Derenzo and Associates, Inc.
Environmental Consultants

August 5, 2013

Ms. Tammy T. McWade
Engineer Specialist III
Office of Permitting and Compliance
Division of Air Resource Management
Department of Environmental Protection
STATE OF FLORIDA
2600 Blair Stone Road, MS 5505
Tallahassee, FL 32399-2400

Subject: Sarasota Energy, LLC
Project No. 1150089-008-AC (PSD-FL-422)
Response to requests for additional information

Dear Ms. McWade:

Derenzo and Associates, Inc. (Derenzo and Associates), on behalf of Sarasota Energy, LLC (Sarasota Energy), is submitting to the Florida Department of Environmental Protection, Division of Air Resource Management (FDEP-DARM) additional information requested by the regulatory agency during July 2013 for consideration in the review of its Air Construction Permit application for a new landfill gas (treated gas) fueled electricity generating facility at the Central County Solid Waste Disposal Complex.

Attachment 1 provides for reference the additional information requested by the FDEP-DARM.

UTM Coordinates

The proposed facility coordinates that are presented in the initially submitted air permit application forms are in meters not kilometers (km). The proposed facility coordinates are 362.850 km East and 3,008.950 km North.

The Air Construction Permit Applications forms (page 8) presented in Attachment 2 contain corrected UTM coordinates.

Landfill Gas Recovery / Generation Projections

Attachment 3 provides data on projected NMOC generation rates for the Central County Solid Waste Disposal Complex.

These data indicate (based on 40 CFR Part 60, Subpart WWW Tier II reporting submitted to appropriate regulatory agencies) that the amount of NMOC generated by the Central County Solid Waste Disposal Complex (landfill) may exceed 50 megagrams per year (Mg/yr) near the end of 2015.

However, based on the use of actual waste acceptance values recorded by the landfill for the years 2010 – 2012, the U.S. Environmental Protection Agency Landfill Gas Emissions Model (LandGEM) estimates that the facility may exceed the 50 Mg/yr threshold during 2017.

Attachment 4 provides 1998 – 2012 waste acceptance records for the landfill and the results of LandGEM NMOC generation estimates that are based on.

1. Actual waste placement data through 2012.

2. Five (5) percent increases in annual waste placement tonnage each year after 2012 through 2015.

3. A methane generation rate of 0.05 $year^{-1}$, which is specified in the model for Tier II reporting.

4. A potential methane generation capacity of 170 m^3/Mg, which is specified for Tier II reporting.

5. A NMOC concentration of 267 ppmv as hexane, which was measured by the landfill for its 2010 Tier II reporting.

6. A methane content of 50 % by volume.

LandGEM estimates with the use of:

1. The Tier II reporting input parameter values that the landfill may generate a maximum of 6,186 cubic feet per minute (ft^3/min) of landfill gas (LFG) in 2072.

2. Emission inventory input parameter values (i.e., a methane generation rate of 0.05 $year^{-1}$ and a potential methane generation capacity of 100 m^3/Mg) that the landfill may generate a maximum of 3,528 ft^3/min of LFG in 2072.

Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, AP-42, Section 2.4, Municipal Solid Waste, subsection 2.4.4.2 Controlled Emissions states that:

> *Emissions from landfills are typically controlled by installing a gas collection system, and combusting the collected gas through the use of internal combustion engines, flares, or*

turbines. Gas collection systems are not 100 percent efficient in collecting landfill gas, so emissions of methane and NMOC at a landfill with a gas recovery system still occur ... Reported collection efficiencies typically range from 60 to 85 percent, with an average of 75 percent most commonly assumed. Higher collection efficiencies may be achieved at some sites (i.e., those engineered to control gas emissions). If site-specific collection efficiencies are available (i.e., through a comprehensive surface sampling program), then they should be used instead of the 75 percent average.

Total HAPs and HCl Emissions

The Air Construction Permit Application forms (pages 39, 40) presented in Attachment 2 contain corrected total hazardous air pollutant (HAPs) and hydrogen chloride (HCl) emission rates for the LFG (treated gas) fueled internal combustion (IC) engines.

IC Engine Potential H_2S Emissions

Attachment 5 provides potential hydrogen sulfide (H_2S) emission rates for the LFG (treated gas) fueled IC engines.

The potential H_2S emissions of the LFG (treated gas) fueled IC engines is 0.2 TpY, which is much less than the 10 TpY significant emission rate (SER) specified in FDEP-DARM Rule 62-210.200(282)k.

The Air Construction Permit Applications forms (pages 10, 22, 35, 40) presented in Attachment 2 address H_2S emission rates for the LFG (treated gas) fueled IC engines.

Please contact us if you have questions or require additional information.

Sincerely,

DERENZO AND ASSOCIATES, INC.

David R. Derenzo
Services Director

attachments

c: Emily Zambuto, IES/LES
Mike Laframboise, IES/LES
Jason Timmons, Sarasota County Public Utilities

ATTACHMENT 1

Additional Information Requested
by the
FDEP-DARM.

David Derenzo

From: McWade, Tammy [Tammy.McWade@dep.state.fl.us]
Sent: Tuesday, July 30, 2013 12:09 PM
To: 'David Derenzo'
Subject: FW: Sarasota Energy Project No. 1150089-008-AC (PSD-FL-422)

Hi David,

Just a reminder on our previous conversation regarding emissions of H_2S, please provide the calculations and tons/year for this pollutant. The application currently states:

A LFG sulfur content of 289 ppmv as H_2S is equivalent to a SO_X (as SO_2) emission rate of 48 pounds per million cubic feet (lb/MMscf) of fuel based on the complete oxidation of the fuel-bound sulfur compounds during the combustion process. (8.20 lb/hr and 36.0 TpY of SO_2 (four engines))

SER for H_2S is 10 tons/year in accordance with PSD Rule 62-210.200(282)k.

This pollutant may also need to be addressed in the application.

If you have any questions or concerns please give me a call or email.

Thank you,

Tammy T. McWade
Engineer Specialist III
Florida Department of Environmental Protection
Division of Air Resource Management (DARM)
Office of Permitting and Compliance (OPC)
Phone: 850/717-9086
GIC: 59586

Please take a few minutes to share your comments on the service you received from the department by clicking on this link. DEP Customer Survey.
From: McWade, Tammy
Sent: Monday, July 29, 2013 4:29 PM
To: 'David Derenzo'
Subject: Sarasota Energy Project No.

Hi David,

As per our conversation, I need the following information to complete the application for Sarasota Energy:

1. Please review the given UTM coordinates for the project (the project location coordinates). These are given as: 362,850 km East, and 3,008,950 km North. I believe these are given in meters and not kilometers. Please clarify.
2. Please provide the landfill gas recovery/generation projections, which will also identify that the landfill is below the 50 mg gas generation threshold. This will provide reasonable assurance that the landfill is not subject to the landfill gas collection and control system requirements of NSPS Subpart WWW of 40 CFR 60.

3. Please provide only the pages in the application that need to be corrected (Total HAPs and HCl) and resubmit along with the PE certification.

Thank you for all your help.

Tammy

Tammy T. McWade
Engineer Specialist III
Florida Department of Environmental Protection
Division of Air Resource Management (DARM)
Office of Permitting and Compliance (OPC)
Phone: 850/717-9086
GIC: 59586

ATTACHMENT 2

Corrected and Modified
FDEP-DARM
Air Construction Permit Applications Forms

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: Robert L. Harvey
   Registration Number: 68151
2. Professional Engineer Mailing Address...
   Organization/Firm: Derenzo and Associates, Inc.
   Street Address: 39395 Schoolcraft Road
   City: Livonia State: MI Zip Code: 48150
3. Professional Engineer Telephone Numbers...
   Telephone: (734) 464 - 3880 ext. Fax: (734) 464 - 4368
4. Professional Engineer E-mail Address: rharvey@derenzo.com
5. Professional Engineer Statement:

I, the undersigned, 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.

Signature 8/6/13
Date

(seal)

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (km) 362.850 North (km) 3008.950		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 27/11/47.153 Longitude (DD/MM/SS) 82/23/4.863	
3. Governmental Facility Code: 0	4. Facility Status Code: C	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4953
7. Facility Comment : The proposed electricity generation facility will be located on leased land at the Central County Solid Waste Disposal Complex			

Facility Contact

1. Facility Contact Name: Michael Laframboise Vice President Construction and Technical Services
2. Facility Contact Mailing Address... Organization/Firm: Innovative Energy Systems/Landfill Energy Systems Street Address: 46280 Dylan Drive, Suite 200 City: Novi State: MI Zip Code: 48377
3. Facility Contact Telephone Numbers: Telephone: (248) 380 - 3920 ext. Fax: (248) 380 - 2038
4. Facility Contact E-mail Address: Michael.Laframboise@landfillenergy.com

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:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official E-mail Address:

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
CO	A	N
NOx	B	N
VOC	B	Y
NMOC	B	Y
SO2	B	Y
PM (total)	B	N
PM10	B	N
PM2.5	B	N
HAPS (total)	A	N
Formaldehyde (H095)	A	N
Hydrogen Chloride (H106)	B	N
Greenhouse Gases	B	N
H2S	B	N

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
CO			EL
NOx			EL
VOC			EL
NMOC			EL
SO2			EL
PM (total)			EL
PM10			EL
PM2.5			EL
HAPS (total)			EL
Formaldehyde			EL
Hydrogen Chloride			EL
Greenhouse gases			EL
H2S			EL

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

(Optional for unregulated emissions units.)

Complete a Subsection F1 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 operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Hydrogen sulfide	2. Total Percent Efficiency of Control: 99% (destruction)
3. Potential Emissions: 0.04 lb/hour 0.2 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: see Table H-1r	7. Emissions Method Code: 5
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: Refer to Table H-1r	
11. Potential, Fugitive, and Actual Emissions Comment: 0.01 lb/hr/engine, 0.05 tons/year/engine (refer to Table H-1r)	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 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: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: PM10 – 0.24 g/bhp-hr	4. Equivalent Allowable Emissions: 4.74 lb/hour 20.8 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): Rule 62-212.400	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: PM2.5 – 0.24 g/bhp-hr	4. Equivalent Allowable Emissions: 4.74 lb/hour 20.8 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): Rule 62-212.400	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: HAPs (total) – 10.73 lb/hr	4. Equivalent Allowable Emissions: 10.73 lb/hour 47.0 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 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: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: Formaldehyde – 8.30 lb/hr	4. Equivalent Allowable Emissions: 8.30 lb/hour 36.4 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: Hydrogen chloride – 1.91 lb/hr	4. Equivalent Allowable Emissions: 1.91 lb/hour 8.40 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: H2S – 0.04 lb/hr	4. Equivalent Allowable Emissions: 0.04 lb/hour 0.2 tons/year
5. Method of Compliance: IC engine fuel H2S content analysis	
6. Allowable Emissions Comment (Description of Operating Method): Rule 62-212.400 – H2S emissions $\leq$ 10 tons/year (Rule 62-210.200(282)k. significance threshold)	

ATTACHMENT 3

Central County Solid Waste Disposal Complex
Estimated NMOC Generation Rates

Attachment A - Central County Solid Waste Disposal Complex NMOC Generation

$$M_{NMOC} = \sum_{i=1}^{n} 2kL_oM_i(e^{-kt_i})(C_{NMOC})(3.6x10^{-9})$$ known waste acceptance rate

L_o (m^3/Mg) = 170 Methane generation potential (EPA default)

k (/yr) = 0.05 Methane generation rate constant (EPA default)

C_{NMOC} 267 2010 Tier 2 Test Average NMOC Concentration (ppmv)

M_{NMOC} = Total NMOC emission rate from the landfill in Mg/year

t_i = Age of the ith section , years

M_i = Mass of solid waste in the ith section, in units of Megagrams

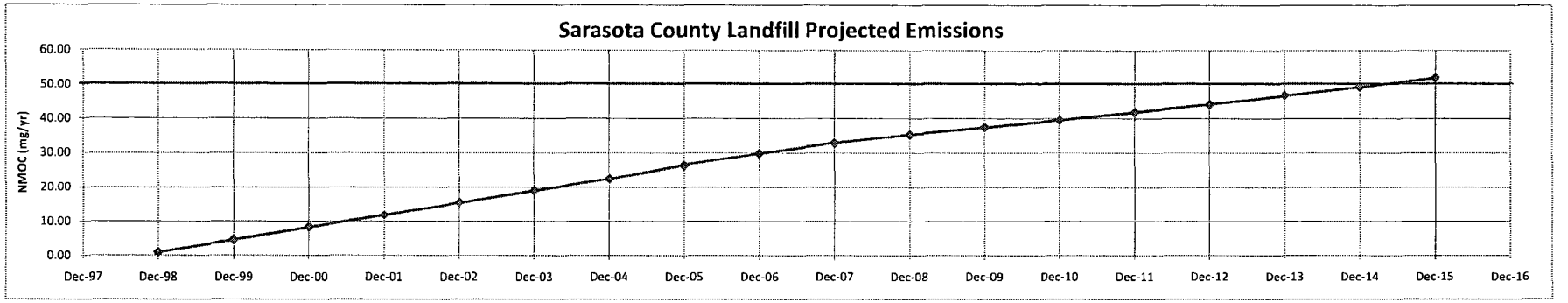
constant 3.6E-09 Conversion Factors: 0.9072 Mg per ton 2000 lbs per ton

Calendar Year ending ,	Annual Disposal: M_i		$2kL_oM_i$	Annual Emisions for year ending, (Mg/yr)																
	tons	Mg		Dec-1998	Dec-1999	Dec-2000	Dec-2001	Dec-2002	Dec-2003	Dec-2004	Dec-2005	Dec-2006	Dec-2007	Dec-2008	Dec-2009	Dec-2010	Dec-2011	Dec-2012	Dec-2013	Dec-2014	Dec-2015
31-Dec-1998	68,771	62,388	1,060,596	1.02	0.97	0.92	0.88	0.83	0.79	0.76	0.72	0.68	0.65	0.62	0.59	0.56	0.53	0.51	0.48	0.46	0.44
31-Dec-1999	246,242	223,387	3,797,579		3.65	3.47	3.30	3.14	2.99	2.84	2.70	2.57	2.45	2.33	2.21	2.11	2.00	1.90	1.81	1.72	1.64
31-Dec-2000	265,465	240,826	4,094,038			3.94	3.74	3.56	3.39	3.22	3.06	2.91	2.77	2.64	2.51	2.39	2.27	2.16	2.05	1.95	1.86
31-Dec-2001	261,420	237,156	4,031,656				3.88	3.69	3.51	3.33	3.17	3.02	2.87	2.73	2.60	2.47	2.35	2.23	2.13	2.02	1.92
31-Dec-2002	278,646	252,783	4,297,318					4.13	3.93	3.74	3.55	3.38	3.22	3.06	2.91	2.77	2.63	2.50	2.38	2.27	2.16
31-Dec-2003	296,620	269,089	4,574,515						4.40	4.18	3.98	3.78	3.60	3.42	3.26	3.10	2.95	2.80	2.67	2.54	2.41
31-Dec-2004	300,857	272,933	4,639,859							4.46	4.24	4.04	3.84	3.65	3.47	3.30	3.14	2.99	2.84	2.70	2.57
31-Dec-2005	333,948	302,953	5,150,193								4.95	4.71	4.48	4.26	4.05	3.85	3.67	3.49	3.32	3.16	3.00
31-Dec-2006	317,319	287,867	4,893,738									4.70	4.47	4.26	4.05	3.85	3.66	3.48	3.31	3.15	3.00
31-Dec-2007	305,015	276,705	4,703,984										4.52	4.30	4.09	3.89	3.70	3.52	3.35	3.19	3.03
31-Dec-2008	275,375	249,816	4,246,872											4.08	3.88	3.69	3.51	3.34	3.18	3.02	2.88
31-Dec-2009	255,495	231,781	3,940,280												3.79	3.60	3.43	3.26	3.10	2.95	2.81
31-Dec-2010	270,586	245,471	4,173,015													4.01	3.82	3.63	3.45	3.28	3.12
31-Dec-2011	284,115	257,745	4,381,666														4.21	4.01	3.81	3.62	3.45
31-Dec-2012	298,321	270,632	4,600,749															4.42	4.21	4.00	3.81
31-Dec-2013	313,237	284,164	4,830,787																4.64	4.42	4.20
31-Dec-2014	328,899	298,372	5,072,326																	4.88	4.64
31-Dec-2015	345,344	313,291	5,325,942																		5.12
			Total M_{NMOC}=	1.02	4.62	8.33	11.80	15.35	19.00	22.53	26.38	29.80	32.87	35.34	37.41	39.59	41.87	44.25	46.73	49.33	52.04

Notes: For years 2011 through 2015 the disposal rate was increased by 5% per year. Tonnage information for 2010 estimated based on County tonnages from 2nd half 2009 and 1st half 2010 tonnages.

References: 40 CFR Part 60, Subpart WWW (NSPS Regulations): Formulas, L_o, and k

If the Sarasota County Landfill continues with its current increasing rate of waste acceptance, it will cross the annual 50 Mg NMOC threshold near the end of 2013.

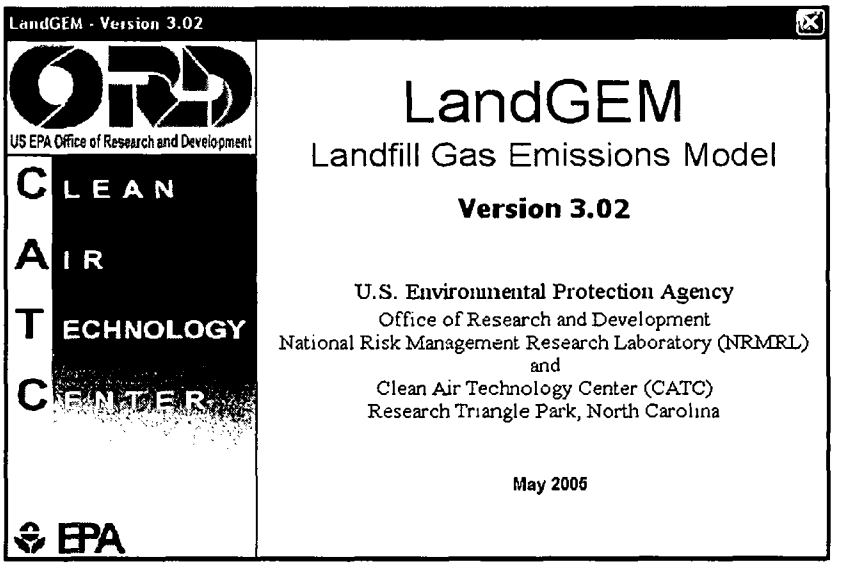


ATTACHMENT 4

Central County Solid Waste Disposal Complex
1998 – 2012 Actual Waste Acceptance Rates
And
LandGEM Results

Year	Tier II Class I Waste (tons)	Actual Tonnage since 2010
1998	68,771	
1999	246,242	
2000	265,465	
2001	261,420	
2002	278,646	
2003	296,620	
2004	300,857	
2005	333,948	
2006	317,319	
2007	305,015	
2008	275,375	
2009	255,495	
2010	270,586	273,586
2011	284,115	255,870
2012	298,321	264,136
2013	313,237	
2014	328,899	
2015	345,344	

Note: Tier II report completed in 2010, included projections for 2010 through 2015. Values to the right for 2010, 2011, and 2012 are the actual tonnages received.



Summary Report

Landfill Name or Identifier: Sarasota County Central Landfill

Date: Sunday, August 04, 2013

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

Where,

Q_{CH_4} = annual methane generation in the year of the calculation (m^3/year)
i = 1-year time increment
n = (year of the calculation) - (initial year of waste acceptance)
j = 0.1-year time increment
k = methane generation rate ($year^{-1}$)
L_o = potential methane generation capacity (m^3/Mg)
M_i = mass of waste accepted in the i^{th} year (Mg)
t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (decimal years, e.g., 3.2 years)

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

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

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	**1998**	
Landfill Closure Year (with 80-year limit)	**2072**	
Actual Closure Year (without limit)	***2072***	
Have Model Calculate Closure Year?	**Yes**	
Waste Design Capacity	**22,000,000**	*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.050**	*year^{-1}*
Potential Methane Generation Capacity, L_o	**170**	*m^3/Mg*
NMOC Concentration	**267**	*ppmv as hexane*
Methane Content	**50**	*% by volume*

GASES / POLLUTANTS SELECTED

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

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
1998	62,519	68,771	0	0
1999	223,856	246,242	62,519	68,771
2000	241,332	265,465	286,375	315,013
2001	237,655	261,420	527,707	580,478
2002	253,315	278,646	765,362	841,898
2003	269,655	296,620	1,018,676	1,120,544
2004	273,506	300,857	1,288,331	1,417,164
2005	303,589	333,948	1,561,837	1,718,021
2006	288,472	317,319	1,865,426	2,051,969
2007	277,286	305,015	2,153,899	2,369,288
2008	250,341	275,375	2,431,185	2,674,303
2009	232,268	255,495	2,681,526	2,949,679
2010	248,715	273,586	2,913,794	3,205,174
2011	232,609	255,870	3,162,509	3,478,760
2012	240,124	264,136	3,395,118	3,734,630
2013	252,130	277,343	3,635,242	3,998,766
2014	264,736	291,210	3,887,372	4,276,109
2015	277,973	305,770	4,152,108	4,567,319
2016	277,973	305,770	4,430,081	4,873,089
2017	277,973	305,770	4,708,053	5,178,859
2018	277,973	305,770	4,986,026	5,484,629
2019	277,973	305,770	5,263,999	5,790,399
2020	277,973	305,770	5,541,972	6,096,169
2021	277,973	305,770	5,819,944	6,401,939
2022	277,973	305,770	6,097,917	6,707,709
2023	277,973	305,770	6,375,890	7,013,479
2024	277,973	305,770	6,653,863	7,319,249
2025	277,973	305,770	6,931,835	7,625,019
2026	277,973	305,770	7,209,808	7,930,789
2027	277,973	305,770	7,487,781	8,236,559
2028	277,973	305,770	7,765,753	8,542,329
2029	277,973	305,770	8,043,726	8,848,099
2030	277,973	305,770	8,321,699	9,153,869
2031	277,973	305,770	8,599,672	9,459,639
2032	277,973	305,770	8,877,644	9,765,409
2033	277,973	305,770	9,155,617	10,071,179
2034	277,973	305,770	9,433,590	10,376,949
2035	277,973	305,770	9,711,563	10,682,719
2036	277,973	305,770	9,989,535	10,988,489
2037	277,973	305,770	10,267,508	11,294,259

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2038	277,973	305,770	10,545,481	11,600,029
2039	277,973	305,770	10,823,453	11,905,799
2040	277,973	305,770	11,101,426	12,211,569
2041	277,973	305,770	11,379,399	12,517,339
2042	277,973	305,770	11,657,372	12,823,109
2043	277,973	305,770	11,935,344	13,128,879
2044	277,973	305,770	12,213,317	13,434,649
2045	277,973	305,770	12,491,290	13,740,419
2046	277,973	305,770	12,769,263	14,046,189
2047	277,973	305,770	13,047,235	14,351,959
2048	277,973	305,770	13,325,208	14,657,729
2049	277,973	305,770	13,603,181	14,963,499
2050	277,973	305,770	13,881,153	15,269,269
2051	277,973	305,770	14,159,126	15,575,039
2052	277,973	305,770	14,437,099	15,880,809
2053	277,973	305,770	14,715,072	16,186,579
2054	277,973	305,770	14,993,044	16,492,349
2055	277,973	305,770	15,271,017	16,798,119
2056	277,973	305,770	15,548,990	17,103,889
2057	277,973	305,770	15,826,963	17,409,659
2058	277,973	305,770	16,104,935	17,715,429
2059	277,973	305,770	16,382,908	18,021,199
2060	277,973	305,770	16,660,881	18,326,969
2061	277,973	305,770	16,938,853	18,632,739
2062	277,973	305,770	17,216,826	18,938,509
2063	277,973	305,770	17,494,799	19,244,279
2064	277,973	305,770	17,772,772	19,550,049
2065	277,973	305,770	18,050,744	19,855,819
2066	277,973	305,770	18,328,717	20,161,589
2067	277,973	305,770	18,606,690	20,467,359
2068	277,973	305,770	18,884,663	20,773,129
2069	277,973	305,770	19,162,635	21,078,899
2070	277,973	305,770	19,440,608	21,384,669
2071	277,973	305,770	19,718,581	21,690,439
2072	3,447	3,791	19,996,553	21,996,209
2073	0	0	20,000,000	22,000,000
2074	0	0	20,000,000	22,000,000
2075	0	0	20,000,000	22,000,000
2076	0	0	20,000,000	22,000,000
2077	0	0	20,000,000	22,000,000

Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
1998	0	0	0	0	0	0
1999	1.298E+03	1.039E+06	6.983E+01	3.467E+02	5.196E+05	3.491E+01
2000	5.882E+03	4.710E+06	3.165E+02	1.571E+03	2.355E+06	1.582E+02
2001	1.060E+04	8.492E+06	5.706E+02	2.833E+03	4.246E+06	2.853E+02
2002	1.502E+04	1.203E+07	8.082E+02	4.012E+03	6.014E+06	4.041E+02
2003	1.955E+04	1.565E+07	1.052E+03	5.221E+03	7.826E+06	5.259E+02
2004	2.419E+04	1.937E+07	1.302E+03	6.462E+03	9.686E+06	6.508E+02
2005	2.869E+04	2.297E+07	1.544E+03	7.663E+03	1.149E+07	7.718E+02
2006	3.359E+04	2.690E+07	1.807E+03	8.973E+03	1.345E+07	9.037E+02
2007	3.794E+04	3.038E+07	2.041E+03	1.014E+04	1.519E+07	1.021E+03
2008	4.185E+04	3.351E+07	2.252E+03	1.118E+04	1.676E+07	1.126E+03
2009	4.501E+04	3.604E+07	2.421E+03	1.202E+04	1.802E+07	1.211E+03
2010	4.763E+04	3.814E+07	2.563E+03	1.272E+04	1.907E+07	1.281E+03
2011	5.047E+04	4.042E+07	2.716E+03	1.348E+04	2.021E+07	1.358E+03
2012	5.284E+04	4.231E+07	2.843E+03	1.411E+04	2.116E+07	1.421E+03
2013	5.525E+04	4.424E+07	2.972E+03	1.476E+04	2.212E+07	1.486E+03
2014	5.779E+04	4.627E+07	3.109E+03	1.544E+04	2.314E+07	1.555E+03
2015	6.047E+04	4.842E+07	3.253E+03	1.615E+04	2.421E+07	1.627E+03
2016	6.329E+04	5.068E+07	3.405E+03	1.690E+04	2.534E+07	1.702E+03
2017	6.597E+04	5.283E+07	3.549E+03	1.762E+04	2.641E+07	1.775E+03
2018	6.852E+04	5.487E+07	3.687E+03	1.830E+04	2.744E+07	1.843E+03
2019	7.095E+04	5.682E+07	3.817E+03	1.895E+04	2.841E+07	1.909E+03
2020	7.326E+04	5.867E+07	3.942E+03	1.957E+04	2.933E+07	1.971E+03
2021	7.546E+04	6.043E+07	4.060E+03	2.016E+04	3.021E+07	2.030E+03
2022	7.755E+04	6.210E+07	4.172E+03	2.071E+04	3.105E+07	2.086E+03
2023	7.954E+04	6.369E+07	4.279E+03	2.125E+04	3.185E+07	2.140E+03
2024	8.143E+04	6.521E+07	4.381E+03	2.175E+04	3.260E+07	2.191E+03
2025	8.323E+04	6.665E+07	4.478E+03	2.223E+04	3.332E+07	2.239E+03
2026	8.494E+04	6.802E+07	4.570E+03	2.269E+04	3.401E+07	2.285E+03
2027	8.657E+04	6.932E+07	4.658E+03	2.312E+04	3.466E+07	2.329E+03
2028	8.812E+04	7.056E+07	4.741E+03	2.354E+04	3.528E+07	2.370E+03
2029	8.959E+04	7.174E+07	4.820E+03	2.393E+04	3.587E+07	2.410E+03
2030	9.099E+04	7.286E+07	4.896E+03	2.431E+04	3.643E+07	2.448E+03
2031	9.233E+04	7.393E+07	4.967E+03	2.466E+04	3.697E+07	2.484E+03
2032	9.359E+04	7.495E+07	5.036E+03	2.500E+04	3.747E+07	2.518E+03
2033	9.480E+04	7.591E+07	5.100E+03	2.532E+04	3.796E+07	2.550E+03
2034	9.595E+04	7.683E+07	5.162E+03	2.563E+04	3.841E+07	2.581E+03
2035	9.704E+04	7.770E+07	5.221E+03	2.592E+04	3.885E+07	2.610E+03
2036	9.808E+04	7.853E+07	5.277E+03	2.620E+04	3.927E+07	2.638E+03
2037	9.906E+04	7.933E+07	5.330E+03	2.646E+04	3.966E+07	2.665E+03
2038	1.000E+05	8.008E+07	5.380E+03	2.671E+04	4.004E+07	2.690E+03
2039	1.009E+05	8.079E+07	5.428E+03	2.695E+04	4.040E+07	2.714E+03
2040	1.017E+05	8.147E+07	5.474E+03	2.718E+04	4.074E+07	2.737E+03
2041	1.026E+05	8.212E+07	5.518E+03	2.739E+04	4.106E+07	2.759E+03
2042	1.033E+05	8.274E+07	5.559E+03	2.760E+04	4.137E+07	2.780E+03
2043	1.041E+05	8.332E+07	5.598E+03	2.779E+04	4.166E+07	2.799E+03
2044	1.048E+05	8.388E+07	5.636E+03	2.798E+04	4.194E+07	2.818E+03
2045	1.054E+05	8.441E+07	5.671E+03	2.816E+04	4.220E+07	2.836E+03
2046	1.060E+05	8.491E+07	5.705E+03	2.833E+04	4.246E+07	2.853E+03
2047	1.066E+05	8.539E+07	5.738E+03	2.849E+04	4.270E+07	2.869E+03

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2048	1.072E+05	8.585E+07	5.768E+03	2.864E+04	4.292E+07	2.884E+03
2049	1.078E+05	8.628E+07	5.797E+03	2.878E+04	4.314E+07	2.899E+03
2050	1.083E+05	8.670E+07	5.825E+03	2.892E+04	4.335E+07	2.913E+03
2051	1.088E+05	8.709E+07	5.851E+03	2.905E+04	4.354E+07	2.926E+03
2052	1.092E+05	8.746E+07	5.877E+03	2.918E+04	4.373E+07	2.938E+03
2053	1.097E+05	8.782E+07	5.900E+03	2.929E+04	4.391E+07	2.950E+03
2054	1.101E+05	8.816E+07	5.923E+03	2.941E+04	4.408E+07	2.962E+03
2055	1.105E+05	8.848E+07	5.945E+03	2.951E+04	4.424E+07	2.972E+03
2056	1.109E+05	8.878E+07	5.965E+03	2.962E+04	4.439E+07	2.983E+03
2057	1.112E+05	8.907E+07	5.985E+03	2.971E+04	4.454E+07	2.992E+03
2058	1.116E+05	8.935E+07	6.003E+03	2.981E+04	4.468E+07	3.002E+03
2059	1.119E+05	8.961E+07	6.021E+03	2.989E+04	4.481E+07	3.011E+03
2060	1.122E+05	8.986E+07	6.038E+03	2.998E+04	4.493E+07	3.019E+03
2061	1.125E+05	9.010E+07	6.054E+03	3.006E+04	4.505E+07	3.027E+03
2062	1.128E+05	9.033E+07	6.069E+03	3.013E+04	4.516E+07	3.035E+03
2063	1.131E+05	9.054E+07	6.084E+03	3.020E+04	4.527E+07	3.042E+03
2064	1.133E+05	9.075E+07	6.097E+03	3.027E+04	4.537E+07	3.049E+03
2065	1.136E+05	9.094E+07	6.111E+03	3.034E+04	4.547E+07	3.055E+03
2066	1.138E+05	9.113E+07	6.123E+03	3.040E+04	4.556E+07	3.061E+03
2067	1.140E+05	9.131E+07	6.135E+03	3.046E+04	4.565E+07	3.067E+03
2068	1.142E+05	9.147E+07	6.146E+03	3.051E+04	4.574E+07	3.073E+03
2069	1.144E+05	9.163E+07	6.157E+03	3.057E+04	4.582E+07	3.078E+03
2070	1.146E+05	9.179E+07	6.167E+03	3.062E+04	4.589E+07	3.084E+03
2071	1.148E+05	9.193E+07	6.177E+03	3.067E+04	4.596E+07	3.088E+03
2072	1.150E+05	9.207E+07	6.186E+03	3.071E+04	4.603E+07	3.093E+03
2073	1.094E+05	8.763E+07	5.888E+03	2.923E+04	4.382E+07	2.944E+03
2074	1.041E+05	8.336E+07	5.601E+03	2.781E+04	4.168E+07	2.800E+03
2075	9.903E+04	7.929E+07	5.328E+03	2.645E+04	3.965E+07	2.664E+03
2076	9.420E+04	7.543E+07	5.068E+03	2.516E+04	3.771E+07	2.534E+03
2077	8.960E+04	7.175E+07	4.821E+03	2.393E+04	3.587E+07	2.410E+03
2078	8.523E+04	6.825E+07	4.586E+03	2.277E+04	3.412E+07	2.293E+03
2079	8.108E+04	6.492E+07	4.362E+03	2.166E+04	3.246E+07	2.181E+03
2080	7.712E+04	6.175E+07	4.149E+03	2.060E+04	3.088E+07	2.075E+03
2081	7.336E+04	5.874E+07	3.947E+03	1.960E+04	2.937E+07	1.973E+03
2082	6.978E+04	5.588E+07	3.754E+03	1.864E+04	2.794E+07	1.877E+03
2083	6.638E+04	5.315E+07	3.571E+03	1.773E+04	2.658E+07	1.786E+03
2084	6.314E+04	5.056E+07	3.397E+03	1.687E+04	2.528E+07	1.699E+03
2085	6.006E+04	4.809E+07	3.231E+03	1.604E+04	2.405E+07	1.616E+03
2086	5.713E+04	4.575E+07	3.074E+03	1.526E+04	2.287E+07	1.537E+03
2087	5.435E+04	4.352E+07	2.924E+03	1.452E+04	2.176E+07	1.462E+03
2088	5.170E+04	4.140E+07	2.781E+03	1.381E+04	2.070E+07	1.391E+03
2089	4.917E+04	3.938E+07	2.646E+03	1.314E+04	1.969E+07	1.323E+03
2090	4.678E+04	3.746E+07	2.517E+03	1.249E+04	1.873E+07	1.258E+03
2091	4.449E+04	3.563E+07	2.394E+03	1.189E+04	1.781E+07	1.197E+03
2092	4.232E+04	3.389E+07	2.277E+03	1.131E+04	1.695E+07	1.139E+03
2093	4.026E+04	3.224E+07	2.166E+03	1.075E+04	1.612E+07	1.083E+03
2094	3.830E+04	3.067E+07	2.060E+03	1.023E+04	1.533E+07	1.030E+03
2095	3.643E+04	2.917E+07	1.960E+03	9.731E+03	1.459E+07	9.800E+02
2096	3.465E+04	2.775E+07	1.864E+03	9.256E+03	1.387E+07	9.322E+02
2097	3.296E+04	2.639E+07	1.773E+03	8.805E+03	1.320E+07	8.867E+02
2098	3.136E+04	2.511E+07	1.687E+03	8.375E+03	1.255E+07	8.435E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2099	2.983E+04	2.388E+07	1.605E+03	7.967E+03	1.194E+07	8.024E+02
2100	2.837E+04	2.272E+07	1.526E+03	7.578E+03	1.136E+07	7.632E+02
2101	2.699E+04	2.161E+07	1.452E+03	7.209E+03	1.081E+07	7.260E+02
2102	2.567E+04	2.056E+07	1.381E+03	6.857E+03	1.028E+07	6.906E+02
2103	2.442E+04	1.955E+07	1.314E+03	6.523E+03	9.777E+06	6.569E+02
2104	2.323E+04	1.860E+07	1.250E+03	6.205E+03	9.300E+06	6.249E+02
2105	2.210E+04	1.769E+07	1.189E+03	5.902E+03	8.847E+06	5.944E+02
2106	2.102E+04	1.683E+07	1.131E+03	5.614E+03	8.415E+06	5.654E+02
2107	1.999E+04	1.601E+07	1.076E+03	5.340E+03	8.005E+06	5.378E+02
2108	1.902E+04	1.523E+07	1.023E+03	5.080E+03	7.614E+06	5.116E+02
2109	1.809E+04	1.449E+07	9.733E+02	4.832E+03	7.243E+06	4.867E+02
2110	1.721E+04	1.378E+07	9.258E+02	4.596E+03	6.890E+06	4.629E+02
2111	1.637E+04	1.311E+07	8.807E+02	4.372E+03	6.554E+06	4.403E+02
2112	1.557E+04	1.247E+07	8.377E+02	4.159E+03	6.234E+06	4.189E+02
2113	1.481E+04	1.186E+07	7.969E+02	3.956E+03	5.930E+06	3.984E+02
2114	1.409E+04	1.128E+07	7.580E+02	3.763E+03	5.641E+06	3.790E+02
2115	1.340E+04	1.073E+07	7.210E+02	3.580E+03	5.366E+06	3.605E+02
2116	1.275E+04	1.021E+07	6.859E+02	3.405E+03	5.104E+06	3.429E+02
2117	1.213E+04	9.710E+06	6.524E+02	3.239E+03	4.855E+06	3.262E+02
2118	1.153E+04	9.237E+06	6.206E+02	3.081E+03	4.618E+06	3.103E+02
2119	1.097E+04	8.786E+06	5.903E+02	2.931E+03	4.393E+06	2.952E+02
2120	1.044E+04	8.358E+06	5.615E+02	2.788E+03	4.179E+06	2.808E+02
2121	9.928E+03	7.950E+06	5.342E+02	2.652E+03	3.975E+06	2.671E+02
2122	9.444E+03	7.562E+06	5.081E+02	2.523E+03	3.781E+06	2.541E+02
2123	8.983E+03	7.193E+06	4.833E+02	2.400E+03	3.597E+06	2.417E+02
2124	8.545E+03	6.843E+06	4.598E+02	2.283E+03	3.421E+06	2.299E+02
2125	8.128E+03	6.509E+06	4.373E+02	2.171E+03	3.254E+06	2.187E+02
2126	7.732E+03	6.191E+06	4.160E+02	2.065E+03	3.096E+06	2.080E+02
2127	7.355E+03	5.890E+06	3.957E+02	1.965E+03	2.945E+06	1.979E+02
2128	6.996E+03	5.602E+06	3.764E+02	1.869E+03	2.801E+06	1.882E+02
2129	6.655E+03	5.329E+06	3.581E+02	1.778E+03	2.665E+06	1.790E+02
2130	6.330E+03	5.069E+06	3.406E+02	1.691E+03	2.535E+06	1.703E+02
2131	6.022E+03	4.822E+06	3.240E+02	1.608E+03	2.411E+06	1.620E+02
2132	5.728E+03	4.587E+06	3.082E+02	1.530E+03	2.293E+06	1.541E+02
2133	5.449E+03	4.363E+06	2.932E+02	1.455E+03	2.182E+06	1.466E+02
2134	5.183E+03	4.150E+06	2.789E+02	1.384E+03	2.075E+06	1.394E+02
2135	4.930E+03	3.948E+06	2.653E+02	1.317E+03	1.974E+06	1.326E+02
2136	4.690E+03	3.755E+06	2.523E+02	1.253E+03	1.878E+06	1.262E+02
2137	4.461E+03	3.572E+06	2.400E+02	1.192E+03	1.786E+06	1.200E+02
2138	4.243E+03	3.398E+06	2.283E+02	1.133E+03	1.699E+06	1.142E+02

Results (Continued)

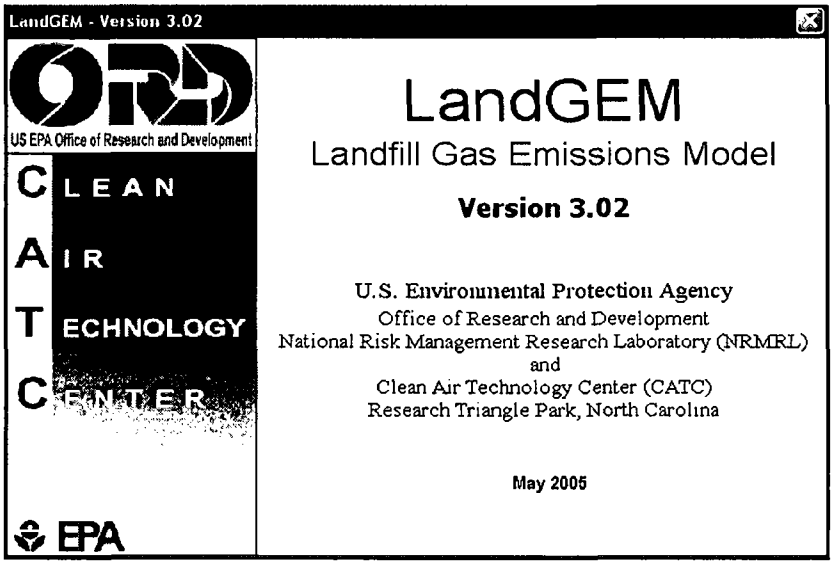
Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
1998	0	0	0	0	0	0
1999	9.512E+02	5.196E+05	3.491E+01	9.947E-01	2.775E+02	1.864E-02
2000	4.311E+03	2.355E+06	1.582E+02	4.508E+00	1.258E+03	8.449E-02
2001	7.772E+03	4.246E+06	2.853E+02	8.127E+00	2.267E+03	1.523E-01
2002	1.101E+04	6.014E+06	4.041E+02	1.151E+01	3.212E+03	2.158E-01
2003	1.433E+04	7.826E+06	5.259E+02	1.498E+01	4.179E+03	2.808E-01
2004	1.773E+04	9.686E+06	6.508E+02	1.854E+01	5.172E+03	3.475E-01
2005	2.103E+04	1.149E+07	7.718E+02	2.199E+01	6.134E+03	4.121E-01
2006	2.462E+04	1.345E+07	9.037E+02	2.574E+01	7.182E+03	4.826E-01
2007	2.781E+04	1.519E+07	1.021E+03	2.908E+01	8.112E+03	5.451E-01
2008	3.067E+04	1.676E+07	1.126E+03	3.207E+01	8.947E+03	6.012E-01
2009	3.298E+04	1.802E+07	1.211E+03	3.449E+01	9.622E+03	6.465E-01
2010	3.491E+04	1.907E+07	1.281E+03	3.650E+01	1.018E+04	6.843E-01
2011	3.699E+04	2.021E+07	1.358E+03	3.868E+01	1.079E+04	7.251E-01
2012	3.873E+04	2.116E+07	1.421E+03	4.049E+01	1.130E+04	7.591E-01
2013	4.049E+04	2.212E+07	1.486E+03	4.234E+01	1.181E+04	7.937E-01
2014	4.235E+04	2.314E+07	1.555E+03	4.429E+01	1.236E+04	8.301E-01
2015	4.431E+04	2.421E+07	1.627E+03	4.634E+01	1.293E+04	8.686E-01
2016	4.638E+04	2.534E+07	1.702E+03	4.850E+01	1.353E+04	9.091E-01
2017	4.835E+04	2.641E+07	1.775E+03	5.056E+01	1.410E+04	9.477E-01
2018	5.022E+04	2.744E+07	1.843E+03	5.251E+01	1.465E+04	9.844E-01
2019	5.200E+04	2.841E+07	1.909E+03	5.438E+01	1.517E+04	1.019E+00
2020	5.369E+04	2.933E+07	1.971E+03	5.615E+01	1.566E+04	1.052E+00
2021	5.530E+04	3.021E+07	2.030E+03	5.783E+01	1.613E+04	1.084E+00
2022	5.684E+04	3.105E+07	2.086E+03	5.943E+01	1.658E+04	1.114E+00
2023	5.829E+04	3.185E+07	2.140E+03	6.096E+01	1.701E+04	1.143E+00
2024	5.968E+04	3.260E+07	2.191E+03	6.241E+01	1.741E+04	1.170E+00
2025	6.100E+04	3.332E+07	2.239E+03	6.378E+01	1.779E+04	1.196E+00
2026	6.225E+04	3.401E+07	2.285E+03	6.510E+01	1.816E+04	1.220E+00
2027	6.345E+04	3.466E+07	2.329E+03	6.634E+01	1.851E+04	1.244E+00
2028	6.458E+04	3.528E+07	2.370E+03	6.753E+01	1.884E+04	1.266E+00
2029	6.566E+04	3.587E+07	2.410E+03	6.866E+01	1.915E+04	1.287E+00
2030	6.669E+04	3.643E+07	2.448E+03	6.973E+01	1.945E+04	1.307E+00
2031	6.766E+04	3.697E+07	2.484E+03	7.075E+01	1.974E+04	1.326E+00
2032	6.859E+04	3.747E+07	2.518E+03	7.173E+01	2.001E+04	1.344E+00
2033	6.948E+04	3.796E+07	2.550E+03	7.265E+01	2.027E+04	1.362E+00
2034	7.032E+04	3.841E+07	2.581E+03	7.353E+01	2.051E+04	1.378E+00
2035	7.112E+04	3.885E+07	2.610E+03	7.437E+01	2.075E+04	1.394E+00
2036	7.188E+04	3.927E+07	2.638E+03	7.516E+01	2.097E+04	1.409E+00
2037	7.260E+04	3.966E+07	2.665E+03	7.592E+01	2.118E+04	1.423E+00
2038	7.329E+04	4.004E+07	2.690E+03	7.664E+01	2.138E+04	1.437E+00
2039	7.395E+04	4.040E+07	2.714E+03	7.732E+01	2.157E+04	1.449E+00
2040	7.457E+04	4.074E+07	2.737E+03	7.797E+01	2.175E+04	1.462E+00
2041	7.516E+04	4.106E+07	2.759E+03	7.859E+01	2.193E+04	1.473E+00
2042	7.572E+04	4.137E+07	2.780E+03	7.918E+01	2.209E+04	1.484E+00
2043	7.626E+04	4.166E+07	2.799E+03	7.974E+01	2.225E+04	1.495E+00
2044	7.677E+04	4.194E+07	2.818E+03	8.028E+01	2.240E+04	1.505E+00
2045	7.726E+04	4.220E+07	2.836E+03	8.078E+01	2.254E+04	1.514E+00
2046	7.772E+04	4.246E+07	2.853E+03	8.127E+01	2.267E+04	1.523E+00
2047	7.816E+04	4.270E+07	2.869E+03	8.173E+01	2.280E+04	1.532E+00

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2048	7.857E+04	4.292E+07	2.884E+03	8.216E+01	2.292E+04	1.540E+00
2049	7.897E+04	4.314E+07	2.899E+03	8.258E+01	2.304E+04	1.548E+00
2050	7.935E+04	4.335E+07	2.913E+03	8.297E+01	2.315E+04	1.555E+00
2051	7.971E+04	4.354E+07	2.926E+03	8.335E+01	2.325E+04	1.562E+00
2052	8.005E+04	4.373E+07	2.938E+03	8.371E+01	2.335E+04	1.569E+00
2053	8.038E+04	4.391E+07	2.950E+03	8.405E+01	2.345E+04	1.575E+00
2054	8.068E+04	4.408E+07	2.962E+03	8.437E+01	2.354E+04	1.581E+00
2055	8.098E+04	4.424E+07	2.972E+03	8.468E+01	2.362E+04	1.587E+00
2056	8.126E+04	4.439E+07	2.983E+03	8.497E+01	2.371E+04	1.593E+00
2057	8.152E+04	4.454E+07	2.992E+03	8.525E+01	2.378E+04	1.598E+00
2058	8.178E+04	4.468E+07	3.002E+03	8.551E+01	2.386E+04	1.603E+00
2059	8.202E+04	4.481E+07	3.011E+03	8.577E+01	2.393E+04	1.608E+00
2060	8.225E+04	4.493E+07	3.019E+03	8.600E+01	2.399E+04	1.612E+00
2061	8.247E+04	4.505E+07	3.027E+03	8.623E+01	2.406E+04	1.616E+00
2062	8.267E+04	4.516E+07	3.035E+03	8.645E+01	2.412E+04	1.620E+00
2063	8.287E+04	4.527E+07	3.042E+03	8.666E+01	2.418E+04	1.624E+00
2064	8.306E+04	4.537E+07	3.049E+03	8.685E+01	2.423E+04	1.628E+00
2065	8.324E+04	4.547E+07	3.055E+03	8.704E+01	2.428E+04	1.632E+00
2066	8.341E+04	4.556E+07	3.061E+03	8.722E+01	2.433E+04	1.635E+00
2067	8.357E+04	4.565E+07	3.067E+03	8.738E+01	2.438E+04	1.638E+00
2068	8.372E+04	4.574E+07	3.073E+03	8.755E+01	2.442E+04	1.641E+00
2069	8.387E+04	4.582E+07	3.078E+03	8.770E+01	2.447E+04	1.644E+00
2070	8.401E+04	4.589E+07	3.084E+03	8.784E+01	2.451E+04	1.647E+00
2071	8.414E+04	4.596E+07	3.088E+03	8.798E+01	2.455E+04	1.649E+00
2072	8.426E+04	4.603E+07	3.093E+03	8.811E+01	2.458E+04	1.652E+00
2073	8.021E+04	4.382E+07	2.944E+03	8.387E+01	2.340E+04	1.572E+00
2074	7.630E+04	4.168E+07	2.800E+03	7.978E+01	2.226E+04	1.495E+00
2075	7.257E+04	3.965E+07	2.664E+03	7.589E+01	2.117E+04	1.423E+00
2076	6.904E+04	3.771E+07	2.534E+03	7.219E+01	2.014E+04	1.353E+00
2077	6.567E+04	3.587E+07	2.410E+03	6.867E+01	1.916E+04	1.287E+00
2078	6.247E+04	3.412E+07	2.293E+03	6.532E+01	1.822E+04	1.224E+00
2079	5.942E+04	3.246E+07	2.181E+03	6.213E+01	1.733E+04	1.165E+00
2080	5.652E+04	3.088E+07	2.075E+03	5.910E+01	1.649E+04	1.108E+00
2081	5.376E+04	2.937E+07	1.973E+03	5.622E+01	1.568E+04	1.054E+00
2082	5.114E+04	2.794E+07	1.877E+03	5.348E+01	1.492E+04	1.002E+00
2083	4.865E+04	2.658E+07	1.786E+03	5.087E+01	1.419E+04	9.535E-01
2084	4.628E+04	2.528E+07	1.699E+03	4.839E+01	1.350E+04	9.070E-01
2085	4.402E+04	2.405E+07	1.616E+03	4.603E+01	1.284E+04	8.628E-01
2086	4.187E+04	2.287E+07	1.537E+03	4.378E+01	1.222E+04	8.207E-01
2087	3.983E+04	2.176E+07	1.462E+03	4.165E+01	1.162E+04	7.807E-01
2088	3.789E+04	2.070E+07	1.391E+03	3.962E+01	1.105E+04	7.426E-01
2089	3.604E+04	1.969E+07	1.323E+03	3.769E+01	1.051E+04	7.064E-01
2090	3.428E+04	1.873E+07	1.258E+03	3.585E+01	1.000E+04	6.720E-01
2091	3.261E+04	1.781E+07	1.197E+03	3.410E+01	9.513E+03	6.392E-01
2092	3.102E+04	1.695E+07	1.139E+03	3.244E+01	9.049E+03	6.080E-01
2093	2.951E+04	1.612E+07	1.083E+03	3.085E+01	8.608E+03	5.784E-01
2094	2.807E+04	1.533E+07	1.030E+03	2.935E+01	8.188E+03	5.501E-01
2095	2.670E+04	1.459E+07	9.800E+02	2.792E+01	7.789E+03	5.233E-01
2096	2.540E+04	1.387E+07	9.322E+02	2.656E+01	7.409E+03	4.978E-01
2097	2.416E+04	1.320E+07	8.867E+02	2.526E+01	7.047E+03	4.735E-01
2098	2.298E+04	1.255E+07	8.435E+02	2.403E+01	6.704E+03	4.504E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2099	2.186E+04	1.194E+07	8.024E+02	2.286E+01	6.377E+03	4.285E-01
2100	2.079E+04	1.136E+07	7.632E+02	2.174E+01	6.066E+03	4.076E-01
2101	1.978E+04	1.081E+07	7.260E+02	2.068E+01	5.770E+03	3.877E-01
2102	1.881E+04	1.028E+07	6.906E+02	1.967E+01	5.489E+03	3.688E-01
2103	1.790E+04	9.777E+06	6.569E+02	1.871E+01	5.221E+03	3.508E-01
2104	1.702E+04	9.300E+06	6.249E+02	1.780E+01	4.966E+03	3.337E-01
2105	1.619E+04	8.847E+06	5.944E+02	1.693E+01	4.724E+03	3.174E-01
2106	1.540E+04	8.415E+06	5.654E+02	1.611E+01	4.494E+03	3.019E-01
2107	1.465E+04	8.005E+06	5.378E+02	1.532E+01	4.275E+03	2.872E-01
2108	1.394E+04	7.614E+06	5.116E+02	1.457E+01	4.066E+03	2.732E-01
2109	1.326E+04	7.243E+06	4.867E+02	1.386E+01	3.868E+03	2.599E-01
2110	1.261E+04	6.890E+06	4.629E+02	1.319E+01	3.679E+03	2.472E-01
2111	1.200E+04	6.554E+06	4.403E+02	1.254E+01	3.500E+03	2.351E-01
2112	1.141E+04	6.234E+06	4.189E+02	1.193E+01	3.329E+03	2.237E-01
2113	1.085E+04	5.930E+06	3.984E+02	1.135E+01	3.167E+03	2.128E-01
2114	1.033E+04	5.641E+06	3.790E+02	1.080E+01	3.012E+03	2.024E-01
2115	9.822E+03	5.366E+06	3.605E+02	1.027E+01	2.865E+03	1.925E-01
2116	9.343E+03	5.104E+06	3.429E+02	9.770E+00	2.726E+03	1.831E-01
2117	8.887E+03	4.855E+06	3.262E+02	9.293E+00	2.593E+03	1.742E-01
2118	8.454E+03	4.618E+06	3.103E+02	8.840E+00	2.466E+03	1.657E-01
2119	8.041E+03	4.393E+06	2.952E+02	8.409E+00	2.346E+03	1.576E-01
2120	7.649E+03	4.179E+06	2.808E+02	7.999E+00	2.231E+03	1.499E-01
2121	7.276E+03	3.975E+06	2.671E+02	7.609E+00	2.123E+03	1.426E-01
2122	6.921E+03	3.781E+06	2.541E+02	7.238E+00	2.019E+03	1.357E-01
2123	6.584E+03	3.597E+06	2.417E+02	6.885E+00	1.921E+03	1.290E-01
2124	6.263E+03	3.421E+06	2.299E+02	6.549E+00	1.827E+03	1.228E-01
2125	5.957E+03	3.254E+06	2.187E+02	6.229E+00	1.738E+03	1.168E-01
2126	5.667E+03	3.096E+06	2.080E+02	5.926E+00	1.653E+03	1.111E-01
2127	5.390E+03	2.945E+06	1.979E+02	5.637E+00	1.573E+03	1.057E-01
2128	5.127E+03	2.801E+06	1.882E+02	5.362E+00	1.496E+03	1.005E-01
2129	4.877E+03	2.665E+06	1.790E+02	5.100E+00	1.423E+03	9.560E-02
2130	4.640E+03	2.535E+06	1.703E+02	4.851E+00	1.353E+03	9.094E-02
2131	4.413E+03	2.411E+06	1.620E+02	4.615E+00	1.287E+03	8.650E-02
2132	4.198E+03	2.293E+06	1.541E+02	4.390E+00	1.225E+03	8.229E-02
2133	3.993E+03	2.182E+06	1.466E+02	4.176E+00	1.165E+03	7.827E-02
2134	3.799E+03	2.075E+06	1.394E+02	3.972E+00	1.108E+03	7.445E-02
2135	3.613E+03	1.974E+06	1.326E+02	3.778E+00	1.054E+03	7.082E-02
2136	3.437E+03	1.878E+06	1.262E+02	3.594E+00	1.003E+03	6.737E-02
2137	3.269E+03	1.786E+06	1.200E+02	3.419E+00	9.538E+02	6.408E-02
2138	3.110E+03	1.699E+06	1.142E+02	3.252E+00	9.073E+02	6.096E-02



Summary Report

Landfill Name or Identifier: Sarasota County Central Landfill

Date: Sunday, August 04, 2013

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

Where,

Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$)
i = 1-year time increment
n = (year of the calculation) - (initial year of waste acceptance)
j = 0.1-year time increment
k = methane generation rate ($year^{-1}$)
L_o = potential methane generation capacity (m^3/Mg)
M_i = mass of waste accepted in the i^{th} year (Mg)
t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (decimal years, e.g., 3.2 years)

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

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

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	**1998**	
Landfill Closure Year (with 80-year limit)	**2072**	
Actual Closure Year (without limit)	***2072***	
Have Model Calculate Closure Year?	**Yes**	
Waste Design Capacity	**22,000,000**	*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.040**	*year^{-1}*
Potential Methane Generation Capacity, L_o	**100**	*m^3/Mg*
NMOC Concentration	**267**	*ppmv as hexane*
Methane Content	**50**	*% by volume*

GASES / POLLUTANTS SELECTED

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

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
1998	62,519	68,771	0	0
1999	223,856	246,242	62,519	68,771
2000	241,332	265,465	286,375	315,013
2001	237,655	261,420	527,707	580,478
2002	253,315	278,646	765,362	841,898
2003	269,655	296,620	1,018,676	1,120,544
2004	273,506	300,857	1,288,331	1,417,164
2005	303,589	333,948	1,561,837	1,718,021
2006	288,472	317,319	1,865,426	2,051,969
2007	277,286	305,015	2,153,899	2,369,288
2008	250,341	275,375	2,431,185	2,674,303
2009	232,268	255,495	2,681,526	2,949,679
2010	248,715	273,586	2,913,794	3,205,174
2011	232,609	255,870	3,162,509	3,478,760
2012	240,124	264,136	3,395,118	3,734,630
2013	252,130	277,343	3,635,242	3,998,766
2014	264,736	291,210	3,887,372	4,276,109
2015	277,973	305,770	4,152,108	4,567,319
2016	277,973	305,770	4,430,081	4,873,089
2017	277,973	305,770	4,708,053	5,178,859
2018	277,973	305,770	4,986,026	5,484,629
2019	277,973	305,770	5,263,999	5,790,399
2020	277,973	305,770	5,541,972	6,096,169
2021	277,973	305,770	5,819,944	6,401,939
2022	277,973	305,770	6,097,917	6,707,709
2023	277,973	305,770	6,375,890	7,013,479
2024	277,973	305,770	6,653,863	7,319,249
2025	277,973	305,770	6,931,835	7,625,019
2026	277,973	305,770	7,209,808	7,930,789
2027	277,973	305,770	7,487,781	8,236,559
2028	277,973	305,770	7,765,753	8,542,329
2029	277,973	305,770	8,043,726	8,848,099
2030	277,973	305,770	8,321,699	9,153,869
2031	277,973	305,770	8,599,672	9,459,639
2032	277,973	305,770	8,877,644	9,765,409
2033	277,973	305,770	9,155,617	10,071,179
2034	277,973	305,770	9,433,590	10,376,949
2035	277,973	305,770	9,711,563	10,682,719
2036	277,973	305,770	9,989,535	10,988,489
2037	277,973	305,770	10,267,508	11,294,259

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2038	277,973	305,770	10,545,481	11,600,029
2039	277,973	305,770	10,823,453	11,905,799
2040	277,973	305,770	11,101,426	12,211,569
2041	277,973	305,770	11,379,399	12,517,339
2042	277,973	305,770	11,657,372	12,823,109
2043	277,973	305,770	11,935,344	13,128,879
2044	277,973	305,770	12,213,317	13,434,649
2045	277,973	305,770	12,491,290	13,740,419
2046	277,973	305,770	12,769,263	14,046,189
2047	277,973	305,770	13,047,235	14,351,959
2048	277,973	305,770	13,325,208	14,657,729
2049	277,973	305,770	13,603,181	14,963,499
2050	277,973	305,770	13,881,153	15,269,269
2051	277,973	305,770	14,159,126	15,575,039
2052	277,973	305,770	14,437,099	15,880,809
2053	277,973	305,770	14,715,072	16,186,579
2054	277,973	305,770	14,993,044	16,492,349
2055	277,973	305,770	15,271,017	16,798,119
2056	277,973	305,770	15,548,990	17,103,889
2057	277,973	305,770	15,826,963	17,409,659
2058	277,973	305,770	16,104,935	17,715,429
2059	277,973	305,770	16,382,908	18,021,199
2060	277,973	305,770	16,660,881	18,326,969
2061	277,973	305,770	16,938,853	18,632,739
2062	277,973	305,770	17,216,826	18,938,509
2063	277,973	305,770	17,494,799	19,244,279
2064	277,973	305,770	17,772,772	19,550,049
2065	277,973	305,770	18,050,744	19,855,819
2066	277,973	305,770	18,328,717	20,161,589
2067	277,973	305,770	18,606,690	20,467,359
2068	277,973	305,770	18,884,663	20,773,129
2069	277,973	305,770	19,162,635	21,078,899
2070	277,973	305,770	19,440,608	21,384,669
2071	277,973	305,770	19,718,581	21,690,439
2072	3,447	3,791	19,996,553	21,996,209
2073	0	0	20,000,000	22,000,000
2074	0	0	20,000,000	22,000,000
2075	0	0	20,000,000	22,000,000
2076	0	0	20,000,000	22,000,000
2077	0	0	20,000,000	22,000,000

Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
1998	0	0	0	0	0	0
1999	6.135E+02	4.913E+05	3.301E+01	1.639E+02	2.456E+05	1.650E+01
2000	2.786E+03	2.231E+06	1.499E+02	7.442E+02	1.116E+06	7.495E+01
2001	5.045E+03	4.040E+06	2.714E+02	1.348E+03	2.020E+06	1.357E+02
2002	7.179E+03	5.749E+06	3.863E+02	1.918E+03	2.874E+06	1.931E+02
2003	9.384E+03	7.514E+06	5.049E+02	2.506E+03	3.757E+06	2.524E+02
2004	1.166E+04	9.338E+06	6.274E+02	3.115E+03	4.669E+06	3.137E+02
2005	1.389E+04	1.112E+07	7.472E+02	3.710E+03	5.561E+06	3.736E+02
2006	1.632E+04	1.307E+07	8.782E+02	4.360E+03	6.535E+06	4.391E+02
2007	1.851E+04	1.482E+07	9.961E+02	4.945E+03	7.412E+06	4.980E+02
2008	2.051E+04	1.642E+07	1.103E+03	5.478E+03	8.211E+06	5.517E+02
2009	2.216E+04	1.775E+07	1.192E+03	5.920E+03	8.873E+06	5.962E+02
2010	2.357E+04	1.888E+07	1.268E+03	6.296E+03	9.438E+06	6.341E+02
2011	2.509E+04	2.009E+07	1.350E+03	6.701E+03	1.004E+07	6.749E+02
2012	2.639E+04	2.113E+07	1.420E+03	7.048E+03	1.056E+07	7.098E+02
2013	2.771E+04	2.219E+07	1.491E+03	7.401E+03	1.109E+07	7.454E+02
2014	2.910E+04	2.330E+07	1.565E+03	7.772E+03	1.165E+07	7.827E+02
2015	3.055E+04	2.447E+07	1.644E+03	8.161E+03	1.223E+07	8.219E+02
2016	3.208E+04	2.569E+07	1.726E+03	8.570E+03	1.285E+07	8.631E+02
2017	3.355E+04	2.687E+07	1.805E+03	8.962E+03	1.343E+07	9.026E+02
2018	3.496E+04	2.800E+07	1.881E+03	9.339E+03	1.400E+07	9.406E+02
2019	3.632E+04	2.908E+07	1.954E+03	9.702E+03	1.454E+07	9.771E+02
2020	3.763E+04	3.013E+07	2.024E+03	1.005E+04	1.506E+07	1.012E+03
2021	3.888E+04	3.113E+07	2.092E+03	1.038E+04	1.557E+07	1.046E+03
2022	4.008E+04	3.209E+07	2.156E+03	1.071E+04	1.605E+07	1.078E+03
2023	4.124E+04	3.302E+07	2.219E+03	1.101E+04	1.651E+07	1.109E+03
2024	4.235E+04	3.391E+07	2.278E+03	1.131E+04	1.696E+07	1.139E+03
2025	4.342E+04	3.476E+07	2.336E+03	1.160E+04	1.738E+07	1.168E+03
2026	4.444E+04	3.559E+07	2.391E+03	1.187E+04	1.779E+07	1.196E+03
2027	4.543E+04	3.637E+07	2.444E+03	1.213E+04	1.819E+07	1.222E+03
2028	4.637E+04	3.713E+07	2.495E+03	1.239E+04	1.857E+07	1.247E+03
2029	4.728E+04	3.786E+07	2.544E+03	1.263E+04	1.893E+07	1.272E+03
2030	4.816E+04	3.856E+07	2.591E+03	1.286E+04	1.928E+07	1.295E+03
2031	4.900E+04	3.923E+07	2.636E+03	1.309E+04	1.962E+07	1.318E+03
2032	4.980E+04	3.988E+07	2.679E+03	1.330E+04	1.994E+07	1.340E+03
2033	5.058E+04	4.050E+07	2.721E+03	1.351E+04	2.025E+07	1.361E+03
2034	5.132E+04	4.110E+07	2.761E+03	1.371E+04	2.055E+07	1.381E+03
2035	5.204E+04	4.167E+07	2.800E+03	1.390E+04	2.083E+07	1.400E+03
2036	5.272E+04	4.222E+07	2.837E+03	1.408E+04	2.111E+07	1.418E+03
2037	5.338E+04	4.275E+07	2.872E+03	1.426E+04	2.137E+07	1.436E+03
2038	5.402E+04	4.326E+07	2.906E+03	1.443E+04	2.163E+07	1.453E+03
2039	5.463E+04	4.374E+07	2.939E+03	1.459E+04	2.187E+07	1.470E+03
2040	5.521E+04	4.421E+07	2.971E+03	1.475E+04	2.211E+07	1.485E+03
2041	5.578E+04	4.466E+07	3.001E+03	1.490E+04	2.233E+07	1.500E+03
2042	5.632E+04	4.510E+07	3.030E+03	1.504E+04	2.255E+07	1.515E+03
2043	5.684E+04	4.551E+07	3.058E+03	1.518E+04	2.276E+07	1.529E+03
2044	5.734E+04	4.591E+07	3.085E+03	1.532E+04	2.296E+07	1.542E+03
2045	5.782E+04	4.630E+07	3.111E+03	1.544E+04	2.315E+07	1.555E+03
2046	5.828E+04	4.667E+07	3.135E+03	1.557E+04	2.333E+07	1.568E+03
2047	5.872E+04	4.702E+07	3.159E+03	1.568E+04	2.351E+07	1.580E+03

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2048	5.914E+04	4.736E+07	3.182E+03	1.580E+04	2.368E+07	1.591E+03
2049	5.955E+04	4.769E+07	3.204E+03	1.591E+04	2.384E+07	1.602E+03
2050	5.995E+04	4.800E+07	3.225E+03	1.601E+04	2.400E+07	1.613E+03
2051	6.032E+04	4.830E+07	3.246E+03	1.611E+04	2.415E+07	1.623E+03
2052	6.069E+04	4.859E+07	3.265E+03	1.621E+04	2.430E+07	1.633E+03
2053	6.103E+04	4.887E+07	3.284E+03	1.630E+04	2.444E+07	1.642E+03
2054	6.137E+04	4.914E+07	3.302E+03	1.639E+04	2.457E+07	1.651E+03
2055	6.169E+04	4.940E+07	3.319E+03	1.648E+04	2.470E+07	1.660E+03
2056	6.200E+04	4.965E+07	3.336E+03	1.656E+04	2.482E+07	1.668E+03
2057	6.230E+04	4.988E+07	3.352E+03	1.664E+04	2.494E+07	1.676E+03
2058	6.258E+04	5.011E+07	3.367E+03	1.672E+04	2.506E+07	1.684E+03
2059	6.285E+04	5.033E+07	3.382E+03	1.679E+04	2.517E+07	1.691E+03
2060	6.312E+04	5.054E+07	3.396E+03	1.686E+04	2.527E+07	1.698E+03
2061	6.337E+04	5.074E+07	3.410E+03	1.693E+04	2.537E+07	1.705E+03
2062	6.361E+04	5.094E+07	3.423E+03	1.699E+04	2.547E+07	1.711E+03
2063	6.385E+04	5.113E+07	3.435E+03	1.705E+04	2.556E+07	1.718E+03
2064	6.407E+04	5.131E+07	3.447E+03	1.711E+04	2.565E+07	1.724E+03
2065	6.429E+04	5.148E+07	3.459E+03	1.717E+04	2.574E+07	1.729E+03
2066	6.449E+04	5.164E+07	3.470E+03	1.723E+04	2.582E+07	1.735E+03
2067	6.469E+04	5.180E+07	3.481E+03	1.728E+04	2.590E+07	1.740E+03
2068	6.488E+04	5.196E+07	3.491E+03	1.733E+04	2.598E+07	1.745E+03
2069	6.507E+04	5.210E+07	3.501E+03	1.738E+04	2.605E+07	1.750E+03
2070	6.524E+04	5.224E+07	3.510E+03	1.743E+04	2.612E+07	1.755E+03
2071	6.541E+04	5.238E+07	3.519E+03	1.747E+04	2.619E+07	1.760E+03
2072	6.558E+04	5.251E+07	3.528E+03	1.752E+04	2.626E+07	1.764E+03
2073	6.304E+04	5.048E+07	3.392E+03	1.684E+04	2.524E+07	1.696E+03
2074	6.057E+04	4.850E+07	3.259E+03	1.618E+04	2.425E+07	1.629E+03
2075	5.819E+04	4.660E+07	3.131E+03	1.554E+04	2.330E+07	1.565E+03
2076	5.591E+04	4.477E+07	3.008E+03	1.493E+04	2.239E+07	1.504E+03
2077	5.372E+04	4.301E+07	2.890E+03	1.435E+04	2.151E+07	1.445E+03
2078	5.161E+04	4.133E+07	2.777E+03	1.379E+04	2.066E+07	1.388E+03
2079	4.959E+04	3.971E+07	2.668E+03	1.325E+04	1.985E+07	1.334E+03
2080	4.764E+04	3.815E+07	2.563E+03	1.273E+04	1.908E+07	1.282E+03
2081	4.578E+04	3.665E+07	2.463E+03	1.223E+04	1.833E+07	1.231E+03
2082	4.398E+04	3.522E+07	2.366E+03	1.175E+04	1.761E+07	1.183E+03
2083	4.226E+04	3.384E+07	2.273E+03	1.129E+04	1.692E+07	1.137E+03
2084	4.060E+04	3.251E+07	2.184E+03	1.084E+04	1.626E+07	1.092E+03
2085	3.901E+04	3.124E+07	2.099E+03	1.042E+04	1.562E+07	1.049E+03
2086	3.748E+04	3.001E+07	2.016E+03	1.001E+04	1.501E+07	1.008E+03
2087	3.601E+04	2.883E+07	1.937E+03	9.618E+03	1.442E+07	9.687E+02
2088	3.460E+04	2.770E+07	1.861E+03	9.241E+03	1.385E+07	9.307E+02
2089	3.324E+04	2.662E+07	1.788E+03	8.879E+03	1.331E+07	8.942E+02
2090	3.194E+04	2.557E+07	1.718E+03	8.531E+03	1.279E+07	8.591E+02
2091	3.068E+04	2.457E+07	1.651E+03	8.196E+03	1.229E+07	8.254E+02
2092	2.948E+04	2.361E+07	1.586E+03	7.875E+03	1.180E+07	7.931E+02
2093	2.833E+04	2.268E+07	1.524E+03	7.566E+03	1.134E+07	7.620E+02
2094	2.721E+04	2.179E+07	1.464E+03	7.269E+03	1.090E+07	7.321E+02
2095	2.615E+04	2.094E+07	1.407E+03	6.984E+03	1.047E+07	7.034E+02
2096	2.512E+04	2.012E+07	1.352E+03	6.710E+03	1.006E+07	6.758E+02
2097	2.414E+04	1.933E+07	1.299E+03	6.447E+03	9.664E+06	6.493E+02
2098	2.319E+04	1.857E+07	1.248E+03	6.194E+03	9.285E+06	6.239E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2099	2.228E+04	1.784E+07	1.199E+03	5.952E+03	8.921E+06	5.994E+02
2100	2.141E+04	1.714E+07	1.152E+03	5.718E+03	8.571E+06	5.759E+02
2101	2.057E+04	1.647E+07	1.107E+03	5.494E+03	8.235E+06	5.533E+02
2102	1.976E+04	1.582E+07	1.063E+03	5.279E+03	7.912E+06	5.316E+02
2103	1.899E+04	1.520E+07	1.022E+03	5.072E+03	7.602E+06	5.108E+02
2104	1.824E+04	1.461E+07	9.815E+02	4.873E+03	7.304E+06	4.907E+02
2105	1.753E+04	1.403E+07	9.430E+02	4.682E+03	7.017E+06	4.715E+02
2106	1.684E+04	1.348E+07	9.060E+02	4.498E+03	6.742E+06	4.530E+02
2107	1.618E+04	1.296E+07	8.705E+02	4.322E+03	6.478E+06	4.353E+02
2108	1.555E+04	1.245E+07	8.364E+02	4.152E+03	6.224E+06	4.182E+02
2109	1.494E+04	1.196E+07	8.036E+02	3.989E+03	5.980E+06	4.018E+02
2110	1.435E+04	1.149E+07	7.721E+02	3.833E+03	5.745E+06	3.860E+02
2111	1.379E+04	1.104E+07	7.418E+02	3.683E+03	5.520E+06	3.709E+02
2112	1.325E+04	1.061E+07	7.127E+02	3.538E+03	5.304E+06	3.564E+02
2113	1.273E+04	1.019E+07	6.848E+02	3.400E+03	5.096E+06	3.424E+02
2114	1.223E+04	9.792E+06	6.579E+02	3.266E+03	4.896E+06	3.290E+02
2115	1.175E+04	9.408E+06	6.321E+02	3.138E+03	4.704E+06	3.161E+02
2116	1.129E+04	9.039E+06	6.073E+02	3.015E+03	4.519E+06	3.037E+02
2117	1.085E+04	8.685E+06	5.835E+02	2.897E+03	4.342E+06	2.918E+02
2118	1.042E+04	8.344E+06	5.606E+02	2.783E+03	4.172E+06	2.803E+02
2119	1.001E+04	8.017E+06	5.387E+02	2.674E+03	4.008E+06	2.693E+02
2120	9.619E+03	7.703E+06	5.175E+02	2.569E+03	3.851E+06	2.588E+02
2121	9.242E+03	7.401E+06	4.972E+02	2.469E+03	3.700E+06	2.486E+02
2122	8.880E+03	7.110E+06	4.777E+02	2.372E+03	3.555E+06	2.389E+02
2123	8.531E+03	6.832E+06	4.590E+02	2.279E+03	3.416E+06	2.295E+02
2124	8.197E+03	6.564E+06	4.410E+02	2.189E+03	3.282E+06	2.205E+02
2125	7.875E+03	6.306E+06	4.237E+02	2.104E+03	3.153E+06	2.119E+02
2126	7.567E+03	6.059E+06	4.071E+02	2.021E+03	3.030E+06	2.036E+02
2127	7.270E+03	5.821E+06	3.911E+02	1.942E+03	2.911E+06	1.956E+02
2128	6.985E+03	5.593E+06	3.758E+02	1.866E+03	2.797E+06	1.879E+02
2129	6.711E+03	5.374E+06	3.611E+02	1.793E+03	2.687E+06	1.805E+02
2130	6.448E+03	5.163E+06	3.469E+02	1.722E+03	2.582E+06	1.735E+02
2131	6.195E+03	4.961E+06	3.333E+02	1.655E+03	2.480E+06	1.667E+02
2132	5.952E+03	4.766E+06	3.202E+02	1.590E+03	2.383E+06	1.601E+02
2133	5.719E+03	4.579E+06	3.077E+02	1.528E+03	2.290E+06	1.538E+02
2134	5.495E+03	4.400E+06	2.956E+02	1.468E+03	2.200E+06	1.478E+02
2135	5.279E+03	4.227E+06	2.840E+02	1.410E+03	2.114E+06	1.420E+02
2136	5.072E+03	4.061E+06	2.729E+02	1.355E+03	2.031E+06	1.364E+02
2137	4.873E+03	3.902E+06	2.622E+02	1.302E+03	1.951E+06	1.311E+02
2138	4.682E+03	3.749E+06	2.519E+02	1.251E+03	1.875E+06	1.260E+02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
1998	0	0	0	0	0	0
1999	4.496E+02	2.456E+05	1.650E+01	4.702E-01	1.312E+02	8.813E-03
2000	2.042E+03	1.116E+06	7.495E+01	2.135E+00	5.957E+02	4.002E-02
2001	3.697E+03	2.020E+06	1.357E+02	3.866E+00	1.079E+03	7.247E-02
2002	5.262E+03	2.874E+06	1.931E+02	5.502E+00	1.535E+03	1.031E-01
2003	6.877E+03	3.757E+06	2.524E+02	7.191E+00	2.006E+03	1.348E-01
2004	8.547E+03	4.669E+06	3.137E+02	8.937E+00	2.493E+03	1.675E-01
2005	1.018E+04	5.561E+06	3.736E+02	1.064E+01	2.969E+03	1.995E-01
2006	1.196E+04	6.535E+06	4.391E+02	1.251E+01	3.490E+03	2.345E-01
2007	1.357E+04	7.412E+06	4.980E+02	1.419E+01	3.958E+03	2.660E-01
2008	1.503E+04	8.211E+06	5.517E+02	1.572E+01	4.385E+03	2.946E-01
2009	1.624E+04	8.873E+06	5.962E+02	1.698E+01	4.738E+03	3.184E-01
2010	1.728E+04	9.438E+06	6.341E+02	1.806E+01	5.040E+03	3.386E-01
2011	1.839E+04	1.004E+07	6.749E+02	1.923E+01	5.364E+03	3.604E-01
2012	1.934E+04	1.056E+07	7.098E+02	2.022E+01	5.642E+03	3.791E-01
2013	2.031E+04	1.109E+07	7.454E+02	2.123E+01	5.924E+03	3.980E-01
2014	2.132E+04	1.165E+07	7.827E+02	2.230E+01	6.221E+03	4.180E-01
2015	2.239E+04	1.223E+07	8.219E+02	2.341E+01	6.532E+03	4.389E-01
2016	2.351E+04	1.285E+07	8.631E+02	2.459E+01	6.859E+03	4.609E-01
2017	2.459E+04	1.343E+07	9.026E+02	2.571E+01	7.174E+03	4.820E-01
2018	2.563E+04	1.400E+07	9.406E+02	2.680E+01	7.476E+03	5.023E-01
2019	2.662E+04	1.454E+07	9.771E+02	2.784E+01	7.766E+03	5.218E-01
2020	2.758E+04	1.506E+07	1.012E+03	2.883E+01	8.044E+03	5.405E-01
2021	2.849E+04	1.557E+07	1.046E+03	2.979E+01	8.312E+03	5.585E-01
2022	2.937E+04	1.605E+07	1.078E+03	3.072E+01	8.569E+03	5.758E-01
2023	3.022E+04	1.651E+07	1.109E+03	3.160E+01	8.817E+03	5.924E-01
2024	3.104E+04	1.696E+07	1.139E+03	3.245E+01	9.054E+03	6.083E-01
2025	3.182E+04	1.738E+07	1.168E+03	3.327E+01	9.282E+03	6.237E-01
2026	3.257E+04	1.779E+07	1.196E+03	3.406E+01	9.501E+03	6.384E-01
2027	3.329E+04	1.819E+07	1.222E+03	3.481E+01	9.712E+03	6.526E-01
2028	3.399E+04	1.857E+07	1.247E+03	3.554E+01	9.914E+03	6.662E-01
2029	3.465E+04	1.893E+07	1.272E+03	3.624E+01	1.011E+04	6.792E-01
2030	3.529E+04	1.928E+07	1.295E+03	3.690E+01	1.030E+04	6.918E-01
2031	3.591E+04	1.962E+07	1.318E+03	3.755E+01	1.048E+04	7.038E-01
2032	3.650E+04	1.994E+07	1.340E+03	3.817E+01	1.065E+04	7.154E-01
2033	3.707E+04	2.025E+07	1.361E+03	3.876E+01	1.081E+04	7.266E-01
2034	3.761E+04	2.055E+07	1.381E+03	3.933E+01	1.097E+04	7.372E-01
2035	3.814E+04	2.083E+07	1.400E+03	3.988E+01	1.113E+04	7.475E-01
2036	3.864E+04	2.111E+07	1.418E+03	4.041E+01	1.127E+04	7.574E-01
2037	3.912E+04	2.137E+07	1.436E+03	4.091E+01	1.141E+04	7.669E-01
2038	3.959E+04	2.163E+07	1.453E+03	4.140E+01	1.155E+04	7.760E-01
2039	4.004E+04	2.187E+07	1.470E+03	4.187E+01	1.168E+04	7.848E-01
2040	4.047E+04	2.211E+07	1.485E+03	4.231E+01	1.180E+04	7.932E-01
2041	4.088E+04	2.233E+07	1.500E+03	4.275E+01	1.193E+04	8.013E-01
2042	4.127E+04	2.255E+07	1.515E+03	4.316E+01	1.204E+04	8.090E-01
2043	4.166E+04	2.276E+07	1.529E+03	4.356E+01	1.215E+04	8.165E-01
2044	4.202E+04	2.296E+07	1.542E+03	4.394E+01	1.226E+04	8.237E-01
2045	4.237E+04	2.315E+07	1.555E+03	4.431E+01	1.236E+04	8.305E-01
2046	4.271E+04	2.333E+07	1.568E+03	4.466E+01	1.246E+04	8.372E-01
2047	4.303E+04	2.351E+07	1.580E+03	4.500E+01	1.255E+04	8.435E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2048	4.335E+04	2.368E+07	1.591E+03	4.533E+01	1.265E+04	8.496E-01
2049	4.365E+04	2.384E+07	1.602E+03	4.564E+01	1.273E+04	8.555E-01
2050	4.393E+04	2.400E+07	1.613E+03	4.594E+01	1.282E+04	8.611E-01
2051	4.421E+04	2.415E+07	1.623E+03	4.623E+01	1.290E+04	8.666E-01
2052	4.448E+04	2.430E+07	1.633E+03	4.651E+01	1.297E+04	8.718E-01
2053	4.473E+04	2.444E+07	1.642E+03	4.677E+01	1.305E+04	8.768E-01
2054	4.498E+04	2.457E+07	1.651E+03	4.703E+01	1.312E+04	8.816E-01
2055	4.521E+04	2.470E+07	1.660E+03	4.728E+01	1.319E+04	8.862E-01
2056	4.544E+04	2.482E+07	1.668E+03	4.751E+01	1.326E+04	8.906E-01
2057	4.566E+04	2.494E+07	1.676E+03	4.774E+01	1.332E+04	8.949E-01
2058	4.586E+04	2.506E+07	1.684E+03	4.796E+01	1.338E+04	8.990E-01
2059	4.607E+04	2.517E+07	1.691E+03	4.817E+01	1.344E+04	9.029E-01
2060	4.626E+04	2.527E+07	1.698E+03	4.837E+01	1.349E+04	9.067E-01
2061	4.644E+04	2.537E+07	1.705E+03	4.856E+01	1.355E+04	9.103E-01
2062	4.662E+04	2.547E+07	1.711E+03	4.875E+01	1.360E+04	9.138E-01
2063	4.679E+04	2.556E+07	1.718E+03	4.893E+01	1.365E+04	9.172E-01
2064	4.696E+04	2.565E+07	1.724E+03	4.910E+01	1.370E+04	9.204E-01
2065	4.712E+04	2.574E+07	1.729E+03	4.927E+01	1.374E+04	9.235E-01
2066	4.727E+04	2.582E+07	1.735E+03	4.943E+01	1.379E+04	9.265E-01
2067	4.741E+04	2.590E+07	1.740E+03	4.958E+01	1.383E+04	9.293E-01
2068	4.755E+04	2.598E+07	1.745E+03	4.972E+01	1.387E+04	9.321E-01
2069	4.769E+04	2.605E+07	1.750E+03	4.987E+01	1.391E+04	9.347E-01
2070	4.782E+04	2.612E+07	1.755E+03	5.000E+01	1.395E+04	9.372E-01
2071	4.794E+04	2.619E+07	1.760E+03	5.013E+01	1.399E+04	9.397E-01
2072	4.806E+04	2.626E+07	1.764E+03	5.026E+01	1.402E+04	9.420E-01
2073	4.620E+04	2.524E+07	1.696E+03	4.831E+01	1.348E+04	9.056E-01
2074	4.439E+04	2.425E+07	1.629E+03	4.642E+01	1.295E+04	8.701E-01
2075	4.265E+04	2.330E+07	1.565E+03	4.460E+01	1.244E+04	8.359E-01
2076	4.098E+04	2.239E+07	1.504E+03	4.285E+01	1.195E+04	8.032E-01
2077	3.937E+04	2.151E+07	1.445E+03	4.117E+01	1.149E+04	7.717E-01
2078	3.783E+04	2.066E+07	1.388E+03	3.955E+01	1.103E+04	7.414E-01
2079	3.634E+04	1.985E+07	1.334E+03	3.800E+01	1.060E+04	7.123E-01
2080	3.492E+04	1.908E+07	1.282E+03	3.651E+01	1.019E+04	6.844E-01
2081	3.355E+04	1.833E+07	1.231E+03	3.508E+01	9.787E+03	6.576E-01
2082	3.223E+04	1.761E+07	1.183E+03	3.371E+01	9.403E+03	6.318E-01
2083	3.097E+04	1.692E+07	1.137E+03	3.238E+01	9.034E+03	6.070E-01
2084	2.975E+04	1.626E+07	1.092E+03	3.111E+01	8.680E+03	5.832E-01
2085	2.859E+04	1.562E+07	1.049E+03	2.989E+01	8.340E+03	5.604E-01
2086	2.747E+04	1.501E+07	1.008E+03	2.872E+01	8.013E+03	5.384E-01
2087	2.639E+04	1.442E+07	9.687E+02	2.760E+01	7.699E+03	5.173E-01
2088	2.536E+04	1.385E+07	9.307E+02	2.651E+01	7.397E+03	4.970E-01
2089	2.436E+04	1.331E+07	8.942E+02	2.547E+01	7.107E+03	4.775E-01
2090	2.341E+04	1.279E+07	8.591E+02	2.447E+01	6.828E+03	4.588E-01
2091	2.249E+04	1.229E+07	8.254E+02	2.352E+01	6.560E+03	4.408E-01
2092	2.161E+04	1.180E+07	7.931E+02	2.259E+01	6.303E+03	4.235E-01
2093	2.076E+04	1.134E+07	7.620E+02	2.171E+01	6.056E+03	4.069E-01
2094	1.995E+04	1.090E+07	7.321E+02	2.086E+01	5.818E+03	3.909E-01
2095	1.916E+04	1.047E+07	7.034E+02	2.004E+01	5.590E+03	3.756E-01
2096	1.841E+04	1.006E+07	6.758E+02	1.925E+01	5.371E+03	3.609E-01
2097	1.769E+04	9.664E+06	6.493E+02	1.850E+01	5.161E+03	3.467E-01
2098	1.700E+04	9.285E+06	6.239E+02	1.777E+01	4.958E+03	3.331E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2099	1.633E+04	8.921E+06	5.994E+02	1.708E+01	4.764E+03	3.201E-01
2100	1.569E+04	8.571E+06	5.759E+02	1.641E+01	4.577E+03	3.075E-01
2101	1.507E+04	8.235E+06	5.533E+02	1.576E+01	4.398E+03	2.955E-01
2102	1.448E+04	7.912E+06	5.316E+02	1.514E+01	4.225E+03	2.839E-01
2103	1.392E+04	7.602E+06	5.108E+02	1.455E+01	4.059E+03	2.728E-01
2104	1.337E+04	7.304E+06	4.907E+02	1.398E+01	3.900E+03	2.621E-01
2105	1.285E+04	7.017E+06	4.715E+02	1.343E+01	3.747E+03	2.518E-01
2106	1.234E+04	6.742E+06	4.530E+02	1.291E+01	3.600E+03	2.419E-01
2107	1.186E+04	6.478E+06	4.353E+02	1.240E+01	3.459E+03	2.324E-01
2108	1.139E+04	6.224E+06	4.182E+02	1.191E+01	3.324E+03	2.233E-01
2109	1.095E+04	5.980E+06	4.018E+02	1.145E+01	3.193E+03	2.146E-01
2110	1.052E+04	5.745E+06	3.860E+02	1.100E+01	3.068E+03	2.061E-01
2111	1.010E+04	5.520E+06	3.709E+02	1.057E+01	2.948E+03	1.981E-01
2112	9.708E+03	5.304E+06	3.564E+02	1.015E+01	2.832E+03	1.903E-01
2113	9.328E+03	5.096E+06	3.424E+02	9.754E+00	2.721E+03	1.828E-01
2114	8.962E+03	4.896E+06	3.290E+02	9.371E+00	2.614E+03	1.757E-01
2115	8.611E+03	4.704E+06	3.161E+02	9.004E+00	2.512E+03	1.688E-01
2116	8.273E+03	4.519E+06	3.037E+02	8.651E+00	2.413E+03	1.622E-01
2117	7.949E+03	4.342E+06	2.918E+02	8.312E+00	2.319E+03	1.558E-01
2118	7.637E+03	4.172E+06	2.803E+02	7.986E+00	2.228E+03	1.497E-01
2119	7.337E+03	4.008E+06	2.693E+02	7.673E+00	2.141E+03	1.438E-01
2120	7.050E+03	3.851E+06	2.588E+02	7.372E+00	2.057E+03	1.382E-01
2121	6.773E+03	3.700E+06	2.486E+02	7.083E+00	1.976E+03	1.328E-01
2122	6.508E+03	3.555E+06	2.389E+02	6.805E+00	1.898E+03	1.276E-01
2123	6.253E+03	3.416E+06	2.295E+02	6.538E+00	1.824E+03	1.226E-01
2124	6.007E+03	3.282E+06	2.205E+02	6.282E+00	1.752E+03	1.178E-01
2125	5.772E+03	3.153E+06	2.119E+02	6.035E+00	1.684E+03	1.131E-01
2126	5.546E+03	3.030E+06	2.036E+02	5.799E+00	1.618E+03	1.087E-01
2127	5.328E+03	2.911E+06	1.956E+02	5.571E+00	1.554E+03	1.044E-01
2128	5.119E+03	2.797E+06	1.879E+02	5.353E+00	1.493E+03	1.003E-01
2129	4.918E+03	2.687E+06	1.805E+02	5.143E+00	1.435E+03	9.641E-02
2130	4.726E+03	2.582E+06	1.735E+02	4.941E+00	1.379E+03	9.263E-02
2131	4.540E+03	2.480E+06	1.667E+02	4.748E+00	1.325E+03	8.899E-02
2132	4.362E+03	2.383E+06	1.601E+02	4.562E+00	1.273E+03	8.550E-02
2133	4.191E+03	2.290E+06	1.538E+02	4.383E+00	1.223E+03	8.215E-02
2134	4.027E+03	2.200E+06	1.478E+02	4.211E+00	1.175E+03	7.893E-02
2135	3.869E+03	2.114E+06	1.420E+02	4.046E+00	1.129E+03	7.584E-02
2136	3.717E+03	2.031E+06	1.364E+02	3.887E+00	1.084E+03	7.286E-02
2137	3.572E+03	1.951E+06	1.311E+02	3.735E+00	1.042E+03	7.000E-02
2138	3.431E+03	1.875E+06	1.260E+02	3.588E+00	1.001E+03	6.726E-02

ATTACHMENT 5

LFG (Treated Gas) Fueled IC Engine
H_2S Emission Rates

Table H-1r

Summary of Criteria Air Pollutant, HAPs and GHG Emission Rates
Landfill Gas Fueled IC Engine

CAT® G3520C IC Engine Specifications

Net Power Output	2,242	bhp	Min. LFG heat content (LHV):	350	Btu/scf
Heat input rate (LHV)	14.96	MMBtu/hr (1)	Max. fuel consumption (per hr)	42,753	scf/hr
Heat input rate (HHV)	16.63	MMBtu/hr	Max. fuel consumption (per min)	713	scfm
			Max. fuel consumption (daily)	1.026	MMscf/day

		Pollutant Emission Factors			Pollutant Emission Rates Single Engine		Pollutant Emission Rates Four (4) Engines	
Regulated Pollutant		(g/bhp-hr)	(lb/MMscf)	(lb/MMBtu)	(lb/hr)	(TpY)	(lb/hr)	(TpY)
Criteria Pollutants								
Nitrogen Oxides (2)	NO_X	0.60	--	0.198	2.97	13.0	11.86	52.0
Carbon Monoxide (2)	CO	3.50	--	1.156	17.3	75.8	69.20	303.1
Particulate Matter (2)	PM10/PM2.5	0.24	--	0.079	1.19	5.20	4.74	20.8
Volatile Organic Compounds (3)	VOC	0.42	--	0.137	2.05	8.99	8.21	36.0
Non-Methane Hydrocarbons (4)	NMOC	0.52	--	0.172	2.57	11.26	10.28	45.0
Sulfur Dioxide (3)	SO_2	--	48.0	0.137	2.05	8.99	8.21	36.0
Hydrogen Sulfide(5)	H_2S	--	0.24	0.0007	0.01	0.05	0.04	0.2
Hazardous Air Pollutants (HAPs)								
LFG Constituents (6)	HAPs	--	3.04	0.009	0.13	0.57	0.52	2.3
Hydrogen Chloride (7)	HCl	--	11.17	0.032	0.48	2.09	1.91	8.4
Formaldehyde (8)	HCHO	0.42	--	0.139	2.08	9.09	8.30	36.4
Total								47.0
Greenhouse Gases (GHG) (9)								
Carbon Dioxide - CO2e	CO_2	--	--	--	--	8,357	--	33,428
Methane - CO2e	CH_4	--	--	--	--	11	--	44
Nitrous Oxide - CO2e	N_2O	--	--	--	--	31	--	124
Total								33,596

Notes

1 Engine heat input rate based on CAT G3520C gas engine spec sheet (which is provided in Appendix F of initial permit application submittal) 'LHV Input' 243,311 Btu/min plus 2.5% tolerance

2 Emissions based on BACT determination provide in Appendix K of initial permit application submittal

3 Emissions based on 90% of PSD significant emission increase threshold of 40 TpY.

4 Emissions based on 90% of PSD significant emission increase threshold of 50 TpY.

5 Emissions based on H_2S 274.2 ppmv concentration, see Table H-2 of initial permit application submittal. H_2S is a fammable gas that has an autoignition temperature of 500 F. Therefore, since IC engine combustion temperatures are in excess of 900 F a 99% destruction efficiency was used. ((274.2 scf H_2S/MMscf LFG) (34.06 lb. H_2S/mol.) / (385 cf/mol)) (1 - 0.99) = 0.243 lb. H_2S /MMscf

6 HAPs from LFG constituents based on AP-42 default data (see Tables H-5 and H-6 of initial permit application submittal)

7 HCl emissions based on conversion of chlorinated LFG constituents (see Table H-4 of initial permit application submittal)

8 HCHO emissions from CAT G3520C gas engine spec sheet (see Appendix F of initial permit application submittal)

9 Greenhouse gas emissions (see Tables H-7 and H-8 of initial permit application submittal)