Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

August 8, 2006

Mr. Gregg M. Worley, Chief
Air Permits Section
U.S. EPA, Region 4
61 Forsyth Street
Atlanta, Georgia 30303-8960

RE: Okeechobee Landfill, Inc.
Proposed Flares Project
0930104-014-AC, PSD-FL-382

Dear Mr. Worley:

Enclosed for your review and comment is a PSD permit application from Okeechobee Landfill, Inc. for a proposed flare project at the Berman Road Landfill in Okeechobee County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/921-9533. If you have any questions, please contact Teresa Heron, review engineer, at 850/921-9529.

Sincerely,

Patty Adams
for
A. A. Linero, P.E., Administrator
South Permitting Section

AAL/pa

Enclosure

cc: T. Heron

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

August 14, 2006

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS – Air Quality Division
P. O. Box 25287
Denver, Colorado 80225

RE: Okeechobee Landfill, Inc.
Proposed Flares Project
0930104-014-AC, PSD-FL-382

Dear Mr. Bunyak:

Enclosed for your review and comment is a PSD permit application from Okeechobee Landfill, Inc. for a proposed flare project at the Berman Road Landfill in Okeechobee County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/921-9533. If you have any questions, please contact Teresa Heron, review engineer, at 850/921-9529.

Sincerely,

Patty Adams

for A. A. Linero, P.E., Administrator
South Permitting Section

AAL/pa

Enclosure

cc: T. Heron

Title V Permit Application No. 1270-1
Facility ID No. 0930104
Okeechobee Landfill
(Formerly Berman Road Landfill)
Okeechobee, Florida

Prepared for:

Okeechobee Landfill, Inc.
10800 N.E. 128th Avenue
Okeechobee, FL 34972
(863) 357-0111

Prepared by:

Shaw®

Shaw Environmental and Infrastructure, Inc.
88C Elm Street
Hopkinton, MA 01748

Submitted to:

Florida Department of Environmental Protection
Air Resource Management
Southeast District
400 North Congress Avenue,
Suite 200
West Palm Beach, FL 33401

July 28, 2006

July 28, 2006

VIA EPSAP
(FDEP Permit Application Online Submittal Process)

Ms. Trina Vielhauer
Chief, Bureau of Air Regulation
Division of Air Resource Regulation
2600 Blair Stone Road MS# 5505
Tallahassee, FL 32399-2400

Subject: Title V PSD Permit Application No. 1270-1
Okeechobee Landfill, Inc. Facility ID No. 0930104

Dear Ms. Vielhauer;

On behalf of Okeechobee Landfill Inc. (OLI) Shaw Environmental and Infrastructure, Inc. has attached, through the EPSAP, the application for a Title V PSD construction and operation permit for the proposed flares project at the Okeechobee Landfill. We have completed the application forms and have supplied the detail necessary for FDEP to begin their evaluation of the proposed project. As you are aware from our meeting on June 9, 2006, this application was submitted in accordance with the first amendment to the consent agreement between Okeechobee Landfill, Inc. (OLI) and FDEP. The proposed project is to control the landfill gas being produced from the landfill by flaring and to reduce odors by another temporary flare. The temporary flare is part of the amended consent decree.

In developing the flare project, OLI considered the expected landfill gas flow rate, which peaks at over 14,000-scfm in 2011 for the "Berman Road" section of Okeechobee landfill. Currently, based on daily measurements in June 2006, the average gas flow rate to the existing flares is approximately 5400 scfm. At our current permitted capacity of 6,000-scfm, there is only a small margin (little more than 10%) for any gas production increases. Additional wells that are scheduled to be connected to the gas system could easily consume the remaining 600-scfm. Additionally, while the facility is well below the projected estimate for 2011, this permit application with emission rates and increases, current H_2S inlet gas levels, proposed gas flaring equipment, PSD, and BACT components are being developed to proactively address the not to distant operational needs for 15,000-scfm of flaring capacity.

This permit application is unique compared to typical PSD applications and projects. Typically, the PSD applications cover a new facility or a facility modification while still in the planning stages. In the planning stages, a project can be cancelled or located elsewhere if air emission complexities prevent it from being economically feasible. Additionally, there is typically less time constraint because the typical projects do not have increased emissions unless the project is implemented. In the case of Okeechobee, the facility exists and is permitted by Florida DEP as a solid waste landfill, and the landfill gas generation will increase under the current planned permitted project. Socially and economically, the landfill is necessary for State and local residents. The facility has supported and is designated for natural disaster response efforts for accepting increased and specialized waste streams.

The permit application includes a BACT analysis that has been completed for the selection of the two most economically effective control technologies given the current information compiled and landfill gas parameters. The BACT analysis compiled various technologies: conventional, beneficial and innovative. The short timeframe allowed for the application's submittal precluded completion of detailed discussions with vendors and others necessary tasks necessary for a final BACT selection.

One of the options, OLI is considering is the beneficial use of the landfill gas in a coal-fired power plant located in Indiantown. This option, which is only in the feasibility phase, may allow the beneficial use of the landfill gas while reducing the emissions of sulfur dioxide and carbon monoxide that would have been produced by the landfill. Transmitting the landfill gas to the Indiantown facility via a pipeline to be used in their existing coal-fired boiler, which would be modified to receive the landfill gas, would support lower-cost electricity production and control emissions from landfill because the plant is already equipped with air pollution controls for sulfur dioxide. This project would be considered Renewable Energy. The amount of landfill gas available for use in the power plant could be the equivalent of up to 495,000,000 Btus per hour in 2011. This is the equivalent of 2.5 tons of coal per hour.

The eventual BACT selection will be dependent on a number of issues, including contracts, water requirements; waste and waste water disposal, and energy requirements. Once the BACT is selected and enough design details developed, OLI will be able to set an emission rate for SO2. At that time, this emission rate will be used in the ambient air impact analysis and any interactive modeling required to support the project. Since the BACT has not been chosen as yet, the ambient air impact analysis has not been completed.

This application has been prepared to meet the requirements of the first amendment of the consent agreement. We feel this application demonstrates the intent of OLI to meet FDEP's requirements. We are available to answer any questions you may have on the project and this application.

We kindly request a meeting to discuss this application. If possible, please copy me on any correspondence with the Professional Engineer and Responsible Official so that I may timely support you and our project permitting team.

Sincerely
Shaw Environmental & Infrastructure, Inc.

Bruce K. Maillet

Bruce K Maillet
Senior Consultant for Air

CC:

Mike Stallard, Okeechobee Landfill, Inc., Responsible Official
Kristin Alzheimer, P.E, Shaw Environmental & Infrastructure, Inc.

Department of
Environmental Protection
Division of Air Resource Management

SUBMITTED APPLICATION REPORT
APPLICATION FOR AIR PERMIT - LONG FORM

--- Form Effective 02/02/06 ---

Application Number: 1270- 1

Application Name: OKEECHOBEE AC & AV MODIFICATION FOR FLARES: PSD

Date Submitted: 28 July 2006

I. APPLICATION INFORMATION

Air Construction Permit - Use this form to apply for any air construction permit at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air permit. Also use this form to apply for an air construction permit:

- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- Where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- Where the applicant proposes to establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit - Use this form to apply for:

- an initial federally enforceable state air operation permit (FESOP); or
- an initial/revised/renewal Title V air operation permit.

Air Construction Permit & Title V Air Operation Permit (Concurrent Processing Option) - Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: OKEECHOBEE LANDFILL, INC.		
2. Site Name: BERMAN ROAD LANDFILL		
3. Facility Identification Number: 0930104		
4. Facility Location... Street Address or Other Locator:	3.5 miles north of St. Rd. 70 on NE 128th Avenue 10800 N.E. 128TH AVENUE	
City: OKEECHOBEE	County: OKEECHOBEE	Zip Code: 34972
5. Relocatable Facility? ☐ Yes ☑ No	6. Existing Title V Permitted Facility ☑ Yes ☐ No	

Application Contact

1.	Application Contact Name: JOE FASULO	Application Contact Job Title: District Manager
2.	Application Contact Mailing Address... Organization/Firm: OKEECHOBEE LANDFILL, INC. Street Address: 10800 N.E. 128TH AVENUE City: OKEECHOBEE State: FL Zip Code: 34972	
3.	Application Contact Telephone Numbers... Telephone: (863) 357-0111 ext. Fax: (863) 357-0772	
4.	Application Contact Email Address: jfasulo@wm.com	

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

- ☐ Air construction permit.
- ☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).
- ☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

- ☐ Initial Title V air operation permit.
- ☐ Title V air operation permit revision.
- ☐ Title V air operation permit renewal.
- ☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- ☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

- ☑ Air construction permit and Title V permit revision, incorporating the proposed project.
- ☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Application purpose: To construct two new emission units(herein designated EU-006 and EU-007), that consists of a temporary 3,000-scfm flare (EU-006) and a 6,000-scfm flare (EU-007); and to upgrade the EVAP-unit of an existing flare (EU-003) from 20,000 GPD to 30,000 GPD; and to revise the existing Title V Facility Operation Permit to include operation of these EUs. This is a PSD permit application for SO_2 emissions. This application is administratively complete and meets the 30-day submittal requirement of the First Amended Order (OGC File No. 04-0094A).

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type
3	3000 SCFM ENC FLARE, MODEL 1776 EVAP 3016	AC1A
4	3000 SCFM OPEN FLARE, MODEL 1495 (USED AS BACKUP)	
5	3000 SCFM ENC FLARE, MODEL 1698 EVAP 3004IM	
	3,000-scfm Temporary Utilty Flare (odor control)	AC1A
	6,000 scfm Utility Flare	AC1A

Note: The fee calculation information associated with this application may be accessed from the Main Menu of ESPAP.

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1.	Owner/Authorized Representative Name: JOHN VAN GESSEL	Owner/Authorized Representative Job Title: Vice President & Assistant Secretary
2.	Owner/Authorized Representative Mailing Address... Organization/Firm: WASTE MANAGEMENT, INC. OF FLORIDA Street Address: 2859 PACES FERRY ROAD SUITE 1600 City: ATLANTA State: GA Zip Code: 30339	
3.	Owner/Authorized Representative Telephone Numbers... Telephone: (770) 805-3350 ext. Fax: (770) 805-8485	
4.	Owner/Authorized Representative Email Address: jvangessel@WM.COM	
5.	Owner/Authorized Representative Statement: By entering my PIN below, I certify that I am the owner/authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.	

Application Responsible Official Certification

1.	Application Responsible Official Name: MIKE STALLARD
2.	Application Responsible Official Qualification (Check one or more of the following options, as applicable): ☑ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C. ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively. ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. ☐ The designated representative at an Acid Rain source.
3.	Application Responsible Official Mailing Address... Organization/Firm: WASTE MANAGEMENT INC. OF FLORIDA Street Address: 10800 NE 128TH AVENUE City: OKEECHOBEE State: FL Zip Code: 34972
4.	Application Responsible Official Telephone Numbers... Telephone: (863)357-0111 ext. 221 Fax: (863)357-0772
5.	Application Responsible Official Email Address: mstallard@wm.com
6.	Application Responsible Official Certification: By entering my PIN below, I certify that I am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

Professional Engineer Certification

1.	Professional Engineer Name: KRISTIN ALZHEIMER Registration Number: 43456	Professional Engineer Job Title: Engineering Manager
2.	Professional Engineer Mailing Address... Organization/Firm: SHAW ENVIRONMENTAL INC. Street Address: 200 HORIZON CENTER BOULEVARD City: TRENTON State: NJ Zip Code: 08691	
3.	Professional Engineer Telephone Numbers... Telephone: (609) 584-6873 ext. Fax: (609) 584-6873	
4.	Professional Engineer Email Address: KRISTIN.ALZHEIMER@SHAWGRP.COM	
5.	Professional Engineer Statement:	

I hereby certify, except as particularly noted herein*, that:

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☐, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☑, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☑, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Professional Engineer Exception Statement:

II. FACILITY INFORMATION
A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (km) 530.28 North (km) 3023.96		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 27° 20` 24" N Longitude (DD/MM/SS) 80° 41` 27" W	
3. Governmental Facility Code: (0) NOT OWNED OR OPERATED BY A FEDERAL, STATE, OR LOCAL GOVERNMENT	4. Facility Status Code: Active	5. Facility Major Group SIC Code: (49) ELECTRIC, GAS AND SANITARY SERVICES	6. Facility SIC(s): Primary: 4953
7. Facility Comment:			

Facility Contact

1.	Facility Contact Name: MIKE STALLARD	Facility Contact Job Title: LANDFILL DIRECTOR
2.	Facility Contact Mailing Address... Organization/Firm: OKEECHOBEE LANDFILL, INC. Street Address: 10800 NE 128TH AVENUE City: OKEECHOBEE State: FL Zip Code: 34972	
3.	Facility Contact Telephone Numbers... Telephone: (863) 357-0111 ext. Fax: (863) 357-0772	
4.	Facility Contact Email Address:	

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1.	Facility Primary Responsible Official Name: MIKE STALLARD	Facility Primary Responsible Official Job Title: Director, Landfill Operations
2.	Facility Primary Responsible Official Mailing Address... Organization/Firm: WASTE MANAGEMENT INC. OF FLORIDA Street Address: 10800 NE 128TH AVENUE City: OKEECHOBEE State: FL Zip Code: 34972	
3.	Facility Primary Responsible Official Telephone Numbers... Telephone: (863) 357-0111 ext. 221 Fax: (863) 357-0772	
4.	Facility Primary Responsible Official Email Address: mstallard@wm.com	

<u>Facility Regulatory Classifications</u> Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1.	☐ Small Business Stationary Source	☐ Unknown
2.	☐ Synthetic Non-Title V Source	
3.	☑ Title V Source	
4.	☑ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5.	☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6.	☑ Major Source of Hazardous Air Pollutants (HAPs)	
7.	☐ Synthetic Minor Source of HAPs	
8.	☑ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9.	☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10.	☑ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11.	☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12.	Facility Regulatory Classifications Comment:	

List of Pollutants Emitted by Facility

1. Pollutants Emitted	2. Pollutant Classification	Emissions Cap [Y or N]?
SO2	(A) ACTUAL OR POTENTIAL EMISSIONS ARE ABOVE THE APPLICABLE MAJOR SOURCE THRESHOLDS.	N
HAPS	(A) ACTUAL OR POTENTIAL EMISSIONS ARE ABOVE THE APPLICABLE MAJOR SOURCE THRESHOLDS.	N
CO	(A) ACTUAL OR POTENTIAL EMISSIONS ARE ABOVE THE APPLICABLE MAJOR SOURCE THRESHOLDS.	N
NOX	(A) ACTUAL OR POTENTIAL EMISSIONS ARE ABOVE THE APPLICABLE MAJOR SOURCE THRESHOLDS.	N
NMOC	(A) ACTUAL OR POTENTIAL EMISSIONS ARE ABOVE THE APPLICABLE MAJOR SOURCE THRESHOLDS.	N
PM	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
VOC	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
PM10	(C) CLASS IS UNKNOWN	N

B. Emissions Caps

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility Wide Cap [Y or N]? (all units)	3. Emissions Unit ID No.s Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap
NOX	No	No EUs included in the cap			OTHER
SO2	No	No EUs included in the cap			OTHER
VOC	No	No EUs included in the cap			OTHER
NMOC	No	No EUs included in the cap			OTHER

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

NOX: State, not federal, threshold for major facility (Title V). Greater than 100 TPY. F.A.C. 62.213-420(3)(c)
SO2: State, not federal, threshold for major facility (Title V). Greater than 100 TPY. F.A.C. 62.213-420(3)(c)
VOC: MSW Landfill NSPS - 40 CFR 60, Subpart WWW
NMOC: MSW Landfill NSPS - 40 CFR 60, Subpart WWW

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1.	Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Applicable ☑ Previously Submitted, Date: 26-MAR-03 ☑ Attachment
2.	Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Applicable ☐ Previously Submitted, Date: ☑ Attachment
3.	Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Applicable ☐ Previously Submitted, Date: ☑ Attachment

Additional Requirements for Air Construction Permit Applications

1.	Area Map Showing Facility Location: (Not applicable for existing permitted facility) ☐ Applicable ☐ Attachment
2.	Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL): ☑ Applicable ☑ Attachment
3.	Rule Applicability Analysis: ☑ Applicable ☑ Attachment
4.	List of Exempt Emissions Units (Rule 62-210.300(3), F.A.C.): (Not applicable if no exempt units at facility) ☐ Applicable ☐ Attachment
5.	Fugitive Emissions Identification: ☐ Applicable ☐ Attachment
6.	Air Quality Analysis (Rule 62-212.400(7), F.A.C.): ☐ Applicable ☐ Attachment
7.	Source Impact Analysis (Rule 62-212.400(5), F.A.C.): ☑ Applicable ☑ Attachment
8.	Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): ☐ Applicable ☐ Attachment
9.	Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.): ☐ Applicable ☐ Attachment
10.	Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): ☐ Applicable ☐ Attachment

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.): (Not applicable if no exempt units at facility)	
☐ Applicable	☐ Attachment

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities: (Required for initial/renewal applications, but not for revision applications)	
☑ Applicable	☑ Attachment
2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):	
☑ Applicable	☑ Attachment
3. Compliance Report and Plan: (Required for all initial/revision/renewal applications): Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.	
☑ Applicable	☑ Attachment
4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):	
☐ Applicable ☐ Equipment/Activities On site but Not Required to be Individually Listed	☐ Attachment
5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only):	
☐ Applicable	☐ Attachment
6. Requested Changes to Current Title V Air Operation Permit:	
☑ Applicable	☑ Attachment

Other Information Regarding this Facility:

4. Other Facility Information:	
☑ Included	☑ Attachment

Additional Requirements Comment

See the following `other facility information` - Permit Application 1270-1 Title Page -

Facility Attachments

Supplemental Item	Electronic File Name	Attachment Description	Electronic Document	Date Uploaded
Description of Proposed Construction,Modificati or Plantwide Applicability Limit (PAL)	Appendix H - Description Proposed Construct and Mod.pdf	Appendix H - Description Proposed Construct and Modification	Yes	07/28/2006
Rule Applicability Analysis	Appendix I - Rule Applicability Analysis rev1.pdf	Appendix I - Rule Applicability Analysis	Yes	07/28/2006
Source Impact Analysis	Appendix J - Ambient Impact Analysis.pdf	Appendix J - Ambient Impact Analysis	Yes	07/28/2006
Facility Plot Plan	Appendix A - Facility Plot Plan.pdf	Appendix A - Facility Plot Plan	Yes	07/28/2006
Process Flow Diagram (s)	Appendix B - Facility Process Flow Diagram.pdf	Appendix B - Facility Process Flow Diagram	Yes	07/28/2006
Precautions to Prevent Emissions of Unconfined Particulate Matter	Appendix C - Unconfined Particulate Matter.pdf	Appendix C - Unconfined Particulate Matter	Yes	07/28/2006
Other Facility Information	FDEP App No. 1270-1 Cover Letter.pdf	FDEP App No. 1270-1 Cover Letter	Yes	07/28/2006
	Title Page Okeechobee Permit App 1270-1.pdf	Permit Application 1270-1 Title Page	Yes	07/28/2006
	Appendix L - Facility Permit History.pdf	Appendix L - Facility Permit History	Yes	07/28/2006
	Appendix K - Support Calculations.pdf	Appendix K - Support Calculations	Yes	07/28/2006
List of Insignificant Activities	Appendix D - List of Insignificant Activities.pdf	Appendix D - List of Insignificant Activiities	Yes	07/28/2006
Identification of Applicable Requirements	Appendix E - Identification Applicable Requirements.pdf	Appendix E - Identification Applicable Requirements	Yes	07/28/2006
Compliance Report and Plan	Appendix F - Facility and EU Compliance Report and Plan.pdf	Appendix F - Facility and EU Compliance Report and Plan	Yes	07/28/2006
Requested Changes to Current Title V Air Operation Permit	Appendix G - Requested Changes to Current V permit.pdf	Appendix G - Requested Changes to Current V permit	Yes	07/28/2006

III. EMISSIONS UNIT INFORMATION
A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
   - ☑ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
   - ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
   - ☑ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   3000 SCFM ENC FLARE, MODEL 1776 EVAP 3016

3. Emissions Unit Identification Number: 3

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A		01-JUL-02	49	☐ Yes ☑ No

9. Package Unit Manufacturer: LFG SPECIALITIES, INC. Model Number: EF1045I14

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
    EU-003 will be modified by replacing the existing 20,000-gpm EVAP system with a 30,00-gpm unit, which contributes almost negligible increased HAPs emissios.

Emissions Unit Control Equipment

Code	Equipment	Description
23	FLARING	PLEASE REVISE THIS CONTROL EQUIPMENT/METHOD AS `NO CONTROLS (0)` --- FLARING IS NOT THE CONTROL FOR THIS EU AS IT IS A FLARE ITSELF
0	NO CONTROL EQUIPMENT	Flare is the EU and it is control equipment for the MSW landfill.

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1.	Maximum Process or Throughput Rate: 3000 SCFM OF LF GAS		
2.	Maximum Production Rate:		
3.	Maximum Heat Input Rate: 99 million Btu/hr		
4.	Maximum Incineration Rate:	pounds/hr tons/day	
5.	Requested Maximum Operating Schedule:	24 hours/day 52 weeks/year	7 days/week 8760 hours/year
6.	Operating Capacity/Schedule Comment:		

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: 3	2. Emission Point Type Code: 1 - A single emission point serving a single emissions unit	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: (V) A STACK WITH AN UNOBSTRUCTED OPENING DISCHARGING IN A VERTICAL/NEARLY VERTICAL DIRECTION	6. Stack Height: 45 feet	7. Exit Diameter: 10 feet
8. Exit Temperature: 1400° F	9. Actual Volumetric Flow Rate: 196340 acfm	10. Water Vapor: 8 %
11. Maximum Dry Standard Flow Rate: 2760 dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): 530.588 North (km): 3023.974	14. Emission Point Latitude/Longitude... Latitude: Longitude:	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): LFG generated by the MSW is flared (MMcf burned)		
2. Source Classification Code (SCC): 50100410	3. SCC Units: Million Cubic Feet Waste Gas Burned	
4. Maximum Hourly Rate: .18	5. Maximum Annual Rate: 225	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: .6	8. Maximum % Ash: .1	9. Million Btu per SCC Unit: 550
10. Segment Comment:		
Is this a valid segment? Yes		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code	Valid?
CO	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
HAPS	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
NMOC	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
NOX	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
PM				Yes
PM10	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
SO2	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
VOC	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	EL	Yes

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO - Carbon Monoxide	2. Total Percent Efficiency of Control:
3. Potential Emissions: 19.8 lb/hour 87 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: .2 LB/MMBTU Reference: MFR GUARANTEE	7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.
8.a. Baseline Actual Emissions (if required): 52 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: (ESCPSD) allow facility/modification to escape PSD preconstruction review	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: .27 POUNDS PER MILLION BTU HEAT INPUT	4. Equivalent Allowable Emissions: 20 lb/hour 87 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: HAPS - Total Hazardous Air Pollutants	2. Total Percent Efficiency of Control:
3. Potential Emissions: .83 lb/hour 3.63 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: SECTION 2.4, TABLES.	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheets in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NMOC - Nonmethane Organic Compounds from MSW Landfill	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: .49 lb/hour 2.14 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 595 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): .145 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. % control efficiency is related to NMOC combustion as required by NSPS. 2. Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation	2. Future Effective Date of Allowable Emissions: 24-JUL-01
3. Allowable Emissions and Units: 98 PERCENT REDUCTION IN EMISSIONS	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): OR 20 ppm by volume as hexane at 3% O2	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation	2. Future Effective Date of Allowable Emissions: 24-JUL-01
3. Allowable Emissions and Units: 20 PARTS PER MILLION DRY GAS VOLUME AS HEXANE @ 3% O2	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): The limit is 20 ppmvd as hexane at 3% O2.	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX - Nitrogen Oxides	2. Total Percent Efficiency of Control:
3. Potential Emissions: 5.94 lb/hour 29.62 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: .068 LB/MMBTU Reference: MFR GUARANTEE	7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.
8.a. Baseline Actual Emissions (if required): 15.4 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM - Particulate Matter - Total	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: Request that PM10 not PM because calculations and emission factors are based on PM10 information for this pollutant	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10 - Particulate Matter - PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: 1.55 lb/hour 6.78 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 17 OTHER (SPECIFY IN COMMENT) Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): 4 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. Emission Factor units are lb/MM scfm of CH4 2. Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SO2 - Sulfur Dioxide	2. Total Percent Efficiency of Control:
3. Potential Emissions: 176.05 lb/hour 771.1 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 5796.8 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): 526.3 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. Emission Factor value includes inlet source test: sulfur content 2. Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC - Volatile Organic Compounds	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: .19 lb/hour .83 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 232 PPMVD Reference: MFR GUARANTEE	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): .57 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. % control efficiency is related to VOC combustion as required by NSPS. 2. Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix k	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

No Visible Emissions information submitted.

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

No Continuous Monitoring information submitted.

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment
2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment
3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment
4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment
5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment
6. Compliance Demonstration Reports/Records
   ☑ Applicable ☑ Previously Submitted, Date: 31-DEC-05 ☑ Attachment
   ☐ To Be Submitted, Date (if known):
   Previously Submitted Test Date(s)/Pollutants Tested:
   NMOC and CO on 11/31/2005
   To be Submitted Test Date(s)/Pollutants Tested:

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute
   ☐ Applicable ☐ Attachment

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements		
☑ Applicable		☑ Attachment
2. Compliance Assurance Monitoring Plan		
☐ Applicable		☐ Attachment
3. Alternative Methods of Operation		
☐ Applicable		☐ Attachment
4. Alternative Modes of Operation (Emissions Trading)		
☐ Applicable		☐ Attachment
5. Acid Rain Part Application		
Certificate of Representation (EPA Form No. 7610-1)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Acid Rain Part (Form No. 62-210.900(1)(a))		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
New Unit Exemption (Form No. 62-210.900(1)(a)2.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☐ Applicable	☐ Attachment
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☐ Applicable	☐ Attachment
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☑ Applicable	☑ Attachment

Other Information Regarding this Emissions Unit

1. Other Emissions Unit Information ☐ Applicable	☐ Attachment
Note: Provide any other information related to the emissions unit addressed in this Emissions Unit Information Section that is not elsewhere provided in the application, not otherwise required and that you, the applicant, believe may be helpful.	

Additional Requirements Comment

Emission Unit Attachments

Supplemental Item	Electronic File Name	Attachment Description	Electronic Document	Date Uploaded
Description of Stack Sampling Facilities	Appendix P - EU003 Stack Sampling.pdf	Appendix P - EU003 Stack Sampling	Yes	07/28/2006
Process Flow Diagram	Appendix M1 - Process Flow Diagram.pdf	Appendix M - EU Process Flow Diagrams	Yes	07/28/2006
Fuel Analysis or Specification	Appendix N - Fuel Analysis.pdf	Appendix N - Fuel Analysis	Yes	07/28/2006
Procedures for Startup and Shutdown	Appendix Q - Procedures for startup and shut down.pdf	Appendix Q - Procedures for startup and shut down	Yes	07/28/2006
Operation and Maintenance Plan	Appendix R - O and M Plan.pdf	Appendix R - Operation and Maintenance Plan	Yes	07/28/2006
Compliance Demonstration Reports/Records	Appendix S - Compliance Demonstration Reports.pdf	Appendix S - Compliance Demonstration Reports	Yes	07/28/2006
Identification of Applicable Requirements	Appendix T1 - EU Identification of Applicable Requirements.pdf	Appendix T1 - EU Identification of Applicable Requirements	Yes	07/28/2006

III. EMISSIONS UNIT INFORMATION
A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
   - ☑ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
   - ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   3000 SCFM OPEN FLARE, MODEL 1495 (USED AS BACKUP)

3. Emissions Unit Identification Number: 4

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A		01-DEC-98	49	☐ Yes ☑ No

9. Package Unit Manufacturer: LFG SPECIALITIES Model Number: PCF1228I10

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
    Open UNenclosed flare

Emissions Unit Control Equipment

Code	Equipment	Description
23	FLARING	PLEASE REVISE THIS CONTROL EQUIPMENT/METHOD AS `NO CONTROLS (0)` --- FLARING IS NOT THE CONTROL FOR THIS EU AS IT IS A FLARE ITSELF
0	NO CONTROL EQUIPMENT	Flare does not have any control equipment. It controls NMOC from MSW landfill.

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1.	Maximum Process or Throughput Rate: 3000 SCFM LANDFILL G
2.	Maximum Production Rate:
3.	Maximum Heat Input Rate: million Btu/hr
4.	Maximum Incineration Rate: pounds/hr tons/day
5.	Requested Maximum Operating Schedule: hours/day days/week weeks/year hours/year
6.	Operating Capacity/Schedule Comment: This is a backup flare and operates only when the other flare(s) is/are down. Operates at the capacity of the flare it is replacing.. max 3000 scfm

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:	2. Emission Point Type Code: 1 - A single emission point serving a single emissions unit
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:	

5. Discharge Type Code: (V) A STACK WITH AN UNOBSTRUCTED OPENING DISCHARGING IN A VERTICAL/NEARLY VERTICAL DIRECTION	6. Stack Height: 32 feet	7. Exit Diameter: 1 feet
8. Exit Temperature: 1600° F	9. Actual Volumetric Flow Rate: 3231 acfm	10. Water Vapor: 8 %

11. Maximum Dry Standard Flow Rate: 2760 dscfm	12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude: Longitude:
15. Emission Point Comment:	

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC): 50100410	3. SCC Units: Million Cubic Feet Waste Gas Burned	
4. Maximum Hourly Rate: .18	5. Maximum Annual Rate: 1577	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: .1	8. Maximum % Ash: .1	9. Million Btu per SCC Unit: 500
10. Segment Comment:		
Is this a valid segment? Yes		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code	Valid?
CO	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
HAPS	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
NMOC	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	EL	Yes
NOX	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
PM10				Yes
SO2	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
VOC	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	EL	Yes

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO - Carbon Monoxide	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: .37 LB/MMBTU Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: EU is only used as backup to EUs 003,005 and Proposed 3,OO0-scfm flare and 6,000-sfcm flare.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: HAPS - Total Hazardous Air Pollutants	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: EU is only used as backup to EUs 003,005 and Proposed 3,OO0-scfm flare and 6,000-sfcm flare.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NMOC - Nonmethane Organic Compounds from MSW Landfill	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: EU004 Flare is used only as a backup, when EU003, 005, or New are not operational.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX - Nitrogen Oxides	2. Total Percent Efficiency of Control:
3. Potential Emissions: 6.76 lb/hour 29.62 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: .068 LB/MMBTU Reference: MFR GUARANTEE	7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: EU004 Flare is used only as a backup, when EU003, 005, or New are not operational.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10 - Particulate Matter - PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: .83 lb/hour 3.6 tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 80 OTHER (SPECIFY IN COMMENT) Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: Micrograms/Dry Std. Ltr	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SO2 - Sulfur Dioxide	2. Total Percent Efficiency of Control:
3. Potential Emissions: 176.87 lb/hour 774.71 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 5796.8 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: EU004 Flare is used only as a backup, when EU003, 005, or New are not operational.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC - Volatile Organic Compounds	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: .19 lb/hour .83 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 232 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: EU004 Flare is used only as a backup, when EU003, 005, or New are not operational.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE00 - VISIBLE EMISSIONS - 0% NORMAL OPACITY	2. Basis for Allowable Opacity: ☑ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment: The standard is based on METHOD 22. NO VE except for 5 MINUTES in any 2 CONSECUTIVE Hour period	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 1 of 2

1. Parameter Code: FO - Flame Outage	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: LFG SPECIALITIES Model Number: PCF1228I10	Serial Number:
5. Installation Date: 01-SEP-02	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	
Status: Active	

Continuous Monitoring System: Continuous Monitor 2 of 2

1. Parameter Code: FLOW - Volumetric flow rate	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: LFG SPECIALITIES Model Number: EF1150I14	Serial Number: 1698
5. Installation Date: 01-JAN-01	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	
Status: Active	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

6. Compliance Demonstration Reports/Records
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment
   ☐ To Be Submitted, Date (if known):

   Previously Submitted Test Date(s)/Pollutants Tested:

   To be Submitted Test Date(s)/Pollutants Tested:

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Applicable ☐ Attachment

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements ☐ Applicable		☐ Attachment
2. Compliance Assurance Monitoring Plan ☐ Applicable		☐ Attachment
3. Alternative Methods of Operation ☐ Applicable		☐ Attachment
4. Alternative Modes of Operation (Emissions Trading) ☐ Applicable		☐ Attachment
5. Acid Rain Part Application		
Certificate of Representation (EPA Form No. 7610-1)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Acid Rain Part (Form No. 62-210.900(1)(a))		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
New Unit Exemption (Form No. 62-210.900(1)(a)2.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment

Additional Requirements for Air Construction Permit Applications

1.	Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☐ Applicable ☐ Attachment	
2.	Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☐ Applicable ☐ Attachment	
3.	Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Applicable ☐ Attachment	

Other Information Regarding this Emissions Unit

1.	Other Emissions Unit Information ☐ Applicable ☐ Attachment Note: Provide any other information related to the emissions unit addressed in this Emissions Unit Information Section that is not elsewhere provided in the application, not otherwise required and that you, the applicant, believe may be helpful.

Additional Requirements Comment

EU-004 is not part of the proposed project for this Title V operation and construction permit application. The changes/updates herein are administrative only.

III. EMISSIONS UNIT INFORMATION
A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
   - ☑ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
   - ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
   - ☑ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   3000 SCFM ENC FLARE, MODEL 1698 EVAP 3004IM

3. Emissions Unit Identification Number: 5

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A		01-APR-05	49	☐ Yes ☑ No

9. Package Unit Manufacturer: LFG SPECIALTIES, INC. Model Number: EF1045I12

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:

Emissions Unit Control Equipment

Code	Equipment	Description
23	FLARING	PLEASE REVISE THIS CONTROL EQUIPMENT/METHOD AS `NO CONTROLS (0)` --- FLARING IS NOT THE CONTROL FOR THIS EU AS IT IS A FLARE ITSELF
0	NO CONTROL EQUIPMENT	Flare is the EU and it is control equipment for the MSW landfill.

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1.	Maximum Process or Throughput Rate: 3000 SCFM LFG
2.	Maximum Production Rate:
3.	Maximum Heat Input Rate: 99 million Btu/hr
4.	Maximum Incineration Rate: pounds/hr tons/day
5.	Requested Maximum Operating Schedule: 24 hours/day 7 days/week 52 weeks/year 8760 hours/year
6.	Operating Capacity/Schedule Comment:

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: 4	2. Emission Point Type Code: 1 - A single emission point serving a single emissions unit
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:	

5. Discharge Type Code: (V) A STACK WITH AN UNOBSTRUCTED OPENING DISCHARGING IN A VERTICAL/NEARLY VERTICAL DIRECTION	6. Stack Height: 45 feet	7. Exit Diameter: 10 feet
8. Exit Temperature: 1400° F	9. Actual Volumetric Flow Rate: 196340 acfm	10. Water Vapor: 8 %

11. Maximum Dry Standard Flow Rate: 2760 dscfm	12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates... Zone: East (km): 530.705 North (km): 3024.018	14. Emission Point Latitude/Longitude... Latitude: Longitude:
15. Emission Point Comment:	

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): LFG generated by the MSW is flared (MMcf burned)		
2. Source Classification Code (SCC): 50100410	3. SCC Units: Million Cubic Feet Waste Gas Burned	
4. Maximum Hourly Rate: .18	5. Maximum Annual Rate: 225	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: .6	8. Maximum % Ash: .1	9. Million Btu per SCC Unit: 550
10. Segment Comment:		
Is this a valid segment? Yes		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code	Valid?
CO	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
HAPS	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
NMOC	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	EL	Yes
NOX	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
PM				Yes
PM10	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
SO2	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
VOC	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	EL	Yes

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO - Carbon Monoxide	2. Total Percent Efficiency of Control:
3. Potential Emissions: 19.8 lb/hour 87 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: .2 LB/MMBTU Reference: MFR GAURANTEE	7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.
8.a. Baseline Actual Emissions (if required): 52 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: (ESCPSD) allow facility/modification to escape PSD preconstruction review	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: .27 POUNDS PER MILLION BTU HEAT INPUT	4. Equivalent Allowable Emissions: 20 lb/hour 87 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: HAPS - Total Hazardous Air Pollutants	2. Total Percent Efficiency of Control:
3. Potential Emissions: .83 lb/hour 3.6 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: TABLES 2.4, AP-42	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheets in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NMOC - Nonmethane Organic Compounds from MSW Landfill	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: .49 lb/hour 2.13 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 595 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): 1.51 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. % control efficiency is related to NMOC combustion as required by NSPS. 2. Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 20 PARTS PER MILLION DRY GAS VOLUME AS HEXANE @ 3% O2	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): MD: THE LIMIT IS 20 ppmvd as hexane at 3% O2. Freq base date to count every 5 yrs within 6 months of the Renewal Application Due Date of 2/4/08. The 1st test cndtd on 11/ 4/04.	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 98 PERCENT REDUCTION IN EMISSIONS	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): MD: Freq base date to count every 5 yrs within 6 months of the Renewal Application Due Date. of 2/4/08.	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX - Nitrogen Oxides	2. Total Percent Efficiency of Control:
3. Potential Emissions: 5.9 lb/hour 26 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: .068 LB/MMBTU Reference: MFR GUARANTEE	7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.
8.a. Baseline Actual Emissions (if required): 15.7 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM - Particulate Matter - Total	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: See PM10 for information related to PM.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10 - Particulate Matter - PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: 1.55 lb/hour 6.8 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 17 OTHER (SPECIFY IN COMMENT) Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): 4.1 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. Emission Factor units are lb/MM scfm of CH4 2. Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SO2 - Sulfur Dioxide	2. Total Percent Efficiency of Control:
3. Potential Emissions: 176.05 lb/hour 771.1 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 5796.8 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): 545.4 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. Emission Factor value includes inlet source test: sulfur content 2. Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC - Volatile Organic Compounds	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: .19 lb/hour .83 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 232 PPMVD Reference: MFR GUARANTEE	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): .59 tons/year	8.b. Baseline 24-month Period: From: 01-JUL-04 To: 30-JUN-06
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. % control efficiency is related to VOC combustion as required by NSPS. 2. Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

No Visible Emissions information submitted.

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

No Continuous Monitoring information submitted.

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

6. Compliance Demonstration Reports/Records
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment
   ☐ To Be Submitted, Date (if known):

   Previously Submitted Test Date(s)/Pollutants Tested:

   To be Submitted Test Date(s)/Pollutants Tested:

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Applicable ☐ Attachment

Additional Requirements for Title V Air Operation Permit Applications

1.	Identification of Applicable Requirements		
	☐ Applicable		☐ Attachment
2.	Compliance Assurance Monitoring Plan		
	☐ Applicable		☐ Attachment
3.	Alternative Methods of Operation		
	☐ Applicable		☐ Attachment
4.	Alternative Modes of Operation (Emissions Trading)		
	☐ Applicable		☐ Attachment
5.	Acid Rain Part Application		
	Certificate of Representation (EPA Form No. 7610-1)		
	☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
	Acid Rain Part (Form No. 62-210.900(1)(a))		
	☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
	Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)		
	☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
	New Unit Exemption (Form No. 62-210.900(1)(a)2.)		
	☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
	Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)		
	☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
	Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)		
	☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
	Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)		
	☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☐ Applicable ☐ Attachment	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☐ Applicable ☐ Attachment	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Applicable ☐ Attachment	

Other Information Regarding this Emissions Unit

1. Other Emissions Unit Information

☐ Applicable ☐ Attachment

Note: Provide any other information related to the emissions unit addressed in this Emissions Unit Information Section that is not elsewhere provided in the application, not otherwise required and that you, the applicant, believe may be helpful.

Additional Requirements Comment

EU-005 is not part of the proposed project for this Title V operation and construction permit application. The changes/updates herein are administrative only.

III. EMISSIONS UNIT INFORMATION
A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
   - ☑ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
   - ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
   - ☑ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   3,000-scfm Temporary Utilty Flare (odor control)

3. Emissions Unit Identification Number:

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C			49	☐ Yes ☑ No

9. Package Unit Manufacturer: LFG SPECIALTIES OR EQUIVALENT Model Number: CF1230I10

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
    This is a temporary flare required by first order decree to be installed for odor control.

Emissions Unit Control Equipment

Code	Equipment	Description
0	NO CONTROL EQUIPMENT	Flare is part of the control equipment for the MSW landfill (EU001)

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1.	Maximum Process or Throughput Rate: 3014 SCFM OF LFG		
2.	Maximum Production Rate:		
3.	Maximum Heat Input Rate: 99.5 million Btu/hr		
4.	Maximum Incineration Rate:	pounds/hr tons/day	
5.	Requested Maximum Operating Schedule:	24 hours/day 52 weeks/year	7 days/week 8760 hours/year
6.	Operating Capacity/Schedule Comment: flare is used for odor control		

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: 6	2. Emission Point Type Code: 1 - A single emission point serving a single emissions unit
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:	

5. Discharge Type Code: (V) A STACK WITH AN UNOBSTRUCTED OPENING DISCHARGING IN A VERTICAL/NEARLY VERTICAL DIRECTION	6. Stack Height: 33 feet	7. Exit Diameter: 1 feet
8. Exit Temperature: 1400° F	9. Actual Volumetric Flow Rate: 3246 acfm	10. Water Vapor: 8 %

11. Maximum Dry Standard Flow Rate: 2773 dscfm	12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates... Zone: 17 East (km): 530.691 North (km): 3023.961	14. Emission Point Latitude/Longitude... Latitude: Longitude:
15. Emission Point Comment:	

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): LFG generated by the MSW is flared (MMcf burned)		
2. Source Classification Code (SCC): 50100410	3. SCC Units: Million Cubic Feet Waste Gas Burned	
4. Maximum Hourly Rate: .18	5. Maximum Annual Rate: 225	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: .6	8. Maximum % Ash: .1	9. Million Btu per SCC Unit: 550
10. Segment Comment:		
Is this a valid segment? Yes		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code	Valid?
CO	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
HAPS	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
NMOC	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	EL	Yes
NOX	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
PM10	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
SO2	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
VOC	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	EL	Yes

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO - Carbon Monoxide	2. Total Percent Efficiency of Control:
3. Potential Emissions: 36.8 lb/hour 161.2 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: .37 LB/MMBTU Reference: MFR GUARANTEE	7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: See Baseline Actual Emissions for this facility in Appendix ???????????????	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: HAPS - Total Hazardous Air Pollutants	2. Total Percent Efficiency of Control:
3. Potential Emissions: .83 lb/hour 3.64 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: TABLE 2.4 AP-42	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheets in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NMOC - Nonmethane Organic Compounds from MSW Landfill	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: .49 lb/hour 2.14 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 595 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. % control efficiency is related to NMOC combustion as required by NSPS. 2. Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 20 PARTS PER MILLION DRY GAS VOLUME AS HEXANE @ 3% O2	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): NSPS Subpart WWW.	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 98 PERCENT REDUCTION IN EMISSIONS	4. Equivalent Allowable Emissions: .49 lb/hour 2.14 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): NSPS Subpart WWW	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX - Nitrogen Oxides	2. Total Percent Efficiency of Control:
3. Potential Emissions: 6.76 lb/hour 29.62 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: .068 LB/MMBTU Reference: MFR GUARANTEE	7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10 - Particulate Matter - PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: 1.56 lb/hour 6.81 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 17 OTHER (SPECIFY IN COMMENT) Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. (099) lb/MMdscf of CH4 2. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SO2 - Sulfur Dioxide	2. Total Percent Efficiency of Control:
3. Potential Emissions: 176.87 lb/hour 774.71 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 5797 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. Emission Factor value includes source test of the inlet gas of sulfur content 2. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC - Volatile Organic Compounds	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: .19 lb/hour .83 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 232 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. % control efficiency is related to VOC combustion as required by NSPS. 2. See Baseline Actual Emissions for this facility in Appendix ????????????????	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE20 - VISIBLE EMISSIONS - 20% NORMAL OPACITY	2. Basis for Allowable Opacity: ☑ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 20% Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: 5 min/hour	
4. Method of Compliance: EPA METHOD 9	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

No Continuous Monitoring information submitted.

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment
2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment
3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment
4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment
5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment
6. Compliance Demonstration Reports/Records
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment
   ☐ To Be Submitted, Date (if known):

   Previously Submitted Test Date(s)/Pollutants Tested:

   To be Submitted Test Date(s)/Pollutants Tested:

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute
   ☐ Applicable ☐ Attachment

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements		
☑ Applicable		☑ Attachment
2. Compliance Assurance Monitoring Plan		
☐ Applicable		☐ Attachment
3. Alternative Methods of Operation		
☐ Applicable		☐ Attachment
4. Alternative Modes of Operation (Emissions Trading)		
☐ Applicable		☐ Attachment
5. Acid Rain Part Application		
Certificate of Representation (EPA Form No. 7610-1)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Acid Rain Part (Form No. 62-210.900(1)(a))		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
New Unit Exemption (Form No. 62-210.900(1)(a)2.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment
Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)		
☐ Applicable	☐ Previously Submitted, Date:	☐ Attachment

Additional Requirements for Air Construction Permit Applications

1.	Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☐ Applicable	☐ Attachment
2.	Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☐ Applicable	☐ Attachment
3.	Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☑ Applicable	☑ Attachment

Other Information Regarding this Emissions Unit

1.	Other Emissions Unit Information ☐ Applicable Note: Provide any other information related to the emissions unit addressed in this Emissions Unit Information Section that is not elsewhere provided in the application, not otherwise required and that you, the applicant, believe may be helpful.	☐ Attachment

Additional Requirements Comment

Emission Unit Attachments

Supplemental Item	Electronic File Name	Attachment Description	Electronic Document	Date Uploaded
Description of Stack Sampling Facilities	Appendix V - Good Engineering Practice Stack Height Analysis.pdf	Appendix V - Good Engineering Practice Stack Height Analysis	Yes	07/28/2006
Process Flow Diagram	Appendix M2 - Process Flow Diagram.pdf	Appendix M - EU Process Flow Diagrams	Yes	07/28/2006
Fuel Analysis or Specification	Appendix N - Fuel Analysis.pdf	Appendix N - Fuel Analysis	Yes	07/28/2006
Procedures for Startup and Shutdown	Appendix Q - Procedures for startup and shut down.pdf	Appendix Q - Procedures for startup and shut down	Yes	07/28/2006
Operation and Maintenance Plan	Appendix R - O and M Plan.pdf	Appendix R - Operation and Maintenance Plan	Yes	07/28/2006
Identification of Applicable Requirements	Appendix T2 - EU Identification of Applicable Requirements.pdf	Appendix T2 - EU Identification of Applicable Requirements	Yes	07/28/2006

III. EMISSIONS UNIT INFORMATION
A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
   - [x] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
   - [ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
   - [x] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
   - [ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
   - [ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   6,000 scfm Utility Flare

3. Emissions Unit Identification Number:

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C			49	[ ] Yes [ ] No

9. Package Unit Manufacturer: LFG SPECIALTIES OR EQUIVALENT   Model Number: CF1840I16

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:

Emissions Unit Control Equipment

Code	Equipment	Description
0	NO CONTROL EQUIPMENT	

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1.	Maximum Process or Throughput Rate: 6013 SCFM OF LFG		
2.	Maximum Production Rate:		
3.	Maximum Heat Input Rate: 198.4 million Btu/hr		
4.	Maximum Incineration Rate:	pounds/hr tons/day	
5.	Requested Maximum Operating Schedule:	24 hours/day 52 weeks/year	7 days/week 8760 hours/year
6.	Operating Capacity/Schedule Comment:		

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: 7	2. Emission Point Type Code: 1 - A single emission point serving a single emissions unit
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:	

5. Discharge Type Code: (V) A STACK WITH AN UNOBSTRUCTED OPENING DISCHARGING IN A VERTICAL/NEARLY VERTICAL DIRECTION	6. Stack Height: 45 feet	7. Exit Diameter: 1.5 feet
8. Exit Temperature: 1400° F	9. Actual Volumetric Flow Rate: 6476 acfm	10. Water Vapor: 8 %

11. Maximum Dry Standard Flow Rate: 5532 dscfm	12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates... Zone: East (km): 531.259 North (km): 3023.962	14. Emission Point Latitude/Longitude... Latitude: Longitude:
15. Emission Point Comment:	

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): LFG generated by the MSW is flared (MMcf burned)		
2. Source Classification Code (SCC): 50100410	3. SCC Units: Million Cubic Feet Waste Gas Burned	
4. Maximum Hourly Rate: .36	5. Maximum Annual Rate: 450	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: .6	8. Maximum % Ash: .1	9. Million Btu per SCC Unit: 550
10. Segment Comment:		
Is this a valid segment? Yes		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code	Valid?
CO	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
HAPS	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
NMOC	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	EL	Yes
NOX	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
PM10	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
SO2	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	NS	Yes
VOC	NO CONTROL EQUIPMENT	NO CONTROL EQUIPMENT	EL	Yes

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO - Carbon Monoxide	2. Total Percent Efficiency of Control:
3. Potential Emissions: 73.4 lb/hour 321.6 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: .37 LB/MMBTU Reference: MFR GUARANTEE	7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: See Baseline emissions for this facility in ATTACHEMENT ???????????????	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: HAPS - Total Hazardous Air Pollutants	2. Total Percent Efficiency of Control:
3. Potential Emissions: 1.66 lb/hour 7.27 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: TABLE 2.4, AP-42	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheets in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NMOC - Nonmethane Organic Compounds from MSW Landfill	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: .97 lb/hour 2.47 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 595 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. % control efficiency is related to NMOC combustion as required by NSPS. 2. Baseline Actual Emissions are viewed as facility wide. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 98 PERCENT REDUCTION IN EMISSIONS	4. Equivalent Allowable Emissions: .97 lb/hour 4.27 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): NSPS Subpart WWWW	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 20 PARTS PER MILLION DRY GAS VOLUME AS HEXANE @ 3% O2	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): NSPS Subpart WWWW	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX - Nitrogen Oxides	2. Total Percent Efficiency of Control:
3. Potential Emissions: 13.49 lb/hour 59.1 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: .068 LB/MMBTU Reference: MFR GUARANTEE	7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10 - Particulate Matter - PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: 3.1 lb/hour 13.59 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 17 OTHER (SPECIFY IN COMMENT) Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. lb/MMscf of CH4 2. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SO2 - Sulfur Dioxide	2. Total Percent Efficiency of Control:
3. Potential Emissions: 352.87 lb/hour 1545.57 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 5796.8 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. Emission Factor value includes source test of the inlet gas of sulfur content 2. See Baseline Actual Emissions for this facility in Appendix K	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC - Volatile Organic Compounds	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: .38 lb/hour 1.66 tons/year	4. Synthetically Limited? ☐ Yes ☑ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 232 PPMVD Reference:	7. Emissions Method Code: (3) CALCULATED USING EMISSION FACTOR FROM AP-42/FIRE SYSTEM.
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: See attached spreadsheet in Appendix K, Support Calculations	
11. Pollutant Potential,Fugitive, and Actual Emissions Comment: 1. % control efficiency is related to VOC combustion as required by NSPS. 2. See Baseline Actual Emissions for this facility in Appendix ???????????????	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

No Pollutant Allowable Emissions information submitted.

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE20 - VISIBLE EMISSIONS - 20% NORMAL OPACITY	2. Basis for Allowable Opacity: ☑ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 20% Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: 5 min/hour	
4. Method of Compliance: EPA METHOD 9	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

No Continuous Monitoring information submitted.

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Applicable ☐ Previously Submitted, Date: ☑ Attachment

6. Compliance Demonstration Reports/Records
   ☐ Applicable ☐ Previously Submitted, Date: ☐ Attachment
   ☐ To Be Submitted, Date (if known):

   Previously Submitted Test Date(s)/Pollutants Tested:

   To be Submitted Test Date(s)/Pollutants Tested:

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Applicable ☐ Attachment

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements ☑ Applicable	☑ Attachment
2. Compliance Assurance Monitoring Plan ☐ Applicable	☐ Attachment
3. Alternative Methods of Operation ☐ Applicable	☐ Attachment
4. Alternative Modes of Operation (Emissions Trading) ☐ Applicable	☐ Attachment
5. Acid Rain Part Application	
Certificate of Representation (EPA Form No. 7610-1) ☐ Applicable ☐ Previously Submitted, Date:	☐ Attachment
Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Applicable ☐ Previously Submitted, Date:	☐ Attachment
Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Applicable ☐ Previously Submitted, Date:	☐ Attachment
New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Applicable ☐ Previously Submitted, Date:	☐ Attachment
Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Applicable ☐ Previously Submitted, Date:	☐ Attachment
Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Applicable ☐ Previously Submitted, Date:	☐ Attachment
Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Applicable ☐ Previously Submitted, Date:	☐ Attachment

Additional Requirements for Air Construction Permit Applications

1.	Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☑ Applicable ☑ Attachment	
2.	Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☐ Applicable ☐ Attachment	
3.	Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☑ Applicable ☑ Attachment	

Other Information Regarding this Emissions Unit

1.	Other Emissions Unit Information ☐ Applicable ☐ Attachment Note: Provide any other information related to the emissions unit addressed in this Emissions Unit Information Section that is not elsewhere provided in the application, not otherwise required and that you, the applicant, believe may be helpful.

Additional Requirements Comment

Emission Unit Attachments

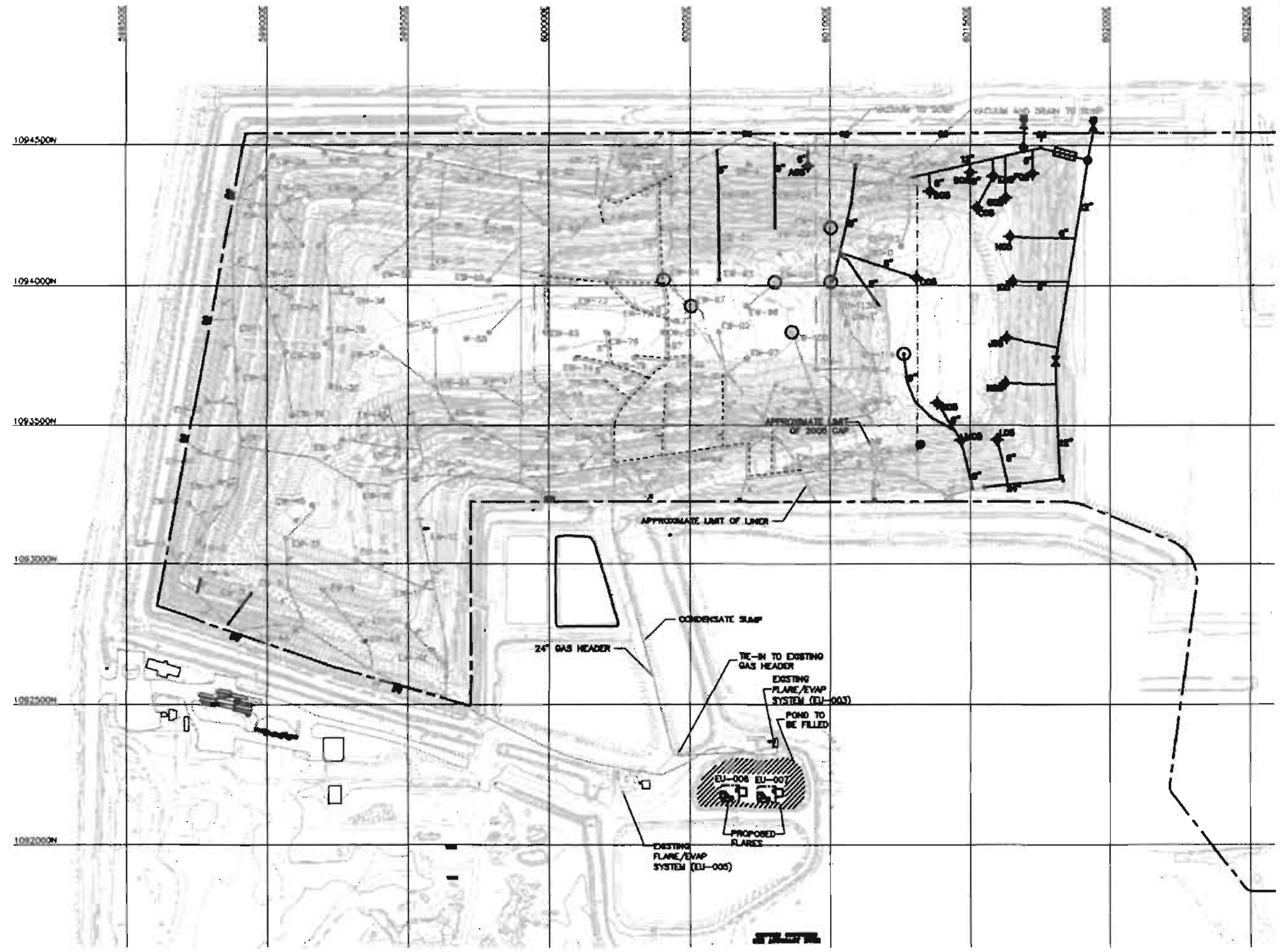
Supplemental Item	Electronic File Name	Attachment Description	Electronic Document	Date Uploaded
Control Technology Review and Analysis	Appendix U - Control Technology Review and Analysis (PSD Report) rev1.pdf	Appendix U - Control Technology Review and Analysis (PSD Report) Applicable to EU-003 and New EUs (006 and 007)	Yes	07/28/2006
Description of Stack Sampling Facilities	Appendix V - Good Engineering Practice Stack Height Analysis.pdf	Appendix P - Stack Sampling	Yes	07/28/2006
Description of Stack Sampling Facilities	Appendix V - Good Engineering Practice Stack Height Analysis.pdf	Appendix V - Good Engineering Practice Stack Height Analysis	Yes	07/28/2006
Process Flow Diagram	Appendix M2 - Process Flow Diagram.pdf	Appendix M - EU Process Flow Diagrams	Yes	07/28/2006
Fuel Analysis or Specification	Appendix N - Fuel Analysis.pdf	Appendix N - Fuel Analysis	Yes	07/28/2006
Procedures for Startup and Shutdown	Appendix Q - Procedures for startup and shut down.pdf	Appendix Q - Procedures for startup and shut down	Yes	07/28/2006
Operation and Maintenance Plan	Appendix R - O and M Plan.pdf	Appendix R - Operation and Maintenance Plan	Yes	07/28/2006
Identification of Applicable Requirements	Appendix T2 - EU Identification of Applicable Requirements.pdf	Appendix T2 - EU Identification of Applicable Requirements	Yes	07/28/2006

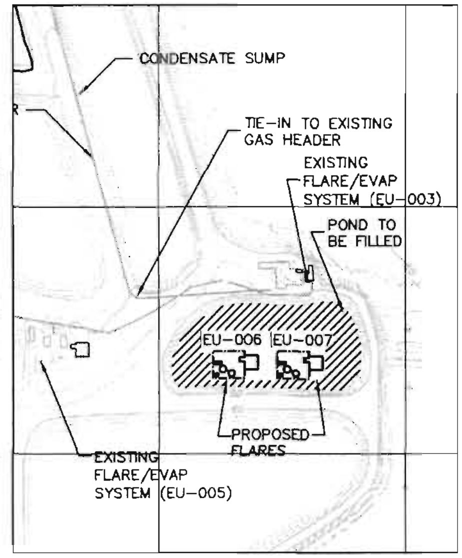
Appendix A

Permit Application No. 1270-1

Facility ID No. 0930104

Facility Plot Plan





LEGEND

- LIMIT OF WASTE
- APPROXIMATE LIMIT OF LINER
- EXISTING GAS HEADER
- PROPOSED GAS HEADER
- 2" AIRLINE
- PREVIOUSLY INSTALLED WELLS
- PROPOSED WELLS FOR REDRILLING
- PROPOSED WELLS
- CLEANOUT
- VALVE
- CONTROL VALVE FOR HORIZONTAL COLLECTOR
- CONDENSATE TRAP

NOTES:

1. BASE MAP AND PROPOSED FLARE LOCATIONS PROVIDED BY OKEECHOBEE LANDFILL, INC. SHAW UPDATED DRAWING TO SHOW PROPOSED FLARE LOCATIONS.
2. THIS MAP WAS COMPILED BY LANDAIR SURVEYING, INC. USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED 11/28/04.
3. HEADER PIPING INSTALLED IN INTERMEDIATE COVER AREAS ARE INSTALLED ON GRADE.
4. CONSTRUCT HORIZONTAL COLLECTOR ON GRADE AND MOUND REFUSE TO COVER – 10' MIN.

0 200 400
SCALE IN FEET

REV	DATE	DESCRIPTION	DRN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 07/27/06 | DRN BY VF | DES BY KAZ | CHK BY BKM | APP BY KAZ

Shaw Environmental, Inc.

OKEECHOBEE LANDFILL, INC.
OKEECHOBEE COUNTY, FLORIDA

PROPOSED FLARE LOCATIONS

DRAWING NO. 1
PROJECT NO. 121535

Appendix C

Permit Application 1270-1

Facility ID No. 0930104

Facility Wide - Precautions to Prevent Emissions of Unconfined Particulate Matter

Appendix C
Precautions to Prevent Emissions of Unconfined Particulate Matter

Okeechobee Landfill Inc. — Permit Application: 1270-1
Okeechobee Landfill — Facility ID No.: 0930104

The Okeechobee Landfill routinely takes steps to prevent the emission of uncontrolled particulate matter to the atmosphere. The steps are outlined below. It should be noted that the steps and procedures listed might be augmented from time to time. The weather patterns of the Okeechobee area also contribute to dust control due to the large amounts of rainfall during the year.

- Waste is accepted in covered containers to prevent the escape of debris and dust.
- Waste is placed in lifts in the landfill in a manner to prevent windblown litter and dust. The working face is kept as small as practicable to further reduce windblown dust and litter.
- Portable fences are used around and near the working face to keep windblown litter in the work area.
- Waste is covered daily to prevent windblown litter after operation hours.
- Paved Roads: During hours of operation, the frequency of vehicle traffic may warrant dust control measures. Roadway sweeping will be performed as needed, especially in the portions of the year with less rainfall. Roadway washing will take place as needed to prevent carry out of dirt and mud onto adjoining roadways.
- Unpaved Roads: Roadways in the active areas of the landfill will be graded and compacted to allow safe passage of vehicles and to prevent carry out of dirt and mud. Dust control will be achieved using a water truck.
- Roads General: The type and frequency of the dust control operations will vary according to weather conditions. Maintenance of the paved and unpaved roads will be performed from time to time as needed.

Appendix B

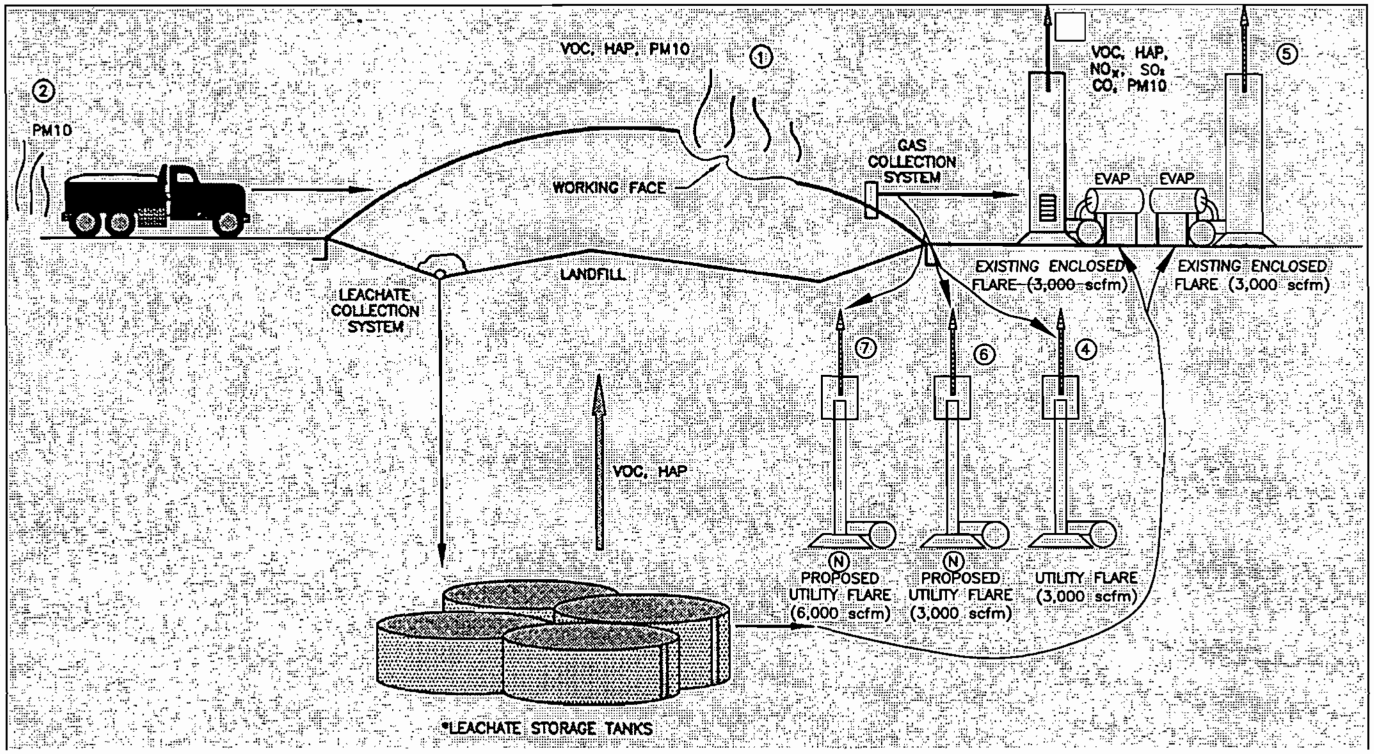
Permit Application 1270-1

Facility ID No. 0930104

Facility Process Flow Diagram

L:\project\835776\835776A2.dwg
Plot Date/Time: 09/10/02 12:05pm Image: LEGEND
Format Revised: 12/15/99 Xref: PROCESSFLOW2

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
HOPKINTON, MA	KK/VE	07-24-06	KF	07-07-05	KF	07-07-05	836378A2-1A



LEGEND

- FUGITIVE EMISSIONS
- POINT EMISSIONS
- PROCESS FLOW
- (N) NEW SOURCE

DRAWING NOT TO SCALE

Shaw Shaw E & I, Inc.

OKEECHOBEE LANDFILL, INC.

ATTACHMENT B
PROCESS FLOW DIAGRAM

OKEECHOBEE LANDFILL
OKEECHOBEE, FLORIDA

Appendix D

Permit Application 1270-1

Facility ID No. 0930104

Facility List of Insignificant Activities

Attachment D
List of Insignificant Emissions Units and/or Activities.

Okeechobee Landfill, Inc.
Okeechobee Landfill

Permit Application No.: 1270-1
Facility ID No.: 0930104

The facilities, emissions units, or pollutant-emitting activities listed in Rule 62-210.300(3)(a), F.A.C., Categorical Exemptions, or that meet the criteria specified in Rule 62-210.300(3)(b)1., F.A.C., Generic Emissions Unit Exemption, are exempt from the air permitting requirements of Chapters 62-210, 62-212 and 62-4, F.A.C.; provided, however, that exempt emissions units shall be subject to any applicable emission limiting standards and the emissions from exempt emissions units or activities shall be considered in determining the potential emissions of the facility containing such emissions units. Emissions units and pollutant-emitting activities exempt from permitting under Rules 62-210.300(3)(a) and (b)1., F.A.C., shall not be exempt from the permitting requirements of Chapter 62-213, F.A.C., if they are contained within a Title V source; however, such emissions units and activities shall be considered insignificant for Title V purposes provided they also meet the criteria of Rule 62-213.430(6)(b), F.A.C. No emissions unit shall be entitled to an exemption from permitting under Rules 62-210.300(3)(a) and (b)1., F.A.C., if its emissions, in combination with the emissions of other units and activities at the facility, would cause the facility to emit or have the potential to emit any pollutant in such amount as to make the facility a Title V source.

The below listed emissions units and/or activities are considered insignificant pursuant to Rule 62-213.430(6), F.A.C.

Brief Description of Emissions Units and/or Activities

Twenty Two (22) Passive Solar Vent Flares
20,000 Btu/hr Boiler
Pressure Washer
Truck Washer
10,000 gallons tank (diesel Fuel)
10,000 gallons tank (Diesel-LP)
Four (4) 250 gallons tanks (for Motor Oil, Gear Oil, Hydraulic Oil, Transmission Oil)
150 gallons tank (Antifreeze)
35 gallons tank for Parts Cleaner
Two Generators, 34, and 141 kVa, respectively
Three (3) Pumps (10 hp respectively)
Painting activities
Welding Operations (One Generator 8kW)

Appendix E

Permit Application 1270-1

Facility ID No. 0930104

Facility-wide Identification of Applicable Requirements

APPLICABLE FEDERAL AND STATE REQUIREMENTS

1. MSW Landfill NSPS – 40 CFR 60, Subpart WWW
2. National Emission Standards for Asbestos – 40 CFR 61, Subpart M
3. MSW Landfill NESHAP – 40 CFR 63, Subpart AAAA
4. Rules 62-4, 62-204 through 62-297, F.A.C.

APPLICABLE PERMIT REQUIREMENTS

The conditions in this section generally apply to all emission units and activities associated with this facility and to the facility as a whole.

1. APPENDIX TV-5, TITLE V CONDITIONS (03/28/05), is a part of this permit.
[F.A.C. Rules 62-4, 62-103, 62-204, 62-210, 62-213, 62-256, 62-257, 62-281, and 62-296.]

2. <u>General Pollutant Emission Limiting Standards. Objectionable Odor Prohibited.</u> No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor.
[Rule 62-296.320(2), F.A.C.]

3. <u>General Particulate Emission Limiting Standards. General Visible Emission Standard.</u> Except for emission units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emission of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity). EPA Method 9 is the method of compliance pursuant to Chapter 62-297, F.A.C.
[Rules 62-296.320(4)(b)1. & 4., F.A.C.]

4. <u>Open Burning Prohibited:</u> Open burning in connection with industrial, commercial, or municipal operations is prohibited, except when:
   (a) Open burning is determined by the Department to be the only feasible method of operation and is authorized by an air permit issued pursuant to Chapter 62-210 or 62-213, F.A.C.; or
   (b) An emergency exists which requires immediate action to protect human health and safety; or
   (c) A county or municipality would use a portable air curtain incinerator to burn yard trash generated by a hurricane, tornado, fire or other disaster and the air curtain incinerator would otherwise be operated in accordance with the permitting exemption criteria of Rule 62-210.300(3), F.A.C.
[Rule 62-296.300(3), F.A.C.]

5. <u>Prevention of Accidental Releases (Section 112(r) of CAA).</u>
a. The permittee shall submit its Risk Management Plan (RMP) to the Chemical Emergency Preparedness and Prevention Office (CEPPO) RMP Reporting Center when, and if, such requirement becomes applicable. Any Risk Management Plans, original submittals, revisions or updates to submittals, should be sent to:

RMP Reporting Center
Post Office Box 3346

Merrifield, VA 22116-3346
Telephone: 703/816-4434

and, **b.** The permittee shall submit to the permitting authority Title V certification forms or a compliance schedule in accordance with Rule 62-213.440(2), F.A.C.
[40 CFR 68 and Permit 0930104-011-AV]

6. Insignificant Emission Units and/or Activities. Appendix I-1, List of Unregulated Emission Units and/or Activities, is a part of this permit.
[Rule 62-213.440(1), F.A.C.]

7. Compliance Plan. Appendix CP-1, Compliance Plan, is a part of this permit.
[Rule 62-213.440(2), F.A.C.]

8. General Pollutant Emission Limiting Standards. Volatile Organic Compounds (VOC) Emission or Organic Solvents (OS) Emission. The permittee shall allow no person to store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds (VOC) or organic solvents (OS) without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department.

"Nothing was deemed necessary and ordered at this time."
[Rule 62-296.320(1)(a), F.A.C., and Title V permit **revision** application received March 26, 2003]

9. Emission of Unconfined Particulate Matter. Reasonable precautions to prevent emission of unconfined particulate matter at this facility include the following requirements:

- Application of water to control emission from such activities as demolition of buildings, grading roads, construction, and land clearing.
- Paving and maintenance of roads, parking areas and yards.
- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.
- Landscaping or planting of vegetation.
- Posting and enforcing a speed limit for vehicles traveling on roadways on site.

[Rule 62-296.320(4)(c)2., F.A.C.]

10. When appropriate, any recording, monitoring, or reporting requirements that are time-specific shall be in accordance with the effective date of the permit, which defines day one.
[Rule 62-213.440, F.A.C.]

11. Statement of Compliance. The annual statement of compliance pursuant to Rule 62-213.440(3)(a)2., F.A.C., shall be submitted to the Department and EPA within 60 (sixty) days after the end of the calendar year using DEP Form No. 62-213.900(7), F.A.C.
[Rules 62-213.440(3) and 62-213.900, F.A.C.]

{Permitting Note: This condition implements the requirements of Rules 62-213.440(3)(a)2. & 3., F.A.C. (see Condition 51. of APPENDIX TV-4, TITLE V CONDITIONS)}

12. The permittee shall submit all compliance related notifications and reports required of this permit to the Department's Southeast District office.

Department of Environmental Protection
Southeast District Office
400 North Congress Avenue, Suite 200
West Palm Beach, Florida 33401
Telephone: 561/681-6600; Fax: 561/681-6790

13. Any reports, data, notifications, certifications, and requests required to be sent to the United States Environmental Protection Agency, Region 4, should be sent to:

United States Environmental Protection Agency
Region 4
Air, Pesticides & Toxics Management Division
Air and EPCRA Enforcement Branch
Air Enforcement Section
61 Forsyth Street
Atlanta, Georgia 30303-8960
Telephone: 404/562-9155; Fax: 404/562-9163

14. Certification by Responsible Official (RO). In addition to the professional engineering certification required for applications by Rule 62-4.050(3), F.A.C., any application form, report, compliance statement, compliance plan and compliance schedule submitted pursuant to Chapter 62-213, F.A.C., shall contain a certification signed by a responsible official that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Any responsible official who fails to submit any required information or who has submitted incorrect information shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary information or correct information.
[Rule 62-213.420(4), F.A.C.]

15. Annual Operating Report Required: On or before March 1 of each calendar year, a completed DEP Form 62-210.900(5), Annual Operating Report (AOR) Form for Air Pollutant Emitting Facility, shall be submitted to the Department of Environmental Protection, Southeast District Office, Air Program. Included with this report shall be additional reports, if any, required by this permit in Part III -- Emission Unit Specific Conditions.
[Rule 62-210.370(3), F.A.C.]

Appendix F

Permit Application No. 1270-1

Facility ID No. 0930104

Facility and EU Compliance Report and Plan

Attachment F
Facility Compliance Report and Plan

Okeechobee Landfill, Inc. Permit Application No.: 1270-1
Okeechobee Landfill Facility ID No.: 0930104

COMPLIANCE REPORTS

Compliance Report for EU-001 Municipal Solid Waste Landfill

Semi-annual compliance reports for this facility are filed in accordance with FLDEP and Federal air rules. After the filing in May 2005, this facility, specifically EU-001, has been the subject of discussions about compliance with FLDEP. On June 28, 2006, a first amended order to the Consent Decree was signed by FDEP and Okeechobee Landfill, Inc. This first amended order addresses control of landfill gas through the use of a temporary flare and odor control wells. Related to control of landfill gas, in spring of 2005, the facility saw a significant jump in landfill gas generation that has brought the current flares on a faster track to their operational capacity. This Title V permit application address the construction and operation of a permanent 6,000-scfm utility flare to handle the increasing landfill gas generation and a temporary 3,000-scfm utility flare for odor control.

Compliance Report for EU-003 Enclosed 3,000-scfm flare with EVAP

EU-003 is an existing landfill gas flare with an E-VAP® system. EU-003 is in the scope of this application to upgrade the E-VAP® unit. There is no issue of non-compliance at the time of this filing. The most recent compliance demonstration testing was performed in June 2005 and the report was filed in August 2005.

Compliance Report for EU-004 Utility Backup 3,000-scfm flare

EU-004 is an existing landfill gas utility flare to be operated as a backup to the production flares (EU-003, EU-005 and proposed new EUs, designated in this permit application as EU-006 and EU007). There is no issue of non-compliance at the time of this filing.

Compliance Report for EU-005 Enclosed 3,000-scfm flare with EVAP

EU-005 is an existing landfill gas flare with an E-VAP® system. There is no issue of non-compliance at the time of this filing.

COMPLIANCE PLAN FOR EUs ADDRESSED IN THIS PERMIT APPLICATION

Existing EU-003

Compliance Plan for the Existing EU-003
This compliance plan is for the replacement of the existing 20,000-gpd E-VAP® unit of EU-003 with a 30,000-gpd unit. The lead time for E-VAP® unit manufacturing is 6 to 9 months. The Unit will NOT require retesting if the EVAP® is upgraded because it does not change the existing flare's operation or performance.

Attachment F
Facility Compliance Report and Plan

Okeechobee Landfill, Inc.
Okeechobee Landfill

Permit Application No.: 1270-1
Facility ID No.: 0930104

Proposed Time Frames and Procedures for the Enclosed Flare (EU-003)

ACTIVITY DESCRIPTION	DUE DATE
Notification to the Department that modification of EU-003 will commence.	180 days from the Public Notification
Notification to the Department that modification of EU-003 will commence.	365 days from the Public Notification
Completion of construction & startup of equipment	180 days from the date of notification to the Department
Notification to the Department of the startup	Within 10 days prior to startup

New EU-006

Compliance Plan for the New EU-006 Temporary 3,000-scfm Utility Flare
A temporary utility flare is available.

Proposed Time Frames and Procedures for the Temporary 3,000-scfm Flare] (EU-006)

ACTIVITY DESCRIPTION	DUE DATE
Notification to the Department that construction of the 3,000scfm flare will commence.	180 days from the Public Notification
Notification to the Department that construction of the 3,000scfm flare will commence.	365 days from the Public Notification
Completion of construction & startup of equipment	180 days from the date of notification to the Department
Notification to the Department of the startup	Within 10 days prior to startup
Compliance emission testing (Carbon Monoxide and NMOC)	Within 180 days of startup
Submit the test report	Within 45 days of testing

Proposed Test Methods, Duration, and Location for Testing of the Temporary 3,000-scfm Utility Flare (EU-006).

PARAMETER	TEST METHOD	DURATION	LOCATION
Visibility	EPA Method 9	**NA**	Flare Outlet
Oxygen and carbon dioxide	EPA 3C (Inlet)	**NA**	Flare Inlet

Attachment F
Facility Compliance Report and Plan

Okeechobee Landfill, Inc.	Permit Application No.: 1270-1
Okeechobee Landfill	Facility ID No.: 0930104

New EU-007

Compliance Plan for the New EU-007: 6,000-scfm Utility Flare

The typical lead time for the 6,000-scfm flare is 6 to 9 months.

Proposed Time Frames and Procedures for the 6,000-scfm Utility Flare (EU-007)

ACTIVITY DESCRIPTION	DUE DATE
Notification to the Department that construction of the 6,000scfm flare will commence.	180 days from the Public Notification
Notification to the Department that construction of the 6,000scfm flare will commence.	365 days from the Public Notification
Completion of construction & startup of equipment	180 days from the date of notification to the Department
Notification to the Department of the startup	Within 10 days prior to startup
Compliance emission testing (Carbon Monoxide and NMOC)	Within 180 days of startup
Submit the test report	Within 45 days of testing

Proposed Test Methods, Duration, and Location for Testing of the Temporary 6,000-scfm Utility Flare (EU-007).

PARAMETER	TEST METHOD	DURATION	LOCATION
Visibility	EPA Method 9	**NA**	Flare Outlet
Oxygen and carbon dioxide	EPA 3C (Inlet)	**NA**	Flare Inlet

Appendix G

Permit Application 1270-1

Facility ID No. 0930104

Requested Changes to Current Title V Operation Permit

Appendix G
Requested Changes to Current Title V Operation Permit

Okeechobee Landfill Inc.
Okeechobee Landfill

Permit Application No.: 1270
Facility ID No.: 0930104

This permit revision is being sought for the purposes of incorporating the terms and conditions of the air construction permit No. 0930104-012-AC submitted concurrently with this application into the current Title V operation permit No. 0930104-006-AV as revised by permit no. 0930104-011-AV. Air construction permit application No. 1270-1 for Facility ID Number 0930104 seeks authorization to construct a temporary 3,000-scfm utility flare for odor control to comply with the first order amendment of the Consent Decree; and to construction a 6,000-scfm utility flare; and to replace the 20,000-gpd E-VAP® system of existing landfill flare EU 003 with a 30,000-gpd E-VAP® system.

Appendix H

Permit Application 1270-1

Facility ID No. 0930104

Description of the Proposed Construction and Modification

Appendix H
Description of Proposed Construction or Modification to Current Title V Air Permit

Okeechobee Landfill Inc. | Permit Application No. 1270-1
Okeechobee Landfill | Facility ID No.: 0930104

The current permit, 0930104-011-AV, issued to Okeechobee Landfill is for the following emission units:

- **EU 001** – A Municipal Solid Waste Landfill
- **EU 003** – A 3,000 scfm Enclosed Flare Unit #1776 with 20,000 gpd E-VAP® Unit #3016
- **EU 004** – A 3,000 scfm Unenclosed Flare Unit #1495, used as a back-up unit
- **EU 005** – A 3,000 scfm Enclosed Flare Unit #1698 with 20,000 gpd E-VAP® Unit #3004IM

Proposed Construction: This permit application is for the construction of two new flares.

1. The construction of a new emission unit (designated EU-006 for the purposes of this application), consisting of a 3,000-scfm temporary utility flare (Unit Number to be determined). This emission unit will be located as shown on the facility plot plan in Appendix A. This new emission unit will be located southwest of existing EU-003 and approximately east of EU-005 and will provide landfill gas control capability for odor control wells as they are installed in the landfill. The proposed landfill gas flare will be manufactured by LFG Specialties, Inc. Model No. CF1230I10 or will be an equivalent model substantially meeting the performance specifications of the LFG Specialties equipment. The Manufacturers datasheet for this equipment is included in Appendix O of this application.

2. The construction of a new emission unit (designated EU-007 for the purposes of this application), consisting of a 6,000-scfm utility flare (Unit Number to be determined). This emission unit will be located as shown on the facility plot plan in Appendix A. This new emission unit will be located adjacent (east side) of the proposed EU-006. Based on recent landfill gas generation estimates, EU-007 will provide sufficient landfill gas control capability for Okeechobee Landfill. The proposed landfill gas flare will be manufactured by LFG Specialties, Inc. Model No. CF1840I16 or will be an equivalent model substantially meeting the performance specifications of the LFG Specialties equipment. The Manufacturers datasheet for this equipment is included in Appendix O of this application.

Operating Permit Modification: This permit application is to modify the leachate control equipment associated with EU 003. The existing leachate EVAP unit #3016 will be upgraded from 20,000-gpd to 30,000-gpd by replacing the evaporator vessel with larger and improved hardware. The basic footprint of the unit is being preserved, along with the control system, most of the wiring system, and the evaporator blower skid. Replacement of this equipment will not change the operation and compliance of the landfill gas flare. The Compliance Plan in Appendix F provides the construction and compliance testing schedule for proposed facility modifications.

Appendix I

Permit Application No. 1270-1

Facility ID No. 0930104

Rule Applicability Analysis

This application for an air construction and operation permit meets the general requirements for preconstruction review. The addition of two new landfill gas flares (EU-006 and EU-007) and the upgrade of a component part (the E-VAP system) of an existing flare (EU-003) is a modification to the existing facility. The addition of the new flare will result in an increase in subject pollutants. The upgrade of the E-VAP to the existing flare (EU-003) will result in a negligible increase in pollutants.

The subject units emit sulfur dioxide, nitrogen dioxide, carbon monoxide, volatile organic compounds and particulate matter. The following page presents the summary of estimated for the potential emissions of this facility. The rule applicability analysis based on the estimated emission potential is as follows.

- SO_2 emissions for the facility will be above PSD thresholds. The emissions of SO_2 are a by-product of a pollution control process: the control of VOCs from the facility's landfill, emission unit EU001. PSD review per 62-212.400 (2)(a)2c applies to the facility. Appendix J will include the ambient air analysis, which is required by 62-212.400. The analysis must utilize the selected BACT and show that the expected discharge of SO_2 will not violate any ambient air quality standard, consume increment beyond what is allowed, or cause any visibility problems.
- NO_2 from the facility will not exceed the PSD threshold.
- Baseline emissions of CO from the facility under the existing permit are 103.7 TPY. The proposed new flare (EU-006) and the new flare (EU 007) will increase the CO emissions by 552 TPY. This increase will exceed the PSD limit for modifications of 250 TPY.
- VOC will be discharged from the facility's flares, but will be limited to less than 20% by volume per the rule.
- Particulates are discharged from the flares but the total emissions will not exceed PSD thresholds.

An ambient air analysis will be completed for the proposed facility modifications upon completion of the BACT analysis. The analysis will be presented in Appendix J to this application. The proposed modifications will not cause or contribute to an ambient concentration at any point within the baseline area that exceeds either the appropriate baseline concentration for the point plus the appropriate maximum allowable increase or the appropriate ambient air quality standard. [62.212(1)(c) F.A.C.]

A netting analysis was not performed and is not needed for this facility. The area is attainment for all criteria pollutants, so NAA NSR does not apply.

The project does not include the relaxation of any federally enforceable limitations on the pollutant emitting capacity of the facility not previously approved. There are no relaxations in place or proposed which would trigger PSD or NAA NSR.

Appendix J

Air Modeling, Quality and Impact Analysis

Permit Application No. 1270-1

Facility ID No. 0930104

The eventual BACT selection and details have not been completed under the short time from to complete this application. Once the BACT is selected and enough design details developed, Okeechobee Landfill, Inc. will be able to set an emission rate for SO_2. At that time, this emission rate will be used in the ambient air impact analysis and any interactive modeling required to support the project. Since the BACT has not been chosen as yet, the ambient air impact analysis has not been completed.

Appendix K

Permit Application 1270-1

Facility ID No. 0930104

Support Calculations

CURRENT POTENTIAL TO EMIT UNDER CURRENT PERMIT

EU NO.	Description	Reference	Maximum Potential Flow Rate (scfm)	Emissions NO$_x$ (lb/hr)	NO$_x$ (tpy)	CO (lb/hr)	CO (tpy)	SO$_2$ (lb/hr)	SO$_2$ (tpy)	PM$_{10}$ (lb/hr)	PM$_{10}$ (tpy)
003	Enclosed Flare - 3,000 scfm w/EVAP	MFR Guarantee	3,000	5.94	26.02	19.80	86.72	1.49	6.54	1.55	6.78
005	3,000 scfm Enclosed Flare w/EVAP	MFR Guarantee	3,000	5.94	26.02	19.80	86.72	1.51	6.60	1.55	6.78
004	3,000 scfm Open, Unenclosed Flare	MFR Guarantee	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CURRENT TOTAL - Two (2) Enclosed Flares (Unit#1776/1698), two (2) EVAPs (Unit# 3016/3004IM), and Unit #1495			6,000	11.88	52.03	39.60	173.45	3.00	13.14	3.10	13.56

BASELINE ACTUAL EMISSIONS

EU NO.	Description	Reference	Maximum Potential Flow Rate (scfm)	Emissions NO$_x$ (lb/hr)	NO$_x$ (tpy)	CO (lb/hr)	CO (tpy)	SO$_2$ (lb/hr)	SO$_2$ (tpy)	PM$_{10}$ (lb/hr)	PM$_{10}$ (tpy)
003	Enclosed Flare - 3,000 scfm w/EVAP	MFR Guarantee & Field Data	2,105	3.6	15.4	12.0	51	123.53	526.34	0.94	4.0
005	3,000 scfm Enclosed Flare w/EVAP	MFR Guarantee & Field Data	2,170	3.7	15.7	12.2	52	127.32	545.42	0.96	4.1
004	3,000 scfm Open, Unenclosed Flare	MFR Guarantee	0	0	0	0	0	0	0	0	0
CURRENT TOTAL - Two (2) Enclosed Flares (Unit#1776/1698), two (2) EVAPs (Unit# 3016/3004IM), and Unit #1495			4,275	7.3	31.1	24.3	103.7	250.9	1,071.8	1.9	8.1

CURRENT POTENTIAL TO EMIT UNDER CURRENT PERMIT

EU NO.	Description	Reference	NMOC (lb/hr)	NMOC (tpy)	VOC (lb/hr)	VOC (tpy)	HAP (Total) (lb/hr)	HAP (Total) (tpy)	HAP (Single) (lb/hr)	HAP (Single) (tpy)
003	Enclosed Flare - 3,000 scfm w/EVAP	MFR Guarantee	0.49	2.13	0.19	0.83	0.83	3.63	0.73	3.18
005	3,000 scfm Enclosed Flare w/EVAP	MFR Guarantee	0.49	2.13	0.19	0.83	0.83	3.63	0.73	3.18
004	3,000 scfm Open, Unenclosed Flare	MFR Guarantee	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
CURRENT TOTAL - Two (2) Enclosed Flares (Unit#1776/1698), two (2) EVAPs (Unit# 3016/3004IM), and Unit #1495			0.97	4.26	0.38	1.66	1.66	7.25	1.45	6.37

BASELINE ACTUAL EMISSIONS

EU NO.	Description	Reference	NMOC (lb/hr)	NMOC (tpy)	VOC (lb/hr)	VOC (tpy)	HAP (Total) (lb/hr)	HAP (Total) (tpy)	HAP (Single) (lb/hr)	HAP (Single) (tpy)
003	Enclosed Flare - 3,000 scfm w/EVAP	MFR Guarantee & Field Data	0.34	1.45	0.13	0.57	0.58	2.5	0.51	2.17
005	3,000 scfm Enclosed Flare w/EVAP	MFR Guarantee & Field Data	0.35	1.51	0.14	0.59	0.60	2.6	0.53	2.25
004	3,000 scfm Open, Unenclosed Flare	MFR Guarantee	0	0	0	0	0	0	0	0
CURRENT TOTAL - Two (2) Enclosed Flares (Unit#1776/1698), two (2) EVAPs (Unit# 3016/3004IM), and Unit #1495			0.69	3.0	0.3	1.2	1.2	5.0	1.0	4.4

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Emissions Calculations
Okeechobee (Berman Road) Landfill
Okeechobee, Fl

SUMMARY - PROPOSED POTENTIAL TO EMIT

EU NO.	Description	Reference	Max. Potential LFG Flow (scfm)	Emissions NO$_x$ (lb/hr)	NO$_x$ (tpy)	CO (lb/hr)	CO (tpy)	SO$_2$ (lb/hr)	SO$_2$ (tpy)	PM$_{10}$ (lb/hr)	PM$_{10}$ (tpy)
003	Enclosed Flare - 3,000 scfm w/EVAP	MFR Guarantee	3,000	5.94	26.02	19.80	86.72	176.05	771.11	1.55	6.78
005	3,000 scfm Enclosed Flare w/EVAP	MFR Guarantee	3,000	5.94	26.02	19.80	86.72	176.05	771.11	1.55	6.78
004	3,000 scfm Open, Unenclosed Flare	MFR Guarantee	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NEW	*Open - 6,000 scfm*	MFR Guarantee	*6,013*	*13.49*	*59.10*	*73.42*	*321.57*	*352.87*	*1,545.57*	*3.10*	*13.59*
NEW	*3,000 scfm Open, Unenclosed Flare (Temporary)*	MFR Guarantee	*3,014*	*6.76*	*29.62*	*36.80*	*161.19*	*176.87*	*774.71*	*1.56*	*6.81*
PROPOSED TOTAL - Two Enclosed Flares with EVAPs, 6,000-scfm Utilty Flare, PROPOSED 3,000-scfm Utility Flare (odor control) and Backup 3,000-scfm Utilty Flare Unit #1495			**15,027**	**32.1**	**140.8**	**149.8**	**656.2**	**881.8**	**3,862.5**	**7.8**	**34.0**

PROPOSED EMISSION INCREASE FOR POTENTIAL TO BASELINE-ACTUAL

Description	(scfm)	EMISSIONS INCI NO$_x$ (lb/hr)	NO$_x$ (tpy)	CO (lb/hr)	CO (tpy)	SO$_2$ (lb/hr)	SO$_2$ (tpy)	PM$_{10}$ (lb/hr)	PM$_{10}$ (tpy)
PROPOSED TOTAL - Two Enclosed Flares with EVAPs, 6,000-scfm Utilty Flare, PROPOSED 3,000-scfm Utility Flare (odor control) and Backup 3,000-scfm Utilty Flare Unit #1495	10,752	24.86	109.66	125.55	552.54	630.99	2,790.73	5.86	25.86

SUMMARY - PROPOSED POTENTIAL TO EMIT

EU NO.	Description	Reference	NMOC (lb/hr)	NMOC (tpy)	VOC (lb/hr)	VOC (tpy)	HAP (Total) (lb/hr)	HAP (Total) (tpy)	HAP (Single) (lb/hr)	HAP (Single) (tpy)
003	Enclosed Flare - 3,000 scfm w/EVAP	MFR Guarantee	0.49	2.13	0.19	0.83	0.83	3.63	0.73	3.18
005	3,000 scfm Enclosed Flare w/EVAP	MFR Guarantee	0.49	2.13	0.19	0.83	0.83	3.63	0.73	3.18
004	3,000 scfm Open, Unenclosed Flare	MFR Guarantee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NEW	*Open - 6,000 scfm*	MFR Guarantee	0.97	4.27	*0.38*	*1.66*	*1.66*	*7.27*	*1.46*	*6.38*
NEW	*3,000 scfm Open, Unenclosed Flare (Temporary)*	MFR Guarantee	0.49	2.14	*0.19*	*0.83*	*0.83*	*3.64*	*0.73*	*3.20*
PROPOSED TOTAL - Two Enclosed Flares with EVAPs, 6,000-scfm Utilty Flare, PROPOSED 3,000-scfm Utility Flare (odor control) and Backup 3,000-scfm Utilty Flare Unit #1495			**1.5**	**6.4**	**0.9**	**4.2**	**4.1**	**18.2**	**3.6**	**15.9**

PROPOSED EMISSION INCREASE FOR POTENTIAL TO BASELINI

Description	REASE NMOC (lb/hr)	NMOC (tpy)	VOC (lb/hr)	VOC (tpy)	HAP (Total) (lb/hr)	HAP (Total) (tpy)	HAP (Single) (lb/hr)	HAP (Single) (tpy)
PROPOSED TOTAL - Two Enclosed Flares with EVAPs, 6,000-scfm Utilty Flare, PROPOSED 3,000-scfm Utility Flare (odor control) and Backup 3,000-scfm Utilty Flare Unit #1495	0.77	3.45	0.68	3.01	2.97	13.12	2.60	11.52

CURRENT POTENTIAL TO EMIT UNDER CURRENT PERMIT

EU NO.	Description	Reference	Maximum Potential Flow Rate (scfm)	Emissions NO_x (lb/hr)	NO_x (tpy)	CO (lb/hr)	CO (tpy)	SO_2 (lb/hr)	SO_2 (tpy)	PM_{10} (lb/hr)	PM_{10} (tpy)
003	Enclosed Flare - 3,000 scfm w/EVAP	MFR Guarantee	3,000	5.9	26.0	19.8	87	1.49	6.54	1.55	6.8
005	3,000 scfm Enclosed Flare w/EVAP	MFR Guarantee	3,000	5.9	26.0	19.8	87	1.51	6.60	1.55	6.8
004	3,000 scfm Open, Unenclosed Flare	MFR Guarantee	0	0	0	0	0	0	0	0	0
CURRENT TOTAL - Two (2) Enclosed Flares (Unit#1776/1698), two (2) EVAPs (Unit# 3016/3004IM), and Unit #1495			6,000	11.9	52.0	39.6	173.4	3.0	13.1	3.1	13.6

CURRENT POTENTIAL TO EMIT UNDER CURRENT PERMIT

			Emissions							
			NMOC		VOC		HAP (Total)		HAP (Single)	
EU NO.	Description	Reference	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
003	Enclosed Flare - 3,000 scfm w/EVAP	MFR Guarantee	0.49	2.1	0.19	0.83	0.83	3.6	0.73	3.18
005	3,000 scfm Enclosed Flare w/EVAP	MFR Guarantee	0.49	2.1	0.19	0.83	0.83	3.6	0.73	3.18
004	3,000 scfm Open, Unenclosed Flare	MFR Guarantee	0	0	0	0	0	0	0	0
CURRENT TOTAL - Two (2) Enclosed Flares (Unit#1776/1698), two (2) EVAPs (Unit# 3016/3004IM), and Unit #1495			0.97	4.3	0.4	1.7	1.7	7.3	1.5	6.4

EU003 3,000-scfm enclosed flare w/evap

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft^3/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft^3	
LFG Methane Component[c]	55%		
LFG Typical Heating Value	550	Btu/ft^3	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%		
Methane Combustion Constant[d]	9.53	ft^3 air/ft^3 CH_4	

[a]Industrial STP (60°F, 30.00 in. Hg, 1 atm)
[b]Typical
[c]Assumed
[d]*Professional Engineering Registration Program*, 23-9.

Fuel & Equipment - Enclosed Flare

Flare Information	Value		Equivalent
Operation Period[a]	8,760	hr	
LFG inlet flow, standard[b]	3,000	scfm	
LFG Inlet Flow, dry standard	2,760	dscfm	
Heat Input	99	MMBtu/hr	
Design Flare Operating Temperature[c]	1,400	°F	1,860 °R
Excess Air for Combustion[c]	230%		
Flare Tip Flow, standard	54,891	scfm	
Flare Tip Flow, actual	196,340	acfm	
Flare Tip Diameter[b]	10.0	ft	
Flare Tip Exhaust Velocity	2,500	ft/min	41.7 ft/s
Flare Tip Height, above local grade[b]	45	ft	

[a]Permit Applicant
[b]Flare manufacturer - based on LFG model EF1045I12
[c]Function of design flame temperature; values are typical and are provided for 1400°F, 1600°F, 1800°F, and 2000°Fby a flare manufactuer

EU005 3,000-scfm enclosed flare w/evap

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft³/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft³	
LFG Methane Component[c]	55%		
LFG Typical Heating Value	550	Btu/ft³	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%		
Methane Combustion Constant[d]	9.53	ft³ air/ft³ CH_4	

[a]Industrial STP (60°F, 30.00 in. Hg, 1 atm)

[b]Typical

[c]Assumed

[d]*Professional Engineering Registration Program*, 23-9.

Fuel & Equipment - Enclosed Flare

Flare Information	Value		Equivalent
Operation Period[a]	8,760	hr	
LFG inlet flow, standard[b]	3,000	scfm	
LFG Inlet Flow, dry standard	2,760	dscfm	
Heat Input	99	MMBtu/hr	
Design Flare Operating Temperature[c]	1,400	°F	1,860 °R
Excess Air for Combustion[c]	230%		
Flare Tip Flow, standard	54,891	scfm	
Flare Tip Flow, actual	196,340	acfm	
Flare Tip Diameter[b]	10.0	ft	
Flare Tip Exhaust Velocity	2,500	ft/min	41.7 ft/s
Flare Tip Height, above local grade[b]	45	ft	

[a]Permit Applicant

[b]Flare manufacturer - based on LFG model EF1045I12

[c]Function of design flame temperature; values are typical and are provided for 1400°F, 1600°F, 1800°F, and 2000°Fby a flare manufactuer

EU003 3,000-scfm enclosed flare w/evap
Criteria Pollutant Emissions - Enclosed Flare

Operation Period	8,760	hr
LFG inlet flow, standard	3,000	scfm
Heat Input	99	MMBtu/hr

SO_2 Emission Rate

SO_2 concentration in exhaust gas	49.15	ppmv		
SO_2 emission rate	1.49	lb/hr	6.5	tpy

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]	Control Eff[a,b]	Individual Compound Contribution to SO_2: No. of S Atoms	S Conc (ppmv)	SO_2 Emiss (lb/hr)
Carbon Disulfide	75-15-0	76.13	0.58	99.7%	2	1.16	0.04
Carbonyl Sulfide	463-58-1	60.07	0.49	99.7%	1	0.49	0.01
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82	99.7%	1	7.80	0.24
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28	99.7%	1	2.27	0.07
Hydrogen Sulfide	7783-06-4	34.08	35.05	99.7%	1	34.9	1.06
PERMIT	74-93-1	48.11	2.49	99.7%	1	2.48	0.08
				Total Contribution to SO_2 :		49.15	1.49

PM_{10} Emission Rate

PM emission factor[a]	17	lb/MM dscf CH_4		
PM emission rate	1.55	lb/hr	6.8	tpy

NO_2 Emission Rate

NO_2 emission factor[c]	0.06	lb/MMBtu		
NO_2 emission rate	5.9	lb/hr	26.0	tpy

CO Emission Rate

CO emission factor[c]	0.20	lb/MMBtu		
CO emission rate	19.8	lb/hr	87	tpy

NMOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
MW hexane	86.18	lb/lb-mol		
destruction efficiency	98%			
mass NMOC inlet gas	24.3	lb/hr		
NMOC emission rate	0.49	lb/hr	2.13	tpy

VOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
VOC fraction of NMOC[a]	39%			
VOC concentration in inlet gas	232	ppmv		
MW hexane	86.18	lb/lb-mol		
mass VOC inlet gas	9.5	lb/hr		
destruction efficiency	98%			
VOC emission rate	0.19	lb/hr	0.83	tpy

[a]U.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources* ("AP-42"), *5th Ed.,* November 1998. Tables 2.4-1, 2.4-2, 2.4-3, 2.4-5.\

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent. The upper end of the range is used here resulting in maximum calculated emissions of SO2.

[c]LFG Specialties Inc. (typical)

Criteria Pollutant Emissions - Enclosed Flare

EU005 3,000-scfm enclosed flare w/evap

Operation Period	8,760	hr
LFG inlet flow, standard	3,000	scfm
Heat Input	99	MMBtu/hr

SO_2 Emission Rate

SO_2 concentration in exhaust gas	49.60	ppmv		
SO_2 emission rate	1.51	lb/hr	6.6	tpy

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]	Control Eff[a,b]	Individual Compound Contribution to SO_2: No. of S Atoms	S Conc (ppmv)	SO_2 Emiss (lb/hr)
Carbon Disulfide	75-15-0	76.13	0.58	99.7%	2	1.16	0.04
Carbonyl Sulfide	463-58-1	60.07	0.49	99.7%	1	0.49	0.01
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82	99.7%	1	7.80	0.24
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28	99.7%	1	2.27	0.07
Hydrogen Sulfide	7783-06-4	34.08	35.50	99.7%	1	35.4	1.07
Methyl Mercaptan	74-93-1	48.11	2.49	99.7%	1	2.48	0.08
					Total Contribution to SO_2:	49.60	1.51

PM_{10} Emission Rate

PM emission factor[a]	17	lb/MM dscf CH_4		
PM emission rate	1.55	lb/hr	6.8	tpy

NO_2 Emission Rate

NO_2 emission factor[c]	0.06	lb/MMBtu		
NO_2 emission rate	5.9	lb/hr	26.0	tpy

CO Emission Rate

CO emission factor[c]	0.20	lb/MMBtu		
CO emission rate	19.8	lb/hr	87	tpy

NMOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
MW hexane	86.18	lb/lb-mol		
destruction efficiency	98%			
mass NMOC inlet gas	24.3	lb/hr		
NMOC emission rate	0.49	lb/hr	2.13	tpy

VOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
VOC fraction of NMOC[a]	39%			
VOC concentration in inlet gas	232	ppmv		
MW hexane	86.18	lb/lb-mol		
mass VOC inlet gas	9.5	lb/hr		
destruction efficiency	98%			
VOC emission rate	0.19	lb/hr	0.83	tpy

[a]U.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources* ("AP-42"), *5th Ed.*, November 1998. Tables 2.4-1, 2.4-2, 2.4-3, 2.4-5.\

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent. The upper end of the range is used here resulting in maximum calculated emissions of SO2.

[c]LFG Specialties Inc. (typical)

LFG inlet flow 3,000 scfm

EU003 3,000-scfm enclosed flare w/evap

LFG Compound	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas (ppmv)[a]	(lb/hr)	Control Eff[a,b]	Flare Exhaust (lb/hr)*	(tpy)*
1,1,1 - Trichloroethane (methyl chloroform)	x	--	71-55-6	133.41	0.48	3.04E-02	98.0%	6.07E-04	2.66E-03
1,1,2,2 - Tetrachloroethane	x	x	79-34-5	167.85	1.11	8.83E-02	98.0%	1.77E-03	7.74E-03
1,1,2 - Trichloroethane (1,1,2 TCA)	x	x	79-00-5	133.41	0.10	6.32E-03	98.0%	1.26E-04	5.54E-04
1,1 - Dichloroethane (ethylidene dichloride)	x	x	75-34-3	98.96	2.35	1.10E-01	98.0%	2.20E-03	9.66E-03
1,1 - Dichloroethene (vinylidene chloride)	x	x	75-35-4	96.94	0.20	9.24E-03	98.0%	1.85E-04	8.09E-04
1,2 - Dichloroethane (ethylene dichloride)	x	x	107-06-2	98.96	0.41	1.91E-02	98.0%	3.82E-04	1.67E-03
1,2 - Dichloropropane (propylene dichloride)	x	x	78-87-5	112.99	0.18	9.64E-03	98.0%	1.93E-04	8.45E-04
2-Propanol (isopropyl alcohol)	--	x	67-63-0	60.11	50.1	1.43E+00	98.0%	2.86E-02	1.25E-01
Acetone (2-propanone)	--	--	67-64-1	58.08	7.01	1.93E-01	98.0%	3.86E-03	1.69E-02
Acrylonitrile (Propenenitrile)	x	x	107-13-1	53.06	6.33	1.59E-01	98.0%	3.18E-03	1.39E-02
Benzene	x	x	71-43-2	78.12	1.91	7.07E-02	98.0%	1.41E-03	6.20E-03
Bromodichloromethane	--	x	75-27-4	163.83	3.13	2.43E-01	98.0%	4.86E-03	2.13E-02
Butane	--	x	106-97-8	58.12	5.03	1.39E-01	98.0%	2.77E-03	1.21E-02
Carbon Disulfide	x	x	75-15-0	76.14	0.58	2.10E-02	98.0%	4.21E-04	1.84E-03
Carbon Tetrachloride	x	x	56-23-5	153.84	0.004	2.92E-04	98.0%	5.83E-06	2.56E-05
Carbonyl Sulfide	x	x	463-58-1	60.07	0.49	1.40E-02	98.0%	2.79E-04	1.22E-03
Chlorobenzene (monochlorobenzene)	x	x	108-90-7	112.56	0.25	1.36E-02	98.0%	2.71E-04	1.19E-03
Chlorodifluoromethane (CFC-22, freon-22)	--	--	75-45-6	86.47	1.30	5.33E-02	98.0%	1.07E-03	4.67E-03
Chloroethane (ethyl chloride)	x	x	75-00-3	64.52	1.25	3.82E-02	98.0%	7.65E-04	3.35E-03
Chloroform (trichloromethane)	x	x	67-66-3	119.38	0.03	1.70E-03	98.0%	3.40E-05	1.49E-04
Chloromethane (methyl chloride)	x	x	74-87-3	50.49	1.21	2.90E-02	98.0%	5.79E-04	2.54E-03
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	106-46-7	147	0.21	1.48E-02	98.0%	2.97E-04	1.30E-03
Dichlorodifluoromethane (CFC-12, freon-12)	--	--	75-71-8	120.91	15.7	9.00E-01	98.0%	1.80E-02	7.88E-02
Dichlorofluoromethane (freon-21)	--	--	75-43-4	102.92	2.62	1.28E-01	98.0%	2.56E-03	1.12E-02
Dichloromethane (methylene chloride)	x	--	75-09-2	84.93	14.3	5.76E-01	98.0%	1.15E-02	5.04E-02
Dimethyl Sulfide (methyl sulfide)	--	x	75-18-3	62.13	7.82	2.30E-01	98.0%	4.61E-03	2.02E-02
Ethane	--	--	74-84-0	30.07	889	1.27E+01	98.0%	2.53E-01	1.11E+00
Ethanol (ethyl alcohol)	--	x	64-17-5	46.08	27.2	5.94E-01	98.0%	1.19E-02	5.20E-02
Ethylbenzene[g]	x	x	100-41-4	106.17	4.61	2.32E-01	98.0%	4.64E-03	2.03E-02
Ethyl Mercaptan (ethanethiol)	--	x	75-08-1	62.13	1.25	3.68E-02	98.0%	7.36E-04	3.23E-03
Ethylene dibromide (1,2 dibromoethane)	x	x	106-93-4	187.88	0.001	8.91E-05	98.0%	1.78E-06	7.80E-06
Fluorotrichloromethane (CFC-11, freon-11)	--	--	75-69-4	137.37	0.76	4.95E-02	98.0%	9.90E-04	4.34E-03
Hexane	x	x	110-54-3	86.18	6.57	2.68E-01	98.0%	5.37E-03	2.35E-02
Hydrogen Sulfide	--	--	7783-06-4	34.08	35.5	5.74E-01	98.0%	1.15E-02	5.02E-02
Mercury (total)	x	--	7439-97-6	200.61	2.92E-04	2.78E-05	0.0%	2.78E-05	1.22E-04
Methyl Ethyl Ketone (2-butanone)	x	x	78-93-3	72.11	7.09	2.42E-01	98.0%	4.85E-03	2.12E-02
Methyl Isobutyl Ketone (hexone)	x	x	108-10-1	100.16	1.87	8.88E-02	98.0%	1.78E-03	7.78E-03
Methyl Mercaptan	--	x	74-93-1	48.11	2.49	5.68E-02	98.0%	1.14E-03	4.97E-03
Pentane	--	x	109-66-0	72.15	3.29	1.13E-01	98.0%	2.25E-03	9.86E-03
ethene)	x	x	127-18-4	165.83	3.73	2.93E-01	98.0%	5.86E-03	2.57E-02
Propane	--	x	74-98-6	44.1	11.1	2.32E-01	98.0%	4.64E-03	2.03E-02
Toluene (methylbenzene)	x	x	108-88-3	92.14	39.3	1.72E+00	98.0%	3.43E-02	1.50E-01
Trichloroethylene (trichloroethene)	x	x	79-01-6	131.38	2.82	1.76E-01	98.0%	3.51E-03	1.54E-02
t - 1,2 - Dichloroethene (1,2 dichloroethylene)	--	--	156-60-5	96.94	2.84	1.31E-01	98.0%	2.61E-03	1.14E-02
Vinyl Chloride (chloroethylene, VCM)	x	x	75-01-4	62.50	7.34	2.17E-01	98.0%	4.35E-03	1.91E-02
Xylenes (m, o, p)	x	x	1330-20-7	106.17	12.1	6.09E-01	98.0%	1.22E-02	5.33E-02
Hydrogen Chloride	x	--	7647-01-0	36.50	42.0	7.27E-01	0.0%	7.27E-01	3.18E+00
Total HAP[e]								0.83	3.6
Maximum Single HAP								0.73	3.18

[a]EPA 1998. "Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources" (AP-42), 5th Ed., November

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent and control. Control

[c]Product of combustion

[d]Because HCl is a production of combustion, a default outlet concentration is listed; AP-42, Section 2.4.4.

Note: "x" denotes a HAP only or a HAP and VOC; "y" denotes a VOC only

LFG inlet flow 3,000 **scfm**

EU005 3,000-scfm enclosed flare w/evap

LFG Compound	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas (ppmv)[a]	(lb/hr)	Control Eff[a,b]	Flare Exhaust (lb/hr)*	(tpy)*
1,1,1 - Trichloroethane (methyl chloroform)	x	--	71-55-6	133.41	0.48	3.04E-02	98.0%	6.07E-04	2.66E-03
1,1,2,2 - Tetrachloroethane	x	x	79-34-5	167.85	1.11	8.83E-02	98.0%	1.77E-03	7.74E-03
1,1,2 - Trichloroethane (1,1,2 TCA)	x	x	79-00-5	133.41	0.10	6.32E-03	98.0%	1.26E-04	5.54E-04
1,1 - Dichloroethane (ethylidene dichloride)	x	x	75-34-3	98.96	2.35	1.10E-01	98.0%	2.20E-03	9.66E-03
1,1 - Dichloroethene (vinylidene chloride)	x	x	75-35-4	96.94	0.20	9.24E-03	98.0%	1.85E-04	8.09E-04
1,2 - Dichloroethane (ethylene dichloride)	x	x	107-06-2	98.96	0.41	1.91E-02	98.0%	3.82E-04	1.67E-03
1,2 - Dichloropropane (propylene dichloride)	x	x	78-87-5	112.99	0.18	9.64E-03	98.0%	1.93E-04	8.45E-04
2-Propanol (isopropyl alcohol)	--	x	67-63-0	60.11	50.1	1.43E+00	98.0%	2.86E-02	1.25E-01
Acetone (2-propanone)	--	--	67-64-1	58.08	7.01	1.93E-01	98.0%	3.86E-03	1.69E-02
Acrylonitrile (Propenenitrile)	x	x	107-13-1	53.06	6.33	1.59E-01	98.0%	3.18E-03	1.39E-02
Benzene	x	x	71-43-2	78.12	1.91	7.07E-02	98.0%	1.41E-03	6.20E-03
Bromodichloromethane	--	x	75-27-4	163.83	3.13	2.43E-01	98.0%	4.86E-03	2.13E-02
Butane	--	x	106-97-8	58.12	5.03	1.39E-01	98.0%	2.77E-03	1.21E-02
Carbon Disulfide	x	x	75-15-0	76.14	0.58	2.10E-02	98.0%	4.21E-04	1.84E-03
Carbon Tetrachloride	x	x	56-23-5	153.84	0.004	2.92E-04	98.0%	5.83E-06	2.56E-05
Carbonyl Sulfide	x	x	463-58-1	60.07	0.49	1.40E-02	98.0%	2.79E-04	1.22E-03
Chlorobenzene (monochlorobenzene)	x	x	108-90-7	112.56	0.25	1.36E-02	98.0%	2.71E-04	1.19E-03
Chlorodifluoromethane (CFC-22, freon-22)	--	--	75-45-6	86.47	1.30	5.33E-02	98.0%	1.07E-03	4.67E-03
Chloroethane (ethyl chloride)	x	x	75-00-3	64.52	1.25	3.82E-02	98.0%	7.65E-04	3.35E-03
Chloroform (trichloromethane)	x	x	67-66-3	119.38	0.03	1.70E-03	98.0%	3.40E-05	1.49E-04
Chloromethane (methyl chloride)	x	x	74-87-3	50.49	1.21	2.90E-02	98.0%	5.79E-04	2.54E-03
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	106-46-7	147	0.21	1.48E-02	98.0%	2.97E-04	1.30E-03
Dichlorodifluoromethane (CFC-12, freon-12)	--	--	75-71-8	120.91	15.7	9.00E-01	98.0%	1.80E-02	7.88E-02
Dichlorofluoromethane (freon-21)	--	--	75-43-4	102.92	2.62	1.28E-01	98.0%	2.56E-03	1.12E-02
Dichloromethane (methylene chloride)	x	--	75-09-2	84.93	14.3	5.76E-01	98.0%	1.15E-02	5.04E-02
Dimethyl Sulfide (methyl sulfide)	--	x	75-18-3	62.13	7.82	2.30E-01	98.0%	4.61E-03	2.02E-02
Ethane	--	--	74-84-0	30.07	889	1.27E+01	98.0%	2.53E-01	1.11E+00
Ethanol (ethyl alcohol)	--	x	64-17-5	46.08	27.2	5.94E-01	98.0%	1.19E-02	5.20E-02
Ethylbenzene[g]	x	x	100-41-4	106.17	4.61	2.32E-01	98.0%	4.64E-03	2.03E-02
Ethyl Mercaptan (ethanethiol)	--	x	75-08-1	62.13	1.25	3.68E-02	98.0%	7.36E-04	3.23E-03
Ethylene dibromide (1,2 dibromoethane)	x	x	106-93-4	187.88	0.001	8.91E-05	98.0%	1.78E-06	7.80E-06
Fluorotrichloromethane (CFC-11, freon-11)	--	--	75-69-4	137.37	0.76	4.95E-02	98.0%	9.90E-04	4.34E-03
Hexane	x	x	110-54-3	86.18	6.57	2.68E-01	98.0%	5.37E-03	2.35E-02
Hydrogen Sulfide	--	--	7783-06-4	34.08	35.5	5.74E-01	98.0%	1.15E-02	5.02E-02
Mercury (total)	x	--	7439-97-6	200.61	2.92E-04	2.78E-05	0.0%	2.78E-05	1.22E-04
Methyl Ethyl Ketone (2-butanone)	x	x	78-93-3	72.11	7.09	2.42E-01	98.0%	4.85E-03	2.12E-02
Methyl Isobutyl Ketone (hexone)	x	x	108-10-1	100.16	1.87	8.88E-02	98.0%	1.78E-03	7.78E-03
Methyl Mercaptan	--	x	74-93-1	48.11	2.49	5.68E-02	98.0%	1.14E-03	4.97E-03
Pentane	--	x	109-66-0	72.15	3.29	1.13E-01	98.0%	2.25E-03	9.86E-03
ethene)	x	x	127-18-4	165.83	3.73	2.93E-01	98.0%	5.86E-03	2.57E-02
Propane	--	x	74-98-6	44.1	11.1	2.32E-01	98.0%	4.64E-03	2.03E-02
Toluene (methylbenzene)	x	x	108-88-3	92.14	39.3	1.72E+00	98.0%	3.43E-02	1.50E-01
Trichloroethylene (trichloroethene)	x	x	79-01-6	131.38	2.82	1.76E-01	98.0%	3.51E-03	1.54E-02
t - 1,2 - Dichloroethene (1,2 dichloroethylene)	--	--	156-60-5	96.94	2.84	1.31E-01	98.0%	2.61E-03	1.14E-02
Vinyl Chloride (chloroethylene, VCM)	x	x	75-01-4	62.50	7.34	2.17E-01	98.0%	4.35E-03	1.91E-02
Xylenes (m, o, p)	x	x	1330-20-7	106.17	12.1	6.09E-01	98.0%	1.22E-02	5.33E-02
Hydogen Chloride	x	--	7647-01-0	36.50	42.0	7.27E-01	0.0%	7.27E-01	3.18E+00
Total HAP[e]								0.83	3.6
Maximum Single HAP								0.73	3.18

[a]EPA 1998. "Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources" (AP-42), 5th Ed., November

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent and control. Control efficiencies for non-halogenated species range from 38 to 91 percent. For permitting purposes, the lower end of each ranges is used here.

[c]Product of combustion

[d]Because HCl is a production of combustion, a default <u>outlet</u> concentration is listed; AP-42, Section 2.4.4.

Note: "x" denotes a HAP only or a HAP and VOC; "y" denotes a VOC only

BASELINE ACTUAL EMISSIONS

EU NO.	Description	Reference	Maximum Potential Flow Rate (scfm)	Emissions							
				NO_x		CO		SO_2		PM_{10}	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
003	Enclosed Flare - 3,000 scfm (Unit# 1698) w/EVAP (Unit# 3004IM)	MFR Guarantee & Field Data	2,105	3.6	15.4	12.0	51	123.53	526.34	0.94	4.0
005	3,000 scfm Enclosed Flare (Unit# 1776) w/EVAP (Unit# 3016)	MFR Guarantee & Field Data	2,170	3.7	15.7	12.2	52	127.32	545.42	0.96	4.1
004	3,000 scfm Open, Unenclosed Flare (Unit# 1495)[a]	MFR Guarantee	0	0	0	0	0	0	0	0	0
CURRENT TOTAL - Two (2) Enclosed Flares (Unit#1776/1698), two (2) EVAPs (Unit# 3016/3004IM), and Unit #1495			4,275	7.3	31.1	24.3	103.7	250.9	1,071.8	1.9	8.1

Note: Fuel and Equipment parameters provided by Okeechobee Landfill from actual measurements of flow, hrs operation, and CH4%. See attached data s

BASELINE ACTUAL EMISSIONS

EU NO.	Description	Reference	Emissions NMOC (lb/hr)	NMOC (tpy)	VOC (lb/hr)	VOC (tpy)	HAP (Total) (lb/hr)	HAP (Total) (tpy)	HAP (Single) (lb/hr)	HAP (Single) (tpy)
003	Enclosed Flare - 3,000 scfm (Unit# 1698) w/EVAP (Unit# 3004IM)	MFR Guarantee & Field Data	0.34	1.45	0.13	0.57	0.58	2.5	0.51	2.17
005	3,000 scfm Enclosed Flare (Unit# 1776) w/EVAP (Unit# 3016)	MFR Guarantee & Field Data	0.35	1.51	0.14	0.59	0.60	2.6	0.53	2.25
004	3,000 scfm Open, Unenclosed Flare (Unit# 1495)[a]	MFR Guarantee	0	0	0	0	0	0	0	0
CURRENT TOTAL - Two (2) Enclosed Flares (Unit#1776/1698), two (2) EVAPs (Unit# 3016/3004IM), and Unit #1495			0.69	3.0	0.3	1.2	1.2	5.0	1.0	4.4

Note: Fuel and Equipment parameters provided by Okeechobee Landsheet summaries.

EU003 3,000-scfm enclosed flare w/evap

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft^3/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft^3	
LFG Methane Component[c]	48%		
LFG Typical Heating Value	477	Btu/ft^3	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%		
Methane Combustion Constant[d]	9.53	ft^3 air/ft^3 CH_4	

[a]Industrial STP (60°F, 30.00 in. Hg, 1 atm)
[b]Typical
[c]Assumed
[d]*Professional Engineering Registration Program*, 23-9.

Fuel & Equipment - Enclosed Flare

Flare Information	Value		Equivalent
Operation Period[a]	8,522	hr	
LFG inlet flow, standard[b]	2,105	scfm	
LFG Inlet Flow, dry standard	1,937	dscfm	
Heat Input	60	MMBtu/hr	
Design Flare Operating Temperature[c]	1,400	°F	1,860 °R
Excess Air for Combustion[c]	230%		
Flare Tip Flow, standard	33,675	scfm	
Flare Tip Flow, actual	120,452	acfm	
Flare Tip Diameter[b]	10.0	ft	
Flare Tip Exhaust Velocity	1,534	ft/min	25.6 ft/s
Flare Tip Height, above local grade[b]	45	ft	

[a]Permit Applicant
[b]Flare manufacturer
[c]Function of design flame temperature; values are typical and are provided for 1400°F, 1600°F, 1800°F, and 2000°Fby a flare manufactuer

EU005 3,000-scfm enclosed flare w/evap

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft^3/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft^3	
LFG Methane Component[c]	47%		
LFG Typical Heating Value	469	Btu/ft^3	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%		
Methane Combustion Constant[d]	9.53	ft^3 air/ft^3 CH_4	

[a]Industrial STP (60°F, 30.00 in. Hg, 1 atm)
[b]Typical
[c]Assumed
[d]*Professional Engineering Registration Program*, 23-9.

Fuel & Equipment - Enclosed Flare

Flare Information	Value		Equivalent
Operation Period[a]	8,568	hr	
LFG inlet flow, standard[b]	2,170	scfm	
LFG Inlet Flow, dry standard	1,996	dscfm	
Heat Input	61	MMBtu/hr	
Design Flare Operating Temperature[c]	1,400	°F	1,860 °R
Excess Air for Combustion[c]	230%		
Flare Tip Flow, standard	34,196	scfm	
Flare Tip Flow, actual	122,317	acfm	
Flare Tip Diameter[b]	10.0	ft	
Flare Tip Exhaust Velocity	1,557	ft/min	26.0 ft/s
Flare Tip Height, above local grade[b]	45	ft	

[a]Permit Applicant
[b]Flare manufacturer - based on LFG model EF1045I12
[c]Function of design flame temperature; values are typical and are provided for 1400°F, 1600°F, 1800°F, and 2000°Fby a flare manufactuer

Criteria Pollutant Emissions - Enclosed Flare
EU003 3,000-scfm enclosed flare w/evap

Operation Period	8,522	hr
LFG inlet flow, standard	2,105	scfm
Heat Input	60	MMBtu/hr

SO_2 Emission Rate

SO_2 concentration in exhaust gas	5796.80	ppmv		
SO_2 emission rate	123.53	lb/hr	526.3	tpy

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]	Control Eff[a,b]	Individual Compound Contribution to SO_2: No. of S Atoms	S Conc (ppmv)	SO_2 Emiss (lb/hr)
Carbon Disulfide	75-15-0	76.13	0.58	99.7%	2	1.16	0.02
Carbonyl Sulfide	463-58-1	60.07	0.49	99.7%	1	0.49	0.01
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82	99.7%	1	7.80	0.17
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28	99.7%	1	2.27	0.05
Hydrogen Sulfide	7783-06-4	34.08	**5800.00**	99.7%	1	5782.6	123.23
Methyl Mercaptan	74-93-1	48.11	2.49	99.7%	1	2.48	0.05
				Total Contribution to SO_2 :		5796.80	123.53

PM_{10} Emission Rate

PM emission factor[a]	17	lb/MM dscf CH_4		
PM emission rate	0.94	lb/hr	4.0	tpy

NO_2 Emission Rate

NO_2 emission factor[c]	0.06	lb/MMBtu		
NO_2 emission rate	3.6	lb/hr	15.4	tpy

CO Emission Rate

CO emission factor[c]	0.20	lb/MMBtu		
CO emission rate	12.0	lb/hr	51	tpy

NMOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
MW hexane	86.18	lb/lb-mol		
destruction efficiency	98%			
mass NMOC inlet gas	17.1	lb/hr		
NMOC emission rate	0.34	lb/hr	1.45	tpy

VOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
VOC fraction of NMOC[a]	39%			
VOC concentration in inlet gas	232	ppmv		
MW hexane	86.18	lb/lb-mol		
mass VOC inlet gas	6.7	lb/hr		
destruction efficiency	98%			
VOC emission rate	0.13	lb/hr	0.57	tpy

[a]U.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources* ("AP-42"), *5th Ed.,* November 1998. Tables 2.4-1, 2.4-2, 2.4-3, 2.4-5.\

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent. The upper end of the range is used here resulting in maximum calculated emissions of SO2.

[c]LFG Specialties Inc. (typical)

Emissions Calculations
Okeechobee (Berman Road) Landfill
Okeechobee, Fl

Criteria Pollutant Emissions - Enclosed Flare
EU005 3,000-scfm enclosed flare w/evap

Operation Period	8,568	hr
LFG inlet flow, standard	2,170	scfm
Heat Input	61	MMBtu/hr

SO_2 Emission Rate

SO_2 concentration in exhaust gas	5796.80	ppmv		
SO_2 emission rate	127.32	lb/hr	545.4	tpy

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]	Control Eff[a,b]	Individual Compound Contribution to SO_2: No. of S Atoms	S Conc (ppmv)	SO_2 Emiss (lb/hr)
Carbon Disulfide	75-15-0	76.13	0.58	99.7%	2	1.16	0.03
Carbonyl Sulfide	463-58-1	60.07	0.49	99.7%	1	0.49	0.01
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82	99.7%	1	7.80	0.17
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28	99.7%	1	2.27	0.05
Hydrogen Sulfide	7783-06-4	34.08	**5800.00**	99.7%	1	5782.6	127.01
Methyl Mercaptan	74-93-1	48.11	2.49	99.7%	1	2.48	0.05
				Total Contribution to SO_2:		5796.80	127.32

PM_{10} Emission Rate

PM emission factor[a]	17	lb/MM dscf CH_4		
PM emission rate	0.96	lb/hr	4.1	tpy

NO_2 Emission Rate

NO_2 emission factor[c]	0.06	lb/MMBtu		
NO_2 emission rate	3.7	lb/hr	15.7	tpy

CO Emission Rate

CO emission factor[c]	0.20	lb/MMBtu		
CO emission rate	12.2	lb/hr	52	tpy

NMOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
MW hexane	86.18	lb/lb-mol		
destruction efficiency	98%			
mass NMOC inlet gas	17.6	lb/hr		
NMOC emission rate	0.35	lb/hr	1.51	tpy

VOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
VOC fraction of NMOC[a]	39%			
VOC concentration in inlet gas	232	ppmv		
MW hexane	86.18	lb/lb-mol		
mass VOC inlet gas	6.9	lb/hr		
destruction efficiency	98%			
VOC emission rate	0.14	lb/hr	0.59	tpy

[a] U.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources* ("AP-42"), *5th Ed.,* November 1998. Tables 2.4-1, 2.4-2, 2.4-3, 2.4-5.\

[b] AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent. The upper end of the range is used here resulting in maximum calculated emissions of SO2.

[c] LFG Specialties Inc. (typical)

Emissions Calculations
LFG inlet flow | 2,105 | scfm — **Okeechobee (Berman Road) Landfill**
EU003 3,000-scfm enclosed flare w/evap — **Okeechobee, Fl**

LFG Compound	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas (ppmv)[a]	(lb/hr)	Control Eff[a,b]	Flare Exhaust (lb/hr)*	(tpy)*
1,1,1 - Trichloroethane (methyl chloroform)	x	--	71-55-6	133.41	0.48	2.13E-02	98.0%	4.26E-04	1.82E-03
1,1,2,2 - Tetrachloroethane	x	x	79-34-5	167.85	1.11	6.20E-02	98.0%	1.24E-03	5.28E-03
1,1,2 - Trichloroethane (1,1,2 TCA)	x	x	79-00-5	133.41	0.10	4.44E-03	98.0%	8.88E-05	3.78E-04
1,1 - Dichloroethane (ethylidene dichloride)	x	x	75-34-3	98.96	2.35	7.74E-02	98.0%	1.55E-03	6.59E-03
1,1 - Dichloroethene (vinylidene chloride)	x	x	75-35-4	96.94	0.20	6.48E-03	98.0%	1.30E-04	5.52E-04
1,2 - Dichloroethane (ethylene dichloride)	x	x	107-06-2	98.96	0.41	1.34E-02	98.0%	2.68E-04	1.14E-03
1,2 - Dichloropropane (propylene dichloride)	x	x	78-87-5	112.99	0.18	6.77E-03	98.0%	1.35E-04	5.76E-04
2-Propanol (isopropyl alcohol)	--	x	67-63-0	60.11	50.1	1.00E+00	98.0%	2.00E-02	8.54E-02
Acetone (2-propanone)	--	--	67-64-1	58.08	7.01	1.35E-01	98.0%	2.71E-03	1.15E-02
Acrylonitrile (Propenenitrile)	x	x	107-13-1	53.06	6.33	1.12E-01	98.0%	2.23E-03	9.52E-03
Benzene	x	x	71-43-2	78.12	1.91	4.96E-02	98.0%	9.93E-04	4.23E-03
Bromodichloromethane	--	x	75-27-4	163.83	3.13	1.71E-01	98.0%	3.41E-03	1.45E-02
Butane	--	x	106-97-8	58.12	5.03	9.72E-02	98.0%	1.94E-03	8.29E-03
Carbon Disulfide	x	x	75-15-0	76.14	0.58	1.48E-02	98.0%	2.95E-04	1.26E-03
Carbon Tetrachloride	x	x	56-23-5	153.84	0.004	2.05E-04	98.0%	4.09E-06	1.74E-05
Carbonyl Sulfide	x	x	463-58-1	60.07	0.49	9.79E-03	98.0%	1.96E-04	8.34E-04
Chlorobenzene (monochlorobenzene)	x	x	108-90-7	112.56	0.25	9.51E-03	98.0%	1.90E-04	8.10E-04
Chlorodifluoromethane (CFC-22, freon-22)	--	--	75-45-6	86.47	1.30	3.74E-02	98.0%	7.48E-04	3.19E-03
Chloroethane (ethyl chloride)	x	x	75-00-3	64.52	1.25	2.68E-02	98.0%	5.37E-04	2.29E-03
Chloroform (trichloromethane)	x	x	67-66-3	119.38	0.03	1.19E-03	98.0%	2.38E-05	1.02E-04
Chloromethane (methyl chloride)	x	x	74-87-3	50.49	1.21	2.03E-02	98.0%	4.06E-04	1.73E-03
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	106-46-7	147	0.21	1.04E-02	98.0%	2.08E-04	8.88E-04
Dichlorodifluoromethane (CFC-12, freon-12)	--	--	75-71-8	120.91	15.7	6.31E-01	98.0%	1.26E-02	5.38E-02
Dichlorofluoromethane (freon-21)	--	--	75-43-4	102.92	2.62	8.97E-02	98.0%	1.79E-03	7.64E-03
Dichloromethane (methylene chloride)	x	--	75-09-2	84.93	14.3	4.04E-01	98.0%	8.08E-03	3.44E-02
Dimethyl Sulfide (methyl sulfide)	--	x	75-18-3	62.13	7.82	1.62E-01	98.0%	3.23E-03	1.38E-02
Ethane	--	--	74-84-0	30.07	889	8.89E+00	98.0%	1.78E-01	7.58E-01
Ethanol (ethyl alcohol)	--	x	64-17-5	46.08	27.2	4.17E-01	98.0%	8.34E-03	3.55E-02
Ethylbenzene[g]	x	x	100-41-4	106.17	4.61	1.63E-01	98.0%	3.26E-03	1.39E-02
Ethyl Mercaptan (ethanethiol)	--	x	75-08-1	62.13	1.25	2.58E-02	98.0%	5.17E-04	2.20E-03
Ethylene dibromide (1,2 dibromoethane)	x	x	106-93-4	187.88	0.001	6.25E-05	98.0%	1.25E-06	5.33E-06
Fluorotrichloromethane (CFC-11, freon-11)	--	--	75-69-4	137.37	0.76	3.47E-02	98.0%	6.95E-04	2.96E-03
Hexane	x	x	110-54-3	86.18	6.57	1.88E-01	98.0%	3.77E-03	1.60E-02
Hydrogen Sulfide	--	--	7783-06-4	34.08	**5800.0**	6.57E+01	98.0%	1.31E+00	5.60E+00
Mercury (total)	x	--	7439-97-6	200.61	2.92E-04	1.95E-05	0.0%	1.95E-05	8.30E-05
Methyl Ethyl Ketone (2-butanone)	x	x	78-93-3	72.11	7.09	1.70E-01	98.0%	3.40E-03	1.45E-02
Methyl Isobutyl Ketone (hexone)	x	x	108-10-1	100.16	1.87	6.23E-02	98.0%	1.25E-03	5.31E-03
Methyl Mercaptan	--	x	74-93-1	48.11	2.49	3.98E-02	98.0%	7.97E-04	3.40E-03
Pentane	--	x	109-66-0	72.15	3.29	7.90E-02	98.0%	1.58E-03	6.73E-03
ethene)	x	x	127-18-4	165.83	3.73	2.06E-01	98.0%	4.11E-03	1.75E-02
Propane	--	x	74-98-6	44.1	11.1	1.63E-01	98.0%	3.26E-03	1.39E-02
Toluene (methylbenzene)	x	x	108-88-3	92.14	39.3	1.20E+00	98.0%	2.41E-02	1.03E-01
Trichloroethylene (trichloroethene)	x	x	79-01-6	131.38	2.82	1.23E-01	98.0%	2.46E-03	1.05E-02
t - 1,2 - Dichloroethene (1,2 dichloroethylene)	--	--	156-60-5	96.94	2.84	9.16E-02	98.0%	1.83E-03	7.80E-03
Vinyl Chloride (chloroethylene, VCM)	x	x	75-01-4	62.50	7.34	1.53E-01	98.0%	3.05E-03	1.30E-02
Xylenes (m, o, p)	x	x	1330-20-7	106.17	12.1	4.27E-01	98.0%	8.55E-03	3.64E-02
Hydogen Chloride	x	--	7647-01-0	36.50	42.0	5.10E-01	0.0%	5.10E-01	2.17E+00
Total HAP[e]								0.58	2.5
Maximum Single HAP								0.51	2.17

[a]EPA 1998. "Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources" (AP-42), 5th Ed., November

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent and control. Control efficiencies for non-halogenated species range from 38 to 91 percent. For permitting purposes, the lower end of each ranges is used here.

[c]Product of combustion

[d]Because HCl is a production of combustion, a default <u>outlet</u> concentration is listed; AP-42, Section 2.4.4.

Note: "x" denotes a HAP only or a HAP and VOC; "y" denotes a VOC only.

LFG inlet flow 2,170 scfm

EU005 3,000-scfm enclosed flare w/evap

LFG Compound	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas (ppmv)[a]	(lb/hr)	Control Eff[a,b]	Flare Exhaust (lb/hr)*	(tpy)*
1,1,1 - Trichloroethane (methyl chloroform)	x	--	71-55-6	133.41	0.48	2.20E-02	98.0%	4.39E-04	1.88E-03
1,1,2,2 - Tetrachloroethane	x	x	79-34-5	167.85	1.11	6.39E-02	98.0%	1.28E-03	5.47E-03
1,1,2 - Trichloroethane (1,1,2 TCA)	x	x	79-00-5	133.41	0.10	4.57E-03	98.0%	9.15E-05	3.92E-04
1,1 - Dichloroethane (ethylidene dichloride)	x	x	75-34-3	98.96	2.35	7.97E-02	98.0%	1.59E-03	6.83E-03
1,1 - Dichloroethene (vinylidene chloride)	x	x	75-35-4	96.94	0.20	6.68E-03	98.0%	1.34E-04	5.72E-04
1,2 - Dichloroethane (ethylene dichloride)	x	x	107-06-2	98.96	0.41	1.38E-02	98.0%	2.76E-04	1.18E-03
1,2 - Dichloropropane (propylene dichloride)	x	x	78-87-5	112.99	0.18	6.97E-03	98.0%	1.39E-04	5.97E-04
2-Propanol (isopropyl alcohol)	--	x	67-63-0	60.11	50.1	1.03E+00	98.0%	2.06E-02	8.85E-02
Acetone (2-propanone)	--	--	67-64-1	58.08	7.01	1.40E-01	98.0%	2.79E-03	1.20E-02
Acrylonitrile (Propenenitrile)	x	x	107-13-1	53.06	6.33	1.15E-01	98.0%	2.30E-03	9.87E-03
Benzene	x	x	71-43-2	78.12	1.91	5.12E-02	98.0%	1.02E-03	4.38E-03
Bromodichloromethane	--	x	75-27-4	163.83	3.13	1.76E-01	98.0%	3.52E-03	1.51E-02
Butane	--	x	106-97-8	58.12	5.03	1.00E-01	98.0%	2.00E-03	8.59E-03
Carbon Disulfide	x	x	75-15-0	76.14	0.58	1.52E-02	98.0%	3.04E-04	1.30E-03
Carbon Tetrachloride	x	x	56-23-5	153.84	0.004	2.11E-04	98.0%	4.22E-06	1.81E-05
Carbonyl Sulfide	x	x	463-58-1	60.07	0.49	1.01E-02	98.0%	2.02E-04	8.65E-04
Chlorobenzene (monochlorobenzene)	x	x	108-90-7	112.56	0.25	9.80E-03	98.0%	1.96E-04	8.40E-04
Chlorodifluoromethane (CFC-22, freon-22)	--	--	75-45-6	86.47	1.30	3.85E-02	98.0%	7.71E-04	3.30E-03
Chloroethane (ethyl chloride)	x	x	75-00-3	64.52	1.25	2.76E-02	98.0%	5.53E-04	2.37E-03
Chloroform (trichloromethane)	x	x	67-66-3	119.38	0.03	1.23E-03	98.0%	2.46E-05	1.05E-04
Chloromethane (methyl chloride)	x	x	74-87-3	50.49	1.21	2.09E-02	98.0%	4.19E-04	1.79E-03
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	106-46-7	147	0.21	1.07E-02	98.0%	2.15E-04	9.20E-04
Dichlorodifluoromethane (CFC-12, freon-12)	--	--	75-71-8	120.91	15.7	6.51E-01	98.0%	1.30E-02	5.58E-02
Dichlorofluoromethane (freon-21)	--	--	75-43-4	102.92	2.62	9.24E-02	98.0%	1.85E-03	7.92E-03
Dichloromethane (methylene chloride)	x	--	75-09-2	84.93	14.3	4.16E-01	98.0%	8.33E-03	3.57E-02
Dimethyl Sulfide (methyl sulfide)	--	x	75-18-3	62.13	7.82	1.67E-01	98.0%	3.33E-03	1.43E-02
Ethane	--	--	74-84-0	30.07	889	9.16E+00	98.0%	1.83E-01	7.85E-01
Ethanol (ethyl alcohol)	--	x	64-17-5	46.08	27.2	4.30E-01	98.0%	8.59E-03	3.68E-02
Ethylbenzene[g]	x	x	100-41-4	106.17	4.61	1.68E-01	98.0%	3.36E-03	1.44E-02
Ethyl Mercaptan (ethanethiol)	--	x	75-08-1	62.13	1.25	2.66E-02	98.0%	5.33E-04	2.28E-03
Ethylene dibromide (1,2 dibromoethane)	x	x	106-93-4	187.88	0.001	6.44E-05	98.0%	1.29E-06	5.52E-06
Fluorotrichloromethane (CFC-11, freon-11)	--	--	75-69-4	137.37	0.76	3.58E-02	98.0%	7.16E-04	3.07E-03
Hexane	x	x	110-54-3	86.18	6.57	1.94E-01	98.0%	3.88E-03	1.66E-02
Hydrogen Sulfide	--	--	7783-06-4	34.08	**5800.0**	6.78E+01	98.0%	1.36E+00	5.81E+00
Mercury (total)	x	--	7439-97-6	200.61	2.92E-04	2.01E-05	0.0%	2.01E-05	8.60E-05
Methyl Ethyl Ketone (2-butanone)	x	x	78-93-3	72.11	7.09	1.75E-01	98.0%	3.51E-03	1.50E-02
Methyl Isobutyl Ketone (hexone)	x	x	108-10-1	100.16	1.87	6.42E-02	98.0%	1.28E-03	5.50E-03
Methyl Mercaptan	--	x	74-93-1	48.11	2.49	4.11E-02	98.0%	8.21E-04	3.52E-03
Pentane	--	x	109-66-0	72.15	3.29	8.14E-02	98.0%	1.63E-03	6.97E-03
ethene)	x	x	127-18-4	165.83	3.73	2.12E-01	98.0%	4.24E-03	1.82E-02
Propane	--	x	74-98-6	44.1	11.1	1.68E-01	98.0%	3.36E-03	1.44E-02
Toluene (methylbenzene)	x	x	108-88-3	92.14	39.3	1.24E+00	98.0%	2.48E-02	1.06E-01
Trichloroethylene (trichloroethene)	x	x	79-01-6	131.38	2.82	1.27E-01	98.0%	2.54E-03	1.09E-02
t - 1,2 - Dichloroethene (1,2 dichloroethylene)	--	--	156-60-5	96.94	2.84	9.44E-02	98.0%	1.89E-03	8.09E-03
Vinyl Chloride (chloroethylene, VCM)	x	x	75-01-4	62.50	7.34	1.57E-01	98.0%	3.15E-03	1.35E-02
Xylenes (m, o, p)	x	x	1330-20-7	106.17	12.1	4.40E-01	98.0%	8.81E-03	3.77E-02
Hydogen Chloride	x	--	7647-01-0	36.50	42.0	5.26E-01	0.0%	5.26E-01	2.25E+00
Total HAP[e]								0.60	2.6
Maximum Single HAP								0.53	2.25
VOC								0.11	0.5

[a]EPA 1998. "Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources" (AP-42), 5th Ed., November

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent and control. Control efficiencies for non-halogenated species range from 38 to 91 percent. For permitting purposes, the lower end of each ranges is used here.

[c]Product of combustion

[d]Because HCl is a production of combustion, a default <u>outlet</u> concentration is listed; AP-42, Section 2.4.4.

Note: "x" denotes a HAP only or a HAP and VOC; "y" denotes a VOC only

EU003 3,000-scfm enclosed flare w/evap
Unit #1 - Summary of Field Collected Data
Flare Operation June 2004 - June 2006

Month	Operational (hours)	Average CH4 (%)	Average Flow (scfm) To Flare	Average Flow (scfm) To EVAP	Average Flow (scfm) Total
July	742.37	55.1	1,894	235	2,129
August	730.22	57.9	1,886	275	2,161
September	618.12	52.9	1,755	241	1,996
October	724.67	54	1,664	294	1,958
November	709.5	52.6	1,552	300	1,852
December	729.38	50.6	1,293	229	1,522
January (05)	739.35	50.7	1,358	194	1,552
February	669.58	54.3	1,641	255	1,896
March	740.08	53.1	1,632	268	1,900
April	718.92	51.1	1,557	314	1,871
May	735.13	43.9	1,524	357	1,881
June	710.5	46.4	1,515	322	1,837
July	740.35	47.8	1,521	316	1,837
August	734.32	48	1,594	314	1,908
September	709.73	45.3	1,881	315	2,196
October	670.45	42	2,188	275	2,463
November	716.25	44.7	1,964	164	2,128
December	738.57	43.3	1,904	233	2,137
January (06)	738.35	46.2	2075	241	2316
February	667.43	43.8	2099	258	2357
March	737.25	42	2064	251	2315
April	570.4	41.1	2388	261	2649
May	738.22	39.2	2493	258	2751
June	713.9	38.5	2632	277	2909
AVERAGES:	**710.1**	**47.7**	**1836**	**269**	**2105**

EU005 3,000-scfm enclosed flare w/evap
Unit #2 - summary of Field Collected Data
Flare Operation - June 2004 - June 2006

Month	Operational (hours)	Average CH4 (%)	Average Flow (scfm) To Flare	Average Flow (scfm) To EVAP	Average Flow (scfm) Total
July	740.47	54.1	1,610	329	1,939
August	742.5	55.5	1,756	280	2,036
September	604.5	51.7	1,576	375	1,951
October	737.83	52.9	1,511	382	1,893
November	717.92	52	1,517	379	1,896
December	690.32	52.4	2,006	219	2,225
January (05)	743.72	48.5	1,425	357	1,782
February	671.75	51.7	1,741	364	2,105
March	741.5	48.7	1,692	380	2,072
April	718.67	48.9	1,570	366	1,936
May	744	47.7	1,513	382	1,895
June	714.4	44.6	1,576	366	1,942
July	744	50.2	1,561	325	1,886
August	740.1	50.4	1,716	327	2,043
September	720	45.4	1,708	350	2,058
October	739.77	41.9	1,786	360	2,146
November	717.43	40.5	1,621	322	1,943
December	742.18	42.7	2,168	327	2,495
January (06)	741.58	45.4	2359	312	2671
February	671.18	43.4	2452	324	2776
March	742.6	41.7	2467	324	2791
April	719.63	39.6	2333	334	2667
May	742.9	38	2088	322	2410
June	546.13	38.6	2190	323	2513
TOTALS / AVERAGES:	**714.0**	**46.9**	**1831**	**339**	**2170**

SUMMARY - PROPOSED POTENTIAL TO EMIT

EU NO.	Description	Reference	Max. Potential LFG Flow (scfm)	Emissions NO_x (lb/hr)	NO_x (tpy)	CO (lb/hr)	CO (tpy)	SO_2 (lb/hr)	SO_2 (tpy)	PM_{10} (lb/hr)	PM_{10} (tpy)
003	Enclosed Flare - 3,000 scfm w/EVAP	MFR Guarantee	3,000	5.94	26.02	19.80	86.72	176.05	771.11	1.55	6.78
005	3,000 scfm Enclosed Flare w/EVAP	MFR Guarantee	3,000	5.94	26.02	19.80	86.72	176.05	771.11	1.55	6.78
004	3,000 scfm Open, Unenclosed Flare	MFR Guarantee	0	0	0	0	0	0	0	0	0
NEW	*Open - 6,000 scfm*	MFR Guarantee	6,013	13.49	59.10	73.4	321.6	352.87	1,545.57	3.10	13.59
NEW	*3,000 scfm Open, Unenclosed Flare (Temporary)*	MFR Guarantee	3,014	6.76	29.62	36.8	161.2	176.87	774.71	1.56	6.81
PROPOSED TOTAL - Two Enclosed Flares with EVAPs, 6,000-scfm Utilty Flare, PROPOSED 3,000-scfm Utility Flare (odor control) and Backup 3,000-scfm Utilty Flare Unit #1495			9,027	20.3	88.7	110.2	482.8	529.7	2,320.3	4.7	20.4

SUMMARY - PROPOSED POTENTIAL TO EMIT

			Emissions							
			NMOC		VOC		HAP (Total)		HAP (Single)	
EU NO.	Description	Reference	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
003	Enclosed Flare - 3,000 scfm w/EVAP	MFR Guarantee	0.49	2.13	0.19	0.83	0.83	3.63	0.73	3.18
005	3,000 scfm Enclosed Flare w/EVAP	MFR Guarantee	0.49	2.13	0.19	0.83	0.83	3.63	0.73	3.18
004	3,000 scfm Open, Unenclosed Flare	MFR Guarantee	0	0	0	0	0	0	0	0
NEW	*Open - 6,000 scfm*	MFR Guarantee	0.97	4.27	0.38	1.66	1.66	7.27	1.46	6.38
NEW	*3,000 scfm Open, Unenclosed Flare (Temporary)*	MFR Guarantee	0.49	2.14	0.19	0.83	0.83	3.64	0.73	3.20
PROPOSED TOTAL - Two Enclosed Flares with EVAPs, 6,000-scfm Utilty Flare, PROPOSED 3,000-scfm Utility Flare (odor control) and Backup 3,000-scfm Utilty Flare Unit #1495			2.4	6.4	0.6	2.5	2.5	10.9	2.2	9.6

EU NEW - Proposed 6,000-scfm utility flare

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft³/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft³	
LFG Methane Component[c]	55%	%	
LFG Typical Heating Value	550	Btu/ft³	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%	%	

[a]Industrial STP (60°F, 30.00 in. Hg, 1 atm)
[b]Typical
[c]Assumed

Fuel & Equipment - Open Flare

Flare Information	Value		Equivalent
No. of Hours of Operation Per Day[a]	24	hr	
No. of Days in Averaging Period[a]	365	day	
Operation Period[a]	8,760	hr	
LFG inlet flow, standard[a]	6,013	scfm	
LFG Inlet Flow, dry standard	5,532	dscfm	
Heat Input	198.4	MMBtu/hr	
Design Flare Operating Temperature[b]	1,400	°F	1,860 °R
Flare Tip Flow, standard	6,013	scfm	
Flare Tip Flow, actual	6,476	acfm	
Flare Tip Diameter[b]	1.50	ft	
Flare Tip Exhaust Velocity	3,664	ft/min	61.1 ft/s
Flare Tip Height, above local grade[b]	45	ft	

[a]Permit Applicant
[b]Flare manufacturer

EU NEW - Proposed 3,000-scfm utility flare

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft^3/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft^3	
LFG Methane Component[c]	55%	%	
LFG Typical Heating Value	550	Btu/ft^3	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%	%	

[a]Industrial STP (60°F, 30.00 in. Hg, 1 atm)
[b]Typical
[c]Assumed

Fuel & Equipment - Open Flare

Flare Information	Value		Equivalent
No. of Hours of Operation Per Day[a]	24	hr	
No. of Days in Averaging Period[a]	365	day	
Operation Period[a]	8,760	hr	
LFG inlet flow, standard[a]	3,014	scfm	
LFG Inlet Flow, dry standard	2,773	dscfm	
Heat Input	99.5	MMBtu/hr	
Design Flare Operating Temperature[b]	1,400	°F	1,860 °R
Flare Tip Flow, standard	3,014	scfm	
Flare Tip Flow, actual	3,246	acfm	
Flare Tip Diameter[b]	1.00	ft	
Flare Tip Exhaust Velocity	4,133	ft/min	68.9 ft/s
Flare Tip Height, above local grade[b]	33	ft	

[a]Permit Applicant
[b]Flare manufacturer

EU003 3,000-scfm enclosed flare w/evap

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft^3/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft^3	
LFG Methane Component[c]	55%		
LFG Typical Heating Value	550	Btu/ft^3	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%		
Methane Combustion Constant[d]	9.53	ft^3 air/ft^3 CH_4	

[a]*Industrial STP (60°F, 30.00 in. Hg, 1 atm)*
[b]Typical
[c]Assumed
[d]*Professional Engineering Registration Program*, 23-9.

Fuel & Equipment - Enclosed Flare

Flare Information	Value		Equivalent
Operation Period[a]	8,760	hr	
LFG inlet flow, standard[b]	3,000	scfm	
LFG Inlet Flow, dry standard	2,760	dscfm	
Heat Input	99	MMBtu/hr	
Design Flare Operating Temperature[c]	1,400	°F	1,860 °R
Excess Air for Combustion[c]	230%		
Flare Tip Flow, standard	54,891	scfm	
Flare Tip Flow, actual	196,340	acfm	
Flare Tip Diameter[b]	10.0	ft	
Flare Tip Exhaust Velocity	2,500	ft/min	41.7 ft/s
Flare Tip Height, above local grade[b]	45	ft	

[a]Permit Applicant
[b]Flare manufacturer - based on LFG model EF1045I12
[c]Function of design flame temperature; values are typical and are provided for 1400°F, 1600°F, 1800°F, and 2000°Fby a flare manufactuer

EU005 3,000-scfm enclosed flare w/evap

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft³/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft³	
LFG Methane Component[c]	55%		
LFG Typical Heating Value	550	Btu/ft³	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%		
Methane Combustion Constant[d]	9.53	ft³ air/ft³ CH_4	

[a]Industrial STP (60°F, 30.00 in. Hg, 1 atm)
[b]Typical
[c]Assumed
[d]*Professional Engineering Registration Program*, 23-9.

Fuel & Equipment - Enclosed Flare

Flare Information	Value		Equivalent
Operation Period[a]	8,760	hr	
LFG inlet flow, standard[b]	3,000	scfm	
LFG Inlet Flow, dry standard	2,760	dscfm	
Heat Input	99	MMBtu/hr	
Design Flare Operating Temperature[c]	1,400	°F	1,860 °R
Excess Air for Combustion[c]	230%		
Flare Tip Flow, standard	54,891	scfm	
Flare Tip Flow, actual	196,340	acfm	
Flare Tip Diameter[b]	10.0	ft	
Flare Tip Exhaust Velocity	2,500	ft/min	41.7 ft/s
Flare Tip Height, above local grade[b]	45	ft	

[a]Permit Applicant
[b]Flare manufacturer - based on LFG model EF1045I12
[c]Function of design flame temperature; values are typical and are provided for 1400°F, 1600°F, 1800°F, and 2000°Fby a flare manufactuer

EU NEW - Proposed 6,000-scfm utility flare
Criteria Pollutant Emissions - Open Flare

Operation Period	8,760	hr
LFG inlet flow, standard	6,013	scfm
Heat Input	198.4	MMBtu/hr

SO_2 Emission Rate

SO_2 concentration in exhaust gas	5796.80	ppmv		
SO_2 emission rate	352.87	lb/hr	1545.57	ton/yr

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]	Control Eff[a,b]	Individual Compound Contribution to SO_2: No. of S Atoms	S Conc (ppmv)	SO_2 Emiss (lb/hr)
Carbon Disulfide	75-15-0	76.13	0.58	99.7%	2	1.16	0.07
Carbonyl Sulfide	463-58-1	60.07	0.49	99.7%	1	0.49	0.03
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82	99.7%	1	7.80	0.47
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28	99.7%	1	2.27	0.14
Hydrogen Sulfide	7783-06-4	34.08	**5800.00**	99.7%	1	5782.6	352.00
Methyl Mercaptan	74-93-1	48.11	2.49	99.7%	1	2.48	0.15
					Total Contribution to SO_2 :	5796.80	352.87

PM_{10} Emission Rate

PM emission factor[a]	17	lb/MM dscf CH_4		
PM emission rate	3.10	lb/hr	13.59	tpy

NO_2 Emission Rate

NO_2 emission factor[c]	0.068	lb/MMBtu		
NO_2 emission rate	13.49	lb/hr	59.10	tpy

CO Emission Rate

CO emission factor[c]	0.37	lb/MMBtu		
CO emission rate	73.4	lb/hr	321.6	tpy

NMOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
MW hexane	86.18	lb/lb-mol		
destruction efficiency	98%			
mass NMOC inlet gas	48.72	lb/hr		
NMOC emission rate	0.97	lb/hr	4.27	tpy

VOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
VOC fraction of NMOC[a]	39%			
VOC concentration in inlet gas	232	ppmv		
MW hexane	86.18	lb/lb-mol		
mass VOC inlet gas	19.00	lb/hr		
destruction efficiency	98%			
VOC emission rate	0.38	lb/hr	1.66	tpy

[a]EPA 1998. "Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources" (AP-42), 5th Ed., November
[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent. The upper end of th range is used here resulting in maximum calculated emissions of SO_2.
[c]LFG Specialties Inc. (typical)

Criteria Pollutant Emissions - Open Flare

Operation Period	8,760	hr
LFG inlet flow, standard	3,014	scfm
Heat Input	99.5	MMBtu/hr

SO_2 Emission Rate

SO_2 concentration in exhaust gas	5796.80	ppmv		
SO_2 emission rate	176.87	lb/hr	774.71	ton/yr

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]	Control Eff[a,b]	Individual Compound Contribution to SO_2: No. of S Atoms	S Conc (ppmv)	SO_2 Emiss (lb/hr)
Carbon Disulfide	75-15-0	76.13	0.58	99.7%	2	1.16	0.04
Carbonyl Sulfide	463-58-1	60.07	0.49	99.7%	1	0.49	0.01
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82	99.7%	1	7.80	0.24
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28	99.7%	1	2.27	0.07
Hydrogen Sulfide	7783-06-4	34.08	**5800.00**	99.7%	1	5782.6	176.44
Methyl Mercaptan	74-93-1	48.11	2.49	99.7%	1	2.48	0.08
					Total Contribution to SO_2 :	5796.80	176.87

PM_{10} Emission Rate

PM emission factor[a]	17	lb/MM dscf CH_4		
PM emission rate	1.56	lb/hr	6.81	tpy

NO_2 Emission Rate

NO_2 emission factor[c]	0.068	lb/MMBtu		
NO_2 emission rate	6.76	lb/hr	29.62	tpy

CO Emission Rate

CO emission factor[c]	0.37	lb/MMBtu		
CO emission rate	36.8	lb/hr	161.2	tpy

NMOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
MW hexane	86.18	lb/lb-mol		
destruction efficiency	98%			
mass NMOC inlet gas	24.42	lb/hr		
NMOC emission rate	0.49	lb/hr	2.14	tpy

VOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
VOC fraction of NMOC[a]	39%			
VOC concentration in inlet gas	232	ppmv		
MW hexane	86.18	lb/lb-mol		
mass VOC inlet gas	9.52	lb/hr		
destruction efficiency	98%			
VOC emission rate	0.19	lb/hr	0.83	tpy

[a]EPA 1998. "Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources" (AP-42), 5th Ed., November
[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent. The upper end of the range is used here resulting in maximum calculated emissions of SO_2.
[c]LFG Specialties Inc. (typical)

Criteria Pollutant Emissions - Enclosed Flare
EU003 3,000-scfm enclosed flare w/evap

Operation Period	8,760 hr
LFG inlet flow, standard	3,000 scfm
Heat Input	99 MMBtu/hr

SO_2 Emission Rate

SO_2 concentration in exhaust gas	5796.80 ppmv	
SO_2 emission rate	176.05 lb/hr	771.1 tpy

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]	Control Eff[a,b]	Individual Compound Contribution to SO_2: No. of S Atoms	S Conc (ppmv)	SO_2 Emiss (lb/hr)
Carbon Disulfide	75-15-0	76.13	0.58	99.7%	2	1.16	0.04
Carbonyl Sulfide	463-58-1	60.07	0.49	99.7%	1	0.49	0.01
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82	99.7%	1	7.80	0.24
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28	99.7%	1	2.27	0.07
Hydrogen Sulfide	7783-06-4	34.08	5800.00	99.7%	1	5782.6	175.62
PERMIT	74-93-1	48.11	2.49	99.7%	1	2.48	0.08
				Total Contribution to SO_2:		5796.80	176.05

PM_{10} Emission Rate

PM emission factor[a]	17 lb/MM dscf CH_4	
PM emission rate	1.55 lb/hr	6.8 tpy

NO_2 Emission Rate

NO_2 emission factor[c]	0.06 lb/MMBtu	
NO_2 emission rate	5.9 lb/hr	26.0 tpy

CO Emission Rate

CO emission factor[c]	0.20 lb/MMBtu	
CO emission rate	19.8 lb/hr	87 tpy

NMOC Emission Rate

NMOC conc inlet gas[a]	595 ppmv	
MW hexane	86.18 lb/lb-mol	
destruction efficiency	98%	
mass NMOC inlet gas	24.3 lb/hr	
NMOC emission rate	0.49 lb/hr	2.13 tpy

VOC Emission Rate

NMOC conc inlet gas[a]	595 ppmv	
VOC fraction of NMOC[a]	39%	
VOC concentration in inlet gas	232 ppmv	
MW hexane	86.18 lb/lb-mol	
mass VOC inlet gas	9.5 lb/hr	
destruction efficiency	98%	
VOC emission rate	0.19 lb/hr	0.83 tpy

[a]U.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources* ("AP-42"), *5th Ed.,* November 1998. Tables 2.4-1, 2.4-2, 2.4-3, 2.4-5.

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent. The upper end of the range is used here resulting in maximum calculated emissions of SO_2.

[c]LFG Specialties Inc. (typical)

Criteria Pollutant Emissions - Enclosed Flare
EU005 3,000-scfm enclosed flare w/evap

Operation Period	8,760	hr
LFG inlet flow, standard	3,000	scfm
Heat Input	99	MMBtu/hr

SO_2 Emission Rate

SO_2 concentration in exhaust gas	5796.80	ppmv		
SO_2 emission rate	176.05	lb/hr	771.1	tpy

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]	Control Eff[a,b]	Individual Compound Contribution to SO_2: No. of S Atoms	S Conc (ppmv)	SO_2 Emiss (lb/hr)
Carbon Disulfide	75-15-0	76.13	0.58	99.7%	2	1.16	0.04
Carbonyl Sulfide	463-58-1	60.07	0.49	99.7%	1	0.49	0.01
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82	99.7%	1	7.80	0.24
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28	99.7%	1	2.27	0.07
Hydrogen Sulfide	7783-06-4	34.08	5800.00	99.7%	1	5782.6	175.62
Methyl Mercaptan	74-93-1	48.11	2.49	99.7%	1	2.48	0.08
				Total Contribution to SO_2:		5796.80	176.05

PM_{10} Emission Rate

PM emission factor[a]	17	lb/MM dscf CH_4		
PM emission rate	1.55	lb/hr	6.8	tpy

NO_2 Emission Rate

NO_2 emission factor[c]	0.06	lb/MMBtu		
NO_2 emission rate	5.9	lb/hr	26.0	tpy

CO Emission Rate

CO emission factor[c]	0.20	lb/MMBtu		
CO emission rate	19.8	lb/hr	87	tpy

NMOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
MW hexane	86.18	lb/lb-mol		
destruction efficiency	98%			
mass NMOC inlet gas	24.3	lb/hr		
NMOC emission rate	0.49	lb/hr	2.13	tpy

VOC Emission Rate

NMOC conc inlet gas[a]	595	ppmv		
VOC fraction of NMOC[a]	39%			
VOC concentration in inlet gas	232	ppmv		
MW hexane	86.18	lb/lb-mol		
mass VOC inlet gas	9.5	lb/hr		
destruction efficiency	98%			
VOC emission rate	0.19	lb/hr	0.83	tpy

[a]U.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources* ("AP-42"), *5th Ed.*, November 1998. Tables 2.4-1, 2.4-2, 2.4-3, 2.4-5.

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent. The upper end of the range is used here resulting in maximum calculated emissions of SO_2.

[c]LFG Specialties Inc. (typical)

EU NEW - Proposed 6,000-scfm utility flare

Air Toxics Emissions from Open Flare. *The flare's inlet flow* **6,013** *scfm*

LFG Compound	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas (ppmv)[a]	Compound Conc & Mass in Inlet Gas (lb/hr)	Control Eff[a,b]	Flare Exhaust (lb/hr)	Flare Exhaust (tpy)
1,1,1 - Trichloroethane (methyl chloroform)	x	--	71-55-6	133.41	0.48	6.08E-02	98.0%	1.22E-03	5.33E-03
1,1,2,2 - Tetrachloroethane	x	x	79-34-5	167.85	1.11	1.77E-01	98.0%	3.54E-03	1.55E-02
1,1,2 - Trichloroethane (1,1,2 TCA)	x	x	79-00-5	133.41	0.10	1.27E-02	98.0%	2.54E-04	1.11E-03
1,1 - Dichloroethane (ethylidene dichloride)	x	x	75-34-3	98.96	2.35	2.21E-01	98.0%	4.42E-03	1.94E-02
1,1 - Dichloroethene (vinylidene chloride)	x	x	75-35-4	96.94	0.20	1.85E-02	98.0%	3.70E-04	1.62E-03
1,2 - Dichloroethane (ethylene dichloride)	x	x	107-06-2	98.96	0.41	3.83E-02	98.0%	7.65E-04	3.35E-03
1,2 - Dichloropropane (propylene dichloride)	x	x	78-87-5	112.99	0.18	1.93E-02	98.0%	3.86E-04	1.69E-03
2-Propanol (isopropyl alcohol)	--	x	67-63-0	60.11	50.1	2.86E+00	98.0%	5.72E-02	2.51E-01
Acetone (2-propanone)	--	--	67-64-1	58.08	7.01	3.87E-01	98.0%	7.74E-03	3.39E-02
Acrylonitrile (Propenenitrile)	x	x	107-13-1	53.06	6.33	3.19E-01	98.0%	6.38E-03	2.80E-02
Benzene	x	x	71-43-2	78.12	1.91	1.42E-01	98.0%	2.84E-03	1.24E-02
Bromodichloromethane	--	x	75-27-4	163.83	3.13	4.87E-01	98.0%	9.74E-03	4.27E-02
Butane	--	x	106-97-8	58.12	5.03	2.78E-01	98.0%	5.56E-03	2.43E-02
Carbon Disulfide	x	x	75-15-0	76.14	0.58	4.22E-02	98.0%	8.44E-04	3.69E-03
Carbon Tetrachloride	x	x	56-23-5	153.84	0.004	5.85E-04	98.0%	1.17E-05	5.12E-05
Carbonyl Sulfide	x	x	463-58-1	60.07	0.49	2.80E-02	98.0%	5.59E-04	2.45E-03
Chlorobenzene (monochlorobenzene)	x	x	108-90-7	112.56	0.25	2.72E-02	98.0%	5.43E-04	2.38E-03
Chlorodifluoromethane (CFC-22, freon-22)	--	--	75-45-6	86.47	1.30	1.07E-01	98.0%	2.14E-03	9.36E-03
Chloroethane (ethyl chloride)	x	x	75-00-3	64.52	1.25	7.66E-02	98.0%	1.53E-03	6.71E-03
Chloroform (trichloromethane)	x	x	67-66-3	119.38	0.03	3.40E-03	98.0%	6.81E-05	2.98E-04
Chloromethane (methyl chloride)	x	x	74-87-3	50.49	1.21	5.80E-02	98.0%	1.16E-03	5.09E-03
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	106-46-7	147	0.21	2.98E-02	98.0%	5.95E-04	2.61E-03
Dichlorodifluoromethane (CFC-12, freon-12)	--	--	75-71-8	120.91	15.7	1.80E+00	98.0%	3.61E-02	1.58E-01
Dichlorofluoromethane (freon-21)	--	--	75-43-4	102.92	2.62	2.56E-01	98.0%	5.12E-03	2.24E-02
Dichloromethane (methylene chloride)	x	--	75-09-2	84.93	14.3	1.15E+00	98.0%	2.31E-02	1.01E-01
Dimethyl Sulfide (methyl sulfide)	--	x	75-18-3	62.13	7.82	4.62E-01	98.0%	9.23E-03	4.04E-02
Ethane	--	--	74-84-0	30.07	889	2.54E+01	98.0%	5.08E-01	2.23E+00
Ethanol (ethyl alcohol)	--	x	64-17-5	46.08	27.2	1.19E+00	98.0%	2.38E-02	1.04E-01
Ethylbenzene[g]	x	x	100-41-4	106.17	4.61	4.65E-01	98.0%	9.30E-03	4.07E-02
Ethyl Mercaptan (ethanethiol)	--	x	75-08-1	62.13	1.25	7.38E-02	98.0%	1.48E-03	6.46E-03
Ethylene dibromide (1,2 dibromoethane)	x	x	106-93-4	187.88	0.001	1.79E-04	98.0%	3.57E-06	1.56E-05
Fluorotrichloromethane (CFC-11, freon-11)	--	--	75-69-4	137.37	0.76	9.92E-02	98.0%	1.98E-03	8.69E-03
Hexane	x	x	110-54-3	86.18	6.57	5.38E-01	98.0%	1.08E-02	4.71E-02
Hydrogen Sulfide	--	--	7783-06-4	34.08	5800.0	1.88E+02	98.0%	3.76E+00	1.65E+01
Mercury (total)	x	--	7439-97-6	200.61	2.92E-04	5.57E-05	0.0%	5.57E-05	2.44E-04
Methyl Ethyl Ketone (2-butanone)	x	x	78-93-3	72.11	7.09	4.86E-01	98.0%	9.72E-03	4.26E-02
Methyl Isobutyl Ketone (hexone)	x	x	108-10-1	100.16	1.87	1.78E-01	98.0%	3.56E-03	1.56E-02
Methyl Mercaptan	--	x	74-93-1	48.11	2.49	1.14E-01	98.0%	2.28E-03	9.97E-03
Pentane	--	x	109-66-0	72.15	3.29	2.26E-01	98.0%	4.51E-03	1.98E-02
ethene)	x		127-18-4	165.83	3.73	5.88E-01	98.0%	1.18E-02	5.15E-02
Propane	--	x	74-98-6	44.1	11.1	4.65E-01	98.0%	9.30E-03	4.07E-02
Toluene (methylbenzene)	x	x	108-88-3	92.14	39.3	3.44E+00	98.0%	6.88E-02	3.01E-01
Trichloroethylene (trichloroethene)	x	x	79-01-6	131.38	2.82	3.52E-01	98.0%	7.04E-03	3.08E-02
t - 1,2 - Dichloroethene (1,2 dichloroethylene)	--	--	156-60-5	96.94	2.84	2.62E-01	98.0%	5.23E-03	2.29E-02
Vinyl Chloride (chloroethylene, VCM)	x	x	75-01-4	62.50	7.34	4.36E-01	98.0%	8.72E-03	3.82E-02
Xylenes (m, o, p)	x	x	1330-20-7	106.17	12.1	1.22E+00	98.0%	2.44E-02	1.07E-01
Hydrogen Chloride[c,d]	x	--	7647-01-0	36.50	42.0	1.46E+00	0.0%	1.46E+00	6.38E+00
Total HAP								1.66	7.27
Maximum Single HAP								1.46	6.38

[a]EPA 1998. "Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources" (AP-42), 5th Ed., November

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent and control. Control efficiencies for non-halogenated species range from 38 to 91 percent. For permitting purposes, the lower end of each ranges is used here.

[c]Product of combustion

[d]Because HCl is a production of combustion, a default <u>outlet</u> concentration is listed; AP-42, Section 2.4.4.

Air Toxics Emissions from Open Flare *The flare's inlet flow* **3,014** *scfm*

LFG Compound	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas (ppmv)[a]	(lb/hr)	Control Eff[a,b]	Flare Exhaust (lb/hr)	(tpy)
1,1,1 - Trichloroethane (methyl chloroform)	x	--	71-55-6	133.41	0.48	3.05E-02	98.0%	6.10E-04	2.67E-03
1,1,2,2 - Tetrachloroethane	x	x	79-34-5	167.85	1.11	8.87E-02	98.0%	1.77E-03	7.77E-03
1,1,2 - Trichloroethane (1,1,2 TCA)	x	x	79-00-5	133.41	0.10	6.35E-03	98.0%	1.27E-04	5.57E-04
1,1 - Dichloroethane (ethylidene dichloride)	x	x	75-34-3	98.96	2.35	1.11E-01	98.0%	2.22E-03	9.70E-03
1,1 - Dichloroethene (vinylidene chloride)	x	x	75-35-4	96.94	0.20	9.28E-03	98.0%	1.86E-04	8.13E-04
1,2 - Dichloroethane (ethylene dichloride)	x	x	107-06-2	98.96	0.41	1.92E-02	98.0%	3.84E-04	1.68E-03
1,2 - Dichloropropane (propylene dichloride)	x	x	78-87-5	112.99	0.18	9.69E-03	98.0%	1.94E-04	8.49E-04
2-Propanol (isopropyl alcohol)	--	x	67-63-0	60.11	50.1	1.43E+00	98.0%	2.87E-02	1.26E-01
Acetone (2-propanone)	--	--	67-64-1	58.08	7.01	1.94E-01	98.0%	3.88E-03	1.70E-02
Acrylonitrile (Propenenitrile)	x	x	107-13-1	53.06	6.33	1.60E-01	98.0%	3.20E-03	1.40E-02
Benzene	x	x	71-43-2	78.12	1.91	7.11E-02	98.0%	1.42E-03	6.23E-03
Bromodichloromethane	--	x	75-27-4	163.83	3.13	2.44E-01	98.0%	4.88E-03	2.14E-02
Butane	--	x	106-97-8	58.12	5.03	1.39E-01	98.0%	2.78E-03	1.22E-02
Carbon Disulfide	x	x	75-15-0	76.14	0.58	2.11E-02	98.0%	4.23E-04	1.85E-03
Carbon Tetrachloride	x	x	56-23-5	153.84	0.004	2.93E-04	98.0%	5.86E-06	2.57E-05
Carbonyl Sulfide	x	x	463-58-1	60.07	0.49	1.40E-02	98.0%	2.80E-04	1.23E-03
Chlorobenzene (monochlorobenzene)	x	x	108-90-7	112.56	0.25	1.36E-02	98.0%	2.72E-04	1.19E-03
Chlorodifluoromethane (CFC-22, freon-22)	--	--	75-45-6	86.47	1.30	5.35E-02	98.0%	1.07E-03	4.69E-03
Chloroethane (ethyl chloride)	x	x	75-00-3	64.52	1.25	3.84E-02	98.0%	7.68E-04	3.36E-03
Chloroform (trichloromethane)	x	x	67-66-3	119.38	0.03	1.71E-03	98.0%	3.41E-05	1.49E-04
Chloromethane (methyl chloride)	x	x	74-87-3	50.49	1.21	2.91E-02	98.0%	5.82E-04	2.55E-03
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	106-46-7	147	0.21	1.49E-02	98.0%	2.98E-04	1.31E-03
Dichlorodifluoromethane (CFC-12, freon-12)	--	--	75-71-8	120.91	15.7	9.04E-01	98.0%	1.81E-02	7.92E-02
Dichlorofluoromethane (freon-21)	--	--	75-43-4	102.92	2.62	1.28E-01	98.0%	2.57E-03	1.13E-02
Dichloromethane (methylene chloride)	x	--	75-09-2	84.93	14.3	5.78E-01	98.0%	1.16E-02	5.07E-02
Dimethyl Sulfide (methyl sulfide)	--	x	75-18-3	62.13	7.82	2.31E-01	98.0%	4.63E-03	2.03E-02
Ethane	--	--	74-84-0	30.07	889	1.27E+01	98.0%	2.55E-01	1.12E+00
Ethanol (ethyl alcohol)	--	x	64-17-5	46.08	27.2	5.97E-01	98.0%	1.19E-02	5.23E-02
Ethylbenzene[g]	x	x	100-41-4	106.17	4.61	2.33E-01	98.0%	4.66E-03	2.04E-02
Ethyl Mercaptan (ethanethiol)	--	x	75-08-1	62.13	1.25	3.70E-02	98.0%	7.40E-04	3.24E-03
Ethylene dibromide (1,2 dibromoethane)	x	x	106-93-4	187.88	0.001	8.95E-05	98.0%	1.79E-06	7.84E-06
Fluorotrichloromethane (CFC-11, freon-11)	--	--	75-69-4	137.37	0.76	4.97E-02	98.0%	9.94E-04	4.36E-03
Hexane	x	x	110-54-3	86.18	6.57	2.70E-01	98.0%	5.39E-03	2.36E-02
Hydrogen Sulfide	--	--	7783-06-4	34.08	5800.0	9.41E+01	98.0%	1.88E+00	8.25E+00
Mercury (total)	x	--	7439-97-6	200.61	2.92E-04	2.79E-05	0.0%	2.79E-05	1.22E-04
Methyl Ethyl Ketone (2-butanone)	x	x	78-93-3	72.11	7.09	2.43E-01	98.0%	4.87E-03	2.13E-02
Methyl Isobutyl Ketone (hexone)	x	x	108-10-1	100.16	1.87	8.92E-02	98.0%	1.78E-03	7.81E-03
Methyl Mercaptan	--	x	74-93-1	48.11	2.49	5.71E-02	98.0%	1.14E-03	5.00E-03
Pentane	--	x	109-66-0	72.15	3.29	1.13E-01	98.0%	2.26E-03	9.90E-03
ethene)	x		127-18-4	165.83	3.73	2.95E-01	98.0%	5.89E-03	2.58E-02
Propane	--	x	74-98-6	44.1	11.1	2.33E-01	98.0%	4.66E-03	2.04E-02
Toluene (methylbenzene)	x	x	108-88-3	92.14	39.3	1.72E+00	98.0%	3.45E-02	1.51E-01
Trichloroethylene (trichloroethene)	x	x	79-01-6	131.38	2.82	1.76E-01	98.0%	3.53E-03	1.55E-02
t - 1,2 - Dichloroethene (1,2 dichloroethylene)	--	--	156-60-5	96.94	2.84	1.31E-01	98.0%	2.62E-03	1.15E-02
Vinyl Chloride (chloroethylene, VCM)	x	x	75-01-4	62.50	7.34	2.18E-01	98.0%	4.37E-03	1.91E-02
Xylenes (m, o, p)	x	x	1330-20-7	106.17	12.1	6.12E-01	98.0%	1.22E-02	5.36E-02
Hydrogen Chloride[c,d]	x	--	7647-01-0	36.50	42.0	7.30E-01	0.0%	7.30E-01	3.20E+00
Total HAP								0.83	3.64
Maximum Single HAP								0.73	3.20

[a]EPA 1998. "Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources" (AP-42), 5th Ed., November

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent and control. Control efficiencies for non-halogenated species range from 38 to 91 percent. For permitting purposes, the lower end of each ranges is used here.

[c]Product of combustion

[d]Because HCl is a production of combustion, a default outlet concentration is listed; AP-42, Section 2.4.4.

LFG inlet flow 3,000 **scfm**

EU003 3,000-scfm enclosed flare w/evap

LFG Compound	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas (ppmv)[a]	(lb/hr)	Control Eff[a,b]	Flare Exhaust (lb/hr)*	(tpy)*
1,1,1 - Trichloroethane (methyl chloroform)	x	--	71-55-6	133.41	0.48	3.04E-02	98.0%	6.07E-04	2.66E-03
1,1,2,2 - Tetrachloroethane	x	x	79-34-5	167.85	1.11	8.83E-02	98.0%	1.77E-03	7.74E-03
1,1,2 - Trichloroethane (1,1,2 TCA)	x	x	79-00-5	133.41	0.10	6.32E-03	98.0%	1.26E-04	5.54E-04
1,1 - Dichloroethane (ethylidene dichloride)	x	x	75-34-3	98.96	2.35	1.10E-01	98.0%	2.20E-03	9.66E-03
1,1 - Dichloroethene (vinylidene chloride)	x	x	75-35-4	96.94	0.20	9.24E-03	98.0%	1.85E-04	8.09E-04
1,2 - Dichloroethane (ethylene dichloride)	x	x	107-06-2	98.96	0.41	1.91E-02	98.0%	3.82E-04	1.67E-03
1,2 - Dichloropropane (propylene dichloride)	x	x	78-87-5	112.99	0.18	9.64E-03	98.0%	1.93E-04	8.45E-04
2-Propanol (isopropyl alcohol)	--	x	67-63-0	60.11	50.1	1.43E+00	98.0%	2.86E-02	1.25E-01
Acetone (2-propanone)	--	--	67-64-1	58.08	7.01	1.93E-01	98.0%	3.86E-03	1.69E-02
Acrylonitrile (Propenenitrile)	x	x	107-13-1	53.06	6.33	1.59E-01	98.0%	3.18E-03	1.39E-02
Benzene	x	x	71-43-2	78.12	1.91	7.07E-02	98.0%	1.41E-03	6.20E-03
Bromodichloromethane	--	x	75-27-4	163.83	3.13	2.43E-01	98.0%	4.86E-03	2.13E-02
Butane	--	x	106-97-8	58.12	5.03	1.39E-01	98.0%	2.77E-03	1.21E-02
Carbon Disulfide	x	x	75-15-0	76.14	0.58	2.10E-02	98.0%	4.21E-04	1.84E-03
Carbon Tetrachloride	x	x	56-23-5	153.84	0.004	2.92E-04	98.0%	5.83E-06	2.56E-05
Carbonyl Sulfide	x	x	463-58-1	60.07	0.49	1.40E-02	98.0%	2.79E-04	1.22E-03
Chlorobenzene (monochlorobenzene)	x	x	108-90-7	112.56	0.25	1.36E-02	98.0%	2.71E-04	1.19E-03
Chlorodifluoromethane (CFC-22, freon-22)	--	--	75-45-6	86.47	1.30	5.33E-02	98.0%	1.07E-03	4.67E-03
Chloroethane (ethyl chloride)	x	x	75-00-3	64.52	1.25	3.82E-02	98.0%	7.65E-04	3.35E-03
Chloroform (trichloromethane)	x	x	67-66-3	119.38	0.03	1.70E-03	98.0%	3.40E-05	1.49E-04
Chloromethane (methyl chloride)	x	x	74-87-3	50.49	1.21	2.90E-02	98.0%	5.79E-04	2.54E-03
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	106-46-7	147	0.21	1.48E-02	98.0%	2.97E-04	1.30E-03
Dichlorodifluoromethane (CFC-12, freon-12)	--	--	75-71-8	120.91	15.7	9.00E-01	98.0%	1.80E-02	7.88E-02
Dichlorofluoromethane (freon-21)	--	--	75-43-4	102.92	2.62	1.28E-01	98.0%	2.56E-03	1.12E-02
Dichloromethane (methylene chloride)	x	--	75-09-2	84.93	14.3	5.76E-01	98.0%	1.15E-02	5.04E-02
Dimethyl Sulfide (methyl sulfide)	--	x	75-18-3	62.13	7.82	2.30E-01	98.0%	4.61E-03	2.02E-02
Ethane	--	--	74-84-0	30.07	889	1.27E+01	98.0%	2.53E-01	1.11E+00
Ethanol (ethyl alcohol)	--	x	64-17-5	46.08	27.2	5.94E-01	98.0%	1.19E-02	5.20E-02
Ethylbenzene[g]	x	x	100-41-4	106.17	4.61	2.32E-01	98.0%	4.64E-03	2.03E-02
Ethyl Mercaptan (ethanethiol)	--	x	75-08-1	62.13	1.25	3.68E-02	98.0%	7.36E-04	3.23E-03
Ethylene dibromide (1,2 dibromoethane)	x	x	106-93-4	187.88	0.001	8.91E-05	98.0%	1.78E-06	7.80E-06
Fluorotrichloromethane (CFC-11, freon-11)	--	--	75-69-4	137.37	0.76	4.95E-02	98.0%	9.90E-04	4.34E-03
Hexane	x	x	110-54-3	86.18	6.57	2.68E-01	98.0%	5.37E-03	2.35E-02
Hydrogen Sulfide	--	--	7783-06-4	34.08	5800.0	9.37E+01	98.0%	1.87E+00	8.21E+00
Mercury (total)	x	--	7439-97-6	200.61	#######	2.78E-05	0.0%	2.78E-05	1.22E-04
Methyl Ethyl Ketone (2-butanone)	x	x	78-93-3	72.11	7.09	2.42E-01	98.0%	4.85E-03	2.12E-02
Methyl Isobutyl Ketone (hexone)	x	x	108-10-1	100.16	1.87	8.88E-02	98.0%	1.78E-03	7.78E-03
Methyl Mercaptan	–	x	74-93-1	48.11	2.49	5.68E-02	98.0%	1.14E-03	4.97E-03
Pentane	--	x	109-66-0	72.15	3.29	1.13E-01	98.0%	2.25E-03	9.86E-03
ethene)	x	x	127-18-4	165.83	3.73	2.93E-01	98.0%	5.86E-03	2.57E-02
Propane	--	x	74-98-6	44.1	11.1	2.32E-01	98.0%	4.64E-03	2.03E-02
Toluene (methylbenzene)	x	x	108-88-3	92.14	39.3	1.72E+00	98.0%	3.43E-02	1.50E-01
Trichloroethylene (trichloroethene)	x	x	79-01-6	131.38	2.82	1.76E-01	98.0%	3.51E-03	1.54E-02
t - 1,2 - Dichloroethene (1,2 dichloroethylene)	--	--	156-60-5	96.94	2.84	1.31E-01	98.0%	2.61E-03	1.14E-02
Vinyl Chloride (chloroethylene, VCM)	x	x	75-01-4	62.50	7.34	2.17E-01	98.0%	4.35E-03	1.91E-02
Xylenes (m, o, p)	x	x	1330-20-7	106.17	12.1	6.09E-01	98.0%	1.22E-02	5.33E-02
Hydrogen Chloride	x	--	7647-01-0	36.50	42.0	7.27E-01	0.0%	7.27E-01	3.18E+00
Total HAP[e]								0.83	3.6
Maximum Single HAP								0.73	3.18

[a]U.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources* ("AP-42"), *5th Ed.*, November 1998.Tables 2. 4-1, 2.4-2, 2.4-3.

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent and control. Control efficiencies for non-halogenated species range from 38 to 91 percent. For permitting purposes, the lower end of each ranges is used here.

[c]Product of combustion

[d]Because HCl is a production of combustion, a default <u>outlet</u> concentration is listed; AP-42, Section 2.4.4.

LFG inlet flow 3,000 **scfm**

EU005 3,000-scfm enclosed flare w/evap

LFG Compound	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas (ppmv)[a]	(lb/hr)	Control Eff[a,b]	Flare Exhaust (lb/hr)*	(tpy)*
1,1,1 - Trichloroethane (methyl chloroform)	x	--	71-55-6	133.41	0.48	3.04E-02	98.0%	6.07E-04	2.66E-03
1,1,2,2 - Tetrachloroethane	x	x	79-34-5	167.85	1.11	8.83E-02	98.0%	1.77E-03	7.74E-03
1,1,2 - Trichloroethane (1,1,2 TCA)	x	x	79-00-5	133.41	0.10	6.32E-03	98.0%	1.26E-04	5.54E-04
1,1 - Dichloroethane (ethylidene dichloride)	x	x	75-34-3	98.96	2.35	1.10E-01	98.0%	2.20E-03	9.66E-03
1,1 - Dichloroethene (vinylidene chloride)	x	x	75-35-4	96.94	0.20	9.24E-03	98.0%	1.85E-04	8.09E-04
1,2 - Dichloroethane (ethylene dichloride)	x	x	107-06-2	98.96	0.41	1.91E-02	98.0%	3.82E-04	1.67E-03
1,2 - Dichloropropane (propylene dichloride)	x	x	78-87-5	112.99	0.18	9.64E-03	98.0%	1.93E-04	8.45E-04
2-Propanol (isopropyl alcohol)	--	x	67-63-0	60.11	50.1	1.43E+00	98.0%	2.86E-02	1.25E-01
Acetone (2-propanone)	--	--	67-64-1	58.08	7.01	1.93E-01	98.0%	3.86E-03	1.69E-02
Acrylonitrile (Propenenitrile)	x	x	107-13-1	53.06	6.33	1.59E-01	98.0%	3.18E-03	1.39E-02
Benzene	x	x	71-43-2	78.12	1.91	7.07E-02	98.0%	1.41E-03	6.20E-03
Bromodichloromethane	--	x	75-27-4	163.83	3.13	2.43E-01	98.0%	4.86E-03	2.13E-02
Butane	--	x	106-97-8	58.12	5.03	1.39E-01	98.0%	2.77E-03	1.21E-02
Carbon Disulfide	x	x	75-15-0	76.14	0.58	2.10E-02	98.0%	4.21E-04	1.84E-03
Carbon Tetrachloride	x	x	56-23-5	153.84	0.004	2.92E-04	98.0%	5.83E-06	2.56E-05
Carbonyl Sulfide	x	x	463-58-1	60.07	0.49	1.40E-02	98.0%	2.79E-04	1.22E-03
Chlorobenzene (monochlorobenzene)	x	x	108-90-7	112.56	0.25	1.36E-02	98.0%	2.71E-04	1.19E-03
Chlorodifluoromethane (CFC-22, freon-22)	--	--	75-45-6	86.47	1.30	5.33E-02	98.0%	1.07E-03	4.67E-03
Chloroethane (ethyl chloride)	x	x	75-00-3	64.52	1.25	3.82E-02	98.0%	7.65E-04	3.35E-03
Chloroform (trichloromethane)	x	x	67-66-3	119.38	0.03	1.70E-03	98.0%	3.40E-05	1.49E-04
Chloromethane (methyl chloride)	x	x	74-87-3	50.49	1.21	2.90E-02	98.0%	5.79E-04	2.54E-03
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	106-46-7	147	0.21	1.48E-02	98.0%	2.97E-04	1.30E-03
Dichlorodifluoromethane (CFC-12, freon-12)	--	--	75-71-8	120.91	15.7	9.00E-01	98.0%	1.80E-02	7.88E-02
Dichlorofluoromethane (freon-21)	--	--	75-43-4	102.92	2.62	1.28E-01	98.0%	2.56E-03	1.12E-02
Dichloromethane (methylene chloride)	x	--	75-09-2	84.93	14.3	5.76E-01	98.0%	1.15E-02	5.04E-02
Dimethyl Sulfide (methyl sulfide)	--	x	75-18-3	62.13	7.82	2.30E-01	98.0%	4.61E-03	2.02E-02
Ethane	--	--	74-84-0	30.07	889	1.27E+01	98.0%	2.53E-01	1.11E+00
Ethanol (ethyl alcohol)	--	x	64-17-5	46.08	27.2	5.94E-01	98.0%	1.19E-02	5.20E-02
Ethylbenzene[g]	x	x	100-41-4	106.17	4.61	2.32E-01	98.0%	4.64E-03	2.03E-02
Ethyl Mercaptan (ethanethiol)	--	x	75-08-1	62.13	1.25	3.68E-02	98.0%	7.36E-04	3.23E-03
Ethylene dibromide (1,2 dibromoethane)	x	x	106-93-4	187.88	0.001	8.91E-05	98.0%	1.78E-06	7.80E-06
Fluorotrichloromethane (CFC-11, freon-11)	--	--	75-69-4	137.37	0.76	4.95E-02	98.0%	9.90E-04	4.34E-03
Hexane	x	x	110-54-3	86.18	6.57	2.68E-01	98.0%	5.37E-03	2.35E-02
Hydrogen Sulfide	--	--	7783-06-4	34.08	5800.0	9.37E+01	98.0%	1.87E+00	8.21E+00
Mercury (total)	x	--	7439-97-6	200.61	2.92E-04	2.78E-05	0.0%	2.78E-05	1.22E-04
Methyl Ethyl Ketone (2-butanone)	x	x	78-93-3	72.11	7.09	2.42E-01	98.0%	4.85E-03	2.12E-02
Methyl Isobutyl Ketone (hexone)	x	x	108-10-1	100.16	1.87	8.88E-02	98.0%	1.78E-03	7.78E-03
Methyl Mercaptan	--	x	74-93-1	48.11	2.49	5.68E-02	98.0%	1.14E-03	4.97E-03
Pentane	--	x	109-66-0	72.15	3.29	1.13E-01	98.0%	2.25E-03	9.86E-03
ethene)	x	x	127-18-4	165.83	3.73	2.93E-01	98.0%	5.86E-03	2.57E-02
Propane	--	x	74-98-6	44.1	11.1	2.32E-01	98.0%	4.64E-03	2.03E-02
Toluene (methylbenzene)	x	x	108-88-3	92.14	39.3	1.72E+00	98.0%	3.43E-02	1.50E-01
Trichloroethylene (trichloroethene)	x	x	79-01-6	131.38	2.82	1.76E-01	98.0%	3.51E-03	1.54E-02
t - 1,2 - Dichloroethene (1,2 dichloroethylene)	--	--	156-60-5	96.94	2.84	1.31E-01	98.0%	2.61E-03	1.14E-02
Vinyl Chloride (chloroethylene, VCM)	x	x	75-01-4	62.50	7.34	2.17E-01	98.0%	4.35E-03	1.91E-02
Xylenes (m, o, p)	x	x	1330-20-7	106.17	12.1	6.09E-01	98.0%	1.22E-02	5.33E-02
Hydrogen Chloride	x	--	7647-01-0	36.50	42.0	7.27E-01	0.0%	7.27E-01	3.18E+00
Total HAP[e]								0.83	3.6
Maximum Single HAP								0.73	3.18

[a]U.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources* ("AP-42"), *5th Ed.*, November 1998.Tables 2. 4-1, 2.4-2, 2.4-3.

[b]AP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent and control. Control efficiencies for non-halogenated species range from 38 to 91 percent. For permitting purposes, the lower end of each ranges is used here.

[c]Product of combustion

[d]Because HCl is a production of combustion, a default <u>outlet</u> concentration is listed; AP-42, Section 2.4.4.

EU003 - 3,000-scfm enclosed flare w/evap
E-VAP UNIT #3016
THEORETICAL ORGANIC/METAL/OTHER CONCENTRATIONS and EMISSIONS

Leachate input Rate (gallons/day) = 30,000 gpd 0.030 MGD

COMPOUND	HAP	8/19/1998 ppm [b] (mg/l)	4/29/1998 ppm [b] (mg/l)	2/5/1998 ppm [b] (mg/l)	11/5/1997 ppm [b] (mg/l)	11/5/97 (a) ppm [b] (mg/l)	11/5/97 (a) ppb [b] (ug/l)	Maximum ppm [b] (mg/l)	EPA Theoretical Median Conc[(1)] (mg/l)	EPA Theoretical Median Conc[(1)] (ug/l)	Number of Samples by EPA	Max Conc (mg/l)	Pounds per hour	Pounds per year
1,1 Dichloroethane	*					0.0000		0.000	0.165	165	34	0.165	1.72E-3	15.08
(ethylidene dichloride)						0.0000		0.000	0		0	0.0000	0.00E+0	-
1,1,1 Trichloroethane	*	5.00				0.0000		5.000	0.086	86	20	5.0000	5.22E-2	456.85
1,1,2 Trichloroethane	*					0.0000		0.000	0.426	426	4	0.4260	4.44E-3	38.92
1,1,2,2 Tetrachloroethane	*					0.0000		0.000	0.21	210	1	0.2100	2.19E-3	19.19
1,2 Dichloroethane (ethylene dichloride)	*					0.0000		0.000	0.01	10	6	0.0100	1.04E-4	0.91
1,2 Dichloropropane (propylene dichloride)	*					0.0000		0.000	0.009	9	12	0.0090	9.39E-5	0.82
1,2 trans dichloroethylene						0.0000		0.000	0.092	92	40	0.0920	9.60E-4	8.41
1,2,3 Trichloropropane						0.0000		0.000	0.23	230	1	0.2300	2.40E-3	21.02
1-Propanol						0.0000		0.000	11	11000	1	11.0000	1.15E-1	1,005.08
2,4-dimethylphenol						0.0000		0.000	0.019	19	2	0.0190	1.98E-4	1.74
2-Chloroethyl Vinyl Ether						0.0000		0.000	0.551	551	2	0.5510	5.75E-3	50.35
2-Hexanone						0.0000		0.000	0.088	88	11	0.0880	9.18E-4	8.04
Acetone						0.0880	88.00	0.088	0.43	430	23	0.4300	4.49E-3	39.29
Acrolein	*					0.0000		0.000	0.27	270	1	0.2700	2.82E-3	24.67
Acrylonitrile	*					0.0000		0.000	0		0	0.0000	0.00E+0	-
Benzene	*					0.0003	0.27	0.00027	0.037	37	35	0.0370	3.86E-4	3.38
Bis(Chloromethyl) Ether	*					0.0000		0.000	0.25	250	1	0.2500	2.61E-3	22.84
Butanol						0.0000		0.000	10	10000	1	10.0000	1.04E-1	913.71
Carbon tetrachloride	*					0.0000		0.000	0.202	202	2	0.2020	2.11E-3	18.46
Chlorobenzene	*					0.0000		0.000	0.007	7	12	0.0070	7.30E-5	0.64
Chloroform	*					0.0000		0.000	0.029	29	8	0.0290	3.02E-4	2.65
Chloromethane	*					0.0000		0.000	0.175	175	3	0.1750	1.83E-3	15.99
Cis- 1,2 Dichloroethylene						0.0000		0.000	0.33	330	2	0.3300	3.44E-3	30.15
Dichloromethane	*					0.0000		0.000	0.44	440	68	0.4400	4.59E-3	40.20
(methylene chloride)						0.0000		0.000	0		0	0.0000	0.00E+0	-
Diethyl phthalate						0.0000		0.000	0.083	83	27	0.0830	8.66E-4	7.58
Ethanol						0.0000		0.000	23	23000	1	23.0000	2.40E-1	2,101.53
Ethylbenzene	*	3.00				0.0010	1.00	3.000	0.058	58	41	3.0000	3.13E-2	274.11
Isophorone	*					0.0000		0.000	0.076	76	19	0.0760	7.93E-4	6.94
Methyl ethyl ketone	*					0.1900	190.00	0.190	1.55	1550	24	1.5500	1.62E-2	141.62
Methyl isobutyl ketone	*					0.0280	28	0.028	0.27	270	9	0.2700	2.82E-3	24.67
Naphthalene	*					0.0000		0.000	0.012	12	23	0.0120	1.25E-4	1.10
p-Cresol	*					0.0000		0.000	2.305	2305	10	2.3050	2.40E-2	210.61
Perchloroethylene (tetrachloroethylene)	*					0.0000		0.000	0.055	55	18	0.0550	5.74E-4	5.03
Phenols (total)	*					0.0000		0.000	0.378	378	45	0.3780	3.94E-3	34.54
Styrene	*					0.0000		0.000	0		0	0.0000	0.00E+0	-
Tetrahydrofuran						0.0000		0.000	0.26	260	7	0.2600	2.71E-3	23.76
Toluene	*	5.00		4.00	2.00	0.0026	2.60	5.000	0.413	413	69	5.0000	5.22E-2	456.85
Trichloroethylene	*					0.0000		0.000	0.043	43	28	0.0430	4.49E-4	3.93
Vinyl chloride	*					0.0000		0.000	0.04	40	10	0.0400	4.17E-4	3.65
Xylene	*	9.00				0.0022	2.20	9.000	0.071	71	7	9	9.39E-2	822.34
												Total HAPs	2.46E-1	2,156.07

Notes:
HAP = Clean Air Act Hazardous Air Pollutant
mgal = million gallons
Parts per billion = ug/l
Parts per million = mg/l

x - detected below method detection limit

(1) Using EPA "typical" leachate data (median value), Summary Of Data On Municipal Solid Waste Landfill Leachate Characteristics "Criteria For Municipal Solid Waste Landfills", EPA, July 1988 (NTIS PB88-242441).

	HAP	8/19/1998 ppm [b] (mg/l)	4/29/1998 ppm [b] (mg/l)	2/5/1998 ppm [b] (mg/l)	11/5/1997 ppm [b] (mg/l)	11/5/97 (a) ppm [b] (mg/l)	11/5/97 (a) ppb [b] (ug/l)	Maximum ppm [b] (mg/l)	EPA Theoretical Median Conc (mg/l)	EPA Theoretical Conc (ug/l)	Number of Samples by EPA	Max Conc (mg/l)	Pounds per hour	Pounds per year
Hydrogen Chloride[(d)]	*	660.00	320.00	260.00				660.000	695	695000	0	695.000	-	N/A
Hydrogen fluoride						200.00		200.000	0.4	400	0	200.000	-	N/A
Hydrogen sulfide[(e)]		96.00	8.00					96.000	108	108000	0	108.000	1.13E+0	9,868.04

Leachate HAPs & metals [c]	HAP	8/19/1998 ppm [b] (mg/l)	4/29/1998 ppm [b] (mg/l)	2/5/1998 ppm [b] (mg/l)	11/5/1997 ppm [b] (mg/l)	11/5/97 (a) ppm [b] (mg/l)	11/5/97 (a) ppb [b] (ug/l)	Maximum ppm [b] (mg/l)	EPA Theoretical Median Conc (mg/l)	EPA Theoretical Conc (ug/l)	Number of Samples by EPA	Max Conc (mg/l)	Pounds per hour	Pounds per year
Bis (Chloromethyl) ether	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
Isophorone	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
Naphthalene	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
p-cresol	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
phenols (total)	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
antimony	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
arsenic	*					0.0000		0.000	0.08		0	0.080	8.34E-7	0.0
barium		0.17	0.06	0.06	0.08	0.0000		0.170	0.383	383	0	0.383	3.99E-6	0.0
beryllium	*					0.0000		0.000	0.0065	7	0	0.007	6.78E-8	0.0
cadmium	*					0.0000		0.000	0.015	15	0	0.015	1.56E-7	0.0
calcium		135.00	21.00	25.00	27.00	0.0000		135.000	336	336000	0	336.000	3.50E-3	30.7
chromium	*	0.17				0.0000		0.170	0.06	60	0	0.170	1.77E-6	0.0
copper		0.10				0.0420	42.00	0.100	0.07	70	0	0.100	1.04E-6	0.0
lead	*					0.0000		0.000	0.08	80	0	0.080	8.34E-7	0.0
mercury	*					0.0000		0.000	0.0006	0.6	0	0.001	6.26E-9	0.0
nickel	*	0.20	0.03	0.02	0.02	0.0000		0.200	0.16	160	0	0.200	2.09E-6	0.0
selenium	*					0.0000		0.000		0	0	0.000	0.00E+0	0.0
sodium		510.00	260.00	330.00	440.00	0.0000		510.000		0	0	510.000	5.32E-3	46.6
thallium						0.0000		0.000		0	0	0.000	0.00E+0	0.0
iron		6.00				3.6000	3600.00	6.000	66.2	66200	0	66.200	6.90E-4	6.0
zinc		0.07				0.0750	75.00	0.075	1.35	1350	0	1.350	1.41E-5	0.1

TOTAL HAP EMISSIONS:

uncontrolled =	**0.30** lb/hr	**#####** lbs/year
98% control =	**0.006** lb/hr	**52.92** lbs/year

a - HAPs in both LFG and in leachate

b - from EPA Characterization of MWC Ashes and Leachates from MSW Landfills, Monofills and Co-Disposal Sites, median concentration values

c - draft AP-42 (9/95), Tables 2.4-3; unlisted control efficiencies assumed to be 80%

d - product of combustion

c - Additional HAPs found in leachate > 50 ppb/mgal per reference b

x - HAP present in leachate > 50 ppb

o - non-VOC HAP

Notes:

c - draft AP-42 (9/95), Tables 2.4-1 and 2.4-2; concentration in inlet gas

d - concentration of chloride in leachate; thermal conversion to hydrogen chloride in flare is presented in the "air toxics" sheets

d - concentration of sulfate in leachate; thermal conversion to sulfur dioxides in flare is presented in the "criteria pollutants" sheets

EU005 3,000-scfm enclosed flare w/evap
E-VAP UNIT #PROPOSED on existing flare
THEORETICAL ORGANIC/METAL/OTHER CONCENTRATIONS and EMISSIONS

Leachate input Rate (gallons/day) = 30,000 gpd 0.030 MGD

COMPOUND	HAP	8/19/1998 ppm [b] (mg/l)	4/29/1998 ppm [b] (mg/l)	2/5/1998 ppm [b] (mg/l)	11/5/1997 ppm [b] (mg/l)	11/5/97 (a) ppm [b] (mg/l)	11/5/97 (a) ppb [b] (ug/l)	Maximum ppm [b] (mg/l)	EPA Theoretical Median Conc[1] (mg/l)	EPA Theoretical Median Conc[1] (ug/l)	Number of Samples by EPA	Max Conc (mg/l)	Pounds per hour	Pounds per year
1,1 Dichloroethane	*					0.0000		0.000	0.165	165	34	0.165	1.72E-3	15.08
(ethylidene dichloride)						0.0000		0.000	0		0	0.0000	0.00E+0	-
1,1,1 Trichloroethane	*	5.00				0.0000		5.000	0.086	86	20	5.0000	5.22E-2	456.85
1,1,2 Trichloroethane	*					0.0000		0.000	0.426	426	4	0.4260	4.44E-3	38.92
1,1,2,2 Tetrachloroethane	*					0.0000		0.000	0.21	210	1	0.2100	2.19E-3	19.19
1,2 Dichloroethane (ethylene dichloride)	*					0.0000		0.000	0.01	10	6	0.0100	1.04E-4	0.91
1,2 Dichloropropane (propylene dichloride)	*					0.0000		0.000	0.009	9	12	0.0090	9.39E-5	0.82
1,2 trans dichloroethylene						0.0000		0.000	0.092	92	40	0.0920	9.60E-4	8.41
1,2,3 Trichloropropane						0.0000		0.000	0.23	230	1	0.2300	2.40E-3	21.02
1-Propanol						0.0000		0.000	11	11000	1	11.0000	1.15E-1	1,005.08
2,4-dimethylphenol						0.0000		0.000	0.019	19	2	0.0190	1.98E-4	1.74
2-Chloroethyl Vinyl Ether						0.0000		0.000	0.551	551	2	0.5510	5.75E-3	50.35
2-Hexanone						0.0000		0.000	0.088	88	11	0.0880	9.18E-4	8.04
Acetone						0.0880	88.00	0.088	0.43	430	23	0.4300	4.49E-3	39.29
Acrolein	*					0.0000		0.000	0.27	270	1	0.2700	2.82E-3	24.67
Acrylonitrile	*					0.0000		0.000	0		0	0.0000	0.00E+0	-
Benzene	*					0.0003	0.27	0.00027	0.037	37	35	0.0370	3.86E-4	3.38
Bis(Chloromethyl) Ether	*					0.0000		0.000	0.25	250	1	0.2500	2.61E-3	22.84
Butanol						0.0000		0.000	10	10000	1	10.0000	1.04E-1	913.71
Carbon tetrachloride	*					0.0000		0.000	0.202	202	2	0.2020	2.11E-3	18.46
Chlorobenzene	*					0.0000		0.000	0.007	7	12	0.0070	7.30E-5	0.64
Chloroform	*					0.0000		0.000	0.029	29	8	0.0290	3.02E-4	2.65
Chloromethane	*					0.0000		0.000	0.175	175	3	0.1750	1.83E-3	15.99
Cis- 1,2 Dichloroethylene						0.0000		0.000	0.33	330	2	0.3300	3.44E-3	30.15
Dichloromethane	*					0.0000		0.000	0.44	440	68	0.4400	4.59E-3	40.20
(methylene chloride)						0.0000		0.000	0		0	0.0000	0.00E+0	-
Diethyl phthalate						0.0000		0.000	0.083	83	27	0.0830	8.66E-4	7.58
Ethanol						0.0000		0.000	23	23000	1	23.0000	2.40E-1	2,101.53
Ethylbenzene	*	3.00				0.0010	1.00	3.000	0.058	58	41	3.0000	3.13E-2	274.11
Isophorone	*					0.0000		0.000	0.076	76	19	0.0760	7.93E-4	6.94
Methyl ethyl ketone	*					0.1900	190.00	0.190	1.55	1550	24	1.5500	1.62E-2	141.62
Methyl isobutyl ketone	*					0.0280	28	0.028	0.27	270	9	0.2700	2.82E-3	24.67
Naphthalene	*					0.0000		0.000	0.012	12	23	0.0120	1.25E-4	1.10
p-Cresol	*					0.0000		0.000	2.305	2305	10	2.3050	2.40E-2	210.61
Perchloroethylene (tetrachloroethylene)	*					0.0000		0.000	0.055	55	18	0.0550	5.74E-4	5.03
Phenols (total)	*					0.0000		0.000	0.378	378	45	0.3780	3.94E-3	34.54
Styrene	*					0.0000		0.000	0		0	0.0000	0.00E+0	-
Tetrahydrofuran						0.0000		0.000	0.26	260	7	0.2600	2.71E-3	23.76
Toluene	*	5.00		4.00	2.00	0.0026	2.60	5.000	0.413	413	69	5.0000	5.22E-2	456.85
Trichloroethylene	*					0.0000		0.000	0.043	43	28	0.0430	4.49E-4	3.93
Vinyl chloride	*					0.0000		0.000	0.04	40	10	0.0400	4.17E-4	3.65
Xylene	*	9.00				0.0022	2.20	9.000	0.071	71	7	9	9.39E-2	822.34

Notes:
HAP = Clean Air Act Hazardous Air Pollutant
mgal = million gallons
Parts per billion = ug/l
Parts per million = mg/l

x - detected below method detection limit
(1) Using EPA "typical" leachate data (median value), Summary Of Data On Municipal Solid Waste Landfill Leachate Characteristics "Criteria For Municipal Solid Waste Landfills", EPA, July 1988 (NTIS PB88-242441).

	HAP	8/19/1998 ppm [b] (mg/l)	4/29/1998 ppm [b] (mg/l)	2/5/1998 ppm [b] (mg/l)	11/5/1997 ppm [b] (mg/l)	11/5/97 (a) ppm [b] (mg/l)	11/5/97 (a) ppb [b] (ug/l)	Maximum ppm [b] (mg/l)	EPA Theoretical Median Conc (mg/l)	EPA Theoretical Conc (ug/l)	Number of Samples by EPA	Max Conc (mg/l)	Pounds per hour	Pounds per year
Hydrogen Chloride[(d)]	*	660.00	320.00	260.00				660.000	695	695000	0	695.000	-	N/A
Hydrogen fluoride						200.00		200.000	0.4	400	0	200.000	-	N/A
Hydrogen sulfide[(e)]		96.00	8.00					96.000	108	108000	0	108.000	1.13E+0	9,868.04

Leachate HAPs & metals [c]	HAP	8/19/1998 ppm [b] (mg/l)	4/29/1998 ppm [b] (mg/l)	2/5/1998 ppm [b] (mg/l)	11/5/1997 ppm [b] (mg/l)	11/5/97 (a) ppm [b] (mg/l)	11/5/97 (a) ppb [b] (ug/l)	Maximum ppm [b] (mg/l)	EPA Theoretical Median Conc (mg/l)	EPA Theoretical Conc (ug/l)	Number of Samples by EPA	Max Conc (mg/l)	Pounds per hour	Pounds per year
Bis (Chloromethyl) ether	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
Isophorone	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
Naphthalene	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
p-cresol	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
phenols (total)	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
antimony	*					0.0000		0.000	0		0	0.000	0.00E+0	0.0
arsenic	*					0.0000		0.000	0.08		0	0.080	8.34E-7	0.0
barium		0.17	0.06	0.06	0.08	0.0000		0.170	0.383	383	0	0.383	3.99E-6	0.0
beryllium	*					0.0000		0.000	0.0065	7	0	0.007	6.78E-8	0.0
cadmium	*					0.0000		0.000	0.015	15	0	0.015	1.56E-7	0.0
calcium		135.00	21.00	25.00	27.00	0.0000		135.000	336	336000	0	336.000	3.50E-3	30.7
chromium	*	0.17				0.0000		0.170	0.06	60	0	0.170	1.77E-6	0.0
copper		0.10				0.0420	42.00	0.100	0.07	70	0	0.100	1.04E-6	0.0
lead	*					0.0000		0.000	0.08	80	0	0.080	8.34E-7	0.0
mercury	*					0.0000		0.000	0.0006	0.6	0	0.001	6.26E-9	0.0
nickel	*	0.20	0.03	0.02	0.02	0.0000		0.200	0.16	160	0	0.200	2.09E-6	0.0
selenium	*					0.0000		0.000		0	0	0.000	0.00E+0	0.0
sodium		510.00	260.00	330.00	440.00	0.0000		510.000		0	0	510.000	5.32E-3	46.6
thallium						0.0000		0.000		0	0	0.000	0.00E+0	0.0
iron		6.00				3.6000	3600.00	6.000	66.2	66200	0	66.200	6.90E-4	6.0
zinc		0.07				0.0750	75.00	0.075	1.35	1350	0	1.350	1.41E-5	0.1

TOTAL HAP EMISSIONS:

uncontrolled = **0.30** lb/hr **2,646.05** lbs/year

98% control = **0.006** lb/hr **52.92** lbs/year

Note: Existing 20,000-gpd EVAP unit contributed 35.3 lb/yr. Increase for new unit = 35.3

a - HAPs in both LFG and in leachate
b - from EPA Characterization of MWC Ashes and Leachates from MSW Landfills, Monofills and Co-Disposal Sites, median concentration values
c - draft AP-42 (9/95), Tables 2.4-3; unlisted control efficiencies assumed to be 80%
d - product of combustion
c - Additional HAPs found in leachate > 50 ppb/mgal per reference b
x - HAP present in leachate > 50 ppb
o - non-VOC HAP
Notes:
c - draft AP-42 (9/95), Tables 2.4-1 and 2.4-2; concentration in inlet gas
d - concentration of chloride in leachate; thermal conversion to hydrogen chloride in flare is presented in the "air toxics" sheets
d - concentration of sulfate in leachate; thermal conversion to sulfur dioxides in flare is presented in the "criteria pollutants" sheets

Letter Symbol	Definition
atm-ft^3/lb-mol°R	atmosphere cubic foot per pound mole degree Rankine
acfm	actual cubic foot per minute
atm	atmosphere
bhp	brake horsepower
Btu	british thermal unit
cal/s	calorie per second
CO	carbon monoxide
ft^3	cubic foot
m^3	cubic meter
d	day
°F	degree Fahrenheit
°R	degree Rankine
dscfm	dry standard cubic foot, feet per minute
dsl/min	dry standard litre per minute
ft	foot
ft/min	foot per minute
ft/s	foot per second
g	gram
hr	hour
HAP	hazardous air pollutant
HV	heating value
HHV	higher heating value
in.	inch
kW	kilowatt
kWh	kilowatt hour
l	litre
LHV	lower heating value
m	meter
m/s	meter per second
CH_4	methane
Hg	mercury
μg	microgram
μg/dsl	microgram per dry standard litre
mg	milligram
MM	million
MMBtu	million british thermal units
min	minute
mol	mole
NO_2	nitrogen dioxide
Nox	nitrogen oxides
NMOC	non-methane organic compounds
PM_{10}	particulate matter less than or equal to 10 microns
Pb	lead
ppmv	parts per million by volume
ppmw	parts per million by weight
lb/hr	pound per hour
s	second
scf	standard cubic foot
scfm	standard cubic foot per minute
STP	standard temperature and pressure
SO_2	sulfur dioxide
ton	ton
ton/yr	ton per year
R	universal gas constant
VOC	volatile organic compound

Sample Calculations

Standard Conditions and Constants

$^oR = ^oF + 460$
standard temperature = 60 ^oF
standard pressure = 1 atm
Universal gas constant (R) = 0.7302 atm-ft^3/lb-mol^{o}R

Flow
dscfm= scfm*(1-%moisture)
acfm = scfm*(actual temp[^{o}R])/(standard temp[^{o}R])*{(standard press[atm])/(actual press [atm])}

CO and NO_x Emissions
(lb/MMbtu)*(MMbtu/hr)= lb/hr

SO_2 Emissions
typically, 86% to 99.7% of sulfur compounds convert to SO_2 during combustion
{(scfm)*(60 min/hr)*(total sulfur concentration [ppmv])*(1-control efficiency)*(MW SO_2)}/{(R)*(T)} = lb/hr

PM_{10} Emissions
(dscfm)*(CH_4 component)*(1E-6 MMscf/scf)* (lb PM/MMscf CH_4)*(60 min/hr) = lb/hr

VOC Emissions
{(scfm*60 min/hr*concentration$_{compound}$[ppmv]*MW$_{compound}$)/(R)*(T)}*(1-control efficiency) = lb/hr
OR
VOCs are 39 percent of NMOC, as prescribed in AP-42
VOC concentration[ppmv] = NMOC concentration[as hexane]*39%
flare and/or engines typically combust 98% of VOCs
{(scfm*60 min/hr*concentration$_{hexane}$[ppmv]*MW$_{hexane}$)/(R)*(T)}*(0.39) = lb/hr

LFG Compound Emissions
{(scfm*60 min/hr*concentration$_{compound}$[ppmv]*MW$_{compound}$)/(R)*(T)}*(1-control efficiency)

HCl Emissions
typically, 86% to 99.7% of chlorine compounds convert to HCl during combustion
(concentration$_{compound}$[ppm])*(control efficiency)*(no. of chlorine atoms) = HCl concentration [ppm] in outlet gas from each compound
{HCl conconcentration$_{each\ compound}$[ppm]*scfm*MW$_{HCl}$}/{(R)*(T)}*(60 min/hr) = lb/hr
OR

{(scfm)*(60 min/hr)*(HCl outlet concentration per AP-42 [ppmv])*(1-control efficiency)*(MW}/{(R)*(T)} = lb/hr

Sample Calculations

Standard Conditions and Constants

$^{o}R = {}^{o}F + 460$
standard temperature = 60 ^{o}F
standard pressure = 1 atm
Universal gas constant (R) = 0.7302 atm-ft^3/lb-mol^{o}R

Flow

dscfm= scfm*(1-%moisture)
acfm = scfm*(actual temp[^{o}R])/(standard temp[^{o}R])*{(standard press[atm])/(actual press [atm])}

CO and NO_x Emissions

(lb/MMbtu)*(MMbtu/hr)= lb/hr

SO_2 Emissions

typically, 86% to 99.7% of sulfur compounds convert to SO_2 during combustion
{(scfm)*(60 min/hr)*(total sulfur concentration [ppmv])*(1-control efficiency)*(MW SO_2)}/{(R)*(T)} = lb/hr

PM_{10} Emissions

(dscfm)*(CH_4 component)*(1E-6 MMscf/scf)* (lb PM/MMscf $CH_{4)}$*(60 min/hr) = lb/hr

VOC Emissions

{(scfm*60 min/hr*concentration$_{compound}$[ppmv]*MW$_{compound}$)/(R)*(T)}*(1-control efficiency) = lb/hr
OR
VOCs are 39 percent of NMOC, as prescribed in AP-42
VOC concentration[ppmv] = NMOC concentration[as hexane]*39%
flare and/or engines typically combust 98% of VOCs
{(scfm*60 min/hr*concentration$_{hexane}$[ppmv]*MW$_{hexane}$)/(R)*(T)}*(0.39) = lb/hr

LFG Compound Emissions

{(scfm*60 min/hr*concentration$_{compound}$[ppmv]*MW$_{compound}$)/(R)*(T)}*(1-control efficiency)

HCl Emissions

typically, 86% to 99.7% of chlorine compounds convert to HCl during combustion
(concentration$_{compound}$[ppm])*(control efficiency)*(no. of chlorine atoms) = HCl concentration [ppm] in outlet gas from each compound
{HCl conconcentration$_{each\ compound}$[ppm]*scfm*MW$_{HCl}$}/{(R)*(T)}*(60 min/hr) = lb/hr
OR
{(scfm)*(60 min/hr)*(HCl outlet concentration per AP-42 [ppmv])*(1-control efficiency)*(MW)}/{(R)*(T)} = lb/hr

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Appendix L

Permit Application 1270-1

Facility ID No. 0930104

Facility Permit History

Appendix L

Permit Application No. 1270-1

Facility ID No. 0930104

Facility Permit History

E.U. ID No.	Description	Permit No.	Effective Date	Expiration Date	Project Type
001	Landfill	**0930104-001-AC**	5/13/1997	5/12/1998	Construction
001	Landfill	**0930104-002-AV**	12/16/1997	12/15/2002	Initial TV
002	Enclosed Flare (1500 SCFM)	**0930104-003-AC**	05/01/1998	05/12/1999	Construction Extension
002 & 003	1500 scfm enclosed flare 3000 scfm enclosed flare	**0930104-004-AC**	07/23/2001	07/22/2002	Construction
002 & 003	1500 scfm enclosed flare 3000 scfm enclosed flare	**0930104-005-AC**	05/22/2002	11/19/2002	Construction (Ext.)
001, 002, 003, 004	Landfill, 1500 scfm enclosed flare 3000 scfm enclosed flare, 3000 scfm open flare	**0930104-006-AV**	08/08/03	08/02/2008	TV Renewal
004	3000 scfm open flare	**0930104-007-AC**	4/15/2003	4/14/2004	Construction
002 & 003	1500 scfm enclosed flare 3000 scfm enclosed flare	**0930104-008-AC**	09/24/2002	02/17/2003	Construction (Ext.)
002 & 003	1500 scfm enclosed flare 3000 scfm enclosed flare	**0930104-009-AC**	01/28/2003	03/19/2003	Construction (Ext.)
005	3000 scfm enclosed flare	**0930104-010-AC**	09/29/2003	09/28/2004	Construction
005	3000 scfm enclosed flare	**0930104-011-AV**	01/16/2004	08/02/2008	TV Revision

Appendix N

Permit Application 1270-1

Facility ID No. 0930104

Landfill Gas (Fuel) Analysis for EU-003 and EU-006

Appendix N
Landfill Gas (Fuel) Analysis

The fuel for the flare is provided by the municipal waste decomposition in the MSW landfill (EU-001) and varies due to the heterogeneous nature of the waste, moisture, time in place, and decomposition rate. The fuel's available heating value (Btu) is substantially provided by the methane.

The table below presents the typical composition of a productive landfill gas.

Typical Landfill Gas Components	
Component	**Percent by Volume**
methane	45–60
carbon dioxide	40–60
nitrogen	2–5
oxygen	0.1–1
ammonia	0.1–1
NMOCs (non-methane organic compounds) NMOCs most commonly found in landfills include acrylonitrile, benzene, 1,1-dichloroethane, 1,2-cis dichloroethylene, dichloromethane, carbonyl sulfide, ethyl-benzene, hexane, methyl ethyl ketone, tetrachloroethylene, toluene, trichloroethylene, vinyl chloride, and xylenes.	0.01–0.6
Sulfides (e.g., hydrogen sulfide, dimethyl sulfide, mercaptans)	0–1
hydrogen	0–0.2
carbon monoxide	0–0.2
Source: Tchobanoglous, Theisen, and Vigil 1993; EPA 1995	

The following two table presents the typical fuel analysis that was used as a basis for the emission calculations of the flares (EU-003, EU-005 and new EUs, EU-006 and EU-007) for this facility. Additional information may be found in Appendix K – Support Calculations.

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft^3/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft^3	
LFG Methane Component[c]	55%		
LFG Typical Heating Value	550	Btu/ft^3	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%		
Methane Combustion Constant[d]	9.53	ft^3 air/ft^3 CH_4	

[a]Industrial STP (60°F, 30.00 in. Hg, 1 atm)
[b]Typical
[c]Assumed
[d]*Professional Engineering Registration Program*, 23-9

The following table provides the data used for sulfur content in the Landfill Gas. Values are from AP-42 except the Hydrogen Sulfide, which was provided from analyzing the Okeechobee Facility's inlet gas.

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]
Carbon Disulfide	75-15-0	76.13	0.58
Carbonyl Sulfide	463-58-1	60.07	0.49
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28
Hydrogen Sulfide	7783-06-4	34.08	**5800.00**
Methyl Mercaptan	74-93-1	48.11	2.49

Appendix O

Permit Application No. 1270-1
Facility ID No. 0930104

Detailed Description of Equipment For EU-003, New EU-006 and New EU-007

Detailed Description of Equipment for EU-003

Note: The equipment information is also related to existing EU-005.

Detailed Description of Equipment
New EU-006 and New EU-007

Appendix O
Detailed Description of Control Equipment

Okeechobee Landfill, Inc.
Okeechobee Landfill

Permit No.: 0930104-012-AC
Facility ID No.: 0930104

The technical specifications for the proposed 30,000 gallon per day E-VAP® units for EU-003 and EU-006 are presented in the table below:

E-VAP MODEL SPECIFICATIONS

Available Models	5,000 GPD E-Vap	10,000 GPD E-Vap	20,000 GPD E-Vap	30,000 GPD E-Vap
Capacity GPM	3.5	7	14	21
LFG Flow at 50% Methane (Min)	275 cfm	550 cfm	1100 cfm	1650 cfm
LFG use per Gal. Evaporated (cf)	75	75	75	75
Leachate Volume Reduction	+97%	+97%	+97%	+97%
Air Emissions	Pass	Pass	Pass	Pass
Qualifies for IRS Section 29	Yes	Yes	Yes	Yes
Electricity Used	25 kW	39 kW	56 kW	61 kW
Dimensions	2,200 sq. ft.	2,500 sq. ft.	2,800 sq. ft.	3,200 sq. ft.

On the next two pages are details of the enclosed flare (model EF1045I12) proposed for the new EU-006.

LFG Specialties FLARE *Systems*

Totally Committed To The Landfill Gas Industry

LFG Specialties is the first company to dedicate its engineering and production facilities to the design and manufacture of landfill gas extraction, control and recovery equipment and systems.

Enclosed Flares

LFG Specialties manufactures a full range of enclosed type flares for landfill gas application. The flares are specifically designed for high-efficiency combustion of landfill gas, guaranteed to meet federal and state regulatory requirements for the disposal and combustion of landfill gas.

Features

- *Guaranteed to meet EPA emission standards for LFG disposal*
- *Flame-Trol—advanced fully automated flare controller*
- *Energy saving pilot system*
- *Full range of standard sizes*
- *Quick delivery—twelve weeks or less for most flares*
- *Full service and parts support—24 hour emergency service*

LFG Specialities will also custom design and manufacture flares, controllers and combustor systems to meet specific customer conditions and specifications.

Standard Equipment

Flare Stack—Carbon steel construction with 150# flanged inlet connection.

Combuster Assembly—All 304 SS burner tip.

Igniter Assembly—304 SS pilot tip and nozzle, enclosed spark plug igniter, high temperature leads with igniter transformer in NEMA 4 enclosure, and type K thermocouples in high temperature thermal wells.

Peripheral Equipment—Flame arrester and pilot controls including: pressure regulator, gauges, fail-safe valves and manual shut-off valves.

Optional Equipment

- *Condensate Injection Systems for use on new or existing flare systems*
- *Air Compressor Packages*
- *Paperless and Digital Chart Recorders*
- *Remote Monitoring and Data Logging*

All of our flares are factory tested and shipped ready for quick installation and start-up.

Standard Enclosed Flare Specifications

Model	*EF318I4*	*EF420I4*	*EF525I4*	*EF630I6*	*EF735I6*	*EF840I8*	*EF945I12*	*EF1045I12*	*EF1150I14*	*EF1255I16*	*EF1355I16*
Flow Rates (SCFM)				Turndown Ratio 6:1							
Range	16-100	33-200	58-350	83-500	166-1000	300-1800	416-2500	500-3000	666-4000	833-5000	1000-6000
Shell Diameter	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13"
Height	18'	20'	25'	30'	35'	40'	45'	45'	50'	55'	55'
Flame Arrester	4"	4"	4"	6"	6"	8"	12"	12"	14"	16"	16"

Minimum gas Btu value - 200 Btu/ft^3
Note: Low NO_x and CO emissions with higher than 98% destruction efficiency.

Note: 6:1 Turndown Ratio is standard. 10:1 Turndown Ratio is available on some models.

Wind loads - Designed for 100 mph wind loading (per ANSI/ASCE 7-88)

Flame-Trol IV

LFG Specialties manufactures a full line of flare and system controllers. The Flame-Trol IV is a technically advanced fully automatic flare system controller specifically designed to obtain the maximum operating flexibility and efficiency out of an enclosed type flare. The controller has the following features:

- *Temperature controller to monitor and control set points at which operating functions will occur, including:*
  - *pilot, on and off*
  - *blowers, on and off*
  - *activate automatic header*
  - *valve, open and close*
  - *system safety shutdown.*
- *Temperature controller with constant LED temperature read-out*
- *Pilot timer, provides safety shutoff if flare fails to light*
- *Down time timer–provides the operator with a set time after a shutdown for the system to remain down in order to allow the wellfield to rejuvenate*
- *Igniter timer, allows the operator to set spark duration, extending igniter system life*
- *Manual/Auto-Switch, provides the operator the ability to completely bypass the automatic controls and operate the system manually. This is especially important in lightning prone regions.*

The Flame-Trol IV is installed in a NEMA 4 "outdoor" weather proof enclosure.

LFG Specialties is a full service manufacturer, offering standard, made to order, and special engineered flares, flare controllers and auxiliary equipment and systems. Along with standard installation, inspection and repair parts and service, LFG Specialties also offers a full range of contract rental, operation and maintenance agreements tailored to the customer's specific needs and requirements.

Detailed Description of Equipment
New EU-006 and New EU-007

FLARE *Systems*

Utility "Candle Stick" Flares

LFG Specialties manufactures a full range of utility "candle stick" type flares for landfill gas and wastewater gas applications. The flares are specifically designed for high-efficiency combustion of landfill gas, guaranteeing 98% destruction efficiency.

Features

- *Guaranteed to meet EPA emission standards for methane disposal*
- *Flame-Trol–advanced fully automated flare controller*
- *Energy saving pilot system*
- *Full range of standard sizes*
- *Quick delivery–eight weeks or less for most flares*
- *Full service and parts support–24 hour emergency service*

LFG Specialities will also custom design and manufacture flares, controllers and combustor systems to meet specific customer conditions and specifications.

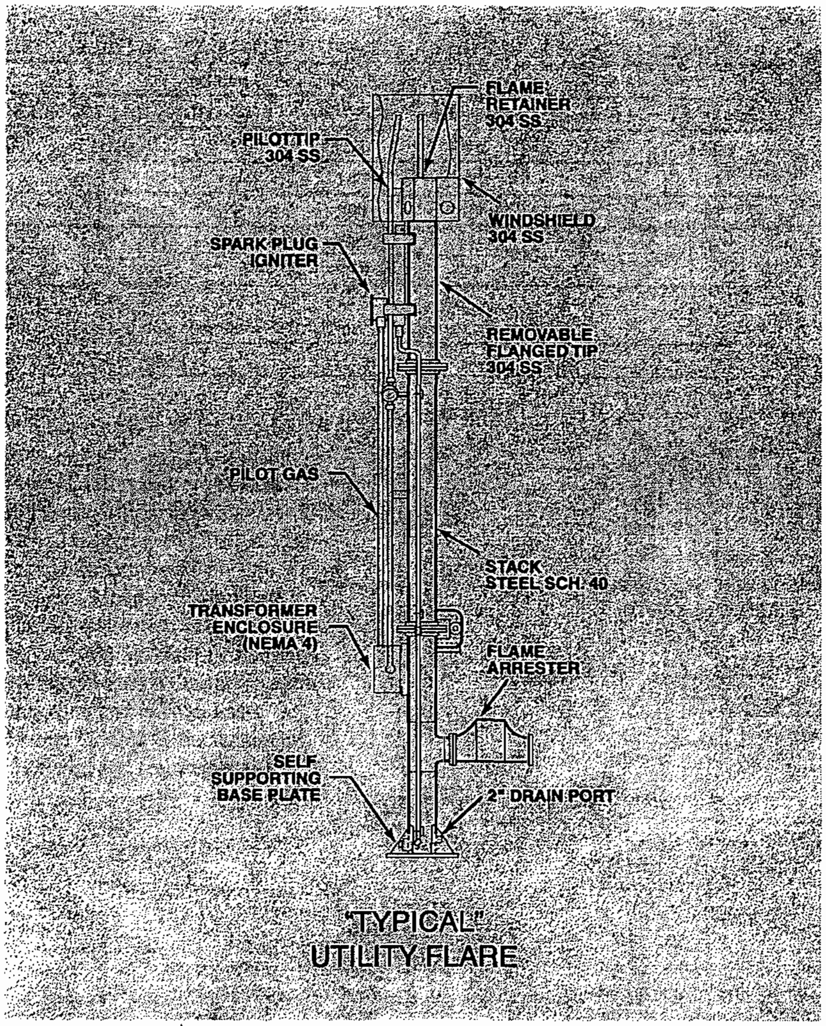
Standard Equipment

Flare Stack–Sch 40, steel pipe with self supporting base and 150# flanged inlet.

Combuster Assembly–Burner tip with flame retainer and windshield, all 304 SS.

Igniter Assembly–304 SS pilot tip and nozzle, enclosed spark plug igniter, high temperature leads, 110/15,000 volt transformer in NEMA 4 enclosure, and chromel-alumel (type K) thermocouples in SS wells.

Peripheral Equipment–Flame arrester, temperature and flame monitoring and pilot gas controls including: pressure regulator, gauge, fail-safe solenoid valve and manual shut-off valve.



Standard Utility Flare Specifications

Model	*CF418I4*	*CF619I4*	*CF825I6*	*CF1025I8*	*CF1230I10*	*CF1434I12*	*CF1635I14*	*CF1840I16*	*CF2045I18*
Flow Rates (SCFM)					Turndown Ratio 10:1				
Range	35-350	79-790	135-1362	210-2131	300-3014	350-3578	470-4717	600-6013	744-7466
Design	260	590	1050	1620	2360	3210	4190	5300	6500
Tip ø In.	4"	6"	8"	10"	12"	14"	16"	18"	20"
Height Ft.	20'	21'	28'	28'	33'	38'	39'	45'	53'
Flame Arrester size (dia.)	4"	4"	6"	8"	10"	10"	12"	16"	18"

Minimum methane content - 30%
Note: Below 30% enrichment gas is required to maintain stable flame and 98% destruction efficiency.

Wind loads - Designed for 100 mph wind loading (per ANSI/ASCE 7-88)

Flame-Trol

LFG Specialities manufactures a full line of flare and system controllers. The Flame-Trol is a technically advanced fully automatic flare system controller specifically designed to obtain the maximum operating flexibility and efficiency out of a utility "candle stick" type flare. The controller has the following features:

- *Temperature controller to monitor and control set points at which operating functions will occur, including:*
  - *pilot, on and off*
  - *blowers, on and off*
  - *activate automatic header valve*
  - *system safety shutdown.*
- *Controller has constant LED temperature read-out*
- *Pilot timer, provides safety shutoff if flare fails to light*
- *Down timer, variable restart timer to allow for gas update rejuvenation*
- *Igniter timer, sets the spark duration for more reliable ignition and extending igniter system life*
- *Manual/Auto-Switch, allows operator to bypass automatic controls and operate the system manually.*

The Flame-Trol is installed in a NEMA 4 "outdoor" weather proof enclosure.

LFG Specialities is a full service manufacturer, offering standard, made to order, and special engineered flares, flare controllers and auxiliary equipment and systems. Along with standard installation, inspection and repair parts and service, LFG Specialities also offers a full range of contract rental equipment, and operation and maintenance agreements tailored to the customer's specific needs and requirements.

Appendix P

Permit Application 1270-1

Facility ID No. 0930104

Stack Sampling

{Permitting note: EU-003 emission is unchanged by the equipment upgrade; provided for information only.}

Appendix P
STACK SAMPLING FACILITIES (version dated 10/07/96)

Okeechobee Landfill, Inc.	Permit No.: 1270-1
Okeechobee Landfill	Facility ID No.: 0930104

Stack Sampling Facilities Provided by the Owner of an Emissions Unit. This section describes the minimum requirements for stack sampling facilities that are necessary to sample point emissions units. Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. Emissions units must provide these facilities at their expense. All stack sampling facilities must meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

(a) Permanent Test Facilities. The owner or operator of an emissions unit for which a compliance test, other than a visible emissions test, is required on at least an annual basis, shall install and maintain permanent stack sampling facilities.

(b) Temporary Test Facilities. The owner or operator of an emissions unit that is not required to conduct a compliance test on at least an annual basis may use permanent or temporary stack sampling facilities. If the owner chooses to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, such temporary facilities shall be installed on the emissions unit within 5 days of a request by the Department and remain on the emissions unit until the test is completed.

(c) Sampling Ports.

1. All sampling ports shall have a minimum inside diameter of 3 inches.

2. The ports shall be capable of being sealed when not in use.

3. The sampling ports shall be located in the stack at least 2 stack diameters or equivalent diameters downstream and at least 0.5 stack diameter or equivalent diameter upstream from any fan, bend, constriction or other flow disturbance.

4. For emissions units for which a complete application to construct has been filed prior to December 1, 1980, at least two sampling ports, 90 degrees apart, shall be installed at each sampling location on all circular stacks that have an outside diameter of 15 feet or less. For stacks with a larger diameter, four sampling ports, each 90 degrees apart, shall be installed. For emissions units for which a complete application to construct is filed on or after December 1, 1980, at least two sampling ports, 90 degrees apart, shall be installed at each sampling location on all circular stacks that have an outside diameter of 10 feet or less. For stacks with larger diameters, four sampling ports, each 90 degrees apart, shall be installed. On horizontal circular ducts, the ports shall be located so that the probe can enter the stack vertically, horizontally or at a 45 degree angle.

5. On rectangular ducts, the cross sectional area shall be divided into the number of equal areas in accordance with EPA Method 1. Sampling ports shall be provided which allow access to each sampling point. The ports shall be located so that the probe can be inserted perpendicular to the gas flow.

(d) Work Platforms.

1. Minimum size of the working platform shall be 24 square feet in area. Platforms shall be at least 3 feet wide.

2. On circular stacks with 2 sampling ports, the platform shall extend at least 110 degrees around the stack.

3. On circular stacks with more than two sampling ports, the work platform shall extend 360 degrees around the stack.

4. All platforms shall be equipped with an adequate safety rail (ropes are not acceptable), toeboard, and hinged floor-opening cover if ladder access is used to reach the platform. The safety rail directly in line with the sampling ports shall be removable

so that no obstruction exists in an area 14 inches below each sample port and 6 inches on either side of the sampling port.

(e) Access to Work Platform.

1. Ladders to the work platform exceeding 15 feet in length shall have safety cages or fall arresters with a minimum of 3 compatible safety belts available for use by sampling personnel.

2. Walkways over free-fall areas shall be equipped with safety rails and toeboards.

(f) Electrical Power.

1. A minimum of two 120-volt AC, 20-amp outlets shall be provided at the sampling platform within 20 feet of each sampling port.

2. If extension cords are used to provide the electrical power, they shall be kept on the plant's property and be available immediately upon request by sampling personnel.

(g) Sampling Equipment Support.

1. A three-quarter inch eyebolt and an angle bracket shall be attached directly above each port on vertical stacks and above each row of sampling ports on the sides of horizontal ducts.

a. The bracket shall be a standard 3 inch x 3 inch x one-quarter inch equal-legs bracket which is 1 and one-half inches wide. A hole that is one-half inch in diameter shall be drilled through the exact center of the horizontal portion of the bracket. The horizontal portion of the bracket shall be located 14 inches above the centerline of the sampling port.

b. A three-eighth inch bolt which protrudes 2 inches from the stack may be substituted for the required bracket. The bolt shall be located 15 and one-half inches above the centerline of the sampling port.

c. The three-quarter inch eyebolt shall be capable of supporting a 500 pound working load. For stacks that are less than 12 feet in diameter, the eyebolt shall be located 48 inches above the horizontal portion of the angle bracket. For stacks that are greater than or equal to 12 feet in diameter, the eyebolt shall be located 60 inches above the horizontal portion of the angle bracket. If the eyebolt is more than 120 inches above the platform, a length of chain shall be attached to it to bring the free end of the chain to within safe reach from the platform.

2. A complete monorail or dualrail arrangement may be substituted for the eyebolt and bracket.

3. When the sample ports are located in the top of a horizontal duct, a frame shall be provided above the port to allow the sample probe to be secured during the test.

[Rule 62-297.310(6), F.A.C.]

Appendix Q

Permit Application 1270-1

Facility ID No. 0930104

Procedures for Start Up and Shut Down For EU-003, New EU-006 and New EU-007

WASTE MANAGEMENT

MUNICIPAL SOLID WASTE LANDFILL
GAS COLLECTION AND CONTROL SYSTEM (GCCS)

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

Okeechobee Landfill, Inc.
Berman Road Landfill
Okeechobee, Florida

Prepared by:
Okeechobee Landfill, Inc.
10800 N.E. 128th Avenue
Okeechobee, FL 34972
(863)357-0111

Date of Issuance:
August 8, 2005

☐ This version of this plan has been superseded.

If the box above has been checked, complete the following information:

This copy of the plan may be discarded after ______________________
(enter the date that is 5 years after date on which this version was superseded by a newer version)

MUNICIPAL SOLID WASTE LANDFILL GAS COLLECTION AND CONTROL SYSTEM (GCCS)

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

Berman Road Landfill Okeechobee, Florida

This startup, shutdown and malfunction (SSM) plan (SSM Plan) was prepared by Okeechobee Landfill, Inc. (OLI) in order to comply with the requirements of 40 CFR 63.6(e)(3), as this facility is subject to 40 CFR Part 63, Subpart AAAA, the National Emission Standard for Hazardous Air Pollutants (NESHAPs) for Municipal Solid Waste (MSW) landfills. The SSM Plan contains all of the required elements set forth within 40 CFR 63.6(e).

This SSM Plan will be revised if the procedures described herein do not adequately address any malfunction or startup/shutdown events that occur at the facility. A copy of the original plan and all revisions/addenda will be kept on file at the facility for at least five (5) years. John Van Gessel, Vice President and Assistant Secretary and Mike Stallard, District Manager are responsible for assuring that the most recent copy of this SSM Plan is made available to all personnel involved with the landfill gas (LFG) collection and control system (GCCS) at Berman Road Landfill as well as to appropriate regulatory agency personnel for inspection.

Name of Plan Preparer: ____

Name Date

Approved:
John Van Gessel
Vice President and Assistant Secretary: ____________________________________

Name Date

Appendix R

Permit Application 1270-1

Facility ID No. 0930104

Operation and Maintenance Plan For EU-003, New EU-006 and New EU-007

Appendix R

Permit Application 1270-1

Facility ID No. 0930104

Operation and Maintenance Plan For EU-003, New EU-006 and New EU-007

The operation and maintenance plan will be updated to include the proposed utility flares before operation of the new flares. Updating the plan will require the completion of the procurement process and receipt of the additional O&M manuals for the new EUs.

The operation and maintenance plan for the landfill gas collection and treatment is comprised of several large binders, therefore, it will not be submitted but maintained at the facility.

Appendix S

Permit Application 1270-1

Facility ID No. 0930104

Compliance Demonstration Reports

For EU-003, New EU-006 and New EU-007

Compliance demonstration reports are submitted for annually for the enclosed stack testing. Compliance demonstration reports for the landfill are submitted on a semiannual basis. A compliance report and plan for the proposed projects EU-006 and EU-007 are included in the facility-wide compliance report presented in Appendix F.

Appendix T1

Permit Application No. 1270-1

Facility ID No. 0930104

Emission Unit: Identification of Applicable Requirements

Enclosed Flares

EU-003

Appendix T1
Emission Unit: Identification of Applicable Requirements

This section addresses the following emission units.

E.U. ID No.	Brief Description
003	A 3,000-scfm-inlet flow Enclosed Landfill gas flare Unit # 1776 with 30,000 gpd EVAP© Unit # TBD

The Emission Unit 003 is an existing enclosed flare (LFG Specialties, Inc. model No. EF1045I10) with an operating capacity of 3,000 scfm . The existing operating 20,000-gpd Leachate E-VAP unit will be replaced with a 30,000-gpd unit to be manufactured by LFG Specialties, Inc.

{Permitting note: These new emission units and the other existing units (facility MSW landfill EU-001, enclosed flares EU-003 and EU-005, and open flare EU-004l) are regulated under NSPS 40 CFR 60, Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills", adopted and incorporated by reference in Rule 62-204.800(7)(b)72, F.A.C. The landfill unit is also regulated under NESHAP 40 CFR 63, Subpart AAAA "National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills. The landfill is also regulated under 40 CFR 61, Subpart M "National Emission Standard for Asbestos", adopted and incorporated by reference in Rule 62-204.800(10)(b)8., F.A.C. ***The landfill with its gas collection system requires pollution control for VOCs. The pollution control equipment is the landfill gas flares. This section of the permit applicable which requires identification of applicable regulation for the subject EUs also identify regulations that may relate to the MSW landfill EU. }***

The following specific conditions apply to the emission units listed above:

1.0 <u>Applicable Requirements and emission limiting standards.</u>

1.1 <u>Hours of Operation.</u> These emission units are allowed to operate continuously. [Rule 62-210.200(PTE), F.A.C.]

1.2 These emission units are subject to the applicable provisions of 40 CFR 60 Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills" and 40 CFR 63 Subpart AAAA, "National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills".
[40 CFR 60.752(a), 40 CFR 63.1935 and Rule 62-204.800, F.A.C., 0930104-004-AC, 007-AC & 010-AC]

1.3 <u>Non-Methane Organic Compounds (NMOC) Emission:</u> 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 parts per million by volume, dry basis as hexane at 3 percent 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). For E.U # 006, the reduction efficiency or parts per million by volume shall be established by an initial performance test required under 40 CFR 60.8.

[Rule 62-204.800(8)(b), F.A.C., 40 CFR 60.752(b)(2)(iii)(B), and 0930104-004-AC & 010-AC]

1.4 Carbon Monoxide (CO) Emission: CO emission is limited to 0.27 lb/mmbtu from each flare.
[Rule 62-4.070(3), F.A.C. and 0930104-010-AC]

1.5 The open flare (**E.U. #004**) shall not operate when all three enclosed flares (EU-003, EU-005 and EU-006) at the facility are operating.
[Rule 62-4.070(3), F.A.C. and 0930104-007-AC]

1.6 These emission units are subject to the following requirements from Title 40 of the Code of Federal Regulations Part 60 (see attached Appendix B):

40 CFR 60.7	Notification and record keeping.
40 CFR 60.8	Performance tests
40 CFR 60.11	Compliance with standards and maintenance requirements
40 CFR 60.12	Circumvention
40 CFR 60.13	Monitoring requirements
40 CFR 60.14	Modification
40 CFR 60.15	Reconstruction
40 CFR 60.19	General notification and reporting requirements

2.0 Sections 40 CFR 60.752: Standards for air emission from municipal solid waste landfills.

The control device shall be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in 40 CFR 60.756; Operate the collection and control device installed to comply with 40 CFR 60, Subpart WWW in accordance with the provisions of 40 CFR 60.753, 60.755 and 60.756.
[Rule 62-204.800, F.A.C.; 40 CFR 60.752(b)]

2.1 Removal of collection and control system
The collection and control system may be capped or removed provided that all the conditions of paragraphs (b)(2)(v) (A), (B), and (C) of this section are met:
(A) The landfill shall be a closed landfill as defined in 40 CFR 60.751. A closure report shall be submitted to the Administrator as provided in 40 CFR 60.757(d);
(B) The collection and control system shall have been in operation a minimum of 15 years; and
(C) 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.
[Rule 62-204.800, F.A.C.; 40 CFR 60.752(b)(2)(v)]

2.2 Closure of landfill.

When a MSW landfill subject to 40 CFR 60, Subpart WWW is closed, the owner or operator is no longer subject to the requirement to maintain an operating permit under 40 CFR 70 or 71 for the landfill if the landfill is not otherwise subject to the requirements of either 40 CFR 70 or 71 and if either of the following conditions are met:

(1) The landfill was never subject to the requirement for a control system under 40 CFR 60.752(b)(2); or
(2) The owner or operator meets the conditions for control system removal specified in 40 CFR 60.752(b)(2)(v).

[Rule 62-204.800, F.A.C.; 40 CFR 60.752(d)]

3.0 Section 40 CFR 60.753: Operational standards for collection and control systems.

3.1 Length of time required to operate control system.

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:

(a) 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:
    (1) 5 years or more if active; or
    (2) 2 years or more if closed or at final grade.

[Rule 62-204.800, F.A.C.; 40 CFR 60.753(a)]

7.2 Collection system pressure requirements.

Operate the collection system with negative pressure at each wellhead except under the following conditions:

(1) A fire or increased well temperature. The owner or operator shall record instances when positive pressure occurs in efforts to avoid a fire. These records shall be submitted with the annual reports as provided in 40 CFR 60.757(f)(1);
(2) Use of a geomembrane or synthetic cover. The owner or operator shall develop acceptable pressure limits in the design plan;
(3) A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes shall be approved by the Administrator.

[Rule 62-204.800, F.A.C.; 40 CFR 60.753(b)]

3.3 Collection system temperature, oxygen and nitrogen requirements.

Operate each interior wellhead in the collection system with a landfill gas temperature not more than 80° C and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. 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.

(1) 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).
(2) 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 except that:
    (i) The span shall be set so that the regulatory limit is between 20 and 50 percent of the span;
    (ii) A data recorder is not required;
    (iii) Only two calibration gases are required, a zero and span, and ambient air may be used as the span;
    (iv) A calibration error check is not required;
    (v) The allowable sample bias, zero drift, and calibration drift are ±10 percent.

[Rule 62-204.800, F.A.C.; 40 CFR 60.753(c)]

3.4 Collection system background methane requirements.
Operate the collection system so that the methane concentration is less than 500 parts per million 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.
[Rule 62-204.800, F.A.C.; 40 CFR 60.753(d)]

3.5 Collection system venting requirements.
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 1 hour.**
[Rule 62-204.800, F.A.C.; 40 CFR 60.753(e)]

3.6 Requirement for continuous operation.
Operate the control or treatment system at all times when the collected gas is routed to the system.
[Rule 62-204.800, F.A.C.; 40 CFR 60.753(f)]

3.7 Requirement to take corrective action.
If monitoring demonstrates that the operational requirement 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). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements in this section.
[Rule 62-204.800, F.A.C.; 40 CFR 60.753(g)]

4.0 Section 40 CFR 60.754 Test methods and procedures for Enclosed Flare EU-003.

4.1 **EU-003:** NMOC Test Required: The owner or operator shall test each 3000 scfm flare for NMOC, to demonstrate compliance with sp. Condition 1.4, using the methods specified in sp. condition 4.7.
[Rules 62-4.070(3) and 62-297.401 F.A.C. & 0930104-004-AC, 010-AC and Compliance Plan submitted June 02, 2003 and revised August 11, 2003]

4.2 **EU-003:** CO Test Required: The owner or operator shall test each 3000 scfm flare for CO, to demonstrate compliance with sp. Condition 1.5, using EPA Method 10.
The facility shall document the flow rates to both flares during the compliance testing of each flare. These flow rates shall be included in the compliance test report submitted to the Department.

[Rules 62-4.070(3) and 62-297.401 F.A.C. & 0930104-004-AC, 010-AC and Compliance Plan submitted June 02, 2003]

4.3 Test Frequency for EU-003:

- Emission Units 003 shall be tested again for NMOC, as specified in sp. Conditions 4.1 within 6 months of the renewal application due date of this permit.
- Emission Units 003 shall be tested again for CO, as specified in sp. Condition 4.2, every federal fiscal year (October 1 - September 30).

[Rules 62-4.070(3), 62-297.310(7), and 62-213.440, F.A.C., Compliance Plan submitted June 02, 2003]

*{**Permitting Note**: The facility conducted the initial compliance test for CO and NMOC of E.U. # 003 and submitted the test report to the Department in December 2005.}*

4.4 Calculating NMOC rate to determine when a collection and control system may be removed.

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 60.752(b)(2)(v), using the following equation:

$$M_{NMOC} = 1.89 \times 10^{-3} Q_{LFG} C_{NMOC}$$

where,

M_{NMOC} = mass emission rate of NMOC, megagrams per year
Q_{LFG} = flow rate of landfill gas, cubic meters per minute
C_{NMOC} = NMOC concentration, parts per million by volume as hexane

(1) 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 40 CFR 60, Appendix A.
(2) 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 40 CFR 60, Appendix A. If using Method 18 of 40 CFR 60, Appendix A, 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 40 CFR 60, Appendix A by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.
(3) The owner or operator may use another method to determine landfill gas flow rate and NMOC concentration if the method has been approved by the Administrator.

[Rule 62-204.800, F.A.C.; 40 CFR 60.754(b)]

4.5 Calculating emission for PSD purposes.

When calculating emission for PSD purposes, the owner or operator of each MSW landfill subject to the provisions of 40 CFR 60, Subpart WWW shall estimate the NMOC emission rate for comparison to the PSD major source and significance levels in 40 CFR 51.166 or 52.21 using AP-42 or other approved measurement procedures.

[Rule 62-204.800, F.A.C.; 40 CFR 60.754(c)]

4.6 Performance test methods.

For the performance test required in 40 CFR 60.752(b)(2)(iii)(B), Method 25, 25C or Method 18 of appendix A of this part shall be used to determine compliance with 98 weight-percent efficiency or the 20 ppmv outlet concentration level, unless another method to demonstrate compliance has been approved by the Administrator 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 3 percent. In cases where the outlet concentration is less than 50 ppm NMOC as carbon (8ppm NMOC as Hexane), Method 25A should be used in place of Method 25. If using Method 18 of 40 CFR 60, Appendix A, 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 following equation shall be used to calculate efficiency:

$$\textbf{Control Efficiency} = (\mathbf{NMOC_{in}} - \mathbf{NMOC_{out}})/(\mathbf{NMOC_{in}})$$

where,

$NMOC_{in}$ = mass of NMOC entering control device
$NMOC_{out}$ = mass of NMOC exiting control device.

[Rule 62-204.800, F.A.C.; 40 CFR 60.754(d)]

5.0 Section 40 CFR 60.755: Compliance provisions.

5.1 Methods for ensuring collection system accuracy.

The specified methods in paragraphs (a)(1) through (a)(6) of this section shall be used to determine whether the gas collection system is in compliance with 40 CFR 60.752(b)(2)(ii).

(1) 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), one of the following equations 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 the Administrator. If k has been determined as specified in 40 CFR 60.754(a)(4), the value of k determined from the test shall be used. A value of no more than 15 years shall be used 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.

(i) For sites with unknown year-to-year solid waste acceptance rate:

$$\mathbf{Q_m = 2L_o R (e^{-kc} - e^{-kt})}$$

where,

Q_m = maximum expected gas generation flow rate, cubic meters per year
L_o = methane generation potential, cubic meters per megagram solid waste
R = average annual acceptance rate, megagrams per year
k = methane generation rate constant, $year^{-1}$
t = age of the landfill at equipment installation plus the time the owner or operator intends to use the gas mover equipment or active life of the landfill, whichever is less. If the equipment is installed after closure, t is the age of the landfill at installation, years
c = time since closure, years (for an active landfill c = O and e^{-kc} = 1)

(ii) For sites with known year-to-year solid waste acceptance rate:

$$Q_M = \sum_{i=1}^{n} 2kLoMi\left(e^{-kt}i\right)$$

where,

Q_M = maximum expected gas generation flow rate, cubic meters per year
k = methane generation rate constant, $year^{-1}$
L_o = methane generation potential, cubic meters per megagram solid waste
M_I = mass of solid waste in the I^{th} section, megagrams

t_I = age of the I^{th} section, years

(iii) 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.

(2) 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 the Administrator, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards.

(3) 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 exceedence may be submitted to the Administrator for approval.

(4) Owners or 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.

(5) 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 the Administrator for approval.

(6) 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 the Administrator as specified in 40 CFR 60.752(b)(2)(I)(C) demonstrating that off-site migration is being controlled.

[Rule 62-204.800, F.A.C.; 40 CFR 60.755(a)]

5.2 Installation according to design plan.
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:

(1) 5 years or more if active; or
(2) 2 years or more if closed or at final grade.

[Rule 62-204.800, F.A.C.; 40 CFR 60.755(b)]

5.3 Surface methane requirements.

The following procedures shall be used for compliance with the surface methane operational standard as provided in 40 CFR 60.753(d).

(1) 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 sp. Condition # 5.4.

(2) 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.

(3) Surface emission monitoring shall be performed in accordance with section 4.3.1 of Method 21 of 40 CFR 60, Appendix A, except that the probe inlet shall be placed within 5 to 10 centimeters of the ground. Monitoring shall be performed during typical meteorological conditions.

(4) 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 40 CFR 60.755(c)(4) (I) through (v) shall be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of 40 CFR 60.753(d).

   (i) The location of each monitored exceedance shall be marked and the location recorded.

   (ii) 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.

   (iii) 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 40 CFR 60.755(c)(4)(v) shall be taken, and no further monitoring of that location is required until the action specified in 40 CFR 60.755(c)(4)(v) has been taken.

   (iv) Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified in 40 CFR 60.755(c)(4) (ii) or (iii) shall be re-monitored 1 month from the initial exceedance. If the 1-month remonitoring shows a concentration less than 500 parts per million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month remonitoring shows an exceedance, the actions specified in 40 CFR 60.755(c)(4) (iii) or (v) shall be taken.

   (v) 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.

(5) The owner or operator shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

[Rule 62-204.800, F.A.C.; 40 CFR 60.755(c)]

5.4 Method for ensuring accuracy of surface methane measurements.

Each owner or operator seeking to comply with the provisions in 40 CFR 60.755(c) shall comply with the following instrumentation specifications and procedures for surface emission monitoring devices:

(1) The portable analyzer shall meet the instrument specifications provided in section 3 of Method 21 of 40 CFR 60, Appendix A, except that "methane" shall replace all references to VOC.

(2) The calibration gas shall be methane, diluted to a nominal concentration of 500 parts per million in air.

(3) To meet the performance evaluation requirements in section 3.1.3 of Method 21 of 40 CFR 60, Appendix A, the instrument evaluation procedures of section 4.4 of Method 21 of 40 CFR 60, Appendix A shall be used.
(4) The calibration procedures provided in section 4.2 of Method 21 of 40 CFR 60, Appendix A shall be followed immediately before commencing a surface monitoring survey.

[Rule 62-204.800, F.A.C.; 40 CFR 60.755(d)]

5.5 Applicability of permit provisions.
The provisions of 40 CFR 60, Subpart WWW 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.
[Rule 62-204.800, F.A.C.; 40 CFR 60.755(e)]

6.0 Section 40 CFR 60.756: Monitoring of operations.

6.1 Active gas collection system.

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 port for temperature measurements at each wellhead and:
(1) Measure the gauge pressure in the gas collection header on a monthly basis as provided in 40 CFR 60.755(a)(3); and
(2) Monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis as provided in 40 CFR 60.755(a)(5); and
(3) Monitor temperature of the landfill gas on a monthly basis as provided in 40 CFR 60.755(a)(5).

[Rule 62-204.800, F.A.C.; 40 CFR 60.756(a)]

6.2 Enclosed combustor. (EU-003 & EU-006)
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 specifications, the following equipment.
(1) 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° C, whichever is greater.
(2) A device that records flow to or bypass of the control device. The owner or operator shall either:
  (i) Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or
  (ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

[Rule 62-204.800, F.A.C.; 40 CFR 60.756(b)]

6.3 Other control devices.
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 the Administrator 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. The Administrator shall review the information and either approve it, or request that additional information be submitted. The Administrator may specify additional appropriate monitoring procedures.

[Rule 62-204.800, F.A.C.; 40 CFR 60.756(d)]

6.4 Alternate methods of compliance.
Each owner or operator seeking to install a collection system that does not meet the specifications in 40 CFR 60.759 or seeking to monitor alternative parameters to those required by 40 CFR 60.753 through 40 CFR 60.756 shall provide information satisfactory to the Administrator as provided in 40 CFR 60.752(b)(2)(I) (B) and (C) describing the design

and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator may specify additional appropriate monitoring procedures.
[Rule 62-204.800, F.A.C.; 40 CFR 60.756(e)]

6.5 Surface methane operational standard.
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.
[Rule 62-204.800, F.A.C.; 40 CFR 60.756(f)]

7.0 Section 40 CFR 60.757: Reporting requirements.

7.1 The facility owner shall submit the results of the initial performance tests, specified in sp. Condition 4.4, within 45 days of the test date.
[Rules 62-4.070(3), and 62-297.310(8), F.A.C.]

7.2 AOR Supplemental Information: Annual operation reports required in Part II of this permit shall include following supplemental information that was recorded in the previous calendar year:

- The waste deposition rate for the reported year.

[Rule 62-4.070(3), F.A.C.]

7.3 Notification of any increase in design capacity.
Each owner or operator subject to the requirements of 40 CFR 60, Subpart WWW shall submit an initial design capacity report to the Administrator.

(1) The initial design capacity report shall fulfill the requirements of the notification of the date construction is commenced as required by 40 CFR 60.7(a)(1) and shall be submitted no later than:
{permitting note: The facility submitted the initial design capacity report in 1996}
(i) (no longer applicable)
(ii) (no longer applicable)
(2) (no longer applicable)
(3) (not applicable)
[Rule 62-204.800, F.A.C.; 40 CFR 60.757(a)]

7.4 Annual NMOC emission rate.

Each owner or operator subject to the requirements of 40 CFR 60, Subpart WWW, shall submit an NMOC emission rate report to the Administrator initially and annually thereafter, except as provided for in 40 CFR 60.757(b)(1)(ii) or (b)(3). The Administrator may request such additional information as may be necessary to verify the reported NMOC emission rate.

(1) The NMOC emission rate report shall contain an annual or 5-year estimate of the NMOC emission rate calculated using the formula and procedures provided in 40 CFR 60.754(a) or (b), as applicable.
  (i) The initial NMOC emission rate report may be combined with the initial design capacity report required in 40 CFR 60.757(a) and shall be submitted no later than indicated in 40 CFR 60.757(b)(1)(I)(A) and (B). Subsequent NMOC emission rate reports shall be submitted annually thereafter, except as provided for in 40 CFR 60.757(b)(1)(ii) and (b)(3).
    (A) (no longer applicable) or
    (B) (no longer applicable)
  (ii) (no longer applicable)

(2) (not applicable)

(3) Each owner or operator subject to the requirements of 40 CFR 60, Subpart WWW, is exempted from the requirements of 40 CFR 60.757(b)(1) and (2), after the installation of a collection and control system in compliance with 40 CFR 60.752(b)(2), during such time as the collection and control system is in operation and in compliance with 40 CFR 60.753 and 60.755.

[Rule 62-204.800, F.A.C.; 40 CFR 60.757(b)]

7.5 <u>Collection and control system design plan.</u>
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 the Administrator within 1 year of the first report, required under 40 CFR 60.757(b), in which the emission rate exceeds 50 megagrams per year, except as follows:
{permitting note: The facility submitted a collection and system design plan in 1997}
(1) (no longer applicable)
(2) (no longer applicable)

[Rule 62-204.800, F.A.C.; 40 CFR 60.757(c)]

7.6 <u>Closure report.</u>
Each owner or operator of a controlled landfill shall submit a closure report to the Administrator within 30 days of waste acceptance cessation. The Administrator 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 the Administrator, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4).

[Rule 62-204.800, F.A.C.; 40 CFR 60.757(d)]

7.7 <u>Equipment removal report.</u>
Each owner or operator of a controlled landfill shall submit an equipment removal report to the Administrator 30 days prior to removal or cessation of operation of the control equipment.
(1) The equipment removal report shall contain all of the following items:
  (i) A copy of the closure report submitted in accordance with 40 CFR 60.757(d);
  (ii) A copy of the initial performance test report demonstrating that the 15 year minimum control period has expired; and
  (iii) Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year.
(2) The Administrator may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 60.752(b)(2)(v) have been met.

[Rule 62-204.800, F.A.C.; 40 CFR 60.757(e)]

7.8 <u>Active collection system annual reports.</u>

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 the Administrator annual (**semi-annual from January 2004**) reports of the recorded information in (f)(1) through (f)(6) of this paragraph. 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).

(1) Value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(a), (b), (c), and (d).
(2) Description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified under 40 CFR 60.756.
(3) Description and duration of all periods when the control device was not operating for a period exceeding 1 hour and length of time the control device was not operating.
(4) All periods when the collection system was not operating in excess of 5 days.
(5) The location of each exceedance of the 500 parts per million methane concentration as provided in 40 CFR 60.753(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month.
(6) The date of installation and the location of each well or collection system expansion added pursuant to 40 CFR 60.755(a)(3), (b), and (c)(4).

[Rule 62-204.800, F.A.C.; 40 CFR 60.757(f)]

7.9 Collection and control system reporting.

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:

(1) A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the final sites for the future collection system expansion;
(2) The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based;
(3) The documentation of the presence of asbestos or nondegradable material for each area from which collection wells have been excluded based on the presence of asbestos or nondegradable material;
(4) The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on nonproductivity and the calculations of gas generation flow rate for each excluded area; and
(5) The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill; and
(6) The provisions for the control of off-site migration.

[Rule 62-204.800, F.A.C.; 40 CFR 60.757(g)]

8.0 Section 40 CFR 60.758: Recordkeeping requirements.

8.1 Capacity and acceptance reports.

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, on-site 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. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

[Rule 62-204.800, F.A.C.; 40 CFR 60.758(a)]

8.2 Control equipment test results.

Except as provided in 40 CFR 60.752(b)(2)(I)(B), 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 paragraphs (b)(1) through (b)(4) below 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.

(1) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 CFR 60.752(b)(2)(ii):
   - (i) 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 the Administrator.
   - (ii) 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).

(2) Where an owner or operator subject to the provisions of this 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 greater than 44 megawatts:
   - (i) The average combustion temperature measured at least every 15 minutes and averaged over the same time period of the performance test.
   - (ii) The percent reduction of NMOC determined as specified in 40 CFR 60.752(b)(2)(iii)(B) achieved by the control device.

(3) (not applicable)

(4) 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.e., 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 flame or flare flame monitoring and records of all periods of operations during which the pilot flame of the flare flame is absent.

[Rule 62-204.800, F.A.C.; 40 CFR 60.758(b)]

8.3 <u>Equipment operating parameters.</u>

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.

(1) The following constitute exceedances that shall be recorded and reported under 40 CFR 60.757(f):
   - (i) For enclosed combustors except for boilers and process heaters with design heat input capacity of 44 megawatts (150 million British thermal unit per hour) or greater, all 3-hour periods of operation during which the average combustion temperature was more than 28 °C below the average combustion temperature during the most recent performance test at which compliance with 40 CFR 60.752(b)(2)(iii) was determined.
   - (ii) (not applicable)

(2) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the indication of flow to the control device or the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines, specified under 40 CFR 60.756.

(3) (not applicable)

(4) Each owner or operator seeking to comply with the provisions of this subpart by use of an open flare shall keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under 40 CFR 60.756(c), and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent.

[Rule 62-204.800, F.A.C.; 40 CFR 60.758(c)]

8.4 Plot map.

Except as provided in 40 CFR 60.752(b)(2)(I)(B), each owner or operator subject to the provisions of 40 CFR 60, Subpart WWW 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.

(1) Each owner or operator subject to the provisions of 40 CFR 60, Subpart WWW 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).

(2) Each owner or operator subject to the provisions of 40 CFR 60, Subpart WWW 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).

[Rule 62-204.800, F.A.C.; 40 CFR 60.758(d)]

8.5 Exceedances.

Except as provided in 40 CFR 60.752(b)(2)(I)(B), each owner or operator subject to the provisions of 40 CFR 60, Subpart WWW 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.

[Rule 62-204.800, F.A.C.; 40 CFR 60.758(e)]

8.6 Design capacity calculations.

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 or 2.5 million cubic meters, as provided in the definition of "design capacity", shall keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

[Rule 62-204.800, F.A.C.; 40 CFR 60.758(f)]

9.0 Section 40 CFR 60.759: Specifications for active collection systems.

9.1 Placement of collection devices.

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 the Administrator as provided in 40 CFR 60.752(b)(2)(I)(C) and (D):

(1) The collection devices within the interior and along the perimeter areas shall be certified to achieve comprehensive control of surface gas emission by a professional engineer. The following issues shall be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, and resistance to the refuse decomposition heat.

(2) The sufficient density of gas collection devices determined in 40 CFR 60.759(a)(1) shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

(3) The placement of gas collection devices determined in 40 CFR 60.759(a)(1) shall control all gas producing areas, except as provided by paragraphs (a)(3)(I) and (a)(3)(ii) below.

 (i) Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under 40 CFR 60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and shall be provided to the Administrator upon request.

(ii) Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emission from the landfill. The amount, location, and age of the material shall be documented and provided to the Administrator upon request. A separate NMOC emission estimate shall be made for each section final for exclusion, and the sum of all such sections shall be compared to the NMOC emission estimate for the entire landfill. Emission from each section shall be computed using the following equation:

$$\mathbf{Q_I = 2\ k\ L_o\ M_I\ (e^{-kt_i})\ (C_{NMOC})\ (3.6\ \ x\ 10^{-9})}$$

where,

Q_I = NMOC emission rate from the ith section, megagrams per year
k = methane generation rate constant, $year^{-1}$
L_o = methane generation potential, cubic meters per megagram solid waste
M_I = mass of the degradable solid waste in the I^{th} section, megagram
t_I = age of the solid waste in the I^{th} section, years
C_{NMOC} = concentration of nonmethane organic compounds, parts per million by volume
3.6×10^{-9} = conversion factor

(iii) The values for k and C_{NMOC} determined in field testing shall be used, if field testing has been performed in determining the NMOC emission rate or the radii of influence (the distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k, L_O and C_{NMOC} provided in 40 CFR 60.754(a)(1) or the alternative values from 40 CFR 60.754(a)(5) shall be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emission provided the nature, location, age, and amount of the nondegradable material is documented as provided in 40 CFR 60.759(a)(3)(I).

[Rule 62-204.800, F.A.C.; 40 CFR 60.759(a)]

9.2 Design of collection devices.

Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(I)(A) shall construct the gas collection devices using the following equipment or procedures:

(1) The landfill gas extraction components shall be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: convey projected amounts of gases; withstand installation, static, and settlement forces; and
(2) Withstand planned overburden or traffic loads. The collection system shall extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors shall be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations shall be situated with regard to the need to prevent excessive air infiltration.
(3) Vertical wells shall be placed so as not to endanger underlying liners and shall address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors shall be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices shall be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations.

(4) Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly shall include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices shall be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

[Rule 62-204.800, F.A.C.; 40 CFR 60.759(b)]

9.3 Capacity of collection system.

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 following procedures:

(1) For existing collection systems, the flow data shall be used to project the maximum flow rate. If no flow data exists, the procedures in paragraph (c)(2) below shall be used.

(2) For new collection systems, the maximum flow rate shall be in accordance with 40 CFR 60.755(a)(1).

[Rule 62-204.800, F.A.C.; 40 CFR 60.759(c)]

10.0 Section 40 CFR 60.18 Specifications for Open Flare Systems (EU # 004)

10.1 The owner or operator shall comply with the following requirements for flares.

(1) Flares shall be designed for and operated with no visible emissions as determined by the methods specified in paragraph (f) *(see sp., condition 10.4)*, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

(2) Flares shall be operated with a flame present at all times, as determined by the methods specified in 40 CFR 60.18(f) *(see sp., condition 10.4)*.

(3) 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.

(i)(A) Flares shall be used that have a diameter of 3 inches or greater, are nonassisted, have a hydrogen content of 8.0 percent (by volume), or greater, and are designed for and operated with an exit velocity less than 37.2 m/sec (122 ft/sec) and less than the velocity, Vmax, as determined by the following equation:

Vmax=(XH2−K1)* K2

Where:

Vmax = Maximum permitted velocity, m/sec.

K1 = Constant, 6.0 volume-percent hydrogen.

K2 = Constant, 3.9(m/sec)/volume-percent hydrogen.

XH2 = The volume-percent of hydrogen, on a wet basis, as calculated by using the American Society for Testing and Materials (ASTM) Method D1946-77. (Incorporated by reference as specified in § 60.17).

(B) The actual exit velocity of a flare shall be determined by the method specified in paragraph (f)(4) *(see sp., condition 10.4)* of this section.

(ii) Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in paragraph (f)(3) *(see sp., condition 10.4)* of this section

(4)

(i) 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.

(ii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4) *(see sp., condition 10.4)*, equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec) are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

(iii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4) *(see sp., condition 10.4)*, less than the velocity, Vmax, as determined by the method specified in paragraph (f)(5) *(see sp., condition 10.4)*, and less than 122 m/sec (400 ft/sec) are allowed

(5) Air-assisted flares shall be designed and operated with an exit velocity less than the velocity, Vmax, as determined by the method specified in paragraph (f)(6) *(see sp., condition 10.4)*.

(6) Flares used to comply with this section shall be steam-assisted, air-assisted, or non-assisted.

[Rule 62-204.800(8)(d), F.A.C., and 40 CFR 60.18(c)]

10.2 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.
[Rule 62-204.800(8)(d), F.A.C., and 40 CFR 60.18(d)]

10.3 Flares used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

[Rule 62-204.800(8)(d), F.A.C., and 40 CFR 60.18(e)]

10.4 Testing Requirements

(1) Reference Method 22 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.

(2) 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.

(3) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$\mathbf{H_T = K \sum_{i=1}^{n} C_i H_i}$$

where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of off gas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

K = Constant, 1.740×10^{-7} (1/ppm) (g mole/scm) (MJ/kcal) where the standard temperature for (g mole/scm) is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 (Incorporated by reference as specified in 40 CFR 60.17); and

H_i = Net heat of combustion of sample component i, kcal/ g mole at 25°C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382–76 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

(4) 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.

(5) The maximum permitted velocity, Vmax, for flares complying with paragraph (c)(4)(iii) shall be determined by the following equation

Log10 (Vmax)=(HT+28.8)/31.7

Vmax=Maximum permitted velocity, M/sec

28.8=Constant

31.7=Constant

HT=The net heating value as determined in paragraph (f)(3).

(6) The maximum permitted velocity, Vmax, for air-assisted flares shall be determined by the following equation.

Vmax=8.706+0.7084 ($\mathbf{H_T}$)

Vmax = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant
H_T = The net heating value as determined in paragraph (f)(3).
[Rule 62-204.800(8)(d), F.A.C., and 40 CFR 60.18(f)]

11.0 <u>Following specific conditions are from 40 CFR 63 Subpart AAAA "National Emission Standards for Hazardous Air Pollutants: Municipal Waste Landfills".</u>

12.1 **The facility shall comply with the applicable requirements of 40 CFR 63 Subpart AAAA by January 16, 2006.**
[40 CFR 63.1945(b)]

12.2 The facility is no longer required to comply with the requirements of 40 CFR 63 Subpart AAAA, when the facility is no longer required to apply controls as specified in 40 CFR 60.752(b)(2)(v) of 40 CFR 60 Subpart WWW.
[40 CFR 63.1950]

Standards

12.3 The facility shall comply with the requirements of 40 CFR 60 Subpart WWW.
[40 CFR 63.1955(a)(1)]

12.4 The facility shall comply with the requirements in 40 CFR 63.1960 through 1985 and with the general provisions of the 40 CFR part 63.

How is Compliance is Determined?

12.5 Compliance is determined in the same way it is determined for 40 CFR part 60, subpart WWW, including performance testing, monitoring of the collection system, continuous parameter monitoring, and other credible evidence.

In addition, continuous parameter monitoring data, collected under 40 CFR 60.756(b)(1) (see specific condition 6.2) of subpart WWW, are used to demonstrate compliance with the operating conditions for control systems.

If a deviation occurs, the facility has failed to meet the control device operating conditions described in this subpart and has deviated from the requirements of this subpart.

Finally, the facility must develop a written SSM plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on site. Failure to write or maintain a copy of the SSM plan is a deviation from the requirements of this subpart.
[40 CFR 63.1960]

What is a Deviation?

12.6 A deviation is defined in §63.1990. For the purposes of the landfill monitoring and SSM plan requirements, deviations include the items in paragraphs (a) through (c) of this section.

(a) A deviation occurs when the control device operating parameter boundaries described in 40 CFR 60.758(c)(1) of subpart WWW are exceeded.
(b) A deviation occurs when 1 hour or more of the hours during the 3-hour block averaging period does not constitute a valid hour of data. A valid hour of data must have measured values for at least three 15-minute monitoring periods within the hour.
(c) A deviation occurs when a SSM plan is not developed or maintained on site.
A deviation is defined in §63.1990. For the purposes of the landfill monitoring and SSM plan requirements, deviations include the items in paragraphs (a) through (c) of this section.
[40 CFR 63.1960]

How to calculate the 3-hour block average used to demonstrate compliance?

12.7 Averages are calculated in the same way as they are calculated in 40 CFR part 60, subpart WWW, except that the data collected during the events listed below are not to be included in any average computed under this subpart:
(a) Monitoring system breakdowns, repairs, calibration checks, and zero (low-level) and high-level adjustments.
(b) Startups.
(c) Shutdowns.
(d) Malfunctions
[40 CFR 63.1975]

What records and reports must the facility keep and submit?

12.8 (a) Keep records and reports as specified in 40 CFR part 60, subpart WWW with one exception: **The facility must submit the annual report described in 40 CFR 60.757(f) (see sp. Condition # 7.8) every 6 months.**
(b) The facility must also keep records and reports as specified in the general provisions of 40 CFR part 60 and this part (see Appendix C). Applicable records in the general provisions include items such as SSM plans and the SSM plan reports.
[40 CFR 63.1980]

12.9 This emission unit is subject to the following requirements from Title 40 of the Code of Federal Regulations part 60 (see Appendix C):

40 CFR 63.1(a), (b) & (e)	Applicability.
40 CFR 63.2	Definitions.
40 CFR 63.4	Prohibited activities and circumvention.
40 CFR 63.5 (b)	Preconstruction review and notification requirements.
40 CFR 63.6 (e) & (f)	Compliance with standards and maintenance requirements.
40 CFR 63.10 (b)(2)(i)-(v) & (d)(5)	Recordkeeping and reporting requirements.
40 CFR 63.12 (a)	State authority and delegations.
40 CFR 63.15	Availability of information and confidentiality.

[40 CFR 63.1980(b)]

12.0 Following specific conditions are from 40 CFR 61 Subpart M, " National Emission Standard for Asbestos"

12.10 Section 61.153: Reporting

(a) Any owner or operator of an existing source shall provide the following information to the Administrator within 90 days of the effective date of this subpart unless the owner or operator of the existing source has previously provided

(b) this information to the Administrator. Any changes in the information provided by any existing source shall be provided to the Administrator, postmarked or delivered, within 30 days after the change.

(1) (not applicable)
(2) (not applicable)
(3) (not applicable)
(4) (not applicable)
(5) For sources subject to 40 CFR 61.151 and 61.154:
(i) A brief description of the site; and
(ii) The method or methods used to comply with the standard, or alternative procedures to be used.

(c) The information required by paragraph (a) of this section must accompany the information required by 40 CFR 61.10. (see appendix D of this permit) Active waste disposal sites subject to § 61.154 shall also comply with this provision.

(d) [40 CFR 61.153 and Rule 62-204.800(10)(b)(8)]

12.11 Section 61.154: Standard for active waste disposal sites

Each owner or operator of an active waste disposal site that receives asbestos-containing waste material from a source covered under 40 CFR 61.149, 61.150, or 61.155 shall meet the requirements of this section:

(a) Either there must be no visible emission 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.

(b) Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of paragraph (c)(1) of this section must be met.

(1) Warning signs must be displayed at all entrances and at intervals of 100 m (330 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:
(i) Be posted in such a manner and location that a person can easily read the legend; and
(ii) Conform to the requirements of 51 cm × 36 cm (20&inch;×14&inch;) upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and
(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site.............	2.5 cm (1 inch) Sans Serif, Gothic or Block.
Do Not Create Dust........................	1.9 cm (\3/4\ inch) Sans Serif, Gothic or Block.
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(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:

(1) Be covered with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or

(2) 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.

Rather than meet the no visible emission requirement of paragraph (a) of this section, use an alternative emission control method that has received prior written approval by the Administrator according to the procedures described in 40 CFR 61.149(c)(2).

(d) For all asbestos-containing waste material received, the owner or operator of the active waste disposal site shall:

(1) Maintain waste shipment records, using a form similar to that shown in Figure 4 (see appendix D of this permit), and include the following information:

(i) The name, address, and telephone number of the waste generator.

(ii) The name, address, and telephone number of the transporter(s).

(iii) The quantity of the asbestos-containing waste material in cubic meters (cubic yards).

(iv) 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

(v) 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.

(vi)The date of the receipt.

(2) 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.

(3) 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.

(4) Retain a copy of all records and reports required by this paragraph for at least 2 years.

(e) 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.

(f) Upon closure, comply with all the provisions of 40 CFR 61.151.

(g) Submit to the Administrator, upon closure of the facility, a copy of records of asbestos waste disposal locations and quantities.

(h) Furnish upon request, and make available during normal business hours for inspection by the Administrator, all records required under this section.

(i) 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:

(1) Scheduled starting and completion dates.

(2) Reason for disturbing the waste.

(3) Procedures to be used to control emission 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.

(4) Location of any temporary storage site and the final disposal site.

[43 CFR 61.154 and Rule 62-204.800(10)(b)(8)]

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Appendices

A Common Causes and Response Actions for GCCS Malfunctions
B SSM Reporting Forms

1 Revision History

Add the effective date of the most-recent revision to the list below. Do not overwrite or delete any dates. This is intended to be a complete record of all revisions made to this plan and assists in making certain that all plan versions are retained for at least 5 years as required by §63.6(e)(3)(v).

Date of Initial Issuance
January 16, 2004
Revision Dates
January 26, 2005
August 8, 2005

2 Introduction

2.1 Purpose and Scope

The municipal solid waste (MSW) landfill owner or operator of an affected source must develop and implement a written Startup, Shutdown and Malfunction (SSM) Plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown and malfunction; a program of corrective action for malfunctioning processes; and air pollution control and monitoring equipment used to comply with the relevant standards. The purpose of the SSM Plan is to:

- Ensure that, at all times, the MSW landfill owner or operator operates and maintains the affected source, including associated air pollution control and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions to the levels required by the relevant standards;
- Ensure that MSW landfill owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants (HAP); and
- Reduce the reporting burden associated with periods of startup, shutdown and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

A more detailed summary of the regulatory background and summary of requirements for preparation and use of a startup, shutdown and malfunction (SSM) plan (SSM Plan) is contained in the document "Guidance for Preparation of Startup, Shutdown and Malfunction Plans", Waste Management, Inc., October 27, 2003 for guidance and instructions for completing and customizing the plan.

The Berman Road Landfill is an existing affected source under the Maximum Achievable Control Technology (MACT) rule for MSW landfills. Berman Road Landfill is subject to the MSW Landfill New Source Performance Standards (NSPS). Because it is NSPS applicable, it is also subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for MSW Landfills. As such, a SSM Plan is required to be prepared and implemented for this landfill site by January 16, 2004 and this SSM Plan meets or exceeds this requirement.

The management of the Berman Road Landfill fully understands and acknowledges the SSM Plan requirements of the MACT rule. This SSM Plan has been developed to specifically address these requirements as summarized above.

2.2 Description Of SSM Plan

This SSM Plan has been divided into three major sections comprising the major elements related to startup, shutdown and/or malfunction of a landfill gas (LFG) collection and control system (GCCS) at a MSW landfill. Malfunction events are distinct events when the GCCS is not operating in accordance with NSPS/EG requirements and which result, or have the potential to result, in an exceedance of one or more emission limitations or operational standards under the NSPS/EG. Startup and shutdown events are generally planned events associated with system repair, maintenance, testing and upgrade and may or may not be related to or occur in association with a malfunction of the GCCS.

2.3 Site Equipment Subject To This SSM Plan

The following components of the GCCS are subject to this SSM Plan:

Collection wells and other collectors
Lateral and header extraction piping
LFG mover equipment
Temperature monitoring and recording equipment
Flow monitoring and recording equipment
Enclosed Flares
Open, Unenclosed Flare
Leachate EVAP Systems
Condensate Knockout/Collection

2.4 Site Equipment NOT Subject To This SSM Plan

The following components of the GCCS are NOT subject to this SSM Plan:

Passive, Solar Flares

Berman Road Landfill is not considering the passive, solar flares as part of this SSM Plan because these devices are not used as part of the GCCS for compliance with NSPS requirements. The passive, solar flares are used for temporary control of newly installed landfill gas wells to control the odor emitted from them prior to final connection to the active GCCS. Prior to connection to the active GCCS, the subject wells are not considered NSPS applicable, therefore, the passive, solar flares would not be NSPS or NESHAP applicable.

3 Startup/Shutdown Plan

This section details procedures for the startup of the GCCS to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions to the levels required by the relevant standards.

Pursuant to the requirements of the NSPS/EG for MSW landfills, a GCCS must be installed and operated when the landfill exceeds a threshold of 50 Megagrams (Mg)/year nonmethane organic compounds (NMOC) and meets all the applicable criteria for a controlled landfill.

3.1 How to Identify a GCCS Startup / Shutdown Event

The regulatory definition of "startup" reads as follows:

> "**Startup** means the setting in operation of an affected source or portion of an affected source for any purpose." (§63.2)

The regulatory definition of "shutdown" reads as follows:

> "**Shutdown** means the cessation of an affected source or portion of an affected source or portion of an affected source for any purpose." (§63.2)

GCCS startup operations and shutdown events generally include startup or shutdown of gas mover equipment, LFG control devices and any ancillary equipment that could affect the operation of the GCCS (e.g., power supply, air compressors, etc.). This section details procedures for the startup and/or shutdown of the GCCS to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions to the levels required by the relevant standards.

The following list includes events that may necessitate a shutdown of the GCCS at a MSW Landfill. This list should not be considered exhaustive.

Table 3-1—Potential Events Necessitating Shutdown of the GCCS

Control Device Maintenance, Repair or Cleaning
Addition of New GCCS Components
Extraction Well Raising
Vertical well(s), horizontal collector(s) isolation/shutdown for well/landfill cover maintenance and construction
Movement of LFG Piping to Accommodate New Components or Filling Operations
Source Testing
Gas Mover Equipment Maintenance, Repair or Cleaning
Gas Processing Equipment Maintenance, Repair or Cleaning
Ancillary Equipment (e.g., compressors, etc.) Maintenance, Repair or Cleaning
New Equipment Testing and Debugging
Shutdown and Subsequent Startup to Address Malfunctions or Other Occurrences
Planned Electrical Outages
Horizontal collectors buildup of liquid ("watered out")
Gas collection system header buildup of liquid ("watered out")

3.2 Actions To Take When the GCCS is Started-Up

The following provides a summary of typical response actions for startup of the GCCS.

3.2.1 Gas Mover and Collection System

The following activities may have the potential to emit regulated air pollutants to the atmosphere during startup of the collection system portion of GCCS: (1) purging of gases trapped within piping system prior to normal operation; (2) repair of system leaks discovered during startup and (3) all other activities after construction of the system but prior to fulltime operation, which could release HAPs from the collection system. These activities would be subject to the Startup Plan portion of the SSM Plan.

During such activities, work shall progress such that air emissions are minimized to the greatest extent possible by:

- Temporarily capping pipes venting gas if such capping does not impact safety or the effective construction of the system.

- Minimizing surface area allowing gas to emit to the atmosphere to the extent that it does not impact safety or the effective construction of the system.
- Ensuring that other parts of the system, not impacted by the activity, are operating in accordance with the applicable requirements of NSPS/EG.
- Limiting the purging of piping to as short duration as possible to ensure safe combustion of the gas in the control device.

GCCSs, once installed, are "closed" systems designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point with the control device(s) with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time and subsequently opened. Opening these valves shall not be considered a startup, unless such an activity causes the venting of gas to the atmosphere. If the activity results in emissions to the atmosphere, the actions listed above shall be followed.

The operation of the collection system, once installed, shall be consistent with the provisions of NSPS/EG as well as the GCCS Design Plan, which has been developed and approved for the facility.

3.2.2 Control Device(s):

Personnel shall follow the procedures as identified below when starting the respective control devices. Control devices operating at MSW landfills normally undergo planned startups. However, flare systems are designed for unattended operation. There are instances when the flare system will shutdown and automatically restart. The shutdown may occur when there is a brief interruption of gas flow to the flare. These shutdown events are followed by an automatic startup sequence as described in the standard operating procedures listed below and incorporated by reference as part of this SSM Plan.

The flare temperature and/or flow recorders will document significant decreases in temperature and/or flow measurements followed by an almost immediate increase back to normal ranges whenever the automatic shutdown/startup sequence occurs. Documentation of the date, time and duration of these automatic shutdown/startup events is contained in the flare temperature and/or flow charts. In addition, there are no actions that need to be taken to affect the shutdown/startup sequence in these instances; therefore, these activities do not need to be documented beyond the information already contained on chart recorders. Documentation of automatic shutdown/startup events will be included in the semi-annual reports.

3.3 Actions To Take When The GCCS Is Shutdown

3.3.1 Collection System

GCCSs, once installed, are "closed" systems designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point with the control device(s) with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time. Closing these valves shall be considered a shutdown, only when such an activity causes an exceedance of the provisions of NSPS/EG and/or any subsequent approvals of alternatives in the facility's GCCS Design Plan or approved variances issued thereafter. The parameters used to determine if there has been an exceedance that would trigger the need for implementing the SSM Plan would be the monthly well monitoring parameters of pressure (>0 in Hg). An individual well may have a differing monitoring parameter that will be documented in the NSPS GCCS Plan or approved in a Permit. These values will be used in place of those listed above. If one or more well exceed one or more of these parameters, then the SSM Plan will be invoked. Because the closing of valves usually occur

when multiple wells are closed or isolated by a header or lateral valve, these occurrences will be considered "events" and documented with by completing a single **SSM Report Form** (Appendix B), not individual SSM Report Forms for each well affected by the shutdown. The well(s) that are part of the "event" will normally be returned to services less than 5 days after isolation of multiple wells or closing of individual wells.

3.3.2 Control Device(s):

Personnel shall follow the procedures as identified below when shutting down the respective control devices. Control devices operating at MSW landfills normally undergo planned shutdown for the various events listed above. Shutdowns for equipment malfunction or breakdown should be addressed in the malfunction plan. Control device shutdown guidance are described in the standard operating procedures in the flare Operation & Maintenance (O&M) Manual incorporated as part of this SSM Plan, as listed below. In addition to the procedures outline in the O&M Manual, the flare can be shutdown safely by turning off power to the control panel. Power can be turned off by pressing the large red button on the control panel or by throwing the main power breaker switch for the control panel.

Table 3-2—Startup / Shutdown Guidance Procedure Reference

Device Name	Operations manual, notes, report, etc.	
	Title	Page(s)
Enclosed Flare – Unit# 1776	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section
Enclosed Flare – Unit# 1698	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section
Open, Unenclosed Flare – Unit# 1495	LFG Specialties Utility Flare System O&M Manual	Section 2.0 – Operation Sub-Section
Leachate EVAP System – Unit# 3016 - STARTUP	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Operation, Pages viii-xii
Leachate EVAP System – Unit# 3016 - SHUTDOWN	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Sequence of Operations for Flame Supervisory System; Step 7
Leachate EVAP System – Unit# 3004IM – STARTUP	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Operation, Pages viii-xii
Leachate EVAP System – Unit# 3004IM – SHUTDOWN	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Sequence of Operations for Flame Supervisory System; Step 7

3.4 What to Record for All Startup / Shutdown Events

The operator shall record the following information on the attached **SSM Report Form** (Appendix B), which should be retained in the landfill operating record for five (5) years:

- The date and time the startup/shutdown occurred.
- The duration of the startup/shutdown.
- The actions taken to effect the startup/shutdown.
- Whether procedures in this SSM Plan were followed. If the procedures in the SSM Plan were not followed, a **SSM Plan Departure Report Form** (Appendix B) must also be completed.
- If an applicable emission limitation was exceeded, a description of the emission standard that was exceeded.

3.5 Whom to Notify at the Facility in Case of a Startup/Shutdown Event

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager should be verbally notified within a reasonable timeframe of the startup/shutdown.
- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager should be verbally notified within a reasonable timeframe of progress of the diagnosis and resolution of the startup/shutdown.
- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager and Miguel Delgado, Engineering Manager should be verbally notified when the alternative timeframe for startup/shutdown has been established if it is outside of the timeframes currently allowed by the NSPS/EG for particular compliance elements.
- The **SSM Report Form** should be initially prepared upon startup/shutdown, or discovery of an automatic startup/shutdown and implementation of the SSM Plan. The form should be finalized by the operator on duty upon successful implementation of the SSM Plan and submitted to the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager. The original form should be retained in the landfill operating record for five (5) years.

3.6 What to Report for a Startup/Shutdown Event

- If the actions taken during the startup/shutdown **were consistent** with this SSM Plan, file the necessary information in your semi-annual SSM report (*within 30 days following the end of each 6-month period*) with the following information included:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official; and
    3. Statement that the actions taken during the startup or shutdown were consistent with the SSM Plan.

- If the actions taken during a startup **were not consistent** with this SSM Plan, the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager must report the actions taken to the enforcing authority by telephone or facsimile transmission within two (2) working days after the startup or shutdown. A letter must then be sent to the enforcing authority within seven (7) working days after the subject startup or shutdown. The letter should be sent by certified or registered mail or overnight delivery service and must include the following information:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);
    3. Detailed explanation of the circumstances of the start/shutdown;
    4. The reasons the SSM Plan was not adequate; and whether any excess emissions and/or parameter monitoring exceedances is believed to have occurred during the event.
    5. A copy of the **SSM Plan Departure Report Form.**

- Note: If the revisions to the SSM Plan alter the scope of the process activities at Berman Road Landfill or otherwise modify the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule and/or the NSPS/EG, the revised SSM Plan is not effective until written notice has been provided to the permitting authority describing the SSM Plan revision(s).

4 Malfunction Plan

4.1 How to Identify a GCCS Malfunction

The regulatory definition of "malfunction" reads as follows:

> "**Malfunction** means any sudden, infrequent and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions." (§63.2, revised 5/30/03)

The following list includes events that may constitute a malfunction of the GCCS at Berman Road Landfill. The cause of these events should be investigated immediately in order to determine the best course of action to correct the malfunction. Each of these malfunctions could have multiple causes that need to be evaluated and possibly considered. It is the intent of this SSM Plan to include all possible causes for the specific malfunction events. Common malfunction events for LFG collection and control systems are listed in Table 4-1.

Table 4-1—Potential Malfunction Events

Possible Malfunction	Section
Loss of LFG Flow/Gas Mover Malfunction	4.3
Loss of Electrical Power	4.4
Low Temperature Conditions at Control Device	4.5
Loss of Flame at the Control Device	4.6
Malfunction of Flow Measuring/Recording Device	4.7
Malfunction of Temperature Measuring/Recording Device	4.8
Collection Well and Pipe Failures	4.9
Other Control Device Malfunctions	4.10
Malfunction of Field Monitoring Equipment	4.11
Buildup of Liquid in Piping	4.12

For one of these occurrences to be considered a malfunction that is required to be addressed by this SSM Plan, it must result in, or have the potential to result in, an exceedance of one or more of the NSPS/EG operational and compliance requirements or the provisions of the MACT rule (e.g., exceedance, reading outside of required operational range, etc). The following list constitutes the possible exceedances of the New Source Performance Standards (NSPS) for MSW landfills and/or the state/local emission guidelines (EG) rule that could occur due to a malfunction of GCCS, thereby necessitating implementation of this SSM Plan:

Table 4-2— Potential Emission Limitation Exceedances Caused by Malfunction Events

GCCS downtime of greater than 5 days (if alternative timeframe has not been established)
Free venting of collected LFG without control for greater than one hour
Control device temperatures excursions in which 3-hour block average is less than established minimum temperature
Downtime for temperature monitoring and/or recording equipment of greater than 15 minutes (if alternative timeframe has not been established)
Any downtime for LFG flow monitoring and/or recording equipment (if alternative timeframe has not been established)
Reserved for modifications or reinterpretations of the NSPS rule by the U.S. EPA or state/local jurisdiction or state/local requirements that are in addition to or more stringent than NSPS/EG

If the occurrence does not result in an exceedance of an applicable emission limitation, or does not have the potential to result in such an exceedance, then **it is not required to be corrected in accordance with this SSM Plan**, although use of the plan may still be advisable. Malfunctions should be considered actionable under this SSM Plan whether discovered by the MSW landfill owner or operator during normal operations or by a regulatory agency during compliance inspections.

The operator should follow all the corrective action, notification, record keeping and reporting procedures described herein in case of malfunction of the GCCS.

4.2 Actions to Take When The GCCS Malfunctions—All Malfunctions

- Determine whether the malfunction has caused an exceedance, or has the potential to cause an exceedance, of any applicable emission limitation contained in the NSPS/EG or MACT.

- Identify whether the malfunction is causing or has caused excess emissions to the atmosphere. If excess emissions are occurring, take necessary steps to reduce emissions to the maximum extent possible using good air pollution control practices and safety procedures.

- Contact the site John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager immediately and proceed with the malfunction diagnosis and correction procedures described in Appendix A ("Common Causes and Response Actions for GCCS Malfunctions") for each specific malfunction.

- Site-specific malfunction and/or troubleshooting procedures are contained in the documents or appendices referenced below. Personnel shall follow these guidance procedures when addressing a malfunction of a collection system or control device.

Table 4-3—Malfunction Guidance Procedure Reference

Control Device ID	Operations manual, notes, report, etc.	
	Title	Page(s)
Enclosed Flare – Unit# 1776	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section; Steps 7-10
Enclosed Flare – Unit# 1698	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section; Steps 7-10
Open, Unenclosed Flare – Unit# 1495	LFG Specialties Utility Flare System O&M Manual	Section 2.0 – Operation Sub-Section; Steps 5-11
Leachate EVAP System – Unit# 3016	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II –
Leachate EVAP System – Unit# 3004IM	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II –

- If the procedures in this SSM Plan do not address or adequately address the malfunction that has occurred, the operator should attempt to correct the malfunction with the best resources available. John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager should be notified of this situation immediately. Complete a **SSM Plan Departure Report Form** (Appendix B) as discussed in Section 4.14. The SSM Plan must be updated to better address this type of malfunction.

- Notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager of the progress of the diagnosis and correction procedures and status of the malfunction as soon as practicable.

- If the GCCS malfunction cannot be corrected within the time frame specified in the NSPS/EG, notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager and proceed to shutdown the control device and/or the process(es) venting to the control device, if this has not already automatically occurred.

- If the GCCS malfunction cannot be corrected within the time frame allowed by the NSPS/EG rule for each specific malfunction, define the appropriate alternative timeframe for corrective action that is reasonable for the type of repair or maintenance that is required to correct the malfunction.

- If the GCCS malfunction cannot be corrected within alternative timeframe for corrective action specified above, notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager and conduct the appropriate record keeping and reporting required for deviations of the MACT rule and Title V permit.

- Once the malfunction is corrected, notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager as soon as the system is operational.

- Complete the **SSM Plan Departure Report Form** (Appendix B) after the malfunction diagnosis and correction procedures are completed.

- If the procedures in this SSM Plan do not address or adequately address the malfunction that has occurred, the operator should note the circumstances and the actual steps taken to correct the malfunction in the **SSM Report Form** (Appendix B). This SSM Plan will need to be revised based on this information, as described in Section 4.13 below.

- Follow procedures in Sections 4.12 through 4.14, as appropriate, to adequately document, notify and report the malfunction and corrective action.

4.3 Loss of LFG Flow/Gas Mover Malfunction

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.4 Loss of Electrical Power

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if malfunction cannot be corrected within the established timeframe.

4.5 Low Temperature Conditions at the Control Device

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction causes an exceedance of the control device's minimum temperature for a 3-hour block average, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

- If the malfunction causes the GCCS to go off-line and cannot be corrected within the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.6 Loss of Flame at the Control Device

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- If system will not restart, follow also the procedures in Section 4.3, above: **Loss of LFG Flow.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.7 Malfunctions of Flow Monitoring/Recording Device

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected in the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.8 Malfunctions of Temperature Monitoring/Recording Device

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within 15 minutes, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.9 Collection Well and Pipe Failures

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**
- Follow also the procedures in Section 4.3, above: **Loss of Flow/Gas Mover Malfunction.**
- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.
- If the malfunction causes the entire GCCS to go off-line and cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.10 Other Control Device Malfunctions

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**
- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.
- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.
- If the malfunction causes an exceedance of the control device's minimum temperature for a 3-hour block average, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.
- If the malfunction causes the entire GCCS to go off-line and cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.11 Malfunctions of Field Monitoring Equipment

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**
- Verify that malfunction of monitoring equipment will cause a deviation of the NSPS/EG requirements for wellhead and/or surface emissions monitoring.
- Conduct diagnostic procedures to identify the cause of the malfunction.
- Repair the device or obtain replacement device to complete the monitoring as required by the NSPS/EG.

- Conduct proper calibration procures before use of the device for NSPS/EG compliance monitoring.

- If the malfunction cannot be corrected so that the monitoring equipment can be used for the purposes required by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.12 Buildup of Liquid in Piping

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Verify that blockage resulting from the build-up of liquid will cause a deviation of the NSPS/EG requirements for operation of the control devices by restricting flow resulting in low operating temperature.

- Verify that blockage resulting from the build-up of liquid will cause a deviation of the NSPS/EG requirements for operation of the collection system by restricting flow resulting in positive pressures at the wellheads.

- Conduct diagnostic procedures to identify the cause and the location of the build-up of liquid.

- Follow shutdown procedures for the gas mover and control devices outlined in Section 4. Allow condensate to drain, or manually remove excess condensate from the piping via use of water pumps.

- Follow startup procedures for the gas mover and control devices outlined in Section 3.

- Assess whether liquid removal remedied the low flow conditions.

4.13 What to Record for a Malfunction

- The operator must record the following information on the attached **SSM Report Form**, which must be retained in the landfill operating record for five (5) years:

  - The date and time the malfunction occurred.

  - The duration of the malfunction.

  - A description of the affected equipment.

  - The cause or reason for the malfunction (if known).

  - The actions taken to correct the malfunction (checklist).

  - Whether the procedures in this SSM Plan were followed. If the procedures in the plan were not followed, a **SSM Plan Departure Report Form** must also be completed.

  - A description of the emission standard that was exceeded or had the potential to be exceeded.

4.14 Whom to Notify at the Facility in Case of a Malfunction

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified immediately of the malfunction.

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified within a reasonable timeframe of progress of the diagnosis and corrective action of the malfunction.

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified when the alternative timeframe for corrective action has been established if it is outside of the timeframes currently allowed by the NSPS/EG for particular compliance elements.

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified if the malfunction cannot be corrected within the timeframe allowed by the NSPS rule or the alternate timeframe established under this SSM Plan. Notification should also occur if the current SSM Plan had not addressed the malfunction.

- The **SSM Report Form** shall be initially prepared upon discovery of the malfunction and implementation of the SSM Plan. The form shall be finalized by the operator on duty upon successful implementation of the SSM Plan and submitted to John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager. The original form must be retained in the landfill operating record for five (5) years.

4.15 What to Report for a Malfunction Event

- If the actions taken during the malfunction **were consistent** with this SSM Plan and the malfunction resulted or had the potential to result in an exceedence of an applicable emission standard, file the necessary information in your semi-annual SSM report (*within 30 days following the end of each 6-month period*) with the following information included:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.); and
    3. Statement that the actions taken during the malfunction were consistent with the SSM Plan.

- If the actions taken during a malfunction **were not consistent** with this SSM Plan and the malfunction resulted in or had the potential to result in an exceedance of an applicable emission standard, (see items listed under Step 1 above), John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager must report the actions taken to the enforcing authority by telephone or facsimile (FAX) transmission within two (2) working days after commencing the actions that were inconsistent with the plan. A letter must then be sent to the enforcing authority within seven (7) working days after the malfunction. The letter should be sent by certified or registered mail or overnight delivery service and must include the following information:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);

3. Detailed explanation of the circumstances of the malfunction;
4. The reasons the SSM Plan was not adequate; and
5. Whether any excess emissions and/or parameter monitoring exceedances is believed to have occurred during the event.
6. Prepare and include **SSM Plan Departure Report Form.**

- If the actions taken during the malfunction **were not consistent** with this SSM Plan, the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager at the landfill must:

  1. Revise the SSM Plan within 45 days after the malfunction to include procedures for operating and maintaining the GCCS during similar malfunction events.
  2. Include the revised SSM Plan in the semi-annual report (within 30 days following the end of each 6-month period).

Note: If the revisions to the SSM Plan alter the scope of the process activities at Berman Road Landfill or otherwise modify the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule and/or the NSPS/EG, the revised SSM Plan is not effective until written notice has been provided to the permitting/enforcing authority describing the SSM Plan revision(s).

APPENDIX A

Common Causes and Response Actions for GCCS Malfunctions

(Appendix A represents a summary of possible causes and response actions for GCCS malfunctions. The list is not considered to be exhaustive. The list of response actions is not intended to be a sequence of events that are to be implemented in order. Certain malfunction incidents may or may not be associated with the listed "common causes" nor will the "common response actions" be appropriate in all instances. Site-specific evaluation of the malfunctions and development of specific response actions is recommended in all cases.)

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment	Applies vacuum to wellfield to extract LFG and transport to control device	Loss of LFG Flow/Blower Malfunction	-Flame arrestor fouling/deterioration -Automatic valve problems -Blower failure (e.g., belt, motor, impeller, coupling, seizing, etc.) -Loss of power -Extraction piping failure -Condensate knock-out problems -Extraction piping blockages	-Repair breakages in extraction piping -Clean flame arrestor -Repair blockages in extraction piping -Verify automatic valve operation, compressed air/nitrogen supply -Notify power utility, if appropriate -Provide/utilize auxiliary power source, if necessary -Repair Settlement in Collection Piping - Repair Blower -Activate back-up blower, if available -Clean knock-up pot/demister -Drain knock-out pot
Extraction Wells and Collection Piping	Conduits for extractions and movement of LFG flow	Collection well and pipe failures	-Break/crack in header or lateral piping -Leaks at wellheads, valves, flanges, test ports, seals, couplings, etc. -Collection piping blockages -Problems due to settlement (e.g. pipe separation, deformation, development of low points)	-Repair leaks or breaks in lines or wellheads -Follow procedures for loss of LFG flow/blower malfunction -Repair blockages in collection piping -Repair settlement in collection piping -Re-install, repair, or replace piping -Review waste types, age of waste, etc.

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment And Control Device	Collection and control of LFG	Loss of electrical power	- Force majeure/Act of God (e.g., lightning, flood, earthquake, etc.) -Area-wide or local blackout or brown-out -Interruption in service (e.g. blown service fuse) -Electrical line failure -Breaker trip -Transformer failure -Motor starter failure/trip -Overdraw of power -Problems in electrical panel -Damage to electrical equipment from on-site operations	-Check/reset breaker -Check/repair electrical panel components -Check/repair transformer -Check/repair motor starter -Check/repair electrical line -Test amperage to various equipment -Contact electricity supplier -Contact/contract electrician -Provide auxiliary power (if necessary)
LFG Control Device	Combusts LFG	Low temperature conditions at control device	-Problems with temperature - monitoring equipment -Problems/failure of -thermocouple and/or thermocouple wiring -Change of LFG flow -Change of LFG quality -Problems with air louvers -Problems with air/fuel controls -Change in atmospheric conditions	-Check/repair temperature monitoring equipment -Check/repair thermocouple and/or wiring -Follow procedures for loss of flow/blower malfunction -Check/adjust louvers -Check/adjust air/fuel controls
LFG Control Device	Combusts LFG	Loss of Flame	-Problems/failure of thermocouple -Loss/change of LFG flow -Loss/change of LFG quality -Problems with air/fuel controls -Problems/failure of flame sensor -Problems with temperature monitoring equipment	-Check/repair temperature monitoring equipment -Check/repair thermocouple -Follow procedures for loss of flow/blower malfunction -Check/adjust air/fuel controls -Check/adjust/repair flame sensor -Check/adjust LFG collectors
Flow Monitoring/ Recording Device	Measures and records gas flow from collection system to control	Malfunctions of Flow Monitoring/Recording Device	-Problems with orifice plate, pitot tube, or other in-line flow measuring device -Problems with device controls and/or wiring -Problems with chart recorder	-Check/adjust/repair flow measuring device and/or wiring -Check/repair chart recorder -Replace paper in chart recorder

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Temperature Monitoring/ Recording Device	Monitors and records combustion temperature of enclosed combustion device	Malfunctions of Temperature Monitoring/Recording Device	-Problems with thermocouple -Problems with device controls and/or wiring -Problems with chart recorder	-Check/adjust/repair thermocouple -Check/adjust/repair controller and/or wiring -Check/adjust/repair electrical panel components -Check/repair chart recorder -Replace paper in chart recorder
Control Device	Combusts LFG	Other Control Device Malfunctions	-Control device smoking (i.e. visible emissions) -Problems with flare insulation -Problems with pilot light system -Problems with air louvers -Problems with air/fuel controllers -Problems with thermocouple -Problems with burners -Problems with flame arrester -Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	-Site-specific diagnosis procedures -Site-specific responses actions based on diagnosis -Open manual louvers -Clean pitot orifice -Clean/drain flame arrestor -Refill propane supply -Check/repair pilot sparking system
Collection Piping	Conduit movement of LFG flow	Blockage of LFG Flow	-Collection piping blockages due to build-up of liquid -Problems due to settlement (e.g. pipe separation, deformation, development of low points)	-Follow procedures for loss of LFG flow/blower malfunction -Repair blockages in collection piping -Repair settlement in collection piping -Re-install, repair or replace piping

APPENDIX B

SSM Plan Reporting Forms

WM WASTE MANAGEMENT

Section 1 - All Events

Type of Event	Military Time Date/Time Start	Date/Time End	Duration (hours)	Event Code (see back of form)	SOP* Followed? Yes	No**
☐ Startup						
☐ Shutdown						
☐ Malfunction					Complete Section 2 Below	
☐ Non-malfunction						

Date Form Filled Out: ______________________ Signature: ______________________

* Standard Operating Procedure (SOP) for Flare Startups (Manual & Automatic) and Shutdowns are provided in SSM Plan

If SOP in SSM Plan was not followed, **notify Market Area General Manager, District Manager or Engineering/Compliance Manager.

Section 2 - Malfunction Events Only

Step	Corrective Action Procedures for All Malfunctions	*Check one of the following for each step:* Procedure completed	Procedure Not Applicable
1.	Determine if the malfunction causing an unsafe operating condition (air entering landfill or piping, smoking, vibration, or other problem), which may harm people, the environment or the landfill gas control equipment. *If conditions are unsafe, **notify your supervisor** and follow steps under No. 3*		
2.	Determine if landfill gas being released to the air (can you smell landfill gas, or measure/detect uncombusted gas flow?). *If landfill gas is being released, follow steps under No. 3*		
3.	If unsafe operating condition exists, or landfill gas is being released to the air, stop (if possible) landfill gas flow by one or more of the following: a. Close nearest valve to source of emissions b. Place a temporary cap on piping c. Apply other device (i.e. duct tape) d. Shut down blower e. Turn off main power disconnect switch to blower f. Other (Describe): ______________________ Note: If flare is shut down, follow shutdown SOP and record shutdown time in Section 1 (above)		
4.	Determine if other personnel/resource (qualified technician, electrician, consultant or other) are needed for malfunction diagnosis. *If other personnel or resources are not needed, go to No. 6*		
5.	Contact qualified resource: a. Record contact name, date and time: ______________________ b. Contact site representative with information recorded in #5.a.		
6.	Start malfunction diagnosis.		
7.	Determine if other resources are needed to fix the malfunction (qualified technician, electrician, contractor, on-site resources, manufacturer's representative, or other). *If other resources are not needed, go to No. 9*		
8.	Contact qualified resource: a. Record contact name, date and time: ______________________ b. Contact site representative with information recorded in #8.a.		
9.	Fix the malfunction.		
10.	Once the malfunction is fixed, re-start the system per SOP if it had been shut down, and record start-up times and dates on this form.		
11.	Record date that malfunction occurred, date that malfunction was repaired, and total time that system was out of service in boxes in Section 1 of this form.		
12.	Sign this form, copy it, and place it in the Start-up, Shutdown, Malfunction file.		
13.	If the procedures listed above were not followed, contact the site engineer immediately.		

Berman Road Landfill - SSM PLAN DEPARTURE REPORT FORM

EVENT CODES

For Start-ups and Shutdowns:

Startup: The setting in operation of an affected source or portion of an affectes source for any purpose.

Shutdown: The cessation of operation of an affected source or portion of any source for any purpose.

Code	Event
1	Maintenance
2	Suspected Collection System Malfunction
3	Suspected Control Device Malfunction
4	Suspected Continuous Monitoring System Malfunction (Temperature/Flow/Other)
5	Training
6	Gas System Construction/Expansion
99	Other (Describe)

For Malfunctions:

Malfunction: Any sudden, infrequent and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

10	Automatic shutdown of control device by designed protective systems
11	Autodialer Callout
12	Shutdown alarms that result in the device not shutting down
13	Unalarmed shutdown
14	Control Device Smoking
15	Inspection identified malfunction
16	Loss of power - utility down
17	Loss of power - unknown
18	Damaged Well, Header or Lateral Piping
19	Leaks at wellheads, valves, flanges, test ports, seals, couplings, etc.
20	Condensate Knock-out Problems
21	Collection Piping Blockages
22	Problems due to Settlement
23	Loss of phase
24	Blower overload condition
25	Blower bearing failure
26	Broken belts (if belt-drive) or broken coupling (if direct-drive) in blower
27	Continuous Monitoring System Malfunction - Thermocouple
28	Continuous Monitoring System Malfunction - UV Scanner
29	Continuous Monitoring System Malfunction - Flow Monitor
30	Continuous Monitoring System Malfuction - Flow Recorder
31	Continuous Monitoring System Malfuction - Temperature Recorder
32	Act of God (i.e., lightning, wind, etc.)
99	Other (Describe)

1. Type of Event: Malfunction	☐ Startup	☐ Shutdown	☐
2. Date:	Time: (Military)	Duration:	
3. Provide detailed explanation of the circumstances of the startup, shutdown, or malfunction:*			
4. Provide description of corrective actions taken:*			
5. Describe the reasons the SSM Plan was not followed:*			
6. Describe any proposed revisions to the SSM Plan:*			
7. Name (print):			
8. Title			

*Use additional sheets if necessary.

Note: If the event documented in this form was a malfunction and if the SSM plan needs to be revised to address the particular type of malfunction that occurred, the revision of the SSM plan must be made within 45 days of the event.

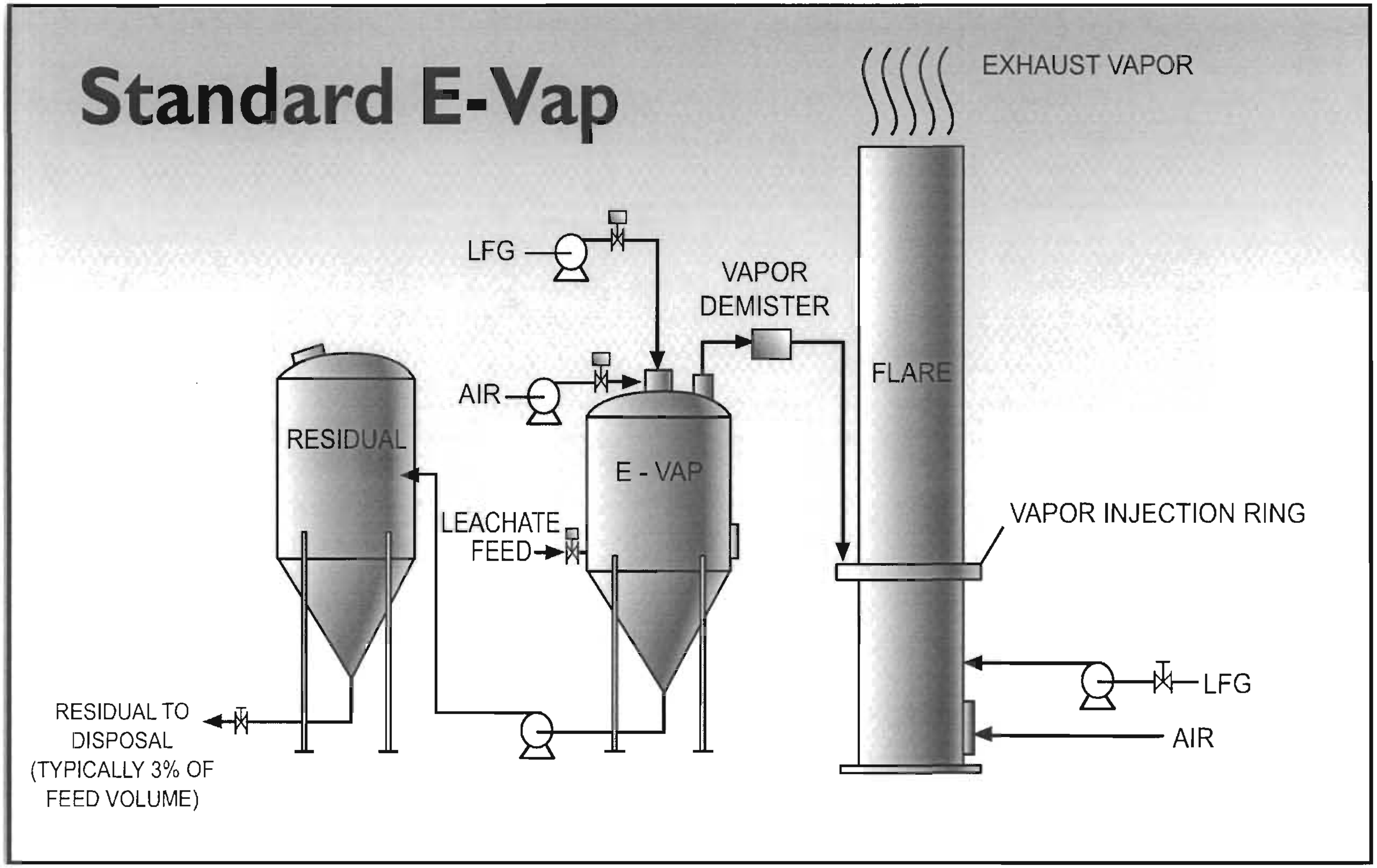
This form is intended to assist in meeting the recordkeeping and reporting requirements of 40 CFR 63.6(e)(3)(iv).

Appendix M1

Permit Application 1270-1

Facility ID No. 0930104

EU Process Flow Diagrams for EU-003


Standard E-Vap
EXHAUST VAPOR
LFG
VAPOR
DEMISTER
FLARE
AIR
RESIDUAL
E - VAP
LEACHATE
FEED
VAPOR INJECTION RING
LFG
AIR
RESIDUAL TO
DISPOSAL
(TYPICALLY 3% OF
FEED VOLUME)

Appendix U

Permit Application No. 1270-1

Facility ID No. 0930104

Control Technology Review and Analysis

Prevention of Significant Deterioration (PSD) Title V Permit
Application No. 1270-1
Facility No. 0930104
Okeechobee Landfill
(Formerly Berman Road Landfill)
Okeechobee, Florida

Prepared for:

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July 28, 2006

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1.0 INTRODUCTION

This Prevention of Significant Deterioration (PSD) Report is in support of the permit application No. 1270 for Okeechobee Landfill (Facility ID 0930104). The Title V permit application is for the concurrent processing of construction and modification of emission units and to request revision to the current operating permit to regulate operation of the emission units.

The project for the permit application consists of

1. The construction of a new emission unit (designated EU-006 for the purposes of the application), consisting of a 3,000-scfm temporary utility flare (Unit Number to be determined).

2. The construction of a new emission unit (EU-007 for the purposes of the application), consisting of a 6,000-scfm utility flare (Unit Number to be determined).

3. The modification of the existing emission unit (EU-003), which is an enclosed 3,000-scfm flare, by replacing the 20,000-gpd EVAP® unit with a 30,000-gpm EVAP® unit.

The replacement of the EVAP® unit with a larger unit has little impact on the emissions. The larger unit contributes an incremental increase of 18 pounds per year (lb/yr) of hazardous air pollutants (HAPs).

The permit revision also addresses recent fuel analysis data for sulfide content that significantly differs from the EPA AP-42 default data. In 2005, a sample of landfill gas was collected and analyzed for sulfides. The hydrogen sulfide (H_2S) results of that analysis indicated that the concentration of H_2S in the landfill gas is 5,800 ppmv.. It is the actual and potential increase in SO2 that results in that pollutants classification as a Prevention of Significant Deterioration Process (PSD) pollutant.

1.1 Prevention of Significant Deterioration (PSD) Process

1.1.1 Applicability and Exemptions

A major modification will occur for the PSD pollutant Sulfur Dioxide (SO2) based on the
1. Baseline Actual-to-Projected Actual Applicability Test for Modifications at Existing Emissions Units.
2. Baseline Actual-to-Potential Applicability Test for Construction of New Emissions Units

The Baseline Actual-to-Projected Actual (in this case Potential to Emit [PTE]) Applicability test results in the SO2 pollutant's classification as a PSD pollutant because the modification to emission unit 003 (EU-003) addresses the revised H_2S data for the inlet (fuel) gas. A significant emissions increase of a PSD pollutant will occur because the sum of the differences between the projected actual (potential) emissions and the baseline actual emissions exceeds the significant emissions rate of 250 tons per year (TPY). Emission data is addressed in Section 2.0.

Baseline Actual-to-Potential Applicability Test for Construction of New Emissions Units results in the classification of SO2 as a PSD pollutant because the emission increase of the sum of the differences of the two new emission units en
the potential to emit from each new emissions unit following completion of the construction exceeds the significant emissions rate of 250 TPY. Emission data is addressed in Section 2.0.

In this application there are a combination of new and existing emissions units involved, therefore the major modification is determined by the hybrid test for multiple types of emissions units pursuant. Considering the construction and modification projects combined, the total difference from the baseline actual to the potential-to-emit results in the SO2 pollutant exceeding the significant emissions rate of 250 TPY. Emission data is addressed in Section 2.0.

No exemptions apply.

1.1.2 Source Information

A <u>Facility History</u>

The landfill was established at 10800 Berman Road in 1981. The facility opened in 1981, after permitting by Florida DEP. The facility has operated in compliance with the FL DEP rules except for occasional odor issues associated with the waste disposal business which the landfill addresses on a continuing basis. This flaring project is an integral part of the continued odor control process.

B <u>Facility Description</u>

The following is the facility description from the existing Title V permit issued by FL DEP:

> *This facility consists of a municipal solid waste landfill, a 3,000 scfm Enclosed flare Unit # 1776 with an EVAP Unit # 3016, a 3,000 scfm Enclosed flare Unit # 1698 with a leachate EVAP Unit 3004IM and a 3,000 scfm unenclosed flare Unit 1495, as a back-up unit. The backup flare operates when one or more enclosed flares are not operating due to malfunction or maintenance and it will operate at the same capacity of the flare that is shut down.*
>
> *This facility does not operate a bioreactor.*
>
> *Also included in this permit are miscellaneous unregulated/insignificant emission units and/or activities.*
>
> *Based on the initial Title V air operating permit application received March 11, 1997 and the Title V air operation permit revision application received* ***March 26, 2003****, this facility* ***is*** *a major source of hazardous air pollutants (HAPs).*

The proposed modification to this existing source (facility) will consist of a 3,000-scfm temporary utility flare for odor control and a 6,000-scfm utility flare to meet the requirements of NSPS Subpart W W W to control landfill gas. The potential landfill gas flow for this project is 15,027 scfm.

The facility receives waste from various parts of the State of Florida and is an integral part of the solid waste disposal capacity of South Florida. The landfill has permitted capacity of 54,660,000 cubic yards of air space and receives approximately 10,000 tons of municipal waste per day. The landfill will operate until all permitted air space is consumed. The landfill is adjacent to an area designated as "Clay Farms" which is permitted to be a solid waste landfill. Clay Farms is owned by Okeechobee Landfill, Inc.. Clay farms construction and operation, when it occurs, will increase the need for landfill gas control equipment in the immediate future.

C Current Operations

The landfill operates six days per week during daylight hours except in times of emergencies such as hurricane recovery when operating hours may change due to the situation. The landfill receives municipal solid waste, construction and demolition material and special wastes over scales at the entrance to the landfill. Trucks are directed to the operating face of the landfill for the actual disposal. The waste is compacted and covered daily. Waste water from the landfill is collected and disposed on site in Landfill gas fired evaporation units or trucked off site. Landfill gas is collected in a system designed to capture gas from all appropriate areas of the landfill. The landfill gas is conveyed to and destroyed in two existing 3000-scfm enclosed flares. Surface monitoring operations verify and check on the integrity of the cover over those landfill areas which are "closed". Landfill gas wells are checked periodically to assure their proper operation in the system.

D Future Operations

This permit application is necessary to assure the adequate destruction of landfill gas from current and future waste decomposition. The capacity of the existing flares is approaching its maximum operational and permits limits and is insufficient to address increase gas generation as the permitted landfill area is filled. This project is necessary to meet the requirements of NSPS Subpart WWW, which requires the control of gas generated in the landfill. Additionally, per the first order amendment to the consent decree requirements, the project includes a 3000-scfm utility flare that will be used to for odor control.

2.0 EMISSIONS

Copies of the emission support calculations are in Appendix K of the permit application.

2.1 Base Line Actual Emissions

After discussions with FDEP, the baseline actual emission for the facility will be the current operation of the two existing 3,000-scfm enclosed flares. These flares are operated under the requirement of NSPS Subpart WWW to control landfill gas currently being produced by the landfill. At the time of this application, the two flares are nearing their operation capacity to control the landfill gas at the current production rate. Recent significant increases in the landfill gas production expedited the need for additional landfill gas flaring equipment. Landfill gas production is expected to continue to increase as the waste in-place increases in the future.

2.2 Actual Emissions To Future Potential Emissions Comparison

The baseline actual emissions were developed for the 24-month period from July 2004 to June 2006. Baseline Actual Emissions are estimated as follows:

Table 1A – Baseline Actual Emissions

Pollutant	Actual Emissions
Landfill gas flow rate (scfm)	*4,275 (Note)*
Sulfur Dioxide (TPY)	1,071.8
Nitrogen dioxide (TPY)	31.1
Carbon Monoxide (TPY)	103.7
Volatile Organic compounds (TPY)	1.2
Particulate matter (TPY)	8.1
HAPs (Total) (TPY)	5.0
HAPs (Single) (TPY)	4.4

Note: The flow rate for the baseline actual emissions are for a 24 month period and do not reflect the current operational parameter. The most recent monthly data indicates a landfill gas flow rate that is typically 5,400 scfm.

Exclusive of any control technology the potential emissions for the four emission units

- Two existing 3,000-scfm enclosed flares
- One 3,000-scfm temporary utility flare for odor control
- One 6,000-scfm utility flare

Table 1B – Potential to Emit and Incremental Increase

Pollutant	Potential to Emit	Incremental Increase
Potential Landfill gas flow (scfm)	*15,027*	*10,752*
Sulfur Dioxide (TPY)	3,862.5	2,790.73
Nitrogen dioxide (TPY)	140.8	109.66
Carbon Monoxide (TPY)	656.2	552.54
Volatile Organic Compounds (TPY)	4.2	3.01
Particulate matter (TPY)	34.0	25.86
HAPs (Total) (TPY)	18.2	13.12
HAPs (Single) (TPY)	15.9	11.52

2.3 Future Gas Flow from Landfill

The projected gas flow from the landfill has been derived by application of gas generation models. The model parameters include the amount of waste in place and its composition as well as the amount and composition of waste to be received over the remaining life of the landfill. USEPA's LandGEM is an example of a gas generation modeling program.

2.4 Significant Emission Rates

2.4.1 Major Sources

Facilities are major sources with respect to emission rates when certain emission rates are exceeded. The Okeechobee Landfill was not permitted as a Title V major source for emissions except for the waste in place exceeding 2.5 million megagrams in place. SO_2 was not considered as a significant pollutant based on AP-42 default data and the potential to emit. Data collected from the landfill gas indicates the H_2S levels are much higher than AP-42 previously used and now constitutes approximately 0.58 percent of the landfill gas. This more recently measured level of H_2S defines the facility as a major source for SO_2 when the conversion of H_2S to SO_2 during the combustion process is estimated. The estimate using 5800 ppmv of H_2S indicates that the facility emits approximately 1,071 tons of SO_2 per year.

Table 1C – Significant Emissions Levels for Actual Emissions

Pollutant	Significant Emission Levels	Actual Emissions	Major threshold exceeded?
Sulfur Dioxide (TPY)	250	1,071.8	Yes
Nitrogen dioxide (TPY)	250	31.1	No
Carbon Monoxide (TPY)	100	103.7	Yes
Volatile Organic Compounds (TPY)	250	1.2	No
Particulate matter (TPY)	25	NA (Note1)	No
Particulate Matter PM_{10} (TPY)	15	8.1	No
HAPs (Total) (TPY) (Note2)	25	5.0	No
HAPs (Single) (TPY) (Note2)	10	4.4	No

Note1 – For the proposed project and emission calculations PM10 is used not PM.
Note2 – For PSD purposes, the facility is currently not a major source for total HAPs or a single HAP based on actual emissions; however, the proposed project will have potential significant emissions (not significant increases) for a single HAP.

2.4.2 PSD Emission Rate Triggers

PSD requirements are also triggered when there is a significant emission rate increase at a major source. The increases from the actual emission rate to the potential emission rate for the project are compared in the table below.

Table 1D – Significant Emissions Increase Levels for Actual Emissions

Pollutant	Current Major status	Significant Emission increase	Actual to Potential Increase for Proposed Project	Exceeds PSD trigger level? (Note 1)
Sulfur Dioxide (TPY)	Yes	40	2,790.73	Yes
Nitrogen Dioxide (TPY)	No	40	109.66	No
Carbon Monoxide (TPY)	Yes	100	552.54	Yes
Volatile Organic Compounds (TPY)	No	40	3.01	No
Particulate Matter PM_{10} (TPY)	No	15	25.86	Yes
HAPs (Total) (TPY)	No	Any	5.0	No
HAPs (Single) (TPY)	No	Any	4.4	No

Note 1 – Major Source that exceeds PSD trigger is 'yes' if it is a current major source AND it exceeds the significant emission increase.

3.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS: SO_2

The PSD permit process requires a BACT analysis in order to identify the H_2S pre-treatment system that is most suitable with respect to technological and economic considerations. The type of equipment or technology sought is described by USEPA as follows:

"Under EPA's "New Source Review" (NSR) program, if a company is planning to build a new plant or modify an existing plant such that air pollution emissions will increase by a large amount, then the company must obtain an NSR permit. The NSR permit is a construction permit which requires the company to minimize air pollution emissions by changing the process to prevent air pollution and/or installing air pollution control equipment. For more information on the NSR program, go to http://www.epa.gov/nsr.

The terms "RACT," "BACT," and "LAER" are acronyms for different program requirements under the NSR program.

RACT, or Reasonably Available Control Technology, is required on existing sources in areas that are not meeting national ambient air quality standards (i.e., non-attainment areas). BACT, or Best Available Control Technology, is required on major new or modified sources in clean areas (i.e., attainment areas).

LAER, or Lowest Achievable Emission Rate, is required on major new or modified sources in non-attainment areas.

BACT and LAER (and sometimes RACT) are determined on a case-by-case basis, usually by State or local permitting agencies. EPA established the RACT/BACT/LAER Clearinghouse, or RBLC, to provide a central data base of air pollution technology information (including past RACT, BACT, and LAER decisions contained in NSR permits) to promote the sharing of information among permitting agencies and to aid in future case-by-case determinations. However, data in the RBLC are not limited to sources subject to RACT, BACT, and LAER requirements. Noteworthy prevention and control technology decisions and information are included even if they are not related to past RACT, BACT, or LAER decisions."

3.1 NSR versus MSW Landfills

The definition above describes a NSR project and how BACT is developed. This project and other MSW landfill projects are substantially different. In most NSR projects the facility has not been built. In the case of an MSW landfill project, the facility has been permitted and substantially constructed. As the community's need for landfill disposal area increases as does the landfill facility. As expansions are permitted, the air emissions for the expansions are added to the existing facility. Historically agencies have looked at the flares or other combustion devices as emission sources along with the landfill. In fact the source has always been the landfill with the flares being control devices for the NMOC that may be emitted from the landfill during its life. This is an important issue for this application. The facility is an operating, permitted landfill which has gas emissions which are about to exceed the capacity of the flares while the landfill continues to serve the public as a waste disposal facility. Whereas, a power plant is designed, receives a PSD permit, and is constructed, the landfill has been built; BACT is being selected and must be designed and installed and then put into operation after approval by FL DEP. We are anticipating a three year period at least for permit approval, BACT vendor selection and design, and construction prior to the control device being available. One of the promising technologies which may be selected will require a pilot plant operation for a period of time prior to final selection, design and construction. In the interim period, the facility may have to utilize emission control devices to achieve compliance with NSPS WWW.

3.2 USEPA Technology Clearinghouse Database

A review was made of the USEPA RACT BACT LAER Clearinghouse by using the USEPA web site www.epa.gov/ttn/catc/rblc. The data base was searched for landfills with the pollutant SO_2. The results are summarized in the table on the next page and the reports are provided in **Appendix 1**.

Table 2 - USEPA TTN Database search parameters and results for SO_2

Process Information	Result
Fuel Combustion	
Utility and Large Industrial Boiler/ Furnaces	
11.320 LF/ Digester/ Bio-gas	None
Industrial Size Boilers/ furnaces (> 100 mi)	
Gaseous fuel and mixtures	
12.320 LF/ Digester/ Bio-Gas	None
Commercial/ Industrial size boilers/ furnaces	
Gaseous fuel and mixtures	
13.320 LF/ Digester/ Bio-Gas	None
Large combustion Turbines (> 25 MW)	
Simple Cycle	
15.120 LF/ Digester/ Bio-Gas	None
Combined Cycle and Co-generation	
15.220 LF/ Digester/ Bio-Gas	None
Small Combustion Turbines (<25 MW)	
Simple Cycle	
16.120 LF/ Digester/ Bio-Gas	None
Combined Cycle and Co-generation	
16.220 LF/ Digester/ Bio-Gas	None
Internal Combustion Engine	
Large Internal Combustion Engine (> 500 HP)	
17.140 LF/ Digester/ Bio-Gas	6 Facilities
Small Internal Combustion Engine	
17.240 LF/ Digester/ Bio-Gas	1 Facility
Miscellaneous Combustion	
Flares	
19.320 Digester & LF Gas Flares	6 Facilities Note: (one facility is beef processing and therefore not considered applicable

3.3 Commercial Technology Review

Further research into BACT technologies was made through known vendors and inquiries to others with technology which may be available to the project. The vendors contacted and the technologies of interest were as follows:

Table 3 – Vendors for SO_2 Technologies

Vendor Name	Technology Name
Q2	EnviroScrub
Q2	Enviro-Tek
Gas Technology Products LLC	Lo-Cat
Gas Technology Products LLC	Sulfur-Rite
Natco Group	SulfaTreat
ADI	SulfaBind
Biothane Corp	Biopuric
Paques, Inc.	Thiopaq
Mtarri/Varani	H2SPlus
Shaw E&I, Inc.	Biotrickling Filter (BTF) system with FlexFil™ Media
Cogentrix	Off-site destination for co-generation project

Each of these technologies is described in Section 4.0 below.

4.0 SO_2 CONTROL TECHNOLOGIES

Dry- and liquid-based chemical processes have traditionally been used for removing sulfur from various industrial process gas steams. These technologies include: activated carbon adsorption (often impregnated with ferric oxide); amine-based technology; caustic (liquid)–based technology; chlorine dioxide; metallic oxide-based technology; nitrite-based processes; and triazine-based chemical reagent processes. With the exception of metal oxide, none of the above are viewed as BACT-suitable for landfills. Metallic oxide-based technology involves using beds, slurries and powders that contain hydrated metal oxides that appear to be economical and effective in selectively removing H_2S from landfill gas streams. While initial investment and operator involvement is relatively low compared to other approaches, waste handling and disposal costs may be significant.

In the past few years, many chemical, physical and biological technologies have become available for the removal of H_2S from biogas and landfill gas streams. This BACT analysis evaluated such brand name chemical-physical systems as LO-CAT, Sulfa Treat, and Sulfa Bind. Sulfur-Rite is a brand name, dry-based chemical system. Biological process technologies evaluated include Biopuric and Thiopaq, the latter involving both biological and chemical process units. In addition, H2SPLUS, a technology based on iron sponge and biological processes, was also evaluated. These systems are described briefly below.

4.1 Control Technology Descriptions

The information presented regarding these technologies was obtained from the manufacturers, internet-based research and technical papers.

4.1.1 LO-CAT

LO-CAT is an aerobic process to control hydrogen sulfide odors developed by Gas Technology Products, LLC, subsidiary of Merichem Company. The process uses a chelated iron catalyst to convert H_2S into elemental sulfur.

The LO-CAT system consists of a venturi absorber and a mobile bed oxidizer. Landfill gas is treated in the absorber vessel by the iron catalyst, which is held in solution by organic chelating agents that form a film around the iron ions. The chelating agents prevent precipitation of either iron sulfide or iron hydroxide. In the absorber, H_2S is absorbed into a slightly alkaline aqueous solution. The H_2S ionizes to bisulfide, which is oxidized to sulfur by reducing the iron ion from ferric to ferrous state. The reduced ions are then transferred to the oxidizer, where the catalyst is regenerated. Atmospheric oxygen is absorbed into the LO-CAT solution to re-oxidize ferrous iron to ferric iron, hence regenerating the catalyst.

The overall reaction is an isothermal modified Claus reaction. The chemical additions required to maintain the above reactions are caustic for maintaining the pH, chelated iron, which is lost in the sulfur removal process, and chelating agents that are degraded in the process and need to be replaced. Thiosulfate and bicarbonates may form as side reactions to produce excess amounts of sour gas and carbon dioxide. Caustic is required to be added under such conditions to maintain the pH.

4.1.2 Sulfur-Rite

Sulfur-Rite, developed by Gas Products Technology, LLC, is a chemical process that converts H_2S into iron pyrite, a stable, non-hazardous compound.

This process consists of two vessels housing the iron-based media. Landfill gas enters the top of the vessel, traveling down through the media as it reacts with the iron. The spent media is non-regenerable and has to be replaced with new media on a periodic basis. The spent media is non-toxic and can generally be safely disposed of in a landfill.

4.1.3 Sulfa Treat

Sulfa Treat is a physico-chemical process, developed by the NATCO Group, featuring a black, granular, pea-sized dry iron compound that selectively removes H_2S.

This process consists of two vessels housing Sulfa Treat media with support trays and media loading and clean out pathways. This process is not affected by pressure variations and the unique characteristics of the media prevent channeling of the landfill gas stream. The media is non-regenerable and needs to be replaced once it is spent. The spent media is non-toxic and can be disposed of in a landfill. The process does not produce any undesirable off-gas and no foaming occurs during the reaction. Since the media only reacts with sulfur-containing compounds, any side reaction with CO_2 that could reduce its efficiency, is eliminated.

4.1.4 Sulfa Bind

Sulfa Bind, developed by ADI Inc., is a physico-chemical technology that uses a diatomite media coated with ferric hydroxide having a grain size of sand to remove H_2S.

The process includes four filter vessels housing the inorganic media, gravel support bed, inlet and outlet nozzles, a regeneration blower and associated piping and valves. The landfill gas is stripped of H_2S when it comes in contact with the media. The process operates with two filters at a time, while the other two are used when the media in the first two vessels is being regenerated. The media is regenerated by blowing air through the media for 8 to 12 hours. Approximately 12 regenerations are possible before the media needs to be replaced. The spent media is non-toxic and can be disposed in a municipal waste landfill.

This process is undergoing its first practical landfill application pilot test and has not yet been used on a full-scale basis at any landfill.

4.1.5 Biopuric

Biopuric is an anaerobic biological process to remove H_2S from gas streams developed by Biothane Corporation. This process uses H_2S removing bacteria to metabolize H_2S from gas streams and produce elemental sulfur.

Biopuric includes four scrubbers, recirculation pumps, and an air blower. The scrubbers house the biomass, which digest the H_2S gas. Biomass is media impregnated with bacterial "bio-film." The landfill gas is fed into the scrubber from the bottom, where contact with water transfers the H_2S from the gas stream into the liquid stream. The liquid is then circulated by pumps to be contacted with the biomass. The bacteria decompose H_2S to produce elemental sulfur. The nutrients required for the bacterial activity are supplied through the recirculation pumps.

This technology does not require any media change out. With proper operating conditions of moisture and pH, the bacteria can apparently thrive indefinitely. The media is required to be flushed periodically to remove built up elemental sulfur.

4.1.6 Thiopaq

The THIOPAQ process, developed by Paques, Inc., is a bio-chemical process for treatment of H_2S in industrial gas streams. This process consists of a caustic scrubber combined with a bioreactor in which the spent caustic solution is regenerated.

The gas enters a wet scrubber from the bottom, typically a packed column, and is desulfurized by contact with a slightly alkaline fluid, at pH 8 to 9 fed from the top. Clean gases leave the scrubber at the top, while scrubbed sulfide liquid collects at the bottom of the scrubber.

The spent scrubber liquid is collected in the bottom of the scrubber and directed to the bioreactor. In the bioreactor, *Thiobacillus* bacteria consume oxygen to convert the dissolved H_2S into solid elemental sulfur, thereby regenerating caustic soda present in the spent scrubber liquid. This sulfur depleted and caustic regenerated liquid is returned to the scrubber for renewed removal of H_2S. A small bleed stream is removed periodically from the scrubber to prevent built up of formed salts. This stream is non-hazardous and can in most cases easily be discharged.

Since there is a significant biological overcapacity in the reactor, variations in the H_2S loading rate can be handled. Caustic soda is added periodically to neutralize sulfuric acid which is a by-product of the H_2S scrubbing.

4.1.7 H2SPLUS

H2SPLUS is a physico-chemico-biological process, developed by Mtarri/Varani LLC, featuring iron sponge technology impregnated with biological agents that selectively removes odor emanating compounds such as H_2S, mercaptans, carbon disulfide and particulate matter.

This process consists of five fiber glass vessels housing iron sponge media with gas distribution piping, water recirculation piping, support trays and media loading and clean out pathways. The vessels are equipped with lifting nets to facilitate media replacement. A sump to collect condensate and recycle the leached iron oxide and sodium bicarbonate (if necessary) is located below the vessel. A small blower adds up to 3% by volume of ambient air to the inlet gas stream to maintain a lower explosive limit, regenerate the media, and facilitate the conversion of iron sulfide to elemental sulfur. When landfill gas is passed through the iron sponge media (wood chips impregnated with iron oxide), H_2S reacts with to form a pyretic-type iron sulfide compound hence immobilizing the H_2S. The biological agents react simultaneously with sulfur compounds to oxidize the pyrites and produce elemental sulfur while regenerating iron oxide.

The media is non-regenerable and needs to be replaced once it is spent. The spent media needs to be treated onsite by wetting and allowing air oxidation to occur over a four day period so that the material is not pyrophoric. The spent media is non-toxic and can be disposed of in a municipal waste landfill or composted and applied as a fertilizer in farming operations. The process does not produce any undesirable off-gas and no foaming occurs during the reaction. Since the media only reacts with sulfur-containing compounds, any side reaction with CO_2 that could reduce its efficiency is eliminated.

4.1.8 Enviro-Scrub®

Enviro-Scrub® is a physico-chemical process, developed by the Q^2 Technologies, that is based upon sparging gas through the solution to remove the H_2S and mercaptans from hydrocarbon fluids, natural gas, gas streams, water and waste water streams. Enviro-Scrub® series of products are non-hazardous and react immediately with H_2S to produce a non-reversible, non-hazardous stable compound. The media is non-regenerable and needs to be disposed of and replaced once it is spent. The spent media is non-toxic, water soluble, forms no solids, is biodegradable and can be disposed of in a municipal waste landfill. The process does not produce any undesirable side reactions that cause the solution to be toxic or hazardous. The media yields minimal reactions with CO_2, increasing efficiency.

4.1.9 Enviro-Tek™

Enviro-Tek™ is a physico-chemical process, developed by the Q^2 Technologies, that utilizes the sulfur scrubbing mechanism of the Enviro-Scrub™ molecule, but may be regenerated to fresh product with aeration of the spent material in a batch or continuous flow process. Enviro-Tek™ is a patented process that selectively removes H_2S and mercaptans out of landfill gas, digester gas, natural gas, refinery flue gas and air collection systems. Enviro-Tek™, like Enviro-Scrub®, is non-toxic and non-corrosive. The Enviro-Tek™ process by-product consists of a granular elemental sulfur cake containing a small percentage of non-toxic, biodegradable

Enviro-Tek™ solution. The system make-up requirement is limited to replacing Enviro-Tek™ solution lost in removing elemental sulfur from the system. The spent media is non-toxic, water soluble, forms no solids, is biodegradable and can be disposed of in a municipal waste landfill. The process does not produce any undesirable side reactions that cause the solution to be toxic or hazardous. The media yields minimal reactions with CO_2, increasing efficiency. Once the H_2S monitor in the outlet reaches the breakthrough point, the spent chemical solution is removed and replaced with fresh chemical solution.

4.1.10 Biotrickling Filter

Shaw Environmental's Biotrickling Filter (BTF) system, utilizing FlexFil™ Media, is an innovative technology for this application. The system package removes contaminant chemicals, such as hydrocarbons and reduced sulfur compounds, from air streams. In the biotrickling filter bed, microbes are responsible for degrading and eliminating the contaminants. The FlexFil™ media is specially manufactured polyurethane foam that provides a maximum level of porosity and biological activity, low pressure drop, and a high level of physical stability and predictable long life.

A portion of the contaminants from the influent air are adsorbed on the surface of the media while the rest of the contaminants are absorbed into the thin film of water surrounding media particles. Microorganisms on the surface of the particles and in the water continuously metabolize the contaminants, converting them to water, carbon dioxide, and salts. Sulfur odors are reduced with the production of sulfate while ammonia and other nitrogen-containing compounds are treated with the generation of nitrate.

While passing through the media, the contaminants in the air stream are metabolized and removed. The purified air passes through the lower chamber of the biotrickling filter and out via a blower on the downstream of the system.

There are multiple media layers inside the Biotrickling filter. The quantity of layers depends on the size of the proposed unit. The layers include Shaw Environmental's proprietary irrigation systems, placed above each layer of the media, thereby assuring that moisture and nutrients are directed to the specific locations within the BTF where they will provide optimum benefit with minimum consumption of utilities. This irrigation system is also used to flush out accumulated salts and acids as required to maintain the performance of the biotrickling filter. Nutrient is added to the system via a nutrient injection system which delivers a nutrient solution to the system whenever the water fill valve is activated.

4.1.11 Off-Site Power Generation Plant

The use of an off-site power plant for transmission and beneficial use of the landfill gas is another alternative to on-site treatment for SO_2 reduction. Approximately 25 miles southeast of Okeechobee Landfill is a pulverized coal plant operated by Cogentrix. The plant has an air pollution control systems that may be able to handle, or with modifications be able to handle, the Okeechobee landfill gas with 5800 ppmv of H_2S and continue to meet their permitted allowable SO_2 emission limits of 0.170 lbs/MMBtu.

4.2 Control Technology Analysis

As of the date of this report, complete information for all the technologies was not made available by the vendors, although follow-up calls were made to the vendors to gather as much information as possible to complete the table. Capital costs and operating costs were obtained from the vendors for a landfill gas flow rate 9,000 scfm and a H_2S concentration of 5,800 ppm. Nine thousand-scfm was used because that was the first assumption of the project scope. The final analysis is based on a per ton basis; therefore, the costs were then scaled up to the flow rate of 15,000 scfm.

The capital costs were annualized over ten years and combined with the annual operating costs. The exception is the gas transmission line project which is annualized over 30 years because this project would likely not be undertaken as a cost-benefit project unless the capital cost were over a longer period. Calculations were performed using the combined annualized capital and operating cost and the landfill gas parameter to estimate the cost per ton of SO_2 removed for each technology. **Table 4** provides a summary of the technology review. The table includes a brief description of the capital equipment and construction costs, the capital and annual costs, previous project applications, and the estimated removal performance limits for the various technologies.

Table 5 presents the ranking of the control technologies based on the following information:

- Has the technology been applied to landfills previously?
- Has the technology demonstrated an ability to handle the hydrogen sulfide levels anticipated from the landfill?
- What is the capital cost of the technology to handle to flow and
- Hydrogen sulfide levels at Okeechobee?
- What are the operating costs for the technology at the levels and flow anticipated at Okeechobee?
- Can the flow or hydrogen sulfide content be increased with modifications to the technology with ease?
- What are the energy costs, waste disposal costs, chemical costs and manpower requirements associated with the technology?

The following observations derive from the cost feasibility analysis presented in the above tables:

- All ten (10) combustion pre-treatment technologies claim to be able to meet the stated performance requirements, although vendors for Enviro-Scrub, Enviro-Tek, and Sulfa Treat admitted that their technologies could not treat the landfill gas at this site efficiently enough to be economically feasible.
- LO-CAT, Sulfa Treat and Thiopaq all have direct landfill application experience.
- LO-CAT and Biopuric have the lowest annualized costs.
- While Sulfa-Rite has the lowest capital costs, it has high annual costs and the highest annualized cost.
- Although Biopuric is an emerging technology with successful digester gas applications, its water consumption is very high and the wastewater disposal requirements, which were unaccounted for, are likely to be very significant for landfill applications.

- A final selection will consider several factors: total annualized cost, initial capital outlay and proven site-specific operating experience in order to estimate design-build level costs.
- Biofilter Trickling -
- Off-site Pipeline -

The technologies were ranked in order from 1 to 6 based on cost, treatment effectiveness, and previous successful applications; 1 being the most cost effective of the technologies reviewed. Technologies that were not feasible according to their respective vendors are labeled as "unavailable" in **Table 5**. The biofilter trickling system is an innovative technology that has not been used in production or in a pilot demonstration project and is therefore labeled as "Innovative/Unproven", which ranks before the unavailable technologies. The BACT analysis is based on the H_2S rate of 5800 ppmv and any changes in these levels may effect the analysis outcome.

5.0 Conclusions

The technologies reviewed and compiled for the BACT analysis reflects state of the art technologies relative to sulfur dioxide control for landfill flares. The analysis is broad reaching in its search for less established technologies such as beneficial use and new biological processes, which, if successful, could be used to at other facilities interested in reducing SO_2 emissions. In general, the cost to reduce the SO_2 emissions from the landfill gas is expensive compared to the cost of SO_2 allowances available on the open market under the acid rain program in the United States. As reported by Evolution Markets, LLC. on July 27, the most recent sales of SO_2 allowances are $652.50 per allowance on the open market.

According to current federal and state rules, the emissions of SO_2 are significant and may require reductions with the use of BACT. The two top ranked control technologies in this report: beneficial use in a power plant and LO-Cat, need to be further analyzed in their feasibility versus cost. As part of this further analysis, the continued growth and operation of the landfill needs to be considered for the handling and control of landfill gas with high sulfur content. This BACT analysis was developed over a relatively short period to meet the 30-day permit application submission requirement of the facility's consent degree. Since the BACT development period was expedited, additional information was not obtained to finalize the proposed BACT for the landfill flare. Additional information would include input from the power plant owners and operators for the beneficial use alternative and detailed design with consideration to water usage and waste water requirements for the LO-Cat technology.

As issues such as preliminary design, contract discussions, permitted issues, and cost benefits proceed, we expect that the BACT may be finalized. Since the BACT was not finalized, then the emission rate associated with it was not available for the air impact analysis. When the BACT analysis is completed, this report will be updated to reflect additional information and BACT details and submitted as Draft to FDEP for review and comment. After the BACT is accepted and the design completed, the emission rates can be established and used to in the air quality analysis calculations and, if required, the interactive impact analysis.

Table 4 – Summary of Technologies and Parameters for BACT Analysis

Technologies	Description	Capital Cost Items	Capital Cost	Annual Cost Items	Annual O&M Cost	Annualized Cost (over 10 years)	Cost per Ton of SO_2 Removed	Known Applications	Performance	Vendor Info	Comments or Notes
LO-CAT	Consists of venturi absorbers and mobile bed absorber containing iron chealate solution.	Engineering Fabrication Initial Chemical Fill Licensing fees O&M Manuals Start up training costs Tax & FOB	$5,000,000	Chemical costs Media Change outs Bag filters Electricity O&M Labor Media disposal	$500,000	$1,000,000	$267.03	Pompano Beach LF, FL	98%	Gas technology Products David Graubard 847.285.3855	Application at Central landfill has had notable success.
Sulfur-Rite	Split gas into six parallel streams: 6 vessels, 17' dia and 22' high Each vessel requires 318,000 lbs of sulfur media.	Engineering Fabrication Initial Chemical Fill Licensing fees O&M Manuals Start up training costs Tax & FOB	$332,000	For each vessel media change-out is required 3 times a year Media disposal Vacuum truck and water truck to flush out media.	$12,450,000	$12,483,200	$3,333.33	Flexus, Pittsburg, PA - Molten Sulfur Rail Co. Cytec, Toronto - Specialty chemical OMV, Pakistan - Natural gas (replaced Puraspec due to high media costs)	< 1 ppm	Gas technology Products David Graubard 847.285.3855	Vendor did not recommend this technology for this application.
Biopuric	Consists of: 24 scrubbers - 13' dia and 42' high, recirculation pumps, air blower, biomass, nutrients, blower and connecting piping, 2 control panels, 2 control skids 8' x 25' x 8' high. Each unit handles 400 scfm. No licensing fees associated.	Equipment package Structural supports Foundation Piping and valving Electrical and conduit trenching Startup cost Biomedia Tax & FOB	$16,600,000	Labor costs Maintenance Electricity Water Nutrients Hot water/ Steam Media disposal Disposal of 17,000 gallons per day not included	$2,324,000	$3,984,000	$1,063.83	Digester Gas at a Paper Mill wastewater application	97% warranty standard	Biothane Corporation Deborah Buckley 856.541.3500 x 513	
H2SPLUS (Iron Sponge)	Includes: vessels (12' diameter x 10' tall), internal piping and valve network, iron sponge media impregnated with biological agents, Fuji air blowers and controls, recycling sump and associated pump, media removal nets, Engineering design, technology license fee, 3 days of installation and start up oversight	Vessels, one time media fill, blowers, pumps, and internal piping	$4,170,000	Includes: media change outs (man hours at $50 / hr, 25 ton crane for 3 days at $5000/ change out, sucker truck at $4000/ change out, boom truck at $3000/ change out Electricity costs not included	$4,170,000	$4,587,000	$1151.36	Odor and H2S removal at: Cargil's Excel facility in Ft. Morgan, CO; Dodge city, KS; Simplot foods in Burley, ID; Coors Brewing Co, Golden, CO; asphalt plants; agricultural landfills	This technology can achieve 95% for the given costs. Higher efficiencies can be achieved by adding more treatment vessels	Mtarri/ Varani, LLC Paul Trost 303.277.1625	
Sulfatreat	Consists of: 2 vessels 120" dia x 32' high. Blower is not required. No licensing fees associated.	Includes: 2 vessels, piping, valving and 1st fill of media. Tax & FOB Bag lifting device Moisture knockout drum	NA – no quote received due to physical obstacles associated with using this technology at this site (i.e. 20,000 lbs of spent media/day for dispoal and re-charge)	600,000 lbs of media replacement required every 30 days. Foam filters Media disposal Water truck and Vac truck	NA	NA	NA	Monmouth County LF, NJ and Freshkills LF, Staten Island, NY	95%	Sulfatreat Mike Civili 636.532.2189	Vendor did not supply a quote due to the massive amounts of media required for this technology under the guidelines of this application.

Table 4 – Summary of Technologies and Parameters for BACT Analysis

Technologies	Description	Capital Cost Items	Capital Cost	Annual Cost Items	Annual O&M Cost	Annualized Cost (over 10 years)	Cost per Ton of SO_2 Removed	Known Applications	Performance	Vendor Info	Comments or Notes
Sulfa Bind	Includes: 20 - 10' dia. x 20' long media filter units. Media is a diatomite, coated with ferric hydroxide having grain size of sand - 0.3 mm dia. No engineering fees associated. No licensing fees associated.	Includes: 4 filters, piping, valvaling, purge points, control panel and media. Tax & FOB Piping and support from main gas line Foundation 1st fill of media Design package Condensate piping and collection system	$9,794,000	Regeneration of media, via air purge, is required every 4days. Regeneration time is 8-12 hours, offline. 13 regenerations possible until media change out is required. Media will need to be changed 8 times a year One change out per unit is 37,000 lbs of media at a cost of $0.70/lb.	$7,811,960	$8,791,360	$2,347.34	First landfill installation pilot test to start at Brookhaven, Long Island, NY in October 2004. (Client preferred this technology over Sulfatreat.)	Has proven to reduce 30,000 ppm H2S inlet concentration to below 1-2 ppm at wastewater treatment plants.	ADI Mike McMullin 1 800 858 1888	
Thiopaq	Includes: absorber, control system, sulfur settler, sulfur handling equipment, forced draft or induced draft blower, engineering design fees, licensing fees, and some required piping.	Sulfur handling equipment: Centrifuge = $100,000	$3,486,000	Includes: chemical costs, water, soda and nutrients. Includes electrical cost at $ 0.08/KWH.	$5,976,000	$6,324,600	$1,688.83	In US: Used at WWTP, Cedar Rapids, IA for treating digester gas at a lagoon for beef parts. Used at 38 locations outside US, including landfills.	95% for the presented cost. (However, technology can achieve up to 99.99% for a higher cost.)	NATCO David Meridadian 713.685.8095	
Enviro-Scrub	Consists of a physio-chemical process that involves sparging gas through a non-regenerable sulfur removing solution	NA	NA	NA	NA	NA	NA	NA	NA	Q2 14729 Highway 105 West Suite 200 Montgomery TX, 77356 (936) 588-2242	Vendor did not supply a quote; this technology cannot efficiently treat the sulfur at the flow rates and H_2S concentrations specified for this project.
Enviro-Tek	Consists of a physio-chemical process that involves sparging gas through a regenerable sulfur removing solution	NA	NA	NA	NA	NA	NA	NA	NA	Q2 14729 Highway 105 West Suite 200 Montgomery TX, 77356 (936) 588-2242	Vendor did not supply a quote; this technology cannot efficiently treat the sulfur at the flow rates and H_2S concentrations specified for this project.
Use On Indiantown Co-Gen	Pipe the gas to the Indiantown power plant, about 26 miles.	Permitting, design, construction, materials and equipment	$50,000,000	Operation of the pipeline; $100,000	$100,000	$1.6 Million	$804.00		90%	NA	Revenue from sale of gas may offset some costs; fits well with Florida Energy plan

Notes: (1) All costs were determined based upon actual quotes provided by the vendors listed.

(2) The provided cost quotes were based upon flow rates of 9,000 scfm and up-scaled to 15,000 scfm

Table 5 – Best Available Control Technology Analysis Ranking

Technologies	Cost per Ton of SO_2 Removed	Performance	Comments or Notes	Rank
LO-CAT	$267.03	98%	Application at Central landfill has had notable success.	1
Use On Indiantown Co-Gen	$804.66	90%	Revenue from sale of LFG may partially offset costs; fits well with FL Energy plan	2
Biopuric	$1,063.83	97%	Almost 4X as costly as LO-CAT	3
H2SPLUS	$1151.36	95%	More than 4X as costly as LO-CAT	4
Thiopaq	$1,688.83	95%	More than 6X as costly as LO-CAT	5
Sulfa Bind	$2,347.34	<1-2 ppm	Almost 9X as costly as LO-CAT	6
Sulfur-Rite	$3,333.33	< 1 ppm	More than 12X as costly as LO-CAT	7
Biofilter Trickling	NA	NA	Innovative technology; cost and effectiveness not fully developed.	Innovative/Unproven
Enviro-Scrub	NA	NA	Vendor did not supply quote; this technology cannot efficiently treat the sulfur at the flow rate and H_2S conc. specified.	Unavailable
Enviro-Tek	NA	NA	Vendor did not supply quote; this technology cannot efficiently treat the sulfur at the flow rate and H_2S conc. specified.	Unavailable
Sulfatreat	NA	95%	Vendor did not supply quote; this technology cannot efficiently treat the sulfur at the flow rate and H_2S conc. specified.	Unavailable

ATTACHMENT 1

US EPA RACT BACT LAER Clearinghouse Reports

Internal Combustion Engine Large Internal Combustion Engine (> 500 HP) 17.140 LF/ Digester/ Bio-Gas	6 Facilities	

COMPREHENSIVE REPORT
Report Date: 07/10/2006

Facility Information

RBLC ID:	VA-0288 (final)	**Date Determination Last Updated:**	06/21/2004
Corporate/Company Name:	IDUSTRIAL POWER GENERATING CORP	**Permit Number:**	61423
Facility Name:	INGENCO	**Permit Date:**	12/17/2003 (actual)
Facility Contact:	ROBERT GREENE (804)521-3557	**FRS Number:**	110008189129
Facility Description:	THIS SOURCE IS A STATE MAJOR; ELECTRIC POWER PLANT	**SIC Code:**	4931
Permit Type:	D: Both B (Add new process to existing facility) &C (Modify process at existing facility)	**NAICS:**	221112

EPA Region: 3

Faciliy County: CHESAPEAKE

Facility State: VA

Facility ZIP Code: 23230

Permit Issued By: VIRGINIA ENVIRONMENTAL QUALITY AIR DIV. (Agency Name)
MR. YOGESH DOSHI (Agency Contact) (804)698-4017 YNDOSHI@DEQ.VIRGINIA.GOV

Other Agency Contact Info: MARGARET KEY
7705 TIMBERLAKE ROAD
LYNCHBURG, VA 24502
804-582-5120

Other Permitting Information: SOURCE HAS REQUESTED A MODIFICATION TO THE EXISTING PERMIT FOR AN INCREASE IN YEARLY EMISSION LIMITS; THERE IS NO CHANGE TO THE EXISTING EQUIPMENT. Original permit (dated 10/16/01) is to construct and operate a dual fuel electric power plant, located at the Virginia Beach Landfill II. In case of a landfill gas treatment system malfunction, untreated landfill gas is diverted to a flare.

Process/Pollutant Information

PROCESS NAME: IC ENGINES, DUAL FUEL, (36)

Process Type: 17.140 (Landfill/Digester/Bio-Gas)

Primary Fuel: LANDFILL GAS

Throughput: 550 HP

Process Notes: 36 Detroit diesel engines, arranged in 6 groups of 6 engines each. Each engine drives a 350 kW generator. Treated landfill gas input ratio is limited to < 50%, treated landfill gas input to total fuel heat input for each period of continuous dual fuel operations. Compliance with lb/mmBtu limits for PM, PM10, VOC, CO and NOx, determined by stack testing.

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 0.11 LB/MMBTU

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) PROPER ENGINE MAINTENANCE PRACTICES

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: State regulation is basis

POLLUTANT NAME: Sulfur Dioxide (SO_2) **CAS Number:** 7446-09-5

Emission Limit 1: 0.2020 LB/MMBTU

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) DISTILLATE OIL FUEL SULFUR LIMITS: FOR NO. 1 OR 2 OIL: 0.2% MAX SULFUR; FOR NO. 4 OIL: 0.5% MAX SULFUR.

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: State regulation is basis

POLLUTANT NAME: Nitrogen Oxides (NO_x) **CAS Number:** 10102

Emission Limit 1: 2.1 LB/MMBTU

Emission Limit 2:

Standard Emission: 5.05 G/B-HP-H calculated, assumes 48% efficiency

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) AIR-TO-FUEL RATIO CONTROL, TURBOCHARGING, CHARGE- AIR COOLING SYSTEMS, SUPPLEMENTARY INLET CHARGE- AIR WATER-TO-AIR COOLING AND OVERSIZED INLET CHARGE AND EXHAUST DUCTS.

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: State regulation is basis

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 3.2 LB/MMBTU

Emission Limit 2:

Standard Emission: 7.7 G/B-HP-H calculated, assumes 48% efficiency

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) FUEL LIMIT: TREATED LANDFILL GAS HEAT INPUT RATIO < 50%

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: State regulation is basis

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 0.22 LB/MMBTU

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) PROPER ENGINE MAINTENANCE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: state reg is basis

Facility Information

RBLC ID:	OH-0260 (final)	**Date Determination Last Updated:**	07/06/2005
Corporate/Company Name:	BIO-ENERGY, L.L.C.	**Permit Number:**	02-16880
Facility Name:	CARBON LIMESTONE LFG	**Permit Date:**	04/10/2003 (actual)
Facility Contact:	LESLIE M. COOK 7133003310	**FRS Number:**	110017419293
Facility Description:	16 LANDFILL GAS-FIRED (LFG) IC ENGINES, AT EXISTING LANDFILL, FOR POWER GENERATION.	**SIC Code:**	4911
Permit Type:	A: New/Greenfield Facility	**NAICS:**	221112
EPA Region:	5		
Faciliy County:	MAHONING		
Facility State:	OH		
Facility ZIP Code:	77063		
Permit Issued By:	OHIO ENVIRONMENTAL PROTECTION AGENCY (Agency Name) MS. CHERYL SUTTMAN (Agency Contact) (614)644-3617 CHERYL.SUTTMAN@EPA.STATE.OH.US		
Other Agency Contact Info:	CHERYL E. SUTTMAN 122 S. FRONT ST. COLUMBUS, OH 43215 614-644-3617		
Other Permitting Information:	THIS PTI IS A MODIFICATION TO PTI#02-14296 ISSUED 4/5/01. TESTING SHOWED THE ORIGINAL LIMITS FOR NOX AND HCL WERE TOO LOW, AND THE FACILITY WAS OUT OF COMPLIANCE. THIS ADJUSTMENT INCLUDED AN INCREASE OF 170 TONS OF NOX AND 6 TONS OF HCL. PM10, NOX, CO AND OC WERE PSD IN THE INITIAL PERMIT. THE FORMALDEHYDE LIMIT WAS REMOVED IN THIS MODIFICATION AND THE ROLLING 12-MO LIMITS WERE CHANGED TO TPY LIMITS. THE TOTAL FACILITY PM LIMIT IS 61 TONS/YR.		

Process/Pollutant Information

PROCESS NAME: IC ENGINES (16)

Process Type: 17.140 (Landfill/Digester/Bio-Gas)

Primary Fuel: LANDFILL GAS

Throughput: 14 MMBTU/H

Process Notes: SIXTEEN 14 MMBTU/H (1400 KW, 1877 HP) INTERNAL COMBUSTION ENGINES BURNING LANDFILL GAS FOR ELECTRICAL POWER. STACK TESTING WAS CONDUCTED ON ONE OF THE 16 SIMILAR UNITS, FOR NOX, CO, PM, HCL AND OCS. IT WAS FOUND THAT NOX, CO, AND HCL DID NOT MEET THE LIMITS IN THE ORIGINAL PERMIT; IT WAS MODIFIED TO INCREASE THESE LIMITS, AND RE-ISSUED ON 4/10/03. THE WAS AN INCREASE OF 170 TONS OF NOX, 79 TONS CO, AND 6 TONS OF HCL. LANDFILL GAS SHALL BE DIVERTED TO AN EXISTING LANDFILL COMBUSTOR, WHEN NOT BURNED IN THE INTERNAL COMBUSTION ENGINES. THE ALLOWABLE GAS FLOW RATE TO THE INTERNAL COMBUSTION ENGINES SHALL BE EXTABLISHED DURING THE MOST RECENT COMPLIANCE TEST; CURRENTLY THIS IS 415 SCFM.

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 4.9 LB/H

Emission Limit 2: 0.36 LB/MMBTU

Standard Emission: 0.60 G/B-HP-H

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (P) LEAN BURN TECHNOLOGY.

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: LIMITS ARE FOR EACH ENGINE. ANNUAL LIMIT: 21.5 T/YR. THESE LIMITS WERE CHANGED IN THE PERMIT MODIFICATION FOLLOWING THE INITIAL STACK TEST. THE ORIGINAL LIMIT COULD NOT BE MET, WAS: 2.48 LB/H AND 10.87 TPY

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 9.4 LB/H

Emission Limit 2: 0.67 LB/MMBTU

Standard Emission: 2 G/B-HP-H

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N)

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: LIMITS ARE FOR EACH ENGINE. ANNUAL LIMIT: 41.2 T/YR.

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 0.70 LB/H

Emission Limit 2: 3 T/YR

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N)

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: LIMITS ARE FOR EACH ENGINE.

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 0.40 LB/H

Emission Limit 2: 1.7 T/YR

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N)

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: LIMITS ARE FOR EACH ENGINE.

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 0.23 LB/H
Emission Limit 2: 1 T/YR
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: N/A
Other Applicable Requirements: SIP
Control Method: (N)
Est. % Efficiency:
Compliance Verified: UNKNOWN
Pollutant/Compliance Notes: LIMITS ARE FOR EACH ENGINE.

POLLUTANT NAME: Hydrochloric Acid **CAS Number:** 7647-01-0

Emission Limit 1: 0.13 LB/H
Emission Limit 2: 0.60 T/YR
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: N/A
Other Applicable Requirements: SIP
Control Method: (N)
Est. % Efficiency:
Compliance Verified: UNKNOWN
Pollutant/Compliance Notes: LIMITS ARE FOR EACH ENGINE.

POLLUTANT NAME: Formaldehyde **CAS Number:** 50-00-0

Emission Limit 1: LIMITATION REMOVED SEE NOTE
Emission Limit 2: LIMITATION REMOVED IN MODIFICATION
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: N/A

Other Applicable Requirements: N/A
Control Method: (N)
Est. % Efficiency:
Compliance Verified: UNKNOWN
Pollutant/Compliance Notes: LIMIT WAS FOR EACH ENGINE. TESTING PROVED THE LIMIT UNNECESSARY AND THIS LIMIT WAS REMOVED FROM THE PERMIT MODIFICATION.

POLLUTANT NAME: Visible Emissions (VE) **CAS Number:** VE

Emission Limit 1: 10 % OPACITY 6 minute average
Emission Limit 2:
Standard Emission: 10 % OPACITY 6 minute average
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (N)
Est. % Efficiency:
Compliance Verified: Y
Pollutant/Compliance Notes: Limit is for each engine.

POLLUTANT NAME: Nonmethane Organic Carbon **CAS Number:** VOC

Emission Limit 1: 20 PPM @ 3% O2 as hexane
Emission Limit 2: 98 % REDUCTION
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (N)
Est. % Efficiency: 98
Compliance Verified: Y
Pollutant/Compliance Notes: Limit is for each engine.

Facility Information

RBLC ID:	CA-1022 (final)	**Date Determination Last Updated:**	01/26/2006
Corporate/Company Name:	CHINO BASIN DESALTER AUTHORITY	**Permit Number:**	388050
Facility Name:	CHINO BASIN DESALTER AUTHORITY	**Permit Date:**	06/18/2002 (actual)
Facility Contact:		**FRS Number:**	110012624972
Facility Description:		**SIC Code:**	4941
Permit Type:	A: New/Greenfield Facility	**NAICS:**	22131
EPA Region:	9		
Faciliy County:	SAN BERNARDINO		
Facility State:	CA		
Facility ZIP Code:	91710		
Permit Issued By:	SOUTH COAST AQMD, CA (Agency Name) MR. MARTIN KAY (Agency Contact) (909)396-3115 mkay@aqmd.gov		
Other Agency Contact Info:	SOUTH COAST AQMD, MARTIN KAY, (909)-396-3115, MKAY@AQMD.GOV		
Other Permitting Information:	CARB ID: 792.0, NEW CONSTR MODIFICATION: NEW CONSTRUCTION. TECH STATUS: BACT DETERMINATION. NO SOURCE TEST AVAILABLE		

Process/Pollutant Information

PROCESS NAME:	IC ENGINE, LANDFILL OR DIGESTED GAS FIRED
Process Type:	17.140 (Landfill/Digester/Bio-Gas)
Primary Fuel:	DIGESTER GAS
Throughput:	10.75 MMBTU/H
Process Notes:	ADDITIONAL THROUGHPUT: 1408 BHP. MFR: WAUKESHA, TYPE: SPARK IGINITION, 4-CYCLE, MODEL: L7042GL, FUNC EQUIP: POWER GENERATION, FUEL_TYPE: NATURAL GAS, SCHEDULE: CONTINUOUS, H/D: 24, D/W: 7, W/Y: 52.

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 0.60 G/B-HP-H 1-HR AVG

Emission Limit 2:

Standard Emission: 0.60 G/B-HP-H

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: N/A

Control Method: (P) TURBOCHARGED,INTERCOOLED,LEAN-BURN,AIR/FUEL CONTROLLER

Est. % Efficiency:

Compliance Verified: NO

Pollutant/Compliance Notes:

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 2.5 G/B-HP-H 1-HR AVG

Emission Limit 2:

Standard Emission: 2.5 G/B-HP-H

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: N/A

Control Method: (P) TURBOCHARGED,INTERCOOLED,LEAN-BURN,AIR/FUEL CONTROLLER

Est. % Efficiency:

Compliance Verified: NO

Pollutant/Compliance Notes:

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 0.80 G/B-HP-H 1-HR AVG

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: N/A

Control Method: (P) TURBOCHARGED,INTERCOOLED,LEAN-BURN,AIR/FUEL CONTROLLER

Est. % Efficiency:

Compliance Verified: NO

Pollutant/Compliance Notes:

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 0.20 LB/H

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: N/A

Control Method: (N)

Est. % Efficiency:

Compliance Verified: NO

Pollutant/Compliance Notes:

POLLUTANT NAME: Sulfur Oxides (SOx) **CAS Number:** 7446

Emission Limit 1: 0.12 LB/H

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: N/A

Control Method: (N)

Est. % Efficiency:

Compliance Verified: NO

Pollutant/Compliance Notes:

Facility Information

RBLC ID:	CA-1092 (final)	**Date Determination Last Updated:**	01/04/2006
Corporate/Company Name:	MM SAN BERNARDINO ENERGY, LLC	**Permit Number:**	391009
Facility Name:	MM SAN BERNARDINO ENERGY, LLC	**Permit Date:**	05/16/2002 (actual)
Facility Contact:		**FRS Number:**	NEW, NOT FOUND
Facility Description:		**SIC Code:**	4953
Permit Type:	A: New/Greenfield Facility	**NAICS:**	562212
EPA Region:	9		
Faciliy County:	SAN BERNARDINO		
Facility State:	CA		
Facility ZIP Code:	91761		
Permit Issued By:	SOUTH COAST AQMD, CA (Agency Name) MR. MARTIN KAY (Agency Contact) (909)396-3115 mkay@aqmd.gov		
Other Agency Contact Info:	SOUTH COAST AQMD, MARTIN KAY, (909) 396-3115, MKAY@AQMD.GOV		
Other Permitting Information:	CARB ID: 795.0, OPERATING PERMIT DATE: , STARTUP DATE: NEW CONSTR MODIFICATION: NEW CONSTRUCTION TECH STATUS: BACT DETERMINATION NO SOURCE TEST AVAILABLE		

Process/Pollutant Information

PROCESS NAME:	ICE: LANDFILL OR DIGESTED GAS FIRED
Process Type:	17.140 (Landfill/Digester/Bio-Gas)
Primary Fuel:	LANDFILL GAS
Throughput:	14.70 MMBTU/H 1850 BHP
Process Notes:	EQUIP: , MFR: DUETZ, TYPE: TURBOCHARGED/INTERCOOLED, MODEL: TBG620V16K, FUNC EQUIP: POWER GENERATION, FUEL_TYPE: , SCHEDULE: CONTINUOUS, H/D: 24, D/W: 7, W/Y: 52, NOTES: PPMVD@15%O2: NOX-46, CO-360, HC-79. G/HP-HR: ROG <.02, PM-10 <.05 (BASED ON 34% (HHV) ENGINE EFFICIENCY USED BY THE MANUFACTURE IN HIS CALCULATIONS, THE PPMVD LIMITS CORRESPOND TO THE FOLLOWING G/HP-HR: NOX-0.61, CO-2.9, HC-0.36 (AS METHANE). SOURCE TEST RESULTS:

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 0.60 G/B-HP/H

Emission Limit 2:

Standard Emission: 0.60 G/B-HP/H

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: N/A

Control Method: (A) TURBOCHARGED,INTERCOOLED AIR/FUEL CONTROLLER

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes:

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 2.5 G/B-HP/H

Emission Limit 2:

Standard Emission: 2.5 G/B-HP/H

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: N/A

Control Method: (A) TURBOCHARGED,INTERCOOLED AIR/FUEL CONTROLLER

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes:

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 0.80 G/B-HP/H

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: N/A
Control Method: (A) TURBOCHARGED,INTERCOOLED AIR/FUEL CONTROLLER
Est. % Efficiency:
Compliance Verified: UNKNOWN
Pollutant/Compliance Notes:

POLLUTANT NAME: Particulate Matter (PM) **CAS Number:** PM

Emission Limit 1: 0.20 LB/H
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements: N/A
Control Method: (A)
Est. % Efficiency:
Compliance Verified: UNKNOWN
Pollutant/Compliance Notes:

POLLUTANT NAME: Sulfur Oxides (SOx) **CAS Number:** 7446

Emission Limit 1: 0.10 LB/H
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements: N/A
Control Method: (N)
Est. % Efficiency:
Compliance Verified: UNKNOWN
Pollutant/Compliance Notes:

Facility Information

RBLC ID:	TX-0404 (final)	**Date Determination Last Updated:**	04/13/2005
Corporate/Company Name:	RELIANT ENERGY RENEWABLES SECURITY LP	**Permit Number:**	P791
Facility Name:	RELIANT SECURITY LFGTE	**Permit Date:**	01/31/2002 (actual)
Facility Contact:	GREG NEWMAN 7139458334	**FRS Number:**	110010496917
Facility Description:	ELECTRICITY GENERATION FROM LANDFILL GAS	**SIC Code:**	4911
Permit Type:	A: New/Greenfield Facility	**NAICS:**	221119
EPA Region:	6		
Faciliy County:	MONTGOMERY		
Facility State:	TX		
Facility ZIP Code:	77210		
Permit Issued By:	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) (Agency Name) MR. JOHNNY VERMILLION (Agency Contact) (512)239-1292 JVERMILL@TCEQ.STATE.TX.US		
Other Agency Contact Info:	JOHNNY VERMILLION TX 512-239-1292		
Other Permitting Information:	ADDITIONAL PERMIT NUMBERS: 44276, PSD-TX-971. THE ISSUED PERMIT WAS FOR THE INSTALLATION OF FOUR 1664 KW GENERATORS FIRED BY LANDFILL GAS.		

Process/Pollutant Information

PROCESS NAME: GENERATOR ENGINE, 4

Process Type: 17.140 (Landfill/Digester/Bio-Gas)

Primary Fuel: LANDFILL GAS

Throughput: 1664 KW

Process Notes: THROUGHPUT IS FOR EACH. THE ENGINES ARE JENBACHER MODEL JGS 616. LANDFILL GAS LIMITED TO 11.9 GR/100 DSCF H2S AND 13.2 GR/100 DSCF S.

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 0.60 G/BHP-H

Emission Limit 2: 3.1 T/YR EACH

Standard Emission: 0.60 G/B-HP-H

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (P) GOOD COMBUSTION PRACTICE

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes:

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 3 G/BHP-H

Emission Limit 2: 15.50 T/YR EACH

Standard Emission: 3 G/B-HP-H

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (P) GOOD COMBUSTION PRACTICE

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes:

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 0.28 G/BHP-H

Emission Limit 2: 0.83 T/YR EACH

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (P) GOOD COMBUSTION PRACTICE

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes:

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 0.84 T/YR EACH

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) GOOD COMBUSTION PRACTICE, LOW SULFUR FUEL

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes:

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 1.24 T/YR EACH

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) GOOD COMBUSTION PRACTICE, LOW SULFUR FUEL

Est. % Efficiency:

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes:

POLLUTANT NAME: Visible Emissions (VE) **CAS Number:** VE

Emission Limit 1: 5 % OPACITY

Emission Limit 2:

Standard Emission: 5 % OPACITY

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) GOOD COMBUSTION PRACTICE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

Facility Information

RBLC ID:	TX-0385 (final)	**Date Determination Last Updated:**	05/05/2005
Corporate/Company Name:	RELIANT ENERGY RENEWABLES COASTAL PLAINS LP	**Permit Number:**	NA031
Facility Name:	RELIANT ENERGY GALVESTON PLANT	**Permit Date:**	01/24/2002 (actual)
Facility Contact:		**FRS Number:**	110002345515

Facility Description:	CO-GENERATION USING LANDFILL GAS AS FUEL	**SIC Code:**	4911
Permit Type:	A: New/Greenfield Facility	**NAICS:**	221112
EPA Region:	6		
Faciliy County:	GALVESTON		
Facility State:	TX		
Facility ZIP Code:			
Permit Issued By:	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) (Agency Name) MR. JOHNNY VERMILLION (Agency Contact) (512)239-1292 JVERMILL@TCEQ.STATE.TX.US		
Other Agency Contact Info:	AARON MOON PO BOX 13087 AUSTIN, TX 78711-3087 512-238-1093		
Other Permitting Information:	CONSTRUCTION PERMIT FOR THE INSTALLATION AND OPERATION OF SEVEN JENBACHER, 2,343 HP, LANDFILL GAS-FIRED IC ENGINES FOR A TOTAL OF 12 MEGAWATTS OF ELECTRICAL POWER. A SUBSEQUENT PERMIT MODIFICATION REDUCED THE NUMBER OF IC ENGINES TO 6. THE REFERENCE DATE AND AND PERMIT NUMBERS FOR THIS MODIFICATION ARE THE SAME AS THE ORIGINAL. NOT ABLE TO FIND FRS NUMBER		

Process/Pollutant Information

PROCESS NAME: JENBACHER IC ENGINES (7)

Process Type: 17.140 (Landfill/Digester/Bio-Gas)

Primary Fuel: LANDFILL GAS

Throughput: 12 MW (TOTAL)

Process Notes: SULFUR COMPOUND LIMITED TO: 13.2 GRAINS H2S/100 DSCF 11.9 GRAINS TOTAL S/100 DSCF

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 15.50 LB/H EACH ENGINE

Emission Limit 2: 460.98 T/YR TOTAL FOR ALL

Standard Emission: 3 G/B-HP-H EACH ENGINE

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (N)

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 3.1 LB/H EACH ENGINE
Emission Limit 2: 92.21 T/YR FOR ALL ENGINES
Standard Emission: 0.60 G/B-HP-H EACH ENGINE
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: Other Case-by-Case
Other Applicable Requirements:
Control Method: (N)
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 0.49 LB/H EACH ENGINE
Emission Limit 2: 14.16 T/YR TOTAL
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: Other Case-by-Case
Other Applicable Requirements:
Control Method: (N)
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 1.27 LB/H EACH ENGINE
Emission Limit 2: 37.75 T/YR TOTAL ALL ENGINES

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) FUEL LIMIT ON SULFUR: 13.2 H2S AND 11.9 TOTAL SULFUR PER 100 DSCF

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Hydrochloric Acid **CAS Number:** 7647-01-0

Emission Limit 1: 0.14 LB/H EACH

Emission Limit 2: 4.14 T/YR TOTAL

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (N)

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 0.83 LB/H EACH

Emission Limit 2: 24.72 T/YR TOTAL

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (N)

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

Small Internal Combustion Engine 17.240 LF/ Digester/ Bio-Gas	1 Facility

COMPREHENSIVE REPORT
Report Date: 07/10/2006

Facility Information

RBLC ID:	VA-0285 (final)	**Date Determination Last Updated:**	03/25/2004
Corporate/Company Name:	INGENCO	**Permit Number:**	52037
Facility Name:	INGENCO - CHESTER PLANT	**Permit Date:**	01/06/2004 (actual)
Facility Contact:	DR ROBERT GREENE 804 521 3557	**FRS Number:**	110014397287
Facility Description:	A DUAL FUEL ELECTRICAL POWER GENERATION FACILITY	**SIC Code:**	4931
Permit Type:	A: New/Greenfield Facility	**NAICS:**	221112
EPA Region:	3		
Faciliy County:	CHESTERFIELD		
Facility State:	VA		
Facility ZIP Code:			
Permit Issued By:	VIRGINIA ENVIRONMENTAL QUALITY AIR DIV. (Agency Name) MS. MONICA A. HARVEY (Agency Contact) (804)698-4300 MAHARVEY@DEQ.VIRGINIA.GOV		
Other Agency Contact Info:	ALISON SINCLAIR RICHMOND, VA 804-527-5155		
Other Permitting Information:			

Process/Pollutant Information

PROCESS NAME:	IC ENGINE, DIESEL, (48)
Process Type:	17.210 (Fuel Oil)
Primary Fuel:	DISTILLATE FUEL OIL
Throughput:	350 KW
Process Notes:	EMISSIONS FROM THE OPERATION OF ANY OF THE 48 DUAL FUEL ENGINES WHEN THE FACILTY IS OPERATED IN THE SINGLE OR DUAL FUEL MODE SHALL NOT EXCEED THESE LIMITS.

POLLUTANT NAME: Particulate Matter (PM) **CAS Number:** PM

Emission Limit 1: 0.30 LB/MMBTU

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: N/A

Other Applicable Requirements: NSPS

Control Method: (P) GOOD COMBUSTION PRACTICES

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ONE OF 48 ENGINES

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 0.30 LB/MMBTU

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: N/A

Other Applicable Requirements: NSPS

Control Method: (P) GOOD COMBUSTION PRACTICES

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ONE OF 48 ENGINES

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 0.50 LB/MMBTU

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: N/A
Other Applicable Requirements: NSPS
Control Method: (P) GOOD COMBUSTION PRACTICES AND LOW SULFUR FUEL
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes: ONE OF 48 ENGINES

POLLUTANT NAME: Nitrogen Dioxide (NO2) **CAS Number:** 10102-44-0

Emission Limit 1: 2.4 LB/MMBTU
Emission Limit 2:
Standard Emission: 5.77 G/B-HP-H calculated, see note
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: N/A
Other Applicable Requirements: NSPS
Control Method: (P) CONTINUAL EMISSION MONITORING DEVICES
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes: ONE OF 48 ENGINES. Standardized emission limit is calculated, assuming 48% engine efficiency

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 4.3 LB/MMBTU
Emission Limit 2:
Standard Emission: 10.35 G/B-HP-H calculated, see note
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: N/A
Other Applicable Requirements: NSPS
Control Method: (P) CONTINUOUS EMISSION MONITORING DEVICES
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes: ONE OF 48 ENGINES. Standardized emission limit calculated assuming 48% engine efficiency.

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 0.40 LB/MMBTU
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: N/A
Other Applicable Requirements: NSPS
Control Method: (P) GOOD COMBUSTION PRACTICES
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes: ONE OF 48 ENGINES

Process/Pollutant Information

PROCESS NAME: IC ENGINE, LANDFILL GAS, (48)
Process Type: 17.240 (Landfill/Digester/Bio-Gas)
Primary Fuel: LANDFILL GAS
Throughput: 350 KW
Process Notes: EMISSIONS FROM THE OPERATION OF ANY OF THE 48 DUAL FUEL ENGINES WHEN THE FACILTY IS OPERATED IN THE SINGLE OR DUAL FUEL MODE SHALL NOT EXCEED THESE LIMITS.

POLLUTANT NAME: Particulate Matter (PM) **CAS Number:** PM

Emission Limit 1: 0.30 LB/MMBTU
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: N/A
Other Applicable Requirements: NSPS
Control Method: (P) GOOD COMBUSTION PRACTICES
Est. % Efficiency:
Compliance Verified: Unknown

Pollutant/Compliance Notes: ONE OF 48

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 0.30 LB/MMBTU

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: N/A

Other Applicable Requirements: NSPS

Control Method: (P) GOOD COMBUSTION PRACTICES

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ONE OF 48

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 0.50 LB/MMBTU

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: N/A

Other Applicable Requirements: NSPS

Control Method: (P) GOOD COMBUSTION PRACTICES AND LOW SULFUR FUELS

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ONE OF 48

POLLUTANT NAME: Nitrogen Dioxide (NO2) **CAS Number:** 10102-44-0

Emission Limit 1: 2.4 LB/MMBTU

Emission Limit 2:

Standard Emission: 5.77 G/B-HP-H calculated, see note

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: N/A

Other Applicable Requirements: NSPS

Control Method: (A) CONTINUOUS EMISSION MONITORING DEVICES

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ONE OF 48. standardized emission limit is calculated using an assumed 48% engine efficiency.

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 4.3 LB/MMBTU

Emission Limit 2:

Standard Emission: 10.35 G/B-HP-H calculated, see note

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: N/A

Other Applicable Requirements: NSPS

Control Method: (A) CONTINUOUS EMISSION MONITORING DEVICES

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ONE OF 48. Standardized emission limit is calculated assuming 48% engine efficiency.

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 0.40 LB/MMBTU

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: N/A

Other Applicable Requirements: NSPS

Control Method: (P) GOOD COMBUSTION PRACTICES

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ONE OF 48

Miscellaneous Combustion Flares	
19.320 Digester & LF Gas Flares	6 Facilities Note: (one facility is beef processing and therefore not described in Table 2.

COMPREHENSIVE REPORT
Report Date: 07/10/2006

Facility Information

RBLC ID:	NE-0020 (final)	**Date Determination Last Updated:**	07/08/2004
Corporate/Company Name:	IBP, INC.	**Permit Number:**	07339C10
Facility Name:	DAKOTA CITY PLANT	**Permit Date:**	06/22/2004 (estimated)
Facility Contact:		**FRS Number:**	
Facility Description:	MODIFICATION TO ADD 3 ANAEROBIC LAGOONS, TWO SCRUBBERS AND A FLARE TO THE WASTE TREATMENT PLANT.	**SIC Code:**	2011
Permit Type:	D: Both B (Add new process to existing facility) &C (Modify process at existing facility)	**NAICS:**	3116111
EPA Region:	7		
Faciliy County:			
Facility State:	NE		
Facility ZIP Code:			
Permit Issued By:	NEBRASKA DEPT. OF ENVIRONMENTAL QUALITY (Agency Name) MR. CLARK SMITH (Agency Contact) (402) 471-4204 CLARK.SMITH@NDEQ.STATE.NE.US		
Other Agency Contact Info:	CLARK SMITH SUITE 400, THE ATRIUM, 1200 N STREET, PO BOX 98922 LINCOLN, NE 68509 402-471-2186		
Other Permitting Information:			

Process/Pollutant Information

PROCESS NAME:	WASTE TREATMENT PLANT
Process Type:	19.320 (Digester and Landfill Gas Flares)
Primary Fuel:	BIO GAS
Throughput:	41.54 MMBTU/H
Process Notes:	IBP is converting 5 anaerobic lagoons into Waste Activated Sludge (WAS) lagoons, installing two packed-bed scrubbers and a Bio-Gas flare.

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 100 T/YR

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) FUEL CONSUMPTION LIMIT 41.54 MMBTU/H AVERAGE FOR 365 DAYS.

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 40 T/YR Less than 40 T/YR

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:

Control Method: (P) FUEL USE LIMITED TO 90,000 SCF/H

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 40 T/YR Less than 40 T/YR

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: Other Case-by-Case

Other Applicable Requirements:
Control Method: (P) SULFUR LIMITED TO 4.85 LB/H OR LESS TO THE FLARE
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Total Reduced Sulfur
CAS Number: 7704

Emission Limit 1: 0.42 T/YR Less than 0.42 T/YR
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: Other Case-by-Case
Other Applicable Requirements:
Control Method: (P) LIMIT TO 4.85 LB/H TRS OR LESS TO THE FLARE
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Visible Emissions (VE)
CAS Number: VE

Emission Limit 1: 20 % OPACITY
Emission Limit 2:
Standard Emission: 20 % OPACITY
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: Other Case-by-Case
Other Applicable Requirements:
Control Method: (A) 2-SCRUBBERS
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

Facility Information

RBLC ID:	VA-0294 (final)	**Date Determination Last Updated:**	10/04/2005
Corporate/Company Name:	WM ATLANTIC WASTE DISPOSAL INC.	**Permit Number:**	51278
Facility Name:	ATLANTIC WASTE DISPOSAL LANDFILL	**Permit Date:**	02/05/2003 (actual)
Facility Contact:	D RICHARD GUIDRY 8043633313	**FRS Number:**	110020667580
Facility Description:	MUNICIPAL SOLID WASTE LANDFILL. EQUIPMENT TO BE CONSTRUCTED (SUBJECT TO NSPS WWW AND NESHAP AAAA) AT THIS FACILITY CONSISTS OF: MUNICIPAL SOLID WASTE LANDFILL CELLS 5A,5B,6B,7A-C,8A,8B,9A,9B,10A-C,11A-C,12A-C WITH A TOTAL CAPACITY OF 92,106,543 YD3 (ASSUMED MAXIMUM COMPACTION OF 1900 LBS/ YD3) OF COMBINED WASTE. THREE LFG&E TRITION UTILITY FLARES MODEL CF-3500 OR EQUIVALENT (CF-4,CF-5,AND CF-6) EACH WITH A FLOW RATING OF 3500 SCFM, INCLUDING BLOWERS AND OTHER EQUIPMENT TO COLLECT LANDFILL GAS TO ROUTE TO THE FLARES OR TREATMENT PROCESS.	**SIC Code:**	4953
Permit Type:	C: Modify process at existing facility	**NAICS:**	562212
EPA Region:	3		
Faciliy County:	SUSSEX		
Facility State:	VA		
Facility ZIP Code:	23890		

Permit Issued By: VIRGINIA ENVIRONMENTAL QUALITY AIR DIV. (Agency Name)
MR. YOGESH DOSHI (Agency Contact) (804)698-4017 YNDOSHI@DEQ.VIRGINIA.GOV

Other Agency Contact Info: THE PERMIT WRITER FOR THIS FACILITY IS ALISON SINCLAIR. SHE MAY BE REACHED AT (804)527-5155 OR E-MAILED AT AMSINCLAIR@DEQ.VIRGINIA.GOV

Other Permitting Information:

Process/Pollutant Information

PROCESS NAME: FLARES, 3500 SCFM LFG (3)

Process Type: 19.320 (Digester and Landfill Gas Flares)

Primary Fuel: LANDFILL GAS

Throughput: 630000 scf/h

Process Notes: 3 3500 SCFM LFG FLARES

POLLUTANT NAME: Particulate Matter < 10 µ (PM10) **CAS Number:** PM

Emission Limit 1: 2.2 LB/H

Emission Limit 2:

Standard Emission: 0.0220 LB/MMBTU CALCULATED SEE NOTE

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: THE EMISSION RATE IS FOR ONE OF THREE FLARES. STANDARD EMISSION LIMIT IS CALCULATED USING AN ASSUMPTION OF 475 BTU/SCF LGF. PERMIT DOES NOT INCLUDE A LIMIT IN LB/MMBTU UNITS.

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 1.9 LB/H

Emission Limit 2:

Standard Emission: 0.0190 LB/MMBTU CALCULATED, SEE NOTE

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: THE EMISSON RATE IS FOR ONE OF THREE FLARES. STANDARD EMISSION LIMIT IS CALCULATED USING AN ASSUMPTION OF 475 BTU/SCF LGF. PERMIT DOES NOT INCLUDE A LIMIT IN LB/MMBTU UNITS.

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 5.1 LB/H

Emission Limit 2:

Standard Emission: 0.0510 LB/MMBTU CALCULATED SEE NOTE

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: EMISSIONS ARE FOR ONE OF 3 FLARES. STANDARD EMISSION LIMIT IS CALCULATED USING AN ASSUMPTION OF 475 BTU/SCF LGF. PERMIT DOES NOT INCLUDE A LIMIT IN LB/MMBTU UNITS.

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 17.30 LB/H

Emission Limit 2:

Standard Emission: 0.0170 LB/MMBTU CALCULATED SEE NOTE

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING %METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: EMISSIONS ARE FOR 1 OF 3 FLARES. STANDARD EMISSION LIMIT IS CALCULATED USING AN ASSUMPTION OF 475 BTU/SCF LGF. PERMIT DOES NOT INCLUDE A LIMIT IN LB/MMBTU UNITS.

POLLUTANT NAME: Nonmethane Organic Carbon **CAS Number:** VOC

Emission Limit 1: 1.4 LB/H

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: EMISSIONS ARE FOR 1 OF 3 FLARES.

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 0.60 LB/H

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes:

Process/Pollutant Information

PROCESS NAME: FLARES, 2500 SCFM LGF (2)

Process Type: 19.320 (Digester and Landfill Gas Flares)

Primary Fuel:

Throughput: 300000 scf/h

Process Notes: EMISSIONS ARE FOR 1 OF 2 FLARES

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 1.6 LB/H

Emission Limit 2:

Standard Emission: 0.02 LB/MMBTU CALCULATED NOT PERMIT LIMIT

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: EMISSIONS ARE FOR 1 OF 2 FLARES. STANDARD EMISSION LIMIT IS CALCULATED USING AN ASSUMPTION OF 475 BTU/SCF LGF. PERMIT DOES NOT INCLUDE A LIMIT IN LB/MMBTU UNITS.

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 1.4 LB/H

Emission Limit 2:

Standard Emission: 0.02 LB/MMBTU CALCULATED SEE NOTE

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING %METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: EMISSIONS ARE FOR 1 OF 2 FLARES. STANDARD EMISSION LIMIT IS CALCULATED USING AN ASSUMPTION OF 475 BTU/SCF LGF. PERMIT DOES NOT INCLUDE A LIMIT IN LB/MMBTU UNITS.

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 3.6 LB/H

Emission Limit 2:

Standard Emission: 0.05 LB/MMBTU CALCULATED, SEE NOTE

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING %METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: EMISSIONS ARE FOR 1 OF 2 FLARES. STANDARD EMISSION LIMIT IS CALCULATED USING AN ASSUMPTION OF 475 BTU/SCF LGF. PERMIT DOES NOT INCLUDE A LIMIT IN LB/MMBTU UNITS.

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 12.30 LB/H

Emission Limit 2:

Standard Emission: 0.17 LB/MMBTU CALCULATED SEE NOTE

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: EMISSIONS ARE FOR 1 OF 2 FLARES. STANDARD EMISSION LIMIT IS CALCULATED USING AN ASSUMPTION OF 475 BTU/SCF LGF. PERMIT DOES NOT INCLUDE A LIMIT IN LB/MMBTU UNITS.

POLLUTANT NAME: Nonmethane Organic Carbon **CAS Number:** VOC

Emission Limit 1: 1 LB/H

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: EMISSIONS ARE FOR 1 OF 2 FLARES

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 98 % REDUCTION

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: EMISSIONS ARE FOR 1 OF 2 FLARES

Process/Pollutant Information

PROCESS NAME: FLARES, COMBINED

Process Type: 19.320 (Digester and Landfill Gas Flares)

Primary Fuel:

Throughput: 930000 scf/h

Process Notes: TOTAL EMISSIONS FOR ALL 5 FLARES: TWO 2500 SCFM AND THREE 3500 SCFM

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 41.60 T/YR

Emission Limit 2:

Standard Emission: SEE NOTE

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: TOTAL EMISSIONS FOR 5 FLARES. STANDARD EMISSIONS IN 2500 SCFM AND 3500 SCFM FLARE ENTRIES.

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 36.30 T/YR

Emission Limit 2:

Standard Emission: SEE NOTE

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

TOTAL EMISSIONS FOR 5 FLARES. STANDARD EMISSIONS IN 2500 SCFM AND 3500 SCFM FLARE ENTRIES.

CASCAS Number: 10102

97.80 T/YR

SEE NOTES

·llutillution technology considerations influence the BACT decisions: U

BACT-PSD

nts: nts: MACT, NESHAP, NSPS

(P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

98

UNKNOWN

TOTAL EMISSIONS FOR 5 FLARES. STANDARD EMISSIONS IN 2500 SCFM AND 3500 SCFM FLARE ENTRIES.

CASCAS Number: 630-08-0

334 T/YR

SEE NOTES

·llutillution technology considerations influence the BACT decisions: U

BACT-PSD

nts: nts: MACT, NESHAP, NSPS

(P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING %METHANE IN LFG

98

UNKNOWN

TOTAL EMISSIONS FOR 5 FLARES. STANDARD EMISSIONS IN 2500 SCFM AND 3500 SCFM FLARE ENTRIES.

POLLUTANT NAME: Nonmethane Organic Carbon **CAS Number:** VOC

Emission Limit 1: 26.50 T/YR

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (P) PROPER MAINTENANCE OF THE FLARE, INCLUDING MONITORING FOR THE PRESENCE OF A FLAME, LGF FLOW RATE, 0% OPACITY, MEASURING % METHANE IN LFG

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: TOTAL EMISSIONS FOR 5 FLARES

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 10.20 T/YR

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: MACT, NESHAP, NSPS

Control Method: (N)

Est. % Efficiency: 98

Compliance Verified: UNKNOWN

Pollutant/Compliance Notes: TOTAL EMISSIONS FOR 5 FLARES

Facility Information

RBLC ID:	CO-0046 (final)	**Date Determination Last Updated:**	12/03/2002
Corporate/Company Name:	EXCEL CORPORATION - FT. MORGAN	**Permit Number:**	99-MR-0691
Facility Name:	EXCEL CORPORATION - FT. MORGAN	**Permit Date:**	04/27/2000 (actual)
Facility Contact:	PAUL PEAKE OR ELDON FISHER 970-867-9862	**FRS Number:**	110000467637
Facility Description:	CATTLE SLAUGHTERING, BEEF PROCESSING AND PACKING FACILITY.	**SIC Code:**	2011
Permit Type:	A: New/Greenfield Facility	**NAICS:**	311611
EPA Region:	8		
Faciliy County:	FORT MORGAN		
Facility State:	CO		
Facility ZIP Code:	80701		
Permit Issued By:	COLORADO DEPT OF HEALTH - AIR POLL CTRL (Agency Name) MR. RAM SEETHARAM (Agency Contact) (303) 692-3198 RAM.SEETHARAM@STATE.CO.US		
Other Agency Contact Info:	RAM N. SEETHARAM CO 303-692-3198		
Other Permitting Information:	WASTEWATER GENERATED IN THE PROCESSING AND PACKING OF BEEF IS SENT TO THE WASTEWATER TREATMENT PLANT. BIOGAS FROM THE WW TREATMENT PLANT IS SENT TO THE STEAM BOILERS OR ALTERNATIVELY TO A FLARE IF THE BOILERS ARE OUT OF SERVICE OR UNABLE TO ACCEPT ALL THE GASES GENERATED. ONLY SOX EMISSIONS WERE SUBJECT TO BACT REVIEW IN THIS PERMIT. START UP AND COMPLIANCE DATES NOT AVAILABLE. ADDITIONAL PLANTWIDE LIMIT: H2S = 0.10 T/YR.		

Process/Pollutant Information

PROCESS NAME:	WASTE WATER TREATMENT PLANT
Process Type:	22.200 (Industrial Wastewater Treatment)
Primary Fuel:	
Throughput:	54 MMGAL/MO
Process Notes:	WASTE WATER TREATMENT SHALL NOT EXCEED 548,000,000 GAL/YR AND 54,000,000 GAL/MO.

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 98 % REDUCTION

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (P) SULFUR RECOVERY SYSTEM, LOW SULFUR CONTENT WATER.

Est. % Efficiency: 98

Compliance Verified: Unknown

Pollutant/Compliance Notes:

Process/Pollutant Information

PROCESS NAME: STEAM BOILER (B-1)

Process Type: 13.390 (Other Gaseous Fuel & Gaseous Fuel Mixtures)

Primary Fuel: NATURAL GAS / BIOGAS

Throughput: 20.90 MMBTU/H

Process Notes: NATURAL GAS - 135.9 MMSCF/YR; BIOGAS - 174 MMSCF/YR; TOTAL HEAT INPUT TO BOTH BOILERS SHALL NOT EXCEED 287,040 MMBTU/YR AND 24,000 MMBTU/MO AND 6,240 H/YR OPERATION FOR EACH BOILER; HEATING VALUE NATURAL GAS - 960 BTU/SCF; BIOGAS - 750 BTU/SCF

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 98 % REDUCTION

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (P) SULFUR RECOVERY SYSTEM. ALL LIMITS ARE ON A FACILITY WIDE BASIS, NO OTHER INFORMATION AVAILABLE.

Est. % Efficiency: 98

Compliance Verified: Unknown

Pollutant/Compliance Notes:

Process/Pollutant Information

PROCESS NAME: STEAM BOILER 2 (B-3)

Process Type: 13.390 (Other Gaseous Fuel & Gaseous Fuel Mixtures)

Primary Fuel: NATURAL GAS/BIOGAS

Throughput: 25.10 MMBTU/H

Process Notes:

POLLUTANT NAME: Sulfur Dioxide (SO_2) **CAS Number:** 7446-09-5

Emission Limit 1: 98 % REDUCTION

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (P) SULFUR RECOVERY SYSTEM. ALL LIMITS ON A FACILITY WIDE BASIS, NO OTHER INFORMATION IS AVAILABLE.

Est. % Efficiency: 98

Compliance Verified: Unknown

Pollutant/Compliance Notes:

Process/Pollutant Information

PROCESS NAME: FLARE (B-9)

Process Type: 19.320 (Digester and Landfill Gas Flares)

Primary Fuel: BIOGAS

Throughput: 67.50 MMBTU/H

Process Notes:

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1:	98 % REDUCTION
Emission Limit 2:	
Standard Emission:	

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis:	BACT-PSD
Other Applicable Requirements:	
Control Method:	(P) ALL LIMITS ARE ON A FACILITY WIDE BASIS, NO OTHER INFORMATION IS AVAILABLE.
Est. % Efficiency:	98
Compliance Verified:	Unknown
Pollutant/Compliance Notes:	

Facility Information

RBLC ID:	NJ-0053 (final)	**Date Determination Last Updated:**	07/03/2003
Corporate/Company Name:	MCUA LANDFILL GAS UTILIZATION PROJECT	**Permit Number:**	01-98-1326 TO 1328
Facility Name:	MCUA	**Permit Date:**	03/09/1999 (actual)
Facility Contact:	RICHARD WAGNER	**FRS Number:**	110017411932
Facility Description:	LANDFILL GAS UTILIZATION	**SIC Code:**	4925
Permit Type:	A: New/Greenfield Facility	**NAICS:**	22121
EPA Region:	2		
Faciliy County:	MIDDLESEX		
Facility State:	NJ		
Facility ZIP Code:	06013		
Permit Issued By:	NEW JERSEY DEPT OF ENV PROTECTION (Agency Name) VIORICA PETRIMAN (Agency Contact) (609) 292-1638 VIORICA.PETRIMAN@DEP.STATE.NJ.US		

Other Agency Contact Info: RAJ PATEL
NJ
(609) 777-0419

Other Permitting Information: FACILITY HAS OBTAINED 130.5 OF NOX OFFSETS PRIOR TO INSTALLATION

Process/Pollutant Information

PROCESS NAME: LANDFILL GAS TURBINE

Process Type: 16.150 (Other Gaseous)

Primary Fuel: LANDFILL GAS

Throughput: 65 MMBTU/H (NOMINAL)*

Process Notes: *74MMBTU/HR PEAK THROUGHPUT CAPACITY/SIZE

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 52.45 LB/H

Emission Limit 2:

Standard Emission: 72 PPM @ 15% O2

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

POLLUTANT NAME: Nonmethane Hydrocarbons **CAS Number:** VOC

Emission Limit 1: 2.78 LB/H

Emission Limit 2: 5 PPMVD@ 15% O2

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 9.52 LB/H

Emission Limit 2:

Standard Emission: 32 PPM @ 15% O2

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 2.5 LB/H

Emission Limit 2: 0.0340 LB/MMBTU

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 2.98 LB/H

Emission Limit 2: 0.04 LB/MMBTU

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

POLLUTANT NAME: Total Suspended Particulates **CAS Number:** PM

Emission Limit 1: 1.25 LB/H

Emission Limit 2: 0.0170 LB/MMBTU

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

Process/Pollutant Information

PROCESS NAME: DUCT FIRED HRSG

Process Type: 13.390 (Other Gaseous Fuel & Gaseous Fuel Mixtures)

Primary Fuel: LANDFILL GAS

Throughput: 31 MMBTU/H NOMINAL *

Process Notes: *43 MMBTU/HR PEAK THROUGHPUT CAPACITY/SIZE

POLLUTANT NAME: Nonmethane Hydrocarbons **CAS Number:** VOC

Emission Limit 1: 1.62 LB/H

Emission Limit 2: 0.0380 LB/MMBTU

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N)

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 4.28 LB/H

Emission Limit 2:

Standard Emission: 0.10 LB/MMBTU

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N)

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 1.73 LB/H

Emission Limit 2:

Standard Emission: 0.04 LB/MMBTU

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

POLLUTANT NAME: Total Suspended Particulates **CAS Number:** PM

Emission Limit 1: 0.0730 LB/H

Emission Limit 2:

Standard Emission: 0.0170 LB/MMBTU

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 10.27 LB/H

Emission Limit 2:

Standard Emission: 0.24 LB/MMBTU

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes:

Process/Pollutant Information

PROCESS NAME: TURBINE WITH HRSG

Process Type: 16.250 (Other Gaseous)

Primary Fuel: LANDFILL GAS

Throughput: 74 MMBTU/H

Process Notes:

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 13.80 LB/H

Emission Limit 2: 0.1210 LB/MMBTU

Standard Emission: 32.67 PPM @ 15% O2 CALCULATED

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N)

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 3.96 LB/H

Emission Limit 2: 0.0340 LB/MMBTU

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 4.71 LB/H

Emission Limit 2: 0.04 LB/MMBTU

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Total Suspended Particulates **CAS Number:** PM

Emission Limit 1: 1.98 LB/H

Emission Limit 2: 0.0170 LB/MMBTU

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N)

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 62.73 LB/H

Emission Limit 2:

Standard Emission: 80 PPM @ 15% O2

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Nonmethane Hydrocarbons **CAS Number:** VOC

Emission Limit 1: 4.39 LB/H

Emission Limit 2: 5 PPM @ 15% O2

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

Process/Pollutant Information

PROCESS NAME: OPEN FLARE

Process Type: 19.320 (Digester and Landfill Gas Flares)

Primary Fuel: LANDFILL GAS

Throughput: 90 MMBTU/H*

Process Notes: *@ 500BTU/SET OF HHV, FEED RATE = 3000 SCFM -<= 3000 SCFM ON 1-HR BLOCK BASIS, SERVE AS BACK-UP TO TURBINES

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 16.20 LB/H

Emission Limit 2: 17.74 T/YR

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ADDITIONAL EMISSION LIMIT; 0.18 LB/MMBTU

POLLUTANT NAME: Hydrochloric Acid **CAS Number:** 7647-01-0

Emission Limit 1: 0.43 LB/H

Emission Limit 2: 0.30 T/YR

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ADDITIONAL EMISSION LIMIT: 0.003 LB/MMBTU

POLLUTANT NAME: Nonmethane Organic Carbon **CAS Number:** VOC

Emission Limit 1: 3.4 LB/H

Emission Limit 2: 3.75 T/YR

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE- FLARE EFFICIENCY

Est. % Efficiency: 98

Compliance Verified: Unknown

Pollutant/Compliance Notes: ADDITIONAL EMISSION LIMIT: .038 LB/MMBTU

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 5.4 LB/H

Emission Limit 2: 5.91 T/YR

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ADDITIONAL EMISSION LIMIT: 0.06 LB/MMBTU

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 3.6 LB/H

Emission Limit 2: 3.94 T/YR

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ADDITIONAL EMISSION LIMIT: 0.04 LB/MMBTU

POLLUTANT NAME: Total Suspended Particulates **CAS Number:** PM

Emission Limit 1: 1.5 LB/H

Emission Limit 2: 1.68 T/YR

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ADDITIONAL EMISSION LIMIT: 0.017 LB/MMBTU

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 2.5 LB/H

Emission Limit 2: 2.76 T/YR

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) NONE

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: ADDITIONAL EMISSION LIMIT: 0.028 LB/MMBTU

Facility Information

RBLC ID:	NY-0090 (final)	**Date Determination Last Updated:**	06/02/2003
Corporate/Company Name:	FRESH KILLS LANDFILL	**Permit Number:**	2-6403-00011/00063
Facility Name:	FRESH KILLS LANDFILL	**Permit Date:**	07/06/1998 (actual)
Facility Contact:	MARTHA K. HIRST	**FRS Number:**	110017411442
Facility Description:	LANDFILL	**SIC Code:**	4953
Permit Type:	A: New/Greenfield Facility	**NAICS:**	562212
EPA Region:	2		
Faciliy County:	RICHMOND		
Facility State:	NY		
Facility ZIP Code:	100004		
Permit Issued By:	NEW YORK DEC, DIV OF AIR RESOURCES (Agency Name) MR. JOHN PENN (Agency Contact) (212) 639-9675		
Other Agency Contact Info:	JOHN J. FERGUSON 47-40 21ST STREET LONG ISLAND CITY, NY 718-482-4997		
Other Permitting Information:	AGENCY CONTACT: JOHN J. FERGUSON PH:718-482-4997 "THIS IS THE FIRST FACILITY TO MEET THE TOUGH NEW CAA STANDARDS FOR LANDFILL GAS." -JOHN FERGUSON FX: 718-482-4975 AD: 47-40 21ST ST, LONG ISLAND CITY, NY		

Process/Pollutant Information

PROCESS NAME:	LANDFILL GAS COLLECTION AND FLARING SYSTEM
Process Type:	19.320 (Digester and Landfill Gas Flares)
Primary Fuel:	LANDFILL GAS
Throughput:	32728 FT^3/MIN TOTAL
Process Notes:	5 FLARE STATIONS WITH 2 ENCLOSED FLARE ASSEMBLIES AT EACH STATION 5000STD CFM EACH OF LANDFILL GAS, EACH FLARE RATED AT 168.56 MMBTU/HR

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 27.26 LB/H
Emission Limit 2: 0.16 LB/MMBTU
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: Other Case-by-Case
Other Applicable Requirements:
Control Method: (P) COMBINED MAX INPUT RATE FOR FLARES 7-10=15195 SCFM, 1-2=4394, 3-4= 5914, 5-6=7225
Est. % Efficiency:
Compliance Verified: Y
Pollutant/Compliance Notes:

POLLUTANT NAME: Nonmethane Organic Carbon **CAS Number:** VOC

Emission Limit 1: 1.6 LB/H
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: Other Case-by-Case
Other Applicable Requirements:
Control Method: (P) COMBINED MAX INPUT RATES. SEE POLLUTANT NOTES.
Est. % Efficiency: 98
Compliance Verified: Y
Pollutant/Compliance Notes: RATE FOR FLARES 7-10=15195 SCFM, 1-2=4394, 3-4= 5914, 5-6=7225, ENCLOSED FLARES

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 13.3160 LB/H
Emission Limit 2: 0.0790 LB/MMBTU
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown
Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (P) MAX INPUT RATES. SEE POLLUTANT NOTES

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes: COMBINED MAX INPUT RATE FOR FLARES 7-10=15195 SCFM, 1-2=4394, 3-4= 5914, 5-6=7225

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 9.3 LB/H

Emission Limit 2: 0.0550 LB/MMBTU

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (P) SEE POLLUTANT NOTES

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes: COMBINED MAX INPUT RATE FOR FLARES 7-10=15195 SCFM, 1-2=4394, 3-4= 5914, 5-6=7225

POLLUTANT NAME: Sulfur Dioxide (SO2) **CAS Number:** 7446-09-5

Emission Limit 1: 4.2 LB/H

Emission Limit 2: 4.55 PPM

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (P) SEE POLLUTANT NOTES

Est. % Efficiency:

Compliance Verified: Y

Pollutant/Compliance Notes: COMBINED MAX INPUT RATE FOR FLARES 7-10=15195 SCFM, 1-2=4394, 3-4= 5914, 5-6=7225

Facility Information

RBLC ID:	CA-0752 (final)	**Date Determination Last Updated:**	12/18/2001
Corporate/Company Name:	CITY OF STOCKTON MUNICIPAL UTILITIES DEPT	**Permit Number:**	N-811-18-0
Facility Name:	CITY OF STOCKTON MUNICIPAL UTILITIES DEPT	**Permit Date:**	11/22/1996 (actual)
Facility Contact:		**FRS Number:**	110000759377
Facility Description:		**SIC Code:**	4952
Permit Type:		**NAICS:**	
EPA Region:	9		
Faciliy County:	SAN JOAQUIN		
Facility State:	CA		
Facility ZIP Code:			
Permit Issued By:	SJVUAPCD - CENTRAL REGIONAL OFFICE, CA (Agency Name) MR. GEORGE HEINEN (Agency Contact) (559) 230-6000		
Other Agency Contact Info:	SEYED SADREDIN CA (209) 468-3474		
Other Permitting Information:	THIS IS THE REGIONAL WASTE WATER CONTROL FACILITY		

Process/Pollutant Information

PROCESS NAME:	DIGESTER GAS-FIRED FLARE
Process Type:	19.320 (Digester and Landfill Gas Flares)
Primary Fuel:	DIGESTER GAS
Throughput:	36 MMBTU/HR
Process Notes:	

POLLUTANT NAME: Sulfur Oxides (SOx) **CAS Number:** 7446

Emission Limit 1: 241.9 LB/DAY

Emission Limit 2: 0

Standard Emission: 0

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: LAER

Other Applicable Requirements:

Control Method: (P) LPG OR NATURAL GAS FIRED PILOT

Est. % Efficiency: 0

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Carbon Monoxide **CAS Number:** 630-08-0

Emission Limit 1: 0.30 LB/MMBTU

Emission Limit 2: 0

Standard Emission: 0

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: LAER

Other Applicable Requirements:

Control Method: (N) NO CONTROL EQUIPMENT THAT IS NOT INTEGRAL TO THE FLARE

Est. % Efficiency: 0

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Nitrogen Oxides (NOx) **CAS Number:** 10102

Emission Limit 1: 51.80 LB/DAY

Emission Limit 2: 0.06 LB/MMBTU

Standard Emission: 0

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: LAER

Other Applicable Requirements:

Control Method: (N) NO CONTROL THAT IS NOT INTEGRAL TO THE FLARE

Est. % Efficiency: 0

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Particulate Matter < 10 μ (PM10) **CAS Number:** PM

Emission Limit 1: 0.02 LB/MMBTU

Emission Limit 2: 0

Standard Emission: 0

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: LAER

Other Applicable Requirements:

Control Method: (N) NO CONTROL EQUIPMENT THAT IS NOT INTEGRAL TO THE FLARE

Est. % Efficiency: 0

Compliance Verified: Unknown

Pollutant/Compliance Notes:

POLLUTANT NAME: Volatile Organic Compounds (VOC) **CAS Number:** VOC

Emission Limit 1: 0.03 LB/MMBTU

Emission Limit 2: 0

Standard Emission: 0

Did factors, other then air pollution technology considerations influence the BACT decisions: Unknown

Case-by-Case Basis: LAER

Other Applicable Requirements:

Control Method: (N) NO CONTROL EQUIPMENT THAT IS NOT INTEGRAL TO THE FLARE

Est. % Efficiency: 0

Compliance Verified: Unknown

Pollutant/Compliance Notes:

Appendix V

Permit Application No. 1270-1

Facility ID. No. 0930104

Good Engineering Practice Stack Height Analysis

EU-003, New EU-006 and New EU-007

There are no nearby buildings. The Okeechobee Landfill facility buildings are the closest and are located over 1000 feet away.

Appendix O

Permit Application No. 1270-1
Facility ID No. 0930104

Detailed Description of Equipment For EU-003, New EU-006 and New EU-007

Detailed Description of Equipment for EU-003

Note: The equipment information is also related to existing EU-005.

Detailed Description of Equipment
New EU-006 and New EU-007

Appendix O
Detailed Description of Control Equipment

Okeechobee Landfill, Inc.
Okeechobee Landfill

Permit No.: 0930104-012-AC
Facility ID No.: 0930104

The technical specifications for the proposed 30,000 gallon per day E-VAP® units for EU-003 and EU-006 are presented in the table below:

E-VAP MODEL SPECIFICATIONS

Available Models	5,000 GPD E-Vap	10,000 GPD E-Vap	20,000 GPD E-Vap	30,000 GPD E-Vap
Capacity GPM	3.5	7	14	21
LFG Flow at 50% Methane (Min)	275 cfm	550 cfm	1100 cfm	1650 cfm
LFG use per Gal. Evaporated (cf)	75	75	75	75
Leachate Volume Reduction	+97%	+97%	+97%	+97%
Air Emissions	Pass	Pass	Pass	Pass
Qualifies for IRS Section 29	Yes	Yes	Yes	Yes
Electricity Used	25 kW	39 kW	56 kW	61 kW
Dimensions	2,200 sq. ft.	2,500 sq. ft.	2,800 sq. ft.	3,200 sq. ft.

On the next two pages are details of the enclosed flare (model EF1045I12) proposed for the new EU-006.

LFG Specialties FLARE *Systems*

Totally Committed To The Landfill Gas Industry

LFG Specialties is the first company to dedicate its engineering and production facilities to the design and manufacture of landfill gas extraction, control and recovery equipment and systems.

Enclosed Flares

LFG Specialties manufactures a full range of enclosed type flares for landfill gas application. The flares are specifically designed for high-efficiency combustion of landfill gas, guaranteed to meet federal and state regulatory requirements for the disposal and combustion of landfill gas.

Features

- *Guaranteed to meet EPA emission standards for LFG disposal*
- *Flame-Trol—advanced fully automated flare controller*
- *Energy saving pilot system*
- *Full range of standard sizes*
- *Quick delivery—twelve weeks or less for most flares*
- *Full service and parts support—24 hour emergency service*

LFG Specialities will also custom design and manufacture flares, controllers and combustor systems to meet specific customer conditions and specifications.

Standard Equipment

Flare Stack—Carbon steel construction with 150# flanged inlet connection.

Combuster Assembly—All 304 SS burner tip.

Igniter Assembly—304 SS pilot tip and nozzle, enclosed spark plug igniter, high temperature leads with igniter transformer in NEMA 4 enclosure, and type K thermocouples in high temperature thermal wells.

Peripheral Equipment—Flame arrester and pilot controls including: pressure regulator, gauges, fail-safe valves and manual shut-off valves.

Optional Equipment

- *Condensate Injection Systems for use on new or existing flare systems*
- *Air Compressor Packages*
- *Paperless and Digital Chart Recorders*
- *Remote Monitoring and Data Logging*

All of our flares are factory tested and shipped ready for quick installation and start-up.

Standard Enclosed Flare Specifications

Model	*EF318I4*	*EF420I4*	*EF525I4*	*EF630I6*	*EF735I6*	*EF840I8*	*EF945I12*	*EF1045I12*	*EF1150I14*	*EF1255I16*	*EF1355I16*
Flow Rates (SCFM)					Turndown Ratio 6:1						
Range	16-100	33-200	58-350	83-500	166-1000	300-1800	416-2500	500-3000	666-4000	833-5000	1000-6000
Shell Diameter	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13"
Height	18'	20'	25'	30'	35'	40'	45'	45'	50'	55'	55'
Flame Arrester	4"	4"	4"	6"	6"	8"	12"	12"	14"	16"	16"

Minimum gas Btu value - 200 Btu/ft^3
Note: Low NO_x and CO emissions with higher than 98% destruction efficiency.

Note: 6:1 Turndown Ratio is standard. 10:1 Turndown Ratio is available on some models.

Wind loads - Designed for 100 mph wind loading (per ANSI/ASCE 7-88)

Flame-Trol IV

LFG Specialties manufactures a full line of flare and system controllers. The Flame-Trol IV is a technically advanced fully automatic flare system controller specifically designed to obtain the maximum operating flexibility and efficiency out of an enclosed type flare. The controller has the following features:

- *Temperature controller to monitor and control set points at which operating functions will occur, including:*
  - *pilot, on and off*
  - *blowers, on and off*
  - *activate automatic header*
  - *valve, open and close*
  - *system safety shutdown.*
- *Temperature controller with constant LED temperature read-out*
- *Pilot timer, provides safety shutoff if flare fails to light*
- *Down time timer—provides the operator with a set time after a shutdown for the system to remain down in order to allow the wellfield to rejuvenate*
- *Igniter timer, allows the operator to set spark duration, extending igniter system life*
- *Manual/Auto-Switch, provides the operator the ability to completely bypass the automatic controls and operate the system manually. This is especially important in lightning prone regions.*

The Flame-Trol IV is installed in a NEMA 4 "outdoor" weather proof enclosure.

LFG Specialties is a full service manufacturer, offering standard, made to order, and special engineered flares, flare controllers and auxiliary equipment and systems. Along with standard installation, inspection and repair parts and service, LFG Specialties also offers a full range of contract rental, operation and maintenance agreements tailored to the customer's specific needs and requirements.

Detailed Description of Equipment
New EU-006 and New EU-007

Best Available Copy

LFG Specialties manufactures a full range of utility "candle stick" type flares for landfill gas and wastewater gas applications. The flares are specifically designed for high-efficiency combustion of landfill gas, guaranteeing 98% destruction efficiency.

Features

- *Guaranteed to meet EPA emission standards for methane disposal*
- *Flame-Trol–advanced fully automated flare controller*
- *Energy saving pilot system*
- *Full range of standard sizes*
- *Quick delivery–eight weeks or less for most flares*
- *Full service and parts support–24 hour emergency service*

LFG Specialities will also custom design and manufacture flares, controllers and combustor systems to meet specific customer conditions and specifications.

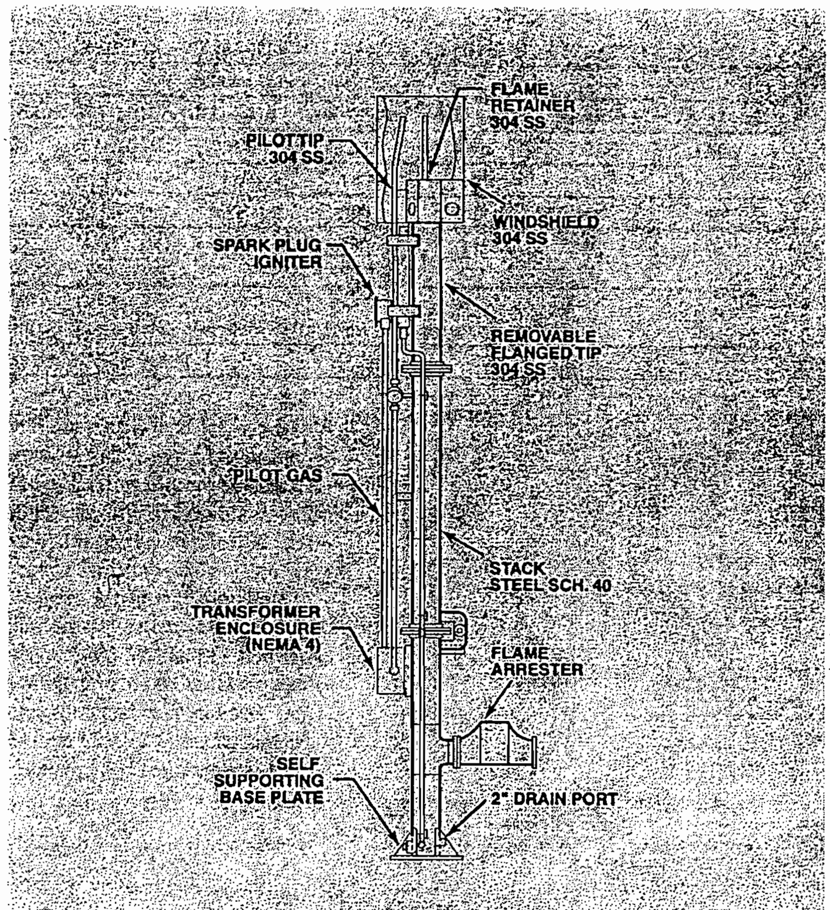
Standard Equipment

Flare Stack—Sch 40, steel pipe with self supporting base and 150# flanged inlet.

Combuster Assembly—Burner tip with flame retainer and windshield, all 304 SS.

Igniter Assembly—304 SS pilot tip and nozzle, enclosed spark plug igniter, high temperature leads, 110/15,000 volt transformer in NEMA 4 enclosure, and chromel-alumel (type K) thermocouples in SS wells.

Peripheral Equipment—Flame arrester, temperature and flame monitoring and pilot gas controls including: pressure regulator, gauge, fail-safe solenoid valve and manual shut-off valve.



"TYPICAL" UTILITY FLARE

Standard Utility Flare Specifications

Model	*CF418I4*	*CF619I4*	*CF825I6*	*CF1025I8*	*CF1230I10*	*CF1434I12*	*CF1635I14*	*CF1840I16*	*CF2045I18*
Flow Rates (SCFM)					Turndown Ratio 10:1				
Range	35-350	79-790	135-1362	210-2131	300-3014	350-3578	470-4717	600-6013	744-7466
Design	260	590	1050	1620	2360	3210	4190	5300	6500
Tip ø In.	4"	6"	8"	10"	12"	14"	16"	18"	20"
Height Ft.	20'	21'	28'	28'	33'	38'	39'	45'	53'
Flame Arrester size (dia.)	4"	4"	6"	8"	10"	10"	12"	16"	18"

Minimum methane content - 30%
Note: Below 30% enrichment gas is required to maintain stable flame and 98% destruction efficiency.

Wind loads - Designed for 100 mph wind loading (per ANSI/ASCE 7-88)

Flame-Trol

LFG Specialities manufactures a full line of flare and system controllers. The Flame-Trol is a technically advanced fully automatic flare system controller specifically designed to obtain the maximum operating flexibility and efficiency out of a utility "candle stick" type flare. The controller has the following features:

- *Temperature controller to monitor and control set points at which operating functions will occur, including:*
  - *pilot, on and off*
  - *blowers, on and off*
  - *activate automatic header valve*
  - *system safety shutdown.*
- *Controller has constant LED temperature read-out*
- *Pilot timer, provides safety shutoff if flare fails to light*
- *Down timer, variable restart timer to allow for gas update rejuvenation*
- *Igniter timer, sets the spark duration for more reliable ignition and extending igniter system life*
- *Manual/Auto-Switch, allows operator to bypass automatic controls and operate the system manually.*

The Flame-Trol is installed in a NEMA 4 "outdoor" weather proof enclosure.

LFG Specialities is a full service manufacturer, offering standard, made to order, and special engineered flares, flare controllers and auxiliary equipment and systems. Along with standard installation, inspection and repair parts and service, LFG Specialities also offers a full range of contract rental equipment, and operation and maintenance agreements tailored to the customer's specific needs and requirements.

Appendix V

Permit Application No. 1270-1

Facility ID. No. 0930104

Good Engineering Practice Stack Height Analysis

EU-003, New EU-006 and New EU-007

There are no nearby buildings. The Okeechobee Landfill facility buildings are the closest and are located over 1000 feet away.

Appendix N

Permit Application 1270-1

Facility ID No. 0930104

Landfill Gas (Fuel) Analysis for EU-003 and EU-006

Appendix N
Landfill Gas (Fuel) Analysis

Okeechobee Landfill, Inc.	Permit Application No.: 1270
Okeechobee Landfill	Facility ID No.: 0930104

The fuel for the flare is provided by the municipal waste decomposition in the MSW landfill (EU-001) and varies due to the heterogeneous nature of the waste, moisture, time in place, and decomposition rate. The fuel's available heating value (Btu) is substantially provided by the methane.

The table below presents the typical composition of a productive landfill gas.

Typical Landfill Gas Components	
Component	**Percent by Volume**
methane	45–60
carbon dioxide	40–60
nitrogen	2–5
oxygen	0.1–1
ammonia	0.1–1
NMOCs (non-methane organic compounds) NMOCs most commonly found in landfills include acrylonitrile, benzene, 1,1-dichloroethane, 1,2-cis dichloroethylene, dichloromethane, carbonyl sulfide, ethyl-benzene, hexane, methyl ethyl ketone, tetrachloroethylene, toluene, trichloroethylene, vinyl chloride, and xylenes.	0.01–0.6
Sulfides (e.g., hydrogen sulfide, dimethyl sulfide, mercaptans)	0–1
hydrogen	0–0.2
carbon monoxide	0–0.2
Source: Tchobanoglous, Theisen, and Vigil 1993; EPA 1995	

The following two table presents the typical fuel analysis that was used as a basis for the emission calculations of the flares (EU-003, EU-005 and new EUs, EU-006 and EU-007) for this facility. Additional information may be found in Appendix K – Support Calculations.

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft^3/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft^3	
LFG Methane Component[c]	55%		
LFG Typical Heating Value	550	Btu/ft^3	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%		
Methane Combustion Constant[d]	9.53	ft^3 air/ft^3 CH_4	

[a]Industrial STP (60°F, 30.00 in. Hg, 1 atm)

[b]Typical

[c]Assumed

[d]*Professional Engineering Registration Program*, 23-9.

The following table provides the data used for sulfur content in the Landfill Gas. Values are from AP-42 except the Hydrogen Sulfide, which was provided from analyzing the Okeechobee Facility's inlet gas.

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]
Carbon Disulfide	75-15-0	76.13	0.58
Carbonyl Sulfide	463-58-1	60.07	0.49
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28
Hydrogen Sulfide	7783-06-4	34.08	**5800.00**
Methyl Mercaptan	74-93-1	48.11	2.49

Appendix N

Permit Application 1270-1

Facility ID No. 0930104

Landfill Gas (Fuel) Analysis for EU-003 and EU-006

Appendix N
Landfill Gas (Fuel) Analysis

Okeechobee Landfill, Inc.	Permit Application No.: 1270
Okeechobee Landfill	Facility ID No.: 0930104

The fuel for the flare is provided by the municipal waste decomposition in the MSW landfill (EU-001) and varies due to the heterogeneous nature of the waste, moisture, time in place, and decomposition rate. The fuel's available heating value (Btu) is substantially provided by the methane.

The table below presents the typical composition of a productive landfill gas.

Typical Landfill Gas Components	
Component	**Percent by Volume**
methane	45–60
carbon dioxide	40–60
nitrogen	2–5
oxygen	0.1–1
ammonia	0.1–1
NMOCs (non-methane organic compounds) NMOCs most commonly found in landfills include acrylonitrile, benzene, 1,1-dichloroethane, 1,2-cis dichloroethylene, dichloromethane, carbonyl sulfide, ethyl-benzene, hexane, methyl ethyl ketone, tetrachloroethylene, toluene, trichloroethylene, vinyl chloride, and xylenes.	0.01–0.6
Sulfides (e.g., hydrogen sulfide, dimethyl sulfide, mercaptans)	0–1
hydrogen	0–0.2
carbon monoxide	0–0.2
Source: Tchobanoglous, Theisen, and Vigil 1993; EPA 1995	

The following two table presents the typical fuel analysis that was used as a basis for the emission calculations of the flares (EU-003, EU-005 and new EUs, EU-006 and EU-007) for this facility. Additional information may be found in Appendix K – Support Calculations.

Standard Conditions, Constants, and Typical Values

Category	Value		Equivalent
Standard Temperature[a]	60	°F	520 °R
Universal Gas Constant	0.7302	atm-ft^3/lb-mol°R	
Pressure[a]	1	atm	
Methane Heating Value[b]	1,000	Btu/ft^3	
LFG Methane Component[c]	55%		
LFG Typical Heating Value	550	Btu/ft^3	
LFG Temperature[c]	100	°F	560 °R
LFG Moisture[c]	8%		
Methane Combustion Constant[d]	9.53	ft^3 air/ft^3 CH_4	

[a]Industrial STP (60°F, 30.00 in. Hg, 1 atm)
[b]Typical
[c]Assumed
[d]*Professional Engineering Registration Program*, 23-9.

The following table provides the data used for sulfur content in the Landfill Gas. Values are from AP-42 except the Hydrogen Sulfide, which was provided from analyzing the Okeechobee Facility's inlet gas.

LFG Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)[a]
Carbon Disulfide	75-15-0	76.13	0.58
Carbonyl Sulfide	463-58-1	60.07	0.49
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28
Hydrogen Sulfide	7783-06-4	34.08	**5800.00**
Methyl Mercaptan	74-93-1	48.11	2.49

Appendix V

Permit Application No. 1270-1

Facility ID. No. 0930104

Good Engineering Practice Stack Height Analysis

EU-003, New EU-006 and New EU-007

There are no nearby buildings. The Okeechobee Landfill facility buildings are the closest and are located over 1000 feet away.

Appendix V

Permit Application No. 1270-1

Facility ID. No. 0930104

Good Engineering Practice Stack Height Analysis

EU-003, New EU-006 and New EU-007

There are no nearby buildings. The Okeechobee Landfill facility buildings are the closest and are located over 1000 feet away.

Appendix T2

Permit Application No. 1270-1

Facility ID No. 0930104

Emission Unit: Identification of Applicable Requirements

Open flares

New EU-006 and New EU-007

Appendix T2
Emission Unit: Identification of Applicable Requirements

Okeechobee Landfill, Inc. — Permit Application No. 1270-1
Okeechobee Landfill — Facility ID No.: 0930104

This section addresses the following emission units.

E.U. ID No.	Brief Description
006 (new)	A 3,000-scfm-inlet flow utility flare # TBD
007 (new)	A 6,000-scfm-inlet utility landfill gas flare Unit # TBD

The proposed 3,000-scfm utility flare EU-006 will be manufactured by LFG Specialties, Inc. model CF1230I10 or another manufacturer's equivalent model.

The Emission Unit 007 is an open utility flare (LFG Specialties, Inc. Model No. CF 840I16 or equivalent) with an operating capacity of 6,000 scfm.

{Permitting note: These new emission units and the other existing units (facility MSW landfill EU-001, enclosed flares EU-003 and EU-005, and open flare EU-004l) are regulated under NSPS 40 CFR 60, Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills", adopted and incorporated by reference in Rule 62-204.800(7)(b)72, F.A.C. The landfill unit is also regulated under NESHAP 40 CFR 63, Subpart AAAA "National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills. The landfill is also regulated under 40 CFR 61, Subpart M "National Emission Standard for Asbestos", adopted and incorporated by reference in Rule 62-204.800(10)(b)8., F.A.C. ***The landfill with its gas collection system requires pollution control for VOCs. The pollution control equipment is the landfill gas flares. This section of the permit applicable which requires identification of applicable regulation for the subject EUs also identify regulations that may relate to the MSW landfill EU. }***

The following specific conditions apply to the emission units listed above:

1.0 Applicable Requirements and emission limiting standards.

1.1 Hours of Operation. These emission units are allowed to operate continuously.
[Rule 62-210.200(PTE), F.A.C.]

1.2 These emission units are subject to the applicable provisions of 40 CFR 60 Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills" and 40 CFR 63 Subpart AAAA, "National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills".
[40 CFR 60.752(a), 40 CFR 63.1935 and Rule 62-204.800, F.A.C., 0930104-004-AC, 007-AC & 010-AC]

1.3 Non-Methane Organic Compounds (NMOC) Emission: The flare is subject to 40 CFR 60.752(2)(iii)(A)(A) and 40 CFR 60.18

1.4 Carbon Monoxide (CO) Emission: CO emission is limited to 0.27 lb/mmbtu from each flare.
[Rule 62-4.070(3), F.A.C (DEP approval of source)]

1.5 These emission units are subject to the following requirements from Title 40 of the Code of Federal Regulations Part 60

40 CFR 60.7	Notification and record keeping.
40 CFR 60.8	Performance tests
40 CFR 60.11	Compliance with standards and maintenance requirements
40 CFR 60.12	Circumvention
40 CFR 60.13	Monitoring requirements
40 CFR 60.14	Modification
40 CFR 60.15	Reconstruction
40 CFR 60.18	General Control Device Requirements Flares
40 CFR 60.19	General notification and reporting requirements

2.0 Sections 40 CFR 60.752: Standards for air emission from municipal solid waste landfills.

The control device shall be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in 40 CFR 60.756; Operate the collection and control device installed to comply with 40 CFR 60, Subpart WWW in accordance with the provisions of 40 CFR 60.753, 60.755 and 60.756.

[Rule 62-204.800, F.A.C.; 40 CFR 60.752(b)]

3.6 Requirement for continuous operation.

Operate the control or treatment system at all times when the collected gas is routed to the system.

[Rule 62-204.800, F.A.C.; 40 CFR 60.753(f)]

4.0 Section 40 CFR 60.754 Test methods and procedures for Utility Flares EU-006 and EU-007.

(1) Reference Method 22 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.

(2) 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.

(3) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^{n} C_i H_i$$

where:

HT=Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C;

K = Constant, 1.740×10^{-7} (1/ppm) (g mole/scm) (MJ/kcal)
where the standard temperature for (g mole/scm) is 20°C;

Ci=Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 (Incorporated by reference as specified in 40 CFR 60.17); and
Hi=Net heat of combustion of sample component i, kcal/g mole at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

(4) The actual exit velocity of a flare shall be determined by dividing the volumetric flowrate (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.

(5) The maximum permitted velocity, Vmax, for flares complying with 40 CFR 60.18(c)(4)(iii) shall be determined by the following equation.

$$\text{Log10 (Vmax)} = (HT+28.8)/31.7$$

Vmax=Maximum permitted velocity, M/sec
28.8=Constant
31.7=Constant
HT=The net heating value as determined in 40 CFR 60.18(f)(3).

(6) The maximum permitted velocity, Vmax, for air-assisted flares shall be determined by the following equation.

$$\text{Vmax} = 8.706+0.7084\ (HT)$$

Vmax=Maximum permitted velocity, m/sec
8.706=Constant
0.7084=Constant
HT=The net heating value as determined in 40 CFR 60.18(f)(3).

[Rule 62-296.800, F.A.C.; 40 CFR 60.18(f)].

Appendix T2

Permit Application No. 1270-1

Facility ID No. 0930104

Emission Unit: Identification of Applicable Requirements

Open flares

New EU-006 and New EU-007

Appendix T2
Emission Unit: Identification of Applicable Requirements

Okeechobee Landfill, Inc. — Permit Application No. 1270-1
Okeechobee Landfill — Facility ID No.: 0930104

This section addresses the following emission units.

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The proposed 3,000-scfm utility flare EU-006 will be manufactured by LFG Specialties, Inc. model CF1230I10 or another manufacturer's equivalent model.

The Emission Unit 007 is an open utility flare (LFG Specialties, Inc. Model No. CF 840I16 or equivalent) with an operating capacity of 6,000 scfm.

{Permitting note: These new emission units and the other existing units (facility MSW landfill EU-001, enclosed flares EU-003 and EU-005, and open flare EU-004l) are regulated under NSPS 40 CFR 60, Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills", adopted and incorporated by reference in Rule 62-204.800(7)(b)72, F.A.C. The landfill unit is also regulated under NESHAP 40 CFR 63, Subpart AAAA "National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills. The landfill is also regulated under 40 CFR 61, Subpart M "National Emission Standard for Asbestos", adopted and incorporated by reference in Rule 62-204.800(10)(b)8., F.A.C. ***The landfill with its gas collection system requires pollution control for VOCs. The pollution control equipment is the landfill gas flares. This section of the permit applicable which requires identification of applicable regulation for the subject EUs also identify regulations that may relate to the MSW landfill EU. }***

The following specific conditions apply to the emission units listed above:

1.0 <u>Applicable Requirements and emission limiting standards.</u>

1.1. Hours of Operation. These emission units are allowed to operate continuously. [Rule 62-210.200(PTE), F.A.C.]

1.2 These emission units are subject to the applicable provisions of 40 CFR 60 Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills" and 40 CFR 63 Subpart AAAA, "National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills".
[40 CFR 60.752(a), 40 CFR 63.1935 and Rule 62-204.800, F.A.C., 0930104-004-AC, 007-AC & 010-AC]

1.3 Non-Methane Organic Compounds (NMOC) Emission: The flare is subject to 40 CFR 60.752(2)(iii)(A)(A) and 40 CFR 60.18

1.4 Carbon Monoxide (CO) Emission: CO emission is limited to 0.27 lb/mmbtu from each flare.
[Rule 62-4.070(3), F.A.C (DEP approval of source)]

1.5 These emission units are subject to the following requirements from Title 40 of the Code of Federal Regulations Part 60

40 CFR 60.7	Notification and record keeping.
40 CFR 60.8	Performance tests
40 CFR 60.11	Compliance with standards and maintenance requirements
40 CFR 60.12	Circumvention
40 CFR 60.13	Monitoring requirements
40 CFR 60.14	Modification
40 CFR 60.15	Reconstruction
40 CFR 60.18	General Control Device Requirements Flares
40 CFR 60.19	General notification and reporting requirements

2.0 Sections 40 CFR 60.752: Standards for air emission from municipal solid waste landfills.

The control device shall be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in 40 CFR 60.756; Operate the collection and control device installed to comply with 40 CFR 60, Subpart WWW in accordance with the provisions of 40 CFR 60.753, 60.755 and 60.756.

[Rule 62-204.800, F.A.C.; 40 CFR 60.752(b)]

3.6 Requirement for continuous operation.

Operate the control or treatment system at all times when the collected gas is routed to the system.

[Rule 62-204.800, F.A.C.; 40 CFR 60.753(f)]

4.0 Section 40 CFR 60.754 Test methods and procedures for Utility Flares EU-006 and EU-007.

(1) Reference Method 22 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.

(2) 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.

(3) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^{n} C_i H_i$$

where:

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K = Constant, 1.740×10^{-7} (1/ppm) (g mole/scm) (MJ/kcal)
where the standard temperature for (g mole/scm) is 20°C;

Ci=Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 (Incorporated by reference as specified in 40 CFR 60.17); and
Hi=Net heat of combustion of sample component i, kcal/g mole at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

(4) The actual exit velocity of a flare shall be determined by dividing the volumetric flowrate (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.

(5) The maximum permitted velocity, Vmax, for flares complying with 40 CFR 60.18(c)(4)(iii) shall be determined by the following equation.

$$\text{Log10}(V_{max})=(HT+28.8)/31.7$$

Vmax=Maximum permitted velocity, M/sec
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$$V_{max}=8.706+0.7084\,(HT)$$

Vmax=Maximum permitted velocity, m/sec
8.706=Constant
0.7084=Constant
HT=The net heating value as determined in 40 CFR 60.18(f)(3).

[Rule 62-296.800, F.A.C.; 40 CFR 60.18(f)].

Appendix R

Permit Application 1270-1

Facility ID No. 0930104

Operation and Maintenance Plan For EU-003, New EU-006 and New EU-007

Appendix R

Permit Application 1270-1

Facility ID No. 0930104

Operation and Maintenance Plan For EU-003, New EU-006 and New EU-007

The operation and maintenance plan will be updated to include the proposed utility flares before operation of the new flares. Updating the plan will require the completion of the procurement process and receipt of the additional O&M manuals for the new EUs.

The operation and maintenance plan for the landfill gas collection and treatment is comprised of several large binders, therefore, it will not be submitted but maintained at the facility.

Appendix R

Permit Application 1270-1

Facility ID No. 0930104

Operation and Maintenance Plan For EU-003, New EU-006 and New EU-007

Appendix R

Permit Application 1270-1

Facility ID No. 0930104

Operation and Maintenance Plan For EU-003, New EU-006 and New EU-007

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Appendix Q

Permit Application 1270-1

Facility ID No. 0930104

Procedures for Start Up and Shut Down For EU-003, New EU-006 and New EU-007

WASTE MANAGEMENT

MUNICIPAL SOLID WASTE LANDFILL
GAS COLLECTION AND CONTROL SYSTEM (GCCS)

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

Okeechobee Landfill, Inc.
Berman Road Landfill
Okeechobee, Florida

Prepared by:
Okeechobee Landfill, Inc.
10800 N.E. 128th Avenue
Okeechobee, FL 34972
(863)357-0111

Date of Issuance:
August 8, 2005

☐ This version of this plan has been superseded.

If the box above has been checked, complete the following information:

This copy of the plan may be discarded after ________________________
(enter the date that is 5 years after date on which this version was superseded by a newer version)

MUNICIPAL SOLID WASTE LANDFILL GAS COLLECTION AND CONTROL SYSTEM (GCCS)

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

Berman Road Landfill
Okeechobee, Florida

This startup, shutdown and malfunction (SSM) plan (SSM Plan) was prepared by Okeechobee Landfill, Inc. (OLI) in order to comply with the requirements of 40 CFR 63.6(e)(3), as this facility is subject to 40 CFR Part 63, Subpart AAAA, the National Emission Standard for Hazardous Air Pollutants (NESHAPs) for Municipal Solid Waste (MSW) landfills. The SSM Plan contains all of the required elements set forth within 40 CFR 63.6(e).

This SSM Plan will be revised if the procedures described herein do not adequately address any malfunction or startup/shutdown events that occur at the facility. A copy of the original plan and all revisions/addenda will be kept on file at the facility for at least five (5) years. John Van Gessel, Vice President and Assistant Secretary and Mike Stallard, District Manager are responsible for assuring that the most recent copy of this SSM Plan is made available to all personnel involved with the landfill gas (LFG) collection and control system (GCCS) at Berman Road Landfill as well as to appropriate regulatory agency personnel for inspection.

Name of Plan Preparer: ______________________________
Name Date

Approved:
John Van Gessel
Vice President and Assistant Secretary: ______________________________
Name Date

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Appendices

A Common Causes and Response Actions for GCCS Malfunctions
B SSM Reporting Forms

1 Revision History

Add the effective date of the most-recent revision to the list below. Do not overwrite or delete any dates. This is intended to be a complete record of all revisions made to this plan and assists in making certain that all plan versions are retained for at least 5 years as required by §63.6(e)(3)(v).

Date of Initial Issuance
January 16, 2004
Revision Dates
January 26, 2005
August 8, 2005

2 Introduction

2.1 Purpose and Scope

The municipal solid waste (MSW) landfill owner or operator of an affected source must develop and implement a written Startup, Shutdown and Malfunction (SSM) Plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown and malfunction; a program of corrective action for malfunctioning processes; and air pollution control and monitoring equipment used to comply with the relevant standards. The purpose of the SSM Plan is to:

- Ensure that, at all times, the MSW landfill owner or operator operates and maintains the affected source, including associated air pollution control and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions to the levels required by the relevant standards;
- Ensure that MSW landfill owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants (HAP); and
- Reduce the reporting burden associated with periods of startup, shutdown and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

A more detailed summary of the regulatory background and summary of requirements for preparation and use of a startup, shutdown and malfunction (SSM) plan (SSM Plan) is contained in the document "Guidance for Preparation of Startup, Shutdown and Malfunction Plans", Waste Management, Inc., October 27, 2003 for guidance and instructions for completing and customizing the plan.

The Berman Road Landfill is an existing affected source under the Maximum Achievable Control Technology (MACT) rule for MSW landfills. Berman Road Landfill is subject to the MSW Landfill New Source Performance Standards (NSPS). Because it is NSPS applicable, it is also subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for MSW Landfills. As such, a SSM Plan is required to be prepared and implemented for this landfill site by January 16, 2004 and this SSM Plan meets or exceeds this requirement.

The management of the Berman Road Landfill fully understands and acknowledges the SSM Plan requirements of the MACT rule. This SSM Plan has been developed to specifically address these requirements as summarized above.

2.2 Description Of SSM Plan

This SSM Plan has been divided into three major sections comprising the major elements related to startup, shutdown and/or malfunction of a landfill gas (LFG) collection and control system (GCCS) at a MSW landfill. Malfunction events are distinct events when the GCCS is not operating in accordance with NSPS/EG requirements and which result, or have the potential to result, in an exceedance of one or more emission limitations or operational standards under the NSPS/EG. Startup and shutdown events are generally planned events associated with system repair, maintenance, testing and upgrade and may or may not be related to or occur in association with a malfunction of the GCCS.

2.3 Site Equipment Subject To This SSM Plan

The following components of the GCCS are subject to this SSM Plan:

Collection wells and other collectors
Lateral and header extraction piping
LFG mover equipment
Temperature monitoring and recording equipment
Flow monitoring and recording equipment
Enclosed Flares
Open, Unenclosed Flare
Leachate EVAP Systems
Condensate Knockout/Collection

2.4 Site Equipment NOT Subject To This SSM Plan

The following components of the GCCS are NOT subject to this SSM Plan:

Passive, Solar Flares

Berman Road Landfill is not considering the passive, solar flares as part of this SSM Plan because these devices are not used as part of the GCCS for compliance with NSPS requirements. The passive, solar flares are used for temporary control of newly installed landfill gas wells to control the odor emitted from them prior to final connection to the active GCCS. Prior to connection to the active GCCS, the subject wells are not considered NSPS applicable, therefore, the passive, solar flares would not be NSPS or NESHAP applicable.

3 Startup/Shutdown Plan

This section details procedures for the startup of the GCCS to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions to the levels required by the relevant standards.

Pursuant to the requirements of the NSPS/EG for MSW landfills, a GCCS must be installed and operated when the landfill exceeds a threshold of 50 Megagrams (Mg)/year nonmethane organic compounds (NMOC) and meets all the applicable criteria for a controlled landfill.

3.1 How to Identify a GCCS Startup / Shutdown Event

The regulatory definition of "startup" reads as follows:

> "**Startup** means the setting in operation of an affected source or portion of an affected source for any purpose." (§63.2)

The regulatory definition of "shutdown" reads as follows:

> "**Shutdown** means the cessation of an affected source or portion of an affected source or portion of an affected source for any purpose." (§63.2)

GCCS startup operations and shutdown events generally include startup or shutdown of gas mover equipment, LFG control devices and any ancillary equipment that could affect the operation of the GCCS (e.g., power supply, air compressors, etc.). This section details procedures for the startup and/or shutdown of the GCCS to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions to the levels required by the relevant standards.

The following list includes events that may necessitate a shutdown of the GCCS at a MSW Landfill. This list should not be considered exhaustive.

Table 3-1—Potential Events Necessitating Shutdown of the GCCS

Control Device Maintenance, Repair or Cleaning
Addition of New GCCS Components
Extraction Well Raising
Vertical well(s), horizontal collector(s) isolation/shutdown for well/landfill cover maintenance and construction
Movement of LFG Piping to Accommodate New Components or Filling Operations
Source Testing
Gas Mover Equipment Maintenance, Repair or Cleaning
Gas Processing Equipment Maintenance, Repair or Cleaning
Ancillary Equipment (e.g., compressors, etc.) Maintenance, Repair or Cleaning
New Equipment Testing and Debugging
Shutdown and Subsequent Startup to Address Malfunctions or Other Occurrences
Planned Electrical Outages
Horizontal collectors buildup of liquid ("watered out")
Gas collection system header buildup of liquid ("watered out")

3.2 Actions To Take When the GCCS is Started-Up

The following provides a summary of typical response actions for startup of the GCCS.

3.2.1 Gas Mover and Collection System

The following activities may have the potential to emit regulated air pollutants to the atmosphere during startup of the collection system portion of GCCS: (1) purging of gases trapped within piping system prior to normal operation; (2) repair of system leaks discovered during startup and (3) all other activities after construction of the system but prior to fulltime operation, which could release HAPs from the collection system. These activities would be subject to the Startup Plan portion of the SSM Plan.

During such activities, work shall progress such that air emissions are minimized to the greatest extent possible by:

- Temporarily capping pipes venting gas if such capping does not impact safety or the effective construction of the system.

- Minimizing surface area allowing gas to emit to the atmosphere to the extent that it does not impact safety or the effective construction of the system.
- Ensuring that other parts of the system, not impacted by the activity, are operating in accordance with the applicable requirements of NSPS/EG.
- Limiting the purging of piping to as short duration as possible to ensure safe combustion of the gas in the control device.

GCCSs, once installed, are "closed" systems designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point with the control device(s) with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time and subsequently opened. Opening these valves shall not be considered a startup, unless such an activity causes the venting of gas to the atmosphere. If the activity results in emissions to the atmosphere, the actions listed above shall be followed.

The operation of the collection system, once installed, shall be consistent with the provisions of NSPS/EG as well as the GCCS Design Plan, which has been developed and approved for the facility.

3.2.2 Control Device(s):

Personnel shall follow the procedures as identified below when starting the respective control devices. Control devices operating at MSW landfills normally undergo planned startups. However, flare systems are designed for unattended operation. There are instances when the flare system will shutdown and automatically restart. The shutdown may occur when there is a brief interruption of gas flow to the flare. These shutdown events are followed by an automatic startup sequence as described in the standard operating procedures listed below and incorporated by reference as part of this SSM Plan.

The flare temperature and/or flow recorders will document significant decreases in temperature and/or flow measurements followed by an almost immediate increase back to normal ranges whenever the automatic shutdown/startup sequence occurs. Documentation of the date, time and duration of these automatic shutdown/startup events is contained in the flare temperature and/or flow charts. In addition, there are no actions that need to be taken to affect the shutdown/startup sequence in these instances; therefore, these activities do not need to be documented beyond the information already contained on chart recorders. Documentation of automatic shutdown/startup events will be included in the semi-annual reports.

3.3 Actions To Take When The GCCS Is Shutdown

3.3.1 Collection System

GCCSs, once installed, are "closed" systems designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point with the control device(s) with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time. Closing these valves shall be considered a shutdown, only when such an activity causes an exceedance of the provisions of NSPS/EG and/or any subsequent approvals of alternatives in the facility's GCCS Design Plan or approved variances issued thereafter. The parameters used to determine if there has been an exceedance that would trigger the need for implementing the SSM Plan would be the monthly well monitoring parameters of pressure (>0 in Hg). An individual well may have a differing monitoring parameter that will be documented in the NSPS GCCS Plan or approved in a Permit. These values will be used in place of those listed above. If one or more well exceed one or more of these parameters, then the SSM Plan will be invoked. Because the closing of valves usually occur

when multiple wells are closed or isolated by a header or lateral valve, these occurrences will be considered "events" and documented with by completing a single **SSM Report Form** (Appendix B), not individual SSM Report Forms for each well affected by the shutdown. The well(s) that are part of the "event" will normally be returned to services less than 5 days after isolation of multiple wells or closing of individual wells.

3.3.2 Control Device(s):

Personnel shall follow the procedures as identified below when shutting down the respective control devices. Control devices operating at MSW landfills normally undergo planned shutdown for the various events listed above. Shutdowns for equipment malfunction or breakdown should be addressed in the malfunction plan. Control device shutdown guidance are described in the standard operating procedures in the flare Operation & Maintenance (O&M) Manual incorporated as part of this SSM Plan, as listed below. In addition to the procedures outline in the O&M Manual, the flare can be shutdown safely by turning off power to the control panel. Power can be turned off by pressing the large red button on the control panel or by throwing the main power breaker switch for the control panel.

Table 3-2—Startup / Shutdown Guidance Procedure Reference

Device Name	Operations manual, notes, report, etc.	
	Title	Page(s)
Enclosed Flare – Unit# 1776	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section
Enclosed Flare – Unit# 1698	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section
Open, Unenclosed Flare – Unit# 1495	LFG Specialties Utility Flare System O&M Manual	Section 2.0 – Operation Sub-Section
Leachate EVAP System – Unit# 3016 - STARTUP	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Operation, Pages viii-xii
Leachate EVAP System – Unit# 3016 - SHUTDOWN	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Sequence of Operations for Flame Supervisory System; Step 7
Leachate EVAP System – Unit# 3004IM – STARTUP	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Operation, Pages viii-xii
Leachate EVAP System – Unit# 3004IM – SHUTDOWN	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Sequence of Operations for Flame Supervisory System; Step 7

3.4 What to Record for All Startup / Shutdown Events

The operator shall record the following information on the attached **SSM Report Form** (Appendix B), which should be retained in the landfill operating record for five (5) years:

- The date and time the startup/shutdown occurred.
- The duration of the startup/shutdown.
- The actions taken to effect the startup/shutdown.
- Whether procedures in this SSM Plan were followed. If the procedures in the SSM Plan were not followed, a **SSM Plan Departure Report Form** (Appendix B) must also be completed.
- If an applicable emission limitation was exceeded, a description of the emission standard that was exceeded.

3.5 Whom to Notify at the Facility in Case of a Startup/Shutdown Event

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager should be verbally notified within a reasonable timeframe of the startup/shutdown.
- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager should be verbally notified within a reasonable timeframe of progress of the diagnosis and resolution of the startup/shutdown.
- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager and Miguel Delgado, Engineering Manager should be verbally notified when the alternative timeframe for startup/shutdown has been established if it is outside of the timeframes currently allowed by the NSPS/EG for particular compliance elements.
- The **SSM Report Form** should be initially prepared upon startup/shutdown, or discovery of an automatic startup/shutdown and implementation of the SSM Plan. The form should be finalized by the operator on duty upon successful implementation of the SSM Plan and submitted to the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager. The original form should be retained in the landfill operating record for five (5) years.

3.6 What to Report for a Startup/Shutdown Event

- If the actions taken during the startup/shutdown **were consistent** with this SSM Plan, file the necessary information in your semi-annual SSM report (*within 30 days following the end of each 6-month period*) with the following information included:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official; and
    3. Statement that the actions taken during the startup or shutdown were consistent with the SSM Plan.

- If the actions taken during a startup **<u>were not consistent</u>** with this SSM Plan, the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager must report the actions taken to the enforcing authority by telephone or facsimile transmission within two (2) working days after the startup or shutdown. A letter must then be sent to the enforcing authority within seven (7) working days after the subject startup or shutdown. The letter should be sent by certified or registered mail or overnight delivery service and must include the following information:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);
    3. Detailed explanation of the circumstances of the start/shutdown;
    4. The reasons the SSM Plan was not adequate; and whether any excess emissions and/or parameter monitoring exceedances is believed to have occurred during the event.
    5. A copy of the **SSM Plan Departure Report Form.**

- Note: If the revisions to the SSM Plan alter the scope of the process activities at Berman Road Landfill or otherwise modify the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule and/or the NSPS/EG, the revised SSM Plan is not effective until written notice has been provided to the permitting authority describing the SSM Plan revision(s).

4 Malfunction Plan

4.1 How to Identify a GCCS Malfunction

The regulatory definition of "malfunction" reads as follows:

> "**Malfunction** means any sudden, infrequent and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions." (§63.2, revised 5/30/03)

The following list includes events that may constitute a malfunction of the GCCS at Berman Road Landfill. The cause of these events should be investigated immediately in order to determine the best course of action to correct the malfunction. Each of these malfunctions could have multiple causes that need to be evaluated and possibly considered. It is the intent of this SSM Plan to include all possible causes for the specific malfunction events. Common malfunction events for LFG collection and control systems are listed in Table 4-1.

Table 4-1—Potential Malfunction Events

Possible Malfunction	Section
Loss of LFG Flow/Gas Mover Malfunction	4.3
Loss of Electrical Power	4.4
Low Temperature Conditions at Control Device	4.5
Loss of Flame at the Control Device	4.6
Malfunction of Flow Measuring/Recording Device	4.7
Malfunction of Temperature Measuring/Recording Device	4.8
Collection Well and Pipe Failures	4.9
Other Control Device Malfunctions	4.10
Malfunction of Field Monitoring Equipment	4.11
Buildup of Liquid in Piping	4.12

For one of these occurrences to be considered a malfunction that is required to be addressed by this SSM Plan, it must result in, or have the potential to result in, an exceedance of one or more of the NSPS/EG operational and compliance requirements or the provisions of the MACT rule (e.g., exceedance, reading outside of required operational range, etc). The following list constitutes the possible exceedances of the New Source Performance Standards (NSPS) for MSW landfills and/or the state/local emission guidelines (EG) rule that could occur due to a malfunction of GCCS, thereby necessitating implementation of this SSM Plan:

Table 4-2— Potential Emission Limitation Exceedances Caused by Malfunction Events

GCCS downtime of greater than 5 days (if alternative timeframe has not been established)
Free venting of collected LFG without control for greater than one hour
Control device temperatures excursions in which 3-hour block average is less than established minimum temperature
Downtime for temperature monitoring and/or recording equipment of greater than 15 minutes (if alternative timeframe has not been established)
Any downtime for LFG flow monitoring and/or recording equipment (if alternative timeframe has not been established)
Reserved for modifications or reinterpretations of the NSPS rule by the U.S. EPA or state/local jurisdiction or state/local requirements that are in addition to or more stringent than NSPS/EG

If the occurrence does not result in an exceedance of an applicable emission limitation, or does not have the potential to result in such an exceedance, then **it is not required to be corrected in accordance with this SSM Plan**, although use of the plan may still be advisable. Malfunctions should be considered actionable under this SSM Plan whether discovered by the MSW landfill owner or operator during normal operations or by a regulatory agency during compliance inspections.

The operator should follow all the corrective action, notification, record keeping and reporting procedures described herein in case of malfunction of the GCCS.

4.2 Actions to Take When The GCCS Malfunctions—All Malfunctions

- Determine whether the malfunction has caused an exceedance, or has the potential to cause an exceedance, of any applicable emission limitation contained in the NSPS/EG or MACT.
- Identify whether the malfunction is causing or has caused excess emissions to the atmosphere. If excess emissions are occurring, take necessary steps to reduce emissions to the maximum extent possible using good air pollution control practices and safety procedures.
- Contact the site John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager immediately and proceed with the malfunction diagnosis and correction procedures described in Appendix A ("Common Causes and Response Actions for GCCS Malfunctions") for each specific malfunction.
- Site-specific malfunction and/or troubleshooting procedures are contained in the documents or appendices referenced below. Personnel shall follow these guidance procedures when addressing a malfunction of a collection system or control device.

Table 4-3—Malfunction Guidance Procedure Reference

Control Device ID	Operations manual, notes, report, etc.	
	Title	Page(s)
Enclosed Flare – Unit# 1776	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section; Steps 7-10
Enclosed Flare – Unit# 1698	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section; Steps 7-10
Open, Unenclosed Flare – Unit# 1495	LFG Specialties Utility Flare System O&M Manual	Section 2.0 – Operation Sub-Section; Steps 5-11
Leachate EVAP System – Unit# 3016	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II –
Leachate EVAP System – Unit# 3004IM	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II –

- If the procedures in this SSM Plan do not address or adequately address the malfunction that has occurred, the operator should attempt to correct the malfunction with the best resources available. John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager should be notified of this situation immediately. Complete a **SSM Plan Departure Report Form** (Appendix B) as discussed in Section 4.14. The SSM Plan must be updated to better address this type of malfunction.

- Notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager of the progress of the diagnosis and correction procedures and status of the malfunction as soon as practicable.

- If the GCCS malfunction cannot be corrected within the time frame specified in the NSPS/EG, notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager and proceed to shutdown the control device and/or the process(es) venting to the control device, if this has not already automatically occurred.

- If the GCCS malfunction cannot be corrected within the time frame allowed by the NSPS/EG rule for each specific malfunction, define the appropriate alternative timeframe for corrective action that is reasonable for the type of repair or maintenance that is required to correct the malfunction.

- If the GCCS malfunction cannot be corrected within alternative timeframe for corrective action specified above, notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager and conduct the appropriate record keeping and reporting required for deviations of the MACT rule and Title V permit.

- Once the malfunction is corrected, notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager as soon as the system is operational.

- Complete the **SSM Plan Departure Report Form** (Appendix B) after the malfunction diagnosis and correction procedures are completed.

- If the procedures in this SSM Plan do not address or adequately address the malfunction that has occurred, the operator should note the circumstances and the actual steps taken to correct the malfunction in the **SSM Report Form** (Appendix B). This SSM Plan will need to be revised based on this information, as described in Section 4.13 below.

- Follow procedures in Sections 4.12 through 4.14, as appropriate, to adequately document, notify and report the malfunction and corrective action.

4.3 Loss of LFG Flow/Gas Mover Malfunction

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.4 Loss of Electrical Power

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if malfunction cannot be corrected within the established timeframe.

4.5 Low Temperature Conditions at the Control Device

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction causes an exceedance of the control device's minimum temperature for a 3-hour block average, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

- If the malfunction causes the GCCS to go off-line and cannot be corrected within the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.6 Loss of Flame at the Control Device

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- If system will not restart, follow also the procedures in Section 4.3, above: **Loss of LFG Flow.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.7 Malfunctions of Flow Monitoring/Recording Device

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected in the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.8 Malfunctions of Temperature Monitoring/Recording Device

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within 15 minutes, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.9 Collection Well and Pipe Failures

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**
- Follow also the procedures in Section 4.3, above: **Loss of Flow/Gas Mover Malfunction.**
- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.
- If the malfunction causes the entire GCCS to go off-line and cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.10 Other Control Device Malfunctions

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**
- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.
- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.
- If the malfunction causes an exceedance of the control device's minimum temperature for a 3-hour block average, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.
- If the malfunction causes the entire GCCS to go off-line and cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.11 Malfunctions of Field Monitoring Equipment

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**
- Verify that malfunction of monitoring equipment will cause a deviation of the NSPS/EG requirements for wellhead and/or surface emissions monitoring.
- Conduct diagnostic procedures to identify the cause of the malfunction.
- Repair the device or obtain replacement device to complete the monitoring as required by the NSPS/EG.

- Conduct proper calibration procures before use of the device for NSPS/EG compliance monitoring.
- If the malfunction cannot be corrected so that the monitoring equipment can be used for the purposes required by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.12 Buildup of Liquid in Piping

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**
- Verify that blockage resulting from the build-up of liquid will cause a deviation of the NSPS/EG requirements for operation of the control devices by restricting flow resulting in low operating temperature.
- Verify that blockage resulting from the build-up of liquid will cause a deviation of the NSPS/EG requirements for operation of the collection system by restricting flow resulting in positive pressures at the wellheads.
- Conduct diagnostic procedures to identify the cause and the location of the build-up of liquid.
- Follow shutdown procedures for the gas mover and control devices outlined in Section 4. Allow condensate to drain, or manually remove excess condensate from the piping via use of water pumps.
- Follow startup procedures for the gas mover and control devices outlined in Section 3.
- Assess whether liquid removal remedied the low flow conditions.

4.13 What to Record for a Malfunction

The operator must record the following information on the attached **SSM Report Form**, which must be retained in the landfill operating record for five (5) years:

- The date and time the malfunction occurred.
- The duration of the malfunction.
- A description of the affected equipment.
- The cause or reason for the malfunction (if known).
- The actions taken to correct the malfunction (checklist).
- Whether the procedures in this SSM Plan were followed. If the procedures in the plan were not followed, a **SSM Plan Departure Report Form** must also be completed.
- A description of the emission standard that was exceeded or had the potential to be exceeded.

4.14 Whom to <u>Notify</u> at the Facility in Case of a Malfunction

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified immediately of the malfunction.

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified within a reasonable timeframe of progress of the diagnosis and corrective action of the malfunction.

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified when the alternative timeframe for corrective action has been established if it is outside of the timeframes currently allowed by the NSPS/EG for particular compliance elements.

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified if the malfunction cannot be corrected within the timeframe allowed by the NSPS rule or the alternate timeframe established under this SSM Plan. Notification should also occur if the current SSM Plan had not addressed the malfunction.

- The **SSM Report Form** shall be initially prepared upon discovery of the malfunction and implementation of the SSM Plan. The form shall be finalized by the operator on duty upon successful implementation of the SSM Plan and submitted to John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager. The original form must be retained in the landfill operating record for five (5) years.

4.15 What to <u>Report</u> for a Malfunction Event

- If the actions taken during the malfunction **<u>were consistent</u>** with this SSM Plan and the malfunction resulted or had the potential to result in an exceedence of an applicable emission standard, file the necessary information in your semi-annual SSM report (*within 30 days following the end of each 6-month period*) with the following information included:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.); and
    3. Statement that the actions taken during the malfunction were consistent with the SSM Plan.

- If the actions taken during a malfunction **<u>were not consistent</u>** with this SSM Plan and the malfunction resulted in or had the potential to result in an exceedance of an applicable emission standard, (see items listed under Step 1 above), John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager must report the actions taken to the enforcing authority by telephone or facsimile (FAX) transmission within two (2) working days after commencing the actions that were inconsistent with the plan. A letter must then be sent to the enforcing authority within seven (7) working days after the malfunction. The letter should be sent by certified or registered mail or overnight delivery service and must include the following information:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);

3. Detailed explanation of the circumstances of the malfunction;
4. The reasons the SSM Plan was not adequate; and
5. Whether any excess emissions and/or parameter monitoring exceedances is believed to have occurred during the event.
6. Prepare and include **SSM Plan Departure Report Form.**

- If the actions taken during the malfunction **were not consistent** with this SSM Plan, the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager at the landfill must:

  1. Revise the SSM Plan within 45 days after the malfunction to include procedures for operating and maintaining the GCCS during similar malfunction events.
  2. Include the revised SSM Plan in the semi-annual report (within 30 days following the end of each 6-month period).

Note: If the revisions to the SSM Plan alter the scope of the process activities at Berman Road Landfill or otherwise modify the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule and/or the NSPS/EG, the revised SSM Plan is not effective until written notice has been provided to the permitting/enforcing authority describing the SSM Plan revision(s).

APPENDIX A

Common Causes and Response Actions for GCCS Malfunctions

(Appendix A represents a summary of possible causes and response actions for GCCS malfunctions. The list is not considered to be exhaustive. The list of response actions is not intended to be a sequence of events that are to be implemented in order. Certain malfunction incidents may or may not be associated with the listed "common causes" nor will the "common response actions" be appropriate in all instances. Site-specific evaluation of the malfunctions and development of specific response actions is recommended in all cases.)

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment	Applies vacuum to wellfield to extract LFG and transport to control device	Loss of LFG Flow/Blower Malfunction	-Flame arrestor fouling/deterioration -Automatic valve problems -Blower failure (e.g., belt, motor, impeller, coupling, seizing, etc.) -Loss of power -Extraction piping failure -Condensate knock-out problems -Extraction piping blockages	-Repair breakages in extraction piping -Clean flame arrestor -Repair blockages in extraction piping -Verify automatic valve operation, compressed air/nitrogen supply -Notify power utility, if appropriate -Provide/utilize auxiliary power source, if necessary -Repair Settlement in Collection Piping - Repair Blower -Activate back-up blower, if available -Clean knock-up pot/demister -Drain knock-out pot
Extraction Wells and Collection Piping	Conduits for extractions and movement of LFG flow	Collection well and pipe failures	-Break/crack in header or lateral piping -Leaks at wellheads, valves, flanges, test ports, seals, couplings, etc. -Collection piping blockages -Problems due to settlement (e.g. pipe separation, deformation, development of low points)	-Repair leaks or breaks in lines or wellheads -Follow procedures for loss of LFG flow/blower malfunction -Repair blockages in collection piping -Repair settlement in collection piping -Re-install, repair, or replace piping -Review waste types, age of waste, etc.

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment And Control Device	Collection and control of LFG	Loss of electrical power	- Force majeure/Act of God (e.g., lightning, flood, earthquake, etc.) -Area-wide or local blackout or brown-out -Interruption in service (e.g. blown service fuse) -Electrical line failure -Breaker trip -Transformer failure -Motor starter failure/trip -Overdraw of power -Problems in electrical panel -Damage to electrical equipment from on-site operations	-Check/reset breaker -Check/repair electrical panel components -Check/repair transformer -Check/repair motor starter -Check/repair electrical line -Test amperage to various equipment -Contact electricity supplier -Contact/contract electrician -Provide auxiliary power (if necessary)
LFG Control Device	Combusts LFG	Low temperature conditions at control device	-Problems with temperature - monitoring equipment -Problems/failure of -thermocouple and/or thermocouple wiring -Change of LFG flow -Change of LFG quality -Problems with air louvers -Problems with air/fuel controls -Change in atmospheric conditions	-Check/repair temperature monitoring equipment -Check/repair thermocouple and/or wiring -Follow procedures for loss of flow/blower malfunction -Check/adjust louvers -Check/adjust air/fuel controls
LFG Control Device	Combusts LFG	Loss of Flame	-Problems/failure of thermocouple -Loss/change of LFG flow -Loss/change of LFG quality -Problems with air/fuel controls -Problems/failure of flame sensor -Problems with temperature monitoring equipment	-Check/repair temperature monitoring equipment -Check/repair thermocouple -Follow procedures for loss of flow/blower malfunction -Check/adjust air/fuel controls -Check/adjust/repair flame sensor -Check/adjust LFG collectors
Flow Monitoring/ Recording Device	Measures and records gas flow from collection system to control	Malfunctions of Flow Monitoring/Recording Device	-Problems with orifice plate, pitot tube, or other in-line flow measuring device -Problems with device controls and/or wiring -Problems with chart recorder	-Check/adjust/repair flow measuring device and/or wiring -Check/repair chart recorder -Replace paper in chart recorder

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Temperature Monitoring/ Recording Device	Monitors and records combustion temperature of enclosed combustion device	Malfunctions of Temperature Monitoring/Recording Device	-Problems with thermocouple -Problems with device controls and/or wiring -Problems with chart recorder	-Check/adjust/repair thermocouple -Check/adjust/repair controller and/or wiring -Check/adjust/repair electrical panel components -Check/repair chart recorder -Replace paper in chart recorder
Control Device	Combusts LFG	Other Control Device Malfunctions	-Control device smoking (i.e. visible emissions) -Problems with flare insulation -Problems with pilot light system -Problems with air louvers -Problems with air/fuel controllers -Problems with thermocouple -Problems with burners -Problems with flame arrester -Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	-Site-specific diagnosis procedures -Site-specific responses actions based on diagnosis -Open manual louvers -Clean pitot orifice -Clean/drain flame arrestor -Refill propane supply -Check/repair pilot sparking system
Collection Piping	Conduit movement of LFG flow	Blockage of LFG Flow	-Collection piping blockages due to build-up of liquid -Problems due to settlement (e.g. pipe separation, deformation, development of low points)	-Follow procedures for loss of LFG flow/blower malfunction -Repair blockages in collection piping -Repair settlement in collection piping -Re-install, repair or replace piping

APPENDIX B

SSM Plan Reporting Forms

Section 1 - All Events

Type of Event	Military Time Date/Time Start	Date/Time End	Duration (hours)	Event Code (see back of form)	SOP* Followed? Yes	No**
☐ Startup						
☐ Shutdown						
☐ Malfunction					Complete Section 2 Below	
☐ Non-malfunction						

Date Form Filled Out: ____________________ Signature: ____________________

** Standard Operating Procedure (SOP) for Flare Startups (Manual & Automatic) and Shutdowns are provided in SSM Plan*

If SOP in SSM Plan was not followed, **notify Market Area General Manager, District Manager or Engineering/Compliance Manager.

Section 2 - Malfunction Events Only

Step	Corrective Action Procedures for All Malfunctions	*Check one of the following for each step:* Procedure completed	Procedure Not Applicable
1.	Determine if the malfunction causing an unsafe operating condition (air entering landfill or piping, smoking, vibration, or other problem), which may harm people, the environment or the landfill gas control equipment. *If conditions are unsafe,* ***notify your supervisor*** *and follow steps under No. 3*		
2.	Determine if landfill gas being released to the air (can you smell landfill gas, or measure/detect uncombusted gas flow?). *If landfill gas is being released, follow steps under No. 3*		
3.	If unsafe operating condition exists, or landfill gas is being released to the air, stop (if possible) landfill gas flow by one or more of the following: a. Close nearest valve to source of emissions b. Place a temporary cap on piping c. Apply other device (i.e. duct tape) d. Shut down blower e. Turn off main power disconnect switch to blower f. Other (Describe): ____________________ Note: If flare is shut down, follow shutdown SOP and record shutdown time in Section 1 (above)		
4.	Determine if other personnel/resource (qualified technician, electrician, consultant or other) are needed for malfunction diagnosis. *If other personnel or resources are not needed, go to No. 6*		
5.	Contact qualified resource: a. Record contact name, date and time: ____________________ b. Contact site representative with information recorded in #5.a.		
6.	Start malfunction diagnosis.		
7.	Determine if other resources are needed to fix the malfunction (qualified technician, electrician, contractor, on-site resources, manufacturer's representative, or other). *If other resources are not needed, go to No. 9*		
8.	Contact qualified resource: a. Record contact name, date and time: ____________________ b. Contact site representative with information recorded in #8.a.		
9.	Fix the malfunction.		
10.	Once the malfunction is fixed, re-start the system per SOP if it had been shut down, and record start-up times and dates on this form.		
11.	Record date that malfunction occurred, date that malfunction was repaired, and total time that system was out of service in boxes in Section 1 of this form.		
12.	Sign this form, copy it, and place it in the Start-up, Shutdown, Malfunction file.		
13.	If the procedures listed above were not followed, contact the site engineer immediately.		

Berman Road Landfill - SSM PLAN DEPARTURE REPORT FORM

EVENT CODES

For Start-ups and Shutdowns:

Startup: The setting in operation of an affected source or portion of an affectes source for any purpose.

Shutdown: The cessation of operation of an affected source or portion of any source for any purpose.

Code	Event
1	Maintenance
2	Suspected Collection System Malfunction
3	Suspected Control Device Malfunction
4	Suspected Continuous Monitoring System Malfunction (Temperature/Flow/Other)
5	Training
6	Gas System Construction/Expansion
99	Other (Describe)

For Malfunctions:

Malfunction: Any sudden, infrequent and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

10	Automatic shutdown of control device by designed protective systems
11	Autodialer Callout
12	Shutdown alarms that result in the device not shutting down
13	Unalarmed shutdown
14	Control Device Smoking
15	Inspection identified malfunction
16	Loss of power - utility down
17	Loss of power - unknown
18	Damaged Well, Header or Lateral Piping
19	Leaks at wellheads, valves, flanges, test ports, seals, couplings, etc.
20	Condensate Knock-out Problems
21	Collection Piping Blockages
22	Problems due to Settlement
23	Loss of phase
24	Blower overload condition
25	Blower bearing failure
26	Broken belts (if belt-drive) or broken coupling (if direct-drive) in blower
27	Continuous Monitoring System Malfunction - Thermocouple
28	Continuous Monitoring System Malfunction - UV Scanner
29	Continuous Monitoring System Malfunction - Flow Monitor
30	Continuous Monitoring System Malfuction - Flow Recorder
31	Continuous Monitoring System Malfuction - Temperature Recorder
32	Act of God (i.e., lightning, wind, etc.)
99	Other (Describe)

1. Type of Event:	☐ Startup	☐ Shutdown	☐ Malfunction
2. Date:	Time: (Military)	Duration:	
3. Provide detailed explanation of the circumstances of the startup, shutdown, or malfunction:*			
4. Provide description of corrective actions taken:*			
5. Describe the reasons the SSM Plan was not followed:*			
6. Describe any proposed revisions to the SSM Plan:*			
7. Name (print):			
8. Title			

*Use additional sheets if necessary.

Note: If the event documented in this form was a malfunction and if the SSM plan needs to be revised to address the particular type of malfunction that occurred, the revision of the SSM plan must be made within 45 days of the event.

This form is intended to assist in meeting the recordkeeping and reporting requirements of 40 CFR 63.6(e)(3)(iv).

Appendix Q

Permit Application 1270-1

Facility ID No. 0930104

Procedures for Start Up and Shut Down For EU-003, New EU-006 and New EU-007

MUNICIPAL SOLID WASTE LANDFILL GAS COLLECTION AND CONTROL SYSTEM (GCCS)

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

Okeechobee Landfill, Inc.
Berman Road Landfill
Okeechobee, Florida

Prepared by:
Okeechobee Landfill, Inc.
10800 N.E. 128th Avenue
Okeechobee, FL 34972
(863)357-0111

Date of Issuance:
August 8, 2005

☐ This version of this plan has been superseded.

If the box above has been checked, complete the following information:

This copy of the plan may be discarded after ____________________________
(enter the date that is 5 years after date on which this version was superseded by a newer version)

MUNICIPAL SOLID WASTE LANDFILL
GAS COLLECTION AND CONTROL SYSTEM (GCCS)

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

Berman Road Landfill
Okeechobee, Florida

This startup, shutdown and malfunction (SSM) plan (SSM Plan) was prepared by Okeechobee Landfill, Inc. (OLI) in order to comply with the requirements of 40 CFR 63.6(e)(3), as this facility is subject to 40 CFR Part 63, Subpart AAAA, the National Emission Standard for Hazardous Air Pollutants (NESHAPs) for Municipal Solid Waste (MSW) landfills. The SSM Plan contains all of the required elements set forth within 40 CFR 63.6(e).

This SSM Plan will be revised if the procedures described herein do not adequately address any malfunction or startup/shutdown events that occur at the facility. A copy of the original plan and all revisions/addenda will be kept on file at the facility for at least five (5) years. John Van Gessel, Vice President and Assistant Secretary and Mike Stallard, District Manager are responsible for assuring that the most recent copy of this SSM Plan is made available to all personnel involved with the landfill gas (LFG) collection and control system (GCCS) at Berman Road Landfill as well as to appropriate regulatory agency personnel for inspection.

Name of Plan Preparer: ______________________________
Name Date

Approved:
John Van Gessel
Vice President and Assistant Secretary: ______________________________
Name Date

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A Common Causes and Response Actions for GCCS Malfunctions
B SSM Reporting Forms

1 Revision History

Add the effective date of the most-recent revision to the list below. Do not overwrite or delete any dates. This is intended to be a complete record of all revisions made to this plan and assists in making certain that all plan versions are retained for at least 5 years as required by §63.6(e)(3)(v).

Date of Initial Issuance
January 16, 2004
Revision Dates
January 26, 2005
August 8, 2005

2 Introduction

2.1 Purpose and Scope

The municipal solid waste (MSW) landfill owner or operator of an affected source must develop and implement a written Startup, Shutdown and Malfunction (SSM) Plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown and malfunction; a program of corrective action for malfunctioning processes; and air pollution control and monitoring equipment used to comply with the relevant standards. The purpose of the SSM Plan is to:

- Ensure that, at all times, the MSW landfill owner or operator operates and maintains the affected source, including associated air pollution control and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions to the levels required by the relevant standards;
- Ensure that MSW landfill owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants (HAP); and
- Reduce the reporting burden associated with periods of startup, shutdown and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

A more detailed summary of the regulatory background and summary of requirements for preparation and use of a startup, shutdown and malfunction (SSM) plan (SSM Plan) is contained in the document "Guidance for Preparation of Startup, Shutdown and Malfunction Plans", Waste Management, Inc., October 27, 2003 for guidance and instructions for completing and customizing the plan.

The Berman Road Landfill is an existing affected source under the Maximum Achievable Control Technology (MACT) rule for MSW landfills. Berman Road Landfill is subject to the MSW Landfill New Source Performance Standards (NSPS). Because it is NSPS applicable, it is also subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for MSW Landfills. As such, a SSM Plan is required to be prepared and implemented for this landfill site by January 16, 2004 and this SSM Plan meets or exceeds this requirement.

The management of the Berman Road Landfill fully understands and acknowledges the SSM Plan requirements of the MACT rule. This SSM Plan has been developed to specifically address these requirements as summarized above.

2.2 Description Of SSM Plan

This SSM Plan has been divided into three major sections comprising the major elements related to startup, shutdown and/or malfunction of a landfill gas (LFG) collection and control system (GCCS) at a MSW landfill. Malfunction events are distinct events when the GCCS is not operating in accordance with NSPS/EG requirements and which result, or have the potential to result, in an exceedance of one or more emission limitations or operational standards under the NSPS/EG. Startup and shutdown events are generally planned events associated with system repair, maintenance, testing and upgrade and may or may not be related to or occur in association with a malfunction of the GCCS.

2.3 Site Equipment Subject To This SSM Plan

The following components of the GCCS are subject to this SSM Plan:

Collection wells and other collectors
Lateral and header extraction piping
LFG mover equipment
Temperature monitoring and recording equipment
Flow monitoring and recording equipment
Enclosed Flares
Open, Unenclosed Flare
Leachate EVAP Systems
Condensate Knockout/Collection

2.4 Site Equipment NOT Subject To This SSM Plan

The following components of the GCCS are NOT subject to this SSM Plan:

Passive, Solar Flares

Berman Road Landfill is not considering the passive, solar flares as part of this SSM Plan because these devices are not used as part of the GCCS for compliance with NSPS requirements. The passive, solar flares are used for temporary control of newly installed landfill gas wells to control the odor emitted from them prior to final connection to the active GCCS. Prior to connection to the active GCCS, the subject wells are not considered NSPS applicable, therefore, the passive, solar flares would not be NSPS or NESHAP applicable.

3 Startup/Shutdown Plan

This section details procedures for the startup of the GCCS to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions to the levels required by the relevant standards.

Pursuant to the requirements of the NSPS/EG for MSW landfills, a GCCS must be installed and operated when the landfill exceeds a threshold of 50 Megagrams (Mg)/year nonmethane organic compounds (NMOC) and meets all the applicable criteria for a controlled landfill.

3.1 How to Identify a GCCS Startup / Shutdown Event

The regulatory definition of "startup" reads as follows:

> "**Startup** means the setting in operation of an affected source or portion of an affected source for any purpose." (§63.2)

The regulatory definition of "shutdown" reads as follows:

> **"Shutdown** means the cessation of an affected source or portion of an affected source or portion of an affected source for any purpose." (§63.2)

GCCS startup operations and shutdown events generally include startup or shutdown of gas mover equipment, LFG control devices and any ancillary equipment that could affect the operation of the GCCS (e.g., power supply, air compressors, etc.). This section details procedures for the startup and/or shutdown of the GCCS to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions to the levels required by the relevant standards.

The following list includes events that may necessitate a shutdown of the GCCS at a MSW Landfill. This list should not be considered exhaustive.

Table 3-1—Potential Events Necessitating Shutdown of the GCCS

Control Device Maintenance, Repair or Cleaning
Addition of New GCCS Components
Extraction Well Raising
Vertical well(s), horizontal collector(s) isolation/shutdown for well/landfill cover maintenance and construction
Movement of LFG Piping to Accommodate New Components or Filling Operations
Source Testing
Gas Mover Equipment Maintenance, Repair or Cleaning
Gas Processing Equipment Maintenance, Repair or Cleaning
Ancillary Equipment (e.g., compressors, etc.) Maintenance, Repair or Cleaning
New Equipment Testing and Debugging
Shutdown and Subsequent Startup to Address Malfunctions or Other Occurrences
Planned Electrical Outages
Horizontal collectors buildup of liquid ("watered out")
Gas collection system header buildup of liquid ("watered out")

3.2 Actions To Take When the GCCS is Started-Up

The following provides a summary of typical response actions for startup of the GCCS.

3.2.1 Gas Mover and Collection System

The following activities may have the potential to emit regulated air pollutants to the atmosphere during startup of the collection system portion of GCCS: (1) purging of gases trapped within piping system prior to normal operation; (2) repair of system leaks discovered during startup and (3) all other activities after construction of the system but prior to fulltime operation, which could release HAPs from the collection system. These activities would be subject to the Startup Plan portion of the SSM Plan.

During such activities, work shall progress such that air emissions are minimized to the greatest extent possible by:

- Temporarily capping pipes venting gas if such capping does not impact safety or the effective construction of the system.

- Minimizing surface area allowing gas to emit to the atmosphere to the extent that it does not impact safety or the effective construction of the system.
- Ensuring that other parts of the system, not impacted by the activity, are operating in accordance with the applicable requirements of NSPS/EG.
- Limiting the purging of piping to as short duration as possible to ensure safe combustion of the gas in the control device.

GCCSs, once installed, are "closed" systems designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point with the control device(s) with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time and subsequently opened. Opening these valves shall not be considered a startup, unless such an activity causes the venting of gas to the atmosphere. If the activity results in emissions to the atmosphere, the actions listed above shall be followed.

The operation of the collection system, once installed, shall be consistent with the provisions of NSPS/EG as well as the GCCS Design Plan, which has been developed and approved for the facility.

3.2.2 Control Device(s):

Personnel shall follow the procedures as identified below when starting the respective control devices. Control devices operating at MSW landfills normally undergo planned startups. However, flare systems are designed for unattended operation. There are instances when the flare system will shutdown and automatically restart. The shutdown may occur when there is a brief interruption of gas flow to the flare. These shutdown events are followed by an automatic startup sequence as described in the standard operating procedures listed below and incorporated by reference as part of this SSM Plan.

The flare temperature and/or flow recorders will document significant decreases in temperature and/or flow measurements followed by an almost immediate increase back to normal ranges whenever the automatic shutdown/startup sequence occurs. Documentation of the date, time and duration of these automatic shutdown/startup events is contained in the flare temperature and/or flow charts. In addition, there are no actions that need to be taken to affect the shutdown/startup sequence in these instances; therefore, these activities do not need to be documented beyond the information already contained on chart recorders. Documentation of automatic shutdown/startup events will be included in the semi-annual reports.

3.3 Actions To Take When The GCCS Is Shutdown

3.3.1 Collection System

GCCSs, once installed, are "closed" systems designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point with the control device(s) with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time. Closing these valves shall be considered a shutdown, only when such an activity causes an exceedance of the provisions of NSPS/EG and/or any subsequent approvals of alternatives in the facility's GCCS Design Plan or approved variances issued thereafter. The parameters used to determine if there has been an exceedance that would trigger the need for implementing the SSM Plan would be the monthly well monitoring parameters of pressure (>0 in Hg). An individual well may have a differing monitoring parameter that will be documented in the NSPS GCCS Plan or approved in a Permit. These values will be used in place of those listed above. If one or more well exceed one or more of these parameters, then the SSM Plan will be invoked. Because the closing of valves usually occur

when multiple wells are closed or isolated by a header or lateral valve, these occurrences will be considered "events" and documented with by completing a single **SSM Report Form** (Appendix B), not individual SSM Report Forms for each well affected by the shutdown. The well(s) that are part of the "event" will normally be returned to services less than 5 days after isolation of multiple wells or closing of individual wells.

3.3.2 Control Device(s):

Personnel shall follow the procedures as identified below when shutting down the respective control devices. Control devices operating at MSW landfills normally undergo planned shutdown for the various events listed above. Shutdowns for equipment malfunction or breakdown should be addressed in the malfunction plan. Control device shutdown guidance are described in the standard operating procedures in the flare Operation & Maintenance (O&M) Manual incorporated as part of this SSM Plan, as listed below. In addition to the procedures outline in the O&M Manual, the flare can be shutdown safely by turning off power to the control panel. Power can be turned off by pressing the large red button on the control panel or by throwing the main power breaker switch for the control panel.

Table 3-2—Startup / Shutdown Guidance Procedure Reference

Device Name	Operations manual, notes, report, etc.	
	Title	Page(s)
Enclosed Flare – Unit# 1776	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section
Enclosed Flare – Unit# 1698	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section
Open, Unenclosed Flare – Unit# 1495	LFG Specialties Utility Flare System O&M Manual	Section 2.0 – Operation Sub-Section
Leachate EVAP System – Unit# 3016 - STARTUP	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Operation, Pages viii-xii
Leachate EVAP System – Unit# 3016 - SHUTDOWN	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Sequence of Operations for Flame Supervisory System; Step 7
Leachate EVAP System – Unit# 3004IM – STARTUP	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Operation, Pages viii-xii
Leachate EVAP System – Unit# 3004IM – SHUTDOWN	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II – Sequence of Operations for Flame Supervisory System; Step 7

3.4 What to Record for All Startup / Shutdown Events

The operator shall record the following information on the attached **SSM Report Form** (Appendix B), which should be retained in the landfill operating record for five (5) years:

- The date and time the startup/shutdown occurred.
- The duration of the startup/shutdown.
- The actions taken to effect the startup/shutdown.
- Whether procedures in this SSM Plan were followed. If the procedures in the SSM Plan were not followed, a **SSM Plan Departure Report Form** (Appendix B) must also be completed.
- If an applicable emission limitation was exceeded, a description of the emission standard that was exceeded.

3.5 Whom to Notify at the Facility in Case of a Startup/Shutdown Event

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager should be verbally notified within a reasonable timeframe of the startup/shutdown.
- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager should be verbally notified within a reasonable timeframe of progress of the diagnosis and resolution of the startup/shutdown.
- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager and Miguel Delgado, Engineering Manager should be verbally notified when the alternative timeframe for startup/shutdown has been established if it is outside of the timeframes currently allowed by the NSPS/EG for particular compliance elements.
- The **SSM Report Form** should be initially prepared upon startup/shutdown, or discovery of an automatic startup/shutdown and implementation of the SSM Plan. The form should be finalized by the operator on duty upon successful implementation of the SSM Plan and submitted to the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager. The original form should be retained in the landfill operating record for five (5) years.

3.6 What to Report for a Startup/Shutdown Event

- If the actions taken during the startup/shutdown **were consistent** with this SSM Plan, file the necessary information in your semi-annual SSM report (*within 30 days following the end of each 6-month period*) with the following information included:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official; and
    3. Statement that the actions taken during the startup or shutdown were consistent with the SSM Plan.

- If the actions taken during a startup **were not consistent** with this SSM Plan, the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager must report the actions taken to the enforcing authority by telephone or facsimile transmission within two (2) working days after the startup or shutdown. A letter must then be sent to the enforcing authority within seven (7) working days after the subject startup or shutdown. The letter should be sent by certified or registered mail or overnight delivery service and must include the following information:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);
    3. Detailed explanation of the circumstances of the start/shutdown;
    4. The reasons the SSM Plan was not adequate; and whether any excess emissions and/or parameter monitoring exceedances is believed to have occurred during the event.
    5. A copy of the **SSM Plan Departure Report Form.**

- Note: If the revisions to the SSM Plan alter the scope of the process activities at Berman Road Landfill or otherwise modify the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule and/or the NSPS/EG, the revised SSM Plan is not effective until written notice has been provided to the permitting authority describing the SSM Plan revision(s).

4 Malfunction Plan

4.1 How to Identify a GCCS Malfunction

The regulatory definition of "malfunction" reads as follows:

> "**Malfunction** means any sudden, infrequent and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions." (§63.2, revised 5/30/03)

The following list includes events that may constitute a malfunction of the GCCS at Berman Road Landfill. The cause of these events should be investigated immediately in order to determine the best course of action to correct the malfunction. Each of these malfunctions could have multiple causes that need to be evaluated and possibly considered. It is the intent of this SSM Plan to include all possible causes for the specific malfunction events. Common malfunction events for LFG collection and control systems are listed in Table 4-1.

Table 4-1—Potential Malfunction Events

Possible Malfunction	Section
Loss of LFG Flow/Gas Mover Malfunction	4.3
Loss of Electrical Power	4.4
Low Temperature Conditions at Control Device	4.5
Loss of Flame at the Control Device	4.6
Malfunction of Flow Measuring/Recording Device	4.7
Malfunction of Temperature Measuring/Recording Device	4.8
Collection Well and Pipe Failures	4.9
Other Control Device Malfunctions	4.10
Malfunction of Field Monitoring Equipment	4.11
Buildup of Liquid in Piping	4.12

For one of these occurrences to be considered a malfunction that is required to be addressed by this SSM Plan, it must result in, or have the potential to result in, an exceedance of one or more of the NSPS/EG operational and compliance requirements or the provisions of the MACT rule (e.g., exceedance, reading outside of required operational range, etc). The following list constitutes the possible exceedances of the New Source Performance Standards (NSPS) for MSW landfills and/or the state/local emission guidelines (EG) rule that could occur due to a malfunction of GCCS, thereby necessitating implementation of this SSM Plan:

Table 4-2— Potential Emission Limitation Exceedances Caused by Malfunction Events

GCCS downtime of greater than 5 days (if alternative timeframe has not been established)
Free venting of collected LFG without control for greater than one hour
Control device temperatures excursions in which 3-hour block average is less than established minimum temperature
Downtime for temperature monitoring and/or recording equipment of greater than 15 minutes (if alternative timeframe has not been established)
Any downtime for LFG flow monitoring and/or recording equipment (if alternative timeframe has not been established)
Reserved for modifications or reinterpretations of the NSPS rule by the U.S. EPA or state/local jurisdiction or state/local requirements that are in addition to or more stringent than NSPS/EG

If the occurrence does not result in an exceedance of an applicable emission limitation, or does not have the potential to result in such an exceedance, then **it is not required to be corrected in accordance with this SSM Plan**, although use of the plan may still be advisable. Malfunctions should be considered actionable under this SSM Plan whether discovered by the MSW landfill owner or operator during normal operations or by a regulatory agency during compliance inspections.

The operator should follow all the corrective action, notification, record keeping and reporting procedures described herein in case of malfunction of the GCCS.

4.2 Actions to Take When The GCCS Malfunctions—All Malfunctions

- Determine whether the malfunction has caused an exceedance, or has the potential to cause an exceedance, of any applicable emission limitation contained in the NSPS/EG or MACT.
- Identify whether the malfunction is causing or has caused excess emissions to the atmosphere. If excess emissions are occurring, take necessary steps to reduce emissions to the maximum extent possible using good air pollution control practices and safety procedures.
- Contact the site John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager immediately and proceed with the malfunction diagnosis and correction procedures described in Appendix A ("Common Causes and Response Actions for GCCS Malfunctions") for each specific malfunction.
- Site-specific malfunction and/or troubleshooting procedures are contained in the documents or appendices referenced below. Personnel shall follow these guidance procedures when addressing a malfunction of a collection system or control device.

Table 4-3—Malfunction Guidance Procedure Reference

Control Device ID	Operations manual, notes, report, etc.	
	Title	Page(s)
Enclosed Flare – Unit# 1776	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section; Steps 7-10
Enclosed Flare – Unit# 1698	LFG Specialties Enclosed Flare System O&M Manual	Section 2.0 – Operation Sub-Section; Steps 7-10
Open, Unenclosed Flare – Unit# 1495	LFG Specialties Utility Flare System O&M Manual	Section 2.0 – Operation Sub-Section; Steps 5-11
Leachate EVAP System – Unit# 3016	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II –
Leachate EVAP System – Unit# 3004IM	LFG Specialties Leachate Evaporator System O&M Manual	Section 1.0 –Sub-Section II –

- If the procedures in this SSM Plan do not address or adequately address the malfunction that has occurred, the operator should attempt to correct the malfunction with the best resources available. John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager should be notified of this situation immediately. Complete a **SSM Plan Departure Report Form** (Appendix B) as discussed in Section 4.14. The SSM Plan must be updated to better address this type of malfunction.

- Notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager of the progress of the diagnosis and correction procedures and status of the malfunction as soon as practicable.

- If the GCCS malfunction cannot be corrected within the time frame specified in the NSPS/EG, notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager and proceed to shutdown the control device and/or the process(es) venting to the control device, if this has not already automatically occurred.

- If the GCCS malfunction cannot be corrected within the time frame allowed by the NSPS/EG rule for each specific malfunction, define the appropriate alternative timeframe for corrective action that is reasonable for the type of repair or maintenance that is required to correct the malfunction.

- If the GCCS malfunction cannot be corrected within alternative timeframe for corrective action specified above, notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager and conduct the appropriate record keeping and reporting required for deviations of the MACT rule and Title V permit.

- Once the malfunction is corrected, notify the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager as soon as the system is operational.

- Complete the **SSM Plan Departure Report Form** (Appendix B) after the malfunction diagnosis and correction procedures are completed.

- If the procedures in this SSM Plan do not address or adequately address the malfunction that has occurred, the operator should note the circumstances and the actual steps taken to correct the malfunction in the **SSM Report Form** (Appendix B). This SSM Plan will need to be revised based on this information, as described in Section 4.13 below.

- Follow procedures in Sections 4.12 through 4.14, as appropriate, to adequately document, notify and report the malfunction and corrective action.

4.3 Loss of LFG Flow/Gas Mover Malfunction

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.4 Loss of Electrical Power

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if malfunction cannot be corrected within the established timeframe.

4.5 Low Temperature Conditions at the Control Device

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction causes an exceedance of the control device's minimum temperature for a 3-hour block average, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

- If the malfunction causes the GCCS to go off-line and cannot be corrected within the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.6 Loss of Flame at the Control Device

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- If system will not restart, follow also the procedures in Section 4.3, above: **Loss of LFG Flow.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.7 Malfunctions of Flow Monitoring/Recording Device

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected in the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.8 Malfunctions of Temperature Monitoring/Recording Device

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within 15 minutes, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.9 Collection Well and Pipe Failures

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**
- Follow also the procedures in Section 4.3, above: **Loss of Flow/Gas Mover Malfunction.**
- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.
- If the malfunction causes the entire GCCS to go off-line and cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.10 Other Control Device Malfunctions

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**
- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.
- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.
- If the malfunction causes an exceedance of the control device's minimum temperature for a 3-hour block average, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.
- If the malfunction causes the entire GCCS to go off-line and cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.11 Malfunctions of Field Monitoring Equipment

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**
- Verify that malfunction of monitoring equipment will cause a deviation of the NSPS/EG requirements for wellhead and/or surface emissions monitoring.
- Conduct diagnostic procedures to identify the cause of the malfunction.
- Repair the device or obtain replacement device to complete the monitoring as required by the NSPS/EG.

- Conduct proper calibration procures before use of the device for NSPS/EG compliance monitoring.

- If the malfunction cannot be corrected so that the monitoring equipment can be used for the purposes required by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.12 Buildup of Liquid in Piping

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Verify that blockage resulting from the build-up of liquid will cause a deviation of the NSPS/EG requirements for operation of the control devices by restricting flow resulting in low operating temperature.

- Verify that blockage resulting from the build-up of liquid will cause a deviation of the NSPS/EG requirements for operation of the collection system by restricting flow resulting in positive pressures at the wellheads.

- Conduct diagnostic procedures to identify the cause and the location of the build-up of liquid.

- Follow shutdown procedures for the gas mover and control devices outlined in Section 4. Allow condensate to drain, or manually remove excess condensate from the piping via use of water pumps.

- Follow startup procedures for the gas mover and control devices outlined in Section 3.

- Assess whether liquid removal remedied the low flow conditions.

4.13 What to Record for a Malfunction

The operator must record the following information on the attached **SSM Report Form**, which must be retained in the landfill operating record for five (5) years:

- The date and time the malfunction occurred.

- The duration of the malfunction.

- A description of the affected equipment.

- The cause or reason for the malfunction (if known).

- The actions taken to correct the malfunction (checklist).

- Whether the procedures in this SSM Plan were followed. If the procedures in the plan were not followed, a **SSM Plan Departure Report Form** must also be completed.

- A description of the emission standard that was exceeded or had the potential to be exceeded.

4.14 Whom to <u>Notify</u> at the Facility in Case of a Malfunction

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified immediately of the malfunction.

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified within a reasonable timeframe of progress of the diagnosis and corrective action of the malfunction.

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified when the alternative timeframe for corrective action has been established if it is outside of the timeframes currently allowed by the NSPS/EG for particular compliance elements.

- John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager shall be notified if the malfunction cannot be corrected within the timeframe allowed by the NSPS rule or the alternate timeframe established under this SSM Plan. Notification should also occur if the current SSM Plan had not addressed the malfunction.

- The **SSM Report Form** shall be initially prepared upon discovery of the malfunction and implementation of the SSM Plan. The form shall be finalized by the operator on duty upon successful implementation of the SSM Plan and submitted to John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager. The original form must be retained in the landfill operating record for five (5) years.

4.15 What to <u>Report</u> for a Malfunction Event

- If the actions taken during the malfunction **<u>were consistent</u>** with this SSM Plan and the malfunction resulted or had the potential to result in an exceedence of an applicable emission standard, file the necessary information in your semi-annual SSM report (*within 30 days following the end of each 6-month period*) with the following information included:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.); and
    3. Statement that the actions taken during the malfunction were consistent with the SSM Plan.

- If the actions taken during a malfunction **<u>were not consistent</u>** with this SSM Plan and the malfunction resulted in or had the potential to result in an exceedance of an applicable emission standard, (see items listed under Step 1 above), John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager must report the actions taken to the enforcing authority by telephone or facsimile (FAX) transmission within two (2) working days after commencing the actions that were inconsistent with the plan. A letter must then be sent to the enforcing authority within seven (7) working days after the malfunction. The letter should be sent by certified or registered mail or overnight delivery service and must include the following information:

    1. Name and title of John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager;
    2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);

3. Detailed explanation of the circumstances of the malfunction;
4. The reasons the SSM Plan was not adequate; and
5. Whether any excess emissions and/or parameter monitoring exceedances is believed to have occurred during the event.
6. Prepare and include **SSM Plan Departure Report Form.**

- If the actions taken during the malfunction **were not consistent** with this SSM Plan, the John Van Gessel, Vice President and Assistant Secretary; Mike Stallard, District Manager or Miguel Delgado, Engineering Manager at the landfill must:

    1. Revise the SSM Plan within 45 days after the malfunction to include procedures for operating and maintaining the GCCS during similar malfunction events.
    2. Include the revised SSM Plan in the semi-annual report (within 30 days following the end of each 6-month period).

Note: If the revisions to the SSM Plan alter the scope of the process activities at Berman Road Landfill or otherwise modify the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule and/or the NSPS/EG, the revised SSM Plan is not effective until written notice has been provided to the permitting/enforcing authority describing the SSM Plan revision(s).

APPENDIX A

Common Causes and Response Actions for GCCS Malfunctions

(Appendix A represents a summary of possible causes and response actions for GCCS malfunctions. The list is not considered to be exhaustive. The list of response actions is not intended to be a sequence of events that are to be implemented in order. Certain malfunction incidents may or may not be associated with the listed "common causes" nor will the "common response actions" be appropriate in all instances. Site-specific evaluation of the malfunctions and development of specific response actions is recommended in all cases.)

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment	Applies vacuum to wellfield to extract LFG and transport to control device	Loss of LFG Flow/Blower Malfunction	-Flame arrestor fouling/deterioration -Automatic valve problems -Blower failure (e.g., belt, motor, impeller, coupling, seizing, etc.) -Loss of power -Extraction piping failure -Condensate knock-out problems -Extraction piping blockages	-Repair breakages in extraction piping -Clean flame arrestor -Repair blockages in extraction piping -Verify automatic valve operation, compressed air/nitrogen supply -Notify power utility, if appropriate -Provide/utilize auxiliary power source, if necessary -Repair Settlement in Collection Piping - Repair Blower -Activate back-up blower, if available -Clean knock-up pot/demister -Drain knock-out pot
Extraction Wells and Collection Piping	Conduits for extractions and movement of LFG flow	Collection well and pipe failures	-Break/crack in header or lateral piping -Leaks at wellheads, valves, flanges, test ports, seals, couplings, etc. -Collection piping blockages -Problems due to settlement (e.g. pipe separation, deformation, development of low points)	-Repair leaks or breaks in lines or wellheads -Follow procedures for loss of LFG flow/blower malfunction -Repair blockages in collection piping -Repair settlement in collection piping -Re-install, repair, or replace piping -Review waste types, age of waste, etc.

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment And Control Device	Collection and control of LFG	Loss of electrical power	- Force majeure/Act of God (e.g., lightning, flood, earthquake, etc.) -Area-wide or local blackout or brown-out -Interruption in service (e.g. blown service fuse) -Electrical line failure -Breaker trip -Transformer failure -Motor starter failure/trip -Overdraw of power -Problems in electrical panel -Damage to electrical equipment from on-site operations	-Check/reset breaker -Check/repair electrical panel components -Check/repair transformer -Check/repair motor starter -Check/repair electrical line -Test amperage to various equipment -Contact electricity supplier -Contact/contract electrician -Provide auxiliary power (if necessary)
LFG Control Device	Combusts LFG	Low temperature conditions at control device	-Problems with temperature - monitoring equipment -Problems/failure of -thermocouple and/or thermocouple wiring -Change of LFG flow -Change of LFG quality -Problems with air louvers -Problems with air/fuel controls -Change in atmospheric conditions	-Check/repair temperature monitoring equipment -Check/repair thermocouple and/or wiring -Follow procedures for loss of flow/blower malfunction -Check/adjust louvers -Check/adjust air/fuel controls
LFG Control Device	Combusts LFG	Loss of Flame	-Problems/failure of thermocouple -Loss/change of LFG flow -Loss/change of LFG quality -Problems with air/fuel controls -Problems/failure of flame sensor -Problems with temperature monitoring equipment	-Check/repair temperature monitoring equipment -Check/repair thermocouple -Follow procedures for loss of flow/blower malfunction -Check/adjust air/fuel controls -Check/adjust/repair flame sensor -Check/adjust LFG collectors
Flow Monitoring/ Recording Device	Measures and records gas flow from collection system to control	Malfunctions of Flow Monitoring/Recording Device	-Problems with orifice plate, pitot tube, or other in-line flow measuring device -Problems with device controls and/or wiring -Problems with chart recorder	-Check/adjust/repair flow measuring device and/or wiring -Check/repair chart recorder -Replace paper in chart recorder

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Temperature Monitoring/ Recording Device	Monitors and records combustion temperature of enclosed combustion device	Malfunctions of Temperature Monitoring/Recording Device	-Problems with thermocouple -Problems with device controls and/or wiring -Problems with chart recorder	-Check/adjust/repair thermocouple -Check/adjust/repair controller and/or wiring -Check/adjust/repair electrical panel components -Check/repair chart recorder -Replace paper in chart recorder
Control Device	Combusts LFG	Other Control Device Malfunctions	-Control device smoking (i.e. visible emissions) -Problems with flare insulation -Problems with pilot light system -Problems with air louvers -Problems with air/fuel controllers -Problems with thermocouple -Problems with burners -Problems with flame arrester -Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	-Site-specific diagnosis procedures -Site-specific responses actions based on diagnosis -Open manual louvers -Clean pitot orifice -Clean/drain flame arrestor -Refill propane supply -Check/repair pilot sparking system
Collection Piping	Conduit movement of LFG flow	Blockage of LFG Flow	-Collection piping blockages due to build-up of liquid -Problems due to settlement (e.g. pipe separation, deformation, development of low points)	-Follow procedures for loss of LFG flow/blower malfunction -Repair blockages in collection piping -Repair settlement in collection piping -Re-install, repair or replace piping

APPENDIX B

SSM Plan Reporting Forms

Startup/Shutdown/Malfunction Report Form

WM Version 3.
August 8, 2005

Section 1 - All Events

Type of Event	Military Time: Date/Time Start	Military Time: Date/Time End	Duration (hours)	Event Code (see back of form)	SOP* Followed? Yes	SOP* Followed? No**
☐ Startup						
☐ Shutdown						
☐ Malfunction					Complete Section 2 Below	
☐ Non-malfunction						

Date Form Filled Out: ______________________ Signature: ______________________

* Standard Operating Procedure (SOP) for Flare Startups (Manual & Automatic) and Shutdowns are provided in SSM Plan
If SOP in SSM Plan was not followed, **notify Market Area General Manager, District Manager or Engineering/Compliance Manager.

Section 2 - Malfunction Events Only

Step	Corrective Action Procedures for All Malfunctions	*Check one of the following for each step:* Procedure completed	Procedure Not Applicable
1.	Determine if the malfunction causing an unsafe operating condition (air entering landfill or piping, smoking, vibration, or other problem), which may harm people, the environment or the landfill gas control equipment. *If conditions are unsafe,* ***notify your supervisor*** *and follow steps under No. 3*		
2.	Determine if landfill gas being released to the air (can you smell landfill gas, or measure/detect uncombusted gas flow?). *If landfill gas is being released, follow steps under No. 3*		
3.	If unsafe operating condition exists, or landfill gas is being released to the air, stop (if possible) landfill gas flow by one or more of the following: a. Close nearest valve to source of emissions b. Place a temporary cap on piping c. Apply other device (i.e. duct tape) d. Shut down blower e. Turn off main power disconnect switch to blower f. Other (Describe): ______________________ Note: If flare is shut down, follow shutdown SOP and record shutdown time in Section 1 (above)		
4.	Determine if other personnel/resource (qualified technician, electrician, consultant or other) are needed for malfunction diagnosis. *If other personnel or resources are not needed, go to No. 6*		
5.	Contact qualified resource: a. Record contact name, date and time: ______________________ b. Contact site representative with information recorded in #5.a.		
6.	Start malfunction diagnosis.		
7.	Determine if other resources are needed to fix the malfunction (qualified technician, electrician, contractor, on-site resources, manufacturer's representative, or other). *If other resources are not needed, go to No. 9*		
8.	Contact qualified resource: a. Record contact name, date and time: ______________________ b. Contact site representative with information recorded in #8.a.		
9.	Fix the malfunction.		
10.	Once the malfunction is fixed, re-start the system per SOP if it had been shut down, and record start-up times and dates on this form.		
11.	Record date that malfunction occurred, date that malfunction was repaired, and total time that system was out of service in boxes in Section 1 of this form.		
12.	Sign this form, copy it, and place it in the Start-up, Shutdown, Malfunction file.		
13.	If the procedures listed above were not followed, contact the site engineer immediately.		

Berman Road Landfill - SSM PLAN DEPARTURE REPORT FORM

EVENT CODES

For Start-ups and Shutdowns:

Startup: The setting in operation of an affected source or portion of an affectes source for any purpose.

Shutdown: The cessation of operation of an affected source or portion of any source for any purpose.

Code	Event
1	Maintenance
2	Suspected Collection System Malfunction
3	Suspected Control Device Malfunction
4	Suspected Continuous Monitoring System Malfunction (Temperature/Flow/Other)
5	Training
6	Gas System Construction/Expansion
99	Other (Describe)

For Malfunctions:

Malfunction: Any sudden, infrequent and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

10	Automatic shutdown of control device by designed protective systems
11	Autodialer Callout
12	Shutdown alarms that result in the device not shutting down
13	Unalarmed shutdown
14	Control Device Smoking
15	Inspection identified malfunction
16	Loss of power - utility down
17	Loss of power - unknown
18	Damaged Well, Header or Lateral Piping
19	Leaks at wellheads, valves, flanges, test ports, seals, couplings, etc.
20	Condensate Knock-out Problems
21	Collection Piping Blockages
22	Problems due to Settlement
23	Loss of phase
24	Blower overload condition
25	Blower bearing failure
26	Broken belts (if belt-drive) or broken coupling (if direct-drive) in blower
27	Continuous Monitoring System Malfunction - Thermocouple
28	Continuous Monitoring System Malfunction - UV Scanner
29	Continuous Monitoring System Malfunction - Flow Monitor
30	Continuous Monitoring System Malfuction - Flow Recorder
31	Continuous Monitoring System Malfuction - Temperature Recorder
32	Act of God (i.e., lightning, wind, etc.)
99	Other (Describe)

1. Type of Event: Malfunction	☐ Startup	☐ Shutdown	☐
2. Date:	Time: (Military)	Duration:	
3. Provide detailed explanation of the circumstances of the startup, shutdown, or malfunction:*			
4. Provide description of corrective actions taken:*			
5. Describe the reasons the SSM Plan was not followed:*			
6. Describe any proposed revisions to the SSM Plan:*			
7. Name (print):			
8. Title			

*Use additional sheets if necessary.

Note: If the event documented in this form was a malfunction and if the SSM plan needs to be revised to address the particular type of malfunction that occurred, the revision of the SSM plan must be made within 45 days of the event.

This form is intended to assist in meeting the recordkeeping and reporting requirements of 40 CFR 63.6(e)(3)(iv).

Appendix M2

Permit Application 1270-1

Facility ID No. 0930104

EU Process Flow Diagrams for New EU-006 and New EU-007

File: O:\05 WMI\okeechobee\drawings\835776A2-1B.dwg Layout: Layout1 User: kevin.kirmelewicz Aug 12, 2005 - 9:49am

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
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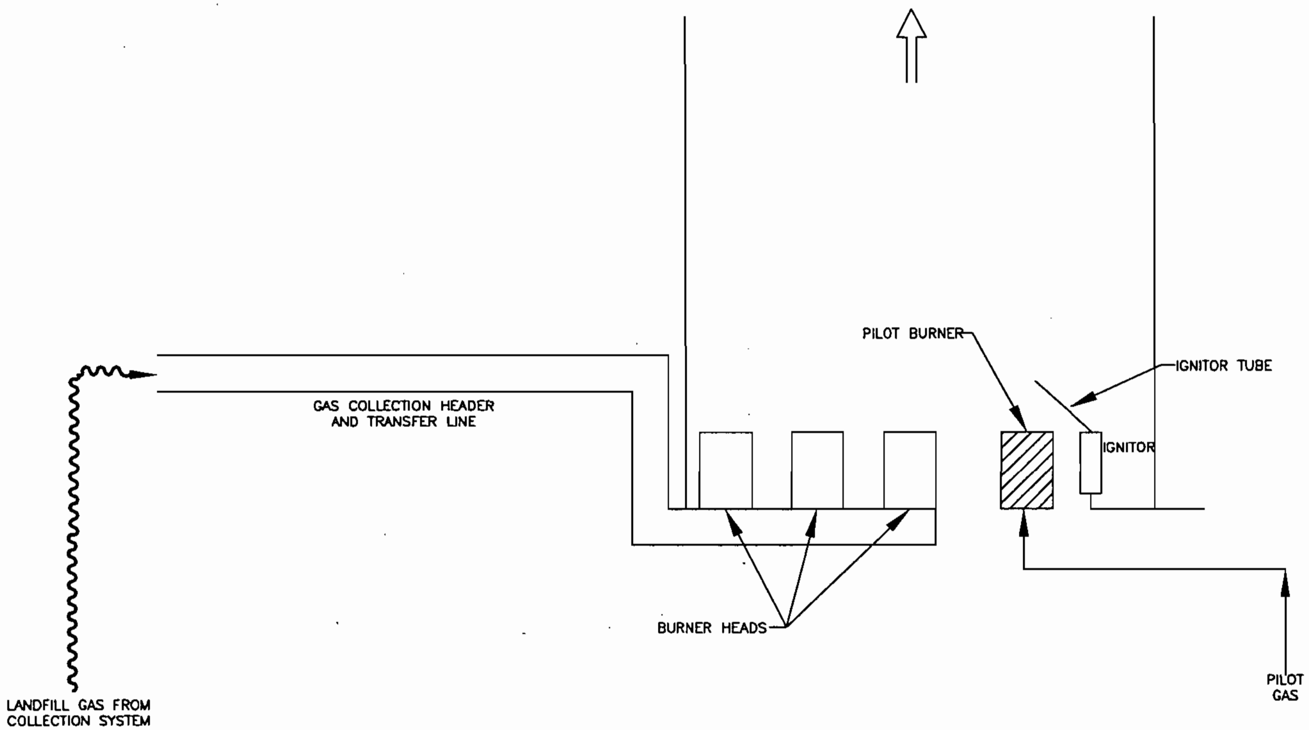

LEGEND

EMISSION POINT

PROCESS FLOW

DRAWING NOT TO SCALE

Shaw E & I, Inc.

OKEECHOBEE LANDFILL, INC.

EMISSION UNIT

PROCESS FLOW DIAGRAM

LANDFILL GAS FLARE

OKEECHOBEE LANDFILL

OKEECHOBEE, FLORIDA

Appendix M2

Permit Application 1270-1

Facility ID No. 0930104

EU Process Flow Diagrams for New EU-006 and New EU-007

File: O:\05 WMI\okeechobee\drawings\835776A2-1B.dwg Layout: Layout1 User: kevin.kirmelewicz Aug 12, 2005 - 9:49am

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
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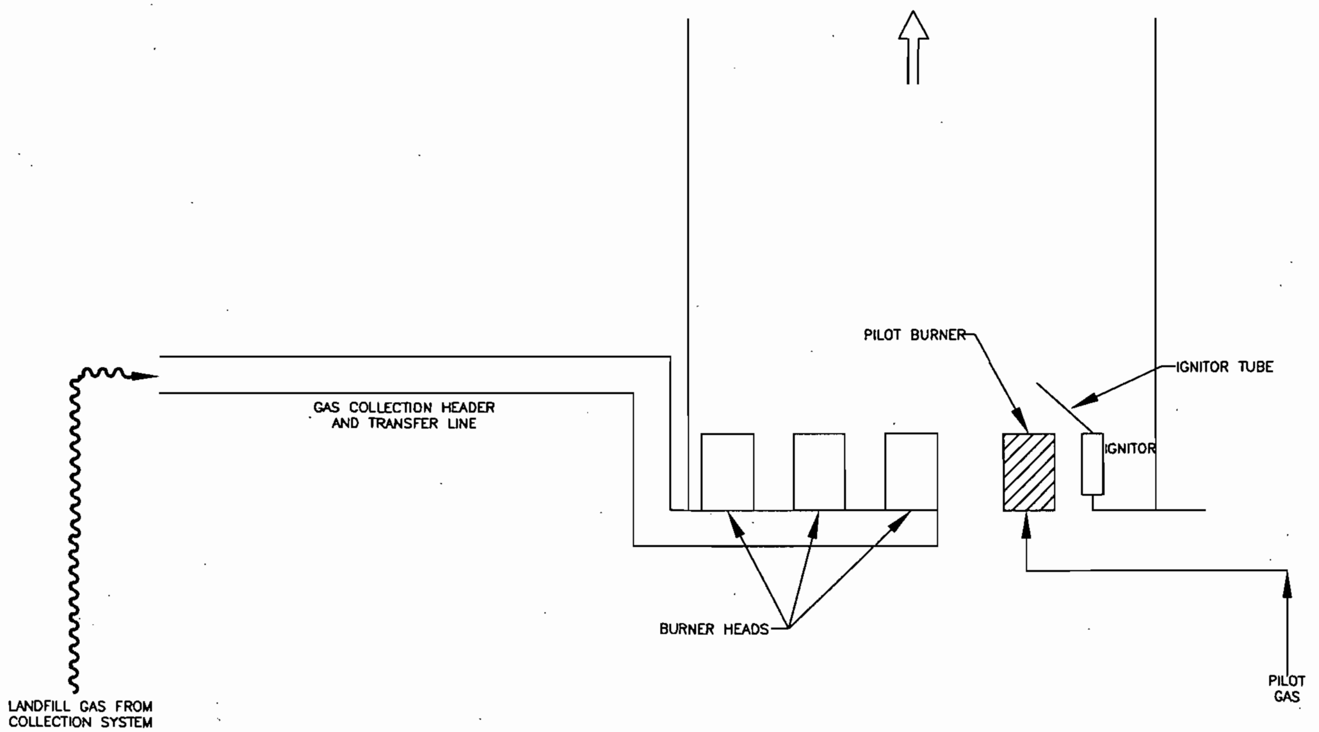

LEGEND

EMISSION POINT

PROCESS FLOW

DRAWING NOT TO SCALE

Shaw E & I, Inc.

OKEECHOBEE LANDFILL, INC.

EMISSION UNIT
PROCESS FLOW DIAGRAM
LANDFILL GAS FLARE
OKEECHOBEE LANDFILL
OKEECHOBEE, FLORIDA

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P. Adams
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111 S MAGNOLIA DR
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UNITED STATES Phone: 850-921-9505

EXP+

Pieces: 1/1

ORIGIN: TLH

Sender's ref 37550201000 A7 AP255

To: NATIONAL PARK SERVICE
MR. JOHN BUNYAK
12795 W. ALAMEDA PARKWAY
AIR DIVISION
LAKEWOOD, CO 80228
UNITED STATES

POSTCODE: 80228

TEL: 303-966-2818

Time 10:30

Description: PSD-FL-381 application

Weight: 5 lbs for 1 pcs
Date: 2006-08-14

DHL standard terms and conditions apply.

EGEH 9E

(2L)US80228

WAYBILL: 17405899055

(Non-Negotiable)

PEEL HERE PEEL HERE

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DO NOT PHOTOCOPY

Using a photocopy could delay the delivery of your package and will result in additional shipping charge

SENDER'S RECEIPT
Waybill #: 17405899055

To(Company):
National Park Service
Air Division
12795 W. Alameda Parkway

Lakewood, CO 80228
UNITED STATES

Attention To: Mr. John Bunyak
Phone#: 303-966-2818

Sent By: P. Adams
Phone#: 850-921-9505

Rate Estimate: 18.89
Protection: Not Required
Description: PSD-FL-381 application

Weight (lbs.): 5
Dimensions: 0 x 0 x 0

Ship Ref: 37550201000 A7 AP255
Service Level: Next Day 10:30 (Next business day by 10:30 A.M.)

Special Svc:

Date Printed: 8/14/2006
Bill Shipment To: Sender
Bill To Acct: 778941286

DHL Signature (optional) ____________ Route ______ Date ______ Time ______

For Tracking, please go to www.dhl-usa.com or call 1-800-225-5345
Thank you for shipping with DHL

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DHL EXPRESS

FM: DEP AIR RESOURCE MGMT
P. Adams
DIRECTOR OFFICE STE 23
111 S MAGNOLIA DR
TALLAHASSEE, FL 32301
UNITED STATES Phone: 850-921-9505

NAS

Pieces: 1/1

ORIGIN: TLH

To: U.S. EPA REGION 4
MR. GREGG M. WORLEY
61 FORSYTH STREET
AIR PERMITS SECTION
ATLANTA, GA 30303
UNITED STATES

Sender's ref 37550201000 A7 AP255

POSTCODE: 30303

TEL: 404-562-9141

Description: PSD-FL-381 application

Weight: 5 lbs for 1 pcs
Date: 2006-08-14

DHL standard terms and conditions apply.

HARB 6V
ATT

(2L)US30303

WAYBILL: 17405773556

(Non-Negotiable)

PEEL HERE ▲ PEEL HERE

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SENDER'S RECEIPT
Waybill #: 17405773556

To(Company):
U.S. EPA Region 4
Air Permits Section
61 Forsyth Street

Atlanta, GA 30303
UNITED STATES

Attention To: Mr. Gregg M. Worley
Phone#: 404-562-9141

Sent By: P. Adams
Phone#: 850-921-9505

Rate Estimate: 5.05
Protection: Not Required
Description: PSD-FL-381 application

Weight (lbs.): 5
Dimensions: 0 x 0 x 0

Ship Ref: 37550201000 A7 AP255
Service Level: Next Day 3:00 (Next business day by 3 PM)

Special Svc:

Date Printed: 8/14/2006
Bill Shipment To: Sender
Bill To Acct: 778941286

DHL Signature (optional) ______________________ Route ______ Date ______ Time ______

For Tracking, please go to www.dhl-usa.com or call 1-800-225-5345

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