04	1.852E+07	1.245E+03
2051	5.124E+04	4.216E+07	2.833E+03	1.266E+04	1.897E+07	1.275E+03
2052	5.243E+04	4.314E+07	2.898E+03	1.295E+04	1.941E+07	1.304E+03
2053	5.360E+04	4.409E+07	2.963E+03	1.324E+04	1.984E+07	1.333E+03
2054	5.474E+04	4.503E+07	3.026E+03	1.352E+04	2.026E+07	1.362E+03
2055	5.585E+04	4.595E+07	3.088E+03	1.380E+04	2.068E+07	1.389E+03
2056	5.695E+04	4.686E+07	3.148E+03	1.407E+04	2.108E+07	1.417E+03
2057	5.803E+04	4.774E+07	3.208E+03	1.433E+04	2.148E+07	1.443E+03

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2058	5.908E+04	4.861E+07	3.266E+03	1.459E+04	2.187E+07	1.470E+03
2059	6.011E+04	4.946E+07	3.323E+03	1.485E+04	2.226E+07	1.495E+03
2060	6.112E+04	5.029E+07	3.379E+03	1.510E+04	2.263E+07	1.520E+03
2061	6.212E+04	5.110E+07	3.434E+03	1.534E+04	2.300E+07	1.545E+03
2062	6.309E+04	5.190E+07	3.487E+03	1.558E+04	2.336E+07	1.569E+03
2063	6.404E+04	5.269E+07	3.540E+03	1.582E+04	2.371E+07	1.593E+03
2064	6.498E+04	5.346E+07	3.592E+03	1.605E+04	2.406E+07	1.616E+03
2065	6.589E+04	5.421E+07	3.642E+03	1.627E+04	2.439E+07	1.639E+03
2066	6.679E+04	5.495E+07	3.692E+03	1.650E+04	2.473E+07	1.661E+03
2067	6.767E+04	5.567E+07	3.741E+03	1.671E+04	2.505E+07	1.683E+03
2068	6.853E+04	5.638E+07	3.788E+03	1.693E+04	2.537E+07	1.705E+03
2069	6.938E+04	5.708E+07	3.835E+03	1.714E+04	2.569E+07	1.726E+03
2070	7.021E+04	5.776E+07	3.881E+03	1.734E+04	2.599E+07	1.746E+03
2071	7.102E+04	5.843E+07	3.926E+03	1.754E+04	2.629E+07	1.767E+03
2072	7.181E+04	5.908E+07	3.970E+03	1.774E+04	2.659E+07	1.786E+03
2073	7.259E+04	5.973E+07	4.013E+03	1.793E+04	2.688E+07	1.806E+03
2074	7.336E+04	6.035E+07	4.055E+03	1.812E+04	2.716E+07	1.825E+03
2075	7.411E+04	6.097E+07	4.097E+03	1.830E+04	2.744E+07	1.843E+03
2076	7.484E+04	6.158E+07	4.137E+03	1.849E+04	2.771E+07	1.862E+03
2077	7.556E+04	6.217E+07	4.177E+03	1.866E+04	2.798E+07	1.880E+03
2078	7.627E+04	6.275E+07	4.216E+03	1.884E+04	2.824E+07	1.897E+03
2079	7.696E+04	6.332E+07	4.254E+03	1.901E+04	2.849E+07	1.914E+03
2080	7.764E+04	6.388E+07	4.292E+03	1.918E+04	2.874E+07	1.931E+03
2081	7.831E+04	6.442E+07	4.329E+03	1.934E+04	2.899E+07	1.948E+03
2082	7.896E+04	6.496E+07	4.365E+03	1.950E+04	2.923E+07	1.964E+03
2083	7.960E+04	6.549E+07	4.400E+03	1.966E+04	2.947E+07	1.980E+03
2084	8.022E+04	6.600E+07	4.435E+03	1.981E+04	2.970E+07	1.996E+03
2085	8.084E+04	6.651E+07	4.469E+03	1.997E+04	2.993E+07	2.011E+03
2086	8.144E+04	6.700E+07	4.502E+03	2.012E+04	3.015E+07	2.026E+03
2087	8.203E+04	6.749E+07	4.534E+03	2.026E+04	3.037E+07	2.040E+03
2088	8.261E+04	6.796E+07	4.566E+03	2.040E+04	3.058E+07	2.055E+03
2089	8.097E+04	6.662E+07	4.476E+03	2.000E+04	2.998E+07	2.014E+03
2090	7.937E+04	6.530E+07	4.387E+03	1.960E+04	2.938E+07	1.974E+03
2091	7.780E+04	6.400E+07	4.300E+03	1.922E+04	2.880E+07	1.935E+03
2092	7.626E+04	6.274E+07	4.215E+03	1.883E+04	2.823E+07	1.897E+03
2093	7.475E+04	6.149E+07	4.132E+03	1.846E+04	2.767E+07	1.859E+03
2094	7.327E+04	6.028E+07	4.050E+03	1.810E+04	2.712E+07	1.823E+03
2095	7.181E+04	5.908E+07	3.970E+03	1.774E+04	2.659E+07	1.786E+03
2096	7.039E+04	5.791E+07	3.891E+03	1.739E+04	2.606E+07	1.751E+03
2097	6.900E+04	5.677E+07	3.814E+03	1.704E+04	2.555E+07	1.716E+03
2098	6.763E+04	5.564E+07	3.739E+03	1.670E+04	2.504E+07	1.682E+03
2099	6.629E+04	5.454E+07	3.665E+03	1.637E+04	2.454E+07	1.649E+03
2100	6.498E+04	5.346E+07	3.592E+03	1.605E+04	2.406E+07	1.616E+03
2101	6.369E+04	5.240E+07	3.521E+03	1.573E+04	2.358E+07	1.584E+03
2102	6.243E+04	5.136E+07	3.451E+03	1.542E+04	2.311E+07	1.553E+03
2103	6.120E+04	5.035E+07	3.383E+03	1.512E+04	2.266E+07	1.522E+03
2104	5.998E+04	4.935E+07	3.316E+03	1.482E+04	2.221E+07	1.492E+03
2105	5.880E+04	4.837E+07	3.250E+03	1.452E+04	2.177E+07	1.463E+03
2106	5.763E+04	4.742E+07	3.186E+03	1.424E+04	2.134E+07	1.434E+03
2107	5.649E+04	4.648E+07	3.123E+03	1.395E+04	2.091E+07	1.405E+03
2108	5.537E+04	4.556E+07	3.061E+03	1.368E+04	2.050E+07	1.377E+03

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2109	5.428E+04	4.465E+07	3.000E+03	1.341E+04	2.009E+07	1.350E+03
2110	5.320E+04	4.377E+07	2.941E+03	1.314E+04	1.970E+07	1.323E+03
2111	5.215E+04	4.290E+07	2.883E+03	1.288E+04	1.931E+07	1.297E+03
2112	5.112E+04	4.205E+07	2.826E+03	1.263E+04	1.892E+07	1.272E+03
2113	5.010E+04	4.122E+07	2.770E+03	1.238E+04	1.855E+07	1.246E+03
2114	4.911E+04	4.041E+07	2.715E+03	1.213E+04	1.818E+07	1.222E+03
2115	4.814E+04	3.961E+07	2.661E+03	1.189E+04	1.782E+07	1.197E+03
2116	4.719E+04	3.882E+07	2.608E+03	1.165E+04	1.747E+07	1.174E+03
2117	4.625E+04	3.805E+07	2.557E+03	1.142E+04	1.712E+07	1.151E+03
2118	4.534E+04	3.730E+07	2.506E+03	1.120E+04	1.678E+07	1.128E+03
2119	4.444E+04	3.656E+07	2.456E+03	1.098E+04	1.645E+07	1.105E+03
2120	4.356E+04	3.584E+07	2.408E+03	1.076E+04	1.613E+07	1.084E+03
2121	4.270E+04	3.513E+07	2.360E+03	1.055E+04	1.581E+07	1.062E+03
2122	4.185E+04	3.443E+07	2.313E+03	1.034E+04	1.549E+07	1.041E+03
2123	4.102E+04	3.375E+07	2.268E+03	1.013E+04	1.519E+07	1.020E+03
2124	4.021E+04	3.308E+07	2.223E+03	9.931E+03	1.489E+07	1.000E+03
2125	3.941E+04	3.243E+07	2.179E+03	9.735E+03	1.459E+07	9.804E+02
2126	3.863E+04	3.178E+07	2.136E+03	9.542E+03	1.430E+07	9.610E+02
2127	3.787E+04	3.115E+07	2.093E+03	9.353E+03	1.402E+07	9.420E+02
2128	3.712E+04	3.054E+07	2.052E+03	9.168E+03	1.374E+07	9.233E+02
2129	3.638E+04	2.993E+07	2.011E+03	8.986E+03	1.347E+07	9.050E+02
2130	3.566E+04	2.934E+07	1.971E+03	8.808E+03	1.320E+07	8.871E+02
2131	3.496E+04	2.876E+07	1.932E+03	8.634E+03	1.294E+07	8.695E+02
2132	3.426E+04	2.819E+07	1.894E+03	8.463E+03	1.269E+07	8.523E+02
2133	3.359E+04	2.763E+07	1.857E+03	8.295E+03	1.243E+07	8.354E+02
2134	3.292E+04	2.708E+07	1.820E+03	8.131E+03	1.219E+07	8.189E+02
2135	3.227E+04	2.655E+07	1.784E+03	7.970E+03	1.195E+07	8.027E+02
2136	3.163E+04	2.602E+07	1.748E+03	7.812E+03	1.171E+07	7.868E+02
2137	3.100E+04	2.551E+07	1.714E+03	7.658E+03	1.148E+07	7.712E+02
2138	3.039E+04	2.500E+07	1.680E+03	7.506E+03	1.125E+07	7.559E+02
2139	2.979E+04	2.451E+07	1.647E+03	7.357E+03	1.103E+07	7.410E+02
2140	2.920E+04	2.402E+07	1.614E+03	7.212E+03	1.081E+07	7.263E+02
2141	2.862E+04	2.355E+07	1.582E+03	7.069E+03	1.060E+07	7.119E+02
2142	2.805E+04	2.308E+07	1.551E+03	6.929E+03	1.039E+07	6.978E+02
2143	2.750E+04	2.262E+07	1.520E+03	6.792E+03	1.018E+07	6.840E+02
2144	2.695E+04	2.217E+07	1.490E+03	6.657E+03	9.979E+06	6.705E+02
2145	2.642E+04	2.174E+07	1.460E+03	6.525E+03	9.781E+06	6.572E+02
2146	2.590E+04	2.131E+07	1.432E+03	6.396E+03	9.587E+06	6.442E+02
2147	2.538E+04	2.088E+07	1.403E+03	6.270E+03	9.398E+06	6.314E+02
2148	2.488E+04	2.047E+07	1.375E+03	6.145E+03	9.211E+06	6.189E+02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2008	0	0	0	0	0	0
2009	1.120E+03	6.116E+05	4.109E+01	2.204E-01	6.149E+01	4.132E-03
2010	1.995E+03	1.090E+06	7.321E+01	3.927E-01	1.096E+02	7.361E-03
2011	1.955E+03	1.068E+06	7.176E+01	3.849E-01	1.074E+02	7.216E-03
2012	1.916E+03	1.047E+06	7.034E+01	3.773E-01	1.053E+02	7.073E-03
2013	1.878E+03	1.026E+06	6.895E+01	3.698E-01	1.032E+02	6.933E-03
2014	1.841E+03	1.006E+06	6.759E+01	3.625E-01	1.011E+02	6.795E-03
2015	1.805E+03	9.860E+05	6.625E+01	3.553E-01	9.913E+01	6.661E-03
2016	1.769E+03	9.664E+05	6.494E+01	3.483E-01	9.717E+01	6.529E-03
2017	1.734E+03	9.473E+05	6.365E+01	3.414E-01	9.525E+01	6.400E-03
2018	1.700E+03	9.285E+05	6.239E+01	3.346E-01	9.336E+01	6.273E-03
2019	1.666E+03	9.102E+05	6.115E+01	3.280E-01	9.151E+01	6.149E-03
2020	1.633E+03	8.921E+05	5.994E+01	3.215E-01	8.970E+01	6.027E-03
2021	1.601E+03	8.745E+05	5.876E+01	3.152E-01	8.792E+01	5.908E-03
2022	3.393E+03	1.854E+06	1.246E+02	6.681E-01	1.864E+02	1.252E-02
2023	5.150E+03	2.814E+06	1.890E+02	1.014E+00	2.829E+02	1.901E-02
2024	6.873E+03	3.754E+06	2.523E+02	1.353E+00	3.775E+02	2.536E-02
2025	8.561E+03	4.677E+06	3.142E+02	1.685E+00	4.702E+02	3.159E-02
2026	1.022E+04	5.581E+06	3.750E+02	2.011E+00	5.611E+02	3.770E-02
2027	1.184E+04	6.467E+06	4.345E+02	2.331E+00	6.502E+02	4.369E-02
2028	1.343E+04	7.335E+06	4.929E+02	2.644E+00	7.375E+02	4.955E-02
2029	1.499E+04	8.187E+06	5.501E+02	2.950E+00	8.231E+02	5.531E-02
2030	1.651E+04	9.021E+06	6.061E+02	3.251E+00	9.070E+02	6.094E-02
2031	1.801E+04	9.839E+06	6.611E+02	3.546E+00	9.893E+02	6.647E-02
2032	1.948E+04	1.064E+07	7.150E+02	3.835E+00	1.070E+03	7.189E-02
2033	2.092E+04	1.143E+07	7.678E+02	4.118E+00	1.149E+03	7.719E-02
2034	2.233E+04	1.220E+07	8.195E+02	4.396E+00	1.226E+03	8.240E-02
2035	2.371E+04	1.295E+07	8.702E+02	4.668E+00	1.302E+03	8.750E-02
2036	2.506E+04	1.369E+07	9.200E+02	4.935E+00	1.377E+03	9.250E-02
2037	2.639E+04	1.442E+07	9.687E+02	5.196E+00	1.450E+03	9.740E-02
2038	2.769E+04	1.513E+07	1.016E+03	5.452E+00	1.521E+03	1.022E-01
2039	2.897E+04	1.583E+07	1.063E+03	5.704E+00	1.591E+03	1.069E-01
2040	3.022E+04	1.651E+07	1.109E+03	5.950E+00	1.660E+03	1.115E-01
2041	3.145E+04	1.718E+07	1.154E+03	6.191E+00	1.727E+03	1.161E-01
2042	3.265E+04	1.783E+07	1.198E+03	6.428E+00	1.793E+03	1.205E-01
2043	3.382E+04	1.848E+07	1.242E+03	6.660E+00	1.858E+03	1.248E-01
2044	3.498E+04	1.911E+07	1.284E+03	6.887E+00	1.921E+03	1.291E-01
2045	3.611E+04	1.973E+07	1.325E+03	7.110E+00	1.983E+03	1.333E-01
2046	3.722E+04	2.033E+07	1.366E+03	7.328E+00	2.044E+03	1.374E-01
2047	3.831E+04	2.093E+07	1.406E+03	7.542E+00	2.104E+03	1.414E-01
2048	3.937E+04	2.151E+07	1.445E+03	7.752E+00	2.163E+03	1.453E-01
2049	4.042E+04	2.208E+07	1.484E+03	7.958E+00	2.220E+03	1.492E-01
2050	4.144E+04	2.264E+07	1.521E+03	8.159E+00	2.276E+03	1.529E-01
2051	4.244E+04	2.319E+07	1.558E+03	8.357E+00	2.331E+03	1.566E-01
2052	4.343E+04	2.373E+07	1.594E+03	8.551E+00	2.385E+03	1.603E-01
2053	4.439E+04	2.425E+07	1.629E+03	8.740E+00	2.438E+03	1.638E-01
2054	4.534E+04	2.477E+07	1.664E+03	8.927E+00	2.490E+03	1.673E-01
2055	4.626E+04	2.527E+07	1.698E+03	9.109E+00	2.541E+03	1.707E-01
2056	4.717E+04	2.577E+07	1.732E+03	9.288E+00	2.591E+03	1.741E-01
2057	4.806E+04	2.626E+07	1.764E+03	9.463E+00	2.640E+03	1.774E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2058	4.894E+04	2.673E+07	1.796E+03	9.635E+00	2.688E+03	1.806E-01
2059	4.979E+04	2.720E+07	1.828E+03	9.803E+00	2.735E+03	1.838E-01
2060	5.063E+04	2.766E+07	1.858E+03	9.968E+00	2.781E+03	1.869E-01
2061	5.145E+04	2.811E+07	1.889E+03	1.013E+01	2.826E+03	1.899E-01
2062	5.226E+04	2.855E+07	1.918E+03	1.029E+01	2.870E+03	1.929E-01
2063	5.305E+04	2.898E+07	1.947E+03	1.044E+01	2.914E+03	1.958E-01
2064	5.382E+04	2.940E+07	1.975E+03	1.060E+01	2.956E+03	1.986E-01
2065	5.458E+04	2.982E+07	2.003E+03	1.075E+01	2.998E+03	2.014E-01
2066	5.532E+04	3.022E+07	2.031E+03	1.089E+01	3.039E+03	2.042E-01
2067	5.605E+04	3.062E+07	2.057E+03	1.104E+01	3.079E+03	2.069E-01
2068	5.676E+04	3.101E+07	2.084E+03	1.118E+01	3.118E+03	2.095E-01
2069	5.746E+04	3.139E+07	2.109E+03	1.131E+01	3.156E+03	2.121E-01
2070	5.815E+04	3.177E+07	2.134E+03	1.145E+01	3.194E+03	2.146E-01
2071	5.882E+04	3.214E+07	2.159E+03	1.158E+01	3.231E+03	2.171E-01
2072	5.948E+04	3.250E+07	2.183E+03	1.171E+01	3.267E+03	2.195E-01
2073	6.013E+04	3.285E+07	2.207E+03	1.184E+01	3.303E+03	2.219E-01
2074	6.076E+04	3.320E+07	2.230E+03	1.196E+01	3.338E+03	2.243E-01
2075	6.138E+04	3.353E+07	2.253E+03	1.209E+01	3.372E+03	2.265E-01
2076	6.199E+04	3.387E+07	2.276E+03	1.221E+01	3.405E+03	2.288E-01
2077	6.259E+04	3.419E+07	2.297E+03	1.232E+01	3.438E+03	2.310E-01
2078	6.317E+04	3.451E+07	2.319E+03	1.244E+01	3.470E+03	2.332E-01
2079	6.375E+04	3.483E+07	2.340E+03	1.255E+01	3.502E+03	2.353E-01
2080	6.431E+04	3.513E+07	2.361E+03	1.266E+01	3.532E+03	2.373E-01
2081	6.486E+04	3.543E+07	2.381E+03	1.277E+01	3.563E+03	2.394E-01
2082	6.540E+04	3.573E+07	2.401E+03	1.288E+01	3.592E+03	2.414E-01
2083	6.593E+04	3.602E+07	2.420E+03	1.298E+01	3.621E+03	2.433E-01
2084	6.645E+04	3.630E+07	2.439E+03	1.308E+01	3.650E+03	2.452E-01
2085	6.696E+04	3.658E+07	2.458E+03	1.318E+01	3.678E+03	2.471E-01
2086	6.746E+04	3.685E+07	2.476E+03	1.328E+01	3.705E+03	2.490E-01
2087	6.794E+04	3.712E+07	2.494E+03	1.338E+01	3.732E+03	2.508E-01
2088	6.842E+04	3.738E+07	2.512E+03	1.347E+01	3.758E+03	2.525E-01
2089	6.707E+04	3.664E+07	2.462E+03	1.320E+01	3.684E+03	2.475E-01
2090	6.574E+04	3.591E+07	2.413E+03	1.294E+01	3.611E+03	2.426E-01
2091	6.444E+04	3.520E+07	2.365E+03	1.269E+01	3.539E+03	2.378E-01
2092	6.316E+04	3.451E+07	2.318E+03	1.244E+01	3.469E+03	2.331E-01
2093	6.191E+04	3.382E+07	2.273E+03	1.219E+01	3.401E+03	2.285E-01
2094	6.069E+04	3.315E+07	2.228E+03	1.195E+01	3.333E+03	2.240E-01
2095	5.948E+04	3.250E+07	2.183E+03	1.171E+01	3.267E+03	2.195E-01
2096	5.831E+04	3.185E+07	2.140E+03	1.148E+01	3.203E+03	2.152E-01
2097	5.715E+04	3.122E+07	2.098E+03	1.125E+01	3.139E+03	2.109E-01
2098	5.602E+04	3.060E+07	2.056E+03	1.103E+01	3.077E+03	2.067E-01
2099	5.491E+04	3.000E+07	2.016E+03	1.081E+01	3.016E+03	2.027E-01
2100	5.382E+04	2.940E+07	1.976E+03	1.060E+01	2.956E+03	1.986E-01
2101	5.276E+04	2.882E+07	1.937E+03	1.039E+01	2.898E+03	1.947E-01
2102	5.171E+04	2.825E+07	1.898E+03	1.018E+01	2.840E+03	1.909E-01
2103	5.069E+04	2.769E+07	1.861E+03	9.980E+00	2.784E+03	1.871E-01
2104	4.969E+04	2.714E+07	1.824E+03	9.782E+00	2.729E+03	1.834E-01
2105	4.870E+04	2.661E+07	1.788E+03	9.589E+00	2.675E+03	1.797E-01
2106	4.774E+04	2.608E+07	1.752E+03	9.399E+00	2.622E+03	1.762E-01
2107	4.679E+04	2.556E+07	1.718E+03	9.213E+00	2.570E+03	1.727E-01
2108	4.587E+04	2.506E+07	1.684E+03	9.030E+00	2.519E+03	1.693E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2109	4.496E+04	2.456E+07	1.650E+03	8.851E+00	2.469E+03	1.659E-01
2110	4.407E+04	2.407E+07	1.618E+03	8.676E+00	2.420E+03	1.626E-01
2111	4.319E+04	2.360E+07	1.585E+03	8.504E+00	2.373E+03	1.594E-01
2112	4.234E+04	2.313E+07	1.554E+03	8.336E+00	2.326E+03	1.563E-01
2113	4.150E+04	2.267E+07	1.523E+03	8.171E+00	2.280E+03	1.532E-01
2114	4.068E+04	2.222E+07	1.493E+03	8.009E+00	2.234E+03	1.501E-01
2115	3.987E+04	2.178E+07	1.464E+03	7.851E+00	2.190E+03	1.472E-01
2116	3.908E+04	2.135E+07	1.435E+03	7.695E+00	2.147E+03	1.442E-01
2117	3.831E+04	2.093E+07	1.406E+03	7.543E+00	2.104E+03	1.414E-01
2118	3.755E+04	2.051E+07	1.378E+03	7.393E+00	2.063E+03	1.386E-01
2119	3.681E+04	2.011E+07	1.351E+03	7.247E+00	2.022E+03	1.358E-01
2120	3.608E+04	1.971E+07	1.324E+03	7.103E+00	1.982E+03	1.332E-01
2121	3.536E+04	1.932E+07	1.298E+03	6.963E+00	1.942E+03	1.305E-01
2122	3.466E+04	1.894E+07	1.272E+03	6.825E+00	1.904E+03	1.279E-01
2123	3.398E+04	1.856E+07	1.247E+03	6.690E+00	1.866E+03	1.254E-01
2124	3.330E+04	1.819E+07	1.222E+03	6.557E+00	1.829E+03	1.229E-01
2125	3.265E+04	1.783E+07	1.198E+03	6.427E+00	1.793E+03	1.205E-01
2126	3.200E+04	1.748E+07	1.175E+03	6.300E+00	1.758E+03	1.181E-01
2127	3.137E+04	1.713E+07	1.151E+03	6.175E+00	1.723E+03	1.158E-01
2128	3.074E+04	1.680E+07	1.128E+03	6.053E+00	1.689E+03	1.135E-01
2129	3.014E+04	1.646E+07	1.106E+03	5.933E+00	1.655E+03	1.112E-01
2130	2.954E+04	1.614E+07	1.084E+03	5.816E+00	1.623E+03	1.090E-01
2131	2.895E+04	1.582E+07	1.063E+03	5.701E+00	1.590E+03	1.069E-01
2132	2.838E+04	1.550E+07	1.042E+03	5.588E+00	1.559E+03	1.047E-01
2133	2.782E+04	1.520E+07	1.021E+03	5.477E+00	1.528E+03	1.027E-01
2134	2.727E+04	1.490E+07	1.001E+03	5.369E+00	1.498E+03	1.006E-01
2135	2.673E+04	1.460E+07	9.811E+02	5.262E+00	1.468E+03	9.864E-02
2136	2.620E+04	1.431E+07	9.616E+02	5.158E+00	1.439E+03	9.669E-02
2137	2.568E+04	1.403E+07	9.426E+02	5.056E+00	1.411E+03	9.477E-02
2138	2.517E+04	1.375E+07	9.239E+02	4.956E+00	1.383E+03	9.290E-02
2139	2.467E+04	1.348E+07	9.056E+02	4.858E+00	1.355E+03	9.106E-02
2140	2.418E+04	1.321E+07	8.877E+02	4.762E+00	1.328E+03	8.925E-02
2141	2.371E+04	1.295E+07	8.701E+02	4.667E+00	1.302E+03	8.749E-02
2142	2.324E+04	1.269E+07	8.529E+02	4.575E+00	1.276E+03	8.576E-02
2143	2.278E+04	1.244E+07	8.360E+02	4.484E+00	1.251E+03	8.406E-02
2144	2.232E+04	1.220E+07	8.195E+02	4.396E+00	1.226E+03	8.239E-02
2145	2.188E+04	1.195E+07	8.032E+02	4.308E+00	1.202E+03	8.076E-02
2146	2.145E+04	1.172E+07	7.873E+02	4.223E+00	1.178E+03	7.916E-02
2147	2.102E+04	1.149E+07	7.717E+02	4.140E+00	1.155E+03	7.759E-02
2148	2.061E+04	1.126E+07	7.565E+02	4.058E+00	1.132E+03	7.606E-02

Appendix E

Potential Emissions

E-1: Landfill Gas Collection and Control

Potential Landfill Emissions Calculations

Flares

Assume potential LFG flow of 4699 scfm

$Q_{CH4\ Max}$ = 3.497E+07 m^3/yr Design maximum; w/ 50% methane content

Uncontrolled Emissions of PM-10

Manufacturer Specifications

CM_{PM10} =	0.042	lb/MMBTU
Qr_{max} =	65,520,000	Maximum flare heat release (BTU/hr); based on design specifications
LHV =	546	Landfill gas lower heating value (BTU/SCF), based on design specifications
Q_{CH4} =	3.497E+07	m^3/yr
	1.23E+09	ft^3/yr
Qr_{Total} =	76,969,620	Lower flare heat release (BTU/hr)

CM_{PM10} = 3.23 lb/hr 14.16 tons/yr Combined

AP-42 Emission Factor (Section 2.4, 11/98, Table 2.4-5)

CM_{PM10} =	17	lb/MMdscf

CM_{PM10} = 2.40 lb/hr 10.50 tons/yr Combined

Note: Conservative Engineering Assumption PM10 is assumed to equal PM10 and PM2.5

Potential Landfill Emissions Calculations
LFG Collection and Control (Worksheet 2)

Given:

$Q_{CH4\ Max}$ = 3.497E+07 m^3/yr Design maximum; w/ 50% methane content

Estimate of NMOC & Other Constituent Concentrations

$Q_P = F * Q_{CH4} * (C_P / 1E+06)$ Eqn 3

Q_P =		Emission rate of pollutant P (m^3/yr)
$Q_{CH4\ Max}$ =	3.497E+07	Methane generation rate at time t (m^3/yr)
C_P =	172.5	Concentration of pollutant P in landfill gas sample, corrected (ppmv)
F =	2.0	Multiplication factor; 1.82 for landfill gas at 55% CH_4; 2.0 for landfill gas at 50% CH_4

Q_P = 12,066 m^3/yr NMOC = 0.81 cfm NMOC Combined Flares

Uncontrolled Mass Emissions Rate

$UM_P = Q_P * (MW_P * 1\ atm) / (8.205E-05\ m3\text{-}atm/gmol\text{-}K * 1000\ g/kg * (273 + T)\ K)$ Eqn 4

UM_P =		Uncontrolled mass emission rate of pollutant P (kg/yr)
Q_P =	12,066	Emission rate of pollutant P (m^3/yr)
MW_P =	86.18	Molecular weight of pollutant P; NMOC = hexane, MW =86.18 (g/gmol)
T =	20	Temperature of landfill gas (C); default 25 C.

UM_P = 43,253 kg/yr NMOC = 10.86 lb/hr NMOC Combined Flares

47.7 Tons/yr NMOC

Controlled Emissions of Methane, NMOC and Speciated Emissions

$CM_P = UM_P * (1- n_{col}) + UM_P * n_{col} * (1 - n_{cnt})$ Eqn 5

CM_P =		Controlled mass emissions of pollutant P (kg/yr)
UM_P =		Uncontrolled mass emissions of pollutant P (kg/yr); use Eqn 4
n_{col} =	85.0%	Gas collection system control efficiency; default 75% = 0.75
n_{cnt} =		Emission control device control efficiency

CM_P = *Calculated values given in NMOC & TAPS emissions table*

Controlled Emissions of Carbon Dioxide and Sulfur Dioxide

Carbon Dioxide Emissions

$CM_{CO2} = UM_{CO2} + UM_{CH4} * n_{col} * 2.75$ Eqn 6

CM_{CO2} =		Controlled mass emissions of carbon dioxide (kg/yr)
UM_{CO2} =	6.400E+07	Uncontrolled mass emissions of carbon dioxide (kg/yr); Design Maximum value
$UM_{CH4\ Max}$ =	2.333E+07	Uncontrolled mass emissions of methane (kg/yr); Design maximum value

n_{col} = 85.0% Gas collection system control efficiency; default 75% = 0.75

CM_{CO2} = 118,527,486 kg/yr CO_2 = 29,767.18 lb/hr NMOC Combined Flares
130,617 Tons/yr CO_2

If site-specific total reduced sulfur compound data is available --

Eqn 7

$CM_{SO2} = UM_S * n_{col} * 2.0$

CM_{SO2} = Controlled mass emissions of sulfur dioxide (kg/yr)
UM_S = Uncontrolled mass emissions of reduced sulfur compounds (kg/yr); use Eqn 3 & 4
n_{col} = 75% Gas collection system control efficiency; default 75% = 0.75

Sulfur Dioxide Emissions

If site-specific total reduced sulfur compound data is not available --

C_S = Sigma (C_P * S_P) Eqn 8

C_S = 46.9 Concentration of total reduced sulfur compounds (ppmv as S); default value 46.9 ppmv.
C_P = NA Concentration of each reduced sulfur compound (ppmv)
S_P = NA No. of moles of S produced from combustion of each reduced sulfur compound
F = 2.0 Multiplication factor; 1.82 for landfill gas at 55% CH_4; 2.0 for landfill gas at 50% CH_4
$Q_{CH4\ Max}$ = 3.497E+07 Methane generation rate at time t (m^3/yr)
MW_S = 32.06 Molecular weight of sulfur (g/gmol)

$Q_S = F * Q_{CH4} * (C_S / 1E+06)$ Eqn 3

Q_S = 3,280 ppmv S, sulfur

$UM_S = Q_S * (MW_S * 1\ atm) / (8.205E-05\ m3\text{-}atm/gmol\text{-}K * 1000\ g/kg * (273 + T)\ K)$ Eqn 4

UM_S = 4,375 Uncontrolled mass emission rate of sulfur (kg/yr)

$CM_{SO2} = UM_S * n_{col} * 2.0$ Eqn 7

CM_{SO2} = Controlled mass emissions of sulfur dioxide (kg/yr)
UM_S = 4,375 Uncontrolled mass emissions of reduced sulfur compounds (kg/yr); use Eqn 3 & 4
n_{col} = 85% Gas collection system control efficiency; default 75% = 0.75

CM_{SO2} = 7,437 kg/yr SO_2 Combined Flares
8.2 Tons/yr SO_2 = 1.87 lb/hr SO_2 Existing PTE

Controlled Emissions of Hydrochloric Acid

C_{Cl} = Sigma (C_P * Cl_P) Eqn 9

C_{Cl} = 42.0 Concentration of total chloride (ppmv as Cl^-); default value 42.0 ppmv.
C_P = NA Concentration of each chlorinated compound (ppmv)
Cl_P = NA No. of moles of Cl^- produced from combustion of each reduced sulfur compound
F = 2.0 Multiplication factor; 1.82 for landfill gas at 55% CH_4; 2.0 for landfill gas at 50% CH_4

$Q_{CH4\ Max}$ = 3.497E+07 Methane generation rate at time t (m^3/yr)
MW_{Cl} = 35.453 Molecular weight of chloride, Cl^- (g/gmol)

$Q_{Cl} = F * Q_{CH4} * (C_{Cl} / 1E+06)$ Eqn 3

Q_{Cl} = 2,938 ppmv Chloride, Cl^-

$UM_S = Q_S * (MW_S * 1\ atm) / (8.205E-05\ m3\text{-}atm/gmol\text{-}K * 1000\ g/kg * (273 + T)\ K)$ Eqn 4

UM_{Cl} = 4,332 Uncontrolled mass emission rate of chlorine, Cl^- (kg/yr)

$CM_{HCl} = UM_{Cl} * n_{col} * 1.03 * n_{cnt}$ Eqn 10

CM_{HCl} = Controlled mass emissions of HCl (kg/yr)
UM_{Cl} = 4,332 Uncontrolled mass emissions of chlorinated compounds (kg/yr); use Eqn 3 & 4
n_{col} = 85% Gas collection system control efficiency; default 75% = 0.75
n_{cnt} = 99% Emission control device control efficiency (for flare, halogenated species, high-end of range)

CM_{HCl} = 3,755 kg/yr HCl Combined Flares
4.1 Tons/yr HCl = 0.94 lb/hr HCL

Uncontrolled Emissions of Nitrogen Oxides (NOx) and Carbon Monoxide

Manufacturer Specifications
CM_{NOx} = 0.06 lb/MMBTU @1,600°F
0.08 lb/MMBTU @1,800°F

CM_{CO} = 0.02 lb/MMBTU @1,600°F
0.015 lb/MMBTU @1,800°F

Qr_{max} = 65,520,000 Maximum flare heat release (BTU/hr); based on design specifications

LHV = 546 Landfill gas lower heating value (BTU/SCF), based on design specifications
$Q_{CH4\ Max}$ = 3.50E+07 m^3/yr
1.23E+09 ft3/yr 2.35E+03
Q_{rTotal} = 76,969,620 Total flare heat release (BTU/hr)

CM_{NOx} = 4.62 lb/hr @1,600° F 20.23 tons/yr Combined
6.16 lb/hr @1,800° F 26.97 tons/yr Combined

CM_{CO} = 1.54 lb/hr @1,600° F 6.74 tons/yr Combined
1.15 lb/hr @1,800° F 5.06 tons/yr Combined

Landfill Emissions Calculations - NMOC & TAP Emissions
LFG Collection and Control (Worksheet 3)

Note: Values already corrected for air infiltration
Uncontrolled Pollutant Concentrations (AP-42 Table 2.4-1, 11/98)

Year: 2011
$Q_{CH4\ Max}$ = 3.497E+07 m^3/yr Design maximum for all pollutants except H2S and S02 (Existing Permit Conditions)
$Q_{CH4\ Max}$ = 3.497E+07 m^3/yr Design maximum for H2S and SO2
Collection system efficiency: 85.0%
Landfill Temp: 20 C

Pollutant	CAS No.	MW	Concentration in Landfill Gas	Landfill Uncontrolled Emission Rates - No Flare				Flare Emissions (Emissions After Collection and Control)			IDAPA 58.01.01.585/586 Standards			Flare - Controlled	Flare Control Efficiency
				Volume	Mass - Annual		Mass - Hourly				EL	AAC	AACC		
		(g/gmol)	(ppmv)	(m^3/yr)	(kg/yr)	(lb/yr)	(lb/hr)	(kg/yr)	(lb/yr)	(lb/hr)	(lb/hr)	(mg/m^3)	(ug/m^3)		
1,1,1-Trichloroethane	71-55-6	133.41	0.48	3.36E+01	1.86E+02	4.11E+02	4.69E-02	3.17E+00	6.98E+00	7.97E-04	127	95.5		Below	98.0%
1,1,2,2-Tetrachloroethane	79-34-5	167.85	1.11	7.76E+01	5.42E+02	1.20E+03	1.36E-01	9.22E+00	2.03E+01	2.32E-03	1.10E-05		1.70E-02	Exceeds	98.0%
1,1,2-Trichloroethane	79-00-5	133.41	0.10	6.99E+00	3.88E+01	8.56E+01	9.77E-03	6.60E-01	1.45E+00	1.66E-04	***4.20E-04***	NA	NA	Below	98.0%
1,1-Dichloroethane (ethylidene dichloride)	75-34-3	98.97	2.35	1.64E+02	6.77E+02	1.49E+03	1.70E-01	1.15E+01	2.54E+01	2.90E-03	2.50E-04		3.80E-02	Exceeds	98.0%
1,1-Dichloroethene (vinylidene chloride)	75-35-4	96.94	0.2	1.40E+01	5.64E+01	1.24E+02	1.42E-02	9.59E-01	2.11E+00	2.41E-04	1.30E-04		2.00E-02	Exceeds	98.0%
1,2-Dichloroethane (ethylene dichloride)	107-06-2	98.96	0.41	2.87E+01	1.18E+02	2.60E+02	2.97E-02	2.01E+00	4.42E+00	5.05E-04	2.50E-04		3.80E-02	Exceeds	98.0%
1,2-Dichloropropane (propylene dichloride)	78-87-5	112.99	0.18	1.26E+01	5.92E+01	1.30E+02	1.49E-02	1.01E+00	2.22E+00	2.53E-04	23.133	17.35		Below	98.0%
2-Propanol (isopropyl alcohol)	67-63-0	60.11	50.1	3.50E+03	8.76E+03	1.93E+04	2.21E+00	2.23E+01	4.93E+01	5.62E-03	6.53E+01	49		Below	99.7%
Acetone	67-64-1	58.08	7.01	4.90E+02	1.18E+03	2.61E+03	2.98E-01	3.02E+00	6.66E+00	7.60E-04	119	89		Below	99.7%
Acrylonitrile	107-13-1	53.06	6.33	4.43E+02	9.77E+02	2.15E+03	2.46E-01	2.49E+00	5.49E+00	6.27E-04	9.80E-05		1.50E-02	Exceeds	99.7%
Bromodichloromethane	75-27-4	163.83	3.13	2.19E+02	1.49E+03	3.29E+03	3.75E-01	2.54E+01	5.59E+01	6.38E-03	NA	NA	NA		98.0%
Butane	106-97-8	58.12	5.03	3.52E+02	8.51E+02	1.88E+03	2.14E-01	2.17E+00	4.78E+00	5.46E-04	NA	NA	NA		99.7%
Carbon disulfide	75-15-0	76.13	0.58	4.06E+01	1.28E+02	2.83E+02	3.23E-02	3.28E-01	7.22E-01	8.24E-05	2	1.5		Below	99.7%
Carbon tetrachloride	56-23-5	153.84	0.004	2.80E-01	1.79E+00	3.95E+00	4.51E-04	3.04E-02	6.71E-02	7.66E-06	4.40E-04		6.70E-02	Below	98.0%
Carbonyl sulfide	463-58-1	60.07	0.49	3.43E+01	8.56E+01	1.89E+02	2.16E-02	5.82E-01	1.28E+00	1.47E-04	0.027	0.02		Below	99.2%
Chlorobenzene	108-90-7	112.56	0.25	1.75E+01	8.19E+01	1.80E+02	2.06E-02	1.39E+00	3.07E+00	3.50E-04	23.3	17.5		Below	98.0%
Chlorodifluoromethane	75-45-6	86.47	1.3	9.09E+01	3.27E+02	7.21E+02	8.23E-02	5.56E+00	1.23E+01	1.40E-03	NA	NA	NA		98.0%
Chloroethane (ethyl chloride)	75-00-3	64.52	1.25	8.74E+01	2.35E+02	5.17E+02	5.91E-02	3.99E+00	8.79E+00	1.00E-03	176	132		Below	98.0%
Chloroform	67-66-3	119.39	0.03	2.10E+00	1.04E+01	2.30E+01	2.62E-03	1.77E-01	3.91E-01	4.46E-05	2.80E-04		4.30E-02	Below	98.0%
Chloromethane (methylchloride)	74-87-3	50.49	1.21	8.46E+01	1.78E+02	3.92E+02	4.47E-02	3.02E+00	6.66E+00	7.60E-04	NA	NA	NA		98.0%
Dichlorobenzene	95-50-1	147	0.21	1.47E+01	8.98E+01	1.98E+02	2.26E-02	1.53E+00	3.37E+00	3.84E-04	20	15		Below	98.0%
Dichlorodifluoromethane	75-71-8	120.91	15.7	1.10E+03	5.52E+03	1.22E+04	1.39E+00	9.39E+01	2.07E+02	2.36E-02	NA	NA	NA		98.0%
Dichlorofluoromethane	75-43-4	102.92	2.62	1.83E+02	7.85E+02	1.73E+03	1.97E-01	1.33E+01	2.94E+01	3.36E-03	2.67	2		Below	98.0%
Dichloromethane (methylene chloride)	75-09-2	84.94	14.3	1.00E+03	3.53E+03	7.79E+03	8.89E-01	6.01E+01	1.32E+02	1.51E-02	1.60E-03		2.40E-01	Exceeds	98.0%
Dimethyl sulfide (methyl sulfide)	75-18-3	62.13	7.82	5.47E+02	1.41E+03	3.12E+03	3.56E-01	9.61E+00	2.12E+01	2.42E-03	NA	NA	NA		99.2%
Ethane	74-84-0	30.07	889	6.22E+04	7.78E+04	1.71E+05	1.96E+01	1.98E+02	4.37E+02	4.99E-02	NA	NA	NA		99.7%
Ethanol	64-17-5	46.08	27.2	1.90E+03	3.65E+03	8.04E+03	9.18E-01	9.30E+00	2.05E+01	2.34E-03	125	94		Below	99.7%
Ethyl mercaptan (ethanethiol)	75-08-1	62.13	2.28	1.59E+02	4.12E+02	9.09E+02	1.04E-01	1.05E+00	2.32E+00	2.64E-04	0.067	0.05		Below	99.7%
Ethylbenzene	100-41-4	106.16	4.61	3.22E+02	1.42E+03	3.14E+03	3.58E-01	3.63E+00	8.00E+00	9.14E-04	29	21.75		Below	99.7%
Ethylene dibromide	106-93-4	187.88	0.001	6.99E-02	5.47E-01	1.21E+00	1.38E-04	9.29E-03	2.05E-02	2.34E-06	3.00E-05		4.50E-03	Below	98.0%
Fluorotrichloromethane	75-69-4	137.38	0.76	5.32E+01	3.04E+02	6.70E+02	7.65E-02	5.16E+00	1.14E+01	1.30E-03	NA	NA	NA		98.0%
Hexane	110-54-3	86.18	6.57	4.60E+02	1.65E+03	3.63E+03	4.15E-01	4.20E+00	9.26E+00	1.06E-03	12	9		Below	99.7%
Hydrogen sulfide	7783-06-4	34.08	453.5	3.17E+04	4.50E+04	9.91E+04	1.13E+01	3.06E+02	7.93E+02	9.05E-02	0.933	0.7		Below	99.2%
Mercury (total)	7439-97-6	200.61	0.000292	2.04E-02	1.70E-01	3.76E-01	4.29E-05	1.45E-01	3.19E-01	3.65E-05	0.007	0.005		Below	0.0%
Methyl ethyl ketone (MEK)	78-93-3	72.11	7.09	4.96E+02	1.49E+03	3.28E+03	3.74E-01	3.79E+00	8.36E+00	9.55E-04	39.3	29.5		Below	99.7%
Methyl isobutyl ketone (MIBK)	108-10-1	100.16	1.87	1.31E+02	5.45E+02	1.20E+03	1.37E-01	1.39E+00	3.06E+00	3.50E-04	13.7	10.25		Below	99.7%
Methyl mercaptan	74-93-1	48.11	2.49	1.74E+02	3.49E+02	7.68E+02	8.77E-02	8.89E-01	1.96E+00	2.24E-04	0.033	0.025		Below	99.7%
Pentane	109-66-0	72.15	3.29	2.30E+02	6.91E+02	1.52E+03	1.74E-01	1.76E+00	3.88E+00	4.43E-04	118	88.5		Below	99.7%
Perchloroethylene (tetrachloroethylene)	127-18-4	165.83	3.73	2.61E+02	1.80E+03	3.97E+03	4.53E-01	3.06E+01	6.74E+01	7.70E-03	1.30E-02		2.10E+00	Below	98.0%
Propane	74-98-6	44.09	11.1	7.76E+02	1.42E+03	3.14E+03	3.58E-01	3.63E+00	8.00E+00	9.14E-04	NA	NA	NA		99.7%
trans-1,2-Dichloroethene	540-59-0	96.94	2.84	1.99E+02	8.01E+02	1.77E+03	2.02E-01	1.36E+01	3.00E+01	3.43E-03	52.7	39.5		Below	98.0%
Trichoroethylene	79-01-6	131.4	2.82	1.97E+02	1.08E+03	2.38E+03	2.71E-01	1.83E+01	4.04E+01	4.61E-03	17.93	13.45		Below	98.0%
Vinyl chloride	75-01-4	62.5	7.34	5.13E+02	1.33E+03	2.94E+03	3.36E-01	2.27E+01	5.00E+01	5.71E-03	9.40E-04		1.40E-01	Exceeds	98.0%
Xylenes	1330-20-7	106.16	12.1	8.46E+02	3.74E+03	8.24E+03	9.41E-01	9.53E+00	2.10E+01	2.40E-03	29	21.75		Below	99.7%
Carbon monoxide	630-08-0	28.01	141	9.86E+03	1.15E+04	2.53E+04	2.89E+00	4.20E+04	9.25E+04	1.06E+01	NA	NA	NA		12,000

Codisposal Pollutant Concentrations (AP-42 Table 2.4-2, 11/98)

Pollutant	CAS No.	MW	Concentration	Uncontrolled		Uncontrolled		Flare	Flare		IDAPA 58.01.01.585/586 Standards			Total - Controlled	Flare
				Volume Emission Rate	Mass Emission Rate -	Mass Emission	Mass Emission Rate - Hourly	Mass Emission Rate -	Mass Emission Rate -	Mass Emission Rate - Hourly	EL	AAC	AACC	Exceeds EL?	
		(g/gmol)	(ppmv)	Uncontrolled (m^3/yr)	Uncontrolled (kg/yr)	Rate - Annual (lb/yr)	Avg (lb/hr)	Controlled (kg/yr)	Controlled (lb/yr)	Avg (lb/hr)	(lb/hr)	(mg/m^3)	(ug/m^3)		
Benzene															
Co-disposal	71-43-2	78.11	11.1	7.76E+02	2.52E+03	5.56E+03	6.35E-01	6.43E+00	1.42E+01	1.62E-03	8.00E-04		1.20E-01	Exceeds	99.7%
No or unknown co-disposal	71-43-2	78.11	1.91	1.34E+02	4.34E+02	9.57E+02	1.09E-01	1.11E+00	2.44E+00	2.79E-04	8.00E-04		1.20E-01	Below	99.7%
NMOC (as hexane)															
Co-disposal		86.18	2,420	1.69E+05	6.07E+05	1.34E+06	1.53E+02	4.13E+03	9.10E+03	1.04E+00	NA	NA	NA		99.2%
No or unknown co-disposal		86.18	595	4.16E+04	1.49E+05	3.29E+05	3.75E+01	1.01E+03	2.24E+03	2.55E-01	NA	NA	NA		99.2%
Regulatory default		86.18	4,000	2.80E+05	1.00E+06	2.21E+06	2.52E+02	6.82E+03	1.50E+04	1.72E+00	NA	NA	NA		99.2%
Site-Specific Value		86.18	172.5	1.21E+04	4.33E+04	9.54E+04	1.09E+01	3.68E+04	8.11E+04	9.25E+00	NA	NA	NA		
Toluene															
Co-disposal	108-88-3	92.13	165	1.15E+04	4.42E+04	9.75E+04	1.11E+01	1.13E+02	2.49E+02	2.84E-02	25	18.75		Below	99.7%
No or unknown co-disposal	108-88-3	92.13	39.3	2.75E+03	1.05E+04	2.32E+04	2.65E+00	2.69E+01	5.92E+01	6.76E-03	25	18.75		Below	99.7%

Notes:
1. 1,1,2-Trichloroethane emissions calculated by LANDGEM but not in AP-42 listing (Table 2.4-1, 11/98)
2. Carbon monoxide emissions from flare: 12,000kg/10^6 dscm CH_4

Landfill Emissions Calculations
LFG Collection and Control (Worksheet 4)
Potential Summary of Emissions - Maximum Flow

Based on Design Maximum rates

	Flare - Controlled		Flare1 - Controlled		Flare 2- Controlled		
	(Tons/yr)	(lb/hr)	(Tons/yr)	(lb/hr)	(Tons/yr)	(lb/hr)	
Sulfur Dioxide	**93.3**	**21.30**	**45.90**	**10.48**	**47.40**	**10.82**	Based on Flowrate of 4,699 cfm
Nitrogen Oxides	**26.97**	**6.16**	**13.27**	**3.03**	**13.70**	**3.13**	Existing Permit Condition 4,699 cfm
Carbon Monoxide	**6.74**	**1.54**	**3.32**	**0.76**	**3.43**	**0.78**	Existing Permit Condition 4,699 cfm
PM10	**14.16**	**3.23**	**6.97**	**1.59**	**7.19**	**1.64**	Existing Permit Condition 4,699 cfm

		Flare - Controlled		Flare1 - Controlled		Flare 2- Controlled		IDAPA 585/586 EL	
HAP/VOC		(Tons/yr)	(lb/hr)	(Tons/yr)	(lb/hr)	(Tons/yr)	(lb/hr)	(lb/hr)	Exceeds?
HAP	1,1,1-Trichloroethane	3.49E-03	7.97E-04	1.72E-03	3.92E-04	1.77E-03	4.05E-04	1.27E+02	Below
HAP/VOC	1,1,2,2-Tetrachloroethane	1.02E-02	2.32E-03	5.00E-03	1.14E-03	5.16E-03	1.18E-03	1.10E-05	Exceeds
HAP/VOC	1,1,2-Trichloroethane	7.27E-04	1.66E-04	3.58E-04	8.17E-05	3.70E-04	8.44E-05	4.20E-04	Exceeds
HAP/VOC	1,1-Dichloroethane (ethylidene dichloride)	1.27E-02	2.90E-03	6.24E-03	1.42E-03	6.44E-03	1.47E-03	2.50E-04	Exceeds
HAP/VOC	1,1-Dichloroethene (vinylidene chloride)	1.06E-03	2.41E-04	5.20E-04	1.19E-04	5.37E-04	1.23E-04	1.30E-04	Exceeds
HAP/VOC	1,2-Dichloroethane (ethylene dichloride)	2.21E-03	5.05E-04	1.09E-03	2.48E-04	1.12E-03	2.57E-04	2.50E-04	Below
HAP/VOC	1,2-Dichloropropane (propylene dichloride)	1.11E-03	2.53E-04	5.46E-04	1.25E-04	5.63E-04	1.29E-04	2.31E+01	Below
VOC	2-Propanol (isopropyl alcohol)	2.46E-02	5.62E-03	1.21E-02	2.77E-03	1.25E-02	2.86E-03	6.53E+01	Below
*	Acetone	3.33E-03	7.60E-04	1.64E-03	3.74E-04	1.69E-03	3.86E-04	1.19E+02	Below
HAP/VOC	Acrylonitrile	2.75E-03	6.27E-04	1.35E-03	3.09E-04	1.40E-03	3.19E-04	9.80E-05	Exceeds
VOC	Bromodichloromethane	2.80E-02	6.38E-03	1.38E-02	3.14E-03	1.42E-02	3.24E-03	NA	
VOC	Butane	2.39E-03	5.46E-04	1.18E-03	2.69E-04	1.21E-03	2.77E-04	NA	
HAP/VOC	Carbon disulfide	3.61E-04	8.24E-05	1.78E-04	4.06E-05	1.83E-04	4.19E-05	2.00E+00	Below
HAP/VOC	Carbon tetrachloride	3.36E-05	7.66E-06	1.65E-05	3.77E-06	1.70E-05	3.89E-06	4.40E-04	Below
HAP/VOC	Carbonyl sulfide	6.42E-04	1.47E-04	3.16E-04	7.21E-05	3.26E-04	7.45E-05	2.70E-02	Below
HAP/VOC	Chlorobenzene	1.53E-03	3.50E-04	7.55E-04	1.72E-04	7.79E-04	1.78E-04	2.33E+01	Below
VOC	Chlorodifluoromethane	6.13E-03	1.40E-03	3.02E-03	6.88E-04	3.11E-03	7.11E-04	NA	
HAP/VOC	Chloroethane (ethyl chloride)	4.40E-03	1.00E-03	2.16E-03	4.94E-04	2.23E-03	5.10E-04	1.76E+02	Below
HAP/VOC	Chloroform	1.95E-04	4.46E-05	9.61E-05	2.19E-05	9.92E-05	2.26E-05	2.80E-04	Below
HAP/VOC	Chloromethane (methylchloride)	3.33E-03	7.60E-04	1.64E-03	3.74E-04	1.69E-03	3.86E-04	NA	
HAP/VOC	Dichlorobenzene	1.68E-03	3.84E-04	8.28E-04	1.89E-04	8.55E-04	1.95E-04	2.00E+01	Below
VOC	Dichlorodifluoromethane	1.03E-01	2.36E-02	5.09E-02	1.16E-02	5.26E-02	1.20E-02	NA	
VOC	Dichlorofluoromethane	1.47E-02	3.36E-03	7.23E-03	1.65E-03	7.47E-03	1.71E-03	2.67E+00	Below
HAP	Dichloromethane (methylene chloride)	6.62E-02	1.51E-02	3.26E-02	7.44E-03	3.36E-02	7.68E-03	1.60E-03	Exceeds
VOC	Dimethyl sulfide (methyl sulfide)	1.06E-02	2.42E-03	5.21E-03	1.19E-03	5.38E-03	1.23E-03	NA	
VOC	Ethane	2.19E-01	4.99E-02	1.08E-01	2.46E-02	1.11E-01	2.54E-02	NA	
VOC	Ethanol	1.03E-02	2.34E-03	5.04E-03	1.15E-03	5.21E-03	1.19E-03	1.25E+02	Below
VOC	Ethyl mercaptan (ethanethiol)	1.16E-03	2.64E-04	5.70E-04	1.30E-04	5.89E-04	1.34E-04	6.70E-02	Below
HAP/VOC	Ethylbenzene	4.00E-03	9.14E-04	1.97E-03	4.50E-04	2.03E-03	4.64E-04	2.90E+01	Below
HAP/VOC	Ethylene dibromide	1.02E-05	2.34E-06	5.04E-06	1.15E-06	5.20E-06	1.19E-06	3.00E-05	Below
VOC	Fluorotrichloromethane	5.69E-03	1.30E-03	2.80E-03	6.39E-04	2.89E-03	6.60E-04	NA	
HAP/VOC	Hexane	4.63E-03	1.06E-03	2.28E-03	5.20E-04	2.35E-03	5.37E-04	1.20E+01	Below
*	Hydrogen sulfide	3.97E-01	9.05E-02	1.95E-01	4.45E-02	2.01E-01	4.60E-02	9.33E-01	Below
HAP	Mercury (total)	1.60E-04	3.65E-05	7.86E-05	1.79E-05	8.11E-05	1.85E-05	7.00E-03	Below
HAP/VOC	Methyl ethyl ketone (MEK)	4.18E-03	9.55E-04	2.06E-03	4.70E-04	2.12E-03	4.85E-04	3.93E+01	Below
HAP/VOC	Methyl isobutyl ketone (MIBK)	1.53E-03	3.50E-04	7.54E-04	1.72E-04	7.78E-04	1.78E-04	1.37E+01	Below
VOC	Methyl mercaptan	9.80E-04	2.24E-04	4.82E-04	1.10E-04	4.98E-04	1.14E-04	3.30E-02	Below
VOC	Pentane	1.94E-03	4.43E-04	9.55E-04	2.18E-04	9.86E-04	2.25E-04	1.18E+02	Below
HAP/VOC	Perchloroethylene (tetrachloroethylene)	3.37E-02	7.70E-03	1.66E-02	3.79E-03	1.71E-02	3.91E-03	1.30E-02	Below
VOC	Propane	4.00E-03	9.14E-04	1.97E-03	4.50E-04	2.03E-03	4.64E-04	NA	
*	trans-1,2-Dichloroethene	1.50E-02	3.43E-03	7.38E-03	1.69E-03	7.63E-03	1.74E-03	5.27E+01	Below
HAP/VOC	Trichoroethylene	2.02E-02	4.61E-03	9.94E-03	2.27E-03	1.03E-02	2.34E-03	1.79E+01	Below
HAP/VOC	Vinyl chloride	2.50E-02	5.71E-03	1.23E-02	2.81E-03	1.27E-02	2.90E-03	9.40E-04	Exceeds
HAP/VOC	Xylenes	1.05E-02	2.40E-03	5.17E-03	1.18E-03	5.34E-03	1.22E-03	2.90E+01	Below
HAP	Hydrochloric Acid	4.14E+00	9.45E-01	2.04E+00	4.65E-01	2.10E+00	4.80E-01	NA	
HAP/VOC	Benzene								
	No or unknown co-disposal	1.22E-03	2.79E-04	6.00E-04	1.37E-04	6.20E-04	1.42E-04	8.00E-04	Below
VOC	NMOC (as hexane)								
	Site-Specific Value	4.05E+01	9.25E+00	1.99E+01	4.55E+00	2.06E+01	4.70E+00	NA	NA
HAP/VOC	Toluene								
	No or unknown co-disposal	2.96E-02	6.76E-03	1.46E-02	3.33E-03	1.50E-02	3.43E-03	2.50E+01	Below
	Total TAPS	**4.85**	**1.11**	2.39E+00	5.45E-01	2.46E+00	5.63E-01		
	Total HAPS	**4.32**	**0.99**	2.12E+00	4.85E-01	2.19E+00	5.01E-01		
	Total VOCS	**41.14**	**9.39**	2.02E+01	4.62E+00	2.09E+01	4.77E+00		

	Flare 1		**Flare 2**	
	Tons/yr	**lb/hr**	**Tons/yr**	**lb/hr**
Total TAPS	**2.39**	**0.54**	**2.46**	**0.56**
Total HAPS	**2.12**	**0.49**	**2.19**	**0.50**
Total VOCS	**20.24**	**4.621**	**20.90**	**4.771**

Notes:
* Not classified as either HAP or VOC
1. 1,1,2-Trichloroethane emissions calculated by LANDGEM but not in AP-42 listing (Table 2.4-1, 11/98)
2. Lead emissions are not calculated by LANDGEM nor is it listed in EPA AP-42 Section 2.4 Municipal Solid Waste Landfills as a landfill gas constituent. Therefore, we assume that the emissions are zero for this pollutant.

Landfill Emissions Calculations
LFG Collection and Control (Worksheet 5)

H2S Conversion from lb/hr H2S to lb/hr SO2

Assumptions:

34	MW of H2S
32	MW of Sulfur
64	MW of SO2
1.13E+01	lb/hr H2S

Assume 100% H2S conversion for SO2

$CM_{SO2} = UM_S * n_{col} * 2.0$ Eqn 7

10.65	lb/hr S
0.33	lb-mol S
21.30	lb/hr SO2

CM_{SO2} = Controlled mass emissions of sulfur dioxide (lb/hr)

UM_S = 10.65 lb/hr S

n_{col} = 2 Gas collection system control efficiency; default 75% = 0.75

CM_{SO2} = 21.30 lb/hr SO_2 Combined Flares

93.3 Tons/yr SO_2

Current SO2 Limits:

1.87	lb/hr SO2 Combined Flares
0.92	lb/hr SO2 Flare 1
0.95	lb/hr SO2 Flare 2

SO2 Net Increase:

19.43	lb/hr SO2 Combined Flares
9.560	lb/hr SO2 Flare 1
9.872	lb/hr SO2 Flare 2

SO2 Total Flares (facility wide modeling)

21.30	lb/hr SO2 Combined Flares
10.480	lb/hr SO2 Flare 1
10.822	lb/hr SO2 Flare 2

93.30	Ton/yr SO2 Combined Flares
45.90	Ton/yr SO2 Flare 1
47.40	Ton/yr SO2 Flare 2

E-2: Wood Chipper Diesel Engine Generator (GEN 1)

Potential Emission Calculations

ACLF - Wood Chipper Diesel Engine Emissions (Gen 1)

Emission Point No.	**SC-E-1**	
Model No.	**CAT C18**	
Engine Power Rating (bhp)	650	
Fuel Type	Distillate #2	
- maximum sulfur content	0.0015%	Ultra low sulfur fuel
Maximum Firing Rate (gals/hr)	38.0	
Maximum Heat Input Rating (Btu/hr)	5,320,000	
(hp)	2,090	*Large Engine*
Maximum Hours of Operation	3,300	
Maximum Firing Rate (gals/yr)	125,400	
Heat Capacity of Fuel (Btu/gal)	140,000	

			Uncontrolled Potential to Emit		
Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1]		0.0697	0.37	1,224	0.61
Total Particulate Matter ($PM_{2.5}$)[2]		0.0556	0.30	976	0.49
Particulate Matter (PM_{10})[3]		0.0573	0.30	1,006	0.50
Sulfur Oxides (SO_2)[4]		0.00152	0.0081	26.60	0.013
Nitrogen Oxides (NOx)[5]			**5.36**	17,688	8.84
Carbon Monoxide (CO)[5]			**0.95**	3,135	1.57
HC as VOC[5]			**0.12**	396	0.20

			Uncontrolled Potential to Emit					
	CAS Number	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**	**HAP**
Benzene	71-43-2	7.76E-04	4.13E-03	1.36E+01	6.81E-03	8.00E-04	**Exceeds**	HAP
Formaldehyde	50-00-0	7.89E-05	4.20E-04	1.39E+00	6.93E-04	5.10E-04	Below	HAP
Naphthalene	91-20-3	1.30E-04	6.92E-04	2.28E+00	1.14E-03	3.33E+00	Below	HAP
Toluene	108-88-3	2.81E-04	1.49E-03	4.93E+00	2.47E-03	2.50E+01	Below	HAP
o-Xylenes	1330-20-7	1.93E-04	1.03E-03	3.39E+00	1.69E-03	2.90E+01	Below	HAP
Acetaldehyde	75-07-0	2.52E-05	1.34E-04	4.42E-01	2.21E-04	3.00E-03	Below	HAP
Acrolein	107-02-8	7.88E-06	4.19E-05	1.38E-01	6.92E-05	1.70E-02	Below	HAP
Acenaphthene	83-32-9	4.68E-06	2.49E-05	8.22E-02	4.11E-05	#N/A	#N/A	
Acenaphthylene	203-96-8	9.23E-06	4.91E-05	1.62E-01	8.10E-05	#N/A	#N/A	
Anthracene	120-12-7	1.23E-06	6.54E-06	2.16E-02	1.08E-05	#N/A	#N/A	
Benz(a)anthracene	56-55-3	6.22E-07	3.31E-06	1.09E-02	5.46E-06	#N/A	#N/A	
Benzo(b)fluoranthene	205-99-2	1.11E-06	5.91E-06	1.95E-02	9.74E-06	#N/A	#N/A	
Benzo(k)fluoranthene	205-82-3	2.18E-07	1.16E-06	3.83E-03	1.91E-06	#N/A	#N/A	
Benzo(g,h,I)perylene	191-24-2	5.56E-07	2.96E-06	9.76E-03	4.88E-06	#N/A	#N/A	
Chrysene	218-01-9	1.53E-06	8.14E-06	2.69E-02	1.34E-05	#N/A	#N/A	
Dibenzo(a,h)anthracene	53-70-3	3.46E-07	1.84E-06	6.07E-03	3.04E-06	#N/A	#N/A	
Indeno(1,2,3-cd)pyrene	193-39-5	4.14E-07	2.20E-06	7.27E-03	3.63E-06	#N/A	#N/A	
Benzo(a)pyrene	50-32-8	2.57E-07	1.37E-06	4.51E-03	2.26E-06	#N/A	#N/A	
Total PAH			2.69E-05	8.87E-02	4.44E-05	2.00E-06	**Exceeds**	
Fluoroanthene	206-44-0	4.03E-06	2.14E-05	7.08E-02	3.54E-05	#N/A	#N/A	
Fluorene	86-73-7	1.28E-05	6.81E-05	2.25E-01	1.12E-04	#N/A	#N/A	
Phenanthrene	85-01-8	4.08E-05	2.17E-04	7.16E-01	3.58E-04	#N/A	#N/A	
Pyrene	129-00-0	3.71E-06	1.97E-05	6.51E-02	3.26E-05	#N/A	#N/A	
Propylene	115-07-1	2.79E-03	1.48E-02	4.90E+01	2.45E-02	#N/A	#N/A	
Total HAPS			**7.94E-03**		**1.31E-02**			

[1] Total PM emission factor (AP-42, Table 3.4-2, 10/96)

[2] Total $PM_{2.5}$ emission factor based on filterable particulate < 3 μm plus condensable particulate (AP-42, Table 3.4-2, 10/96)

[3] PM_{10} emission factor is the sum of filterable and condensible PM10 emission factors (AP-42,Table 3.4-2, 10/96)

[4] SO_2 emission factor multiplied by sulfur content of fuel (Ap-42, Table 3.4.1, 10/96)

[5] Manufacturer (Caterpillar) provided worst case emission estimates "Not to exceed data" for NOx, CO, and HC.

E-3: Power Screen Diesel Engine Generator (GEN 2)

Potential Emission Calculations

ACLF - Power Wood Screen Diesel Engine Emissions (Gen 2)

Emission Point No.	**SC-E-2**	
Model No.	**Deutz BF4L913**	
Engine Power Rating (bhp)	106	
Fuel Type	Distillate #2	
- maximum sulfur content	0.0015%	Ultra low sulfur fuel
Maximum Firing Rate (gals/hr)	6.1	
Maximum Heat Input Rating (Btu/hr)	858,600	
(hp)	337	*Small Engine*
Maximum Hours of Operation	3,300	
Maximum Firing Rate (gals/yr)	20,238	
Heat Capacity of Fuel (Btu/gal)	140,000	

			Uncontrolled Potential to Emit		
Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1]		0.31	0.27	878	0.44
Total Particulate Matter ($PM_{2.5}$)[2]		0.31	0.27	878	0.44
Particulate Matter (PM10)[3]		0.31	0.27	878	0.44
Nitrogen Oxides (NOx)[4]		4.41	3.79	12,495	6.25
Sulfur Oxides (SO_2)[5]		0.00152	0.0013	4.293	0.002
Carbon Monoxide (CO)[4]		0.95	0.82	2,692	1.35
TOC as VOC[4]		0.35	0.30	992	0.50

			Uncontrolled Potential to Emit					
	CAS Number	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**	**HAP**
Benzene	71-43-2	9.33E-04	8.01E-04	2.64E+00	1.32E-03	8.00E-04	**Exceeds**	HAP
Formaldehyde	50-00-0	1.18E-03	1.01E-03	3.34E+00	1.67E-03	5.10E-04	**Exceeds**	HAP
Naphthalene	91-20-3	8.48E-05	7.28E-05	2.40E-01	1.20E-04	3.33E+00	Below	HAP
Toluene	108-88-3	4.09E-04	3.51E-04	1.16E+00	5.79E-04	2.50E+01	Below	HAP
o-Xylenes	1330-20-7	2.85E-04	2.45E-04	8.08E-01	4.04E-04	2.90E+01	Below	HAP
Propylene	115-07-1	2.58E-03	2.22E-03	7.31E+00	3.66E-03	NA	NA	HAP
Acetaldehyde	75-07-0	7.67E-04	6.59E-04	2.17E+00	1.09E-03	3.00E-03	Below	HAP
Acrolein	107-02-8	9.25E-05	7.94E-05	2.62E-01	1.31E-04	1.70E-02	Below	HAP
1,3-Butadiene	106-99-0	3.91E-05	3.36E-05	1.11E-01	5.54E-05	2.40E-05	**Exceeds**	HAP
Acenaphthene	83-32-9	1.42E-06	1.22E-06	4.02E-03	2.01E-06	NA	NA	
Acenaphthylene	203-96-8	5.06E-06	4.34E-06	1.43E-02	7.17E-06	NA	NA	
Anthracene	120-12-7	1.87E-06	1.61E-06	5.30E-03	2.65E-06	NA	NA	
Benz(a)anthracene	56-55-3	1.68E-06	1.44E-06	4.76E-03	2.38E-06	NA	NA	
Benzo(b)fluoranthene	205-99-2	9.91E-08	8.51E-08	2.81E-04	1.40E-07	NA	NA	
Benzo(k)fluoranthene	205-82-3	1.55E-07	1.33E-07	4.39E-04	2.20E-07	NA	NA	
Benzo(g,h,I)perylene	191-24-2	4.89E-07	4.20E-07	1.39E-03	6.93E-07	NA	NA	
Chrysene	218-01-9	3.53E-07	3.03E-07	1.00E-03	5.00E-07	NA	NA	
Dibenzo(a,h)anthracene	53-70-3	5.83E-07	5.01E-07	1.65E-03	8.26E-07	NA	NA	
Indeno(1,2,3-cd)pyrene	193-39-5	3.75E-07	3.22E-07	1.06E-03	5.31E-07	NA	NA	
Benzo(a)pyrene	50-32-8	1.88E-07	1.61E-07	5.33E-04	2.66E-07	NA	NA	
Total PAH			3.37E-06	1.11E-02	5.56E-06	2.00E-06	**Exceeds**	
Fluoroanthene	206-44-0	7.61E-06	6.53E-06	2.16E-02	1.08E-05	NA	NA	
Fluorene	86-73-7	2.92E-05	2.51E-05	8.27E-02	4.14E-05	NA	NA	
Phenanthrene	85-01-8	2.94E-05	2.52E-05	8.33E-02	4.17E-05	NA	NA	
Pyrene	129-00-0	4.78E-06	4.10E-06	1.35E-02	6.77E-06	NA	NA	
Total HAPS			**5.47E-03**		**9.02E-03**			

[1] PM is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[2] $PM_{2.5}$ is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[3] PM_{10} emission factor (AP-42, Table 3.3-1, 10/96)

[4] NOx, CO and TOC emission factors(Table 3.3-1, 10/96). Note TOC is based on exhaust emission factor for VOC.

[5] SO_2 is based on AP-42, Table 3.4-1, 10/96, multiplied by sulfur content of fuel

E-4: Emergency Backup Generators (GEN 3 and GEN 4)

Potential Emission Calculations

ACLF - HHHW Facility Diesel Engine Emissions (Gen 3)

Emission Point No.	**SC-E-2**	
Model No.	**Detroit Diesel 30DS60**	
Engine Power Rating (bhp)	44	
Fuel Type	Distillate #2	
- maximum sulfur content	0.0015%	Ultra low sulfur fuel
Maximum Firing Rate (gals/hr)	3.0	
Maximum Heat Input Rating (Btu/hr)	420,000	
(hp)	165	*Small Engine*
Maximum Hours of Operation	26	
Maximum Firing Rate (gals/yr)	78	
Heat Capacity of Fuel (Btu/gal)	140,000	

			Uncontrolled Potential to Emit		
Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1]		0.31	0.13	3	0.00
Total Particulate Matter ($PM_{2.5}$)[2]		0.31	0.13	3	0.00
Particulate Matter (PM10)[3]		0.31	0.13	3	0.00
Nitrogen Oxides (NOx)[4]		4.41	1.85	48	0.02
Sulfur Oxides (SO_2)[5]		0.00152	0.0006	0.017	0.000
Carbon Monoxide (CO)[4]		0.95	0.40	10	0.01
TOC as VOC[4]		0.35	0.15	4	0.00

			Uncontrolled Potential to Emit					
	CAS Number	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**	**HAP**
Benzene	71-43-2	9.33E-04	3.92E-04	1.02E-02	5.09E-06	8.00E-04	**Below**	HAP
Formaldehyde	50-00-0	1.18E-03	4.96E-04	1.29E-02	6.44E-06	5.10E-04	**Below**	HAP
Naphthalene	91-20-3	8.48E-05	3.56E-05	9.26E-04	4.63E-07	3.33E+00	Below	HAP
Toluene	108-88-3	4.09E-04	1.72E-04	4.47E-03	2.23E-06	2.50E+01	Below	HAP
o-Xylenes	1330-20-7	2.85E-04	1.20E-04	3.11E-03	1.56E-06	2.90E+01	Below	HAP
Propylene	115-07-1	2.58E-03	1.08E-03	2.82E-02	1.41E-05	NA	NA	HAP
Acetaldehyde	75-07-0	7.67E-04	3.22E-04	8.38E-03	4.19E-06	3.00E-03	Below	HAP
Acrolein	107-02-8	9.25E-05	3.89E-05	1.01E-03	5.05E-07	1.70E-02	Below	HAP
1,3-Butadiene	106-99-0	3.91E-05	1.64E-05	4.27E-04	2.13E-07	2.40E-05	**Below**	HAP
Acenaphthene	83-32-9	1.42E-06	5.96E-07	1.55E-05	7.75E-09	NA	NA	
Acenaphthylene	203-96-8	5.06E-06	2.13E-06	5.53E-05	2.76E-08	NA	NA	
Anthracene	120-12-7	1.87E-06	7.85E-07	2.04E-05	1.02E-08	NA	NA	
Benz(a)anthracene	56-55-3	1.68E-06	7.06E-07	1.83E-05	9.17E-09	NA	NA	
Benzo(b)fluoranthene	205-99-2	9.91E-08	4.16E-08	1.08E-06	5.41E-10	NA	NA	
Benzo(k)fluoranthene	205-82-3	1.55E-07	6.51E-08	1.69E-06	8.46E-10	NA	NA	
Benzo(g,h,I)perylene	191-24-2	4.89E-07	2.05E-07	5.34E-06	2.67E-09	NA	NA	
Chrysene	218-01-9	3.53E-07	1.48E-07	3.85E-06	1.93E-09	NA	NA	
Dibenzo(a,h)anthracene	53-70-3	5.83E-07	2.45E-07	6.37E-06	3.18E-09	NA	NA	
Indeno(1,2,3-cd)pyrene	193-39-5	3.75E-07	1.58E-07	4.10E-06	2.05E-09	NA	NA	
Benzo(a)pyrene	50-32-8	1.88E-07	7.90E-08	2.05E-06	1.03E-09	NA	NA	
Total PAH			1.65E-06	4.28E-05	2.14E-08	2.00E-06	**Below**	
Fluoroanthene	206-44-0	7.61E-06	3.20E-06	8.31E-05	4.16E-08	NA	NA	
Fluorene	86-73-7	2.92E-05	1.23E-05	3.19E-04	1.59E-07	NA	NA	
Phenanthrene	85-01-8	2.94E-05	1.23E-05	3.21E-04	1.61E-07	NA	NA	
Pyrene	129-00-0	4.78E-06	2.01E-06	5.22E-05	2.61E-08	NA	NA	
Total HAPS			**2.68E-03**		**3.48E-05**			

[1] PM is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[2] $PM_{2.5}$ is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[3] PM_{10} emission factor (AP-42, Table 3.3-1, 10/96)

[4] NOx, CO and TOC emission factors(Table 3.3-1, 10/96). Note TOC is based on exhaust emission factor for VOC.

[5] SO_2 is based on AP-42, Table 3.4-1, 10/96, multiplied by sulfur content of fuel

Potential Emission Calculations

ACLF - Scales Emergency Backup Generator (Gen 4)

Emission Point No.	**SC-E-2**	
Model No.	**John Deere 4024 HF 285**	
Engine Power Rating (bhp)	80	
Fuel Type	Distillate #2	
- maximum sulfur content	0.0015%	Ultra low sulfur fuel
Maximum Firing Rate (gals/hr)	4.6	
Maximum Heat Input Rating (Btu/hr)	648,000	
(hp)	255	*Small Engine*
Maximum Hours of Operation	26	
Maximum Firing Rate (gals/yr)	120	
Heat Capacity of Fuel (Btu/gal)	140,000	

			Uncontrolled Potential to Emit		
Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1]		0.31	0.20	5	0.00
Total Particulate Matter ($PM_{2.5}$)[2]		0.31	0.20	5	0.00
Particulate Matter (PM10)[3]		0.31	0.20	5	0.00
Nitrogen Oxides (NOx)[4]		4.41	2.86	74	0.04
Sulfur Oxides (SO_2)[5]		0.00152	0.0010	0.026	0.000
Carbon Monoxide (CO)[4]		0.95	0.62	16	0.01
TOC as VOC[4]		0.35	0.23	6	0.00

			Uncontrolled Potential to Emit					
	CAS Number	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**	**HAP**
Benzene	71-43-2	9.33E-04	6.05E-04	1.57E-02	7.86E-06	8.00E-04	**Below**	HAP
Formaldehyde	50-00-0	1.18E-03	7.65E-04	1.99E-02	9.94E-06	5.10E-04	**Exceeds**	HAP
Naphthalene	91-20-3	8.48E-05	5.50E-05	1.43E-03	7.14E-07	3.33E+00	Below	HAP
Toluene	108-88-3	4.09E-04	2.65E-04	6.89E-03	3.45E-06	2.50E+01	Below	HAP
o-Xylenes	1330-20-7	2.85E-04	1.85E-04	4.80E-03	2.40E-06	2.90E+01	Below	HAP
Propylene	115-07-1	2.58E-03	1.67E-03	4.35E-02	2.17E-05	NA	NA	HAP
Acetaldehyde	75-07-0	7.67E-04	4.97E-04	1.29E-02	6.46E-06	3.00E-03	Below	HAP
Acrolein	107-02-8	9.25E-05	5.99E-05	1.56E-03	7.79E-07	1.70E-02	Below	HAP
1,3-Butadiene	106-99-0	3.91E-05	2.53E-05	6.59E-04	3.29E-07	2.40E-05	**Exceeds**	HAP
Acenaphthene	83-32-9	1.42E-06	9.20E-07	2.39E-05	1.20E-08	NA	NA	
Acenaphthylene	203-96-8	5.06E-06	3.28E-06	8.53E-05	4.26E-08	NA	NA	
Anthracene	120-12-7	1.87E-06	1.21E-06	3.15E-05	1.58E-08	NA	NA	
Benz(a)anthracene	56-55-3	1.68E-06	1.09E-06	2.83E-05	1.42E-08	NA	NA	
Benzo(b)fluoranthene	205-99-2	9.91E-08	6.42E-08	1.67E-06	8.35E-10	NA	NA	
Benzo(k)fluoranthene	205-82-3	1.55E-07	1.00E-07	2.61E-06	1.31E-09	NA	NA	
Benzo(g,h,I)perylene	191-24-2	4.89E-07	3.17E-07	8.24E-06	4.12E-09	NA	NA	
Chrysene	218-01-9	3.53E-07	2.29E-07	5.95E-06	2.97E-09	NA	NA	
Dibenzo(a,h)anthracene	53-70-3	5.83E-07	3.78E-07	9.82E-06	4.91E-09	NA	NA	
Indeno(1,2,3-cd)pyrene	193-39-5	3.75E-07	2.43E-07	6.32E-06	3.16E-09	NA	NA	
Benzo(a)pyrene	50-32-8	1.88E-07	1.22E-07	3.17E-06	1.58E-09	NA	NA	
Total PAH			2.54E-06	6.61E-05	3.30E-08	2.00E-06	**Exceeds**	
Fluoroanthene	206-44-0	7.61E-06	4.93E-06	1.28E-04	6.41E-08	NA	NA	
Fluorene	86-73-7	2.92E-05	1.89E-05	4.92E-04	2.46E-07	NA	NA	
Phenanthrene	85-01-8	2.94E-05	1.91E-05	4.95E-04	2.48E-07	NA	NA	
Pyrene	129-00-0	4.78E-06	3.10E-06	8.05E-05	4.03E-08	NA	NA	
Total HAPS			**4.13E-03**		**5.37E-05**			

[1] PM is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[2] $PM_{2.5}$ is assumed to equal PM_{10} (AP-42, Table 3.3-1, 10/96)

[3] PM_{10} emission factor (AP-42, Table 3.3-1, 10/96)

[4] NOx, CO and TOC emission factors(Table 3.3-1, 10/96). Note TOC is based on exhaust emission factor for VOC.

[5] SO_2 is based on AP-42, Table 3.4-1, 10/96, multiplied by sulfur content of fuel

Appendix F

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Title 40: Protection of Environment
Part 60,Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

§ 60.4200 Am I subject to this subpart?

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in paragraphs (a)(1) through (4) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

(1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is:

(i) 2007 or later, for engines that are not fire pump engines;

(ii) The model year listed in Table 3 to this subpart or later model year, for fire pump engines.

(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are:

(i) Manufactured after April 1, 2006, and are not fire pump engines, or

Emission Standards for Manufacturers

§ 60.4205 What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of less than 10 liters per cylinder that are not fire pump engines must comply with the emission standards in table 1 to this subpart. Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards in 40 CFR 94.8(a)(1).

(b) Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in §60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE.

(c) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants.

(d) Owners and operators of emergency stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder must meet the requirements in paragraphs (d)(1) and (2) of this section.

(1) Reduce NO_X emissions by 90 percent or more, or limit the emissions of NO_Xin the stationary CI internal combustion engine exhaust to 1.6 grams per KW-hour (1.2 grams per HP-hour).

(2) Reduce PM emissions by 60 percent or more, or limit the emissions of PM in the stationary CI internal combustion engine exhaust to 0.15 g/KW-hr (0.11 g/HP-hr).

§ 60.4202 What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?

(a) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards specified in paragraphs (a)(1) through (2) of this section.

(1) For engines with a maximum engine power less than 37 KW (50 HP):

(i) The certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants for model year 2007 engines, and

(ii) The certification emission standards for new nonroad CI engines in 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, 40 CFR 1039.115, and table 2 to this subpart, for 2008 model year and later engines.

(2) For engines with a maximum engine power greater than or equal to 37 KW (50 HP), the certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants beginning in model year 2007.

Comply with the Tier III emission standards (Table 1 per 40 CFR 89.112): NHMC + NOx = 4.7 g/kw-hr; CO = 5.0 g/kw-hr; PM= 0.40 g/kw-hr

§ 60.4206 How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

Fuel Requirements for Owners and Operators

§ 60.4207 What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?

(a) Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

The ACLF currently uses ultra low sulfur diesel fuel with a maximum sulfur content of 15 ppmV.

(c) Owners and operators of pre-2011 model year stationary CI ICE subject to this subpart may petition the Administrator for approval to use remaining non-compliant fuel that does not meet the fuel requirements of paragraphs (a) and (b) of this section beyond the dates required for the purpose of using up existing fuel inventories. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the Administrator.

(d) Owners and operators of pre-2011 model year stationary CI ICE subject to this subpart that are located in areas of Alaska not accessible by the Federal Aid Highway System may petition the Administrator for approval to use any fuels mixed with used lubricating oil that do not meet the fuel requirements of paragraphs (a) and (b) of this section. Owners and operators must demonstrate in their petition to the Administrator that there is no other place to use the lubricating oil. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the Administrator.

(e) Stationary CI ICE that have a national security exemption under §60.4200(d) are also exempt from the fuel requirements in this section.

Other Requirements for Owners and Operators

§ 60.4209 What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211.

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine, you must install a non-resettable hour meter prior to startup of the engine.

(b) If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in §60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

Compliance Requirements

§ 60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. You must also meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in §§60.4204(a) or 60.4205(a), or if you are an owner or operator of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.

(1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

(2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

(3) Keeping records of engine manufacturer data indicating compliance with the standards.

(4) Keeping records of control device vendor data indicating compliance with the standards.

(5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must

comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's specifications.

(d) If you are an owner or operator and must comply with the emission standards specified in §60.4204(c) or §60.4205(d), you must demonstrate compliance according to the requirements specified in paragraphs (d)(1) through (3) of this section.

(1) Conducting an initial performance test to demonstrate initial compliance with the emission standards as specified in §60.4213.

(2) Establishing operating parameters to be monitored continuously to ensure the stationary internal combustion engine continues to meet the emission standards. The owner or operator must petition the Administrator for approval of operating parameters to be monitored continuously. The petition must include the information described in paragraphs (d)(2)(i) through (v) of this section.

(i) Identification of the specific parameters you propose to monitor continuously;

(ii) A discussion of the relationship between these parameters and $NO_X$and PM emissions, identifying how the emissions of these pollutants change with changes in these parameters, and how limitations on these parameters will serve to limit $NO_X$and PM emissions;

(iii) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;

(iv) A discussion identifying the methods and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and

(v) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

(3) For non-emergency engines with a displacement of greater than or equal to 30 liters per cylinder, conducting annual performance tests to demonstrate continuous compliance with the emission standards as specified in §60.4213.

(e) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. Anyone may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. For owners and operators of emergency engines meeting standards under §60.4205 but not §60.4204, any operation other than emergency operation, and maintenance and testing as permitted in this section, is prohibited.

Maintenance and testing hours of operation for each emergency standby generator will not exceed 100 hr/yr.

Notification, Reports, and Records for Owners and Operators

§ 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the requirements of paragraphs (a)(1) and (2) of this section.

(1) Submit an initial notification as required in §60.7(a)(1). The notification must include the information in paragraphs (a)(1)(i) through (v) of this section.

(i) Name and address of the owner or operator;

(ii) The address of the affected source;

(iii) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;

(iv) Emission control equipment; and

(v) Fuel used.

(2) Keep records of the information in paragraphs (a)(2)(i) through (iv) of this section.

(i) All notifications submitted to comply with this subpart and all documentation supporting any notification.

(ii) Maintenance conducted on the engine.

(iii) If the stationary CI internal combustion is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards.

(iv) If the stationary CI internal combustion is not a certified engine, documentation that the engine meets the emission standards.

(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.

Appendix G

NESHAP for Stationary Reciprocating Internal Combustion Engines

Title 40: Protection of Environment
Part 63, Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

§ 63.6580 What is the purpose of subpart ZZZZ?

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

§ 63.6585 Am I subject to this subpart?

You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand.

(a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

(c) An area source of HAP emissions is a source that is not a major source.

The facility maintains and operates two non-emergency internal combustion engines. A Caterpillar D398 with an engine power rating of 650 bhp, installed prior to June 12, 2006. A Deutz with an engine power rating of 106 bhp, installed prior to June 12, 2006. This facility is classified as an area source of HAP emissions defined as potential-to-emit (PTE) 10 tons per year (tpy) or less for any single HAP or PTE less than 25 tpy for total HAPs.

(d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

(e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C.

§ 63.6590 What parts of my plant does this subpart cover?

This subpart applies to each affected source.

(a) Affected source. An affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.

(1) *Existing stationary RICE.*

(i) For stationary RICE with a site rating of more than 500 brake horsepower (HP) located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before December 19, 2002.

(ii) For stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

(iii) For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

§ 63.6595 When do I have to comply with this subpart?

(a) *Affected sources.* (1) If you have an existing stationary RICE, excluding existing non-emergency CI stationary RICE, with a site rating of more than 500 brake HP located at a major source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than June 15, 2007. If you have an existing non-emergency CI stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, an existing stationary CI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, or an existing stationary CI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than May 3, 2013. If you have an existing stationary SI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, or an existing stationary SI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than October 19, 2013.

§ 63.6603 What emission limitations and operating limitations must I meet if I own or operate an existing stationary RICE located at an area source of HAP emissions?

Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in §63.6620 and Table 4 to this subpart.

(a) If you own or operate an existing stationary RICE located at an area source of HAP emissions, you must comply with the requirements in Table 2d to this subpart and the operating limitations in Table 1b and Table 2b to this subpart that apply to you.

Non-Emergency CI RICE (≤ 300 hp)[a]:

- **Change oil and filter every 1,000 hr of operation or annually, whichever comes first.[b]**
- **Inspect air cleaner every 1,000 hr of operation or annually, whichever comes first.**
- **Inspect all hoses and belts every 500 hr of operation or annually, whichever comes first, and replace as necessary.**

[a] Deutz power screen generator, engine rating of 106 bhp

[b] Sources have the option to utilize an oil analysis program as described in §63.6625(i) in order to extend the specified oil change requirement in Table 2d of this subpart.

Non-Emergency CI RICE (> 500 hp)[a]:

- **Limit concentration of CO in the stationary RICE exhaust to 23 ppmvd at 15% O_2; or**
- **Reduce CO emissions by 70 percent or more.**

[a] Caterpillar wood chipper generator, engine rating of 650 bhp

§ 63.6604 What fuel requirements must I meet if I own or operate an existing stationary CI RICE?

If you own or operate an existing non-emergency, non-black start CI stationary RICE with a site rating of more than 300 brake HP with a displacement of less than 30 liters per cylinder that uses diesel fuel, you must use diesel fuel that meets the requirements in 40 CFR 80.510(b) for nonroad diesel fuel. Existing non-emergency CI stationary RICE located in Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or at area sources in areas of Alaska not accessible by the FAHS are exempt from the requirements of this section.

Applicable for the Caterpillar wood chipper engine

§ 63.6605 What are my general requirements for complying with this subpart?

(a) You must be in compliance with the emission limitations and operating limitations in this subpart that apply to you at all times.

(b) At all times you must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

§ 63.6612 By what date must I conduct the initial performance tests or other initial compliance demonstrations if I own or operate an existing stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions or an existing stationary RICE located at an area source of HAP emissions?

If you own or operate an existing stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions or an existing stationary RICE located at an area source of HAP emissions you are subject to the requirements of this section.

(a) You must conduct any initial performance test or other initial compliance demonstration according to Tables 4 and 5 to this subpart that apply to you within 180 days after the compliance date that is specified for your stationary RICE in §63.6595 and according to the provisions in §63.7(a)(2).

Table 4 -Non-Emergency CI RICE:

- **Reduce CO emissions –** measure O_2 at inlet and outlet of the control device – use a portable CO and O_2 analyzer

Table 5 -Non-Emergency CI RICE (> 500 hp)[a]:

- **Limit concentration of CO using an oxidation catalyst, and using a CPMS; or**
- **Reduce CO emissions not using an oxidation catalyst; or** – must achieve the required CO percent reduction from initial performance test, install a CPMS to continuously monitor operating parameters
- **Limit the concentration of CO not using an oxidation catalyst –** the average CO concentration must be less than or equal to the CO emission limit as determined by the initial performance test, install a CPMS to continuously monitor operating parameters

[a] *Caterpillar wood chipper generator, engine rating of 650 bhp*

§ 63.6620 What performance tests and other procedures must I use?

(a) You must conduct each performance test in Tables 3 and 4 of this subpart that applies to you.

(b) Each performance test must be conducted according to the requirements that this subpart specifies in Table 4 to this subpart. If you own or operate a non-operational stationary RICE that is subject to performance testing, you do not need to start up the engine solely to conduct the performance test. Owners and operators of a non-operational engine can conduct the performance test when the engine is started up again.

(c) [Reserved]

(d) You must conduct three separate test runs for each performance test required in this section, as specified in §63.7(e)(3). Each test run must last at least 1 hour.

(e)(1) You must use Equation 1 of this section to determine compliance with the percent reduction requirement:

$$\frac{C_i - C_o}{C_i} \times 100 = R \qquad \text{(Eq. 1)}$$

Where:

C_i= concentration of CO or formaldehyde at the control device inlet,

C_o= concentration of CO or formaldehyde at the control device outlet, and

R = percent reduction of CO or formaldehyde emissions.

(2) You must normalize the carbon monoxide (CO) or formaldehyde concentrations at the inlet and outlet of the control device to a dry basis and to 15 percent oxygen, or an equivalent percent carbon dioxide (CO_2). If pollutant concentrations are to be corrected to 15 percent oxygen and CO_2concentration is measured in lieu of oxygen concentration measurement, a CO_2correction factor is needed. Calculate the CO_2correction factor as described in paragraphs (e)(2)(i) through (iii) of this section.

(i) Calculate the fuel-specific $F_o$value for the fuel burned during the test using values obtained from Method 19, section 5.2, and the following equation:

$$F_o = \frac{0.209\, F_d}{F_c} \qquad \text{(Eq. 2)}$$

Where:

F_o= Fuel factor based on the ratio of oxygen volume to the ultimate CO_2volume produced by the fuel at zero percent excess air.

0.209 = Fraction of air that is oxygen, percent/100.

F_d= Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm^3 /J (dscf/10^6 Btu).

F_c= Ratio of the volume of CO_2produced to the gross calorific value of the fuel from Method 19, dsm^3 /J (dscf/10^6 Btu).

(ii) Calculate the CO_2correction factor for correcting measurement data to 15 percent oxygen, as follows:

$$X_{co_2} = \frac{5.9}{F_o} \qquad \text{(Eq. 3)}$$

Where:

X_{co2}= CO_2correction factor, percent.

5.9 = 20.9 percent O_2–15 percent O_2, the defined O_2correction value, percent.

(iii) Calculate the $NO_X$and SO_2gas concentrations adjusted to 15 percent O_2using CO_2as follows:

$$C_{adj} = C_d \frac{X_{co_2}}{\%CO_2} \qquad \text{(Eq. 4)}$$

Where:

%CO_2= Measured CO_2concentration measured, dry basis, percent.

(f) If you comply with the emission limitation to reduce CO and you are not using an oxidation catalyst, if you comply with the emission limitation to reduce formaldehyde and you are not using NSCR, or if you comply with the emission limitation to limit the concentration of formaldehyde in the stationary RICE exhaust and you are not using an oxidation catalyst or NSCR, you must petition the Administrator for operating limitations to be established during the initial performance test and continuously monitored thereafter; or for approval of no operating limitations. You must not conduct the initial performance test until after the petition has been approved by the Administrator.

(g) If you petition the Administrator for approval of operating limitations, your petition must include the information described in paragraphs (g)(1) through (5) of this section.

(1) Identification of the specific parameters you propose to use as operating limitations;

(2) A discussion of the relationship between these parameters and HAP emissions, identifying how HAP emissions change with changes in these parameters, and how limitations on these parameters will serve to limit HAP emissions;

(3) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;

(4) A discussion identifying the methods you will use to measure and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and

(5) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

(h) If you petition the Administrator for approval of no operating limitations, your petition must include the information described in paragraphs (h)(1) through (7) of this section.

(1) Identification of the parameters associated with operation of the stationary RICE and any emission control device which could change intentionally (*e.g.,* operator adjustment, automatic controller adjustment, etc.) or unintentionally (*e.g.,* wear and tear, error, etc.) on a routine basis or over time;

(2) A discussion of the relationship, if any, between changes in the parameters and changes in HAP emissions;

(3) For the parameters which could change in such a way as to increase HAP emissions, a discussion of whether establishing limitations on the parameters would serve to limit HAP emissions;

(4) For the parameters which could change in such a way as to increase HAP emissions, a discussion of how you could establish upper and/or lower values for the parameters which would establish limits on the parameters in operating limitations;

(5) For the parameters, a discussion identifying the methods you could use to measure them and the instruments you could use to monitor them, as well as the relative accuracy and precision of the methods and instruments;

(6) For the parameters, a discussion identifying the frequency and methods for recalibrating the instruments you could use to monitor them; and

(7) A discussion of why, from your point of view, it is infeasible or unreasonable to adopt the parameters as operating limitations.

(i) The engine percent load during a performance test must be determined by documenting the calculations, assumptions, and measurement devices used to measure or estimate the percent load in a specific application. A written report of the average percent load determination must be included in the notification of compliance status. The following information must be included in the written report: the engine model number, the engine manufacturer, the year of purchase, the manufacturer's site-rated brake horsepower, the ambient temperature, pressure, and humidity during the performance test, and all assumptions that were made to estimate or calculate percent load during the performance test must be clearly explained. If measurement devices such as flow meters, kilowatt meters, beta analyzers, stain gauges, etc. are used, the model number of the measurement device, and an estimate of its accurate in percentage of true value must be provided.

§ 63.6625 What are my monitoring, installation, collection, operation, and maintenance requirements?

(e) If you own or operate any of the following stationary RICE, you must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions:

(1) An existing stationary RICE with a site rating of less than 100 HP located at a major source of HAP emissions;

(2) An existing emergency or black start stationary RICE with a site rating of less than or equal to 500 HP located at a major source of HAP emissions;

(3) An existing emergency or black start stationary RICE located at an area source of HAP emissions;

(4) An existing non-emergency, non-black start stationary CI RICE with a site rating less than or equal to 300 HP located at an area source of HAP emissions;

(5) An existing non-emergency, non-black start 2SLB stationary RICE located at an area source of HAP emissions;

(6) An existing non-emergency, non-black start landfill or digester gas stationary RICE located at an area source of HAP emissions;

(7) An existing non-emergency, non-black start 4SLB stationary RICE with a site rating less than or equal to 500 HP located at an area source of HAP emissions;

(8) An existing non-emergency, non-black start 4SRB stationary RICE with a site rating less than or equal to 500 HP located at an area source of HAP emissions;

(9) An existing, non-emergency, non-black start 4SLB stationary RICE with a site rating greater than 500 HP located at an area source of HAP emissions that is operated 24 hours or less per calendar year; and

(10) An existing, non-emergency, non-black start 4SRB stationary RICE with a site rating greater than 500 HP located at an area source of HAP emissions that is operated 24 hours or less per calendar year.

(f) If you own or operate an existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions or an existing emergency stationary RICE located at an area source of HAP emissions, you must install a non-resettable hour meter if one is not already installed.

(g) If you own or operate an existing non-emergency, non-black start CI engine greater than or equal to 300 HP that is not equipped with a closed crankcase ventilation system, you must comply with either paragraph (g)(1) or paragraph (g)(2) of this section. Owners and operators must follow the manufacturer's specified maintenance requirements for operating and maintaining the open or closed crankcase ventilation systems and replacing the crankcase filters, or can request the Administrator to approve different maintenance requirements that are as protective as manufacturer requirements. Existing CI engines located at area sources in areas of Alaska not accessible by the FAHS do not have to meet the requirements of paragraph (g) of this section.

(1) Install a closed crankcase ventilation system that prevents crankcase emissions from being emitted to the atmosphere, or

(2) Install an open crankcase filtration emission control system that reduces emissions from the crankcase by filtering the exhaust stream to remove oil mist, particulates, and metals.

(h) If you operate a new, reconstructed, or existing stationary engine, you must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup in Tables 1a, 2a, 2c, and 2d to this subpart apply.

(i) If you own or operate a stationary CI engine that is subject to the work, operation or management practices in items 1 or 2 of Table 2c to this subpart or in items 1 or 4 of Table 2d to this subpart, you have the option of utilizing an oil analysis program in order to extend the specified oil change requirement in Tables 2c and 2d to this subpart. The oil analysis must be performed at the same frequency specified for changing the oil in Table 2c or 2d to this subpart. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

(j) If you own or operate a stationary SI engine that is subject to the work, operation or management practices in items 6, 7, or 8 of Table 2c to this subpart or in items 5, 6, 7, 9, or 11 of Table 2d to this subpart, you have the option of utilizing an oil analysis program in order to extend the specified oil change requirement in Tables 2c and 2d to this subpart. The oil analysis must be performed at the same frequency specified for changing the oil in Table 2c or 2d to this subpart. The analysis program must at a minimum analyze the following three parameters: Total Acid Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Acid Number increases by more than 3.0 milligrams of potassium hydroxide (KOH) per gram from Total Acid Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

§ 63.6630 How do I demonstrate initial compliance with the emission limitations and operating limitations?

(a) You must demonstrate initial compliance with each emission and operating limitation that applies to you according to Table 5 of this subpart.

Table 5 -Non-Emergency CI RICE (> 500 hp)[a]:

- **Limit concentration of CO using an oxidation catalyst, and using a CPMS; or**
- **Reduce CO emissions not using an oxidation catalyst; or** – must achieve the required CO percent reduction from initial performance test, install a CPMS to continuously monitor operating parameters
- **Limit the concentration of CO not using an oxidation catalyst –** the average CO concentration must be less than or equal to the CO emission limit as determined by the initial performance test, install a CPMS to continuously monitor operating parameters

[a] *Caterpillar wood chipper generator, engine rating of 650 bhp*

(b) During the initial performance test, you must establish each operating limitation in Tables 1b and 2b of this subpart that applies to you.

(c) You must submit the Notification of Compliance Status containing the results of the initial compliance demonstration according to the requirements in §63.6645.

§ 63.6635 How do I monitor and collect data to demonstrate continuous compliance?

(a) If you must comply with emission and operating limitations, you must monitor and collect data according to this section.

(b) Except for monitor malfunctions, associated repairs, required performance evaluations, and required quality assurance or control activities, you must monitor continuously at all times that the stationary RICE is operating. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

(c) You may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels. You must, however, use all the valid data collected during all other periods.

§ 63.6640 How do I demonstrate continuous compliance with the emission limitations and operating limitations?

(a) You must demonstrate continuous compliance with each emission limitation and operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to this subpart that apply to you according to methods specified in Table 6 to this subpart.

(b) You must report each instance in which you did not meet each emission limitation or operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to this subpart that apply to you. These instances are deviations from the emission and operating limitations in this subpart. These deviations must be reported according to the requirements in §63.6650. If you change your catalyst, you must reestablish the values of the operating parameters measured during the initial performance test. When you reestablish the values of your operating parameters, you must also conduct a performance test to demonstrate that you are meeting the required emission limitation applicable to your stationary RICE.

(c) [Reserved]

(d) For new, reconstructed, and rebuilt stationary RICE, deviations from the emission or operating limitations that occur during the first 200 hours of operation from engine startup (engine burn-in period) are not violations. Rebuilt stationary RICE means a stationary RICE that has been rebuilt as that term is defined in 40 CFR 94.11(a).

(e) You must also report each instance in which you did not meet the requirements in Table 8 to this subpart that apply to you. If you own or operate a new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions (except new or reconstructed 4SLB engines greater than or equal to 250 and less than or equal to 500 brake HP), a new or reconstructed stationary RICE located at an area source of HAP emissions, or any of the following RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, you do not need to comply with the requirements in Table 8 to this subpart: An existing 2SLB stationary RICE, an existing 4SLB stationary RICE, an existing emergency stationary RICE, an existing limited use stationary RICE, or an existing stationary RICE which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis. If you own or operate any of the following RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, you do not need to comply with the requirements in Table 8 to this subpart, except for the initial notification requirements: a new or reconstructed stationary RICE that combusts landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, a new or reconstructed emergency stationary RICE, or a new or reconstructed limited use stationary RICE.

§ 63.6645 What notifications must I submit and when?

(a) You must submit all of the notifications in §§63.7(b) and (c), 63.8(e), (f)(4) and (f)(6), 63.9(b) through (e), and (g) and (h) that apply to you by the dates specified if you own or operate any of the following;

(1) An existing stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions.

(2) An existing stationary RICE located at an area source of HAP emissions.

(3) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.

(4) A new or reconstructed 4SLB stationary RICE with a site rating of greater than or equal to 250 HP located at a major source of HAP emissions.

(5) This requirement does not apply if you own or operate an existing stationary RICE less than 100 HP, an existing stationary emergency RICE, or an existing stationary RICE that is not subject to any numerical emission standards.

(b) As specified in §63.9(b)(2), if you start up your stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions before the effective date of this subpart, you must submit an Initial Notification not later than December 13, 2004.

(c) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions on or after August 16, 2004, you must submit an Initial Notification not later than 120 days after you become subject to this subpart.

(d) As specified in §63.9(b)(2), if you start up your stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions before the effective date of this subpart and you are required to submit an initial notification, you must submit an Initial Notification not later than July 16, 2008.

(e) If you start up your new or reconstructed stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions on or after March 18, 2008 and you are required to submit an initial notification, you must submit an Initial Notification not later than 120 days after you become subject to this subpart.

(f) If you are required to submit an Initial Notification but are otherwise not affected by the requirements of this subpart, in accordance with §63.6590(b), your notification should include the information in §63.9(b)(2)(i) through (v), and a statement that your stationary RICE has no additional requirements and explain the basis of the exclusion (for

example, that it operates exclusively as an emergency stationary RICE if it has a site rating of more than 500 brake HP located at a major source of HAP emissions).

(g) If you are required to conduct a performance test, you must submit a Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin as required in §63.7(b)(1).

(h) If you are required to conduct a performance test or other initial compliance demonstration as specified in Tables 4 and 5 to this subpart, you must submit a Notification of Compliance Status according to §63.9(h)(2)(ii).

(1) For each initial compliance demonstration required in Table 5 to this subpart that does not include a performance test, you must submit the Notification of Compliance Status before the close of business on the 30th day following the completion of the initial compliance demonstration.

(2) For each initial compliance demonstration required in Table 5 to this subpart that includes a performance test conducted according to the requirements in Table 3 to this subpart, you must submit the Notification of Compliance Status, including the performance test results, before the close of business on the 60th day following the completion of the performance test according to §63.10(d)(2).

§ 63.6650 What reports must I submit and when?

(a) You must submit each report in Table 7 of this subpart that applies to you.

A compliance report is required semiannually for the Caterpillar wood chipper generator

(b) Unless the Administrator has approved a different schedule for submission of reports under §63.10(a), you must submit each report by the date in Table 7 of this subpart and according to the requirements in paragraphs (b)(1) through (b)(9) of this section.

(1) For semiannual Compliance reports, the first Compliance report must cover the period beginning on the compliance date that is specified for your affected source in §63.6595 and ending on June 30 or December 31, whichever date is the first date following the end of the first calendar half after the compliance date that is specified for your source in §63.6595.

(2) For semiannual Compliance reports, the first Compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date follows the end of the first calendar half after the compliance date that is specified for your affected source in §63.6595.

(3) For semiannual Compliance reports, each subsequent Compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.

(4) For semiannual Compliance reports, each subsequent Compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period.

(5) For each stationary RICE that is subject to permitting regulations pursuant to 40 CFR part 70 or 71, and if the permitting authority has established dates for submitting semiannual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6 (a)(3)(iii)(A), you may submit the first and subsequent Compliance reports according to the dates the permitting authority has established instead of according to the dates in paragraphs (b)(1) through (b)(4) of this section.

(6) For annual Compliance reports, the first Compliance report must cover the period beginning on the compliance date that is specified for your affected source in §63.6595 and ending on December 31.

(7) For annual Compliance reports, the first Compliance report must be postmarked or delivered no later than January 31 following the end of the first calendar year after the compliance date that is specified for your affected source in §63.6595.

(8) For annual Compliance reports, each subsequent Compliance report must cover the annual reporting period from January 1 through December 31.

(9) For annual Compliance reports, each subsequent Compliance report must be postmarked or delivered no later than January 31.

(c) The Compliance report must contain the information in paragraphs (c)(1) through (6) of this section.

(1) Company name and address.

(2) Statement by a responsible official, with that official's name, title, and signature, certifying the accuracy of the content of the report.

(3) Date of report and beginning and ending dates of the reporting period.

(4) If you had a malfunction during the reporting period, the compliance report must include the number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report must also include a description of actions taken by an owner or operator during a malfunction of an affected source to minimize emissions in accordance with §63.6605(b), including actions taken to correct a malfunction.

(5) If there are no deviations from any emission or operating limitations that apply to you, a statement that there were no deviations from the emission or operating limitations during the reporting period.

(6) If there were no periods during which the continuous monitoring system (CMS), including CEMS and CPMS, was out-of-control, as specified in §63.8(c)(7), a statement that there were no periods during which the CMS was out-of-control during the reporting period.

(d) For each deviation from an emission or operating limitation that occurs for a stationary RICE where you are not using a CMS to comply with the emission or operating limitations in this subpart, the Compliance report must contain the information in paragraphs (c)(1) through (4) of this section and the information in paragraphs (d)(1) and (2) of this section.

(1) The total operating time of the stationary RICE at which the deviation occurred during the reporting period.

(2) Information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable, and the corrective action taken.

(e) For each deviation from an emission or operating limitation occurring for a stationary RICE where you are using a CMS to comply with the emission and operating limitations in this subpart, you must include information in paragraphs (c)(1) through (4) and (e)(1) through (12) of this section.

(1) The date and time that each malfunction started and stopped.

(2) The date, time, and duration that each CMS was inoperative, except for zero (low-level) and high-level checks.

(3) The date, time, and duration that each CMS was out-of-control, including the information in §63.8(c)(8).

(4) The date and time that each deviation started and stopped, and whether each deviation occurred during a period of malfunction or during another period.

(5) A summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period.

(6) A breakdown of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes.

(7) A summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total operating time of the stationary RICE at which the CMS downtime occurred during that reporting period.

(8) An identification of each parameter and pollutant (CO or formaldehyde) that was monitored at the stationary RICE.

(9) A brief description of the stationary RICE.

(10) A brief description of the CMS.

(11) The date of the latest CMS certification or audit.

(12) A description of any changes in CMS, processes, or controls since the last reporting period.

(f) Each affected source that has obtained a title V operating permit pursuant to 40 CFR part 70 or 71 must report all deviations as defined in this subpart in the semiannual monitoring report required by 40 CFR 70.6 (a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A). If an affected source submits a Compliance report pursuant to Table 7 of this subpart along with, or as part of, the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), and the Compliance report includes all required information concerning deviations from any emission or operating limitation in this subpart, submission of the Compliance report shall be deemed to satisfy any obligation to report the same deviations in the semiannual monitoring report. However, submission of a Compliance report shall not otherwise affect any obligation the affected source may have to report deviations from permit requirements to the permit authority.

(g) If you are operating as a new or reconstructed stationary RICE which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, you must submit an annual report according to Table 7 of this subpart by the date specified unless the Administrator has approved a different schedule, according to the information described in paragraphs (b)(1) through (b)(5) of this section. You must report the data specified in (g)(1) through (g)(3) of this section.

(1) Fuel flow rate of each fuel and the heating values that were used in your calculations. You must also demonstrate that the percentage of heat input provided by landfill gas or digester gas is equivalent to 10 percent or more of the total fuel consumption on an annual basis.

(2) The operating limits provided in your federally enforceable permit, and any deviations from these limits.

(3) Any problems or errors suspected with the meters.

§ 63.6655 What records must I keep?

(a) If you must comply with the emission and operating limitations, you must keep the records described in paragraphs (a)(1) through (a)(5), (b)(1) through (b)(3) and (c) of this section.

(1) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted, according to the requirement in §63.10(b)(2)(xiv).

(2) Records of the occurrence and duration of each malfunction of operation (*i.e.,* process equipment) or the air pollution control and monitoring equipment.

(3) Records of performance tests and performance evaluations as required in §63.10(b)(2)(viii).

(4) Records of all required maintenance performed on the air pollution control and monitoring equipment.

(5) Records of actions taken during periods of malfunction to minimize emissions in accordance with §63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

(b) For each CEMS or CPMS, you must keep the records listed in paragraphs (b)(1) through (3) of this section.

(1) Records described in §63.10(b)(2)(vi) through (xi).

(2) Previous (*i.e.,* superseded) versions of the performance evaluation plan as required in §63.8(d)(3).

(3) Requests for alternatives to the relative accuracy test for CEMS or CPMS as required in §63.8(f)(6)(i), if applicable.

(c) If you are operating a new or reconstructed stationary RICE which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, you must keep the records of your daily fuel usage monitors.

(d) You must keep the records required in Table 6 of this subpart to show continuous compliance with each emission or operating limitation that applies to you.

(e) You must keep records of the maintenance conducted on the stationary RICE in order to demonstrate that you operated and maintained the stationary RICE and after-treatment control device (if any) according to your own maintenance plan if you own or operate any of the following stationary RICE;

(1) An existing stationary RICE with a site rating of less than 100 brake HP located at a major source of HAP emissions.

(2) An existing stationary emergency RICE.

(3) An existing stationary RICE located at an area source of HAP emissions subject to management practices as shown in Table 2d to this subpart.

(f) If you own or operate any of the stationary RICE in paragraphs (f)(1) or (2) of this section, you must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for demand response operation, the owner or operator must keep records of the notification of the emergency situation, and the time the engine was operated as part of demand response.

(1) An existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions that does not meet the standards applicable to non-emergency engines.

(2) An existing emergency stationary RICE located at an area source of HAP emissions that does not meet the standards applicable to non-emergency engines.

§ 63.6660 In what form and how long must I keep my records?

(a) Your records must be in a form suitable and readily available for expeditious review according to §63.10(b)(1).

(b) As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

(c) You must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1).

Title 40: Protection of Environment
Part 63, Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

§ 63.6580 What is the purpose of subpart ZZZZ?

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

§ 63.6585 Am I subject to this subpart?

You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand.

(a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

(c) An area source of HAP emissions is a source that is not a major source.

ACLF Household Haz Waste Bldg – 33 kW emergency diesel engine generator.

(d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

(e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C.

§ 63.6590 What parts of my plant does this subpart cover?

This subpart applies to each affected source.

(a) Affected source. An affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.

(1) *Existing stationary RICE.*

(i) For stationary RICE with a site rating of more than 500 brake horsepower (HP) located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before December 19, 2002.

(ii) For stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

(iii) For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

Installed in 1998.

(iv) A change in ownership of an existing stationary RICE does not make that stationary RICE a new or reconstructed stationary RICE.

(2) *New stationary RICE.* (i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after December 19, 2002.

(ii) A stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

(iii) A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

(3) *Reconstructed stationary RICE.* (i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after December 19, 2002.

(ii) A stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

(iii) A stationary RICE located at an area source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

(b) *Stationary RICE subject to limited requirements.* (1) An affected source which meets either of the criteria in paragraphs (b)(1)(i) through (ii) of this section does not have to meet the requirements of this subpart and of subpart A of this part except for the initial notification requirements of §63.6645(f).

(i) The stationary RICE is a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.

(ii) The stationary RICE is a new or reconstructed limited use stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.

(2) A new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis must meet the initial notification requirements of §63.6645(h) and the requirements of §§63.6625(c), 63.6650(g), and 63.6655(c). These stationary RICE do not have to meet the emission limitations and operating limitations of this subpart.

(3) A stationary RICE which is an existing spark ignition 4 stroke rich burn (4SRB) stationary RICE located at an area source of HAP emissions; an existing spark ignition 4SRB stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions; an existing spark ignition 2 stroke lean burn (2SLB) stationary RICE; an existing spark ignition 4 stroke lean burn (4SLB) stationary RICE; an existing compression ignition emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions; an existing spark ignition emergency or limited use stationary RICE; an existing limited use stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions; an existing stationary RICE that combusts landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis; or an existing stationary residential, commercial, or institutional emergency stationary RICE located at an area

source of HAP emissions, does not have to meet the requirements of this subpart and of subpart A of this part. No initial notification is necessary.

(c) Stationary RICE subject to Regulations under 40 CFR Part 60. An affected source that is a new or reconstructed stationary RICE located at an area source, or is a new or reconstructed stationary RICE located at a major source of HAP emissions and is a spark ignition 2 stroke lean burn (2SLB) stationary RICE with a site rating of less than 500 brake HP, a spark ignition 4 stroke lean burn (4SLB) stationary RICE with a site rating of less than 250 brake HP, or a 4 stroke rich burn (4SRB) stationary RICE with a site rating of less than or equal to 500 brake HP, a stationary RICE with a site rating of less than or equal to 500 brake HP which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, an emergency or limited use stationary RICE with a site rating of less than or equal to 500 brake HP, or a compression ignition (CI) stationary RICE with a site rating of less than or equal to 500 brake HP, must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

§ 63.6595 When do I have to comply with this subpart?

(a) *Affected sources.* (1) If you have an existing stationary RICE, excluding existing non-emergency CI stationary RICE, with a site rating of more than 500 brake HP located at a major source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than June 15, 2007. If you have an existing non-emergency CI stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, an existing stationary CI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, or an existing stationary CI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than May 3, 2013. If you have an existing stationary SI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, or an existing stationary SI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than October 19, 2013.

(2) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions before August 16, 2004, you must comply with the applicable emission limitations and operating limitations in this subpart no later than August 16, 2004.

(3) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions after August 16, 2004, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.

(4) If you start up your new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions before January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart no later than January 18, 2008.

(5) If you start up your new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions after January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.

(6) If you start up your new or reconstructed stationary RICE located at an area source of HAP emissions before January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart no later than January 18, 2008.

(7) If you start up your new or reconstructed stationary RICE located at an area source of HAP emissions after January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.

§ 63.6603 What emission limitations and operating limitations must I meet if I own or operate an existing stationary RICE located at an area source of HAP emissions?

Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in §63.6620 and Table 4 to this subpart.

(a) If you own or operate an existing stationary RICE located at an area source of HAP emissions, you must comply with the requirements in Table 2d to this subpart and the operating limitations in Table 1b and Table 2b to this subpart that apply to you.

Emergency CI RICE[a]:

- **Change oil and filter every 500 hr of operation or annually, whichever comes first.[b]**
- **Inspect air cleaner every 1,000 hr of operation or annually, whichever comes first.**
- **Inspect all hoses and belts every 500 hr of operation or annually, whichever comes first, and replace as necessary.**

[a]*If an emergency engine is operating during an emergency and it is not possible to shut down the engine in order to perform the management practice requirements on the schedule required in Table 2d of this subpart, or if performing the management practice on the required schedule would otherwise pose an unacceptable risk under Federal, State, or local law, the management practice can be delayed until the emergency is over or the unacceptable risk under Federal, State, or local law has abated. The management practice should be performed as soon as practicable after the emergency has ended or the unacceptable risk under Federal, State, or local law has abated. Sources must report any failure to perform the management practice on the schedule required and the Federal, State or local law under which the risk was deemed unacceptable.*

[b]*Sources have the option to utilize an oil analysis program as described in §63.6625(i) in order to extend the specified oil change requirement in Table 2d of this subpart. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.*

(b) If you own or operate an existing stationary non-emergency CI RICE greater than 300 HP located at area sources in areas of Alaska not accessible by the Federal Aid Highway System (FAHS) you do not have to meet the numerical CO emission limitations specified in Table 2d to this subpart. Existing stationary non-emergency CI RICE greater than 300 HP located at area sources in areas of Alaska not accessible by the FAHS must meet the management practices that are shown for stationary non-emergency CI RICE less than or equal to 300 HP in Table 2d to this subpart.

§ 63.6604 What fuel requirements must I meet if I own or operate an existing stationary CI RICE?

If you own or operate an existing non-emergency, non-black start CI stationary RICE with a site rating of more than 300 brake HP with a displacement of less than 30 liters per cylinder that uses diesel fuel, you must use diesel fuel that meets the requirements in 40 CFR 80.510(b) for nonroad diesel fuel. Existing non-emergency CI stationary RICE located in Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or at area sources in areas of Alaska not accessible by the FAHS are exempt from the requirements of this section.

Not applicable.

§ 63.6605 What are my general requirements for complying with this subpart?

(a) You must be in compliance with the emission limitations and operating limitations in this subpart that apply to you at all times.

(b) At all times you must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

§ 63.6625 What are my monitoring, installation, collection, operation, and maintenance requirements?

(e) If you own or operate any of the following stationary RICE, you must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions:

(1) An existing stationary RICE with a site rating of less than 100 HP located at a major source of HAP emissions;

(2) An existing emergency or black start stationary RICE with a site rating of less than or equal to 500 HP located at a major source of HAP emissions;

(3) An existing emergency or black start stationary RICE located at an area source of HAP emissions;

(4) An existing non-emergency, non-black start stationary CI RICE with a site rating less than or equal to 300 HP located at an area source of HAP emissions;

(5) An existing non-emergency, non-black start 2SLB stationary RICE located at an area source of HAP emissions;

(6) An existing non-emergency, non-black start landfill or digester gas stationary RICE located at an area source of HAP emissions;

(7) An existing non-emergency, non-black start 4SLB stationary RICE with a site rating less than or equal to 500 HP located at an area source of HAP emissions;

(8) An existing non-emergency, non-black start 4SRB stationary RICE with a site rating less than or equal to 500 HP located at an area source of HAP emissions;

(9) An existing, non-emergency, non-black start 4SLB stationary RICE with a site rating greater than 500 HP located at an area source of HAP emissions that is operated 24 hours or less per calendar year; and

(10) An existing, non-emergency, non-black start 4SRB stationary RICE with a site rating greater than 500 HP located at an area source of HAP emissions that is operated 24 hours or less per calendar year.

(f) If you own or operate an existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions or an existing emergency stationary RICE located at an area source of HAP emissions, you must install a non-resettable hour meter if one is not already installed.

(g) If you own or operate an existing non-emergency, non-black start CI engine greater than or equal to 300 HP that is not equipped with a closed crankcase ventilation system, you must comply with either paragraph (g)(1) or paragraph (g)(2) of this section. Owners and operators must follow the manufacturer's specified maintenance requirements for operating and maintaining the open or closed crankcase ventilation systems and replacing the crankcase filters, or can request the Administrator to approve different maintenance requirements that are as protective as manufacturer requirements. Existing CI engines located at area sources in areas of Alaska not accessible by the FAHS do not have to meet the requirements of paragraph (g) of this section.

(1) Install a closed crankcase ventilation system that prevents crankcase emissions from being emitted to the atmosphere, or

(2) Install an open crankcase filtration emission control system that reduces emissions from the crankcase by filtering the exhaust stream to remove oil mist, particulates, and metals.

(h) If you operate a new, reconstructed, or existing stationary engine, you must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup in Tables 1a, 2a, 2c, and 2d to this subpart apply.

(i) If you own or operate a stationary CI engine that is subject to the work, operation or management practices in items 1 or 2 of Table 2c to this subpart or in items 1 or 4 of Table 2d to this subpart, you have the option of utilizing an oil analysis program in order to extend the specified oil change requirement in Tables 2c and 2d to this subpart. The oil analysis must be performed at the same frequency specified for changing the oil in Table 2c or 2d to this subpart. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

(j) If you own or operate a stationary SI engine that is subject to the work, operation or management practices in items 6, 7, or 8 of Table 2c to this subpart or in items 5, 6, 7, 9, or 11 of Table 2d to this subpart, you have the option of utilizing an oil analysis program in order to extend the specified oil change requirement in Tables 2c and 2d to this subpart. The oil analysis must be performed at the same frequency specified for changing the oil in Table 2c or 2d to this subpart. The analysis program must at a minimum analyze the following three parameters: Total Acid Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Acid Number increases by more than 3.0 milligrams of potassium hydroxide (KOH) per gram from Total Acid Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

§ 63.6640 How do I demonstrate continuous compliance with the emission limitations and operating limitations?

(a) You must demonstrate continuous compliance with each emission limitation and operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to this subpart that apply to you according to methods specified in Table 6 to this subpart.

For existing emergency stationary RICE located at an area source of HAP, the following work or management practices apply: (1) Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or (2) Develop and follow your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

(b) You must report each instance in which you did not meet each emission limitation or operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to this subpart that apply to you. These instances are deviations from the emission and operating limitations in this subpart. These deviations must be reported according to the requirements in §63.6650. If you change your catalyst, you must reestablish the values of the operating

parameters measured during the initial performance test. When you reestablish the values of your operating parameters, you must also conduct a performance test to demonstrate that you are meeting the required emission limitation applicable to your stationary RICE.

(c) [Reserved]

(d) For new, reconstructed, and rebuilt stationary RICE, deviations from the emission or operating limitations that occur during the first 200 hours of operation from engine startup (engine burn-in period) are not violations. Rebuilt stationary RICE means a stationary RICE that has been rebuilt as that term is defined in 40 CFR 94.11(a).

(e) You must also report each instance in which you did not meet the requirements in Table 8 to this subpart that apply to you. If you own or operate a new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions (except new or reconstructed 4SLB engines greater than or equal to 250 and less than or equal to 500 brake HP), a new or reconstructed stationary RICE located at an area source of HAP emissions, or any of the following RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, you do not need to comply with the requirements in Table 8 to this subpart: An existing 2SLB stationary RICE, an existing 4SLB stationary RICE, an existing emergency stationary RICE, an existing limited use stationary RICE, or an existing stationary RICE which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis. If you own or operate any of the following RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, you do not need to comply with the requirements in Table 8 to this subpart, except for the initial notification requirements: a new or reconstructed stationary RICE that combusts landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, a new or reconstructed emergency stationary RICE, or a new or reconstructed limited use stationary RICE.

(f) *Requirements for emergency stationary RICE.* (1) If you own or operate an existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that was installed on or after June 12, 2006, or an existing emergency stationary RICE located at an area source of HAP emissions, you must operate the emergency stationary RICE according to the requirements in paragraphs (f)(1)(i) through (iii) of this section. Any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1)(i) through (iii) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1)(i) through (iii) of this section, the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.

(i) There is no time limit on the use of emergency stationary RICE in emergency situations.

(ii) You may operate your emergency stationary RICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year.

(iii) You may operate your emergency stationary RICE up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity; except that owners and operators may operate the emergency engine for a maximum of 15 hours per year as part of a demand response program if the regional transmission organization or equivalent balancing authority and transmission operator has determined there are emergency conditions that could lead to a potential electrical blackout, such as unusually low frequency, equipment overload, capacity or energy deficiency, or unacceptable voltage level. The engine may not be operated for more than 30 minutes prior to the time when the emergency condition is expected to occur, and the engine operation must be terminated immediately after the facility is notified that the emergency condition is no longer imminent. The 15 hours per year of demand response operation are counted as part of the 50 hours of operation per year provided for non-emergency situations. The supply of emergency power to another entity or entities pursuant to financial arrangement is not limited by this paragraph (f)(1)(iii), as long as the power provided by the financial arrangement is limited to emergency power.

(2) If you own or operate an emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that was installed prior to June 12, 2006, you must operate the engine according to the conditions described in paragraphs (f)(2)(i) through (iii) of this section. If you do not operate the engine according to the requirements in paragraphs (f)(2)(i) through (iii) of this section, the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.

(i) There is no time limit on the use of emergency stationary RICE in emergency situations.

(ii) You may operate your emergency stationary RICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by the manufacturer, the vendor, or the insurance company associated with the engine. Required testing of such units should be minimized, but there is no time limit on the use of emergency stationary RICE in emergency situations and for routine testing and maintenance.

(iii) You may operate your emergency stationary RICE for an additional 50 hours per year in non-emergency situations. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

§ 63.6655 What records must I keep?

(a) If you must comply with the emission and operating limitations, you must keep the records described in paragraphs (a)(1) through (a)(5), (b)(1) through (b)(3) and (c) of this section.

(1) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted, according to the requirement in §63.10(b)(2)(xiv).

(2) Records of the occurrence and duration of each malfunction of operation (*i.e.,* process equipment) or the air pollution control and monitoring equipment.

(3) Records of performance tests and performance evaluations as required in §63.10(b)(2)(viii).

(4) Records of all required maintenance performed on the air pollution control and monitoring equipment.

(5) Records of actions taken during periods of malfunction to minimize emissions in accordance with §63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

(b) For each CEMS or CPMS, you must keep the records listed in paragraphs (b)(1) through (3) of this section.

(1) Records described in §63.10(b)(2)(vi) through (xi).

(2) Previous (*i.e.,* superseded) versions of the performance evaluation plan as required in §63.8(d)(3).

(3) Requests for alternatives to the relative accuracy test for CEMS or CPMS as required in §63.8(f)(6)(i), if applicable.

(c) If you are operating a new or reconstructed stationary RICE which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, you must keep the records of your daily fuel usage monitors.

(d) You must keep the records required in Table 6 of this subpart to show continuous compliance with each emission or operating limitation that applies to you.

(e) You must keep records of the maintenance conducted on the stationary RICE in order to demonstrate that you operated and maintained the stationary RICE and after-treatment control device (if any) according to your own maintenance plan if you own or operate any of the following stationary RICE;

Follow management practices as noted above in *§ 63.6640.*

(1) An existing stationary RICE with a site rating of less than 100 brake HP located at a major source of HAP emissions.

(2) An existing stationary emergency RICE.

(3) An existing stationary RICE located at an area source of HAP emissions subject to management practices as shown in Table 2d to this subpart.

(f) If you own or operate any of the stationary RICE in paragraphs (f)(1) or (2) of this section, you must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for demand response operation, the owner or operator must keep records of the notification of the emergency situation, and the time the engine was operated as part of demand response.

(1) An existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions that does not meet the standards applicable to non-emergency engines.

(2) An existing emergency stationary RICE located at an area source of HAP emissions that does not meet the standards applicable to non-emergency engines.

§ 63.6660 In what form and how long must I keep my records?

(a) Your records must be in a form suitable and readily available for expeditious review according to §63.10(b)(1).

(b) As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

(c) You must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1).