

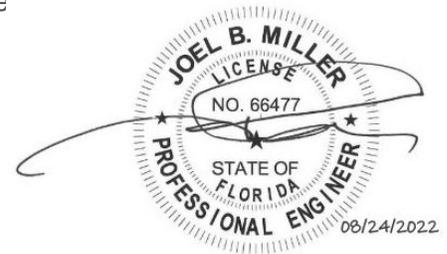


# 2022 Tier 2 NMOC Emission Rate Report Lake County Central Solid Waste Management Facility

Prepared for:  
Lake County Public Works Solid Waste Division  
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## Introduction

HDR Engineering, Inc. (HDR) has been retained by S2L, incorporated (S2Li), on behalf of the Lake County Public Works Solid Waste Division, to conduct landfill gas (LFG) sampling and analysis at the Lake County Central Solid Waste Management Facility (LCCSWMF) located in Tavares, Florida. The purpose of this investigation is to obtain site-specific non-methane organic compound (NMOC) values to be used in NMOC emissions modeling required under the landfill New Source Performance Standards and Emission Guidelines (NSPS/EG) regulations.

NSPS/EG regulations currently promulgated under the new Federal Plan (Title 40 Code of Federal Regulations (CFR) Subpart OOO) are applicable for the LCCSWMF. As of the date of this report, it should be noted that the Federal Register/Vol. 86, No. 205, published on October 27, 2021, indicates the Environmental Protection Agency (EPA) is proposing to approve a Clean Air Act (CAA) section 111(d) plan submitted by the Florida Department of Environmental Protection (FDEP) on December 22, 2020. This action would allow for promulgation of the EG regulations (40 CFR Subpart Cf) in Florida (and the LCCSWMF). Notwithstanding this anticipated action, sampling was conducted in accordance with the requirements outlined in both the Subpart OOO and Subpart Cf regulations, as they are identical with respect to this sampling protocol. Specifically, these regulations refer to the sampling methodologies described in EPA Method 3C and EPA Method 25C.

## Site Information

The LCCSWMF began accepting municipal solid waste (MSW) in 1972. Since this time, MSW (as well as incinerator ash) has been disposed of in the Phase I, II, and III landfills. The Phase I landfill is the oldest and largest landfill cell. Phase I has a total waste area of approximately 80 acres and was formally closed in 1993 with a flexible membrane final cover system.

The Phase II landfill was constructed in different sequences: (a) Phase IIA landfill, which received only incinerator ash from the Waste to Energy (WTE) plant; (b) Phase IIB landfill, which received MSW and incinerator ash; (c) Phase IIC landfill, which received MSW and incinerator ash; and (d) Phase II Vertical Expansion, which also received MSW and incinerator ash. Phase II encompasses approximately 15 acres and was formally closed in 2016 with a flexible membrane final cover system.

The Phase III Landfill (MSW Cell and Ash Cell) was permitted in 2006 and certified by FDEP for waste disposal in 2010. The Phase III landfill started receiving WTE ash in February 2011. It is understood that MSW and ash have been commingled in Phase III since 2001, with the last waste receipt being in 2016. Phase III is approximately 5 acres, and has not yet formally undergone final capping and closure.

## Sampling Methodology

Tier 2 field sampling activities were conducted at the LCCSWMF on Monday July 25, 2022 through Thursday July 28, 2022 by Joel Miller, PE and Chelsea Williams, EI of HDR. Three representatives of the LFG drilling subcontractor, Preferred Drilling Solutions, Inc. (PDS), were on site Monday July 25, 2022 for Phase III sampling activities. Sampling was performed according to the procedures outlined in the previously-submitted Sampling Plan, and in accordance with EPA Method 25C.

The LFG samples were composited into stainless steel Summa canisters per Method 25C. In total, thirty (30) sample locations (26 sample locations and four duplicates) were composited into 13

canisters, with a maximum of 3 sample locations per canister. The samples were transferred to Atmospheric Analysis and Consulting, Inc. (AAC) in Ventura, California for subsequent analysis under EPA Methods 3C and 25C.

## Description of Sampling Equipment

EPA Reference Method 25C, "Determination of NMOC in MSW Landfill Gases", was followed for the Tier 2 sampling effort as required by NSPS/EG with the exception of two EPA-approved minor modifications as described in the Sampling Plan. The two minor modifications to Method 25C included use of the Geoprobe® Post-Run Tubing System (post-run tubing system) for Phase III sampling, and the use of a constant rate flow controller instead of a rotameter in the sampling train. These minor modifications were described in the Sampling Plan and approved by precedent per the EPA letter provided in that document.

For all sample locations, the source of LFG and tubing system was connected to a sampling train that included a 3-way purge/sample valve, calibrated Landtec model GEM-2000 portable LFG analyzer (GEM-5000 used on first day of sampling), and a constant rate flow controller and vacuum gauge. The flow controller for this sampling was set at a constant rate of approximately 200 milliliters per minute (mL/min) by the laboratory prior to shipment. This meets the requirement in the method for sampling at a flow rate of less than 500 mL/min.

## Sampling Locations

Consistent with the Sampling Plan and the methodology for lined cells, existing passive vents in Phase I and Phase II were sampled in order to preserve the integrity of the flexible membrane liner on these capped and closed cells. Due to the age and composition of the waste in these cells, extra care was taken to capture representative LFG samples from these cells. As discussed in below sections, field sampling was performed at both the 8-inch and 2-inch vents (as available) at each location to determine if the vent/area would produce representative LFG. If representative LFG was observed that met the requirements of Method 25 C (i.e. <5% oxygen or <20% nitrogen by volume), then a Summa canister sample was obtained. The sampling location map is provided in **Attachment A**.

## Field Sampling Procedures

At each passive vent location on Phases I and II, the passive vent openings were capped with flexible rubber (fernco) caps tightened to be air-tight with stainless steel band clamps for approximately 24 hours prior to sampling to minimize atmospheric intrusion. For each sample, a 5/16-inch hole was drilled into the cap to ensure a tight fit with the Teflon tubing for sampling. A photo is provided as Figure 1.



Figure 1 – Capped Phase 1 Vent with Sample Tubing

LFG was sampled in Phase III by utilizing a post-run tubing system inserted through steel probe rods pushed a minimum of 3 feet into the waste mass. The post-run tubing system is an approved modification from the stainless-steel probe specified in Method 25C and provides a representative sample with less potential for short-circuiting or air intrusion. The steel probe was equipped with a sampling head and an expendable drive point to allow the probe to be driven into the waste. At the desired depth, the probe rod was withdrawn approximately 6 inches to 1 foot, leaving the expendable point at depth. Teflon tubing was inserted through the rods and threaded onto the sampling head for collecting the LFG sample. The tubing was connected to the sampling train at the surface.

At each sampling location, the source of LFG (capped passive vents in Phase I and Phase II, or geo-probe in Phase III), tubing system, and sampling train were set. The GEM LFG Analyzer was used to determine methane, carbon dioxide, oxygen, and “balance” gas (primarily nitrogen) content in the LFG. These parameters were measured and recorded to determine if the LFG being collected would meet the quality assurance criteria of Method 25C. If the oxygen content was below 5 percent, the sample was considered representative of LFG and was collected for laboratory analysis. In instances where atmospheric intrusion was noted; Phase I and II samples were not taken at those vents, or the geo-probe was pulled out completely and the sampling location was re-pushed in an effort to achieve quality, representative LFG readings in Phase III.

Methane, oxygen, carbon dioxide and “balance” gas (nitrogen) concentrations were recorded both prior to and following sample collection at each location. After purging and recording valid LFG flow, an approximate 1-liter LFG sample was drawn through the flow controller into the canister at a constant rate of approximately 200 mL/min. The samples were collected over an approximate 5 to 7-minute duration to insure the collection of the appropriate volume. Additionally, the vacuum pressure readings on the canister were recorded before and after sample collection. There is a direct correlation between the volume of sample and decrease in vacuum in the canister. Specifically, each sample volume decreased the vacuum in the canister by approximately five inches of mercury (HG). Therefore, approximately three 1-liter (minimum) samples utilize approximately 3 liters of the 6-liter canister; with the lab-included helium ‘pad’ in each can utilizing approximately 2 liters, this filling procedure allows for residual volume and vacuum in the canister (as required by the method). All field measurements were recorded on the field data forms provided in **Attachment B**

Following sample collection, the methane, carbon dioxide, oxygen and nitrogen readings were recorded again in the field to ensure quality representative LFG was sampled throughout the duration of the sample collection. For Phase III sample locations, the probe rods were withdrawn, and the probe holes were backfilled with bentonite.

# Summary of Laboratory Analysis

AAC laboratory performed the Method 25C and Method 3C analyses as required by 40 CFR 62.16718 (Subpart OOO) and 40 CFR 60.35f(a)(3) (Subpart Cf). Method 25C is used to determine the composite sample NMOC concentration and Method 3C to measure gas composition to determine if significant air intrusion had occurred during sampling. Table 1 summarizes the laboratory results. Laboratory analysis reports, including quality control and quality assurance reports, are provided in **Attachment C**.

**Table 1 – Summary of Laboratory Results**

Canister ID	Sampling Locations	Sample Locations per Canister	NMOC as Carbon (ppmV)	NMOC as Hexane (ppmV)
000181	A – C	2	8.4	1.4
000167	VGW-24 – VGW-25	2	7.4	1.2
001480	VGW-13 – VGW-27	2	23	3.8
000102	VGW-35 – VGW-14 – VGW-34	3	Not Used – Outside Acceptable Parameters	
000119	PV-3 – PV-2	2	85	14.2
VEN-501	VGW-7 – VGW-4 – VGW32	3	6.7	1.1
000118	PV-2 – PV-1	2	807	134.5
VEN-446	VGW-31 – VGW-30 – VGW-20	3	99	16.4
VEN-122*	PV-1 – PV-4*	2	974	162.3
001319*	47 – 49*	2	875	145.8
VEN-308	48 – 47	2	1,140	190
000125	49 – 50	2	108	18
001308	VGW-3 – VGW-21 – VGW-22	3	Not Used – Outside Acceptable Parameters	
<b>Weighted Average:</b>				<b>71.9</b>

\* Duplicate sample locations – per 40 CFR 62.16718(a)(3) all samples that met the parameters were used in the analysis

The site-specific NMOC weighted average of 71.9 ppmv (as hexane) was calculated by mathematically determining the weighted average (based on number of sample locations per canister) of the laboratory results of 24 sampling locations at the site. Out of the 30 samples collected, 6 samples (2 canisters) were discarded due to being outside acceptable parameters (<5% oxygen or <20% nitrogen by volume).

## Tier 2 NMOC Emission Estimate

In order to estimate the landfill NMOC emission rate, the annual waste receipts and the weighted average site-specific NMOC concentration calculated from the Tier 2 sampling results are input in the EPA Landfill Gas Emission Model (LandGEM). This model estimates emissions using the equation shown in 40 CFR 62.16718(a)(1) (Subpart OOO) and 40 CFR 60.35f(a)(1) (Subpart Cf).

## Waste Disposal Rates

Annual waste disposal rates from 1972 through 2016 were obtained from the LCCSWMF 2021 Greenhouse Gas Summary Report and are consistent with the previous Tier 2 NMOC analysis conducted in 2012 by HDR. The County reports that the LCCSWMF stopped accepting waste after 2016.

## Model Parameters

The NSPS default values for the methane generation potential ( $L_0 = 170 \text{ m}^3/\text{Mg}$ ), methane generation rate constant for wet climates ( $k = 0.05 \text{ yr}^{-1}$ ), and methane concentration of 50 percent were used in the model. The site specific NMOC weighted average of 71.9 ppmv (as hexane) was used based on the sampling and analysis results. Note that this value is consistent with previous sampling at the site (2012 value 53.45 ppmv hexane).

## NMOC Emission Estimate Model Results

Based on the EPA LandGEM model results using site-specific information and NSPS default parameters, the estimated annual NMOC emissions for 2022 is 2.250 megagrams (Mg). A copy of the EPA LandGEM model report is provided in **Attachment D**.

The model output NMOC generation rates for the next 5 years are summarized in Table 2 and is declining as shown. Projected waste disposal rates for years 2022 through 2027 are shown as zero due to the closure status of the LCCSWMF Phase I and Phase II landfills and the planned closure of the Phase III landfill. Specifically, Phase III closure construction is scheduled to start by the end of 2022 with final completion scheduled for April 2023 – per recent FDEP Notice of Permit dated October 22, 2021 (Permit Number 0125106-035-SF-01).

**Table 2 – EPA LandGEM Model Output**

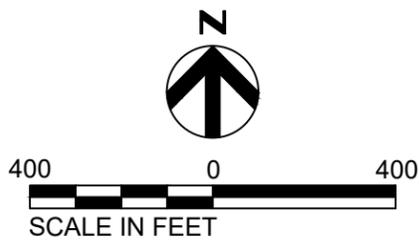
Year	Projected MSW Disposal Rate (tons/yr)	NMOC Generation Rate (Mg/yr)
2022	0	2.250
2023	0	2.140
2024	0	2.036
2025	0	1.936
2026	0	1.842
2027	0	1.752

## Conclusion and Recommendations

Based on the EPA LandGEM model results using site-specific information, the 2022 value for annual NMOC emissions is 2.250 Mg. This NMOC emissions estimate is less than the 34 Mg annual threshold for compliance with LFG collection and control portions of the applicable rules. Therefore, an LFG collection and control system is not required by NSPS/EG at this time. Since the LCCSWMF does not expect to receive any more waste, the landfill is never expected to reach these regulatory threshold emission rates.

NSPS requires the County to perform Tier 2 NMOC sampling and reporting within 5 years of the previous report (in lieu of annual updates) as long as annual waste acceptance rates are at, or below, those utilized in this Report. The County does not expect to receive any more waste, as Phase I and Phase II are closed landfills and Phase III is undergoing closure. Therefore, the LCCSWMF anticipates that it will not be subject to further Tier 1 or Tier 2 NMOC Emission Rate reporting under NSPS Subparts Cf or Subpart OOO for these permitted waste cells.

## Appendix A – Landfill Gas Sampling Locations



**LEGEND**

⊕ VGV14	EXISTING PHASE I PASSIVE VENT
⊕ PV-12	EXISTING PHASE II PASSIVE VENT
⊕ LC-1	EXISTING PHASE III LEACHATE CLEANOUT
● S1	PROPOSED SAMPLING LOCATION
---	APPROXIMATE HECTARE DELINEATION
- - - - -	APPROXIMATE WASTE LIMITS



PROJECT TITLE LAKE COUNTY CENTRAL (ASTATULA) LANDFILL TIER 2 TESTING  
LAKE COUNTY, FLORIDA

SHEET TITLE  
**TIER 2 SAMPLE LOCATION MAP**

PROJECT NUMBER  
10343382

PROJECT MANAGER  
J. MILLER, P.E.

DATE  
AUGUST 2022

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER  
1

## Appendix B – Field Data Forms

# NSPS Tier 2 Field Data Sheet

Project Location: Lake County Landfill Project No: 10343382

Summa Canister Serial No. VEN-308

Date: 7-25-2022 Personnel: Joel Miller & Chelsea Williams

Weather: Sunny / <sup>Partially</sup> cloudy

Notes: \_\_\_\_\_

**1** Sample Vol: 71 L Start Time: 11:14 am  
Sample Rate: 200 mL/Min Stop Time: 11:19 am (4.55.)  
Sample ID: 48 Ambient Temp: 91 F Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:** Methane: 68.4 %  
Carbon Dioxide: 31.4 %  
Oxygen: 0.2 %  
Nitrogen: 0.0 %

**AFTER SAMPLING:** Methane: 68.4 %  
Carbon Dioxide: 31.7 %  
Oxygen: 0.0 %  
Nitrogen: 0.0 %

Canister Vacuum: -21 in. Hg Canister Vacuum: -16 in. Hg

**2** Sample Vol: 71 L Start Time: 11:41 am (5.09.58)  
Sample Rate: 200 mL/Min Stop Time: 11:46 am  
Sample ID: 47 Ambient Temp: 91 F Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:** Methane: 72.6 %  
Carbon Dioxide: 27.4 %  
Oxygen: 0.0 %  
Nitrogen: 0.0 %

**AFTER SAMPLING:** Methane: 72.7 %  
Carbon Dioxide: 27.2 %  
Oxygen: 0.0 %  
Nitrogen: 0.0 %

Canister Vacuum: -16 in. Hg Canister Vacuum: -11 in. Hg

**3** Sample Vol: \_\_\_\_\_ L Start Time: \_\_\_\_\_  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: \_\_\_\_\_  
Sample ID: \_\_\_\_\_ Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %

**AFTER SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %

Canister Vacuum: \_\_\_\_\_ in. Hg Canister Vacuum: \_\_\_\_\_ in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382  
 Summa Canister Serial No. 601319  
 Date: 7/25/2002 Personnel: Joel Miller & Unrseen Williams  
 Weather: Sunny  
 Notes: duplicate

**1** Sample Vol: 71 L Start Time: 11:50 am  
 Sample Rate: 200 mL/Min Stop Time: 11:56 (5.57.93)  
 Sample ID: 47 Ambient Temp: 91 F Barometric Press: \_\_\_\_\_ in. Hg  
**BEFORE SAMPLING:** Methane: 73.1 %  
 Carbon Dioxide: 27.0 %  
 Oxygen: 0.0 %  
 Nitrogen: 0.0 %  
 Canister Vacuum: -21 in. Hg  
**AFTER SAMPLING:** Methane: 73.1 %  
 Carbon Dioxide: 26.9 %  
 Oxygen: 0.0 %  
 Nitrogen: 0.0 %  
 Canister Vacuum: -45 in. Hg

**2** Sample Vol: 71 L Start Time: 12:20 pm  
 Sample Rate: 200 mL/Min Stop Time: 12:27 pm (6.42.53)  
 Sample ID: 49 Ambient Temp: 91 F Barometric Press: \_\_\_\_\_ in. Hg  
**BEFORE SAMPLING:** Methane: 58.9 %  
 Carbon Dioxide: 39.7 %  
 Oxygen: 0.0 %  
 Nitrogen: 1.4 %  
 Canister Vacuum: -15 in. Hg  
**AFTER SAMPLING:** Methane: 57.4 %  
 Carbon Dioxide: 39.8 %  
 Oxygen: 0.0 %  
 Nitrogen: 2.4 %  
 Canister Vacuum: -9 in. Hg

**3** Sample Vol: \_\_\_\_\_ L Start Time: \_\_\_\_\_  
 Sample Rate: \_\_\_\_\_ mL/Min Stop Time: \_\_\_\_\_  
 Sample ID: \_\_\_\_\_ Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
**BEFORE SAMPLING:** Methane: \_\_\_\_\_ %  
 Carbon Dioxide: \_\_\_\_\_ %  
 Oxygen: \_\_\_\_\_ %  
 Nitrogen: \_\_\_\_\_ %  
 Canister Vacuum: \_\_\_\_\_ in. Hg  
**AFTER SAMPLING:** Methane: \_\_\_\_\_ %  
 Carbon Dioxide: \_\_\_\_\_ %  
 Oxygen: \_\_\_\_\_ %  
 Nitrogen: \_\_\_\_\_ %  
 Canister Vacuum: \_\_\_\_\_ in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382

Summa Canister Serial No. 000125

Date: 7/25/2022 Personnel: Joel Miller & Chelsea Williams

Weather: Sunny

Notes: \_\_\_\_\_

**1** Sample Vol: 71 L Start Time: 12:30 pm  
 Sample Rate: 200 mL/Min Stop Time: 12:34 pm (5.47.03)  
 Sample ID: 49 Ambient Temp: 91 F Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:** Methane: 57.6 %  
 Carbon Dioxide: 39.9 %  
 Oxygen: 0.0 %  
 Nitrogen: 2.4 %

Canister Vacuum: -21 in. Hg

**AFTER SAMPLING:** Methane: 57.0 %  
 Carbon Dioxide: 39.5 %  
 Oxygen: 0.0 %  
 Nitrogen: 3.5 %

Canister Vacuum: -15 in. Hg

**2** Sample Vol: 71 L Start Time: 1:40 pm  
 Sample Rate: 200 mL/Min Stop Time: 1:47 pm (6.32.30)  
 Sample ID: 50 Ambient Temp: 91 F Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:** Methane: 51.3 %  
 Carbon Dioxide: 39.0 %  
 Oxygen: 0.1 %  
 Nitrogen: 9.1 %

Canister Vacuum: -15 in. Hg

**AFTER SAMPLING:** Methane: 51.1 %  
 Carbon Dioxide: 39.8 %  
 Oxygen: 0.0 %  
 Nitrogen: 9.0 %

Canister Vacuum: -9 in. Hg

**3** Sample Vol: \_\_\_\_\_ L Start Time: \_\_\_\_\_  
 Sample Rate: \_\_\_\_\_ mL/Min Stop Time: \_\_\_\_\_  
 Sample ID: \_\_\_\_\_ Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:** Methane: \_\_\_\_\_ %  
 Carbon Dioxide: \_\_\_\_\_ %  
 Oxygen: \_\_\_\_\_ %  
 Nitrogen: \_\_\_\_\_ %

Canister Vacuum: \_\_\_\_\_ in. Hg

**AFTER SAMPLING:** Methane: \_\_\_\_\_ %  
 Carbon Dioxide: \_\_\_\_\_ %  
 Oxygen: \_\_\_\_\_ %  
 Nitrogen: \_\_\_\_\_ %

Canister Vacuum: \_\_\_\_\_ in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382

Summa Canister Serial No. VEN-122

Date: 7/26/2022 Personnel: Joel Miller & Chelsea Williams

Weather: cloudy

Notes: \_\_\_\_\_

**1** Sample Vol: \_\_\_\_\_ L Start Time: 3:24 pm (5:18.49)  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 3:29 pm

Sample ID: PV-1 Ambient Temp: 93 F Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:** Methane: 45.5 %  
Carbon Dioxide: 0.0 %  
Oxygen: 0.7 %  
Nitrogen: 53.8 %

**AFTER SAMPLING:** Methane: 45.1 %  
Carbon Dioxide: 0.0 %  
Oxygen: 0.5 %  
Nitrogen: 54.4 %

Canister Vacuum: -21 in. Hg Canister Vacuum: -16 in. Hg

**2** Sample Vol: \_\_\_\_\_ L Start Time: 3:36 pm  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 3:41 pm (4:55.39)

Sample ID: PV-4 Ambient Temp: 93 F Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:** Methane: 44.7 %  
Carbon Dioxide: 0.030 %  
Oxygen: 0.5 %  
Nitrogen: 36.0 %

**AFTER SAMPLING:** Methane: 59.6 %  
Carbon Dioxide: 3.0 %  
Oxygen: 0.4 %  
Nitrogen: 27.0 %

Canister Vacuum: -16 in. Hg Canister Vacuum: -11 in. Hg

**3** Sample Vol: \_\_\_\_\_ L Start Time: \_\_\_\_\_  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: \_\_\_\_\_

Sample ID: \_\_\_\_\_ Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %

**AFTER SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %

Canister Vacuum: \_\_\_\_\_ in. Hg Canister Vacuum: \_\_\_\_\_ in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382  
Summa Canister Serial No. 000119  
Date: 7/24/2022 Personnel: Joel Miller & Chelsea Williams  
Weather: Cloudy  
Notes: \_\_\_\_\_

**1** Sample Vol: \_\_\_\_\_ L Start Time: 3:50 pm  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 3:55 pm (5:03.40)  
Sample ID: PV-3 Ambient Temp: 93 F Barometric Press: \_\_\_\_\_ in. Hg  
**BEFORE SAMPLING:** Methane: 59.0 %  
Carbon Dioxide: 3.0 %  
Oxygen: 0.5 %  
Nitrogen: 37.5 %  
Canister Vacuum: -21 in. Hg  
**AFTER SAMPLING:** Methane: 57.5 %  
Carbon Dioxide: 5.5 %  
Oxygen: 0.5 %  
Nitrogen: 36.6 %  
Canister Vacuum: -16 in. Hg

**2** Sample Vol: \_\_\_\_\_ L Start Time: 4:00 pm  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 4:05 pm (5:11.36)  
Sample ID: PV-2 Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
**BEFORE SAMPLING:** Methane: 46.8 %  
Carbon Dioxide: 0.2 %  
Oxygen: 0.4 %  
Nitrogen: 52.6 %  
Canister Vacuum: -16 in. Hg  
**AFTER SAMPLING:** Methane: 46.8 %  
Carbon Dioxide: 0.1 %  
Oxygen: 0.5 %  
Nitrogen: 52.5 %  
Canister Vacuum: -11 in. Hg

**3** Sample Vol: \_\_\_\_\_ L Start Time: \_\_\_\_\_  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: \_\_\_\_\_  
Sample ID: \_\_\_\_\_ Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
**BEFORE SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %  
Canister Vacuum: \_\_\_\_\_ in. Hg  
**AFTER SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %  
Canister Vacuum: \_\_\_\_\_ in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382

Summa Canister Serial No. 001480

Date: 7/27/2022 Personnel: Joel Miller & Chelsea Williams

Weather: Sunny

Notes: \_\_\_\_\_

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**1** Sample Vol: \_\_\_\_\_ L Start Time: 7:40 am  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 7:46 am (6.50.26)

Sample ID: V6V-13 Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
8-17

**BEFORE SAMPLING:** Methane: 14 %  
Carbon Dioxide: 23.0 %  
Oxygen: 1.1 %  
Nitrogen: 61.9 %

**AFTER SAMPLING:** Methane: 14.0 %  
Carbon Dioxide: 23.1 %  
Oxygen: 0.8 %  
Nitrogen: 62.0 %

Canister Vacuum: -21 in. Hg Canister Vacuum: -16 in. Hg

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**2** Sample Vol: \_\_\_\_\_ L Start Time: 7:57 am  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 8:04 am (6.36.74)

Sample ID: V6V-27 Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
2-17

**BEFORE SAMPLING:** Methane: 1.9 %  
Carbon Dioxide: 14.5 %  
Oxygen: 4.1 %  
Nitrogen: 77.5 %

**AFTER SAMPLING:** Methane: 2.2 %  
Carbon Dioxide: 19.7 %  
Oxygen: 1.2 %  
Nitrogen: 77.0 %

Canister Vacuum: -16 in. Hg Canister Vacuum: -11 in. Hg

---

**3** Sample Vol: \_\_\_\_\_ L Start Time: \_\_\_\_\_  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: \_\_\_\_\_

Sample ID: \_\_\_\_\_ Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %

**AFTER SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %

Canister Vacuum: \_\_\_\_\_ in. Hg Canister Vacuum: \_\_\_\_\_ in. Hg

---

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382

Summa Canister Serial No. 000102

Date: 7/27/2022 Personnel: Joel Miller & Chelsea Williams

Weather: Sunny

Notes: \_\_\_\_\_

**1** Sample Vol: \_\_\_\_\_ L Start Time: 8:26 am  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 8:32 am (6.20.38)

Sample ID: VGV-35 Ambient Temp: 90 F Barometric Press: \_\_\_\_\_ in. Hg  
2-17

**BEFORE SAMPLING:** Methane: 27.9 %  
Carbon Dioxide: 20.5 %  
Oxygen: 4.3 %  
Nitrogen: 47.3 %

**AFTER SAMPLING:** Methane: 20.4 %  
Carbon Dioxide: 20.7 %  
Oxygen: 4.4 %  
Nitrogen: 48.9 %

Canister Vacuum: -21 in. Hg Canister Vacuum: -16 in. Hg

**2** Sample Vol: \_\_\_\_\_ L Start Time: 9:11 am  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 9:17 am (5.58.66)

Sample ID: VGV-14 Ambient Temp: 90 F Barometric Press: \_\_\_\_\_ in. Hg  
8-17

**BEFORE SAMPLING:** Methane: 21.0 %  
Carbon Dioxide: 15.4 %  
Oxygen: 9.3 %  
Nitrogen: 53.7 %

**AFTER SAMPLING:** Methane: 21.3 %  
Carbon Dioxide: 15.1 %  
Oxygen: 9.5 %  
Nitrogen: 54.1 %

Canister Vacuum: -16 in. Hg Canister Vacuum: -11 in. Hg

**3** Sample Vol: \_\_\_\_\_ L Start Time: 9:28 am  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 9:30 am (8.07.35)

Sample ID: VGV-34 Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
8-17

**BEFORE SAMPLING:** Methane: 41.5 %  
Carbon Dioxide: 23.3 %  
Oxygen: 1.1 %  
Nitrogen: 34.0 %

**AFTER SAMPLING:** Methane: 42.2 %  
Carbon Dioxide: 23.4 %  
Oxygen: 0.8 %  
Nitrogen: 33.6 %

Canister Vacuum: -11 in. Hg Canister Vacuum: -5 in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382

Summa Canister Serial No. VEN-446

Date: 7/27/2022 Personnel: Joel Miller & Chelsea Williams

Weather: Sunny

Notes: \_\_\_\_\_

**1** Sample Vol: \_\_\_\_\_ L Start Time: 9:46 am (5.37.82)  
 Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 9:52 am

Sample ID: V6V-31 Ambient Temp: 90 F Barometric Press: \_\_\_\_\_ in. Hg  
8-17

**BEFORE SAMPLING:** Methane: 45.6 %  
 Carbon Dioxide: 29.6 %  
 Oxygen: 0.5 %  
 Nitrogen: 24.3 %

**AFTER SAMPLING:** Methane: 45.7 %  
 Carbon Dioxide: 29.7 %  
 Oxygen: 0.2 %  
 Nitrogen: 24.4 %

Canister Vacuum: -21 in. Hg Canister Vacuum: -16 in. Hg

**2** Sample Vol: \_\_\_\_\_ L Start Time: 10:04 am  
 Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 10:10 am (6.11.70)

Sample ID: V6V-30 Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
2-17

**BEFORE SAMPLING:** Methane: 9.4 %  
 Carbon Dioxide: 16.5 %  
 Oxygen: 3.4 %  
 Nitrogen: 70.6 %

**AFTER SAMPLING:** Methane: 4.8 %  
 Carbon Dioxide: 10.3 %  
 Oxygen: 10.0 %  
 Nitrogen: 74.9 %

Canister Vacuum: -16 in. Hg Canister Vacuum: -11 in. Hg

**3** Sample Vol: \_\_\_\_\_ L Start Time: 10:20 am  
 Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 10:27 am (6.40.70)

Sample ID: V6V-20 Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
8-17

**BEFORE SAMPLING:** Methane: 16.5 %  
 Carbon Dioxide: 19.9 %  
 Oxygen: 4.0 %  
 Nitrogen: 59.1 %

**AFTER SAMPLING:** Methane: 18.0 %  
 Carbon Dioxide: 21.0 %  
 Oxygen: 3.0 %  
 Nitrogen: 57.8 %

Canister Vacuum: -11 in. Hg Canister Vacuum: -6 in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382  
Summa Canister Serial No. 000118  
Date: 7/27/2022 Personnel: Joel Miller & Chelsea Williams  
Weather: cloudy  
Notes: duplicate

**1** Sample Vol: \_\_\_\_\_ L Start Time: 1:24 pm  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 1:31 pm (5:32.70)  
Sample ID: PV-2 Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
**BEFORE SAMPLING:** Methane: 46.9 %  
Carbon Dioxide: 0.2 %  
Oxygen: 0.3 %  
Nitrogen: 52.6 %  
Canister Vacuum: -21 in. Hg  
**AFTER SAMPLING:** Methane: 47.2 %  
Carbon Dioxide: 0.2 %  
Oxygen: 0.1 %  
Nitrogen: 52.4 %  
Canister Vacuum: -16 in. Hg

**2** Sample Vol: \_\_\_\_\_ L Start Time: \_\_\_\_\_  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 1:41 (5:03.39)  
Sample ID: PV-1 Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
**BEFORE SAMPLING:** Methane: 47.0 %  
Carbon Dioxide: 0.2 %  
Oxygen: 0.0 %  
Nitrogen: 52.8 %  
Canister Vacuum: -14 in. Hg  
**AFTER SAMPLING:** Methane: 46.1 %  
Carbon Dioxide: 0.0 %  
Oxygen: 0.0 %  
Nitrogen: 53.9 %  
Canister Vacuum: -11 in. Hg

**3** Sample Vol: \_\_\_\_\_ L Start Time: \_\_\_\_\_  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: \_\_\_\_\_  
Sample ID: \_\_\_\_\_ Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
**BEFORE SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %  
Canister Vacuum: \_\_\_\_\_ in. Hg  
**AFTER SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %  
Canister Vacuum: \_\_\_\_\_ in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382

Summa Canister Serial No. VEN-501

Date: 7/27/2022 Personnel: Joel Miller & Chelsea Williams

Weather: Sunny

Notes: \_\_\_\_\_

**1**

Sample Vol: \_\_\_\_\_ L  
Sample Rate: \_\_\_\_\_ mL/Min

Start Time: 1:55 PM  
Stop Time: 2:00 PM (5.28.58)

Sample ID: V6V-7  
8-in

Ambient Temp: \_\_\_\_\_ F

Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:**  
Methane: 7.8 %  
Carbon Dioxide: 17.5 %  
Oxygen: 0.0 %  
Nitrogen: 74.7 %

**AFTER SAMPLING:**  
Methane: 7.5 %  
Carbon Dioxide: 17.4 %  
Oxygen: 0.0 %  
Nitrogen: 74.9 %

Canister Vacuum: -21 in. Hg

Canister Vacuum: -16 in. Hg

**2**

Sample Vol: \_\_\_\_\_ L  
Sample Rate: \_\_\_\_\_ mL/Min

Start Time: 1:21 PM  
Stop Time: 1:27 PM (5.51.38)

Sample ID: V6V-4  
2-in

Ambient Temp: \_\_\_\_\_ F

Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:**  
Methane: 2.3 %  
Carbon Dioxide: 11.5 %  
Oxygen: 6.1 %  
Nitrogen: 80.1 %

**AFTER SAMPLING:**  
Methane: 4.0 %  
Carbon Dioxide: 13.7 %  
Oxygen: 4.3 %  
Nitrogen: 78.0 %

Canister Vacuum: -14 in. Hg

Canister Vacuum: -11 in. Hg

**3**

Sample Vol: \_\_\_\_\_ L  
Sample Rate: \_\_\_\_\_ mL/Min

Start Time: \_\_\_\_\_  
Stop Time: 3:04 PM (7.16.08)

Sample ID: V6V-33  
V6V-2  
8-in

Ambient Temp: \_\_\_\_\_ F

Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:**  
Methane: 32.2 %  
Carbon Dioxide: 24.8 %  
Oxygen: 0.4 %  
Nitrogen: 42.6 %

**AFTER SAMPLING:**  
Methane: 32.7 %  
Carbon Dioxide: 25.1 %  
Oxygen: 0.2 %  
Nitrogen: 42.0 %

Canister Vacuum: -11 in. Hg

Canister Vacuum: -6 in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382

Summa Canister Serial No. 001308

Date: 7/28/2022 Personnel: Joel Miller & Chelsea Williams

Weather: cloudy

Notes: \_\_\_\_\_

**1**

Sample Vol: \_\_\_\_\_ L  
 Sample Rate: \_\_\_\_\_ mL/Min

Start Time: 7:50am (5.59.05)  
 Stop Time: 7:56am

Sample ID: V6V-3  
8-17

Ambient Temp: \_\_\_\_\_ F

Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:**  
 Methane: 26.2 %  
 Carbon Dioxide: 24.2 %  
 Oxygen: 1.8 %  
 Nitrogen: 47.8 %

**AFTER SAMPLING:**  
 Methane: 26.4 %  
 Carbon Dioxide: 24.5 %  
 Oxygen: 1.3 %  
 Nitrogen: 47.8 %

Canister Vacuum: -21 in. Hg

Canister Vacuum: -16 in. Hg

**2**

Sample Vol: \_\_\_\_\_ L  
 Sample Rate: \_\_\_\_\_ mL/Min

Start Time: 8:15am (5.19.00)  
 Stop Time: 8:21am

Sample ID: V6V-21  
8-17

Ambient Temp: \_\_\_\_\_ F

Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:**  
 Methane: 29.0 %  
 Carbon Dioxide: 23.4 %  
 Oxygen: 4.1 %  
 Nitrogen: 43.5 %

**AFTER SAMPLING:**  
 Methane: 20.4 %  
 Carbon Dioxide: 16.2 %  
 Oxygen: 8.8 %  
 Nitrogen: 54.9 %

Canister Vacuum: -16 in. Hg

Canister Vacuum: -11 in. Hg

**3**

Sample Vol: \_\_\_\_\_ L  
 Sample Rate: \_\_\_\_\_ mL/Min

Start Time: \_\_\_\_\_  
 Stop Time: \_\_\_\_\_

Sample ID: V6V-22  
8-17

Ambient Temp: \_\_\_\_\_ F

Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:**  
 Methane: 18.5 %  
 Carbon Dioxide: 18.3 %  
 Oxygen: 5.4 %  
 Nitrogen: 57.8 %

**AFTER SAMPLING:**  
 Methane: 18.7 %  
 Carbon Dioxide: 18.4 %  
 Oxygen: 5.3 %  
 Nitrogen: 57.4 %

Canister Vacuum: -11 in. Hg

Canister Vacuum: -6 in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382

Summa Canister Serial No. 000167

Date: 7/28/2022 Personnel: Joel Miller & Chelsea Williams

Weather: Sunny

Notes: \_\_\_\_\_

**1**

Sample Vol: \_\_\_\_\_ L  
 Sample Rate: \_\_\_\_\_ mL/Min

Start Time: 9:06 am  
 Stop Time: 9:12 am (6.12.45)

Sample ID: VGW-24  
8-in

Ambient Temp: \_\_\_\_\_ F

Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:**  
 Methane: 23.1 %  
 Carbon Dioxide: 22.7 %  
 Oxygen: 0.8 %  
 Nitrogen: 53.4 %

**AFTER SAMPLING:**  
 Methane: 23.4 %  
 Carbon Dioxide: 23.1 %  
 Oxygen: 0.3 %  
 Nitrogen: 53.1 %

Canister Vacuum: -21 in. Hg

Canister Vacuum: -10 in. Hg

**2**

Sample Vol: \_\_\_\_\_ L  
 Sample Rate: \_\_\_\_\_ mL/Min

Start Time: 9:18 am  
 Stop Time: 9:25 am (6.51.96)

Sample ID: VGW-25  
8-in

Ambient Temp: \_\_\_\_\_ F

Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:**  
 Methane: 25.7 %  
 Carbon Dioxide: 21.2 %  
 Oxygen: 3.0 %  
 Nitrogen: 49.5 %

**AFTER SAMPLING:**  
 Methane: 24.4 %  
 Carbon Dioxide: 27.1 %  
 Oxygen: 3.0 %  
 Nitrogen: 48.5 %

Canister Vacuum: -10 in. Hg

Canister Vacuum: -11 in. Hg

**3**

Sample Vol: \_\_\_\_\_ L  
 Sample Rate: \_\_\_\_\_ mL/Min

Start Time: \_\_\_\_\_  
 Stop Time: \_\_\_\_\_

Sample ID: \_\_\_\_\_

Ambient Temp: \_\_\_\_\_ F

Barometric Press: \_\_\_\_\_ in. Hg

**BEFORE SAMPLING:**  
 Methane: \_\_\_\_\_ %  
 Carbon Dioxide: \_\_\_\_\_ %  
 Oxygen: \_\_\_\_\_ %  
 Nitrogen: \_\_\_\_\_ %

**AFTER SAMPLING:**  
 Methane: \_\_\_\_\_ %  
 Carbon Dioxide: \_\_\_\_\_ %  
 Oxygen: \_\_\_\_\_ %  
 Nitrogen: \_\_\_\_\_ %

Canister Vacuum: \_\_\_\_\_ in. Hg

Canister Vacuum: \_\_\_\_\_ in. Hg

# NSPS Tier 2 Field Data Sheet

Project Location: Lake Co. Landfill Project No: 10343382

Summa Canister Serial No. 000181

Date: 7/28/2022 Personnel: Joel Miller & Chelsea Williams

Weather: Sunny

Notes: \_\_\_\_\_

---

**1** Sample Vol: \_\_\_\_\_ L Start Time: 9:40 am  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 9:48 am (7.1065)

Sample ID: A Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
8-in

**BEFORE SAMPLING:** Methane: 13.7 %  
Carbon Dioxide: 22.7 %  
Oxygen: 0.5 %  
Nitrogen: 63.1 %

**AFTER SAMPLING:** Methane: 13.6 %  
Carbon Dioxide: 22.6 %  
Oxygen: 0.3 %  
Nitrogen: 63.3 %

Canister Vacuum: -24 in. Hg Canister Vacuum: -19 in. Hg

---

**2** Sample Vol: \_\_\_\_\_ L Start Time: 9:56  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: 10:02 am (5.25.21)

Sample ID: C Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg  
8-in

**BEFORE SAMPLING:** Methane: 34.8 %  
Carbon Dioxide: 24.8 %  
Oxygen: 1.4 %  
Nitrogen: 39.0 %

**AFTER SAMPLING:** Methane: 37.9 %  
Carbon Dioxide: 25.0 %  
Oxygen: 1.1 %  
Nitrogen: 39.0 %

Canister Vacuum: -19 in. Hg Canister Vacuum: -14 in. Hg

---

**3** Sample Vol: \_\_\_\_\_ L Start Time: \_\_\_\_\_  
Sample Rate: \_\_\_\_\_ mL/Min Stop Time: \_\_\_\_\_

Sample ID: \_\_\_\_\_ Ambient Temp: \_\_\_\_\_ F Barometric Press: \_\_\_\_\_ in. Hg

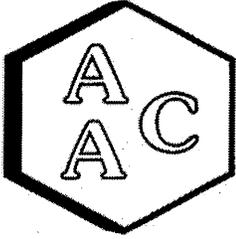
**BEFORE SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %

**AFTER SAMPLING:** Methane: \_\_\_\_\_ %  
Carbon Dioxide: \_\_\_\_\_ %  
Oxygen: \_\_\_\_\_ %  
Nitrogen: \_\_\_\_\_ %

Canister Vacuum: \_\_\_\_\_ in. Hg Canister Vacuum: \_\_\_\_\_ in. Hg

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## Appendix C – Laboratory Results and Quality Control Data



## Atmospheric Analysis & Consulting, Inc

CLIENT : HDR Engineering  
PROJECT NAME : Lake Lo. Tier 2 Testing  
PROJECT NO. : 10343382  
AAC PROJECT NO. : 221663  
REPORT DATE : 08/03/2022

On August 3<sup>rd</sup>, 2022, Atmospheric Analysis & Consulting, Inc. received thirteen (13) Six-Liter Summa Canisters for TNMOC analysis by EPA 25C and Fixed Gases analysis by EPA 3C. Upon receipt, the samples were assigned unique Laboratory ID numbers as follows:

Client ID	Lab No.	Return Pressure (mmHg)	Client ID	Lab No.	Return Pressure (mmHg)
A-C	221663-34638	575.7	VG3-VGV21-VGV22	221663-34645	634.0
VGV24-VGV25	221663-34639	622.9	VGV7-VGV4-VGV32	221663-34646	657.6
VGV35-VGV14-VGV34	221663-34640	690.3	PV1-PV4	221663-34647	557.4
PV3-PV2	221663-34641	547.3	47-49	221663-34648	572.9
VGV13-VGV27	221663-34642	570.8	48-47	221663-34649	520.7
VGV31-VGV30-VGV20	221663-34643	666.1	49-50	221663-34650	558.8
PV2-PV1	221663-34644	548.6			

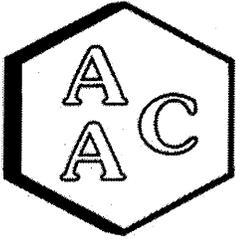
This analysis is performed in accordance with AAC's Quality Manual. Test results apply to the sample(s) as received. For detailed information pertaining to specific EPA, NCASI, ASTM and SCAQMD accreditations (Methods & Analytes), please visit our website at [www.aaclab.com](http://www.aaclab.com).

I certify that this data is technically accurate, complete, and in compliance with the terms and conditions of the contract. No problems were encountered during receiving, preparation, and/or analysis of these samples. The Technical Director or his/her designee, as verified by the following signature, has authorized release of the data.

If you have any questions or require further explanation of data results, please contact the undersigned.

  
Sucha Parmar, Ph.D.  
Technical Director

This report consists of 14 pages.



# Atmospheric Analysis & Consulting, Inc.

## Laboratory Analysis Report

CLIENT : HDR Engineering  
PROJECT NO. : 221663  
MATRIX : AIR

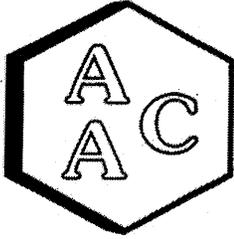
SAMPLING DATE : 07/28/2022  
RECEIVING DATE : 08/03/2022  
ANALYSIS DATE : 08/12/2022  
REPORT DATE : 08/16/2022

### EPA 3C & EPA 25C

Client ID	A-C	VG24-VG25
AAC ID	221663-34638	221663-34639
Can Dilution Factor	2.81	2.46
Analyte	Result	Result
H <sub>2</sub>	< 2.8 %	< 2.5 %
O <sub>2</sub>	2.5 %	2.4 %
N <sub>2</sub>	54.2 %	51.9 %
CO	< 0.3 %	< 0.2 %
CO <sub>2</sub>	21.1 %	20.7 %
CH <sub>4</sub>	22.2 %	24.9 %
TNMOC (as Carbon)	< 8.4 ppmC	< 7.4 ppmC

*All fixed gases have been normalized to 100% on a dry basis*

*Sample Reporting Limit (SRL) is equal to Reporting Limit x Analysis Dil. Fac x Canister Dil. Fac*



# Atmospheric Analysis & Consulting, Inc.

## Laboratory Analysis Report

CLIENT : HDR Engineering  
PROJECT NO. : 221663  
MATRIX : AIR

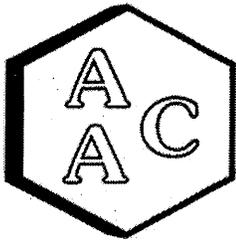
SAMPLING DATE : 07/26-27/2022  
RECEIVING DATE : 08/03/2022  
ANALYSIS DATE : 08/12/2022  
REPORT DATE : 08/16/2022

### EPA 3C & EPA 25C

Client ID	VG35-VG14-VG34	PV3-PV2	VG13-VG27
AAC ID	221663-34640	221663-34641	221663-34642
Can Dilution Factor	2.08	3.11	2.86
Analyte	Result	Result	Result
H <sub>2</sub>	< 2.1 %	< 3.1 %	< 2.9 %
O <sub>2</sub>	5.1 %	0.8 %	1.7 %
N <sub>2</sub>	43.1 %	39.8 %	69.4 %
CO	< 0.2 %	< 0.3 %	< 0.3 %
CO <sub>2</sub>	19.0 %	2.8 %	20.2 %
CH <sub>4</sub>	32.9 %	56.6 %	8.7 %
TNMOC (as Carbon)	22.8 ppmC	800 ppmC	85.3 ppmC

*All fixed gases have been normalized to 100% on a dry basis*

*Sample Reporting Limit (SRL) is equal to Reporting Limit x Analysis Dil. Fac x Canister Dil. Fac*



# Atmospheric Analysis & Consulting, Inc.

## Laboratory Analysis Report

CLIENT : HDR Engineering  
 PROJECT NO. : 221663  
 MATRIX : AIR

SAMPLING DATE : 07/27-28/2022  
 RECEIVING DATE : 08/03/2022  
 ANALYSIS DATE : 08/12-16/2022  
 REPORT DATE : 08/16/2022

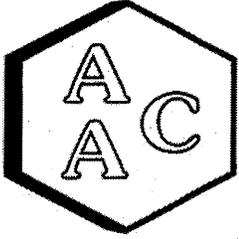
### EPA 3C & EPA 25C

Client ID	VGV31-VGV30-VGV20	PV2-PV1
<b>AAC ID</b>	221663-34643	221663-34644
<b>Can Dilution Factor</b>	2.22	3.06
<b>Analyte</b>	<b>Result</b>	<b>Result</b>
H <sub>2</sub>	< 2.2 %	< 3.1 %
O <sub>2</sub>	3.7 %	1.5 %
N <sub>2</sub>	50.2 %	49.8 %
CO	< 0.2 %	< 0.3 %
CO <sub>2</sub>	20.9 %	< 0.3 %
CH <sub>4</sub>	25.3 %	48.7 %
<b>TNMOC (as Carbon)</b>	< 6.7 ppmC	807 ppmC

Client ID	VGV3-VGV21-VGV22	VGV7-VGV4-VGV32
<b>AAC ID</b>	221663-34645	221663-34646
<b>Can Dilution Factor</b>	2.41	2.24
<b>Analyte</b>	<b>Result</b>	<b>Result</b>
H <sub>2</sub>	< 2.4 %	< 2.2 %
O <sub>2</sub>	5.1 %	3.0 %
N <sub>2</sub>	51.7 %	64.2 %
CO	< 0.2 %	< 0.2 %
CO <sub>2</sub>	19.3 %	17.8 %
CH <sub>4</sub>	23.9 %	15.1 %
<b>TNMOC (as Carbon)</b>	98.5 ppmC	240 ppmC

*All fixed gases have been normalized to 100% on a dry basis*

*Sample Reporting Limit (SRL) is equal to Reporting Limit x Analysis Dil. Fac x Canister Dil. Fac*



# Atmospheric Analysis & Consulting, Inc.

## Laboratory Analysis Report

CLIENT : HDR Engineering  
 PROJECT NO. : 221663  
 MATRIX : AIR

SAMPLING DATE : 07/25-26/2022  
 RECEIVING DATE : 08/03/2022  
 ANALYSIS DATE : 08/16/2022  
 REPORT DATE : 08/16/2022

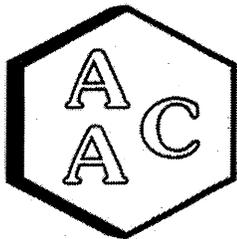
### EPA 3C & EPA 25C

Client ID	PV1-PV4	47-49
AAC ID	221663-34647	221663-34648
Can Dilution Factor	2.98	2.83
Analyte	Result	Result
H <sub>2</sub>	< 3.0 %	< 2.8 %
O <sub>2</sub>	1.3 %	< 0.3 %
N <sub>2</sub>	42.9 %	1.9 %
CO	< 0.3 %	< 0.3 %
CO <sub>2</sub>	1.4 %	33.6 %
CH <sub>4</sub>	54.4 %	64.5 %
TNMOC (as Carbon)	974 ppmC	875 ppmC

Client ID	48-47	49-50
AAC ID	221663-34649	221663-34650
Can Dilution Factor	3.32	3.00
Analyte	Result	Result
H <sub>2</sub>	< 3.3 %	< 3.0 %
O <sub>2</sub>	1.1 %	0.5 %
N <sub>2</sub>	4.6 %	2.6 %
CO	< 0.3 %	< 0.3 %
CO <sub>2</sub>	28.3 %	40.4 %
CH <sub>4</sub>	66.0 %	56.5 %
TNMOC (as Carbon)	1,140 ppmC	108 ppmC

*All fixed gases have been normalized to 100% on a dry basis*

*Sample Reporting Limit (SRL) is equal to Reporting Limit x Analysis Dil. Fac x Canister Dil. Fac*



# Atmospheric Analysis & Consulting, Inc

## Quality Control/Quality Assurance Report

Date Analyzed : 08/12/2022  
 Analyst : MR  
 Units : %

Instrument ID : GC-TCA #2  
 Calb Date : 01/17/2022  
 Reporting Limit : 0.1%

### I - Opening Continuing Calibration Verification - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
CCV	Spike Conc	9.9	10.3	20.7	10.0	10.0	10.0
	Result	9.9	10.7	21.5	10.0	9.9	9.9
	% Rec *	99.8	103.3	104.3	100.1	99.4	99.4

### II - Method Blank - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
MB	Concentration	ND	ND	ND	ND	ND	ND

### III - Laboratory Control Spike & Duplicate - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
Lab Control Standards	Sample Conc	0.0	0.0	0.0	0.0	0.0	0.0
	Spike Conc	9.9	10.3	20.7	10.0	10.0	10.0
	LCS Result	9.7	10.7	21.7	9.7	9.6	9.7
	LCSD Result	9.9	10.6	21.1	9.6	9.6	9.6
	LCS % Rec *	98.0	103.3	105.0	97.1	96.4	97.4
	LCSD % Rec *	99.4	103.0	102.4	96.3	95.9	96.1
	% RPD ***	1.4	0.2	2.5	0.8	0.5	1.3

### IV - Sample & Sample Duplicate - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
221720-35031	Sample	0.0	0.2	3.5	83.3	0.0	0.9
	Sample Dup	0.0	0.2	3.5	84.2	0.0	0.9
	Mean	0.0	0.2	3.5	83.7	0.0	0.9
	% RPD ***	0.0	3.1	0.2	1.1	0.0	1.0

### V - Matrix Spike & Duplicate - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
221720-35031	Sample Conc	0.0	1.7	41.9	0.0	0.5
	Spike Conc	9.9	10.1	10.0	10.0	10.0
	MS Result	10.0	11.9	52.7	9.5	10.0
	MSD Result	10.0	11.9	52.6	9.8	10.2
	MS % Rec **	100.6	100.5	108.7	95.4	95.0
	MSD % Rec **	101.0	100.5	107.3	97.7	97.1
	% RPD ***	0.4	0.1	1.3	2.3	2.2

### VI - Closing Continuing Calibration Verification - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
CCV	Spike Conc	9.9	10.3	20.7	10.0	10.0	10.0
	Result	10.2	10.4	21.8	9.8	9.7	10.0
	% Rec *	103.3	100.8	105.6	98.2	97.1	100.6

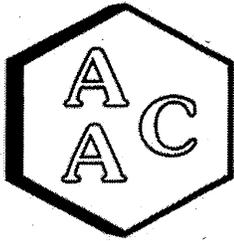
\* Must be 85-115%

\*\* Must be 75-125%

\*\*\* Must be < 25%

ND = Not Detected

<RL = less than Reporting Limit



# Atmospheric Analysis & Consulting, Inc.

## Quality Control/Quality Assurance Report

Analysis Date : 08/12/2022  
 Analyst : MR  
 Units : ppmv

Instrument ID: : GCTCA#2-FID  
 Calibration Date: : 7/18/2022

### I - Opening Calibration Verification Standard - Method 25C

Analyte	xRF	DRF	%RPD*
Propane	119363	129957	8.5

### II - TNMOC Response Factor - Method 25C

Analyte	xRF	CV RF	CV dp RF	CV tp RF	Average RF	% RPD***
Propane	119363	129957	123536	123773	125755	5.2

### III - Method Blank - Method 25C

AAC ID	Analyte	Sample Result
MB	TNMOC	0.00

### IV - Laboratory Control Spike & Duplicate - Method 25C

AAC ID	Analyte	Spike Added	LCS	LCSD	LCS % Rec **	LCSD % Rec **	% RPD***
LCS/LCSD	Propane	51.0	51.59	51.69	101.3	101.5	0.2

### V - Closing Calibration Verification Standard - Method 25C

Analyte	xCF	dCF	%RPD*
Propane	119363	121216	1.5

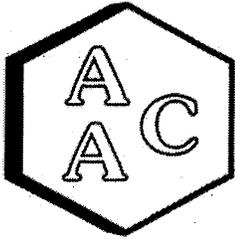
*xCF - Average Calibration Factor from Initial Calibration Curve*

*dCF - Daily Calibration Factor*

\* Must be <15%

\*\* Must be 90-110 %

\*\*\* Must be <20%



# Atmospheric Analysis & Consulting, Inc

## Quality Control/Quality Assurance Report

Date Analyzed : 08/16/2022  
 Analyst : MR  
 Units : %

Instrument ID : GC-TCA #2  
 Calb Date : 01/17/2022  
 Reporting Limit : 0.1%

### I - Opening Continuing Calibration Verification - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
CCV	Spike Conc	9.9	10.3	20.7	10.0	10.0	10.0
	Result	10.6	10.8	21.9	9.8	9.7	9.8
	% Rec *	106.5	104.5	106.0	98.5	97.4	97.9

### II - Method Blank - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
MB	Concentration	ND	ND	ND	ND	ND	ND

### III - Laboratory Control Spike & Duplicate - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
Lab Control Standards	Sample Conc	0.0	0.0	0.0	0.0	0.0	0.0
	Spike Conc	9.9	10.3	20.7	10.0	10.0	10.0
	LCS Result	10.5	10.5	20.8	9.8	9.7	9.8
	LCSD Result	10.8	10.2	20.5	9.8	10.0	10.1
	LCS % Rec *	106.2	101.7	100.9	97.6	97.2	98.6
	LCSD % Rec *	108.6	98.5	99.4	98.0	99.6	101.2
	% RPD ***	2.2	3.3	1.5	0.3	2.5	2.7

### IV - Sample & Sample Duplicate - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
221663-34644	Sample	0.0	0.4	14.1	13.8	0.0	0.0
	Sample Dup	0.0	0.4	14.1	13.9	0.0	0.0
	Mean	0.0	0.4	14.1	13.8	0.0	0.0
	% RPD ***	0.0	0.7	0.0	0.7	0.0	0.0

### V - Matrix Spike & Duplicate- EPA 3C

AAC ID	Analyte	H <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
221663-34644	Sample Conc	0.0	7.1	6.9	0.0	0.0
	Spike Conc	9.9	10.1	10.0	10.0	10.0
	MS Result	10.5	18.2	16.5	9.8	9.8
	MSD Result	10.2	18.2	16.7	9.8	9.8
	MS % Rec **	105.5	109.6	96.1	98.3	98.6
	MSD % Rec **	103.1	109.5	97.8	98.1	97.8
	% RPD ***	2.3	0.1	1.8	0.2	0.8

### VI - Closing Continuing Calibration Verification - EPA 3C

AAC ID	Analyte	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
CCV	Spike Conc	9.9	10.3	20.7	10.0	10.0	10.0
	Result	10.2	10.6	22.0	9.6	9.5	9.5
	% Rec *	103.1	103.1	106.7	95.9	95.1	95.1

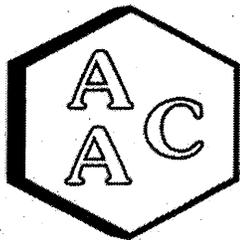
\* Must be 85-115%

\*\* Must be 75-125%

\*\*\* Must be < 25%

ND = Not Detected

<RL = less than Reporting Limit



# Atmospheric Analysis & Consulting, Inc.

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## Quality Control/Quality Assurance Report

Analysis Date : 08/16/2022  
 Analyst : MR  
 Units : ppmv

Instrument ID: : GCTCA#2-FID  
 Calibration Date: : 7/18/2022

### I - Opening Calibration Verification Standard - Method 25C

Analyte	xRF	DRF	%RPD*
Propane	119363	126481	5.8

### II - TNMOC Response Factor - Method 25C

Analyte	xRF	CV RF	CV dp RF	CV tp RF	Average RF	% RPD***
Propane	119363	126481	127580	126365	126809	6.0

### III - Method Blank - Method 25C

AAC ID	Analyte	Sample Result
MB	TNMOC	0.00

### IV - Laboratory Control Spike & Duplicate - Method 25C

AAC ID	Analyte	Spike Added	LCS	LCSD	LCS % Rec **	LCSD % Rec **	% RPD***
LCS/LCSD	Propane	51.0	53.28	52.77	104.6	103.6	1.0

### V - Closing Calibration Verification Standard - Method 25C

Analyte	xCF	dCF	%RPD*
Propane	119363	121093	1.4

*xCF - Average Calibration Factor from Initial Calibration Curve*

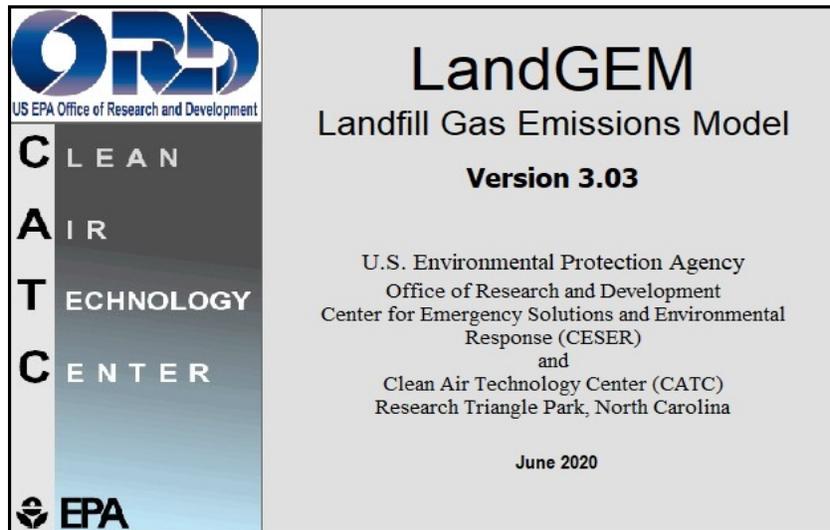
*dCF - Daily Calibration Factor*

\* Must be <15%

\*\* Must be 90-110 %

\*\*\* Must be <20%

# Appendix D – EPA LandGEM Summary Report



## Summary Report

**Landfill Name or Identifier:** Lake County Tier 2 NMOC

**Date:** Monday, August 22, 2022

### Description/Comments:

1972 - 2011 tonnages from 2011 Tier 2 excel spreadsheet. 2012 - 2016 tonnages from 2021 GHG Summary Report

### 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 conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

**Input Review**

LANDFILL CHARACTERISTICS

Landfill Open Year **1972**  
 Landfill Closure Year (with 80-year limit) **2016**  
 Actual Closure Year (without limit) **2016**  
 Have Model Calculate Closure Year? **No**  
 Waste Design Capacity *megagrams*

MODEL PARAMETERS

Methane Generation Rate, k **0.050** *year<sup>-1</sup>*  
 Potential Methane Generation Capacity, L<sub>0</sub> **170** *m<sup>3</sup>/Mg*  
 NMOC Concentration **72** *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)
1972	81,825	90,008	0	0
1973	81,825	90,008	81,825	90,008
1974	81,825	90,008	163,651	180,016
1975	81,825	90,008	245,476	270,024
1976	81,825	90,008	327,302	360,032
1977	81,825	90,008	409,127	450,040
1978	81,825	90,008	490,953	540,048
1979	81,825	90,008	572,778	630,056
1980	81,825	90,008	654,604	720,064
1981	81,825	90,008	736,429	810,072
1982	81,825	90,008	818,255	900,080
1983	81,825	90,008	900,080	990,088
1984	81,825	90,008	981,905	1,080,096
1985	81,825	90,008	1,063,731	1,170,104
1986	81,825	90,008	1,145,556	1,260,112
1987	81,825	90,008	1,227,382	1,350,120
1988	81,825	90,008	1,309,207	1,440,128
1989	81,825	90,008	1,391,033	1,530,136
1990	81,825	90,008	1,472,858	1,620,144
1991	81,825	90,008	1,554,684	1,710,152
1992	81,825	90,008	1,636,509	1,800,160
1993	81,825	90,008	1,718,335	1,890,168
1994	81,825	90,008	1,800,160	1,980,176
1995	24,513	26,964	1,881,985	2,070,184
1996	24,513	26,964	1,906,498	2,097,148
1997	24,513	26,964	1,931,011	2,124,112
1998	24,513	26,964	1,955,524	2,151,076
1999	24,513	26,964	1,980,037	2,178,040
2000	24,513	26,964	2,004,550	2,205,005
2001	24,513	26,964	2,029,062	2,231,969
2002	24,513	26,964	2,053,575	2,258,933
2003	24,513	26,964	2,078,088	2,285,897
2004	24,513	26,964	2,102,601	2,312,861
2005	24,513	26,964	2,127,114	2,339,825
2006	24,513	26,964	2,151,627	2,366,789
2007	24,513	26,964	2,176,139	2,393,753
2008	24,513	26,964	2,200,652	2,420,718
2009	24,513	26,964	2,225,165	2,447,682
2010	24,513	26,964	2,249,678	2,474,646
2011	24,513	26,964	2,274,191	2,501,610

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2012	18,200	20,020	2,298,704	2,528,574
2013	15,419	16,961	2,316,904	2,548,594
2014	15,003	16,504	2,332,323	2,565,555
2015	22,480	24,728	2,347,327	2,582,059
2016	5,327	5,860	2,369,807	2,606,787
2017	0	0	2,375,134	2,612,647
2018	0	0	2,375,134	2,612,647
2019	0	0	2,375,134	2,612,647
2020	0	0	2,375,134	2,612,647
2021	0	0	2,375,134	2,612,647
2022	0	0	2,375,134	2,612,647
2023	0	0	2,375,134	2,612,647
2024	0	0	2,375,134	2,612,647
2025	0	0	2,375,134	2,612,647
2026	0	0	2,375,134	2,612,647
2027	0	0	2,375,134	2,612,647
2028	0	0	2,375,134	2,612,647
2029	0	0	2,375,134	2,612,647
2030	0	0	2,375,134	2,612,647
2031	0	0	2,375,134	2,612,647
2032	0	0	2,375,134	2,612,647
2033	0	0	2,375,134	2,612,647
2034	0	0	2,375,134	2,612,647
2035	0	0	2,375,134	2,612,647
2036	0	0	2,375,134	2,612,647
2037	0	0	2,375,134	2,612,647
2038	0	0	2,375,134	2,612,647
2039	0	0	2,375,134	2,612,647
2040	0	0	2,375,134	2,612,647
2041	0	0	2,375,134	2,612,647
2042	0	0	2,375,134	2,612,647
2043	0	0	2,375,134	2,612,647
2044	0	0	2,375,134	2,612,647
2045	0	0	2,375,134	2,612,647
2046	0	0	2,375,134	2,612,647
2047	0	0	2,375,134	2,612,647
2048	0	0	2,375,134	2,612,647
2049	0	0	2,375,134	2,612,647
2050	0	0	2,375,134	2,612,647
2051	0	0	2,375,134	2,612,647

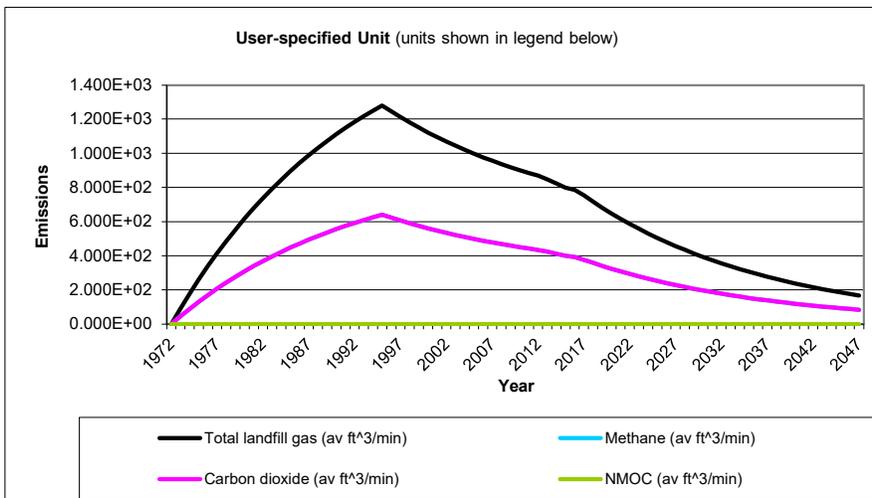
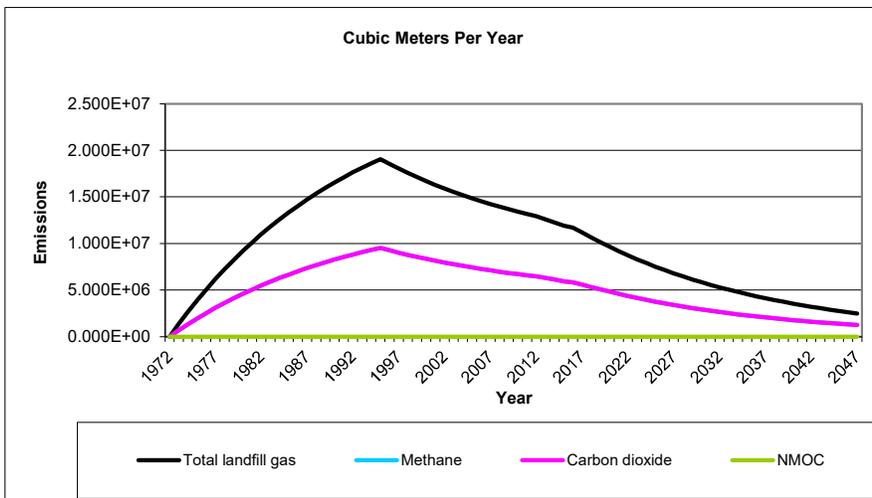
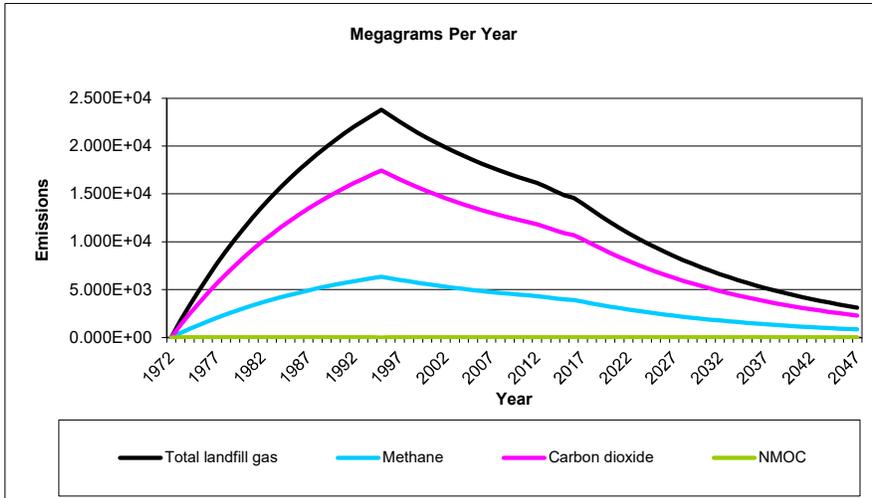
**Pollutant Parameters**

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





**Graphs**



**Results**

Year	Total landfill gas			Methane		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
1972	0	0	0	0	0	0
1973	1.699E+03	1.360E+06	9.139E+01	4.537E+02	6.801E+05	4.570E+01
1974	3.315E+03	2.654E+06	1.783E+02	8.853E+02	1.327E+06	8.916E+01
1975	4.852E+03	3.885E+06	2.610E+02	1.296E+03	1.942E+06	1.305E+02
1976	6.314E+03	5.056E+06	3.397E+02	1.686E+03	2.528E+06	1.698E+02
1977	7.704E+03	6.169E+06	4.145E+02	2.058E+03	3.085E+06	2.073E+02
1978	9.027E+03	7.229E+06	4.857E+02	2.411E+03	3.614E+06	2.428E+02
1979	1.029E+04	8.236E+06	5.534E+02	2.747E+03	4.118E+06	2.767E+02
1980	1.148E+04	9.195E+06	6.178E+02	3.067E+03	4.597E+06	3.089E+02
1981	1.262E+04	1.011E+07	6.791E+02	3.371E+03	5.053E+06	3.395E+02
1982	1.370E+04	1.097E+07	7.373E+02	3.661E+03	5.487E+06	3.687E+02
1983	1.473E+04	1.180E+07	7.928E+02	3.936E+03	5.899E+06	3.964E+02
1984	1.571E+04	1.258E+07	8.455E+02	4.198E+03	6.292E+06	4.228E+02
1985	1.665E+04	1.333E+07	8.957E+02	4.447E+03	6.665E+06	4.478E+02
1986	1.753E+04	1.404E+07	9.434E+02	4.684E+03	7.020E+06	4.717E+02
1987	1.838E+04	1.472E+07	9.888E+02	4.909E+03	7.358E+06	4.944E+02
1988	1.918E+04	1.536E+07	1.032E+03	5.123E+03	7.679E+06	5.160E+02
1989	1.994E+04	1.597E+07	1.073E+03	5.327E+03	7.985E+06	5.365E+02
1990	2.067E+04	1.655E+07	1.112E+03	5.521E+03	8.275E+06	5.560E+02
1991	2.136E+04	1.710E+07	1.149E+03	5.705E+03	8.552E+06	5.746E+02
1992	2.202E+04	1.763E+07	1.185E+03	5.881E+03	8.815E+06	5.923E+02
1993	2.264E+04	1.813E+07	1.218E+03	6.048E+03	9.065E+06	6.091E+02
1994	2.324E+04	1.861E+07	1.250E+03	6.207E+03	9.303E+06	6.251E+02
1995	2.380E+04	1.906E+07	1.281E+03	6.358E+03	9.530E+06	6.403E+02
1996	2.315E+04	1.854E+07	1.246E+03	6.184E+03	9.269E+06	6.228E+02
1997	2.253E+04	1.804E+07	1.212E+03	6.018E+03	9.020E+06	6.061E+02
1998	2.194E+04	1.757E+07	1.180E+03	5.860E+03	8.784E+06	5.902E+02
1999	2.138E+04	1.712E+07	1.150E+03	5.710E+03	8.559E+06	5.751E+02
2000	2.084E+04	1.669E+07	1.121E+03	5.568E+03	8.346E+06	5.607E+02
2001	2.034E+04	1.628E+07	1.094E+03	5.432E+03	8.142E+06	5.471E+02
2002	1.985E+04	1.590E+07	1.068E+03	5.303E+03	7.949E+06	5.341E+02
2003	1.939E+04	1.553E+07	1.043E+03	5.181E+03	7.765E+06	5.217E+02
2004	1.896E+04	1.518E+07	1.020E+03	5.064E+03	7.590E+06	5.100E+02
2005	1.854E+04	1.485E+07	9.976E+02	4.953E+03	7.424E+06	4.988E+02
2006	1.815E+04	1.453E+07	9.763E+02	4.847E+03	7.265E+06	4.882E+02
2007	1.777E+04	1.423E+07	9.561E+02	4.747E+03	7.115E+06	4.780E+02
2008	1.741E+04	1.394E+07	9.368E+02	4.651E+03	6.972E+06	4.684E+02
2009	1.707E+04	1.367E+07	9.185E+02	4.560E+03	6.835E+06	4.593E+02
2010	1.675E+04	1.341E+07	9.011E+02	4.474E+03	6.706E+06	4.506E+02
2011	1.644E+04	1.316E+07	8.845E+02	4.391E+03	6.582E+06	4.423E+02
2012	1.615E+04	1.293E+07	8.688E+02	4.313E+03	6.465E+06	4.344E+02
2013	1.574E+04	1.260E+07	8.467E+02	4.204E+03	6.301E+06	4.234E+02
2014	1.529E+04	1.224E+07	8.227E+02	4.084E+03	6.122E+06	4.113E+02
2015	1.486E+04	1.190E+07	7.993E+02	3.968E+03	5.948E+06	3.997E+02
2016	1.460E+04	1.169E+07	7.854E+02	3.899E+03	5.845E+06	3.927E+02
2017	1.400E+04	1.121E+07	7.531E+02	3.739E+03	5.604E+06	3.765E+02
2018	1.331E+04	1.066E+07	7.163E+02	3.556E+03	5.331E+06	3.582E+02
2019	1.266E+04	1.014E+07	6.814E+02	3.383E+03	5.071E+06	3.407E+02
2020	1.205E+04	9.647E+06	6.482E+02	3.218E+03	4.823E+06	3.241E+02
2021	1.146E+04	9.176E+06	6.166E+02	3.061E+03	4.588E+06	3.083E+02

**Results (Continued)**

Year	Total landfill gas			Methane		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
2022	1.090E+04	8.729E+06	5.865E+02	2.912E+03	4.364E+06	2.932E+02
2023	1.037E+04	8.303E+06	5.579E+02	2.770E+03	4.152E+06	2.789E+02
2024	9.863E+03	7.898E+06	5.307E+02	2.635E+03	3.949E+06	2.653E+02
2025	9.382E+03	7.513E+06	5.048E+02	2.506E+03	3.757E+06	2.524E+02
2026	8.925E+03	7.147E+06	4.802E+02	2.384E+03	3.573E+06	2.401E+02
2027	8.490E+03	6.798E+06	4.568E+02	2.268E+03	3.399E+06	2.284E+02
2028	8.076E+03	6.467E+06	4.345E+02	2.157E+03	3.233E+06	2.172E+02
2029	7.682E+03	6.151E+06	4.133E+02	2.052E+03	3.076E+06	2.066E+02
2030	7.307E+03	5.851E+06	3.931E+02	1.952E+03	2.926E+06	1.966E+02
2031	6.951E+03	5.566E+06	3.740E+02	1.857E+03	2.783E+06	1.870E+02
2032	6.612E+03	5.294E+06	3.557E+02	1.766E+03	2.647E+06	1.779E+02
2033	6.289E+03	5.036E+06	3.384E+02	1.680E+03	2.518E+06	1.692E+02
2034	5.983E+03	4.791E+06	3.219E+02	1.598E+03	2.395E+06	1.609E+02
2035	5.691E+03	4.557E+06	3.062E+02	1.520E+03	2.278E+06	1.531E+02
2036	5.413E+03	4.335E+06	2.912E+02	1.446E+03	2.167E+06	1.456E+02
2037	5.149E+03	4.123E+06	2.770E+02	1.375E+03	2.062E+06	1.385E+02
2038	4.898E+03	3.922E+06	2.635E+02	1.308E+03	1.961E+06	1.318E+02
2039	4.659E+03	3.731E+06	2.507E+02	1.245E+03	1.865E+06	1.253E+02
2040	4.432E+03	3.549E+06	2.385E+02	1.184E+03	1.774E+06	1.192E+02
2041	4.216E+03	3.376E+06	2.268E+02	1.126E+03	1.688E+06	1.134E+02
2042	4.010E+03	3.211E+06	2.158E+02	1.071E+03	1.606E+06	1.079E+02
2043	3.815E+03	3.055E+06	2.052E+02	1.019E+03	1.527E+06	1.026E+02
2044	3.629E+03	2.906E+06	1.952E+02	9.692E+02	1.453E+06	9.761E+01
2045	3.452E+03	2.764E+06	1.857E+02	9.220E+02	1.382E+06	9.285E+01
2046	3.283E+03	2.629E+06	1.766E+02	8.770E+02	1.315E+06	8.832E+01
2047	3.123E+03	2.501E+06	1.680E+02	8.342E+02	1.250E+06	8.402E+01
2048	2.971E+03	2.379E+06	1.598E+02	7.935E+02	1.189E+06	7.992E+01
2049	2.826E+03	2.263E+06	1.520E+02	7.548E+02	1.131E+06	7.602E+01
2050	2.688E+03	2.153E+06	1.446E+02	7.180E+02	1.076E+06	7.231E+01
2051	2.557E+03	2.048E+06	1.376E+02	6.830E+02	1.024E+06	6.879E+01
2052	2.432E+03	1.948E+06	1.309E+02	6.497E+02	9.738E+05	6.543E+01
2053	2.314E+03	1.853E+06	1.245E+02	6.180E+02	9.263E+05	6.224E+01
2054	2.201E+03	1.762E+06	1.184E+02	5.879E+02	8.812E+05	5.921E+01
2055	2.094E+03	1.676E+06	1.126E+02	5.592E+02	8.382E+05	5.632E+01
2056	1.991E+03	1.595E+06	1.071E+02	5.319E+02	7.973E+05	5.357E+01
2057	1.894E+03	1.517E+06	1.019E+02	5.060E+02	7.584E+05	5.096E+01
2058	1.802E+03	1.443E+06	9.695E+01	4.813E+02	7.214E+05	4.847E+01
2059	1.714E+03	1.373E+06	9.222E+01	4.578E+02	6.863E+05	4.611E+01
2060	1.630E+03	1.306E+06	8.772E+01	4.355E+02	6.528E+05	4.386E+01
2061	1.551E+03	1.242E+06	8.344E+01	4.143E+02	6.209E+05	4.172E+01
2062	1.475E+03	1.181E+06	7.937E+01	3.941E+02	5.907E+05	3.969E+01
2063	1.403E+03	1.124E+06	7.550E+01	3.748E+02	5.619E+05	3.775E+01
2064	1.335E+03	1.069E+06	7.182E+01	3.566E+02	5.345E+05	3.591E+01
2065	1.270E+03	1.017E+06	6.832E+01	3.392E+02	5.084E+05	3.416E+01
2066	1.208E+03	9.672E+05	6.499E+01	3.226E+02	4.836E+05	3.249E+01
2067	1.149E+03	9.200E+05	6.182E+01	3.069E+02	4.600E+05	3.091E+01
2068	1.093E+03	8.751E+05	5.880E+01	2.919E+02	4.376E+05	2.940E+01
2069	1.040E+03	8.325E+05	5.593E+01	2.777E+02	4.162E+05	2.797E+01
2070	9.889E+02	7.919E+05	5.321E+01	2.641E+02	3.959E+05	2.660E+01
2071	9.407E+02	7.532E+05	5.061E+01	2.513E+02	3.766E+05	2.531E+01
2072	8.948E+02	7.165E+05	4.814E+01	2.390E+02	3.583E+05	2.407E+01

**Results (Continued)**

Year	Total landfill gas			Methane		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
2073	8.512E+02	6.816E+05	4.579E+01	2.274E+02	3.408E+05	2.290E+01
2074	8.096E+02	6.483E+05	4.356E+01	2.163E+02	3.242E+05	2.178E+01
2075	7.702E+02	6.167E+05	4.144E+01	2.057E+02	3.084E+05	2.072E+01
2076	7.326E+02	5.866E+05	3.942E+01	1.957E+02	2.933E+05	1.971E+01
2077	6.969E+02	5.580E+05	3.749E+01	1.861E+02	2.790E+05	1.875E+01
2078	6.629E+02	5.308E+05	3.566E+01	1.771E+02	2.654E+05	1.783E+01
2079	6.306E+02	5.049E+05	3.393E+01	1.684E+02	2.525E+05	1.696E+01
2080	5.998E+02	4.803E+05	3.227E+01	1.602E+02	2.401E+05	1.614E+01
2081	5.705E+02	4.569E+05	3.070E+01	1.524E+02	2.284E+05	1.535E+01
2082	5.427E+02	4.346E+05	2.920E+01	1.450E+02	2.173E+05	1.460E+01
2083	5.163E+02	4.134E+05	2.778E+01	1.379E+02	2.067E+05	1.389E+01
2084	4.911E+02	3.932E+05	2.642E+01	1.312E+02	1.966E+05	1.321E+01
2085	4.671E+02	3.741E+05	2.513E+01	1.248E+02	1.870E+05	1.257E+01
2086	4.443E+02	3.558E+05	2.391E+01	1.187E+02	1.779E+05	1.195E+01
2087	4.227E+02	3.385E+05	2.274E+01	1.129E+02	1.692E+05	1.137E+01
2088	4.021E+02	3.219E+05	2.163E+01	1.074E+02	1.610E+05	1.082E+01
2089	3.824E+02	3.062E+05	2.058E+01	1.022E+02	1.531E+05	1.029E+01
2090	3.638E+02	2.913E+05	1.957E+01	9.717E+01	1.457E+05	9.787E+00
2091	3.461E+02	2.771E+05	1.862E+01	9.243E+01	1.386E+05	9.309E+00
2092	3.292E+02	2.636E+05	1.771E+01	8.793E+01	1.318E+05	8.855E+00
2093	3.131E+02	2.507E+05	1.685E+01	8.364E+01	1.254E+05	8.423E+00
2094	2.979E+02	2.385E+05	1.603E+01	7.956E+01	1.193E+05	8.013E+00
2095	2.833E+02	2.269E+05	1.524E+01	7.568E+01	1.134E+05	7.622E+00
2096	2.695E+02	2.158E+05	1.450E+01	7.199E+01	1.079E+05	7.250E+00
2097	2.564E+02	2.053E+05	1.379E+01	6.848E+01	1.026E+05	6.896E+00
2098	2.439E+02	1.953E+05	1.312E+01	6.514E+01	9.764E+04	6.560E+00
2099	2.320E+02	1.857E+05	1.248E+01	6.196E+01	9.287E+04	6.240E+00
2100	2.207E+02	1.767E+05	1.187E+01	5.894E+01	8.834E+04	5.936E+00
2101	2.099E+02	1.681E+05	1.129E+01	5.606E+01	8.404E+04	5.646E+00
2102	1.997E+02	1.599E+05	1.074E+01	5.333E+01	7.994E+04	5.371E+00
2103	1.899E+02	1.521E+05	1.022E+01	5.073E+01	7.604E+04	5.109E+00
2104	1.807E+02	1.447E+05	9.720E+00	4.826E+01	7.233E+04	4.860E+00
2105	1.718E+02	1.376E+05	9.246E+00	4.590E+01	6.880E+04	4.623E+00
2106	1.635E+02	1.309E+05	8.795E+00	4.366E+01	6.545E+04	4.397E+00
2107	1.555E+02	1.245E+05	8.366E+00	4.153E+01	6.226E+04	4.183E+00
2108	1.479E+02	1.184E+05	7.958E+00	3.951E+01	5.922E+04	3.979E+00
2109	1.407E+02	1.127E+05	7.570E+00	3.758E+01	5.633E+04	3.785E+00
2110	1.338E+02	1.072E+05	7.201E+00	3.575E+01	5.358E+04	3.600E+00
2111	1.273E+02	1.019E+05	6.849E+00	3.400E+01	5.097E+04	3.425E+00
2112	1.211E+02	9.697E+04	6.515E+00	3.235E+01	4.848E+04	3.258E+00

**Results (Continued)**

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
1972	0	0	0	0	0	0
1973	1.245E+03	6.801E+05	4.570E+01	3.506E-01	9.780E+01	6.571E-03
1974	2.429E+03	1.327E+06	8.916E+01	6.840E-01	1.908E+02	1.282E-02
1975	3.556E+03	1.942E+06	1.305E+02	1.001E+00	2.793E+02	1.877E-02
1976	4.627E+03	2.528E+06	1.698E+02	1.303E+00	3.635E+02	2.442E-02
1977	5.646E+03	3.085E+06	2.073E+02	1.590E+00	4.436E+02	2.980E-02
1978	6.616E+03	3.614E+06	2.428E+02	1.863E+00	5.197E+02	3.492E-02
1979	7.538E+03	4.118E+06	2.767E+02	2.123E+00	5.922E+02	3.979E-02
1980	8.416E+03	4.597E+06	3.089E+02	2.370E+00	6.611E+02	4.442E-02
1981	9.250E+03	5.053E+06	3.395E+02	2.605E+00	7.267E+02	4.882E-02
1982	1.004E+04	5.487E+06	3.687E+02	2.828E+00	7.890E+02	5.301E-02
1983	1.080E+04	5.899E+06	3.964E+02	3.041E+00	8.483E+02	5.700E-02
1984	1.152E+04	6.292E+06	4.228E+02	3.243E+00	9.048E+02	6.079E-02
1985	1.220E+04	6.665E+06	4.478E+02	3.436E+00	9.584E+02	6.440E-02
1986	1.285E+04	7.020E+06	4.717E+02	3.619E+00	1.010E+03	6.783E-02
1987	1.347E+04	7.358E+06	4.944E+02	3.793E+00	1.058E+03	7.109E-02
1988	1.406E+04	7.679E+06	5.160E+02	3.958E+00	1.104E+03	7.420E-02
1989	1.462E+04	7.985E+06	5.365E+02	4.116E+00	1.148E+03	7.715E-02
1990	1.515E+04	8.275E+06	5.560E+02	4.266E+00	1.190E+03	7.996E-02
1991	1.565E+04	8.552E+06	5.746E+02	4.408E+00	1.230E+03	8.263E-02
1992	1.614E+04	8.815E+06	5.923E+02	4.544E+00	1.268E+03	8.517E-02
1993	1.659E+04	9.065E+06	6.091E+02	4.673E+00	1.304E+03	8.759E-02
1994	1.703E+04	9.303E+06	6.251E+02	4.795E+00	1.338E+03	8.989E-02
1995	1.744E+04	9.530E+06	6.403E+02	4.912E+00	1.370E+03	9.207E-02
1996	1.697E+04	9.269E+06	6.228E+02	4.777E+00	1.333E+03	8.955E-02
1997	1.651E+04	9.020E+06	6.061E+02	4.649E+00	1.297E+03	8.715E-02
1998	1.608E+04	8.784E+06	5.902E+02	4.528E+00	1.263E+03	8.487E-02
1999	1.567E+04	8.559E+06	5.751E+02	4.412E+00	1.231E+03	8.270E-02
2000	1.528E+04	8.346E+06	5.607E+02	4.302E+00	1.200E+03	8.064E-02
2001	1.490E+04	8.142E+06	5.471E+02	4.197E+00	1.171E+03	7.867E-02
2002	1.455E+04	7.949E+06	5.341E+02	4.097E+00	1.143E+03	7.680E-02
2003	1.421E+04	7.765E+06	5.217E+02	4.003E+00	1.117E+03	7.503E-02
2004	1.389E+04	7.590E+06	5.100E+02	3.912E+00	1.091E+03	7.334E-02
2005	1.359E+04	7.424E+06	4.988E+02	3.827E+00	1.068E+03	7.173E-02
2006	1.330E+04	7.265E+06	4.882E+02	3.745E+00	1.045E+03	7.020E-02
2007	1.302E+04	7.115E+06	4.780E+02	3.667E+00	1.023E+03	6.874E-02
2008	1.276E+04	6.972E+06	4.684E+02	3.593E+00	1.003E+03	6.736E-02
2009	1.251E+04	6.835E+06	4.593E+02	3.523E+00	9.829E+02	6.604E-02
2010	1.227E+04	6.706E+06	4.506E+02	3.456E+00	9.643E+02	6.479E-02
2011	1.205E+04	6.582E+06	4.423E+02	3.393E+00	9.466E+02	6.360E-02
2012	1.183E+04	6.465E+06	4.344E+02	3.332E+00	9.297E+02	6.247E-02
2013	1.153E+04	6.301E+06	4.234E+02	3.248E+00	9.061E+02	6.088E-02
2014	1.121E+04	6.122E+06	4.113E+02	3.156E+00	8.803E+02	5.915E-02
2015	1.089E+04	5.948E+06	3.997E+02	3.066E+00	8.553E+02	5.747E-02
2016	1.070E+04	5.845E+06	3.927E+02	3.013E+00	8.405E+02	5.647E-02
2017	1.026E+04	5.604E+06	3.765E+02	2.889E+00	8.059E+02	5.415E-02
2018	9.758E+03	5.331E+06	3.582E+02	2.748E+00	7.666E+02	5.151E-02
2019	9.282E+03	5.071E+06	3.407E+02	2.614E+00	7.292E+02	4.899E-02
2020	8.829E+03	4.823E+06	3.241E+02	2.486E+00	6.936E+02	4.660E-02
2021	8.399E+03	4.588E+06	3.083E+02	2.365E+00	6.598E+02	4.433E-02

**Results (Continued)**

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
2022	7.989E+03	4.364E+06	2.932E+02	2.250E+00	6.276E+02	4.217E-02
2023	7.599E+03	4.152E+06	2.789E+02	2.140E+00	5.970E+02	4.011E-02
2024	7.229E+03	3.949E+06	2.653E+02	2.036E+00	5.679E+02	3.816E-02
2025	6.876E+03	3.757E+06	2.524E+02	1.936E+00	5.402E+02	3.630E-02
2026	6.541E+03	3.573E+06	2.401E+02	1.842E+00	5.138E+02	3.452E-02
2027	6.222E+03	3.399E+06	2.284E+02	1.752E+00	4.888E+02	3.284E-02
2028	5.918E+03	3.233E+06	2.172E+02	1.667E+00	4.649E+02	3.124E-02
2029	5.630E+03	3.076E+06	2.066E+02	1.585E+00	4.423E+02	2.972E-02
2030	5.355E+03	2.926E+06	1.966E+02	1.508E+00	4.207E+02	2.827E-02
2031	5.094E+03	2.783E+06	1.870E+02	1.434E+00	4.002E+02	2.689E-02
2032	4.846E+03	2.647E+06	1.779E+02	1.364E+00	3.807E+02	2.558E-02
2033	4.609E+03	2.518E+06	1.692E+02	1.298E+00	3.621E+02	2.433E-02
2034	4.385E+03	2.395E+06	1.609E+02	1.235E+00	3.444E+02	2.314E-02
2035	4.171E+03	2.278E+06	1.531E+02	1.174E+00	3.276E+02	2.201E-02
2036	3.967E+03	2.167E+06	1.456E+02	1.117E+00	3.117E+02	2.094E-02
2037	3.774E+03	2.062E+06	1.385E+02	1.063E+00	2.965E+02	1.992E-02
2038	3.590E+03	1.961E+06	1.318E+02	1.011E+00	2.820E+02	1.895E-02
2039	3.415E+03	1.865E+06	1.253E+02	9.615E-01	2.682E+02	1.802E-02
2040	3.248E+03	1.774E+06	1.192E+02	9.146E-01	2.552E+02	1.714E-02
2041	3.090E+03	1.688E+06	1.134E+02	8.700E-01	2.427E+02	1.631E-02
2042	2.939E+03	1.606E+06	1.079E+02	8.276E-01	2.309E+02	1.551E-02
2043	2.796E+03	1.527E+06	1.026E+02	7.872E-01	2.196E+02	1.476E-02
2044	2.659E+03	1.453E+06	9.761E+01	7.488E-01	2.089E+02	1.404E-02
2045	2.530E+03	1.382E+06	9.285E+01	7.123E-01	1.987E+02	1.335E-02
2046	2.406E+03	1.315E+06	8.832E+01	6.776E-01	1.890E+02	1.270E-02
2047	2.289E+03	1.250E+06	8.402E+01	6.445E-01	1.798E+02	1.208E-02
2048	2.177E+03	1.189E+06	7.992E+01	6.131E-01	1.710E+02	1.149E-02
2049	2.071E+03	1.131E+06	7.602E+01	5.832E-01	1.627E+02	1.093E-02
2050	1.970E+03	1.076E+06	7.231E+01	5.548E-01	1.548E+02	1.040E-02
2051	1.874E+03	1.024E+06	6.879E+01	5.277E-01	1.472E+02	9.892E-03
2052	1.783E+03	9.738E+05	6.543E+01	5.020E-01	1.400E+02	9.409E-03
2053	1.696E+03	9.263E+05	6.224E+01	4.775E-01	1.332E+02	8.950E-03
2054	1.613E+03	8.812E+05	5.921E+01	4.542E-01	1.267E+02	8.514E-03
2055	1.534E+03	8.382E+05	5.632E+01	4.320E-01	1.205E+02	8.099E-03
2056	1.459E+03	7.973E+05	5.357E+01	4.110E-01	1.147E+02	7.704E-03
2057	1.388E+03	7.584E+05	5.096E+01	3.909E-01	1.091E+02	7.328E-03
2058	1.321E+03	7.214E+05	4.847E+01	3.719E-01	1.037E+02	6.970E-03
2059	1.256E+03	6.863E+05	4.611E+01	3.537E-01	9.868E+01	6.631E-03
2060	1.195E+03	6.528E+05	4.386E+01	3.365E-01	9.387E+01	6.307E-03
2061	1.137E+03	6.209E+05	4.172E+01	3.201E-01	8.929E+01	6.000E-03
2062	1.081E+03	5.907E+05	3.969E+01	3.045E-01	8.494E+01	5.707E-03
2063	1.028E+03	5.619E+05	3.775E+01	2.896E-01	8.079E+01	5.429E-03
2064	9.783E+02	5.345E+05	3.591E+01	2.755E-01	7.685E+01	5.164E-03
2065	9.306E+02	5.084E+05	3.416E+01	2.620E-01	7.311E+01	4.912E-03
2066	8.852E+02	4.836E+05	3.249E+01	2.493E-01	6.954E+01	4.672E-03
2067	8.420E+02	4.600E+05	3.091E+01	2.371E-01	6.615E+01	4.445E-03
2068	8.010E+02	4.376E+05	2.940E+01	2.255E-01	6.292E+01	4.228E-03
2069	7.619E+02	4.162E+05	2.797E+01	2.145E-01	5.985E+01	4.022E-03
2070	7.248E+02	3.959E+05	2.660E+01	2.041E-01	5.694E+01	3.825E-03
2071	6.894E+02	3.766E+05	2.531E+01	1.941E-01	5.416E+01	3.639E-03
2072	6.558E+02	3.583E+05	2.407E+01	1.847E-01	5.152E+01	3.461E-03

**Results (Continued)**

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
2073	6.238E+02	3.408E+05	2.290E+01	1.757E-01	4.900E+01	3.293E-03
2074	5.934E+02	3.242E+05	2.178E+01	1.671E-01	4.661E+01	3.132E-03
2075	5.644E+02	3.084E+05	2.072E+01	1.589E-01	4.434E+01	2.979E-03
2076	5.369E+02	2.933E+05	1.971E+01	1.512E-01	4.218E+01	2.834E-03
2077	5.107E+02	2.790E+05	1.875E+01	1.438E-01	4.012E+01	2.696E-03
2078	4.858E+02	2.654E+05	1.783E+01	1.368E-01	3.816E+01	2.564E-03
2079	4.621E+02	2.525E+05	1.696E+01	1.301E-01	3.630E+01	2.439E-03
2080	4.396E+02	2.401E+05	1.614E+01	1.238E-01	3.453E+01	2.320E-03
2081	4.181E+02	2.284E+05	1.535E+01	1.177E-01	3.285E+01	2.207E-03
2082	3.978E+02	2.173E+05	1.460E+01	1.120E-01	3.125E+01	2.099E-03
2083	3.784E+02	2.067E+05	1.389E+01	1.065E-01	2.972E+01	1.997E-03
2084	3.599E+02	1.966E+05	1.321E+01	1.013E-01	2.827E+01	1.900E-03
2085	3.424E+02	1.870E+05	1.257E+01	9.640E-02	2.689E+01	1.807E-03
2086	3.257E+02	1.779E+05	1.195E+01	9.170E-02	2.558E+01	1.719E-03
2087	3.098E+02	1.692E+05	1.137E+01	8.723E-02	2.433E+01	1.635E-03
2088	2.947E+02	1.610E+05	1.082E+01	8.297E-02	2.315E+01	1.555E-03
2089	2.803E+02	1.531E+05	1.029E+01	7.893E-02	2.202E+01	1.479E-03
2090	2.666E+02	1.457E+05	9.787E+00	7.508E-02	2.095E+01	1.407E-03
2091	2.536E+02	1.386E+05	9.309E+00	7.142E-02	1.992E+01	1.339E-03
2092	2.413E+02	1.318E+05	8.855E+00	6.793E-02	1.895E+01	1.273E-03
2093	2.295E+02	1.254E+05	8.423E+00	6.462E-02	1.803E+01	1.211E-03
2094	2.183E+02	1.193E+05	8.013E+00	6.147E-02	1.715E+01	1.152E-03
2095	2.076E+02	1.134E+05	7.622E+00	5.847E-02	1.631E+01	1.096E-03
2096	1.975E+02	1.079E+05	7.250E+00	5.562E-02	1.552E+01	1.043E-03
2097	1.879E+02	1.026E+05	6.896E+00	5.291E-02	1.476E+01	9.917E-04
2098	1.787E+02	9.764E+04	6.560E+00	5.033E-02	1.404E+01	9.434E-04
2099	1.700E+02	9.287E+04	6.240E+00	4.787E-02	1.336E+01	8.973E-04
2100	1.617E+02	8.834E+04	5.936E+00	4.554E-02	1.270E+01	8.536E-04
2101	1.538E+02	8.404E+04	5.646E+00	4.332E-02	1.208E+01	8.119E-04
2102	1.463E+02	7.994E+04	5.371E+00	4.120E-02	1.150E+01	7.723E-04
2103	1.392E+02	7.604E+04	5.109E+00	3.919E-02	1.093E+01	7.347E-04
2104	1.324E+02	7.233E+04	4.860E+00	3.728E-02	1.040E+01	6.989E-04
2105	1.259E+02	6.880E+04	4.623E+00	3.546E-02	9.894E+00	6.648E-04
2106	1.198E+02	6.545E+04	4.397E+00	3.373E-02	9.411E+00	6.323E-04
2107	1.140E+02	6.226E+04	4.183E+00	3.209E-02	8.952E+00	6.015E-04
2108	1.084E+02	5.922E+04	3.979E+00	3.052E-02	8.516E+00	5.722E-04
2109	1.031E+02	5.633E+04	3.785E+00	2.904E-02	8.100E+00	5.443E-04
2110	9.809E+01	5.358E+04	3.600E+00	2.762E-02	7.705E+00	5.177E-04
2111	9.330E+01	5.097E+04	3.425E+00	2.627E-02	7.330E+00	4.925E-04
2112	8.875E+01	4.848E+04	3.258E+00	2.499E-02	6.972E+00	4.685E-04